Toronto's Ravine Parks: Conditions and Visitor Perspectives

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

This thesis evaluates whether there are significant similarities and/or differences between how visitors perceive ravine park management and the consultation process in six sites across the City of Toronto. This was done with the aim of evaluating the condition and maintenance of ravine parks in order to develop recommendations for future planning efforts under Toronto's new Ravine Strategy. A short survey with closed and open-ended questions was completed by 140 on-site visitors. To complement this data, each site was audited with a park audit tool and photographs were taken. Results highlight that people who visit ravines feel broadly positively about them when it comes to their maintenance and management, the safety of these sites, and the features and facilities within them. The most positively identified features were: naturalization and conservation work, art features, and educational features. The most unattractive features and conditions were: lack of way finding and signage, lack of garbage facilities, prevalence of litter, and poor water quality.

Additionally, there is general disagreement about the ravine planning process, equal proportions of respondents expressed cynicism, uncertainty, and optimism about the parks planning and consultation process. Results provide new insight into what the public perceives as the strengths and weaknesses of their local ravine parks which is important to inform future management efforts as the City has repeatedly stated that ravine park improvements are meant to be driven by the public. Recommendations are made to the future implementation plan of Toronto's Ravine Strategy to conclude the thesis.

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1. Introduction

1.1 The Natural History of Ravines in the City of Toronto

Ravines are a unique landform that cover 17% of Toronto's total land area and provide opportunities for leisure in both the urban core and in suburban neighbourhoods. Ravines are characterized by a water body in a depressed area, with sides of varying degrees of steepness (Meadus, 2000). The water body may or may not be present year-round, depending on its size and other conditions. The uneven slope of the land poses problems to building construction, meaning that these steep forests have remained largely undeveloped (Carleton & Taylor, 1982; City of Toronto, 2017; Meadus, 2000).

The ravines in the City of Toronto were formed through major glacial events that make the region unique in several ways. During the Pleistocene era, ice sheets covered the region, depositing significant amounts of sediment and gravel as they advanced and retreated (Freeman, 2008; Eyles, 2008). One of these deposits is the Oak Ridges Moraine, which lies outside of Toronto's boundaries and is where many of the creeks that run throughout the ravines are sourced from.

The ravine landscape is telling of rapid climatic changes in the area's geological past (Coleman, 1899; Eyles, 2008). Approximately 12,500 years ago a deep glacial lake, Lake Iroquois, covered present day Lake Ontario and extended northwards with a shoreline that formed the bluff that now exists 6 km North of Lake Ontario's present shoreline (Eyles, 2008). Lake Iroquois submerged present day Toronto until the ice sheet began melting and retreating northeast, causing the lake to be rapidly drained along with the other Great Lakes that existed at the time, leaving remnant lakes behind (Coleman, 1899; Eyles, 2008). At this stage, rivers flowed to an early Lake Ontario, that was at a much lower water level than the current level

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(Coleman, 1899; Eyles, 2008). These deep rivers formed the ravines we experience today (Eyles, 2008).

1.2 Key Events in Recent Ravine Planning History

There are several key events in recent ravine planning history that have shaped the ravines and how they are used. Three events will be reviewed: Hurricane Hazel and the acquiring of floodplain land by the Toronto and Region Conservation Authority (TRCA), the introduction of the Ravine and Natural Feature By-law, and the development of Toronto's Ravine Strategy.

Hurricane Hazel was a major storm and flood event in 1954 that dramatically shaped the management of ravines in Toronto. The consequences of the event were devastating: 81 lost lives, over 4000 people left homeless, and 50 bridges washed out or destroyed (Michaels, Goucher, & McCarthy, 2006; Nirupama, Armenakis, & Monpetit, 2014). The geography that suffered the most flooding damage was the west end of Toronto, particularly along the Humber River and Etobicoke Creek, and north of Toronto in Vaughan and the Holland Marsh Region just south of Lake Simcoe (TRCA, 2014). These areas experienced the most losses in terms of lives and infrastructure costs as rainfall was heaviest in the region and preparedness was lacking. After Hurricane Hazel, residential construction in floodplains in the region was banned and the Province of Ontario moved to prioritize flood control. A consequence of the devastation from Hazel was the amendment of *The Conservation Authorities Act* which gave Conservation Authorities the right to acquire natural lands and to manage them for the purpose of improving flood management, conservation, and restoration (City of Toronto, 2017; Ramsay-Brown, 2015; Reeves & Palassio, 2008). The acquiring of these lands by the TRCA is largely responsible for the lack of development in ravines and other floodplains in Toronto to date (City of Toronto, 2017).

Aside from the acquiring of land by the TRCA, the next key event and policy change that is relevant to Toronto's ravines was the formation of The Ravine and Natural Feature Zoning By-law. In 2002 this By-law was created that zoned ravine land in particular, for the purpose of protecting these lands from development and damage (City of Toronto, 2002).

The *Ravine and natural feature protection By-law* clearly defines what a ravine is, in order to determine which lands are protected under the By-law. This definition consists of two parts:

"RAVINE: [Amended 2008-05-27 by By-law No. 513-2008]

A. A discernable land form with a minimum two-meter change in grade between the highest and lowest points of elevation that may have vegetation cover and that has or once had water flowing through, adjacent to, or standing on, for some period of the year;

B. Contiguous buffer areas, areas of tree canopy and environmentally significant areas that contribute to the ecological function of a ravine."

- The City of Toronto, 2002

Though ravines are protected from various human activities, a large portion of ravine land is public property, and used for recreational activities (City of Toronto, 2016). The recreational function of ravines is an important part of defining what ravines are from a planning perspective, as it adds another element to their preservation and management. Functionally, ravines are recreational areas, flood management areas, and complete ecosystems (City of Toronto, 2016). These competing interests make their management complex.

The most recent major policy initiative began in 2016, a proposal to form Toronto's first Ravine Strategy. This represents the first comprehensive plan for ravine management in Toronto. Up until now, ravines have been managed as individual green spaces. The Ravine Strategy seeks

to move away from this approach towards a network planning approach where the ravines are treated as part of a larger well-connected system (City of Toronto, 2017). In this way, green space planning in Toronto appears to be adopting values from systems theory by moving towards an integrated planning system rather than the segregated planning initiatives that have dominated past management. In September 2017, the Ravine Strategy was approved by City Council. The Strategy is a set of five guiding principles and twenty action items that have been approved and adopted by city council to guide an upcoming ten-year implementation plan that will be released in 2019 (City of Toronto, 2017).

1.3 Introducing Toronto's Ravine Strategy

Attitudes towards ravines have changed dramatically, as they were once perceived as Toronto's largest barrier to developing into an influential urban centre (City of Toronto, 2017). Initially viewed as disordered nature that interrupted development, the City of Toronto has now taken the stance that these green spaces are one of the City's greatest assets (City of Toronto, 2017). Given their planning history and the gradual change in management attitudes, it is no surprise that ravines today are varied in their structure and their management. Some ravines have been managed much more than others. Some are difficult to find and enter, while others have extensive trail and recreational infrastructure within them. This makes ravine lands challenging from a planning perspective, especially considering that the Ravine Strategy is attempting to manage these ravines as a well-connected network for the very first time. The release of the Strategy is timely, as many people derive various benefits from the ravines, and as there are several management challenges that put the structural and functional integrity of these lands at risk.

The five guiding principles of the Strategy are 1) Protect 2) Invest 3) Connect 4) Partner and 5) Celebrate. The first principle of the Strategy, protect, recognizes that ravines are fundamentally natural spaces. This principle emphasizes that first and foremost, ecological function and resilience are necessary for the future sustainability of the ravines (City of Toronto, 2017). The second principle of investment states that consistent and ongoing investment will be required for the sustainability of ravines. At the same time, the principle states that efficiencies in management will still be pursued (City of Toronto, 2017). The third principle, connect, states that ensuring that people are physically able to reach and visit the ravines in a safe way that minimizes negative ecological impacts is essential (City of Toronto, 2017). The fourth principle, partner, states that the City of Toronto must partner with the community, the TRCA, neighbouring municipalities, other governments, property owners, public utilities, and other organizations to manage and improve the ravines (City of Toronto, 2017). The last principle is to celebrate the ravines and to encourage recognizing the importance of the ravine system through Toronto and the rest of the world (City of Toronto, 2017).

1.3.1 Social Considerations of the Ravine Strategy

A central aspect of green space planning in general and the Ravine Strategy in particular is a responsibility to the public interest. This responsibility requires planners to consider the social dimensions of green space planning. These include: creating recreational opportunities for diverse populations and ensuring that the decision-making process is inclusive. Some of these social considerations are being discussed more explicitly in the Ravine Strategy than others. Namely, the Strategy indirectly alludes to the potential of improving recreational opportunities for low-income populations by indicating that when the implementation plan is developed, social equity data, including adjacency of ravines to low income areas will be considered. No other

details regarding the role this data will have in decision-making is provided. The fourth principle of the Strategy, partner, states that a goal of the Strategy is to improve forums of dialogue and to provide more opportunities for public engagement. However, details on how public engagement will be improved is currently lacking.

The creation of recreational opportunities for diverse populations is particularly relevant to the Strategy as the characteristics of neighbourhoods adjacent to ravines vary significantly across Toronto. Portions of ravine land are privately held by affluent landowners whose homes back onto the ravine. Other ravines are mostly public land and are bordered by large apartment block towers. This range of structural diversity, along with the diversity of people found within the City of Toronto itself, puts pressure on park managers to manage urban ravines that provide favourable physical and social space for visitors who are diverse in terms of their leisure interests, ethno-cultural identity, age and ability, gender, and income levels who likely have different interests and needs (City of Toronto, 2017; Gobster, 2002).

In addition to diversity in terms of identity, expectations of parks differ, where some people anticipate quiet and relaxing spaces, whereas others anticipate safety concerns and delinquent behavior in these sites (Hayward & Weitzer, 1984). Additionally, the rate of use of parks can vary widely where some are full of activity, and others are characterized by non-use (Hayward & Weitzer, 1984). The challenges escalate in urban sites where physical space can be limited, use of these spaces may be high, and the demand for a range of recreational activities is also high (City of Toronto, 2017; Gobster, 2002). Given this, an important question for park planners and managers is, how does citizen diversity (in terms of income, age, gender, ethno-cultural identity, and area of residence) relate to park preferences and perceptions? (Payne, Mowen, & Orsega-Smith, 2002). This will be an important consideration for the Ravine

Strategy, as Toronto is one of the most multicultural cities in the world, creating the potential to bring many cultural perspectives to the management of nature and other facilities in the ravines (City of Toronto, 2017). There is little documentation or evidence that provides insight into how successful past green space consultation and engagement work in Toronto has been in bringing a range of cultural perspectives to the decision-making process. However, there is evidence of lower levels of engagement in lower income and culturally diverse neighbourhoods in Toronto, as identified by Toronto's Strong Neighbourhood Strategy 2020, which identifies neighbourhoods that are lacking in five domains of well-being: "physical surroundings, economic opportunities, healthy lives, social development, and participation in civic decision-making" (City of Toronto, 2015).

While social considerations are important to the implementation of the Ravine Strategy, the Strategy must also prioritize ongoing physical management challenges throughout the Ravine network. Two ongoing management challenges are described; invasive species and erosion challenges. The implementation of the Strategy will have to strategically address these challenges, among many others that are currently posing problems to managers and planners.

At the same time, the Strategy recognizes and seeks to support the various benefits that people derive from the ravine network. These benefits are often framed as ecosystem services that contribute to human wellbeing. The following describes these benefits in the context of urban green spaces such as Toronto's ravines.

1.4 The Benefits Derived from Ravines

Extensive research has been done on the benefits that people derive from urban green spaces (City of Toronto, 2017; Dallimer et al., 2012; Kardan et al., 2015; Smoyer-Tomic, Hewko, & Hodgson, 2004; Wolch, Byrne, & Newell, 2014). The Ravine Strategy itself

highlights many of these benefits in a broad sense (City of Toronto, 2017). The seventh action

item of the Strategy directly proposes a plan to analyze both market and non-market value

ecosystem services (City of Toronto, 2017). Ecosystem services are a common way that

researchers describe and study benefits provided by green spaces. The ecosystem services

framework was popularized by the Millennium Ecosystem Assessment in 2005. Since the

publication of the Millennium Ecosystem Assessment, the ecosystem services framework has

been used by many researchers across the world to describe and argue that green spaces are

valuable resources that provide essential services to humans (Fagerholm et al., 2016; Hardwicke,

2008; Wolch, Byrne, & Newell, 2014; Zhou & Parves, 2012).

The foundational Millennium Ecosystem Assessment outlines four categories of

services: supporting services, provisioning services, regulating services, and cultural services[1]

(MA, 2005). Supporting services are long-term processes that are required for the production of

all other ecosystem services, and include soil production, oxygen gas production through primary

production, and nutrient cycling (MA, 2005). Provisioning services relevant to Toronto's ravines

includes fruit trees and even edible mushrooms that local groups and individual nature-

enthusiasts forage (Taekema, 2015). Regulating services relevant to urban centres include the

mitigation of urban-heat island effect which has been heavily documented (Escobedo et al.,

2011; Kabisch & Haase, 2014; Lafortezza et al., 2009). Cultural services have been defined as

"the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive

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[1] The Millenium Ecosystem Assessment defines supporting services as *services necessary for the production of all other ecosystem services* such as nutrient cycling, soil formation, and primary production. Provisioning services are those *products obtained from ecosystems* including food, freshwater, fiber, fuelwood, and so on. Regulating services are those *benefits obtained from regulation of ecosystem processes* such as climate regulation, water purification, pollination, and water regulation. Cultural services are *nonmaterial benefits obtained from ecosystems*.

development, reflection, recreation, and aesthetic experiences" (MA, 2005). Cultural services include many things such as: educational opportunities, recreational opportunities, improving social cohesion, experiential benefits, fostering place attachment, and adding to a sense of identity, all of which are relevant to Toronto's ravines (Egan, Hjerpe, & Abrams, 2011; Smoyer-Tomic, Hewko, & Hodgson, 2004; Milcu et al., 2013; Niemela, 2014). A discussion of these cultural services is worth doing independent of the other three ecosystem services as there has been more contention and confusion around this one category of service.

1.4.1 Cultural and Social Ecosystem Services

When considering green spaces that are in urban settings, such as Toronto's ravines, cultural services are of particular interest due to the high number of visitors that these green spaces support. The importance of cultural ecosystem services is sometimes minimized because the value of them is difficult to capture with traditional economic indicators unlike the other services (Cooper et al., 2016; Milcu et al., 2013; Zhou & Parves Rana, 2012). While something such as a regulating service can be measured in terms of the cost of replacing the service, cultural and social value is not appropriately captured by a dollar value (Cooper et al., 2016; Zhou & Parves Rana, 2012). Nonetheless the value of educational opportunities, recreational opportunities, social cohesion, experiential benefits, place attachment, and a sense of identity to human well-being has become the focus of numerous studies (Milcu et al., 2013).

Toronto's ravines offer educational and recreational opportunities through formal programming and informal recreation (City of Toronto, 2017). Youth-based educational and recreational programming occurs in ravines, some of these with a conservation or ecological health focus (Ayyavoo et al., 2014; City of Toronto, 2017). Educational features and organized public educational walks provide opportunities for adult visitors (City of Toronto, 2017). Social

opportunities are provided by ravines that support leisure gathering spaces such as picnic tables, fire places, benches, and playgrounds (City of Toronto, 2017). Experiential benefits of urban green space in general include the general enjoyment of a space, improved attention restoration, and positive memory creation and recall (Hartig & Staats, 2006; Tyrvainen et al., 2005). Place attachment and community attachment benefit from green space such that visitors have the opportunity to connect over shared values and interests which can improve social cohesion (Arnberger & Eder, 2012; De la Barrera et al., 2016; Peters et al., 2010).

In terms of positively contributing to a sense of identity, Toronto's green spaces have been argued as contributing to a shared municipal identity by the renowned journalist Robert Fulford who stated "Ravines are to Toronto what canals are to Venice, hills are to San Francisco, and what the Thames River is to London, they are the heart of the city's emotional geography… the shared subconscious of the municipality, the places where much of the city's literature is born" (Fulford, 1995). This statement connects the landscape to the art and creativity produced by the city as a whole, a bold concept that speaks to the broad impact that urban green spaces are thought to have on culture.

1.5 Challenges Facing Ravine Management: Invasive Species

A common biological condition of the ravines is a high frequency of invasive species (Carleton & Taylor, 1983; Meadus, 2000; Ramsay-Brown, 2015; Seymour, 2000). This concern has been identified in the Ravine Strategy and falls under the first guiding principle of protecting the natural environment. Undesirable and increasingly pervasive plants that are posing a problem for ravines include dog-strangling vine, garlic mustard, purple loosestrife, burdock, and Norway maple (Ramsay- Brown, 2015). These species have posed a serious problem to restoration efforts

in recent years by outcompeting local wildlife, and by reducing soil stability which increases the rate of soil erosion (Conway & Vander Vecht, 2015).

Invasive species directly threaten wildlife that is locally rare or endangered (Meadus, 2000). Many locally and regionally rare species have been documented in ravines across the City. These include fly honeysuckle, sassafras, interrupted fern, and bluebead lily (Ramsay-Brown, 2015). In addition to this, plant communities characterized by regionally rare mature-growth red oak and sugar maple are found throughout the ravine network (City of Toronto, 2008). Ravines that include wetland habitat boast an even greater diversity of species with the inclusion of black ash, marsh marigold, Bebb's sedge, and skunk cabbage in their ecosystems (Reeves & Palassio, 2008).

One management practice to respond to invasive species involves the planting of native plant species (Carleton & Taylor, 1983; Meadus, 2000; Ramsay- Brown, 2015). This practice can be implemented after the removal of invasive plants, or it can be done without their complete removal. Planting initiatives have varied in the degree of success they have (City of Toronto, 2000; Ramsay-Brown, 2015; Seymour, 2015). In some areas, plantings occur on an annual basis in spring, marking a long-term investment. Though important strides have been made with this practice, competition between native species and invasives continues to be a problem (City of Toronto, 2000; Meadus, 2000; Ramsay-Brown, 2015). Their removal requires many hours of physical labour, making the process a costly one (City of Toronto, 2000). Site-by-site decision-making on the best strategy for removal is likely the most effective means of addressing this pervasive problem (City of Toronto, 2000). Additionally, recommendations to educate private landowners who own portions of ravine land about planting native versus invasive tree species

such as Norway Maple have been made by several University of Toronto Forestry graduate theses (Kabigting, 2018; Richard, 2018).

1.5.1 Challenges Facing Ravine Management, Erosion

As with many urban water bodies, soil erosion is an ongoing management challenge in Toronto's ravines. There are several processes that result in higher rates of soil erosion such as invasive species that have shallow root systems, and soil compaction due to high foot traffic. Soil erosion is also an issue for the water quality of the creeks and rivers in Toronto's Ravines as changes in sedimentation rates affect water turbidity and therefore impact aquatic habitat quality.

In places with concerning rates of erosion, measures have been taken to combat the rapid process of soil erosion by water (Freeman, 2008). Reinforced banks with boulders or stone can and have been used to this end (Ramsay-Brown, 2015). In some situations, erosion has been managed to the extent that many of the watercourses are characterized by hard surfaces along the bank (Shabica et al., 2010). Planting native species has also been implemented to regulate erosion and to renaturalize watercourses (Shabica et al., 2010).

As with most urban green spaces, the ravine network suffers from ongoing pollution challenges. High sediment load due to high rates of soil erosion itself is a source of pollution, but there are also other pollutants. Part of what makes the problem so prevalent is that pollution originates from a wide array of inputs. The Don River, a central part of Toronto's ravine network, was once extensively polluted by a Domtar paper plant upstream in North Toronto (Seymour, 2000). There are various point-source polluters, however, there is also equally pervasive diffuse pollution sources that cannot be traced to a single source. Water quality also varies with weather events, where stagnant, polluted water is different in character to rapid flows created by storm events (Bonnel, 2010). Overflow of storm sewers during storm events is yet

another source of pollution to the ravine network (Patel, 2008). The implementation of the Ravine Strategy will address both soil erosion and water pollution in some capacity, however, the primary responsibility of water management will be led by other departments and wet weather flow plans. Two plans that are currently being implemented by the TRCA to address water management in ravines are the Taylor Massey Creek Sub-Watershed Master Plan and the Don River Watershed Plan.

1.6 Introducing the Study, Rationale and Purpose

The first objective of this thesis is to understand how visitors perceive the condition and management of six ravines across the City of Toronto. The secondary objective of this thesis is to investigate visitor perspectives of the ravine planning and consultation process. This was the first study that engaged visitors in multiple ravines and compared their responses to management opportunities and challenges. Visitor perspectives are a valuable new source of information on the effectiveness of past and current ravine planning and management efforts. This is essential as this research takes the perspective that the success of a public space relies not only on planners, but also on people adopting, using, and managing the space (Peters et al., 2010). Overall themes were of interest, as were site-level themes. A survey tool, a park audit tool, and photographs were used and results were integrated together to provide a more complete picture of ravine conditions and management issues. These results are seen as timely as the Ravine Strategy has been recently published and the next stage of work will focus on developing an implementation plan.

1.6.1 Thesis Structure

This thesis is divided into five chapters. The second chapter will present a literature review of selected topics in environmental equity research. The purpose and type of review, the

review process, and the academic literature reviewed are presented. The body of knowledge is described and gaps in the literature are identified, which lead to the development of the study's research questions. Chapter three describes the study's methodology. This chapter's contents include a discussion of the research paradigm, the research approach, the scope of the study, descriptions of the selected study sites, and the survey development process. Additional details regarding the methods are outlined for the community park audits, photographs that were taken, statistical analysis, content analysis, and the integration of data.

The fourth chapter presents the study's results. Demographic results are presented as are the survey's closed and open-ended question results, the community park audit tool results and photographs that were taken at each site. Results are presented at two scales: overall trends and site-level results. Quantitative data results are presented separately from the qualitative data results and are then integrated together. The fifth chapter presents a discussion of the results and draws connections between the results presented here and the broader research literature and makes recommendations for further study. Recommendations for future ravine planning efforts based on results and a conclusion complete the thesis.

2. Literature Review

The purpose of this chapter is to present the results from a literature review that serves as the foundation of this thesis. The purpose and types of literature review are briefly described, as is the process that was followed to complete the current literature review. The review introduces several central aspects of environmental equity research regarding urban green space planning, focusing on recreational opportunities, health and well-being benefits, and community engagement in the City of Toronto. A summary of findings from the literature review is presented, and research questions that emerged from the review are listed to conclude the chapter.

2.1 Literature Review: Purpose and Type

Literature reviews serve various purposes. They allow a researcher to become familiar with published research on their topic of interest, allowing them to position themselves as knowledgeable of their topic (Boote and Beile, 2005; Randolph, 2009). One of the central purposes for conducting a literature review is to identify research questions that emerge from identified gaps that exist in the literature (Boote and Beile, 2005). The literature review also provides the reader with context for the thesis findings that will be presented in the results and discussion section of the research (Creswell, 2014; Randolph, 2009).

There are several types of literature reviews. Some reviews focus on integrating what other researchers have done in the field, while others focus on critiquing preexisting research and past work (Creswell, 2014). Some reviews emphasize building bridges and connections between distinct topics, while still others summarize the literature and identify central issues (Creswell, 2014; Randolph, 2009). The current literature review will summarize and identify central issues in environmental equity research.

2.2 Literature Review Method

The current literature review process followed a few key steps. Google Scholar, Scopus, and Web of Science were used to search for the presented literature. Key words were used as recommended by Creswell (2014). Initially, studies that focused on Toronto were sought out to identify the extent of literature on Toronto's ravines specifically. Key words used to find literature on Toronto were Toronto ravine management, urban ravines, and Toronto Ravines. Upon finding a limited number of studies, searches were broadened to other types of green space and the search term "Toronto" was excluded. Key words that were synonymous with urban green space were selected in Scopus and Web of Science. These words included urban forest, open space, urban vegetation, recreational park, and urban greenway. To search for studies focused on environmental equity key words used were environmental equity, environmental justice, and procedural justice. Other key words used were place attachment, community, perception, preferences, fear of crime, perceptions of safety, recreation, and preference behaviour.

In terms of the search process, at the early stages of the process, Google Scholar was primarily used, and books from the University of Waterloo's libraries were sought out. Scopus and Web of Science were later used after the research interest had been refined. There were several exclusion criteria when narrowing down the literature that was included in the review. The time period of research that was included in this review was 1980-2018. The exclusion function was used in Scopus and Web of Science to exclude studies that contained specific key words. These key words were national parks, tourism, rural, agriculture, consumer satisfaction, architecture, auditory perception, and noise pollution. Studies containing these key words focused on topics that were deemed as outside of the scope of the research interest. In winter 2017, 43 articles were initially read, and from these, 19 were included in the literature review.

Another 25 studies were reviewed in Fall 2018 after the research focus had been further refined from earlier drafts. From these, 16 studies were included in the review and all of these had their reference sections scanned for other relevant studies to include. Scanning the reference sections of the 16 studies added another 15 studies to the review.

2.3 Environmental Equity Research

The field of research known as environmental equity originated in the United States and dates back to the 1970s (Bowen, 2002; Tooke, Klinkenberg, & Coops, 2010). The initial interest of environmental equity work concerned itself with racialized communities bearing more of an environmental burden than other social groups by being disproportionally close to environmental hazards such as waste-treatment facilities (Bowen, 2002; Buzzelli et al., 2003; Buzzelli, 2008; Teeluksing & Gosine, 2008; Tooke, Klinkenberg, & Coops, 2010). As environmental justice shifted from a relatively narrow field of research that focused on the distribution of environmental burdens, concepts of equity broadened. In recent history, studies have investigated the distribution of positive amenities, including recreational green space (Chang, 2013; Conway & Bourne, 2013; Gilliland et al., 2006; Gobster, 2002; Kabisch & Haase, 2014; Kardan et al., 2015; Landry & Chakrobarty, 2009; Maroko et al., 2009; Pham et al., 2011; Smale & McLaren, 2005; Tooke, Klinkenberg, & Coops, 2010; Wolch, Byrne, & Newell, 2014).

Not only is the distribution of environmental amenities now a central theme to environmental equity research, but procedural equity has become an important theme to planners in particular. Procedural equity concerns itself with creating equitable and inclusive processes that lead to outcomes, such as decision-making processes (Low, 2013; Tooke, Klinkenberg, & Coops, 2010). With these concepts together, environmental equity research makes the critical

realization that unfortunately, a sustainable community does not necessarily have to be a just one (Buzzelli, 2008).

In response to the disconnect between sustainability and equity, Julian Agyeman has developed a framework called the Just Sustainability Paradigm that captures the different elements of outcome and procedural equity while also integrating sustainability values into environmental planning (Agyeman, 2005). In this approach to environmental equity Agyeman (2005) identifies that "There is a need to ensure a better quality of life for all, now and into the future, in a just and equitable manner whilst living within the limits of supporting ecosystems".

A limitation of environmental equity research is that relationships are studied, but causation cannot be established (Bowen, 2002; Buzelli, 2008; Conway & Bourne, 2013; Gerrish & Watkins, 2018). Most authors, though they may find significant correlations and disparities, cannot speak to the cause of their observations with confidence (Bowen, 2002; Buzelli, 2008; Conway & Bourne, 2013). Nonetheless, several authors insightfully discuss important factors that may play a role in causing the observed inequities in their studies. Across numerous studies that investigate various socioeconomic characteristics, the importance of income as a predictor of disadvantage generally surpasses race or ethnicity (Conway& Bourne, 2013; Gerrish & Watkins, 2018; Pham et al., 2011; Pham et al., 2013; Tooke, Klinkenberg, & Coops, 2010; Smale & Mclaren, 2005; Smoyer-Tomic, Hewko, & Hodgson, 2004). Neighbourhood legacy as it relates to green space planning and the constraints of the built environment has also been identified as a causal factor of inequity.

The built environment and development history influence the opportunities for urban green space. (Conway & Bourne, 2013; Pham et al., 2011; Pham et al., 2013; Potestio et al., 2009; Teelucksingh& Gosine, 2008). Historically cheaper land prices have been linked to rapid

development in the past when consideration for green space was simply not a priority (Pham et al., 2011). Additionally, land-owners have been identified as more likely to advocate for resources such as parks and recreational areas than renters (Pham et al., 2013). Meaning that neighbourhoods with historically high proportions of renters are more prone to having fewer green space amenities than neighbourhoods with high rates of land ownership. All of these elements complicate the question of what should be done to best service a community that would now benefit from green space provision or improvements. The following discussion highlights the key issues and themes that have been identified in the current review of environmental equity research as it pertains to urban green space. The studies have been arranged by recreational opportunities, health and well-being outcomes, and the community engagement process.

2.3.1 Recreational Opportunities

Recreational opportunities are an important part of environmental equity, and many conditions and planning processes can negatively or positively influence these opportunities. One of the simplest measures of recreational opportunities is park provision. Park provision refers to the number and size of public parks in a given area. Park provision is often discussed as a proxy for recreational opportunities, which are understood as benefiting human health by improving rates of physical activity, air quality, providing therapeutic landscapes, and providing opportunities for social connection (Cohen et al., 2010; Gilliland et al 2006; Smale & Mclaren, 2005; Potestio et al, 2009; Smoyer-Tomic, Hewko, & Hodgson, 2004). Some studies focus on children as their study group, and therefore playground provision is studied more specifically (Potestio et al, 2009; Gilliland et al., 2006; Smoyer-Tomic, Hewko, & Hodgson, 2004). In a study by Gilliland et al. (2012) that focused on children and the relationship to obesity and the built environment, the authors found that the presence of recreational opportunities within 500m

of a child's home was associated with lower Body Mass Index scores which was used as an indicator of child obesity.

For studies with a quantitative focus, typically the quantity of parks is studied such that park provision is relatively straightforward to measure with spatial analysis and census data. However, researchers have pointed out that the presence of parks is not always an accurate proxy for park utilization or active-living (Cohen et al., 2010; Maroko et al., 2009; Smale & Mclaren, 2005). In other words, equality of opportunity does not equal outcome equality, one of the main interests of equity-oriented research.

Moreover, the equitable distribution of parks does not speak at all to variations in park quality (Smoyer-Tomic, Hewko, & Hodgson, 2004). This is to say, some parks are perceived as more usable than others. To address this, researchers have shifted their focus towards evaluating the quality of parks. One study in Edmonton noted that low income areas had access to playgrounds of significantly lower quality (Smoyer-Tomic, Hewko,& Hodgson, 2004). This observed disparity was difficult to overcome due to city planning policy. The policy in question stated that the municipality would match funds raised by any given neighbourhood to improve their playgrounds. This policy serves as a barrier to lower-income areas that have less disposable income to fundraise for their local playground. In other words, neighbourhoods with more disposable (i.e., higher) income are able to raise many more funds than lower-income neighbourhoods. As a result of this policy, the municipality is more likely to allocate more of its own financial resources to neighbourhoods with higher income households. This example highlights the unintended role that planning policy can have in exacerbating existing inequities.

Another area of study that impacts recreational opportunities investigates park visitor preferences, and aims to identify which distinct groups hold certain preferences as preferences

may influence park visitation. Populations have been differentiated by age groups, gender categories, racial and ethnic groups, residents versus non residents, commuters versus non commuters, and frequent visitors versus infrequent (Bjerke et al, 2006; Gobster, 2002; Jansson et al, 2013; Kazmierczak, 2013; Larson et al., 2016; Payne, Mowen, & Orsega-Smith, 2002). A fewer number of studies have investigated age as a determinant of recreational preferences (Payne, Mowen, & Orsega-Smith, 2002). Aside from studying what groups prefer certain features, preference research also investigates how attitudes and preferences affect the utilization of recreational opportunities.

Urban areas bring specific challenges to the enjoyment of green space, they are prone to being perceived as crowded, and they are often confronted with high expectations of being a place of escape from the stress of over-stimulating urban life (Arnberger, 2012; Giles Corti et al., 2005; Hartig & Staats, 2006; Hayward & Weitzer, 1984; Peschardt & Stigsdotter, 2013). A need for attention restoration has been identified by various studies, especially for people who are surrounded by a predominantly urban environment (Giles Corti et al., 2005; Hartig & Staats, 2006; Peschardt & Stigsdotter, 2013). Several studies point to how this need for attention restoration may influence environmental preferences more towards preferences for natural rather than built environments (Giles Corti et al., 2005; Hartig & Staats, 2006; Hayward& Weitzer, 1984; Peschardt & Stigsdotter, 2013). This has implications for green space design as the absence of built features may be more preferred by visitors seeking a retreat from their urban environment (Hartig & Staats, 2006; Peschardt & Stigsdotter, 2013). Related to green space design and the need for attention restoration is the concern that several urban green spaces are often perceived as overcrowded (Arnberger, 2012). This has become a relevant part of urban green space planning as these sites are closer in proximity to a high number of people, making

them prone to overcrowding. The perception of being too crowded damages the appeal that any given green space has, and consequently reduces opportunities for attention restoration and other benefits (Arnberger, 2012; Hayward & Weitzer, 1984).

Researchers have investigated many different socioeconomic characteristics for differences in perceptions and preferences in green space. Shafer, Lee, and Turner (2012) categorized two distinct groups of users as commuters versus non-commuters in a greenway trail system. These groups were found to have multiple and sometimes competing priorities (Shafer, Lee, & Turner, 2012). For example, users who only used the greenway trail for commuting by bicycle prioritized trail connectivity to important destinations such as a university and health science complex more than those users who used the trail system to walk their dogs or run with a colleague (Shafer, Lee, & Thurner, 2012). Related to this, studies have noted that residential location seems to be related to park preferences as well, where respondents who were predominantly raised in urban areas mostly preferred more developed and manicured parks compared to suburban residents who preferred natural and forested parks (Bixler & Floyd, 1997; Payne, Mowen, & Orsega-Smith, 2002). Another dimension of residential location is proximity, or how close someone lives to an urban green space, which has also been identified as important to perceptions of green space (Giles Corti et al., 2005; Larson et al., 2016). Giles Corti et al. (2005) found that people who lived in closer proximity to public open space were more likely to use the space for physical activity if they also identified the space as attractive. Larson et al. (2016) found that respondents who lived within 3 miles of a natural trail system perceived stronger cultural benefits than those who lived more than 3 miles away. Additionally, how frequently someone visits a given green space influences how they perceive that space in terms of the benefits they derive from it (Lafortezza et al., 2009). Authors found that longer and more

frequent visits to a green space meant that users perceived more benefits and improvements to personal well-being than those who visited less frequently or for shorter amounts of time (Lafortezza et al., 2009).

Many studies have investigated the role of race and ethnicity on park preferences (Gobster, 2002; Kabish & Haase, 2014; Larson et al., 2016; Payne, Mowen, & Orsega-Smith, 2002; Peters et al., 2010). These studies investigate preferences for naturalized locations versus manicured ones, preferred facilities and activities, and undesirable features identified by visitors.

In an American study, Larson et al. (2016) noted that different racial groups held different perceptions of cultural benefits provided by an urban greenway. Hispanic and Latino visitors identified significantly more cultural benefits to the green space than white visitors (Larson et al., 2016). The authors hypothesized that this trend may be due to Hispanic and Latino visitors valuing socializing in larger groups during outdoor leisure time more than other racial groups (Larson et al., 2016). In the Netherlands, similar findings were true for Peters et al. (2010) who found that social interactions within two parks were more highly valued by non-western migrants than they were valued by local Dutch participants. In particular, having a picnic, a barbecue, and meeting other people were cited as significantly more valued by non-western migrants (Peters et al, 2010). A study based in Berlin, Germany, also found similar preferences for picnic and barbeque facilities being more valued by the new or recent immigrant population (Kaabish & Haase, 2014). Their survey also reported that there were much fewer immigrants surveyed than the researchers had anticipated as they had intentionally chosen a park in close proximity to high immigrant populations (Kabish & Haase, 2014). While the researchers could not confirm what the cause of fewer observed immigrants in the park was, they hypothesized that it might be due to a mismatch in recreational interests and needs.

In an American study based in Cleveland, Payne, Mowen, & Orsega-Smith (2002) found that white participants were more likely to prefer parkland that prioritized conservation rather than recreation compared to non-white participants. Gobster (2002) also alludes to this observation that suggests that white participants value nature and conservation more highly than other race groups.

While investigating the predictive power of race on park preferences and perceptions may be appealing, several researchers have found that it is an oversimplification (Gobster, 2002; Payne, Mowen, Orsega-Smith, Peters et al, 2010; Scott & Munson, 1994). Researchers have repeatedly come to the conclusion that a single sociodemographic characteristic is unreliable when attempting to use that characteristic as a predictor of preference (Gobster, 2002; Payne, Mowen, Orsega-Smith, Peters et al, 2010). Gobster (2002), when investigating racial and ethnic differences in urban park use, emphasized that while there were several significant differences, on the whole, there were in fact many similarities between race groups. In particular, the respondents shared preferences for the park's natural features, were strongly concerned about cleanliness and maintenance, had a similar perception of park safety, and all equally participated in a core set of activities such as walking, cycling, and sitting and relaxing (Gobster, 2002). This is an important finding and lesson for planners who are concerned about a lack of unity among interest groups and who may be tempted to over-emphasize what divides groups, rather than prioritizing the attitudes and preferences that unite them.

Perceptions of safety are another factor that can impact recreational opportunities, such that if an urban green space is perceived as unsafe, recreational areas are likely to be underutilized (Cohen el al., 2010). A literature review of the fear of crime in urban green space by Sreetheran and van den Bosch (2014) stated that the majority of studies find that individual

factors shaped the fear of crime more than broad social and physical factors. Individual factors that were of particular relevance were gender and past experience (Sreetheran & van den Bosch 2014). In particular, past experience with either direct or indirect victimization was found to increase the degree of fear in urban green space (Sreetheran & van den Bosch 2014). Cohen et al. (2010) questioned if and how safety perceptions facilitate park use and concluded that while negative perceptions of park safety have been identified as a barrier to park use, positive safety perceptions alone do not appear to facilitate park usage.

Several studies have found that perceptions of attractiveness and safety sometimes conflict with one another (Bjerke et al, 2006; Hofmann et al, 2012; Jansson et al, 2013; Luymes &Tamminga, 1995). Over 26 studies have investigated the role that dense vegetation has on perceived safety (Sreetheran & van den Bosch, 2014). Dense vegetation and highly naturalized landscapes tend to be rated as most attractive, but least safe by visitors (Bjerke et al, 2006; Jansson et al, 2013; Luymes & Tamminga, 1995; Qiu, Lindberg, & Nielson, 2013).

Differences between how groups perceive safety have been documented in several studies. Women and elderly people in particular have tended to identify more safety concerns than other users (Bjerke et al, 2006; Jansson et al, 2013; Luymes & Tamminga, 1995; Sreetheran & Van den Bosch, 2014). Sreetheran and Van den Bosch, (2014) found that 23 studies reported that women described significantly higher levels of fear than male respondents in urban green space. A study of 8th grade students found that those who have generally high fear expectancy, are sensitive to feelings of disgust or repulsion, and who report higher desires for modern comforts prefer manicured parks rather than wild parks (Bixler & Floyd, 1997). Additionally, in a study by Cohen et al. (2010) neighbourhood sociodemographics were correlated with safety perceptions, where safety was perceived lowest in communities with higher population density,

higher proportions of households in poverty, and higher proportions of Hispanics. Various American and Canadian studies have also noted that low-income individuals identify barriers to their use of public green space including negative safety perceptions, lack of green space in close proximity to their homes, long travel times to visit a green space, and a lack of convenient transportation (McCarville & Smale, 1993; Scott & Munson, 1994; Searle and Jackson 1985).

Another dimension of perceiving a safe environment depends on the evaluation of who belongs in the public space. As an example, it has been noted that people are less suspicious of adult park visitors who are accompanied by children or dogs as they are perceived as having an obvious reason for visiting the park (Kazmierczak, 2013). Social dynamics such as perceived safety risks can cause tension between park visitors. Visible minorities in several studies have indicated that they are fearful of racial conflict and, in some cases, violence in public parks (Gobster, 2002; Low, 2013; Peters et al., 2010). Peters et al. (2010) noted that public spaces are often idealized as being open to everyone, which is not always the case. Rather, it has been found that urban public space is often semi-public in nature and territorialized by specific groups (Low, 2013; Peters et al., 2010). These dynamics have the potential to exclude particular ethno-cultural groups from urban green space, therefore damaging the health and well-being benefits that these groups could otherwise gain from visitation.

2.3.2 Health and Well-being Benefits

Most environmental equity studies that concern themselves with urban green spaces are interested in improving human health and well-being as they relate to the benefits provided by green space. While health and well-being are an important part of the rationale of many studies, the extent and nature of the relationship between green space and health is not clearly understood (Dallimer et al., 2012; Kardan et al., 2015). Childhood health and obesity risk are directly

discussed in terms of park provision in several studies (Potestio et al, 2009; Gilliland et al., 2006; Gilliland et al., 2012; Smoyer-Tomic, Hewko,& Hodgson, 2004). These studies discuss health as a problem of access to recreational opportunities (Wolch, Byrne, & Newell, 2014), however as has been previously discussed, park provision cannot be equated to park utilization.

Self-reported health and its relation to street trees has been studied in Toronto. Results indicate that when mean neighbourhood income is controlled for, individuals who live in neighbourhoods with higher street tree density self-report a better state of health than people who have on average a $10,000 higher annual income (Kardan et al., 2015). At the same time, another study found that tree cover in Toronto's priority investment neighbourhoods was significantly lower than comparable non-priority investment neighbourhoods (Chang, 2013). Priority investment neighbourhoods are those that scored significantly lower than other neighbourhoods in terms of several socioeconomic indicators. Since the time of the study by Chang, the City of Toronto has replaced priority investment neighbourhoods with neighbourhood improvement areas. Priority investment neighbourhoods were identified by the city in 2005, and in 2011 businesses, residents, and other agencies provided input to the development of Toronto's Strong Neighbourhood Strategy 2020 (City of Toronto, 2014). While a name-change of the program occurred during this process, and the data used to inform the selection of neighbourhoods changed in several minor ways, the central intent and objectives of the policy did not.

Broadening the literature search to outside of Toronto, several studies directly link health to cultural ecosystem services that urban green spaces provide (Milcu et al, 2013; Hordyck, Hanley, & Richard, 2015). These studies focus on psychological and mental health and its impact on overall physical health. Milcu et al. (2013) argue that a range of disciplines including psychology, anthropology, and behavioural studies have indicated that cultural ecosystem

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services concretely improve human well-being. Hordyck, Hanly, and Richard (2015) cite three theories of why urban green spaces positively influence human health: stress reduction theory, attention restoration theory, and biophilia. A study by Dallimer et al. (2012) found that regardless of how accurately users perceived the degree of biodiversity in a space, those who perceived high biodiversity in a green space also self-reported higher well-being than users who perceived low biodiversity.

Cultural ecosystem services extend to how green spaces influence place attachment and community attachment and how these are relevant to overall well-being. Place attachment is a part of the subjective experience of place and refers to emotional attachment between groups, individuals, and their environment (Peters et al., 2010). Place attachment has been noted as important for fostering social cohesion (Kazmierczak, 2013; Peters et al., 2010). Place-protective behaviour and actions have been linked with place attachment when planned changes disrupt existing emotional attachments or threaten place-related identity formation (Devine-Wright, 2009). Use of parks, connection to parks, and concern for parks are directly related to the extent of attachment to these places (Peters et al., 2010).

The study of the role that green space in particular has on community attachment is emerging in academic research (Arnberger & Eder, 2012). Community attachment is similar to place attachment but is differentiated in the literature by referring only to connections between people and their communities in a social sense (Trentelman, 2009). Specifically, community attachment has been used as a measure of sentiment towards one's community and their sense of rootedness in the community (Trentelman, 2009). One study in Vienna compared urban residents to suburban residents for their perceptions of and attachment to local green space (Arnberger& Eder, 2012). The study found that urban residents showed higher community attachment, valued

the green space higher, and self-reported a better overall quality of life than suburban residents

(Arnberger & Eder, 2012). A South American study found that residents of a low income

neighbourhood used local green space as a source of community attachment and valued them as

spaces where they could connect to their social community (de la Barrera et al., 2016). The

researchers also found high levels of stewardship and a sense of responsibility towards, or

ownership of, the community green space from these residents (de la Berrera et al., 2016). The

following reviews community engagement and stewardship in Toronto.

2.3.3 Community Engagement in Toronto

Community engagement has been important to Toronto's ravine management.

Community action groups have a local history of mobilization and vocal pressure for the

restoration of troubled ravines and green space (City of Toronto, 2017; Lobko, 2011; Ramsay-

Brown, 2015; Seymour, 2000). In Toronto's green spaces, advocacy is typically organized by

neighbourhood associations or environmental organizations. Examples of such groups include

the Toronto Field Naturalists, Local Enhancement and Appreciation of Forests (LEAF), and

university student nature clubs (City of Toronto, 2016).

Groups such as these often host stewardship events, which are meant to enhance the

natural landscape (Riley, 1998). This includes mulching of trees, planting native species, de-

weeding areas, and watering new plantings (Riley, 1998). The purpose of these events is

twofold: To conserve and restore the ecosystem, and to generate community enthusiasm for

green space in the city (Toronto Field Naturalists, 1976). Some of the most successful restoration

efforts in Toronto have only been made possible because of extensive pressure from such groups,

whether formal decision-making bodies were initially resistant to investment or not (Lobko,

2011).

While several green spaces may have well-organized and relatively powerful advocates, there are also areas that are less able to mobilize their efforts and interests (Buzzelli, 2008; City of Toronto, 2015). Communities that have more barriers to organized advocacy may be those that are predominantly composed of renters (rather than home-owners), new immigrant families, and low-income households (Buzzelli, 2008; Conway & Bourne, 2013; Landry& Chakraborty, 2008). Various studies have reported that these socioeconomic indicators, among others, are closely associated with a lack of participation in political planning processes (Buzzelli, 2008; Landry& Chakraborty, 2008; Pham et al., 2011; Sister, Wolch, & Wilson, 2010; Smoyer-Tomic, Hewko, & Hodgson, 2004). Additionally, other research has found that while low-income communities may be more dependent on the public provision of green space, their participation in public park and recreation programming is lower than other income groups (Scott& Munson, 1994). It has also been noted that, as with other consultation work, green space consultation is prone to one dominant stakeholder group driving the planning process such that changes and improvements only reflect their values (Shafer, Lee, & Turner, 2000).

There is evidence of exclusion from, or barriers to, community consultation processes in Toronto (City of Toronto, 2015; Gibson-Wood & Wakefield, 2013; Newman, 2011). The City itself has recognized this in the Toronto Strong Neighbourhoods Strategy 2020, which has as a central goal, the empowerment of currently less-organized and less-heard communities and neighbourhoods (City of Toronto, 2015). Additionally, a report by the Toronto Centre for Active Transportation identified two neighbourhoods characterized by multiculturalism and new immigrants that are currently lacking in their levels of civic action and engagement due to poverty and marginalization, among other factors (Toronto Centre for Active Transportation, 2015).

Two studies directly discuss the question of multicultural inclusion in Toronto's green space management. Newman (2011) noted that during a community consultation event in a multicultural neighbourhood in a Toronto Park, all 70 of her participants were of western European ancestry. Newman (2011) also reported that an interviewee, a senior TRCA employee, stated that many green spaces are selected for improvement based on political pressure and the ecological value of the site. It was also noted that many high profile restoration projects in Toronto take place in areas with vocal and affluent residents who already have access to green space (Newman, 2011). Gibson-Wood and Wakefield (2012) identified four interrelated mechanisms of exclusion from community engagement in the area of environmental planning for Toronto's Hispanic population: economic marginalization, inaccessibility of common avenues of participation, narrow definitions of environmentalism, and the perceived whiteness of the environmental movement. Both of these studies point to the potential for inequities in ravine consultation efforts.

Summary of Literature Review Findings
The key findings from the literature review are listed in Table 1.

Table 1. Key Findings of the Literature Review

1. Use of green space has been linked to higher health and well-being outcomes.

2. Recreational opportunities are not evenly distributed across communities.

3. Identifying a clear cause for observed inequities is often difficult.

4. Urban green spaces provide opportunities for the development of place attachment and community attachment.

5. Different interest groups and demographic groups often have different recreation and park preferences.

6. Different demographic groups also share many attitudes and park preferences.

7. Highly naturalized green spaces may be perceived as unsafe by various populations.

8. The parks-planning process is vulnerable to procedural inequity and exclusion during the decision-making process.

2.4 Research Questions Derived from the Literature Review

   The current literature review has summarized several dimensions of environmental equity research. Key findings from the review have led to the development of several research questions that guide the subsequent research.

1) How do ravines vary in their physical qualities across the city? And how do the perceptions of ravines vary among ravine visitors?

2) What physical features and management actions make a ravine a valuable resource, in the opinion of a current visitor? What characteristics or management activities make ravines less appealing?

3) Does the age, gender, or household income of a visitor relate to how they perceive a ravine they are visiting? Are perceptions of ravines affected by the sociodemographic character (income distribution, housing type, overall ethnic diversity) of neighbourhoods?

4) How is the ravine-planning process perceived by ravine visitors? Do opinions differ across age groups, gender, or household income?

3. Methodology

The purpose of this chapter is to present the methodology of this thesis. The chapter first reviews the research philosophy and paradigm that guided the research practices. Following will be a discussion of the overall research approach and how this is linked to the research paradigm. The strengths of using a mixed methods approach to address the research questions will be highlighted. Descriptions of each study site are presented. Descriptions of the participant recruitment process, the survey tool, park audits and photograph processes are also presented, as are the selected statistical and content analyses procedures.

3.1 Research Philosophy and Paradigm

Research paradigms have been described as metaphysical frameworks that help a researcher position their work by clarifying their beliefs of reality, ethics, knowledge, and methodology (Mertens, 2010). Research paradigms include several elements, which make each paradigm distinct from the other (Creswell, 2014; Creswell & Clark, 2007; Feilzer, 2010; Mertens, 2010). Each paradigm is accompanied by an ontology, epistemology, axiology, methodology, and common methods (Creswell, 2014; Mertens, 2010). Ontology is interested in the nature of things that are presumed to be, or to exist. Epistemology, on the other hand, is interested in the process of knowing and knowledge acquisition. Axiology refers to the nature of value and valuation, and to what is of value to the research. Methodology includes concepts such as the research rationale and the principles and strategies that accompany it (Creswell, 2014; Mertens, 2010).

There are four paradigms which are typically used in a research context: post-positivism, constructivism, pragmatism, and the transformative paradigm (Creswell, 2014). These categories are useful for understanding how and why a researcher seeks to answer their research questions

using particular methods (Creswell & Plano Clark, 2007). The paradigm that is most relevant to this research is pragmatism.

Above all else, pragmatism focuses on the importance of the research questions and the consequences of the research rather than the methods used to collect data (Cherryholmes, 1992; Creswell & Plano Clark, 2007; Feilzer, 2010). Because the importance of the research questions themselves matter the most, multiple methods can be used to answer them (Creswell & Plano Clark, 2007; Feilzer, 2010). Consequently, pragmatism is pluralistic and seeks to find "what works" (Cherryholmes, 1992; Creswell & Plano Clark, 2007; Feilzer, 2010). The ontology of pragmatism is that there is no single true reality, rather there are multiple realities, all of which are valid. Whether or not there are multiple realities (brought about from multiple perspectives) does not concern pragmatists so much as the recognition that one approach produces more desired results than the other (Cherryholmes, 1992).

The epistemology of pragmatism is based in practicality and is most concerned with answering the research questions (Creswell & Plano Clark, 2007). Knowledge is not static for pragmatists, truth can change over time depending on new information that emerges (Cherryholmes, 1992; Feilzer, 2010). The methodology, or process of research that pragmatists use combines data types such that researchers value both quantitative and qualitative data and mix them (Creswell& Plano Clark, 2007; Feilzer, 2010). Pragmatists take multiple stances on values, or axiology, by including biased and unbiased perspectives and forms of data into their research. Pragmatists are most concerned with the consequences of actions, and agree that research always occurs in social, political, and historical contexts (Creswell, 2014).

3.2 Research Approach

There are three common research approaches: quantitative, qualitative, and mixed methods (Creswell & Plano Clark, 2007). Quantitative research approaches can be thought of as interested in measuring a phenomenon to determine how it relates to a theory (Creswell, 2014; Feilzer, 2010). In contrast, qualitative research is more explorative by design, and is interested in meaning that individuals or groups assign to specific problems (Creswell, 2014; Feilzer, 2010). Mixed-method approaches are interested in collecting quantitative and qualitative data, and integrating the two together for the purpose of providing detailed answers to the research questions that would not be possible without using both quantitative and qualitative data (Creswell & Plano Clark, 2007; Creswell, 2014; Feilzer, 2010).

Quantitative research tends to answer who, where, how many, and what is the relationship between specific variables (Leech& Onwuegbuzie, 2007). Measurable information is gathered that is usually numerical in nature and the collected data is interpreted to present a conclusion (Creswell, 2014). Research questions in quantitative work often rely upon confirming or refuting a hypothesis. Clear independent and dependent variables are tested in a manner to determine causal relationships that will either refute the hypothesis, or fail to refute it (Creswell, 2014).

Qualitative research is often contrasted to quantitative research. It is based upon inductive reasoning and is more interpretive in nature than quantitative work (Creswell, 2014; Feilzer, 2010). It is often constructivist in that it is interested in the interactions between phenomena rather than measuring them independently (Creswell, 2014). Common qualitative methods include participant observations, interviews, and focus groups (Creswell, 2014). Qualitative research is able to present in-depth multi-faceted information that emphasizes processes, which

can provide a more comprehensive understanding of phenomena that quantitative research alone cannot provide (Busch et al., 2012).

This research relied upon mixed-methods to answer the research questions. Mixed-methods research is founded on the belief that both quantitative and qualitative methods present strengths to answering research questions (Busch et al., 2012; Creswell & Plano Clark, 2007). Additionally, mixed methods research allows for a researcher to explain quantitative results with more in-depth and detailed information provided by qualitative data (Creswell & Clark, 2007). For this reason, a mixed-methods approach was determined to be the most suitable option for the current research. The research questions ask for information that both quantitative and qualitative data can address. For example, the first research question asks how do visitor perspectives vary across ravines? Quantitative data can identify what the majority of respondents perceive and can help compare sites to one another to determine if they are statistically significantly different from each other. Qualitative data brings more clarity to why respondents hold certain views, or how their views may have changed over time. In this way, both types of data are valuable to providing insight to the research question.

The following describes the methods that were selected to address the research questions. Detailed profiles of the selected study sites are presented, followed by descriptions of the survey tool, the audit tool, and photographs. The participant recruitment process, statistical and content analyses, and emergent coding methods are described to conclude the chapter.

3.3 Detailed Study Site Profiles

Six ravine parks in the City of Toronto were surveyed, audited, and photographed. Detailed profiles of the selected study sites demonstrate the wide breadth of characteristics that ravines have within Toronto. These study sites were selected to present unique features, which

allows for exploration of the differences, similarities, strengths and weaknesses of each ravine as identified by visitors.

These six ravines were selected because they represent a range of geographies across the city, and they capture some of the variation of interest. One similarity shared among the ravines is that they are all within the City of Toronto's jurisdiction. There were advantages to selecting highly urbanized locations, for several reasons: (i) places with higher population density would make recruiting participants at each site somewhat easier, (ii) being highly urbanized means that these spaces must compete with other priorities in city planning and are thus challenging to manage, and (iii) restricting the scope of the study sites to the urban core of Toronto meant that these parks are at least somewhat easy to visit to many people as the urban core has a well-connected transit network as demonstrated in Figure 1.
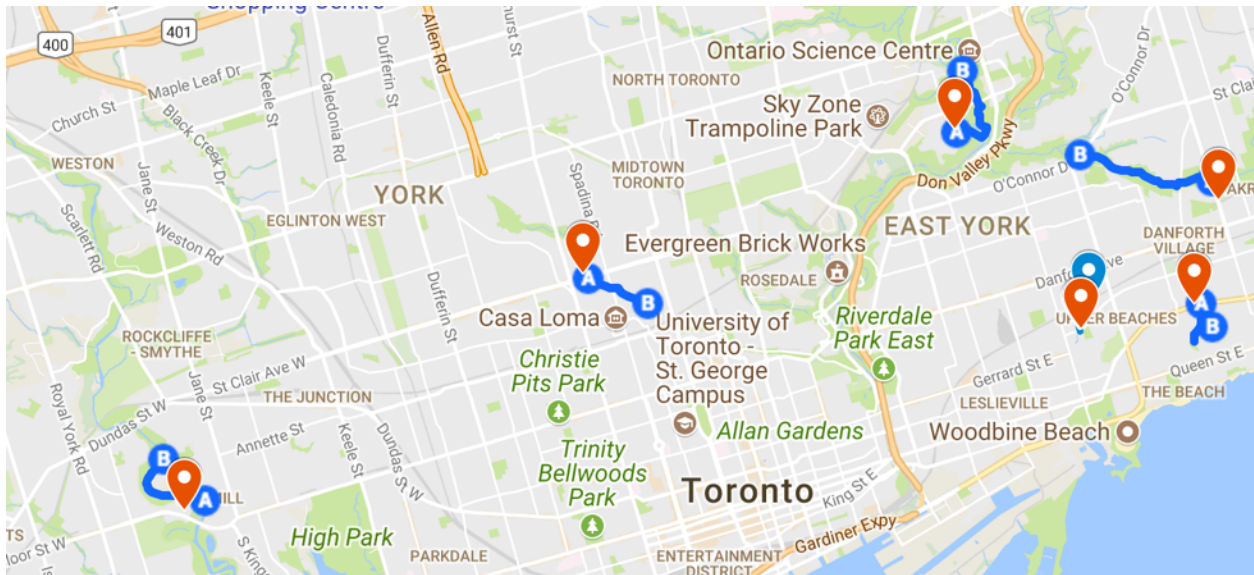
Figure 1. The Six Selected Study Sites. The researcher's walking route at each site is shown in blue. The closest major transit stops are indicated in red.

Use of 2016 Census Data

Neighbourhood-level socioeconomic census data is presented in Tables 2 and 3. The breadth of variation between study sites is apparent from these data. The population size of the

neighbourhood, the density, and the proportion of households earning more than $200,000 before taxes per year are reported. The proportion of people living in the low-income cut off after tax bracket is also reported. These indicators were selected because they demonstrate several key neighbourhood characteristics of each study site. The income categories represent the two extremes of income variation in a single neighbourhood. The proportion of three-major housing types (single-detached homes, apartments less than five storeys in height, and apartments greater than five storeys in height), and the proportion of people who speak English, French, or another (non-official) language as a first language are reported. These were selected as indicators that span several important dimensions of socioeconomics of the neighbourhoods. Housing type is related to population density, and mother-tongue is one measure of the extent of cultural diversity in a given neighbourhood.

Table 2. Population and Income data of the Six Selected Study Sites. Data sourced from the City of Toronto Neighbourhood Profiles

Study Site Name	Population Size	Population Density (Per km^2)	Proportion of Households with Household income > $200,000 (%)	Proportion of Households with Low-income Cut off After Tax (%)
Glen Stewart	21,567	6,058	24	8.2
Etienne Brulee	9,271	3,593	39	4.1
Nordheimer	10, 968	5,683	24.5	11.7
Taylor Massey	15,683	15,528	1.2	27.3
E.T. Seton	21, 108	6,787	1.4	36.4
Williamson	12, 541	7,838	11.2	13.9

Table 3. Housing Type and Language Data of the Six Selected Study Sites. Data sourced from the City of Toronto Neighbourhood Profiles

Study site name	Single-detached Homes (%)	Apartment <5 Storeys (%)	Apartment >5 Storeys (%)	Mother-tongue English (%)	Mother-tongue French (%)	Mother-tongue Other (%)
Glen Stewart	27	42	7	86	3	11
Etienne Brulee	64	9	22	77	2	21
Nordheimer	16	23	50	78	2	20
Taylor Massey	10	4	77	43	1	56
E.T. Seton	0	5	93	26	1	73
Williamson	16	33	13	78	3	19

Glen Stewart Ravine Park
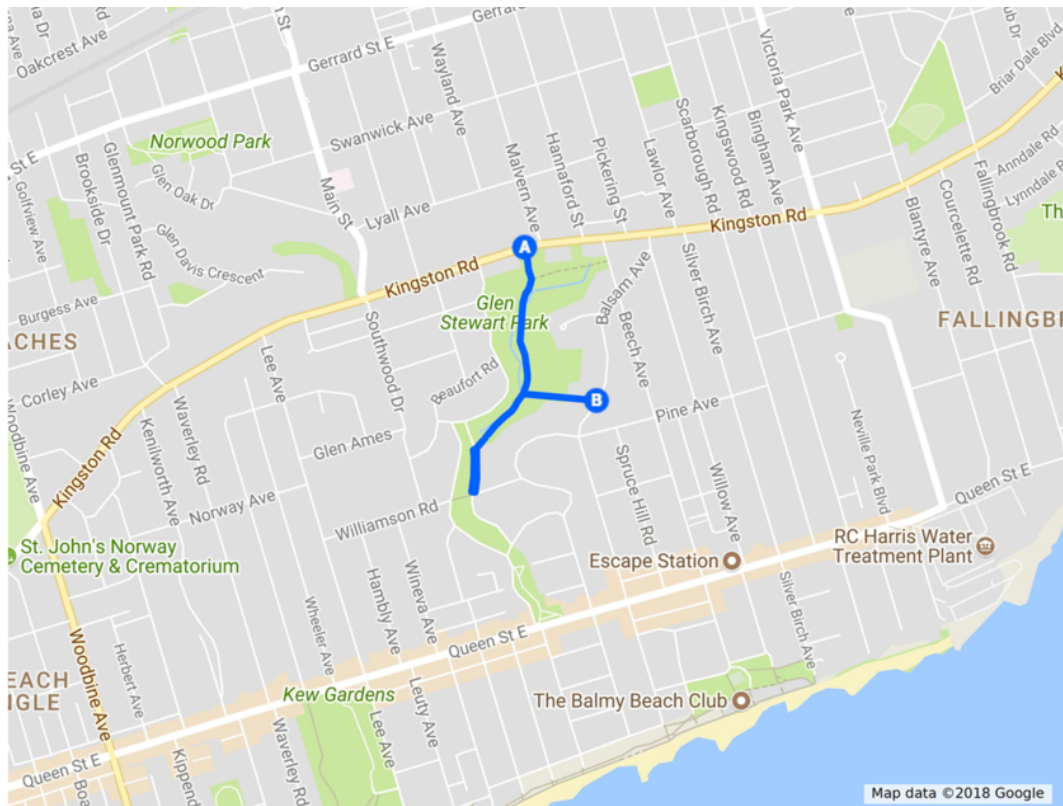
Figure 1. Glen Stewart Park in the City of Toronto. The Researcher's Walking route is shown in dark blue. The letter A indicates the starting point of survey collection, and B indicates the end.

This ravine is located in the East-Beaches area of Toronto. It is bordered by several major streets and is easily reachable by bus transit. The ravine is 11 hectares in area, which is relatively small compared to the other selected study sites. In terms of the broader green space network, this ravine connects to the waterfront and the popular beachside boardwalk there. This site is unique amongst the study sites in the extent of raised boardwalks and staircases that exist in the wooded landscape. Regarding natural features, there is a small creek called Ames Creek that runs throughout the site. The slopes of the ravine are steep, with many old growth Red Oak and White Oak trees, with juvenile Hemlock throughout the site. Signs are posted to beware of coyotes that have been observed in the ravine.

Recent Ravine Management History

Glen Stewart Ravine Park recently underwent significant planning intervention; in 2008 a $1 million restoration project was initiated and completed in four years (City of Toronto, 2012; Rochon, 2012). A private consultant, Schollen and Company, was hired to design and construct a raised boardwalk throughout the park and a new set of stairs to enter the ravine (City of Toronto, 2012). The project also involved reinforcing eroding slopes of the ravine with 16 retaining walls of sand bags (Schollen and Company, 2008; City of Toronto, 2012). At the same time, to assist in slope stabilization, hundreds of native herbs and grasses were planted as well as native tree seedlings (Schollen and Company, 2008; City of Toronto, 2012). Removing invasive trees and plants such as Norway Maple and Manitoba Maple was also part of the restoration effort (Schollen and Company, 2008). Additionally, along the path where the boardwalk ends, cedar fencing was installed to encourage visitors and their dogs to stay on the trail (Schollen and Company, 2008).

In terms of civic engagement, there is an active Friends of Glen Stewart Ravine community group. There are several community boards at the entrances of the ravine advertising various stewardship events including invasive species removal and native vegetation-plantings. There are also official City of Toronto signs throughout the ravine that notify visitors of ongoing native species plantings and ask visitors to stay on the trail to avoid damage to these plantings. There are also educational signs about the native species that can be observed. With all of these educational features, the high level of continuous investment is apparent.

Etienne Brulee Park
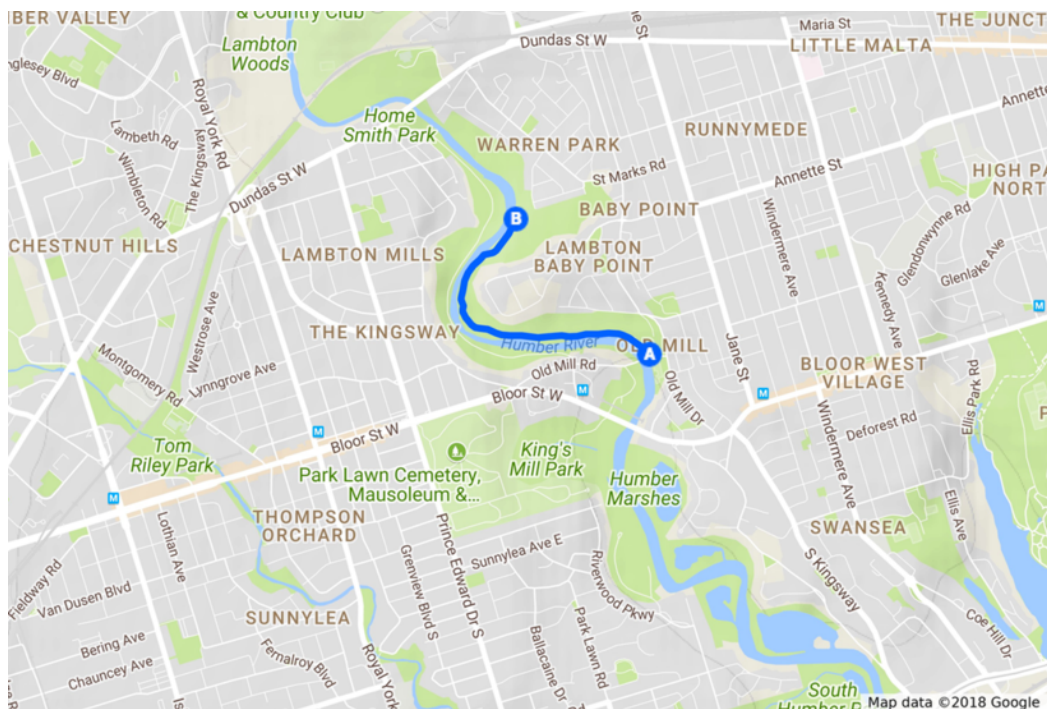
Figure 2. Etienne Brulee Park in the City of Toronto. The Researcher's Walking route is shown in dark blue. The letter A indicates the starting point of survey collection, and B indicates the end.

This is a westerly location situated adjacent to the historic Humber River. The site is a short walking distance to the Old Mill Inn, which overlooks the river and is a historic heritage property. The site is also a short walking distance from Old Mill Subway Station. The Humber River is a large water body compared to those found within the other selected study sites. It has

been officially designated as a Canadian Heritage River and received this designation in 1999 because it was identified as significantly contributing to the cultural and recreational development of the Toronto region (TRCA, 2018). There are 1.5-meter-high dams that were installed after Hurricane Hazel to control water flow and erosion (Whitton, 2014). Migrating salmon jump over these dams in the spring and the fall, attracting onlookers (TRCA, 2018; Whitton, 2014). The site is relatively flat compared to some of the other selected study sites, with only a small portion of the trail covered by closed tree canopy.

Recent Ravine Management History

Recent management interventions have prioritized improving the water quality of the Humber River. Water quality concerns led to the development of the Humber River Fisheries Management Plan, which is in place from 2012-2022 (OMNR & TRCA, 2005). The Humber River Watershed received one of the lowest grades for storm water management when it was audited by the TRCA (Green, 2013; TRCA, 2008). Poor water quality was also noted and has been identified as leading to poor breeding conditions for rainbow trout fish (Green, 2013; TRCA, 2008)

In terms of civic engagement, there is no Friends of Etienne Brulee Park group. There are Humber River Watershed stewardship groups, however the scope of their efforts extends beyond Etienne Brulee Park, as the Humber river watershed covers 911 km^2 and is the largest watershed under TRCA designation (TRCA, 2018). Etienne Brulee Park has a high number of facilities and infrastructure within it, including the Pan-American Games Trail for cyclists, a playground, washrooms, a water fountain, a fire pit, and a free parking lot. The site accommodates pedestrians, cyclists, and vehicles, with one side of the river providing separate trails for pedestrians and cyclists while the other side allows for vehicles to drive through. There are

educational signs throughout the park that provide information about the historical importance of the Humber River as a former trading route pre-settlement. With these various facilities available, active park management is apparent in the site.

Nordheimer Ravine
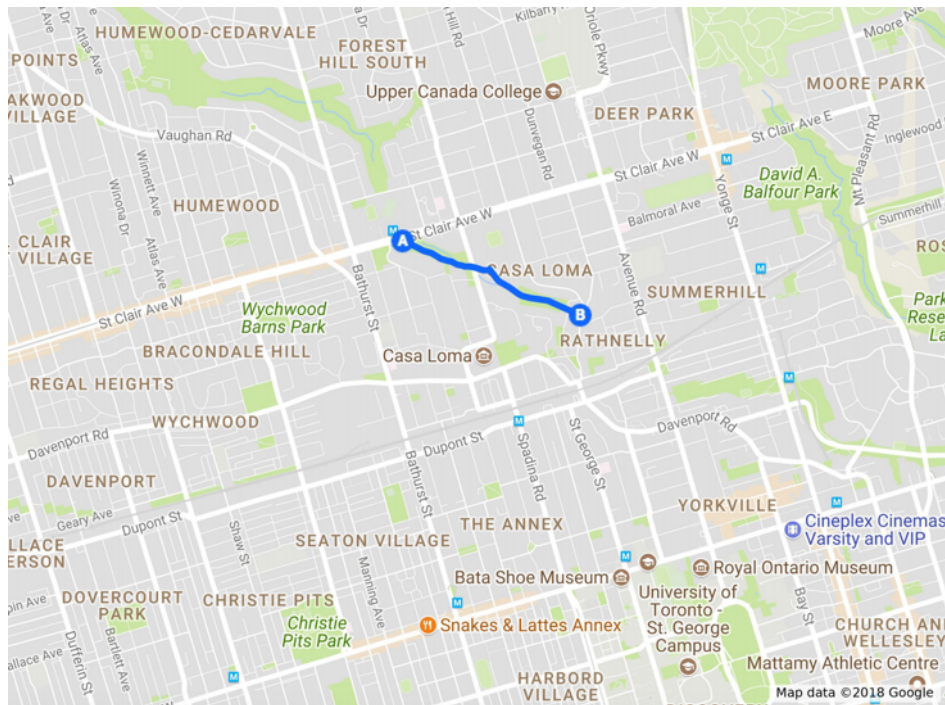
Figure 3. Nordheimer Ravine Park in the City of Toronto. The Researcher's Walking route is shown in dark blue. The letter A indicates the starting point of survey collection, and B indicates the end.

This is the most centrally located ravine, with the north entrance adjacent to a major subway station, St. Clair West Station. The proximity to the subway station is evident throughout the park as emergency exits and staff entrances can be found within the site. This is the only study site that is directly adjacent to a large commercial area, rather than being situated within a predominantly residential area. Approximately 4 hectares in area, this site is relatively small compared to the others selected for this study (Burley, 2017).

The ravine boasts one of the oldest stands of Oak trees in Toronto, and is home to unique wetland species including black ash, marsh marigold, and skunk cabbage (Burley, 2017; Reeves & Palassio, 2008). The ravine is moderately sloped with several steep hills, and there are two

wetland habitats within it. The urban environment surrounding the site is apparent as tall buildings are visible from within the ravine. There are also visible signs of restoration efforts with recent tree plantings, and a large portion of the ravine that is blocked off for construction and restoration of one of the wetlands. Castle Frank Brook runs throughout the ravine.

Recent Ravine Management History

The most recent management intervention is ongoing and involves the restoration of a wetland reservoir (TRCA, 2000). This ongoing project has resulted in the walling off of several areas within the site, which was a situation that was unique to this selected site. Aside from the present wetland restoration project, a pedestrian bridge was recently added to the site, and several efforts have been made to divert water from the main pathway. The City periodically cleans waste and litter from underneath a large street-level overpass. In terms of other infrastructure, all trails are gravel and pebble pathways, and portions of the trail have formal lighting.

In terms of civic engagement, there is no Friends of Nordeimer Ravine group. However, The Task Force to Bring Back the Don is a community group that has played an important role in planting native species in the ravine (Reeves & Palassio, 2008; TRCA, 2000). While the Don River itself does not run through the ravine, Castle Frank Brook is within the Don River Watershed, which is why this group is active in Nordheimer Ravine (Reeves & Palassio, 2008). Another feature of the site are educational signs that refer to the species of plants that have been planted as part of past restoration efforts.

Taylor Massey Creek Park
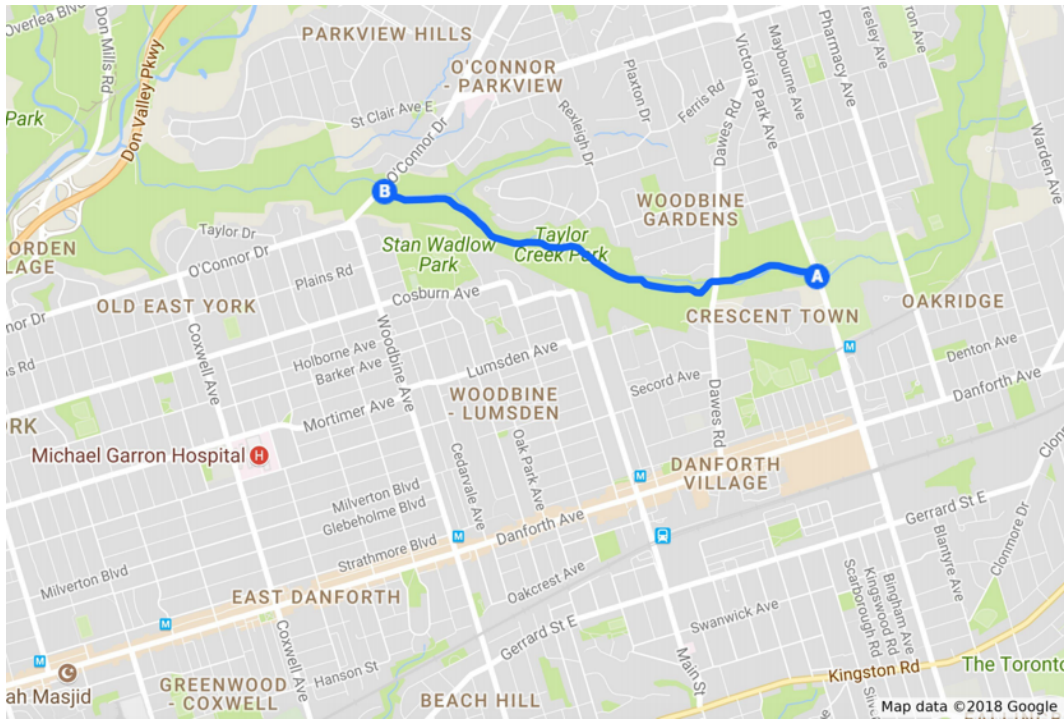
Figure 4.Taylor Massey Creek Park in the City of Toronto. The Researcher's Walking route is shown in dark blue. The letter A indicates the starting point of survey collection, and B indicates the end.

This ravine is farther east in Toronto, and is walking distance from a major subway station, Victoria Park Station. Taylor Massey Creek Park is approximately 67.6 hectares in area. The eastern half of the study site is situated within a Neighbourhood Improvement Area, a neighbourhood that has been identified as requiring prioritized investment based on scoring comparatively low on a predetermined list of sociodemographic indicators (City of Toronto, 2014). There are several large apartment towers bordering Taylor Massey Creek Park, with large arterial roads adjacent to the site as well. The ravine is generally flat and Taylor Massey Creek runs all throughout the park.

Recent Ravine Management History

There are two ongoing water management plans that directly impact Taylor Massey Creek (Nickle, 2018). The first plan is the Taylor Massey Creek Master Plan that is currently

being developed. Taylor Massey Creek Park Management Plan will follow the publication of the Master Plan, which is set to be complete by 2019. The second plan that is in development is the Taylor Massey Creek Wet Weather Project, which aims to divert storm water and raw sewage from the creek (Nickle, 2018).

This site provides visitors with many different facilities. There are designated picnic areas, a large free vehicle parking lot, benches, and bathroom facilities. There are several pedestrian bridges over the creek, and there are also relatively dated and partially vandalized educational signs by a pond describing several wildlife species that can be found there. The paths throughout the ravine are wide, paved, and popular with cyclists. There are also informal unpaved trails along both sides of Taylor Massey Creek.

Friends of Taylor Creek Park is a community group that promotes stewardship in the park and supports the Friends of the Don East and their subwatershed-focused Taylor Massey Project (Milanich, 2017). Friends of the Don East is an advocacy group that led a strategic improvement project called the Taylor Massey Project (Friends of the Don East, 2004). This project was executed by Friends of the Don East and the TRCA while Taylor Massey Creek was a priority in the City of Toronto's 25-year Wet Weather Flow Master Plan that started in 2003 (Milanich, 2017). The two advocacy groups are both active and engaged in the upcoming Master Plan and Wet Weather Project (Milanich, 2017).

E.T. Seton Park
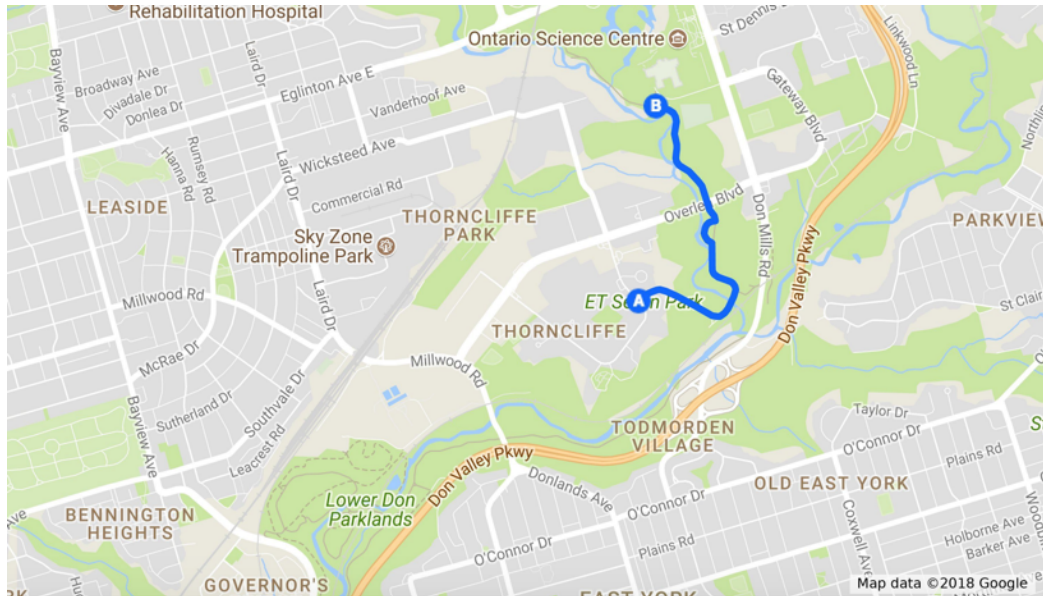
Figure 5. E.T. Seton Park in the City of Toronto. The Researcher's Walking route is shown in dark blue. The letter A indicates the starting point of survey collection, and B indicates the end.

This site is located north of the downtown area in Toronto and is adjacent to a major highway, the Don Valley Parkway. E.T. Seton Park is approximately 121 hectares in size, making it one of the largest of the selected study sites (Burley, 2017). Bus service is available from the Thorncliffe neighbourhood. The study site is bordered by a large arterial road on the east side of the park, and there is a large overpass through the site as well. Thorncliffe residential area is characterized by large apartment block towers. Similarly to Taylor Massey Creek Park, the Thorncliffe neighbourhood is designated as a Neighbourhood Improvement Area. The site is relatively flat with the west branch of the Don River flowing throughout it. There are no visible naturalization efforts or educational signs within the study site.

Recent Ravine Management History

This site contains many facilities including picnic areas, a free vehicle parking lot, washrooms, a disc golf course, a basketball court, and bicycle parking facilities. Wide paved paths are heavily used by cyclists. There are several plans for future investment into the ravine,

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however these are at differing stages of approval and implementation. Ravine improvements are included as part of the Neighbourhood Plan for Thorncliffe Park and Flemingdon Park developed in 2016. In 2018, the Bike Flemingdon Park and Thorncliffe Park Public Consultation Report was released. This report was based on feedback received from the City's Ten Year Cycling Network Plan that plans to replace informal trails in E.T. Seton park with mountain biking trails. This plan was developed because the area is heavily used by mountain bikers who currently use informal trails within the wooded area of the ravine.

There have been recent efforts to attract and engage Thorncliffe residents to visiting the ravine (Winsa, 2016). Thorncliffe Park's Women's committee has played a significant role in leading organized community walks and youth stewardship programs. The committee actively contributes to park improvements, and one activity led by the committee was the creation of an art feature that is now on display at the Thorncliffe Park Drive entrance to the ravine (Winsa, 2016).

Williamson Park Ravine
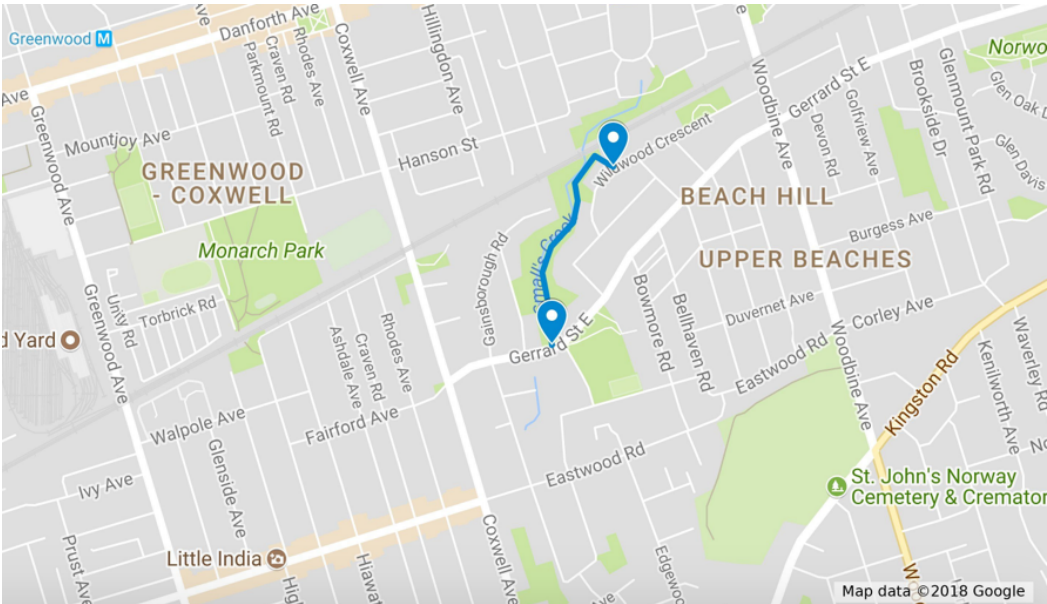
Figure 6. Williamson Park Ravine in the City of Toronto. The Researcher's Walking route is shown in dark blue.

This ravine is located East in Toronto and is 1.8 hectares in size with a 500-meter-long

path, making it the smallest of the selected study sites. Gerrard Street East with a streetcar transit

stop is at the southern side of the ravine. The neighbourhood surrounding the ravine is

predominantly residential, with two schools in close proximity to the site. There are three

staircases that are used to enter the ravine, and within the ravine, there are no formal trails. The

existing trails are unpaved and there is no city-regulated infrastructure within the site. The ravine

is fully forested with a predominance of old growth Oak trees and invasive Norway Maple trees

populating the steeply sloped terrain alongside Small's Creek that runs throughout the ravine.

One unique feature to the site is that there are active railroad tracks at the north side of the

ravine.

Recent Ravine Management History

The most recent city planning intervention was the construction of a new wooden

staircase at the east entrance of the ravine that was completed in 2017. There was formal

planning and consultation leading up to the construction of the new stair case (TRCA, 2016).

During the time of surveying (fall 2017) there was ongoing consultation related to regional train

service changes along the active rail that passes through the north end of the ravine.

Residents are very engaged with the state of the ravine in terms of litter and the usability

of the pathways. There is one garbage bin that is maintained by community residents. Residents

also regularly clear the trail of downed wood, and they maintain planks of wood that have been

placed to cross muddy sections of the trail. Williamson Park Ravine is the only selected study

site that did not have any signage, including any obvious indication of the name of the ravine on-

site.

In terms of civic engagement, Friends of Small's Creek Ravines was established in 2013 and is a community group that aims to rehabilitate the four ravines that Small's Creek runs through, including Williamson Park Ravine (Lavoie, 2014). There are also community-led walking tours through the ravine that introduce participants to the historical land use of the ravine.

3.4 Survey Development Process

Surveys present several advantages to researchers studying parks planning (Bratman et al., 2015; Chan et al., 2012; Mayer & Frantz, 2004; White et al., 2013). Participants are able to respond to various questions in a short time period and surveys can be widely distributed to gain representative samples of local, regional, and even national scales (White et al., 2013). Surveys tend to be a tool of choice for research questions seeking yes-or-no answers, rankings, and open-ended questioning (Bratman et al., 2015; Chan et al., 2012; Mayer & Frantz, 2004; White et al., 2013).

The survey tool used for this research was developed by considering the research questions and drafting survey questions that could inform them. Several research interests were identified: who uses the ravines, what is the nature of ravine use, how visitors perceive management efforts, and how visitors perceive parks planning and public consultation efforts. Likert-scale of impact, yes-or-no questions, and open-ended questions were used. All Likert-scale of impact statements were in the same format: five-point scales with options ranging from strongly disagree to strongly agree. A scale of impact is often used when questions seek to measure intangible phenomena, such as someone's level of appreciation of a green space (Bratman et al., 2015; Chan et al., 2012; Mayer & Frantz, 2004). A copy of the survey tool can be viewed in Appendix A.

Initial survey questions were drafted and then shared with the thesis supervisor for feedback. As the survey was being developed, demographic questions were added to address the third and fourth research questions (Table 4). To ensure that participants could not be identified by their responses, questions were formulated without personal identifiers such as the participant's name and home address. After integrating feedback received from the supervisor, the survey was piloted on several graduate student peers for their feedback. After receiving feedback from peers, a modification request to clarify some of the language in the survey was submitted and approved by the Office of Research Ethics.

Table 4. Research Questions and the Survey Questions that Address them

Research Question	Survey Question developed to answer the research question
1. How do ravines vary in their physical qualities across the city? And how do the perceptions of ravines vary among ravine visitors?	How much do you agree or disagree with the statement: this ravine is very well maintained. What features of the park are or are not attractive? Why do you prefer this ravine, or what features do other ravines or public parks have that you prefer?
2. What physical features and management actions make a ravine a valuable resource, in the opinion of a current visitor? What characteristics or management activities make ravines less appealing?	What is it about the ravine that is poorly or well maintained (trails, stairs, garbage, educational signage)? What is it about the ravine that makes you feel safe or unsafe?
3. Do the sociodemographics (age, gender, household income) of a visitor relate to how they perceive a ravine they are visiting? Does the sociodemographic character (income distribution, housing type, overall ethnic diversity) of the neighbourhood influence how ravines are perceived?	What is your gender? What is your approximate age? What is your approximate after-tax household income?
4. How is the ravine-planning process perceived by ravine visitors? Do opinions differ across sociodemographics (age, gender, household income)?	How much do you agree or disagree with this statement: I would like to share my opinions with city planning staff on Toronto's ravines and how they should be planned for the future? Why do you think you can or cannot share your opinion with City Planning staff? (unsure of whom to contact? Good or bad past experience?) Have you ever been asked for your opinion (at a public meeting, on an online survey, or other questionnaires) on the management of this ravine?

3.5 Community Park Audit Tool

Various tools, including audits, have been developed to evaluate public parks. Audits are used in social science studies as a form of systematic observation to identify notable characteristics of a physical place, often a neighbourhood or a street (Evenson et al., 2009). Audit tools have historically been used to help community members advocate for particular

kinds of infrastructure, commonly bike lanes in the case of street audits (Evenson et al., 2009). Due to these characteristics, audits were identified as a valuable form of data to this research.

The audit tool selected as the best fit for this research was the Community Park Audit Tool (CPAT). The CPAT was selected because of its emphasis on park quality and ease of visitation, two elements that this research was interested in. The CPAT was developed in 2010 in Kansas City Missouri, at the University of Missouri, Kansas (Kaczynski, Stanis, & Besenyi, 2012). The tool is divided into four sections: park information, access and surrounding neighbourhood, park activity areas, and park quality and safety. The single modification made to the tool was the exclusion of the section titled *Park Activity Areas*. This modification better accommodated our research interests in park quality, ease of access, and perceived safety. In order to draw comparisons between visitor surveys and direct ravine observations, each ravine was audited using the CPAT and photographed. A copy of the complete CPAT can be found in Appendix B.

3.6 Photographs

Photographs have been used in various ways in social science research, especially human geography and environmental psychology (Markwell, 2008). Examples include aerial photography, archival photographs, and participatory methods such as photo-voice, where participants are asked to take photographs themselves (Markwell, 2008). The use of photographs in this research is intended to enrich the survey and audit data and to provide better context to site-specific conditions. Photos assist in illustrating differences and similarities among the study sites. Photos provide context to conditions within the six study sites and assist in facilitating discussion of the features found within ravines. Some photos were taken at the time of the survey distribution, while others were taken post-survey.

The audits and photographs, in combination, are intended to document differences in the structure of these ravines as well as the infrastructure within them. The CPAT and photographs were used to triangulate the research results and to provide complementary information to the survey data.

3.7 Survey Participant Approach and Protocol

When the study site was selected, the researcher visited the site and walked the length of the trail to become familiar with the site. Three of the study sites (Taylor Massey Creek Park, E.T. Seton Park, and Etienne Brulee Park) are well-connected to a large and extensive green space network, making their study site boundaries less clear. In response to this, the researcher walked and surveyed participants along more populated sections of the trail, rather than walking the full length of the trail system. When a selected part of the trail was reached, the researcher turned around and retraced their steps to the beginning of the trail and continued inviting trail-goers to participate in the survey. See Figures 1- 6 for maps of the trail sections that were surveyed.

When the number of visitors in the ravine was numerous (mainly on weekends), every third individual who the researcher walked by was asked to participate in the study. This was done to ensure that the researcher was not biasing the survey by only approaching a certain type of individual, which could easily be done unintentionally. During the weekdays when there were substantially fewer visitors overall, each person who was passed on the trail was invited to participate in the survey. This was done to make the survey collection process efficient overall. Weekday and weekends were surveyed, to capture a mix of ravine users. This was based on the idea that there would be more visitors mixed in with nearby residents on weekends.

Site visits were done by one researcher, with the exception of one survey day where the researcher had the assistance of another Master's student to distribute the survey. All site visits occurred between October 13th to November 25th 2017. Approximately one dozen surveys were completed in each study site on the weekends between 9am-4pm, and then another dozen were collected during the weekdays between 7:30am- 4pm. Individuals of the ages 18 and over completed this survey. No groups with the exception of minors were excluded from the study.

Participants were permitted to skip any question that they preferred not to answer. Very few participants skipped questions with the exception of the last survey question, which asked about annual after-tax household income. More than half of participants declined to answer this question, which resulted in some limitations in our results and interpretation of the survey data. This is discussed further in Chapter 5.

Because the chosen methods of this study involved interacting with human participants, receiving research ethics approval from the University of Waterloo's Office of Research Ethics was required before surveys were distributed. An early draft of the survey, an information letter and feedback letter, and the recruitment script was submitted to the Office of Research Ethics. One request for modification of the survey was made after several demographic questions (gender, age, household income) were added to the survey and several wording changes for the purpose of clarity of the questions were made. All aspects of this research received ethics approval on October 12th 2017, with the ORE file number 22514.

3.8 Statistical Analysis

IBM's statistics software SPSS 25 was used for all statistical testing done for this research. Testing whether there were statistically significant differences among the six sites was central to the analysis. With the exception of the final survey question that asked about

household income, there were five cases where a participant decided to skip a closed-ended question. For these five cases, the average of all the responses within that same study site was calculated and applied to the skipped question. This was done so as not to distort or skew the data.

In order to test for statistical significance, specific assumptions that should be met before carrying out these statistical tests were important. There was a particular interest in running a one-way analysis of variance test (ANOVA). Because the data collected included Likert-scale questions, it is categorical in nature, meaning the dependent variable is not normally distributed, which violates the assumption of normality that is expected in order to run parametric tests such as a one-way ANOVA.

There are two additional assumptions required for a one-way ANOVA. These assumptions are: homogeneity of variances between the groups, and that the observed results are independent of one another. Levene's test for equality of variances was used to test the homogeneity of variances assumption. On several occasions, the assumption of homogeneity of variances was violated such that a Welch's ANOVA was run instead of one-way ANOVA.

While the survey data violate the normality assumption, there is debate in the academic community about the weight that this assumption should have on decisions to run parametric versus non-parametric tests (Clason & Domody, 1994; de Winter & Dodou, 2012 Schmider et al., 2010). There have been analyses which show that this assumption is less important to the outcomes of these tests. That is to say, studies have found that running parametric tests on non-normally distributed data yields the same, or more accurate results as running alternative non-parametric tests (de Winter & Dodou, 2012; Schmider et al., 2010). These studies note that the sample size must be greater than 10 for results to be accurate when working with non-normally

distributed data (de Winter & Dodou, 2012). In the case of this research, the sample size per study site ranges from 20-25, twice more than the suggested minimum. Based on the literature (Clason & Domody, 1994; de Winter & Dodou, 2012; Schmider et al., 2010) surrounding the weight that the normality assumption should carry in decision-making of statistical procedures, one-way and Welch ANOVAs (when the homogeneity of variances assumption was not met) were selected to analyze the Likert-scale questions in our survey. Furthermore, there are several advantages of parametric testing compared to non-parametric testing. With parametric tests such as the one-way and Welch ANOVAs, post-hoc analyses can be performed that indicate which groups are statistically significantly different from one another.

Six survey questions had categorical responses that were either in a yes-or-no format or there were very few categories available (such as gender: Male or Female or Other). For these six questions, a non-parametric test, the Chi Square test for independence was carried out. This test indicates less about where differences exist between categorical variables, but it allows one to determine if there are any significant differences between categories. The data here are categorical and nominal, there is no particular order or hierarchy associated with which category respondents choose. Similarly to an ANOVA, there are several assumptions that should be met prior to running the analysis (McHugh, 2013). The assumptions for the Chi Square test are that (i) data are frequencies or counts rather than proportions, (ii) categories are mutually exclusive, (iii) the study groups must be independent, (iv) each participant must only have one observation, (v) there are two variables that fit within distinct categories, and (vi) the minimum expected values of each cell should be at least 5 for at least 80% of the cells (McHugh, 2013). The survey questions, with the exception of two questions (one on past participation in public consultation and one on annual household income) satisfied all of the assumptions and data requirements.

The requirement that was violated for these two questions was the expected minimum value. Because so few people responded yes to having previously participated in any kind of ravine consultation and engagement effort, the expected minimum value was too low. For the household income question, because there were few responses in general, and very few indicating that they were in lower income categories, the expected minimum value was also very low.

3.9 Content Analysis

There were two levels of analysis that were of interest, responses overall and responses on a site-level basis. All of the surveys were read through in their entirety, and the text from the eleven open-ended questions was coded. The software Dedoose (Sociocultural Research Consultants, 8.0.42., 2018) was used to develop themes and codes to analyze the surveys. Themes are broad categories that contain several interrelated codes within them. A code refers to a meaningful label that the researcher applies to text that is similar to each other. The relationships between codes and themes used in this study is presented in Table 8.

There are several different ways to analyze open-ended questions and text responses. The term coding is used to refer to attaching meaningful labels to textual data (Hsei & Shannon, 2005; Urquhart, 2013). The current research relied on emergent coding to develop codes. Emergent coding is where themes and codes emerge from the text itself, rather than creating a pre-determined list of codes and then searching for them in the text. In order to achieve this, researchers refrain from imposing themes and theories from the literature onto their collected texts (Hsei & Shannon, 2005; Urquhart, 2013). Emergent coding is often contrasted to analytical coding, where codes are derived from the literature and put onto collected text (Hsei & Shannon, 2005; Urquhart, 2013). In-between these two distinct kinds of coding, there is coding that takes

from both types, referred to as middle-range coding, where taking themes from the literature and having themes that come from the text itself is considered acceptable (Urquhart, 2013).

A paper-based survey was used and participants were given the option of recording their own responses or having the researcher write them down. The vast majority of participants indicated that they preferred that the researcher record their responses. This was done to put the burden of participation less on the respondent and more on the researcher. However, it also impacts some of the interpretation of results as the words written down may not always be exactly (word for word) what was said, meaning that a level of interpretation by the researcher is reflected in the text. Content analysis occurred after statistical analysis, making it explanatory to the quantitative results.

Open-ended content was explanatory to the quantitative survey data and the audit data. Photos were not expected to document the exact features or scenarios that respondents described, rather they were intended to document things as they were at the time of site visitation. Photos were not used to ground-truth survey data as participants discussed features and concerns in the past as well as the present. When the audit tool appeared to contradict survey results, the survey results were seen as more relevant as participants generally provided more detail and specific information of site conditions. For example, while a site may have had few safety concerns according to the audit, survey participants may be able to provide additional concerns not captured by the audit tool such as a history of crime in an area.

4. Results

This chapter presents the results of the survey tool, the audit tool, and photographs. The quantitative results are discussed at two different scales; combined results when studying all participants, and site-level results. The demographic results from the survey are discussed, followed by the seven closed-ended Likert-scale questions. Results from ANOVA analyses and the Chi Square test for independence are also presented. The qualitative data and results, themes and codes that emerged are described. The qualitative results are presented by reviewing overall themes and characteristics, and then site-level results. Following the qualitative analyses, the park audits and photographs and their relationship to the survey data is presented. Integration of quantitative and qualitative data concludes the chapter.

4.1 Quantitative Analysis

Data was collected in six ravines across the City of Toronto. During the course of the study, 140 ravine visitors participated in the survey. The survey tool consisted of closed-ended and open-ended questions. The closed ended questions provide quantitative data to the analysis. There are seven closed-ended scale of impact questions, also known as Likert-scale questions in the survey tool. Table 5 presents aggregated results of the seven questions. Demographic results from the survey tool are shown in Table 6.

Table 5. Aggregated Results of all Six Study Sites and Participant Responses to the Seven Closed-ended Questions of the Survey Tool

Statement	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
This ravine is convenient for me to visit	1	7	5	56	31
This ravine is very well maintained	1	2	14	73	9
This is an attractive public space	0	0	4	64	31
This ravine is a safe public space	0	2	11	80	7
I prefer this ravine over other ravines or public parks	0	15	41	32	11
I would like to share my opinion with City Staff on Toronto's ravines and how they should be planned for the future	0	22	25	48	5
It is easy for me to share my opinions with City Planning staff on how this ravine should be managed and planned for the future	2	22	39	34	3

The majority of respondents agree or strongly agree that the ravine is convenient for them to visit, 87% agreed or strongly agreed with this statement (Table 5). This result is in keeping with the large proportion of people who indicated that they lived in the same neighbourhood as the ravine. The vast majority of survey respondents expressed favourable perceptions of ravine maintenance, safety, and general appeal (Table 5). Negative and neutral responses were more common towards perceptions of the public engagement process, and the majority of respondents were neutral when asked if they preferred one ravine over others they had visited (Table 5).

Table 6. Site-level Demographic Results of the Distributed Survey.

Study site name	Survey participants	Participants living within a 15 minute walk (%)	Participants living more than a 15 minute walk away (%)	Participants visiting often (>1 a week) (%)	Participants visiting infrequently (< 4 times a year) (%)	Female (%)	Male (%)
Glen Stewart	25	80	20	60	24	48	52
Taylor Massey Creek	25	72	28	60	24	60	40
E.T. Seton	23	26	74	52	21	61	39
Etienne Brulee	23	47	52	30	52	57	43
Nordheimer	24	83	17	87	8	71	29
Williamson	20	65	35	65	25	35	65
Totals	**140**	**63**	**37**	**59**	**26**	**56**	**44**

Residential Location and Visitation Frequency

The majority of survey respondents indicated that they lived within a 15-minute walk to enter the ravine they were visiting (Table 6). A Chi Square test for independence indicated that study sites differ in the distribution of neighbourhood residents and non-residents ($X^2 = 23.94$, df = 5, n = 140, $p < 0.000$). The site with the highest proportion of neighbourhood residents was Nordheimer Ravine, with 83% of respondents indicating they lived within a 15-minute walk of the Ravine (Table 6). The site with the lowest proportion of neighbourhood residents was E.T. Seton Park, with only 26% of respondents indicating they lived less than a 15-minute walk away.

When asked about visitation frequency, more than half of the participants described themselves as visiting the ravine often (Table 6). A Chi Square test of independence indicated that study sites differ in the distribution of frequent visitors versus infrequent visitors *($X^2 = 20.26$, df = 10, n = 140, $p = 0.027$).* Nordheimer Ravine, at 87% is the site with the highest proportion of respondents visiting once a week or more. The site with the lowest rate of frequent visitors was Etienne Brulee Park, where 30% of respondents indicated that they visit once a week

or more. Overall, just over a quarter of respondents indicated that they visit the ravine less than four times a year (Table 6).

Gender and Age
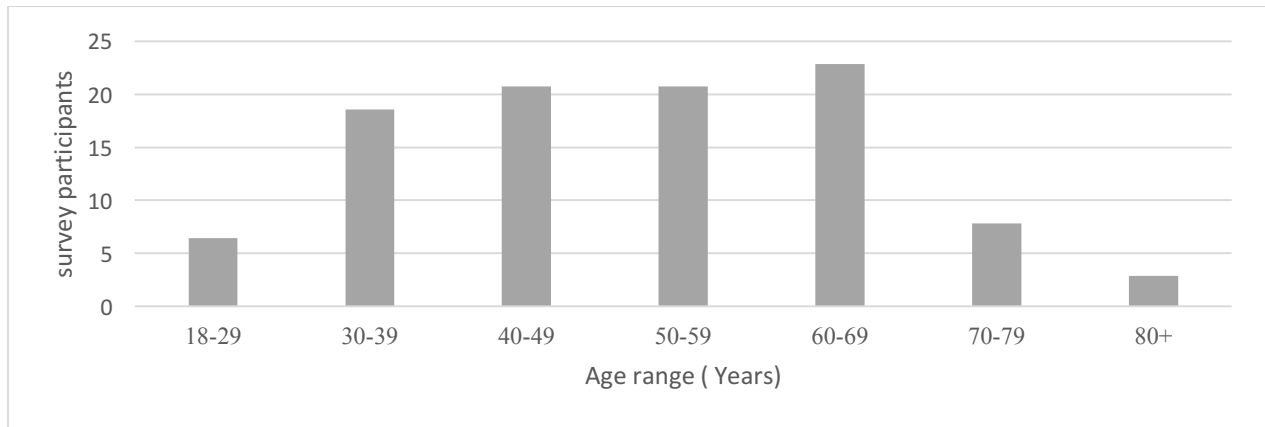
Figure 7. Frequency distribution of age categories among study participants.

There was a slightly higher number of female participants in the survey compared to male participants (Table 5). A Chi Square test of independence indicated there is no statistically significant difference in the distribution of females and males across study sites (X^2 = 3.005, df = 5, n =140, p = 0.699). Nordheimer Ravine had the highest proportion of female respondents (70%) and it was also the site with the lowest proportion of male respondents (30%). In contrast Williamson Park had the highest proportion of male respondents (60%) and it had the lowest proportion of female respondents (35%). The vast majority of visitors in our sample were between the ages of 30 and 69 (Figure 7). A Chi Square test of independence indicated there was no statistically significant difference in the distribution of age classes (X^2 =16.017, df = 10, n =140, p = 0.099). Taylor Massey Creek Park had the highest proportion of respondents over the age of 60 years, with 56% of respondents in this age category. The site with the lowest proportion of respondents over 60 years of age was Nordheimer Ravine with 21% of respondents in this age category. For respondents age 39 and younger, E.T. Seton Park had the highest proportion of respondents in this age category at 39%, while Williamson Park

had the lowest proportion of respondents in this category with 15% indicating they were 39 years of age or less.

After-tax Annual Household Income
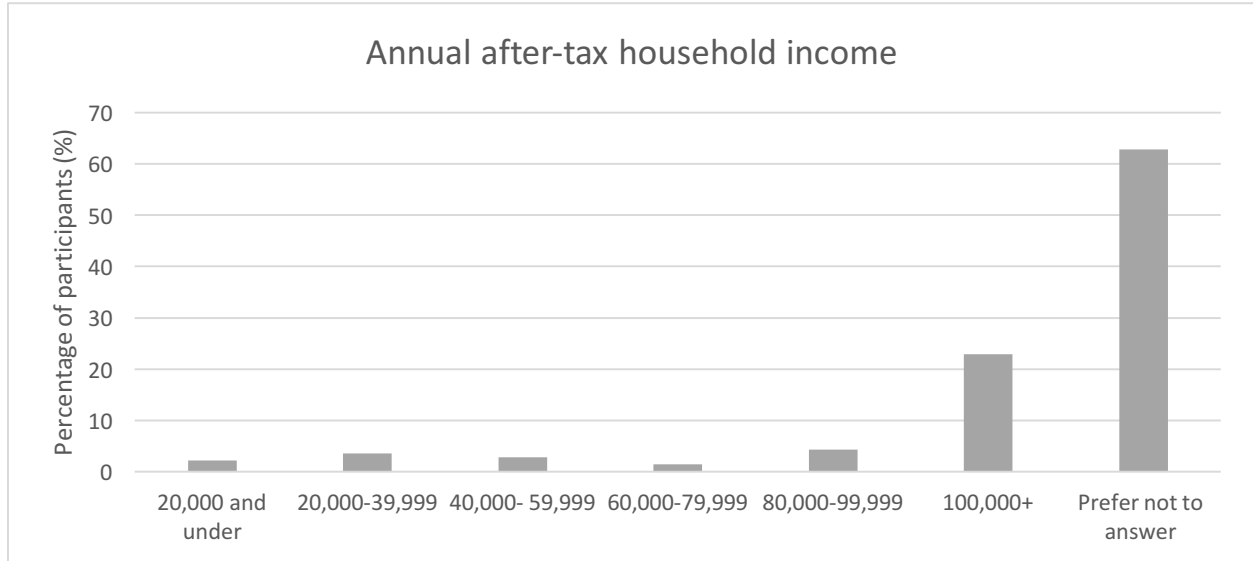
Figure 8. Frequency distribution of income categories among study participants

   The proportion of people who declined to answer the after-tax household income question is just over 60% (Figure 8). Of those who did answer, 23% indicated that they were in the highest income tax bracket. A Chi Square test of independence was not done because the assumption of minimum expected counts was violated, 31 cells (73.8%) had expected counts of less than 5.

4.2 Effects of Demographic Variables

   Age and gender were tested for their potential affects on responses to three of the closed-ended questions (Table 7). The three questions were selected because the researcher, based on the literature, determined that one might expect age and gender to affect survey responses. Points of interest from these tests were the effects of gender on safety perceptions and the effects of age on willingness to formally provide input to park management staff. No other statistically significant relationships were observed (Table 7).

Table 7. Summary ANOVA Statistics on the Effects of Gender and Age on Three Survey Questions

Survey Question	Gender			Age		
	F	df	p	F	df	p
This is a safe public space	3.172	1	**0.077**	0.553	6	0.767
I am willing to share my opinion	0.553	1	0.902	2.135	6	**0.053**
It is easy for me to share my opinion	.015	1	0.625	0.731	6	0.625

An ANOVA was used to investigate the effects of gender and age on perceptions of safety, willingness to participate, and perceived ease of participation. There were significant age effects in this analysis (p = 0.053, F = 2.135, df = 6) such that respondents in the 60+ age categories were less willing to provide their input to city staff compared to other age classes (Table 7). There were no statistically significant impacts of age or gender on responses to perceived safety (Table 7). It is notable though that the effects of gender begin to approach statistical significance (p = 0.077, F = 3.172, df = 1). Female respondents and their rankings of safety were slightly lower than male respondents overall (female mean = 0.87, male mean = 1.02).

4.3 Site-level Comparisons of Participant Perspectives

The following section will review the same questions as above and will look at responses on a site-level basis.
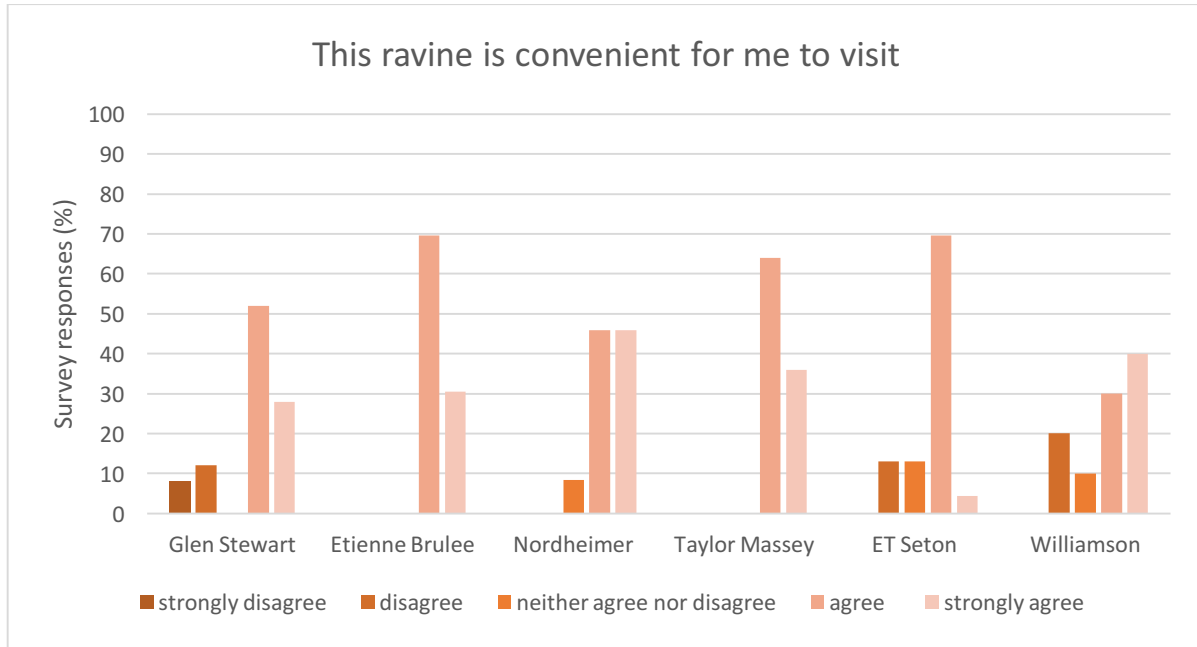
Figure 9. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "this ravine is convenient for me to visit".

While responses to the degree of convenience varied from strongly disagree to strongly agree, most participants agreed or strongly agreed that their ravine site was convenient for them to visit (Figure 9). Notably participants from Glen Stewart, and to a lesser degree from E.T. Seton and Williamson, were more likely to express disagreement with the survey statement. Results from Welch's ANOVA indicate statistically significant differences between study sites in perceptions of convenience ($p = 0.003$). Post-hoc analyses demonstrate statistically significant differences in the distribution of responses between E.T. Seton Park to Etienne Brulee ($p = 0.017$), Taylor Massey Creek ($p = 0.008$), and Nordheimer Ravine ($p = 0.015$). The difference between these sites is such that respondents in E.T. Seton park indicated less

convenience than respondents who were visiting Etienne Brulee, Taylor Massey Creek, and

Nordheimer Ravine.
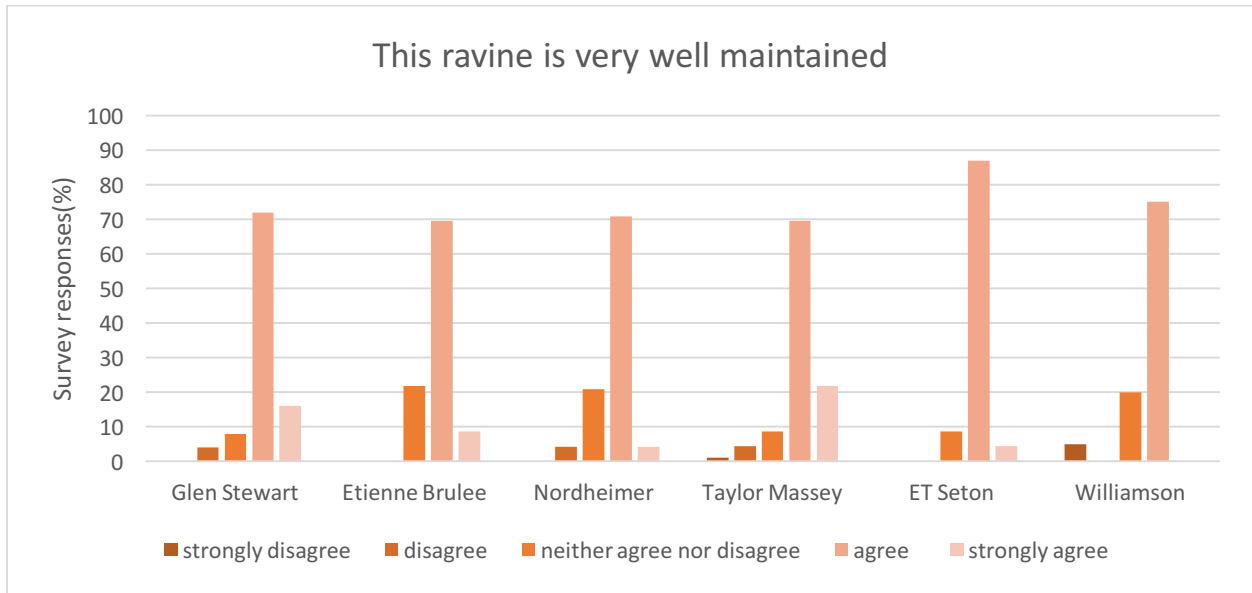
Figure 10. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "this ravine is very well maintained".

In the case of perceptions of maintenance, most participants agreed that their ravine site

was very well maintained (Figure 10). Notably participants from Williamson and to a lesser

degree from Nordheimer and Taylor Massey, were more likely to express disagreement with the

survey statement. Results from a one-way ANOVA indicate there are no significant differences

in the distribution of responses between sites in participants' perceptions of site maintenance

($p = 0.451$).
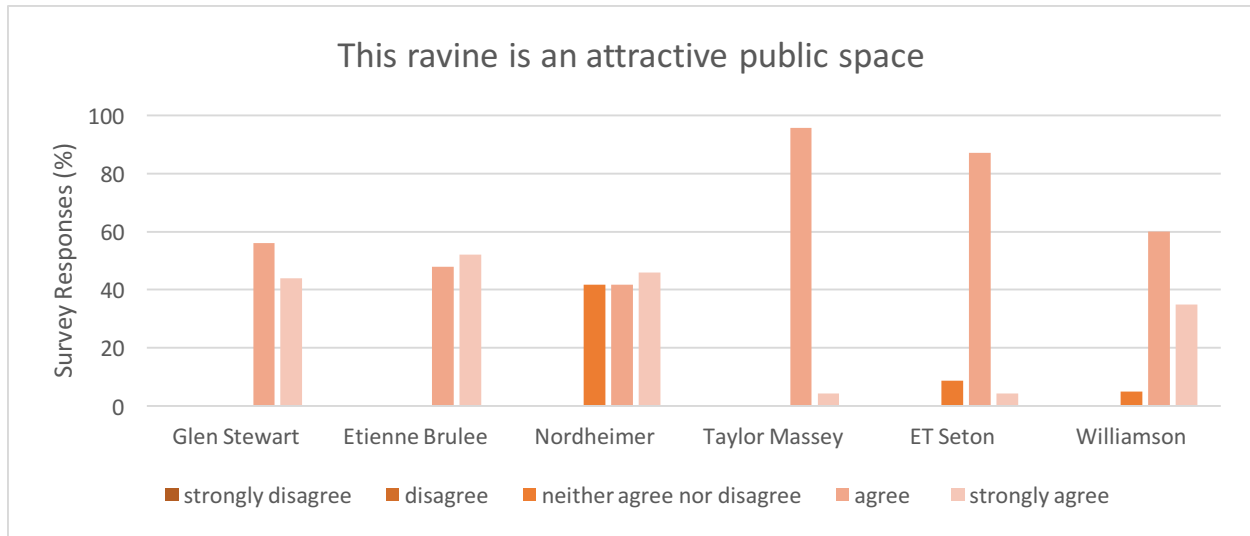
Figure 11. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "This ravine is an attractive public space".

In the case of perceptions of general appeal of the site, all participants either agreed, strongly agreed, or neither agreed nor disagreed with the statement. Notably participants from Glen Stewart, Etienne Brulee, and Nordheimer were more likely to strongly agree that the site was an attractive public space. Welch's ANOVA and post hoc analyses indicated there are statistically significant differences between sites in perceptions of sites' attractiveness. There are statistically significant differences between Glen Stewart and two parks: E.T. Seton ($p = 0.005$) and Taylor Massey Creek ($p = 0.011$). There are also statistically significant differences between Etienne Brulee and E.T. Seton ($p = 0.001$) and Taylor Massey Creek ($p = 0.003$). The difference between the sites is such that respondents in Glen Stewart and Etienne Brulee are more likely to strongly agree with the statement than respondents in E.T. Seton and Taylor Massey Creek.

Figure 12. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "This ravine is a safe public space".

There was broad consensus across sites, the vast majority of participants agreed with the statement "this ravine is a safe public space". Respondents in Nordheimer and E.T. Seton, and to a lesser extent in Etienne Brulee were less likely to agree with the statement. Despite the variation in responses, a one-way ANOVA indicated there were no statistically significant differences between sites in perceptions of public safety ($p = 0.295$).

Figure 13. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "I prefer this ravine over other ravines or public parks".

There was a mix of responses in the case of participants indicating a preference for one ravine over another. Most participants neither agreed nor disagreed, or they agreed that they preferred the site they were in at the time of survey over others. Notably participants from Etienne Brulee, were most likely to choose to neither agree nor disagree with the survey statement (Figure 13). A one-way ANOVA indicated there are no statistically significant differences in preference statements among sites ($p = 0.141$).
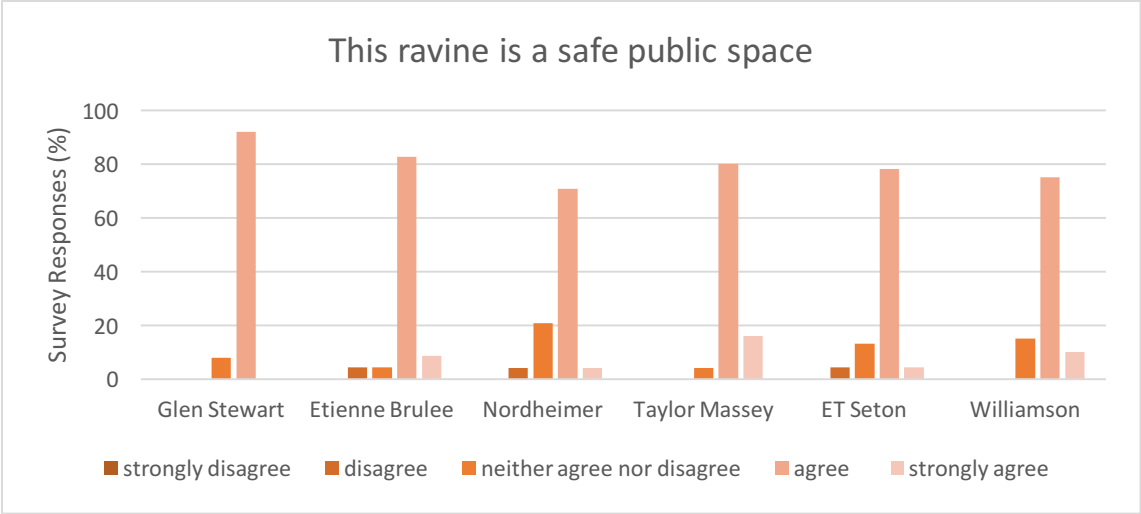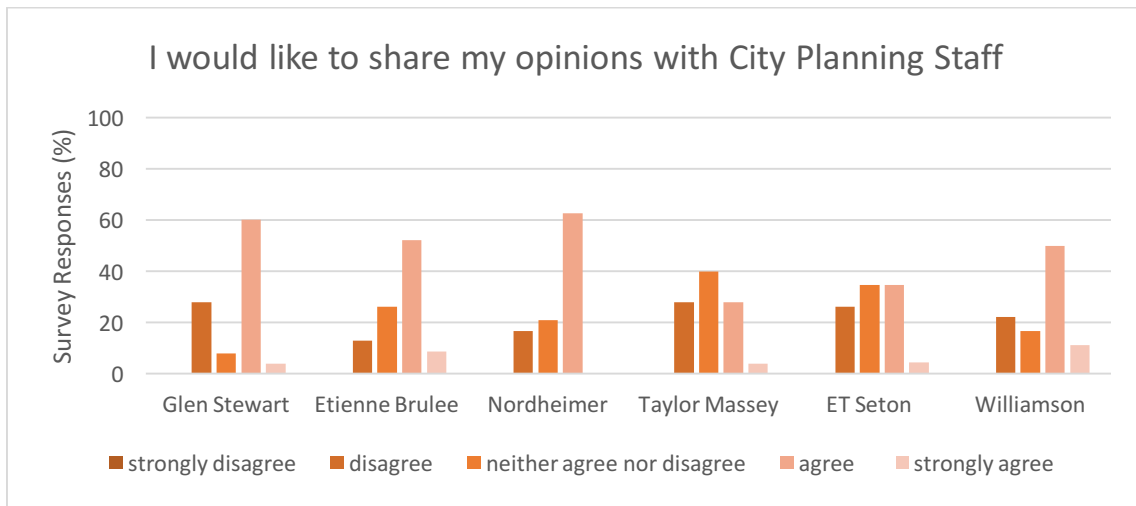

Figure 14. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "I would like to share my opinions with city planning staff".

Participants in all sites disagreed about their desire to share their opinions about ravine planning with City Planning Staff. Respondents in Glen Stewart, Nordheimer, and Williamson expressed the most agreement with the survey statement. Respondents in Taylor Massey and E.T. Seton were more likely to express a neutral position or to disagree with the statement (Figure 14). Despite these differences, a one-way ANOVA indicated there are no statistically significant differences in the distribution of responses between sites ($p = 0.346$).
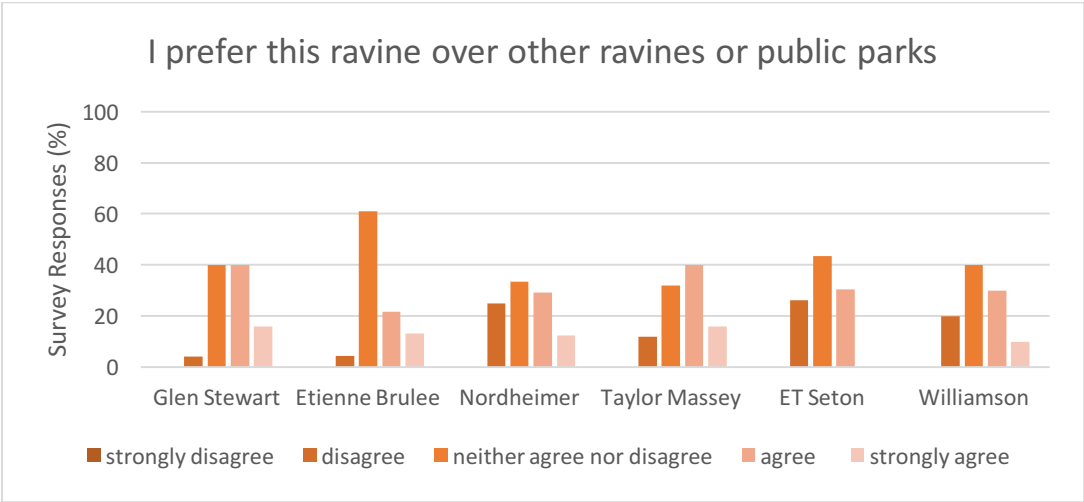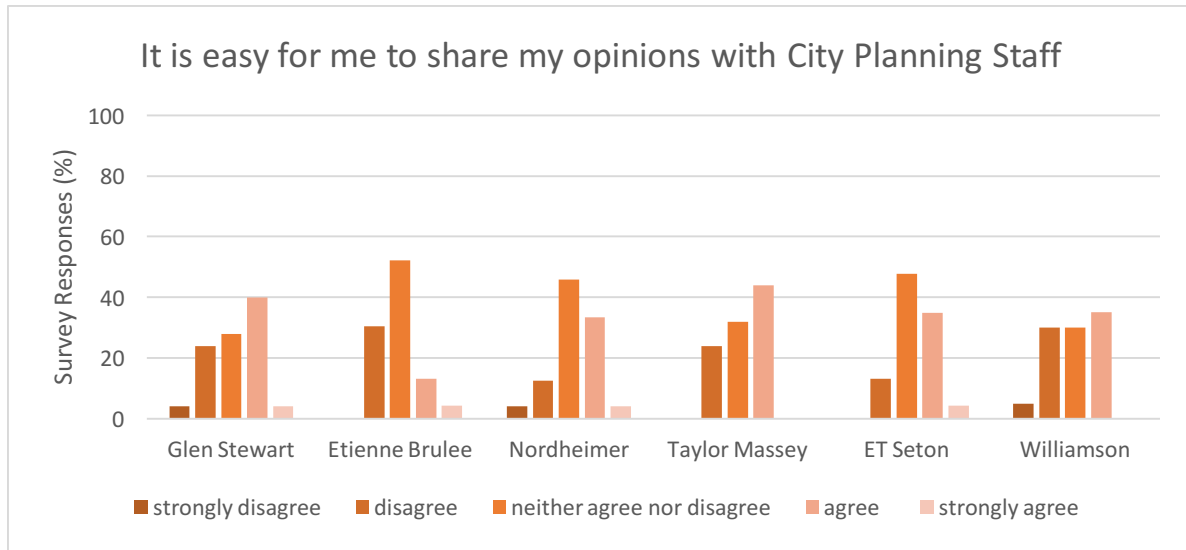
Figure 15. Frequency distribution of study participants within each site and their indicated level of agreement with the statement "It is easy for me to share my opinions with city planning staff".

Participants in all sites disagreed about their perceptions of whether city planning staff were accessible to them. Respondents in Etienne Brulee, Nordheimer, and E.T. Seton were more likely to express that they neither agreed nor disagreed with the statement while respondents in Taylor Massey and Glen Stewart were more likely to agree (Figure 15). A one-way ANOVA indicated there are no statistically significant differences in the distribution of responses between sites ($p = 0.608$)

Number of Participants who previously participated in public consultation

A very small proportion (7%) of the participants had ever been asked to provide comment on ravine management or planning. This stands in contrast to the fact that more than half of study participants stated that they would be willing to participate in planning discussions (Table 5).

4.4 Qualitative Analysis of Aggregated Results

Qualitative data obtained from the survey tool was intended to provide further explanation to the results obtained with the quantitative analyses. In other words, the open-ended questions elaborated on the closed-ended questions. Qualitative analysis consisted of identifying significant text passages and tagging them with codes. These codes were contrasted and compared, which ultimately allowed the researcher to collate them into themes that were developed for each open-ended question.

Table 8. Sample of Themes and Codes Developed Within each Open-Ended Question

Open- ended Question	Themes	Codes
Why do you usually visit this ravine? What activities do you do here?	Leisure	Exercise or physical activity, to access a natural feature, dog walking, to gather socially, and to find refuge from the city
	Function	To reach a particular destination, dog walking
What makes it convenient or inconvenient for you?	Proximity	To home, to public transit
	Free facility	Free vehicle parking
What is it about the ravine that is poorly or well maintained?	Well maintained features	Conservation and naturalization efforts, walkway maintenance
	Poorly maintained features	Lack of facilities Walkway maintenance
What features of the park are or are not attractive?	Attractive features	Natural elements, water feature, general aesthetics,
	Unattractive features	Lack of facilities, park infrastructure
What is it about the ravine that makes you feel safe or unsafe?	Conflict with other visitors	Cyclist- pedestrian conflict , Perception of suspicious persons, bad past experience
	Unease at night	Visibility concerns, fear of crime
	Wildlife and nature	Fear of coyotes, dangerous weather conditions, unsafe path conditions
Why do you prefer this ravine, or what features do other ravines (or other public parks) have that you prefer?	Proximity	Convenient proximity to home, convenient location between two destinations
	Emotional sentiment	Happy past memories
	Preference for a specific recreational facility	Preference for social gathering places, preference for diverse facilities
	Popularity of the site	Preference for less populated sites, preference for more populated sites

Open- ended Question	Themes	Codes
	No strong preference expressed	Each site is unique, access is more important
Why do you think you can or cannot share your opinion? (Bad/good past experience? Unsure of whom to contact?)	Cynical attitude	Bad past experience, negative perception of consultation
	Uncertain attitude	Lack of past experience, lack of information identified
	Positive attitude	Good past experience, active city councilor indicated, a known informational resource indicated
Have you ever been asked for your opinion on the management of this ravine?	Formal consultation experience	Ravine Strategy survey, another city-led campaign
	Informal consultation	High school student project

Enabling Features and General Motivations for Ravine Visitation

The vast majority of respondents indicated leisure as their primary purpose for ravine visitation. The most popular leisure activity that people reported as motivating their visit to the ravine was physical activity and exercise, just less than half of respondents indicated this such as Participant 21 who explained "I come to walk and I use the staircase for exercise". The second most popular motivation was to access a preferred natural feature of the park, which was true for just over a third of respondents. Other important motivations included opportunities for socialization and opportunities for refuge and quiet. Ravines were seen both as places where one can meet with friends and places where one can visit to escape regular urban life. For example, Participant 39 said "I walk here with my friends", and Participant 34 stated "sometimes I just walk to enjoy nature and to get away from the city, you can recharge here". Overall, it is apparent that physical health benefits, social benefits, and mental health benefits are all important motivations for visiting ravines.

Just over ten percent of respondents indicated that they visit the site for the functional purpose of travel as the ravine trail is between their indicated origin and destination. For example, Participant 41 mentioned that "this is a good shortcut to the GO station" and Participant

23 said "this is the best route to walk between work and home". Dog walking is a common leisure activity to some people while it serves a more practical purpose to others. As an example, several professional dog walkers expressed a preference for dog-walking in ravines such as participant 142 who explained that "I'm a dog walker by profession and the dogs love it here!". Overall, a third of respondents indicated that they primarily visit the site to walk their dogs. Regardless of posted park rules, leisure dog walkers frequently made reference to preferring ravines because they perceive that the sites are appropriate for their dogs to be off-leash. For example, Participant 22 stated that "the ability to have my dog off leash is a big draw for me".

Convenience and proximity to the site is an enabling factor of motivation. When asked about how convenient the site was to access, 57% of respondents indicated that the ravine is convenient because they live close by. "I live a five-minute walk away" (Participant 85) and "I just moved to the area" (Participant 118) were comments that indicated close proximity. While the convenience brought about by proximity likely plays a role in visitation, it is not the only important factor in someone's presence or absence from a space. Just over ten percent of respondents said that they visit the site because it is close to their home. In other words, proximity alone is not enough of a reason to visit a ravine. Generally, ravines are places that require intent to go to. For those respondents that did not live next to the ravine, convenience and ease of access was linked to the ability to drive and park for free, and the ability to take public transit. Comments included "I don't live here but it's a quick enough drive with free parking" (Participant 94) and "The parking is convenient, when there's no parking it is inconvenient" (Participant 75).

Perceptions of Ravine Maintenance and Attractiveness

When asked to identify attractive and unattractive features of the ravine, merely 21 negative features were identified overall, compared to 179 positive features. Participants identified well-maintained features much more often than they reported poorly maintained features. Walkway infrastructure was the most referred to feature overall. Both positive and negative comments about walkway infrastructure were made such as "It's a good trail, nice and wide" (Participant 123), "In winter there is a lot of ice buildup on the trail" (Participant 101), "Some of the steps could use some time, love and care" (Participant 10) and "The boardwalk is especially great" (Participant 9).

Elements of management that were most negatively mentioned were the facilities within the ravines and perceptions of cleanliness. Concerns included "Some of the steps in the older staircase are rotting" (Participant 22) and "The river does not look very good with all the litter in it" (Participant 57). Conflicts with other park users were raised as well with statements such as "There should be more separation from cyclists" (Participant 53), and "Some dog owners don't clean up after their dogs" (Participant 24) and "There are more marijuana users now which makes me uncomfortable" (Participant 121).

A common attitude held by participants was that conservation and naturalization efforts were a positive aspect of ravine management. When participants were asked to identify positive features in the site, an appreciation of nature and natural elements within the ravine was expressed far more than any other feature, with a total of 70 comments. Statements include "It's amazing to be in such a green natural place in the city, I really think we need to protect this and places like it!" (Participant 96), "This ravine is a green jewel in the City" (Participant 3), and "The babbling brook is my favourite natural feature here" (Participant 12). In addition to this,

participants positively perceived ongoing on-site maintenance done by staff. Samples of observed maintenance include "I see them do work here, I saw water quality testing and staff testing for mosquito larvae last year" (Participant 38).

Perceptions of Safety

In general, the vast majority of participants reported feeling safe when they visit a ravine. As a caveat, many people report that they would not feel safe in the ravine at night. Respondents indicated that this was simply common sense to them, and they clarified that they do not perceive the site as a particularly dangerous place. Respondents who had previously had a negative past experience or who knew someone who had a negative experience were less likely to perceive the site as safe. Several comments were "I know there was a past assault crime here years ago which is scary" (Participant 2), and "I don't like being alone here, I'd rather be around other people… Nothing feels unsafe except for being alone, I feel that because I know sexual assault victims" (Participant 76).

Several respondents disagreed with the majority and stated that they even feel safe in the ravines at night. For example, Participant 106 stated "Even late at night I feel safe here, I have never felt at risk, and there are lots of young people in the evenings too". Several respondents make a point of organizing social gatherings, such as wiccan traditions, at night as well. Participant 110 explained that he intentionally visits the site at night saying, "I come at night to celebrate wiccan rituals". Other participants referred to young people having parties at night, such as Participant 112 who explained "It's popular for young people to come and party here on New Years Eve". Several elderly women indicated that they do feel uneasy when visiting the site alone, even in the daytime if there are fewer people around. All of these responses indicate the extent to which perceptions of safety differ across ravine visitors.

Other safety concerns referred to wild animals and weather. Safety considerations that were raised include "There's coyotes around but I'm not too worried about them" (Participant 85), and "It's a bit muddy and slippery when it rains" (Participant 129) and "Ice in the winter is bad safety-wise" (Participant 103). The other safety consideration that was raised on several occasions was concern about cyclists passing pedestrians too quickly on shared pathways.

Site Preferences

Many respondents indicated that visiting ravines was more a question of ease of access rather than preference. Proximity to home was most important to these participants. Respondents stated "It's more a matter of access than preference" (Participant 44) and "This is the closest green space to me" (Participant 10). Reference to sentiment and a history of memories in a given site that was close to a long-term residence was also important. For example, Participant 100 noted that "This place is sentimental to me, I raised my family here so we have a lot of happy memories".

A common response was that respondents considered each ravine a unique site, and avoided indicating a clear preference for one ravine over another. Respondents commented "I think they are all different and unique" (Participant 84) and "I visit different ravines for different reasons" (Participant 86).

Perceptions of Public Engagement and Consultation

There were mixed opinions of public engagement efforts and city planning staff. Many respondents expressed a cynical attitude such as "I probably wouldn't be taken seriously" (Participant 72) or "I don't think they are that receptive" (Participant 54). Uncertainty was also frequently expressed and participants identified a lack of information as a barrier to their participation with statements such as "I'm not sure who to go to" (Participant 19) and "It's

unclear who is in charge of management" (Participant 7). Positive statements were also common and often alluded to previous positive consultation experiences. Those expressing positive attitudes often identified their city councilor as a potential resource, and the city-wide informational telephone line 311 as a starting place of information that they would use to contact city staff. For example, Participant 38 recalled a past experience where "I called 311 and reported a Hogweed issue and they quickly came and removed it".

Very few respondents indicated that they had previously participated in ravine public consultation in any form. Only 11 participants overall indicated past park consultation experience. Compared to the number of people who expressed an interest and a willingness to participate, the number who had ever participated is very low, with only 3 respondents indicating knowledge of the recent Ravine Strategy's consultation efforts.

4.5 Qualitative Analysis of Site-level Results

The following presents site-level results from the open-ended survey questions.

Williamson Park Ravine
<u>Perspectives on management</u>

Participants highlighted that they thought community members, rather than city staff, did a good job of maintaining the ravine. Frustration at the length of time it took to construct the new staircase was often expressed, but the majority of participants agreed that they were a positive new feature in the park. At the same time, several individuals who frequent the park expressed concern about more infrastructure coming into the park. They were resistant to the idea of formal paths and intervention in the ravine. Change is often resisted, however these individuals were able to recognize that the addition of the new stairs was a good thing, and that site improvements could come about with formal planning. Participant 140 expressed mixed feelings about the new

stairs by explaining "I don't want this all to be improved with new stairs and stuff like that, the new stairs are nice, but I don't want the City to go into the ravine and change it dramatically". There was one person who said that the stairs had a negative impact by increasing the flow of people within the ravine. This participant noted "I don't come here anymore because of the increase in foot traffic since the stairs" (Participant 130).

<u>Perspectives on the strengths and weaknesses of this site</u>

Participants preferred this ravine because it was quiet and relatively low-traffic compared to other ravines in the city. Many comments were made about it being "rustic" or "wild". One individual noted that when you are in the middle of the ravine "You could be in Algonquin, it's that quiet!" (Participant 139). Complementary to this, the ravine had one of the highest proportions of people directly speaking to the benefits of naturalized spaces on their mental and physical health. Participant 129 said that "I love the running water, I come here when I am having a stressful day". Another person said they come to the ravine because they prefer being away from social settings when dog-walking. This participant noted that "I prefer this because I don't like to socialize very much so I don't like off-leash parks when I am with my dog" (Participant 124).

Respondents celebrated the lack of formal infrastructure and formal trails within the ravine. Participant 141 noted that "I don't like or want pavement in here. It's more fun having dirt paths, especially with kids so they can do things like catch frogs". One pair of visitors made a 45-minute trip on transit with dogs to this ravine, and they emphatically stated that they liked that nature was not tamed here. This couple talked about their wariness of park managers wanting to increase access in ravines across the city. While they acknowledged the importance of access and the value of equity, they were worried about the ravine becoming overly managed.

Participant 133 explained "It's nice that it is hard to reach and it feels like a real hiking experience here, I think we as humans should adapt to nature more. I think if you make it too accessible, there's a threat of becoming too manicured. Then you need trash bins, benches, and the list goes on and on. There should be a place for everyone, but not every park has to be the same with bridges or paved paths."

The only kind of facility that was desired by most participants were garbage bins. Participant 124 noted "We need garbage bins, that is really important" and Participant 127 explained that there is only one community-maintained garbage bin that locals regularly empty by taking the garbage and adding it to their own home- bins.

Safety perspectives

Respondents indicated that because this ravine is less populated, sometimes they are "on guard" or "on edge" in the ravine. Several women mentioned that being accompanied by their dog gave them an extra sense of security when visiting the site. Participant 142 who was a professional dog walker explained that "I've only felt unsafe a few times as a woman. However, I'm usually here with a dog or two, and they are big dogs! So I don't worry too much". Participant 130 stated that she frequently experiences harassment in the neighbourhood from one particular person so that she no longer feels as comfortable as she once did visiting the ravine.

Perceptions of city planning and public participation

The majority of participants expressed dissatisfaction with how long the new staircase took to complete. Participant 124 explained that "the new stairs are okay, but they took over a year to complete which was frustrating". Participants were unsure but thought they may have seen signs during the planning phase of the new staircase, but none of them attended any public meetings. Respondents expressed a mix of attitudes towards public engagement efforts.

Generally, people were aware of past public consultation efforts, which was unusual in comparison to the other sites. One participant stated that she has tried to provide input to ravine planning, but felt that her voice was always overshadowed by more influential residents in the neighbourhood. She explained that "the councilor for this area is under the spell of a certain group of people who push for gentrification. I've tried to be heard but I am not included in this certain group so I am frustrated" (Participant 130). Participant 129 stated that "I think the City may not listen very well, I think that's why locals here take care of it". One person said that she believes that safety concerns would be addressed quickly by the City, but she felt that when it came to other decisions, more affluent residents have more clout with decision-makers. She explained "It would depend on the park and the neighbourhood, I bet places with higher socioeconomics will have more clout. But I imagine that if it was a serious safety concern and it was well-documented that the City would be receptive" (Participant 142).

Glen Stewart Ravine

<u>Perspectives on management</u>

Participants generally expressed satisfaction with the level of maintenance and management in the ravine. The pathway and boardwalk were broadly spoken of as positive features. Participant 13 said "I like the boardwalk, the paths, overall it's all very clean". Participant 22 noted "The paths are safe, the raised metal boardwalk is great". Some comments were made suggesting that minor improvements could be made on the staircases from time to time, but no major challenges were identified. Several participants expressed preference for ongoing naturalization efforts in the site and indicated that any more intervention would make the site "too manicured". Participant 2 said "I prefer it naturalized, if they did much more maintenance it would be too manicured". Participant 5 explained "the best part of this park is the

naturalization work" and Participant 21 perceived that "there is good effort being put in, I really like that we are fighting invasive species!"

Similarly to other sites, the lack of garbage facilities was identified as a shortcoming of current management. Participant 6 said the ravine "would benefit from more garbage cans" and Participant 5 similarly noted that "They should put in more garbage bins here".

<u>Perspectives on the strengths and weaknesses of this site</u>

Several participants expressed strong preference for this site over other ravines in Toronto. Participant 15 felt the site was so unique that he perceived it as "One of the last vestiges of Old Toronto". Many respondents indicated that they grew up in the area and had many memories of being in the ravine. Many expressed that these nostalgic memories contribute to their attachment to the ravine. Participant 23 explained "This is my favourite, I grew up here, I have lived close by for 50+ years now", and Participant 2 said "I have been visiting this ravine for over 30 years". Other respondents indicated that they prefer the waterfront beach but felt that the ravine served as a pleasant green space connection to their beach destination. For example, Participant 6 said "I like that you can access the beach through this park network".

In this ravine, one unique feature was the popularity of people using park infrastructure to exercise. Many people stated that using the stairs for exercise was a common practice. Participant 9 noted "People run up and down the stairs for exercise all the time" and Participant 20 made a similar observation stating "I notice a lot of people exercise with the stairs". In contrast, while Williamson Park had similar staircases, not a single person there spoke about the stairs being used for exercise.

Most participants said they felt safe here in general in daylight but would not come at night because it would be dark and therefore difficult to navigate. Participant 1 noted that "I'm not sure if it's safe at night, there's no lighting at all though so it doesn't seem usable", while Participant 4 explained "It isn't safe at night, but that doesn't mean I think they should put lights in. I just don't think people should come at night". Participant 2 recounted a story about an assault years ago and said that was troubling but that he still felt the site was safe in general.

Thoughts on city planning and public participation

Most respondents felt positively about the public participation process. Some explained that they have had good experiences with City staff regarding other issues (non-park related) in the past. Participant 22 noted "Yeah I think it would be fine to give my opinion, I've had a good experience with City staff before about other things in my neighbourhood". Respondents also spoke of their city councilor as a resource and perceived that the councilor would be receptive to their input on the ravine. For example, Participant 6 said "I have a great city councilor who I am sure would be receptive" and Participant 20 explained "I'm not sure who I would go to, I have a good city councilor though so maybe, yes, I would start there". Other participants expressed cautious optimism with statements such as "I think they would listen, but unless my opinion is in the majority I doubt it would have much of an impact" (Participant 19).

Etienne Brulee Park
Perspectives on management

Most participants perceived that the site was well maintained making statements such as Participant 90 who said "I think they do a good job managing it now" and Participant 92 who felt "The City seems to already care about the park to begin with". Respondents spoke positively about the presence of two trails, one intended predominantly for cyclists and the other intended

for pedestrians. For example, Participant 82 said "I really like that there is a separate path for cyclists". Changes in the material of the path transitioning from pavement to gravel in sections of the trail was raised as something that could be improved upon as identified by Participant 83 who said "I don't like the gravel parts of the one trail".

Several respondents expressed concern about the water quality of the river and indicated that there is often garbage floating in the river. For example, Participant 99 observed that "There's some litter in the water but that is probably hard to improve" and Participant 77 said "The only problem I see is that sometimes there are dead fish floating around, I think they should do catch and release here instead."

Perspectives on the strengths and weaknesses of this site

There were many points of interests in this site and opportunities for social gathering places: there are fire pits, educational features, a playground, a picnic area, all of which people spoke about as positive facilities. One theme that came up repeatedly was the free parking available at the site. Numerous people spoke about how this made the site convenient and easy to visit. The emphasis on the importance of free parking is singular among all of the study sites. Participant 93 recounted that he used to visit another park but that they had replaced free parking with paid parking, so that he no longer goes to that park, explaining, "This is one of my favourite parks. Park Lawn is another old favourite but they replaced free parking with paid parking so that deters me from going there now".

This site was unique because it was surveyed during the annual salmon migration, which attracts people from throughout the region to view the event. Many participants were infrequent visitors who had come for the annual migration spectacle and provided comments such as Participant 84 who explained "It's my first time here, I came to see the salmon with my friends"

and Participant 90 who said "I came to take photos of the salmon jumping". Participant 89 added that there were other positive features aside from the salmon saying "I think this park offers great seasonal attractions and nice things like rock sculptures and the public artwork". On several occasions participants talked about the importance of a flat and well paved path for seniors and families with strollers such as Participant 92 who observed "Older people come walking here, and I see New Mother groups who come with strollers too".

Safety perspectives

Overall, respondents expressed that they perceived the site as safe. Several people noted that the north side of the park is too isolated for them such as Participant 93 who stated "It's a little too quiet on the north side of the park and I've seen questionable behavioural before so I avoid that part" and Participant 97 who explained "I don't really like the north end of the park. You can never be too careful, and I just don't feel very safe there if I am alone". One female respondent, Participant 89, said that once when she was visiting the site with her child a man exposed himself, so she avoids that area of the park now. Despite these comments, in general, the vast majority of participants said they felt safe in the site as demonstrated by statements such as "Up until now I have never had any issue or concern" (Participant 86) and "It seems safe, there is no obvious reason to be concerned" (Participant 98).

Thoughts on city planning and public participation

Infrequent visitors who were just visiting to watch the salmon migration expressed that they did not think they had formed enough of an opinion yet on the park to provide input to consultation efforts. For example, Participant 79 explained "I don't come here often enough to have much to say about the park" and Participant 86 said "I'm not a City of Toronto resident". Local residents expressed a mix of opinions about the public engagement process, but most

expressed a willingness to provide input in the future such as Participant 98 who said "If it didn't cost me money and wasn't too time consuming then I guess I would think it would be worth it to share my opinion". Participant 95 said that though she does not live that close to the park, she frequents it often and would love to be included in planning efforts. She added that "the problem with planning is that it is very much a top-down process. My husband and I don't live in this neighbourhood but we are heavy park users, and we use this park a lot so it would be great to have an opportunity to share our opinions with staff".

Nordheimer Ravine
<u>Perspectives on management</u>

Many respondents indicated the accumulation of litter and waste under the Spadina Road bridge from individuals who temporarily camp there as an ongoing maintenance challenge. While the majority of people indicated this as a problem, most also said that it was not the fact that people camped there that bothered them, but it was the waste left behind that was the problem. For example, Participant 121 explained that "There is a lot of trash and litter from people who camp. I don't mind that they camp here, but the trash bothers me."

Urban infrastructure is visible and present all throughout the site. Subway station emergency exits and grates, home residences, the Spadina Road bridge, and new condo buildings are all visible. Participant 117 noted that there is often an accumulation of litter around the subway emergency exits, and syringes were a specific concern in these areas. The absence of garbage bins was raised on several occasions such as Participant 116 who observed "There are cigarette butts all throughout which is gross, and there are no garbage bins except for at the park entrances!"

Several respondents noted that the trail's pebble material had poor drainage such that large puddles accumulate in warmer weather and ice accumulates in the winter. Participant 102

explained "Using a clay base for the trail material is bad. In winter there is a lot of ice on the trail which can be quite dangerous". Participant 103 also indicated "In winter the ice is bad" and Participant 101 said "In winter there is a lot of ice buildup by the pedestrian bridge". Even with the litter and trail material concerns, respondents gave the City credit for attempting to improve the situation; they just expressed that there was more improvement to be done. As an example, Participant 104 said "Generally, it is well managed" and Participant 100 said "They have improved this a lot over the years".

Ongoing planning and naturalization efforts were very visible throughout the park with the closures due to construction, and many respondents felt that the City was making improvements overall, even if efforts took a long time to implement. For example, Participant 122 said "I can't wait for the work and reservoir to be done! It's going to be great". At the same time, several participants expressed frustration at the length of time it takes to complete infrastructure work, such as Participant 121 who said "The construction makes things messy right now. It has taken more than two years. It's frustrating". Even though there were disruptions in the site, respondents talked about the wooded canopy sections of the park as being especially attractive and "their favourite spot" (Participant 111). So, while the park was noted as being highly urban, there were points of refuge within it. Participants noted that bare hills had been replanted with trees, there was mention of annual tree-plantings, and participants were aware that some of the construction activity was to improve a wetland/reservoir. For example, Participant 112 observed that "They are naturalizing it bit by bit, especially with the designated wetland", and Participant 100 noted that "They did a great job tree planting on what used to be a tobogganing hill".

<u>Perspectives on the strengths and weaknesses of this site</u>

Many people jog through the site, dog walk, and some cyclists bike through. Participant 116 reported that she tries to walk through the ravine at least once every day, even if it makes her walk longer, because she prefers the wooded pathway more than the street-level environment. Several respondents preferred this ravine because of the integration of naturalized wetlands and forest environments within the site. For example, Participant 112 noted "I prefer this to other city parks because those places are too manicured. I like that there is space set aside here for wetlands and forest. And it's a good green connection to other nearby ravines in the City".

Respondents frequently raised the issue of off leash dog parks; people were either happy this site did not have one, or they preferred Cedarvale Ravine close by because it does have an off leash area. For example, Participant 104 said "I prefer Cedarvale Ravine more than here because of the off-leash dog park over there" while Participant 105 said "I don't like the dog park at Cedarvale, there are so many dogs off-trail there and the dog park is way too big". Respondents also expressed that there is a lack of social gathering places within the site. For example, Participant 114 explained "I like the variety of things to do in other parks compared to here, BBQs, and picnic areas are nice".

<u>Safety perspectives</u>

This was the only site with lights along part of the trail (the north entrance), and comments regarding this infrastructure were mixed. Quite a few people indicated that they visit the site at night, which was unusual compared to the other sites. Several respondents noted that they come to the park at night and feel safe in part because of the lit trail. Participant 111 explained "This place is well maintained and with the lights, you can use this space in the day or the night" and Participant 106 stated "Even late at night I feel safe here, I have never felt at risk,

and there are lots of young people in the evenings too". Participant 110 explained that he intentionally visits the site at night saying, "I come at night to celebrate wiccan rituals".

Other respondents disagreed with night-visitation often saying that they thought that lights do not make sense in a ravine setting because they felt it was strange to be in the ravine after dark. For example, Participant 101 said "I have mixed feelings about the lights, I don't think they should put lights up because honestly I don't think people should be here at night". Additionally, several participants were aware that there was activity at night but they themselves do not visit the ravine at night. For example, Participant 103 said "I don't come here at night, but I am aware that young people come here to party at night".

Thoughts on city planning and public participation

There was a mix of interest in participating or providing input; some people said they would rather not, while others were enthusiastic about sharing how they thought the space could be improved. For example, Participant 102 explained "Personally I am not interested in providing input. My wife likes that kind of thing and she hasn't been brushed off in the past so I guess it would be fine", while Participant 104 said "Yeah I would be happy to! I have actually called 3-11 before and have talked to my city councilor about the park too". As demonstrated by Participant 103, respondents who had a positive past consultation or input experience often referred to their city councilor or Toronto's information telephone line 3-11. Other participants who referred to these resources were Participant 117 who said "I would call 3-11, I had a great experience this summer where we planted 120 trees here with only 8 people!" and Participant 105 who stated "I had a good experience, I would start with my local councilor if I had a concern". Other participants expressed interest in specific management issues such as Participant

101 who said "I'd be interested in talking about animal waste management. I think we need more education about it! I bet city staff would respond even though they have limited resources".

Taylor Massey Creek Park
Perspectives on management

In general, respondents noted that the site had been improved upon over the years with the addition of new facilities such as benches. Participant 30 said "It's nice with the new benches they put in" and Participant 37 expressed satisfaction with current management stating "I have no issues with this park, I love it, the grass gets cut, they take good care of it". Several respondents mentioned that they had seen on-site maintenance in the past. Participant 38 said he has seen staff test the water for mosquito larvae, and he had phoned the city about invasive Hogweed explaining "I reported hogweed by calling 3-11 and they quickly came and removed it". There were concerns raised by two respondents about the water quality of the creek. They mentioned that they were aware that excess sewage from a condominium bordering the site had previously been diverted into the creek explaining "The water quality seems poor here, I know condo sewage was being diverted into Taylor Creek. Ours was being diverted too, you can tell that the creek isn't very healthy. The water quality needs to get better" (Participant 31).

Perspectives on the strengths and weaknesses of this site

Many respondents spoke about how convenient the site was to them for various reasons. Several emphasized its convenience because of how well-connected the site is to the broader trail network, which was especially important to cyclists who were a prominent user group. Participant 37 explained "I love the biking trails. I used to jog here, but since I took up cycling, that is all I do here now! It's a huge network." Elderly respondents spoke about the importance of free vehicle parking and flat well-maintained paved trails such as Participant 46 who was visiting as a part of a seniors walking group and said "The wide and well-paved flat paths are

important and nice for us". While there were elderly respondents who drove to visit the site, there were also elderly respondents who indicated that they lived in one of the apartment buildings that was a short walking-distance from the site and found the ravine generally accommodating to their needs. One of these respondents, Participant 33, said she wished more people knew about the ravine and she was happy that there were going to be efforts led by the Ravine Strategy to improve access and knowledge of the site by adding in signage at the entrances. She also said that interacting with the wildlife by feeding the ducks was really important to her, and that since she started going to the ravine everyday her overall well-being had dramatically improved stating "'I come here daily to feed the ducks and Squirrels. It's done wonders for my blood pressure. I'm even planning to write a book about the history of this park since the time of Lake Iroquois".

Participant 34 who lived in the neighbourhood said he really enjoyed being able to access a mix of environments in his life and that he finds the ravine peaceful to walk through, adding "Sometimes I just walk here to enjoy nature and to get away from the City. You can really recharge here". Participant 28 said "I walk through here to relax, it's an antidote to city stress! The greenery is the best part of Toronto". One weakness identified by several respondents was persistent graffiti in the underpass such as Participant 34 who said "The graffiti is unattractive".

Safety perspectives

Most respondents indicated that they generally feel safe in the site. One person said "Sure I feel safe but then again I do recognize I'm a 6'2" man!" (Participant 28), and Participant 27 explained "It's a really busy park so I've never worried about personal safety here". Participant 31 explained that he wouldn't come at night because there is no lighting, explaining "I wouldn't come at night because there are no lights, Toronto is a pretty safe city." One respondent said she

visits alone on a daily basis and that she has been asked about safety from friends before and is always surprised by the question because she has never perceived even the slightest threat to her safety when visiting. One respondent disagreed with the majority and said "This park has changed a lot. I wouldn't come here after 5pm anymore because I see groups of strange immigrant people coming. You know, they bring their different cultures with them and it's really a problem. And the cops are doing nothing about it and neither is city council." This was the only occasion of all the surveys of a respondent expressing concerns about park safety that was rooted in xenophobia.

Thoughts on city planning and public participation

There were a mix of attitudes regarding public engagement efforts. As in other sites, respondents talked about their past efforts and several had reported downed trees before that had been cleaned up quickly by city staff such as Participant 48 who said "I would be happy to provide input, I reported a downed tree once and they took care of it!" A lack of information and experience in public consultation or reaching staff were identified as barriers to participation by several respondents. For example, Participant 27 said "It isn't really in my DNA to get involved like that… And I'm not sure where I'd go to contact someone" and Participant 37 explained "I don't know who to call or anything, there are emergency signs for if someone falls in the creek but that's the only information I see here". Cynicism was also expressed on a few occasions, one where Participant 39 stated "I don't think providing input or comment does any good anyways" and Participant 28 who said "I'm a bit cynical, I'm not too sure but I guess I would keep an open mind".

E.T. Seton Park

Perspectives on management

Similarly to Taylor Massey Creek Park, this site was often spoken of as part of a larger network and was used heavily by cyclists. For example, Participant 57 said "I like being able to bike here from my neighbourhood further east", and Participant 70 said "This is part of a really well connected trail network". Most people were satisfied with overall maintenance of the park, but very few indicated strong preference for this site over others. Several indicated that other parks had specific features that they preferred, such as Participant 72 who explained "I have a few other parks I prefer, they tend to be more wooded, have more places to relax, have less litter and less vacant space. I think in general they just have more points of interest". Survey participants appreciated the picnic and washroom facilities, but noted that washrooms close earlier than they would like them to for the season (September 30th). For example, Participant 74 said "The bathrooms are closed now which is annoying".

Perspectives on the strengths and weaknesses of this site

Cyclists were a dominant presence in this study site. Cyclists commented on the good quality of the trail for bikes, but numerous pedestrian users indicated that cyclists often travel too quickly and closely on the shared path. For example, Participant 56 explained "I find the trail a little too narrow to share with pedestrians and cyclists because they can pass by very quickly which is startling". Cyclists on the other hand were mostly satisfied with the trail such as Participant 70 who said "I love biking here, it has good trail connections and is a long route!"

While there were many cyclists using the park who lived in different neighbourhoods, none of the respondents, cyclists or otherwise, in the site indicated that they lived in the Thorncliffe neighbourhood. This was unique among the study sites, and an unexpected result. The researcher waited along the Thorncliffe Park Drive entrance (location marked 'A' on Figure

93

5) of the park on several occasions, with the hopes of encountering residents to participate in the survey, but without success. There are several conditions of this entrance that may contribute to its underuse. Firstly, the entrance is on a steep hill with no pedestrian separation from vehicles. Secondly, there is very little indication that the park can be accessed from the road and the entrance is less appealing to visitors as it opens upon a large parking lot.

Several participants were frustrated at a lack of signage or way-finding because they were intending to reach a specific destination, a popular decorative garden called Edwards Gardens that is located just north of the site. Participant 55 explained "This is my first time here and with minimal signage, I got lost trying to get to Edwards Gardens", and Participant 62 said "Signs of what street you are passing on an overpass would help a lot". Disc golf and the facilities within the park that support the sport attracted participants from outside the neighbourhood to the park, which was unique among the study sites. Participant 71 and his friend noted "We visit here to use the disc course and play disc golf with friends!"

Safety perspectives

Most respondents perceived that the site was safe in general, if somewhat underused. For example, Participant 72 explained "I haven't had any issues, but I don't feel completely comfortable here, it's a little bit too isolated for my comfort. I have also seen some people collecting bottles or potentially questionable stuff off-trail". Participant 52 said "On weekends yes I feel safe, I don't think I would come on weekdays though, just to be street smart because I imagine it's too quiet." The common sentiment in all sites of perceived safety in the daytime but not after dark was also expressed here. Participant 69 expressed a preference for daytime use and a busy park stating "I wouldn't come at night, I come around 3-5pm during peak commuting

home from work time" and Participant 61 said "Yeah I generally feel safe, I would never come at night though".

Thoughts on city planning and public participation

One respondent said that she felt positively about public engagement because she feels that people generally respect each other and their opinions explaining "I think it would be fine to provide input, everyone respects each other here" (Participant 69). Others were cautiously optimistic such as Participant 67 who said "I'm not sure, I think they might respond fast though because I notice they work hard cutting the grass and other maintenance". As in other study sites, many participants noted that they have never participated in public consultation and were uncertain about where they would start if they did have a concern to report. For example, Participant 72 said "I don't know where to go, I've never really tried. I'm not that interested and I don't see stuff that is that upsetting to me, also I probably wouldn't be taken that seriously." Others knew of consultation efforts in the City but were not involved and were somewhat critical of them, such as Participant 55 who explained "I know that close to where I live there is a Beltline Trail Committee and they just got the City to install a street light at the park entrance. So it at least seems possible to influence the City, but maybe it's only really possible if you're wealthy and loud."

4.6 Community Park Audit Tool Results and Photographs

Another data source was the audit tool that was filled out for each site. Three sections of the audit tool were filled out: Park information, access and surrounding neighbourhood, and park quality and safety. The audits function as a form of ground-truthing of the survey responses. The results largely confirm and complement responses obtained from the survey tool. Another source of information that was used to relate to the survey responses and the audit tool were

photographs. These photographs help to visualize the study sites and capture some of the

ongoing issues and features within them.

Park information

The most relevant information derived from this section of the audit was about the ease

of finding the park and whether or not the auditor was able to locate a map for the park. The

completed audits indicate that some parks are easier to find than others. The auditor was mostly

unable to find a map of any site with the exception of Glen Stewart Ravine Park (Image 1) and

Etienne Brulee Park.

Image 1. Map at entrance of Glen Stewart Ravine with educational information

When asked about the ease of finding the site, all sites with the exception of Etienne

Brulee Park (which was rated by the audit as easy to find) were "somewhat" easy to find onsite.

This reflects and complements the experiences of some of the survey respondents who indicated

that they had a difficult time locating park entrances when they were asked about the

convenience of visiting the site. This was especially the case for infrequent or first time visitors

to the study sites.

Access and Surrounding Neighbourhood

The audit asked if there is public transit within sight of the park, if there is an external trail or path connected to the park, and what kinds of parking are available. This audit section also asked about the number of safety or appearance concerns that were present in the neighbourhood around the park.

Public transit was visible from most study sites, except for E.T. Seton Park. Most sites had between two to five points of entry, except for Taylor Massey Creek Park, which had more than five points of entry. Sites had minimal or no way-finding signage, with the exception of Taylor Massey Creek Park, which did have clear signage throughout the site (Image 2).

Image 2. Way-finding signage and garbage facilities in Taylor Massey Creek Park

In terms of the range of parking that was available, Taylor Massey Creek Park, E.T. Seton Park, and Etienne Brulee Park had the most options available with both bicycle parking and free vehicle parking available (Images 3 and 4). None of the selected sites had paid-vehicle parking. The importance of bicycle parking is apparent as the trails within these three sites are

heavily used by cyclists. The other three sites only provided on-street vehicular parking near some of the site entrances.

Image 3. Free vehicular parking at Etienne Brulee Park

Image 4. Free vehicular parking at E.T. Seton Park

In terms of safety or appearance concerns present in the neighbourhoods around the parks, the most common concern identified by the audit tool was graffiti. Graffiti was observed in every neighbourhood (Images 5 and 6) except for Etienne Brulee Park and E.T. Seton Park. In E.T. Seton Park, the surrounding neighbourhood is not very visible from the site and is characterized by large apartment tower blocks. In Etienne Brulee Park, the neighbourhood is characterized by large single-detached homes and the luxury Inn and Spa near the historic Old Mill bridge. The neighbourhood with the most safety or appearance concerns identified by the audit tool was Taylor Massey Creek Park. Five concerns were identified: presence of graffiti, excessive litter, heavy traffic, excessive noise, and vacant or unfavourable buildings.

Image 5. Graffiti at Nordheimer Ravine

Image 6. Graffiti at Glen Stewart Ravine

Park Quality and Safety

This section of the tool asked about factors that relate to comfort and safety within the park. Some of the indicators for park quality identified the number of facilities and infrastructure within the site and their usability. In terms of facilities, Etienne Brulee Park, Taylor Massey Creek Park, and E.T. Seton Park had the highest number. These parks are larger in area and are more open in terms of their terrain; they are not steeply carved out ravines. These features allow for a greater variety of infrastructure to be built within these sites. Each of these sites had: public restrooms, drinking fountains, benches, picnic tables, and trash cans. All or most of these appeared to be in good condition. The restrooms and drinking fountains were closed for the season, so their usability and quality could not be assessed at the time of the survey (Image 7). At least one garbage facility could be found in all six study sites (Images 8 and 9).

Image 7. Washroom and drinking fountain facility at Etienne Brulee Park

Image 8. The only garbage facility at Glen Stewart Ravine, west entrance

Image 9. Garbage facilities and construction barriers in Nordheimer Ravine

Safety or park quality concerns were also documented within the site itself. The site with the most concerns identified was Taylor Massey Creek Park with four concerns identified. These concerns were: graffiti, excessive litter, excessive dog waste, and fast and aggressive cyclists sharing the single multi-use trail. Etienne Brulee Park and Glen Stewart Ravine Park had the same concern identified, which was graffiti within the site. E.T. Seton Park had excessive litter off-trail (Image 10).

Image 10. E.T. Seton Park, litter and discarded shopping carts off-trail.

Regarding visibility considerations, only Nordheimer Ravine Park had lights. Another factor relevant to visibility in the audit tool was "from the center of the park, how visible is the surrounding neighbourhood?" For most ravines, the auditor noted that the surrounding neighbourhood was partially visible from the centre of the park. Williamson Park Ravine stood out for the neighbourhood being least visible from the site.

In terms of aesthetic (i.e., beautiful or pleasing) features that are present in the sites, a range of features were audited. The site with the highest number of pleasing aesthetic features was Nordheimer Ravine with evidence of landscaping, artistic features present, historical or educational features present, a wooded area, trees scattered throughout the park, a water feature, and a meadow area (Images 11 and 12).

Image 11. Art feature in Nordheimer Ravine

Image 12. Nordheimer Ravine educational signage

The site with the fewest number of aesthetic features identified was Williamson Park with only three features: a wooded area, a water feature, and an attractive wooden staircase (Images 13 and 14). It is important though to recognize that simply having a higher number of aesthetic features is not an indication of how attractive the site is as a whole.

Image 13. Wooded area in the centre of Williamson Park Ravine
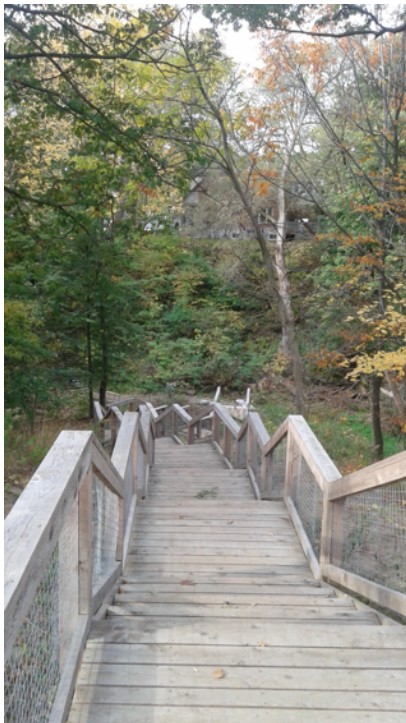
Image 14. New staircase in Williamson Park Ravine

The large Humber River at Etienne Brulee Park (Image 15), a community art feature in E.T. Seton Park (Image 16), and the raised boardwalk in Glen Stewart Park (Image 17) were all identified as appealing features of these sites.

Image 15. The Humber River at Etienne Brulee Park

Image 16. Community art feature in E.T. Seton Park

Image 17. Raised boardwalk and staircase in Glen Stewart Ravine Park.

4.7 Integrating Quantitative and Qualitative Data

This study has utilized several kinds of data. A survey that contains both closed-ended and open-ended questions was distributed to 140 ravine visitors across six study sites. This allowed for the collection of both quantitative and qualitative data. The Community Park Audit Tool was also used to obtain quantitative data. Photographs were taken as an additional source of qualitative information.

The demographic data collected indicates that the participant sample has a slightly higher proportion of female respondents, that there is a fairly even spread of age groups, and that a large proportion of people who were surveyed lived close to the study sites. Quantitatively overall, survey respondents feel more positively about ravines than they feel negatively about them. When it comes to the planning process and public participation, there are mixed feelings about the sincerity of consultation efforts. Very few of those who indicated they would be willing to participate in such efforts had ever been aware of or invited to do so outside of this survey.

There are few statistically significant differences in our site-by-site comparisons of closed-ended question responses. However, for two questions there are statistically significant

differences in responses site-by-site. The first concerns itself with convenience of site visitation, and the second considers the perception of the study site as an attractive public space. When it came to convenience of visitation the difference between these sites is such that respondents in E.T. Seton Park indicated less convenience than respondents who were visiting Etienne Brulee, Taylor Massey Creek, and Nordheimer Ravine. The difference between the sites regarding the perception of the site as attractive is that respondents in Glen Stewart and Etienne Brulee are more likely to strongly agree with the statement than respondents in E.T. Seton and Taylor Massey Creek. There were some demographic differences in the survey respondents site-by site such that some sites had a greater number of older participants, and some sites had a greater proportion of respondents who were visitors rather than residents of the adjacent neighbourhood.

The open-ended questions are explanatory to the closed-ended Likert-scale questions. Popular motivations for visiting the ravine were reviewed, barriers to visitation were similar across study sites, and features identified as attractive and unattractive were also similar across study sites. Hesitations regarding participating in the planning process were shared across the sites and several barriers to participation and informational resources were identified. Integrated results of the survey tool and the audit tool are presented in Table 9.

Table 9. Integration of Quantitative and Qualitative Data from the Survey Tool and the Audit Tool across Study Sites

Survey topic	Key quantitative survey data	Quantitative Audit tool data	Key qualitative survey data	Integrated results
Visitation frequency	59% Frequent visitors 26% rare or first time visitors	n/a	Etienne Brulee Park stands out as having a higher proportion of infrequent visitors. This is explained by the fact that at the time of the survey the annual salmon migration was occurring. This is a spectacle that people from outside of the city, and other parts of the city come to enjoy.	Frequent visitors tended to live close by, specific features like free vehicle parking and natural migration events, like the salmon run, attract a higher number of non-residents.
Neighbourhood residency	63% within a 15 minute walk, 37% farther than a 15 minute walk	Each site was reachable by public transit. Free vehicle parking available in 3 sites.	E.T. Seton Park stands out as having a higher proportion of people who did not live in the adjacent Thorncliffe neighbourhood. Researcher observations indicated that the Thorncliffe entrance had several features that made it less appealing to use as a pedestrian or cyclist: a steep grade, no separation from vehicles, unclear signage indicating the road as an entrance to the ravine park.	There is unexpectedly low park usership from residents in the Thorncliffe neighbourhood.
Gender	56% male 44% female No clear gender effects for perceived safety. But results approaching statistical significance.	n/a	Respondents indicated that gender did play a role in their perception of safety. Several men commented that they personally felt safe but they wondered if they would feel differently as a woman. Several elderly women said that the ravines were not safe when they were young, but they have improved over time. In general, women ranked perceived safety lower than men did overall. Other women expressed that they avoid visiting ravines alone.	There does not seem to be one gender group dominating ravine visitation. This is a positive result from an equity perspective. Gender seems to influence perceptions of safety and some visitors themselves are aware of this.
Age	25% = 18-39 41% = 40-59 34% = 60+ Age effects were noted on willingness to provide input to city staff, where respondents 60+ were less willing to provide input	n/a	Adults of different ages visit the ravines. Families were observed and several parents with young children participated in the survey. Some of the most enthusiastic advocates for ravines were elderly respondents. Other elderly respondents were less interested in ravine planning.	There is a good range of ages using ravines. Opinions on parks planning vary within age groups. On average, adults over 60 years of age were less likely to be interested in providing input to city staff on ravine planning.

Survey topic	Key quantitative survey data	Quantitative Audit tool data	Key qualitative survey data	Integrated results
Annual after-tax household income	63% refusal rate, 23% highest income category. Responses indicating lower income categories are very low, likely making the data highly unreliable.	n/a	Several respondents indicated that they were unsure of their income category either because their exact income fluctuates or the after-tax calculations is complex. Several comments were made about potential inequities in the park planning process. Several respondents indicated that they observe that wealthier neighbourhoods and communities tend to have more influence on decision-makers because they tend to be more vocal in what they want.	Judging only by respondents who were willing to indicate an income category, it appears higher income visitors are visiting ravines more often than lower income visitors. Some visitors identify potential inequities in the park planning process.
This ravine is convenient for me to visit	87 % agreed or strongly agreed	5 out of 6 sites were somewhat easy to find. Park entrances were not always easily visible.	Convenience and proximity were not enough to get someone to visit a site; leisure activities were cited as the motivation for visiting ravines. Proximity to home was noted as the main reason for the site being convenient. Free vehicle parking and access to transit were also raised as positively contributing to convenience.	Proximity is an enabler to ravine visitation, but it is not a motivator. Leisure activities and benefits that people identify they derive from ravine visitation were important reasons for visitation.
This ravine is very well maintained	82% agreed or strongly agreed	The number of garbage facilities is low in most sites. Generally, facilities are useable.	In general respondents perceive that ravines are well maintained but they identified ongoing concerns, especially litter and lack of garbage facilities. Others clarified that they think the site is well maintained by the community not by the City.	The majority of respondents expressed satisfaction with current maintenance. They were also able to identify ongoing challenges that were relevant to maintenance at each site.
This is an attractive public space	95% agreed or strongly agreed	There are a range of diverse aesthetic features: wooded areas, water features, meadow habitat, art and educational features.	Respondents detail the features that were most perceived as attractive and unattractive, including preferences for naturalized landscapes including wetlands, water features that would benefit from improved waste management, and so on.	The vast majority of visitors perceive the ravines as an attractive public space. Different features attract different people. Naturalized landscapes are frequently identified as attractive.

Survey topic	Key quantitative survey data	Quantitative Audit tool data	Key qualitative survey data	Integrated results
This ravine is a safe public space	80% agreed, 11% neither agreed nor disagreed	Graffiti is the most common negligence issue. Excessive litter, heavy traffic, excessive noise were also noted in sites.	Different aspects of safety concerns were raised: pedestrians avoiding collisions with bicycles, weather and nature concerns such as coyotes and slippery paths, avoiding the ravines after dark, and avoiding visiting ravines alone. Several respondents do feel comfortable visiting ravines at night in the single ravine with lights on-site.	There are different kinds of safety concerns for different people. Generally, respondents already visiting the site have assessed it as safe enough for their use. Safety at night is a separate issue and there is disagreement on night visitation.
I prefer this ravine over other ravines or public parks	41% neither agree nor disagree, 43% agree or strongly agree and 15% disagree	n/a	Participants largely indicated that they do not have a favourite park per se, rather, they view each ravine as unique. Others indicated that ease of access was more important to them than preference. Participants with strong preference to a site indicated that the site held sentimental value to them because of positive past memories.	Memories and sentimental value through frequent visitation contribute to preference. Other visitors prioritize ease of access more and perceive ravines as unique on a site-level basis.
I would like to share my opinion with City Staff on Toronto's ravines and how they should be planned for the future	53% agreed or strongly agreed with the statement. 24% neither agreed nor disagreed, and 23% disagreed	n/a	Some people were simply disinterested and hesitant about the time commitment involved in providing input, while others were enthusiastic about providing input.	There is general disagreement about being interested in providing feedback in a more formal manner to ravine planning efforts. About half of respondents expressed a willingness to provide input.
It is easy for me to share my opinions with City Planning staff on how this ravine should be managed and planned for the future	37% agree or strongly agree, 39% neither agree nor disagree, 24 % disagree 11 respondents had ever participated in parks consultation previously.	n/a	Informational barriers were identified as an issue by uncertain respondents, and several respondents identified resources that they have previously accessed to provide input, such as 3-11 and the local city councilor. Respondents who disagreed perceived the City as inaccessible or disingenuous in its efforts to engage the public. Both positive and negative past experiences were mentioned as informing the opinion of a respondent.	Respondents differed in their perception of how accessible formal planning staff are to them. Past experience informed a lot of opinions, and a lack of experience resulted in general uncertainty.

5. Discussion and Recommendations

The following section reviews what was found in Chapter 4 and why it is important and relevant to planning practice today. Results are related back to the research questions and their relationship to the broader academic literature is discussed. The strengths of the study and its limitations are also reviewed. Recommendations of further study based on some of these limitations are presented. Management recommendations and process recommendations conclude the chapter and the thesis.

5.1 Research Questions and Integrated Results

The research questions were developed to address several aspects of the ravine planning process to inform the forthcoming Toronto's Ravine Strategy Implementation Plan. These results can be used to prioritize improvement work and to identify what has been managed well in the past, according to those who visit the site. The Strategy, in guiding principle four, has stated that partnership with the community and local support will be critical for its success. Consulting current ravine users at the sites they are visiting creates opportunities for the mutually beneficial partnerships described in the Strategy's fourth guiding principle.

Table 10. Research Questions and the Results that Address them

Research Question	Results
How do ravines vary in their physical qualities across the city? And how do the perceptions of ravines vary among ravine visitors?	Though ravines varied widely in their features and infrastructure, opinions regarding each site were largely positive. Ease of access varies across sites with some sites being more accessible than others. Safety perceptions are overall positive, but across-site concerns emerged: fear of personal safety, wildlife, trail safety, and concern about ravine visitation at night.
What physical features and management actions make a ravine a valuable resource, in the opinion of a current visitor? What characteristics or management activities make ravines less appealing?	The most positively identified features of ravines were: naturalization and conservation work, art features, and educational features. The most unattractive features and conditions were: lack of way finding and signage, lack of garbage facilities, prevalence of litter, and poor water quality.
Do the sociodemographics (age, gender, household income) of a visitor relate to how they perceive a ravine they are visiting? Does the sociodemographic character (income distribution, housing type, overall ethnic diversity) of the neighbourhood influence how ravines are perceived?	Gender and its potential influence of safety perceptions was tested; in general women rank ravine safety lower than men but the differences were not statistically significant. Respondents were generally unwilling to report annual household income. Most that did report it identified that they were in the highest income category. There were two instances where a respondent spoke directly to ethnic and racial diversity. One was Etienne Brulee Park and it was a positive observation that the Park attracts people from diverse ethnic and racial backgrounds. The second was a negative perception that Taylor Massey Creek Park is less safe now than in the past because new immigrants gather there and were perceived as a threat.
How is the ravine-planning process perceived by ravine visitors? Do opinions differ across sociodemographics (age, gender, household income)?	There is general disagreement about the ravine planning process. Relatively equal proportions of respondents expressed cynicism, uncertainty, and optimism about the parks planning process. Age was found to effect willingness to provide input to city staff on ravine planning such that overall respondents over 60 years of age were less willing to provide input. Several comments were made by survey respondents about potential inequities in the park planning process, where respondents suggested that wealthier areas are better positioned to influence decision-makers.

5.2 Links to Environmental Equity Literature

The aggregated results of this research share several similarities with prominent studies, especially about the motivations people have for visiting a site. Results of this research are in agreement with studies that identify that physical activity and social opportunities are important motivators for green space visitation (Cohen et al., 2010; de la Barrera, 2016; Gilliland et al., 2006; Keith et al., 2018; Shafer et al., 2000; Smale & Mclaren, 2005; Peters et al., 2010). Hayward and Weitzer (1984) found that local residents perceived the park as an asset to the community and as a convenient and pleasant place. Peters et al. (2010) and Shafer et al. (2000) both found urban parks were mainly used for physical activity (walking and cycling) and then for social activities including playing, picnicking or barbecuing, and meeting people. Many studies found that people were also drawn to the park for the simple reason of accessing the experience of enjoying nature (Bratman et al., 2015; Hartig & Staats, 2006; Peters et al., 2010; Shafer et al., 2000). Other important motivations identified in the literature are social activity and experiencing a sense of escape from urban life (Giles Corti et al., 2005; Keith et al., 2018; Peschardt & Stiggsdotter, 2013; Peters et al., 2010). The results presented here also identified social opportunities and refuge from the city as motivations for ravine visitation.

Provision of free vehicle parking that allows distant people to visit a site is an important factor that influences how convenient it is to visit a green space. Gobster (2002) found that personal vehicles become important for park visitation for groups who live farther than walking distance to the park and who use parks for social and family-oriented activities. In Gobster's research, specific racial and ethnic groups reported a lack of vehicle parking as a problem for park access and he therefore recommended that planners should recognize that reductions in parking can disproportionately impact certain visitor groups. While data presented in Chapter 4

did not include measures of race or ethnicity, respondents in Etienne Brulee Park did report that vehicle parking increased the ease of site visitation.

Perceptions of Green Space Management

A positive finding of the research results is that the vast majority of respondents perceive that ravine parks have improved over time. Results also highlighted that the majority of respondents considered that each ravine is unique and should thus be managed accordingly, which is an attitude that is compatible with the approach of the Ravine Strategy. There is disagreement in the research literature regarding the general perceptions of green spaces and whether or not they are perceived to have improved or declined over time. Studies document park improvements over time, as well as park decline (Arnberger, 2012; de la Barrera, 2016; Hayward and Weitzer, 1984; Scott & Munson, 1994). In the literature, common reasons for perceived park decline are overuse and crowding, under-use and safety concerns brought about by isolation, and neglect (Arnberger, 2012; Cohen et al., 2010; de la Barrera, 2016; Hayward and Weitzer, 1984; Scott & Munson, 1994) A minority of the respondents perceived that the state of a ravine park had declined. In one case (Participant 40), the response reflected a xenophobic attitude towards new immigrants and ethnic groups who use the park.

All other comments that expressed a state of decline were based on anxieties about change and potential destruction of the naturalized feel of a ravine. These anxieties were most frequently expressed in Williamson Park Ravine where respondents liked the new staircase in general but did not want more infrastructure to enter the park. There was unease and resistance to its becoming a more developed park with formal trails and maintained facilities. Other places that have more infrastructure such as Glen Stewart Ravine shared similar sentiments, stating that if there were any more management, the ravine would become too manicured. Even where full

bridges and staircases were present at Glen Stewart Ravine, there was concern about losing the naturalized features of the site.

These kinds of anxieties were often expressed by respondents who indicated that they have lived in the neighbourhood for at least several years, if not decades. The research literature on place attachment and on community attachment does indicate that resistance to change is a consequence of place attachment in cases where the proposed change might disrupt or threaten existing emotional attachments or threaten place-related identity formation (Devine-Wright, 2009; Trentelmen, 2009). While concern about potential change emerged in survey results, in general, participants expressed that management and conservation efforts were positive so far.

Perceptions of Safety

Results presented about perceptions of safety are also largely in agreement with findings in the literature. Similarities can be drawn to Gobster's (2002) findings that being in the park after dark or using poorly lit areas, especially when alone, were the most frequent responses given for when and where respondents feel unsafe. Sreetheran and Van den Bosch (2014) found that time of day was strongly related to the fear of crime. Results of the current study agree with this, with the majority of participants expressing the general sentiment that "Yes I feel safe in general, but I wouldn't come at night". In addition to this, Sreetheran and Van den Bosh (2014) also found that there is strong disagreement on what the role of lighting is, and what it should be in parks. Respondents in the current research also disagreed on the role of lighting with some indicating that lights make them feel safer, while others stated that they do not think lights are appropriate in ravines.

There is a basis in the literature for gender-effects of safety perceptions (Bjerke et al, 2006; Jansson et al., 2013; Luymes & Tamminga, 1995; Sreetheran & Van den Bosch, 2014).

Sreetheran and Van den Bosch, (2014) reported 23 studies that found that women describing significantly higher levels of fear than male respondents in urban green space. Quantitative results of the survey are not in strong support of this, but analysis of qualitative texts indicated that respondents make references to their gender when discussing questions of perceived safety.

Several previous studies have also noted the role that age and perceptions of personal vulnerability might play in perceptions of safety. Sreetheran and Van den Bosch (2014) found that elderly respondents tend to be more afraid of crime despite generally being less victimized by crime. No such age effects were found in the results of this research.

Perceptions of Community Consultation

The results indicated that respondents who were over the age of 60 were on average less willing to provide input to City staff than respondents in other age categories. This contradicts literature that finds that Caucasian retirees are more likely to participate in public engagement (Agyeman, 2005; Buzelli, 2008; Newman, 2011; Pham et al., 2011; Scott& Munson, 1994; Shafer, Lee, & Turner, 2000). Results also indicate that respondents overall are somewhat skeptical about how fair and genuine the consultation process is. Several respondents made reference to how they perceive that wealthier neighbourhoods tend to achieve desired outcomes more often than less wealthy neighbourhoods due to their vocal advocacy and organization. There is evidence of exclusion from, or barriers to, community consultation in Toronto (City of Toronto, 2015; Gibson-Wood & Wakefield, 2013; Newman, 2011). The City itself has recognized this challenge in the Toronto Strong Neighbourhoods Strategy 2020 which has as a central goal, the empowerment of currently less-heard communities and neighbourhoods (City of Toronto, 2015)

The results indicate that frequent visitors who live in close proximity to a ravine generally express positive sentiments to the site and may even reference their own attachment to it that has built over time through the repeated creation of positive memories. These are similar results to other studies that find that proximity and visitation frequency strongly influence how many benefits visitors identify they gain from park visitation (Giles Corti et al., 2005; Larson et al., 2016 Lafortezza et al., 2009). However, results here also found that respondents who did not live next to a given study site expressed positive attitude towards the site, and several of these participants indicated that they would be very interested in participating in consultation and decision-making processes. There were also instances where someone had lived close to a study site previously, and now travelled a far distance to continue accessing the ravine.

Results presented here indicated that non-residents also have an interest in providing input to ravine planning, which challenges the typical consultation strategy that exclusively targets neighbouring residents. Valuable insights could be provided by past residents who are still invested in the ravine, and regular visitors who do not live adjacent to it. This situation applied both to popular destination sites, like Etienne Brulee, and to smaller local ravine parks, such as Williamson Park Ravine.

5.3 Study Strengths and Limitations

Strengths of the study include the depth of information that was collected about each study site. The open-ended questions in particular provided rich qualitative data that allowed for direct investigation of the cause of respondent's attitudes and perceptions. Frequent visitors were able to provide detailed information about ongoing management activities within the site they were surveyed in. Several respondents had been visiting a site for decades, meaning that they

were highly knowledgeable of the site and the changes that had taken place within it over the years.

A strength of the study is that perspectives were collected from a range of visitors. Both neighbourhood residents and non-residents participated in the study, as did frequent and infrequent visitors. Additionally, a relatively equal percentage of male and female respondents participated, as did a range of age classes over 18 years of age. This allows for a breadth of opinions, some with a wealth of information of the ravine, and others with valuable first-impression information. For the purpose of interpreting the results, having a large share of residents who frequent the site lends itself to an opportunity for accessing specialized local knowledge. First-impression perspectives are also of value to identify strengths and weaknesses of a site without bias of past experiences within that site.

Another strength of this research is that it is the first to explore and draw comparisons between visitor perspectives across multiple ravines in Toronto. In addition to this, specific sites were chosen because they were situated in a highly urban environment, they were spread across the City of Toronto, and because they contain differing features and infrastructure within them. Perceptions of these features can be used to inform future management activities in these sites and, with caution, the results may be extrapolated to inform planning or management at other ravine sites.

There are several limitations brought about by the study design and protocol. One limitation of this study is that only individuals encountered within the site were invited to participate in the survey, no participants off-site were invited to participate. The fact that participants were recruited within the site itself indicates that they had already assessed the site as a place they would want to visit. This means that there is a potentially positive bias in the

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results as individuals who do not visit ravines may perceive them more negatively than those who do.

One limitation to the recruitment process was that certain types of users would tend to decline the invitation to participate more so than others; in particular, parents, cyclists, and non-native English speakers. Oftentimes, parents with young children declined to participate which results in a unique visitor perspective largely being absent in the survey responses. The same was true for cyclists, who were often biking by too quickly to be invited to participate. A few cyclists who were sitting down were approached, but compared to the number of cyclists passing the researcher on the trail, these individuals represent a very small sample. There were also language barriers in some cases, preventing that group of visitors from participating. This was most noticeably encountered in Etienne Brulee Park where ethnically diverse family groups were watching the annual salmon migration.

A youth-focus or perspective was not a part of this study. Due to ethical considerations that arise when studying youth, people under the age of 18 were not approached or invited to participate. When the researcher was unsure about an individual's age, the researcher erred on the side of caution and did not approach them to participate. Though there were practical reasons for excluding youth from the study, it results in the loss of the youth perspective in the presented results.

Another limitation of the study was brought about by the in-person nature of the design. Reliable data on sensitive topics such as income and race or ethnicity were not collected but would have added to the analysis. Participants were invited to fill out the demographic section of the survey themselves, but most declined to do so and preferred to skip the household income question of the survey.

5.4 Recommendations for Further Study

There are opportunities for future research. An investigation into the role of income and other demographic factors on ravine visitation could add to our understanding of equity considerations that may be important for future park improvement efforts. The Ravine Strategy reflects interest in integrating low-income area prioritization into its implementation plan; however, information from current low-income visitors or non-visitors is needed to inform future action. Additionally, the Strategy has yet to specify how considerations of income will guide or influence future efforts. There is also an absence in Toronto's parks planning documentation of perspectives from individuals who currently choose not to visit ravines and their reasons for doing so. Results identified a lack of participants from the Thorncliffe neighbourhood, which could be for various reasons. The literature provides several reasons for avoidance of green space including cultural values, fear of crime or delinquency, lack of leisure time, and transportation limitations, among other barriers (Kabisch& Haas, 2014; Gobster, 2002; Scott & Munson,1994; Sreetheran & van den Bosch, 2014). Understanding what would be required to attract more visitors to sites could be valuable to future management efforts, particularly for sites that are currently under-used.

Results from this study indicate that while ravine visitors are willing to participate in ongoing naturalization and conservation efforts, many of them have never been a part of ravine consultation or engagement work. Results also identified that not all of the study sites had organized citizen-led advocacy groups, potentially indicating uneven citizen engagement. Further study on the feasibility of citizen-led or co-operative action and what would provide the best outcomes would be compatible with the Strategy's fourth guiding principle, partner, and would be beneficial for the development of the Strategy's implementation plan. A recent

Toronto-based study (Kabigting, 2018) also identified opportunities for citizen-led action, and also recommended further study on identifying conservation work that could easily be done by citizens in ravines versus conservation work that requires professional expertise and training.

The following are specific management recommendations based on the results of this research. These recommendations were developed with the future of the implementation plan for Toronto's Ravine Strategy in mind. Each of the recommendations is connected to at least one guiding principle of the Strategy. They therefore share and build upon the goals of the Strategy itself. Separate recommendations have been formulated for management and for process of consultation work.

5.5 Recommendations for Ravine Management

1) Ensure that relevant information is readily available for the Public and that the conservation and improvement goals of any work are clear to the average visitor. With respect to the first guiding principle of the Strategy – protect – the research results indicate wide support for naturalization and conservation efforts. The majority of invested park users, with time and clear and accessible information are willing and likely to support improvement efforts, even if they experience short-term losses (e.g., inconvenience from a construction site).

2) Recognize that priorities of the Strategy may conflict with one another, and understand that current visitors recognize these conflicts themselves. This conflict is especially true for the guiding principle that seeks to improve ease of visitation to the ravines and the first principle that seeks to protect them. Visitors express anxieties about how more visitors entering the site could negatively impact ravine ecosystems. Transparency about potential tradeoffs, and acknowledgement of the valid concerns visitors have, may help to legitimize management decisions.

3) Take clear and visible positions on ongoing issues such as dogs off-leash, and invest in making the official position of the City of Toronto clear to ravine visitors. Many dog-walkers perceive that ravines are acceptable sites to keep their dogs off-leash because they are less populated compared to other urban parks. Other dog walkers or visitors are in disagreement and express that dogs should be on-leash for conservation purposes and for consideration of other visitors. Public education about rules regarding dogs in ravines may help to clarify the rationale behind particular rules and may inform dog owners who are unaware of these rules. Actively engaging visitors on-site in an approachable manner, rather than relying solely on signage, may result in positive change.

4) Avoid any assumption that all stakeholders want the same kind of infrastructure in their ravines. Consult and develop goals with each community on a site-level basis. For instance, Williamson Park Ravine remains undeveloped with very little infrastructure within the ravine itself. Yet, many respondents indicated that they were strongly opposed to facilities entering the site. The one exception is that respondents at every site indicated that current garbage facilities are inadequate at sites, and that more facilities for waste collection should be added to reduce litter in ravines. The exact number that should be added and the kind of garbage facility would require further consideration. Aside from the standard garbage facilities, there are several technologies available, such as Smart Garbage Cans that contain compressing functions within them and sensors to detect when emptying is required. These kinds of bins have been used in several American cities and have been noted as improving the efficiency of waste collection overall.

5.6 Recommendations for the Process of Consultation

1) Go beyond the targeting of neighbourhood residents for consultation input to acquire broader

perspectives. Survey results indicate that while residents are likely to feel strongly about

planning work that is in close proximity to them, visitors who frequent the site but do not live

adjacent to it also offer a unique and valuable perspective to ravine management.

2) Review and consider updating current public outreach methods. The research findings show

that users are largely ambivalent and skeptical about the ravine planning process. Further

improvements on how ravine planning and the legitimacy of engagement efforts are perceived

will benefit implementation of the Strategy. Accessing frequent and knowledgeable stakeholders

by visiting the ravines themselves and engaging with visitors can facilitate detailed suggestions

and recommendations. Very few of the respondents indicated that they had been provided a

previous opportunity to participate in any consultation compared to the number of respondents

who indicated a willingness to do so. Recruiting participants for consultation work on-site in

ravines while they are already visiting could be an effective way to receive feedback from

current visitors. Additionally, hosting public meetings in the ravines themselves would be

another way to engage nearby residents and could potentially attract passersby as well.

3) Leverage informational resources that visitors are already identifying as useful to them such as

the city-wide information line 311 and City Councilors. A lack of information and experience in

consultation was identified by respondents as a barrier to their ease of accessing City Staff to

report observed concerns or general comments. At the same time, more experienced respondents

identified existing resources that they use to enable them to access planners and decision-makers.

While the 311 information line cannot address inexperience in public engagement, City

Councilors might be able to encourage individuals within their wards to become engaged in

green space planning in their neighbourhood, and could identify resources or groups for further involvement if residents are interested. Additionally, individuals who are currently actively involved, such as members of a Friends of group could be partnered with less experienced individuals who attend a public meeting. Another means of engaging inexperienced but willing people is to visit ravines as a Friends of event and approach and invite passersby, to join in on stewardship work such as tree planting. Recruited passersby could also be invited to join the group and could be provided with contact information and the date of the next meeting.

4) Prioritize making the ravine consultation process more inclusive by leveraging information, such as the Toronto Strong Neighbourhoods 2020 report to identify areas with reported lower levels of civic engagement. Identifying areas for improvement and acting to improve the inclusion of residents in consultation efforts will be essential to equitable ravine planning. In neighbourhoods such as Thorncliffe that are characterized by multiculturalism and recent immigration, there are opportunities for increased engagement supported by partnerships with settlement agencies or community centers who can acquaint new residents to neighbouring ravines by hosting events within these green spaces.

5.7 Conclusion

This research sought to investigate visitor perceptions of six of Toronto's ravine parks. This interest was brought about by the observation that ravines vary dramatically in their features and management across the City. This is important because ravines are a significant landscape in the City of Toronto, making up 17% of the total land area. This was the first study that engaged visitors in six ravine parks and compared their responses to management opportunities and challenges. Visitor perspectives were the primary interest of this research as there has been minimal study on whether or not visitors are in agreement with ongoing management work. It is

the view of this research that public input in the case of ravine management is especially important because it involves decision-making of an important public amenity, urban green space. Overall themes were of interest, as were site-level themes. A survey tool, a park audit tool, and photographs were used and results were integrated together to provide a more complete picture of ravine characteristics and management issues. The results of the survey highlight that people who currently visit ravines feel broadly positively about them when it comes to their maintenance and management, the safety of these sites, and the features and facilities within them. Results also indicate that the most unattractive features and conditions in ravines were a lack of way finding and signage, lack of garbage facilities, prevalence of litter, and poor water quality. The survey data also highlight that perceptions of the parks planning process are varied, with almost equal proportions of participants expressing cynicism, uncertainty, and optimism. This study offers new insight into the perceptions of ongoing and past management work and perceptions of the public engagement process. This study was underpinned by the belief that visitor perspectives and their insights into the strengths and weaknesses of these public green spaces are important. Ensuring that stakeholders are not disconnected from, or in critical disagreement about, how an environmental resource is managed, fosters the required public support necessary for conservation efforts to reach full potential.

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Appendix A - Copy of the Survey Tool

Collecting public opinion of Ravine Parks in the City of Toronto

This survey will ask you about how you use your local Ravine Park, and it will ask for your opinions on how it is managed. Please fill in the blank lines with your answers. For questions that give you a list of options, mark the answer that most closely matches with your opinion or experience. You may skip any question that you prefer not to answer. Thank you for your participation!

1. Why do you usually visit this ravine? What activities do you do here?

_____

_____

2. How often do you visit this ravine?

☐ Rarely (Once or twice a season)
☐ Sometimes (usually every month, but not every week)
☐ Often (every week or more)

3. What days of the week do you usually visit, and what time of day?

_____

_____

4. How much do you agree or disagree with this statement: This ravine is convenient for me to visit.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

4b. What makes it convenient or inconvenient for you?

_____

_____

5. Do you live in this neighbourhood?

☐ Yes   ☐No

6. How do you travel to the ravine (car, bike, walk, etc.) and approximately how long does it take you to arrive (in minutes)?

_____

_____

7a. How much do you agree or disagree with this statement: This ravine is very well maintained.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

7b. What is it about the ravine that is poorly or well maintained (trails, stairs, garbage, educational signs)?

_____

_____

8. What kinds of activities do you see other people doing in this ravine?

_____

_____

9a. How much do you agree or disagree with this statement: This ravine is an attractive public space.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

9b. What features of the park are or are not attractive?
_____

_____

10a. How much do you agree or disagree with this statement: This ravine is a safe public space.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

10b. What is it about the ravine that makes you feel safe or unsafe?
_____

_____

11a. How much do you agree or disagree with this statement: I prefer this ravine over other ravines or public parks.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

11b. Why do you prefer this ravine, or what features do other ravines or public parks have that you prefer?

_____

_____

12. How much do you agree or disagree with this statement: I would like to share my opinions with City Planning Staff on Toronto's ravines and how they should be planned for the future.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

13a. How much do you agree or disagree with this statement: It is easy for me to share my opinions with City Planning Staff on how this ravine should be managed and planned for the future.

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
☐	☐	☐	☐	☐

14b. Why do you think you can or cannot share your opinion? (bad/good past experience? Unsure of whom to contact?)

_____

_____

15a. Have you ever been asked for your opinion (at a public meeting, on an online survey, or other questionnaires, etc.) on the management of this ravine?

☐Yes   ☐No

15b. If yes, what organization asked for your opinion, and did you provide your opinion?
_____

_____

16. What is your gender?

☐ Male   ☐ Female   ☐ Other (Please specify)_____

17. What is your approximate age?

☐ 18-29 years
☐ 30-39 years
☐ 40-49 years
☐ 50-59 years
☐ 60-69 years
☐ 70-79 years
☐ 80+ years

18. What is your approximate **after-tax household** income?

☐ $20,000 and under
☐ $20,000 – $39,999
☐ $40,000 – $59,999
☐ $60,000 – $79,999
☐ $80,000 – $99,999
☐ $100,000+

Thank you for participating in this survey, your time is greatly appreciated!

Appendix B - Copy of the Audit Tool

COMMUNITY PARK AUDIT TOOL

Instructions

Before you begin, try to locate a map of the park. Next, review the CPAT training guide and audit tool. It is important to make sure each question and response is clear when you are marking your answer. Then, go to the park and fill out this audit tool. The tool (6 pages) is divided into four sections that focus on different parts of the park. Further instructions are at the top of each section.

Tips for Using the Community Park Audit Tool (CPAT)

- Drive, bike, or walk around the park to get a feel for what's in the park and the neighborhood around the park.

- Questions on the CPAT are grouped in sections in the order that you might come across them in a park. However, you may need to switch between sections or pages as you complete the park audit. Therefore, it is important to look through the tool before you begin.

- When you are finished, go back and make sure you have completed all the sections and questions.

- There is space at the end of each section where you can write down comments as you complete your audit. The margins or back of the page can be used to take notes, but make sure to transfer your comments into the answer spaces.

- If you see anything that requires immediate attention, contact the local parks department.

Section 1: Park Information

Park Name: _____ **Observer Name or ID:** _____

Park Address/Location: _____

Were you able to locate a map for this park? ❏ No ❏ Yes

Was the park easy to find onsite? ❏ No ❏ Somewhat ❏ Yes

Date (m/d/yr): ___ / ___ / _____

Temperature: ___ °F **Weather:** ❏ Clear ❏ Partly Cloudy ❏ Rain/Snow

Start Time: _____ am or pm (circle) **End Time:** _____ am or pm (circle) **Length of visit:** _____ min

Comments on Park Information:

Section 2: Access and Surrounding Neighborhood

This section asks about accessing the park and about the neighborhood surrounding the park. Several questions include follow-up responses if you answered yes. There are spaces for comments at the end of the section. **When thinking about the surrounding neighborhood, consider all areas that you can see from inside of the park.**

When rating the access and surrounding neighborhood, please use the following definition:
- **Useable**: everything necessary for use is present and nothing prevents use (e.g., sidewalks are passable)

1. Can the park be **accessed for use**? (e.g., not locked/fenced, available for activity, etc.) ❑ No   ❑ Yes

2. Are there **signs** that state the following (could be same sign)? *(check all that are present)* ❑ None present
   ❑ Park name   ❑ Park hours   ❑ Park contact information   ❑ Park/facility rental information
   ❑ Park rules   ❑ Park map   ❑ Rental equipment information   ❑ Event/program information

3. How many **points of entry** does the park have? ❑ More than 5 (or park boundary is open) ❑ 2-5 ❑ Only 1

4. Is there a **public transit stop** within sight of the park? ❑ No   ❑ Yes

5. What types of **parking** are available for the park? *(check all that are present)*
   ❑ None   ❑ Parking Lot   ❑ On street parking   ❑ Bike rack(s)

6. Are there **sidewalks** on *any* roads bordering the park? (could be on opposite side of road) ❑ No   ❑ Yes
   If yes … Are they useable? ❑ All or most are useable   ❑ About half   ❑ None or few useable
   If yes … Are there **curb cuts and/or ramps** on *any* sidewalks bordering or entering the park? ❑ No ❑ Yes

7. Is there an external **trail or path** connected to the park? ❑ No   ❑ Yes
   If yes … Is it useable? ❑ No   ❑ Yes

8. Are there **bike routes** on *any* roads bordering the park? *(check all that are present)*
   ❑ None   ❑ Marked bike lane   ❑ Bike route sign   ❑ Share the road signs/markers

9. Are there nearby **traffic signals** on *any* roads bordering the park? (e.g., crosswalk, stop light/sign) ❑ No ❑ Yes

10. What are the main **land use(s) around the park**? *(check all that apply)*   ❑ None present
    ❑ Residential ❑ Commercial ❑ Institutional (e.g., school) ❑ Industrial (e.g., warehouse) ❑ Natural

11. Which of the following **safety or appearance concerns** are present in the **neighborhood surrounding the park**?
    (check all that are present in the surrounding neighborhood within sight on any side of the park)
    ❑ Poor lighting (e.g., low or no lighting on surrounding neighborhood streets)
    ❑ Graffiti (e.g., markings or paintings that reduce the visual quality of the area)
    ❑ Vandalism (e.g., damaged signs, vehicles, etc.)
    ❑ Excessive litter (e.g., noticeable amounts of trash, broken glass, etc.)
    ❑ Heavy traffic (e.g., steady flow of vehicles)
    ❑ Excessive noise (e.g., noticeable sounds that are unpleasant or annoying)
    ❑ Vacant or unfavorable buildings (e.g., abandoned houses, liquor store)
    ❑ Poorly maintained properties (e.g., overgrown grass, broken windows)
    ❑ Lack of eyes on the street (e.g., absence of people, no houses or store fronts)
    ❑ Evidence of threatening persons or behaviors (e.g., gangs, alcohol/drug use)
    ❑ Other _____
    ❑ None present

Comments on Access or Surrounding Neighborhood Issues:

Section 3: Park Activity Areas

This section asks about the activity areas in the park. For each activity area type:

1. **First, mark the number (#) of areas that are present in the park** (if none, write "0").
2. Then, respond to questions about **up to three** of those activity areas. If there are more than three areas for a specific activity area type, **rate the first three you come across during the audit**. If there were no activity areas of that type present in the park, move on to the next type.
3. Finally, use the space provided to note any additional comments about each type of activity area.

When rating the activity areas, please use the following definitions:
- **Useable**: everything necessary for use is present (excluding portable equipment - rackets, balls, etc.) and nothing prevents use (e.g., are there nets up for tennis courts, goals for sport fields, are trails passable, etc.)
- **Good condition**: looks clean and maintained (e.g., minimal rust, graffiti, broken parts; even surface; etc.)

12. Activity Areas	# of Areas	Area 1	Area 2	Area 3
a. Playground	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Distinct areas for different age groups		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Colorful equipment (i.e., 3+ colors)		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Shade cover for some (25%+) of the area		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Benches in/surrounding area		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Fence around area (i.e., half or more)		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Separation or distance from road		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
b. Sport Field (football/soccer)	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
c. Baseball Field	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
d. Swimming Pool	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
e. Splash Pad	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
f. Basketball Court	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				
g. Tennis Court	(# :_____)			
Useable		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Good condition		❏ No ❏ Yes	❏ No ❏ Yes	❏ No ❏ Yes
Comments:				

Section 4: Park Quality and Safety

This section asks about factors related to comfort and safety when using the park. Several questions include follow-up responses if you answered yes. There are spaces for comments at the end of the section.

When rating the quality and safety features of the park, please use the following definitions:
- **Useable**: everything necessary for use is present and nothing prevents use (e.g., can get into restrooms, drinking fountains work, etc.)
- **Good condition**: looks clean and maintained (e.g., minimal rust, graffiti, broken parts; etc.)

13. Are there public **restroom(s) or portable toilet(s)** at the park? ❑ No ❑ Yes
    If yes …
    Are the restroom(s) useable? ❑ All or most are useable ❑ About half ❑ None or few are useable
    Are they in good condition? ❑ All or most in good condition ❑ About half ❑ None or few in good condition
    Is there a family restroom? ❑ No ❑ Yes
    Is there a baby change station in any restroom? ❑ No ❑ Yes

14. Are there **drinking fountain(s)** at the park? ❑ No ❑ Yes
    If yes …
    How many different fountains are there? (i.e., units, not spouts) _____
    Are the fountains useable? ❑ All or most are useable ❑ About half ❑ None or few are useable
    Are they in good condition? ❑ All or most in good condition ❑ About half ❑ None or few in good condition
    Are they near activity areas? ❑ All or most are near ❑ About half ❑ None or few are near

15. Are there **bench(es)** to sit on in the park? ❑ No ❑ Yes
    If yes …
    Are the benches useable? ❑ All or most are useable ❑ About half ❑ None or few are useable
    Are they in good condition? ❑ All or most in good condition ❑ About half ❑ None or few in good condition

16. Are there **picnic table(s)** in the park? ❑ No ❑ Yes
    If yes …
    Are the tables useable? ❑ All or most are useable ❑ About half ❑ None or few are useable
    Are they in good condition? ❑ All or most in good condition ❑ About half ❑ None or few in good condition
    Is there a picnic shelter in the park? ❑ No ❑ Yes
    Is there a grill or fire pit in the park? ❑ No ❑ Yes

17. Are there **trash cans** in the park? ❑ No ❑ Yes
    If yes …
    Are they overflowing with trash? ❑ All or most overflowing ❑ About half ❑ None or few overflowing
    Are they near activity areas? ❑ All or most are near ❑ About half ❑ None or few are near
    Are recycling containers provided? ❑ No ❑ Yes

18. Is there **food/vending machines** available in the park? ❑ No ❑ Yes
    If yes …
    Are fruits and/or vegetables available in the park? ❑ No ❑ Yes

19. If the sun was directly overhead, how much of the park would be **shaded**? ❑ <25% ❑ 25-75% ❑ >75%

20. Are there **rules posted about animals** in the park? (e.g., dogs must be leashed)? ❑ No ❑ Yes

21. Is there a place to get **dog waste pick up bags** in the park? ❑ No ❑ Yes
    If yes … Are bags available at any of the locations? ❑ No ❑ Yes

22. Are there **lights** in the park? (not including neighborhood street lights) ❏ No   ❏ Yes
    If yes ...
        How much of the park could be lit? ❏ <25%   ❏ 25-75%   ❏ >75%
        Are the activity areas lit? ❏ All or most are lit   ❏ About half   ❏ None or few are lit

23. Is the **park monitored**? (e.g., volunteer or paid staff, patrolled by police, cameras, etc.) ❏ Unsure   ❏ Yes

24. Are there **any emergency devices** in the park? (e.g., phone, button, emergency directions) ❏ No   ❏ Yes

25. From the center of the park, how **visible is the surrounding neighborhood**? ❏ Fully   ❏ Partially   ❏ Not at all

26. Are there **road(s)** of any type through the park? ❏ No   ❏ Yes
    If yes ... Are there traffic control mechanisms on the roads within the park? (e.g., crosswalk, stop light or
        sign, brick road, speed bumps, roundabouts) ❏ No   ❏ Yes

27. Which of the following **park quality or safety concerns** are present **in the park**? *(check all that are present)*
    ❏ Graffiti (e.g., markings or paintings that reduce the visual quality of the area)
    ❏ Vandalism (e.g., damaged signs, buildings, equipment, etc.)
    ❏ Excessive litter (e.g., noticeable amounts of trash, broken glass, etc.)
    ❏ Excessive animal waste (e.g., noticeable amounts of dog waste)
    ❏ Excessive noise (e.g., noticeable sounds that are unpleasant or annoying)
    ❏ Poor maintenance (e.g., overgrown grass/weeds/bushes or lack of grass in green areas)
    ❏ Evidence of threatening persons or behaviors (e.g., gangs, alcohol/drug use)
    ❏ Dangerous spots in the park (e.g., abandoned building, pit/hole)
    ❏ Other _____
    ❏ None present

28. What **aesthetic (i.e., beautiful/pleasing) features** are present **in the park**? *(check all that are present)*
    ❏ Evidence of landscaping (e.g., flower beds, pruned bushes)
    ❏ Artistic feature (e.g., statue, sculpture, gazebo, fountain)
    ❏ Historical or educational feature (e.g., monument, nature display, educational signs, etc.)
    ❏ Wooded area (e.g., thick woods or dense trees)
    ❏ Trees throughout the park (e.g., scattered trees)
    ❏ Water feature (e.g., lake, stream, pond)
    ❏ Meadow (e.g., natural, tall grassy area)
    ❏ Other _____
    ❏ None present

Comments on Park Quality and Safety Issues:

Before you are finished, please make you have answered all questions in the tool.

About the Community Park Audit Tool
The Community Park Audit Tool (CPAT) was developed in 2010 in Kansas City, Missouri by Andrew Kaczynski (Kansas State University) and Sonja Wilhelm Stanis (University of Missouri) in collaboration with the City of Kansas City Missouri Parks and Recreation Department. Development of the CPAT was supported by a grant from Active Living Research, a national program of the Robert Wood Johnson Foundation.