

**Exploring the Effect of Changing Public Transit on Users' Behaviour  
in Saint George's Square**

**by**

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**A Thesis  
presented to  
The University of Guelph**

**In partial fulfilment of requirements  
for the degree of  
Master of Landscape Architecture  
in  
Landscape Architecture**

**Guelph, Ontario, Canada**

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## **Abstract**

### **EXPLORING THE EFFECT OF CHANGING PUBLIC TRANSIT ON USERS' BEHAVIOUR IN SAINT GEORGE'S SQUARE**

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This study evaluated the influence of changes in public transit routes and hubs on the use and behaviour of people in and adjacent to a public square in a medium-sized southern Ontario city. Pre and post transit change data were obtained using behaviour observation and user interviews over a two-week period. Qualitative data was collected through investigator observations, intercept interviews, and field notes. The removal of the transit hub from the square resulted in 50 percent fewer people post change, although the duration of time spent by users in the square increased. There was also a shift in the type of user. The results indicate that transit hub changes can influence the number and types of users in a public square as well as the duration of use. The implications are that public transit design is an important factor in the planning and design of downtown civic space.

Dedicated to

Zs

## Acknowledgements

I would like to thank my advisor Lise Burcher for motivating me to become excited about the importance of well-designed civic space. Her longstanding involvement with the City of Guelph and strong staff relationships were tremendously helpful to me in gaining access to the people I needed to undertake the work on this project. I like to thank my co-supervisor Nathan H Perkins for introducing me to the broad and tremendously exciting area of behavioural research. Nate's assistance in helping me to design appropriate and effective research methods was invaluable. He provided tremendous direction in the literature review and helped me to strive to create a well-structured and elegant thesis.

My special thanks to my dear and beautiful wife Zahra Abedi. As always your patience, encouragement and inspiration made this thesis possible. Your love and companionship lifts my spirits every day preparing me for both the challenges and delightful surprises of discovery throughout my thesis journey.

I would also like to thank my family - to my mother Rabeh Nezami Savoujbolaghi who created a warm and loving home to grow up in and I continue to feel her love and support in every endeavor I undertake – to my Outstanding father Ali Rostami Bookani who lovingly encouraged me to be the best that I can in the world, and I am still working on that! -to my sister Samira Rostami Bookani for motivating me. And to my dear friends Reza Afzali , Arash Talebi, Nima Zarinbakhsh and Jordan Vander Klok, for listening and encouraging me the whole way through.

Thank you!

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# CHAPTER I

## Introduction

### 1.1 Background

Civic spaces can play a significant role in the quality of urban life. Well-designed spaces can foster and enhance social interaction, physical activity, civic engagement and cultural communication.

An active and lively downtown is a key indicator of the success of cities both socially and economically from the point of view of both residents and visitors (Florida, 2009). The development of vibrant civic spaces depends upon making appropriate changes to them as a response to the changes that naturally occur as a city evolves (City of Saskatoon, 2011).

Urban squares are one type of civic space in which layers of complex human interactions occur both in time and in space. Although squares and their users have been extensively studied there is still much to learn about how ephemeral events influence interaction among and between people. One such ephemeral event, public transportation and associated transportation nodes or hubs (e.g., bus routes and stops), is likely to influence both the type and quality of interaction in public spaces.

While the physical elements of urban squares influence how and by whom they are used, it may be that factors not normally addressed by designers have as much influence on the use of a civic place as the actual design (Marcus & Francis, 1998).

One of the non-design factors addressed in this study is the role of public transit in ‘activating’ or conversely impinging upon the social interaction of users in the public space. In order to better understand the relationship between public transit and the influence it has on use patterns and the social interaction of people, it is important to understand how users’ motivations and behaviour are associated with public transit. This study examines urban square users and their behaviour in response to a major change in public transit and most importantly, changes in transit nodes or hubs.

The research was undertaken in the downtown of the City of Guelph, a city with a population of almost 125,000 people, located in the province of Ontario, Canada. Established in the mid 1800’s, Guelph is one of the first communities in Ontario that was systematically planned. Saint George’s Square forms one of two primary civic spaces that organize the spatial features of the original and distinctive radial plan for downtown Guelph.

Saint George’s Square is an attractive urban square with surrounding limestone structures throughout the commercial centre and adjacent residential neighbourhoods. Although Saint George’s Square has changed over time, it has historically served as a both public gathering place and a transportation hub from the beginning of the City of Guelph (Burcher, 2012).

## **1.2 Research Problem**

Because many cities rely on public transportation to bring people into the urban core, the effects of changes to routes and hubs may have significant and sometimes unexpected consequences, in large part because the relationship of transit and human use is complex. This study seeks to better understand the role and influence of a major public transit hub on the use of downtown space.

## **1.2 Research Question**

This research addresses the question; “Do changes in public transit, specifically public transit nodes, affect the behaviour of users in Saint George’s Square?”

## **1.3 Research Goal**

The goal of this research was to explore the possible influence of changes in public transit on the behaviour of Saint George’s Square users.

## **1.4 Research Objectives:**

To explore the research goal in greater detail, this study is divided into three main research objectives:

1. To understand the built form of Saint George’s Square by mapping the physical structure, layout, and use of Saint George’s Square.
2. To understand changes in the behaviour of Saint George’s Square users by documenting the number of users and types of use before and after a transit change.

3. To understand the attitudes of Saint George's Square users by collecting qualitative information on their experiences and attitudes using intercept interviews.

## **1.5 Thesis Organization**

This thesis is presented as a series of chapters that address the research goal. Chapter One presents a short introduction to the research goals and objectives and the rationale for attempting the study. Chapter Two, Literature Review presents a summary of the published literature on urban squares, a historical review of urban squares, and a brief history of Saint George's Square in Guelph, Ontario. Chapter Three, Methods presents the design of the research and explains the physical context of the research. Also the methods used for observing, mapping, and interviewing are described. Chapter Four, Results presents the data obtained from the various methods. The observation results and intercept interview data are presented. Chapter Five, Discussion, presents the implications of the results and discusses Saint George's Square's users' behaviour in the pre and post transit change period. Finally, Chapter Six, Conclusion presents the summary of the research, research critiques and additional propositions for future research.

## CHAPTER II

### Literature Review

#### 2.1 Overview

This chapter presents the literature regarding the history of civic squares and the changes that have taken place over time. This is followed by a review of the research in the last century or so about the role of civic squares, and a brief history of City of Guelph in Ontario, Canada.

#### 2.2 Downtown Cores and Public Life

With continuing changes of city's layout from one form to another over time, which accelerated substantially in the years following the beginning of the Industrial Revolution in the 1840's, it has become evident that responding to such changes and planning for further development is a crucial task for urban and environmental designers (French, 1978). Cities historically originated in and expanded around a downtown core area. An open space with surrounding buildings, a square, or a leftover space could be the original core of a city that then expanded outwards (Carr, Francis, Rivlin, & Stone, 1992). Core areas sustain various transitional, commercial, institutional, and residential uses. They have contributed to the revival of urban spaces by providing a unique range of amenities and services that are an important element in urban living (French, 1978).

Public users bring life to the public places of a downtown area during the day and night by participating in the activity of the city as they go about their daily tasks (Whyte, 1980). These

core areas are brought to life through their users and have a diverse mix of residential, office and retail densities, types and tenures, and a broad range of amenities-all of it centered on and connected by vibrant public places (Florida, 2009) .

### **2.3 Public Life and Public Places**

As a social phenomenon that is always a shared experience among fellow citizens, public life is made up of the connections and communications people have with others in public places such as conversations at the café, on the bus, waiting in line, or just saying hello on the street (City of Saskatoon, 2011). Public life can be considered one of the reasons that cities exist. In essence people want to interact in different ways with each other and public spaces such as streets, plazas, squares and parks contribute to the life of the city (Florida, 2009). So public life and public space have a mutual interaction and as public life evolves from one type to another over time, a new arrangement for public spaces becomes necessary. Additionally, the progression in public life can be accommodated and enhanced by the creation of new spaces (Carr *et al.*, 1992).

Public squares have a great influence on the city's image as a whole (Whyte, 1980). Public squares can be used to entice users and visitors to the area by providing a dynamic and pleasant environment. Also, downtown public squares can be utilized in different ways. While some people may just pass through, others may use it for recreation, shopping and for eating outside (Miles, Cook, & Roberts, 1978).

In improving the quality of public life it is important to make public squares pleasing and attractive, and also to design them so they can be utilized as a public space (Miles et al., 1978).

These public squares contain various physical and non-physical components that provide aesthetic and functional amenities for people who utilize them. Since one of the primary intentions of refining public squares is to improve the functionality of the urban space, it is important to understand the impacts that non-design factors such as public transit have on people's interaction with public squares.

Joardar and Neil (1978), Linday (1978) and Whyte (1980) have sought to create guidelines for designing public spaces. Physical features of plazas such as shape, size, aesthetics, solar exposure, the amount of seating, wind currents, sun and shade, and the aesthetics of building and plaza have been studied. Although these findings have improved our knowledge of design for public places, the broad guidelines when applied have not demonstrated much utility in predicting the behaviour of public place users (Chidister, 1986).

One reason for this phenomenon might be that non-design factors such as the user's personal experiences, attitudes, habits, the influence of others, and social norms affect the behaviour of public square users (Chidister, 1986). One of these non-design factors that are perhaps influential is public transit and the means by which people transfer between different locations of a city. People utilize public spaces in their daily lives; they move in and out of it in various times. Adjacency of public transit to a public square, or being located within it, may affect the behaviour of the users. This research seeks to explore this relationship in two different instances: first, when the public transit hub is located within the square and, second, after the transit hub is removed from the square.

## 2.4 Public Spaces in History

### 2.4.1 Ancient Times

The history of public squares might be seen as the history of the city itself. Although ancient Greece and Rome (circa 500 B.C) are considered to be the origin of contemporary public space, its history certainly can be traced back to the Mesopotamian cities of 2000 B.C. (Mumford, 1961).

Early developments of public spaces in Greek towns were modeled from the acropolis in Athena, that contained an agora or the secular market and meeting place (Mumford, 1961). Later the Roman forums and surrounding center of cities reflected a rigorous spatial order and grandeur beyond that of the Greeks (Mumford, 1961). The Greek agora was mainly used for formal and informal assembly, and also daily communications (Mumford, 1961). In the Roman forum the functionality of two types of Greek open spaces were combined and the layout of cities were centered on these forums (Mumford, 1961). In big cities, the forum shaped a public space incorporating enclosed, semi-closed, and open space for various purposes, including commerce, religious rituals, political meetings, and games (Mumford, 1961).

Between the fifth and tenth centuries AD, people left Europe's cities and dwelled in the countryside (Mumford, 1961). Market squares as a new type of public space can be tracked back in the history of Europe from the tenth century in which cities started to function as a center for production and trade (Mumford, 1961). Market squares were at one point a place where goods were exchanged outside the town wall in part because of the growth in commerce (Carr *et al.*, 1992).

The term 'plaza' is a Latin word that was used in medieval ages in Europe for large open spaces that carried air and light into smaller and congested urban areas (Miles et al., 1978).

The core element in the early development of cities in the Middle Ages was the cathedral and the market places which were located adjacent to them in the early stages. These spaces were later dispersed with the expansion of the cities, (Girouard, 1985) especially after mid-fifteenth century in which some cities created civic squares near to their municipal or governing centres (Mumford, 1961). These types of medieval public squares accommodated a wide range of activities, and special events, "from bullfights and tournaments to processions ... great religious feasts ... [and in] times of crisis the people gathered in the piazza in enormous numbers... victories were celebrated with bonfires on the piazza" (Girouard, 1985, p. 108).

In contrast to the more organic and naturally formed Middle-Ages public square, the Renaissance public squares and plazas were planned and designed mostly on a symmetrical pattern (Girouard, 1985). Some of these public spaces were embedded with civic and religious pride yet many were too large for the present-day cities and lacked in connections to its surrounding city (Carr *et al.*, 1992).

In the mid to late 1600s London, England saw some of the first designs for residential quarters around squares (Mumford, 1961). A result of both the great fire of 1666 and a booming speculative market, residential squares were semipublic in character and restricted public access (Carr *et al.*, 1992).

### 2.4.2 New Era

As Spain was discovering the New World it was also establishing new towns in North America (Carr *et al.*, 1992). In the American south these towns were centered on a main plaza used as a marketplace and for a variety of other purposes, including celebrations, and tournaments (Girouard, 1985). In these types of public spaces “the plaza was surrounded by an arcaded street containing the town’s major buildings such as the main church, town halls, and shops” (Carr *et al.*, 1992, p.57).

In New England, town designs were based on a central green or common that was used for different purposes, and “the church or the civic buildings were sited either on the common or directly adjacent to it” (Carr *et al.*, 1992, p.57). Some of the layouts of these cities were most likely influenced by the squares of London (Reps, 1965). Also a planned street grid with one or more squares was used in the design of new cities as is the case with the Philadelphia model and Savannah, Georgia (Carr *et al.*, 1992).

By the second half of the twentieth century suburban shopping malls had spread significantly beyond the urban core in North America. This development accompanied the spread of highways and suburbia in which “the shopping center consisting of two parallel rows of stores facing each other across an outdoor pedestrian area” (Carr *et al.*, 1992, p.71). Malls arose to dominate public life in suburbia with the arrival of enclosed shopping centers in late 1950s and malls became an important source of attraction “that could host a wide variety of informal eating areas, exhibitions, and special events throughout the year” (Carr *et al.*, 1992, p.72). The further

development of these public places varied in scale and often contained squares and courts with various design themes (Maitland, 1985).

Moving malls indoors was a trend that originated three decades ago in order to bring the controlled environment of the indoor mall to the downtown area (Carr *et al.*, 1992). “Although many of these malls are at street level and easily accessible from the sidewalk, the main action is clearly inside” (Carr *et al.*, 1992, p.74). They are like a mega structure that is separated from the street (Whyte, 1980). Some of these large complexes are just like a plain wall to the neighbourhood they are located in, and offer visitors the opportunity of visits downtown without understanding the city’s layout and context (Carr *et al.*, 1992). Whyte (1980) discussed the relation of such indoor spaces to their street as the main element to the success of their design because “visible indoor space draws in pedestrians, and the life of the street provides diversion from within” (Carr *et al.*, 1992, p.76).

The market place is another kind of public place that emerged in the 1960s as a new type of shopping mall in the cities. “These types of public space are characterized by an absence of department store anchors and an emphasis on upscale specialty stores. There are often a large proportion of eating and entertainment venues and a reuse of historic structures or emphasis on historical associations and themes” (Carr *et al.*, 1992, p.76).

Pedestrian malls emerged as a response to the reducing number of customers in downtown shopping centers due to expansion of suburban malls (Carr *et al.*, 1992). Authorities decided to rejuvenate these spaces via limiting traffic on main streets and making new attractive pedestrian

malls (Carr *et al.*, 1992). Public transit function was added to pedestrian malls due to the lack of activity in the early stages of pedestrian mall development. Whereas some cities have exchanged pedestrian malls with transit malls, some others have changed their downtown malls to integrate public transit (Carr *et al.*, 1992).

Conventionally, public squares that functioned as a “crossroad for human activity” were considered as plazas. In the modern era they can denote “shopping centers, building complexes, parks, squares, malls and building setbacks” (Miles et al., 1978, p.10). Public squares can be considered as a type of plaza with special functioning. They can be described as an open space that has been built for public uses that is connected and close to city walkways (Miles et al., 1978).

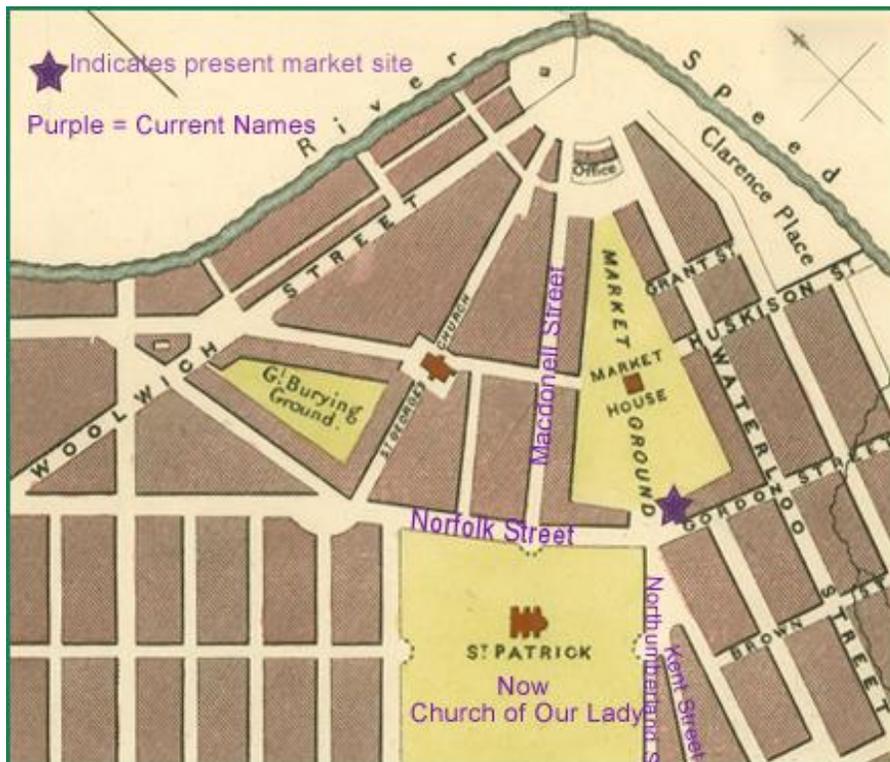
While new forms of public spaces like downtown pedestrian malls, corporate plazas, festival and market places have enjoyed a resurgence in recent decades, it is fairly easy to see that the ‘new’ urban square has a history at least a few millennia in the making. It is an indication of public life persistence and also of a multi-level society in which different spaces serve different social groups (Carr *et al.*, 1992).

## **2.5 History of Guelph and Saint George’s Square**

The City of Guelph was established in 1827 and has the distinction of being one of only two founding communities in Ontario that was comprehensively planned. Guelph was founded on St. George's Day, April 23rd, 1827 with the ceremonial felling of a large maple tree. Guelph is considered to be one of the first planned towns in Canada and was chosen as the headquarters of

a British development firm. The location was picked by the Company's Superintendent in Canada, a popular Scottish novelist named John Galt, who designed the town to attract settlers to it and to the surrounding countryside (Waterston, 1978).

Galt's plan was quite imaginative for the era and was based on a series of streets radiating from a focal point at the Speed River resembling a European city centre, complete with squares, broad main streets and narrow side streets, resulting in a variety of block sizes and shapes (Figure 2-1). Galt chose the name "Guelph" for the new town because it was one of the family names of the British royal family, and it had apparently never previously been used as a place name (Burrow, 1877).



**Figure 2- 1** Town of Guelph layout, 1827 (Guelph Museum, 1979X\_00\_483)

Despite Galt's grandiose plans, Guelph did not grow beyond village size until the Grand Trunk Railroad reached it from Toronto in 1856. In the next few decades, many of Guelph's prominent buildings were erected, a number of which were designed by Toronto-based architects. Most of these buildings were the product of a talented group of local architects, builders and stone carvers who effectively used Guelph's locally quarried, warm-hued limestone which today gives a visual unity to the older parts of the City (Jotham, 1991).

As a very attractive place with its limestone structures, Saint George's Square is located in the core area of the city. Although its function has changed overtime, it has historically been used as a public gathering place since the time of the original Guelph development (Burcher, 2012).

Around Saint George's Square, limestone block buildings gradually replaced wooden structures. The original Wellington Hotel was built around 1848, the ornate Post Office building was built on the square in 1876 and the original Bank of Commerce building was built in 1884. That same year a large fountain was put in an octagonal-shaped grassy plot in the center of the square (Figure 2-2) but later removed in 1922 (Jotham, 1991).



**Figure 2- 2** Saint George's Square, 1896 (Guelph Museum, 1974-40-1)

In its architectural glory, surrounded by imposing limestone buildings and with the fountain in the center, Saint George's Square was the scene of parades for occasions such as Old Home Week, Dominion Day, Guelph's Centennial and military parades during the two world wars. The electric street cars that crossed town had a central stop in the square, and around the fountain were many benches for those waiting (Figure 2-2).

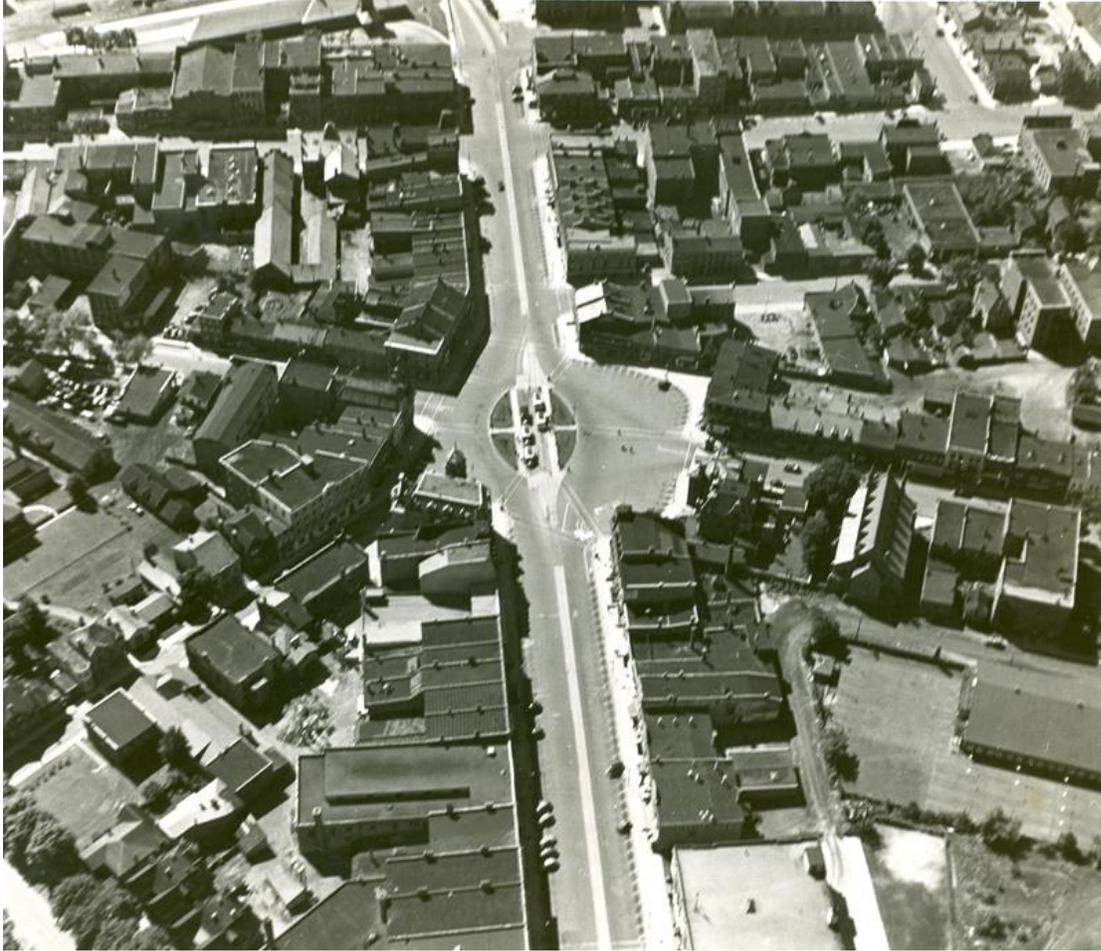
Gradually changes were made and some buildings were demolished to make way for larger more modern structures. Other downtown buildings were destroyed by fire, but early in 1924, demolition crews removed the last old stone building in the square (Waterston, 1978).

Figure 2-3 shows the imposing and regal façade of stone buildings and an electric trolley in the square.



**Figure 2-3** Saint George's Square, 1925 (Guelph Museum, 1977-33-27)

In the last half of the twentieth century a number of buildings facing the square were demolished and replaced with newer concrete structures. The 'new' architectural style of the buildings that detractors called 'concrete boxes' certainly had an influence of the look of the square. So too did the use of adjacent buildings. Lower Quebec Street became the present Eaton Center (a downtown enclosed shopping mall), and the central fountain was moved to the side to make way for through traffic (Figure 2-4).



**Figure 2- 4** Saint George's Square, 1945 (Guelph Museum, 1979-35-24)

In 1926 buses replaced the electric streetcars, and the bus stops moved from the centre of the square to the curb of Wyndham Street (Figure 2-5).



**Figure 2- 5** Saint George's Square, 1955 (Guelph Museum, 1967-1-19-5)

Through the 20<sup>th</sup> Century Saint George's Square was used as a transit hub and this, perhaps as much as the stone building facades, fountain and other urban elements, shaped how the square was viewed and used. In May 2012 the transit hub was moved from the square to a new location a few blocks south, creating for the first time in almost 100 years a transit-hub-free downtown square (Figures 3-4 to 3-8). It was not known at the time whether this change would result in a change of use or a change in square users' behaviour- hence the opportunity and need to study the change of users' behaviour in Saint George's Square pre and post transit hub change.

## **2.6 Summary**

In this chapter the importance of downtown cores and also civic spaces and related research was presented and discussed. Also, various types of public spaces over time were described and the

changing patterns of use in those spaces. A brief history of the City of Guelph was also presented, particularly that of Saint George's Square and the changes that have occurred over the last century.

## **CHAPTER III**

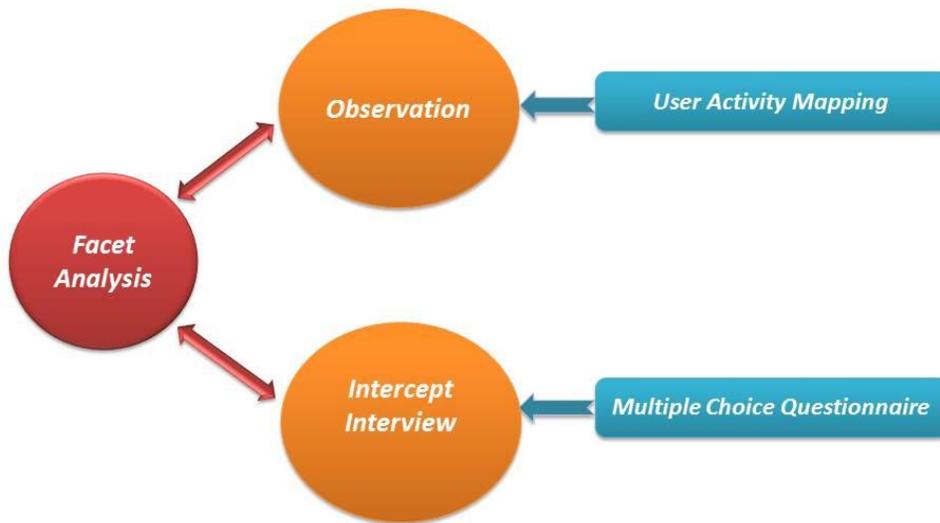
### **METHODS**

#### **3.1 Overview**

This chapter presents the methods utilized in this study. Site selection, observation techniques, data mapping, climate statistics and interview strategies are presented and discussed. The chapter concludes with a discussion of the type of data collected and the analyses that were performed based on the literature review in the previous chapter.

#### **3.2 Research Design**

Multiple approaches were used to collect data for this research study. It is broadly accepted that a variety of methods for gathering data increase the validity of a study (Zeisel, 1984). In this study, behaviour observation and mapping were complemented with interviews, field notes, and transect photography. An overview of the procedures used in this research is outlined in Figure 3-1, which shows techniques and approaches used to shape the methodology of this study and the relationship between them.



**Figure 3- 1** Analysis Diagram

### 3.3 Site Selection

Saint George’s Square in Guelph, Ontario, was selected for this study as it was undergoing changes in public transit in 2012. The bus terminal was moving from Saint George’s Square to another location and the location of the square presented ideal conditions for behavioural observation. Additionally, the perimeter of the square presents clearly defined edges, defined by the built form of bank buildings, coffee shops, and other businesses, further enhancing the conditions for observation.

Saint George’s Square is located in the heart of downtown Guelph (Figure 3-2. Guelph, Ontario). It is situated at the intersection of three city streets: Wyndham Street, Quebec Street and Douglas Street. It is bordered by the Canada Post and Scotia Bank buildings on the north, Canadian

Imperial Bank of Commerce building, Quebec Street Mall entrance and retail on the east, retail stores to the south and the Royal Bank of Canada and Bank of Montréal buildings on the west.

(Figure 3-3)

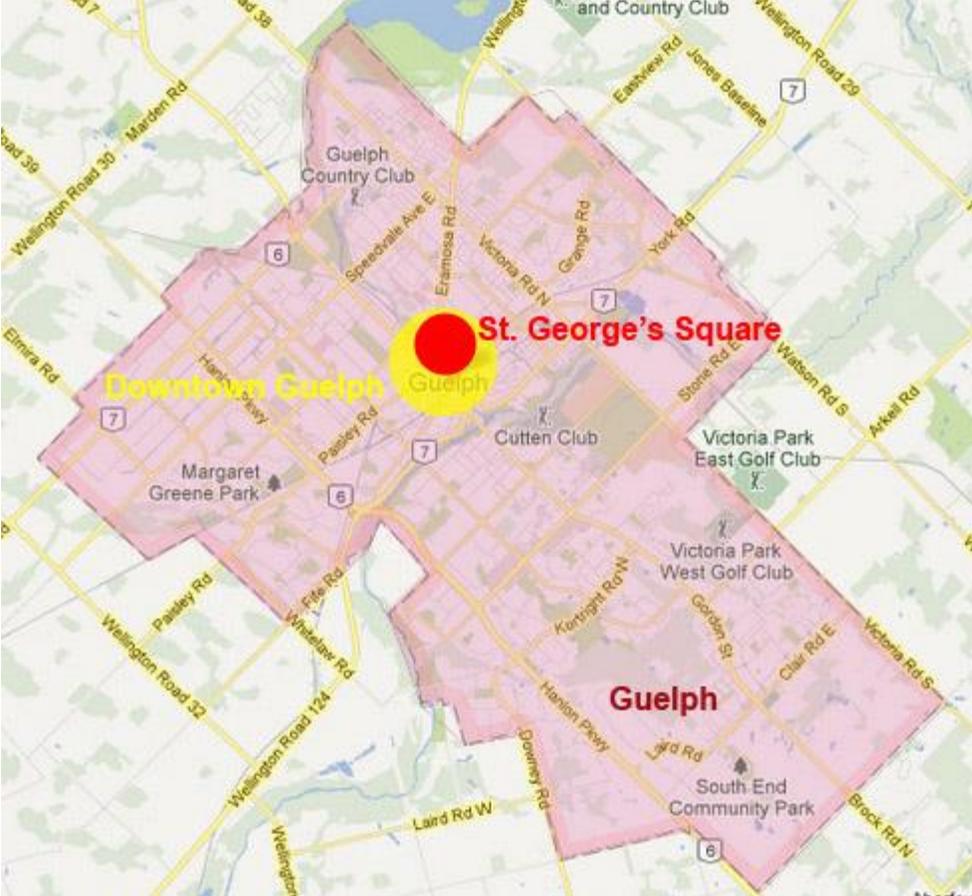
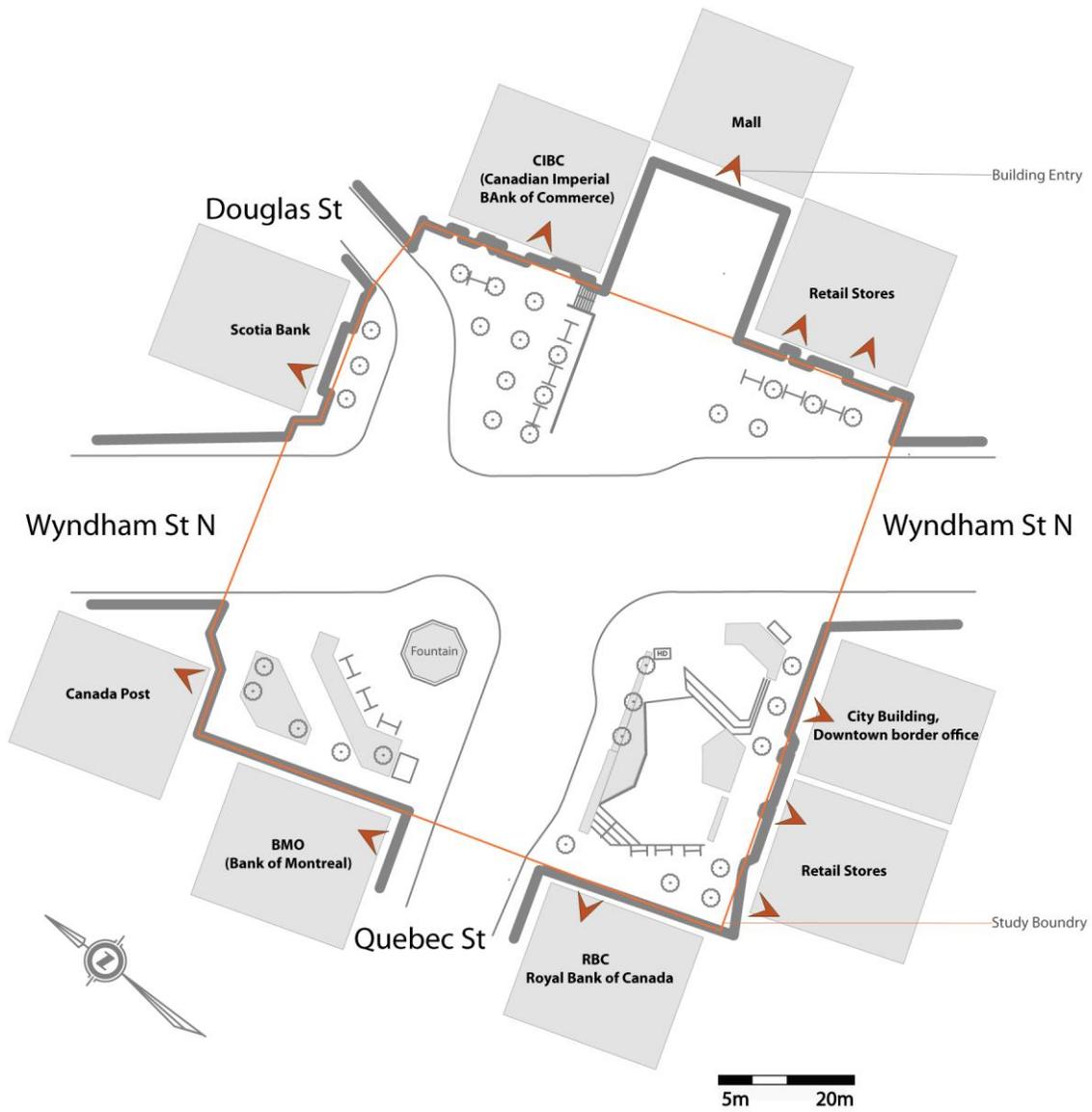


Figure 3- 2 Guelph, Ontario (Googlemap)

A base map of Saint George’s Square was obtained from the City of Guelph and modified by the researcher to define the study area (Figure 3-3).



**Figure 3- 3** Saint George's Square in Guelph, Ontario

Figures 3-4 to 3-8 show the existing physical layout of the Saint George's Square at the beginning of the study.



**Figure 3- 4** Saint George's Square - Looking north - May 7<sup>th</sup>, 2012 - 10:00 AM



**Figure 3- 5** Saint George's Square - Looking East - May 7<sup>th</sup>, 2012 – 10:50 AM



**Figure 3- 6** Saint George's Square - Looking northeast - June 9<sup>th</sup>, 2012 – 11:00 AM



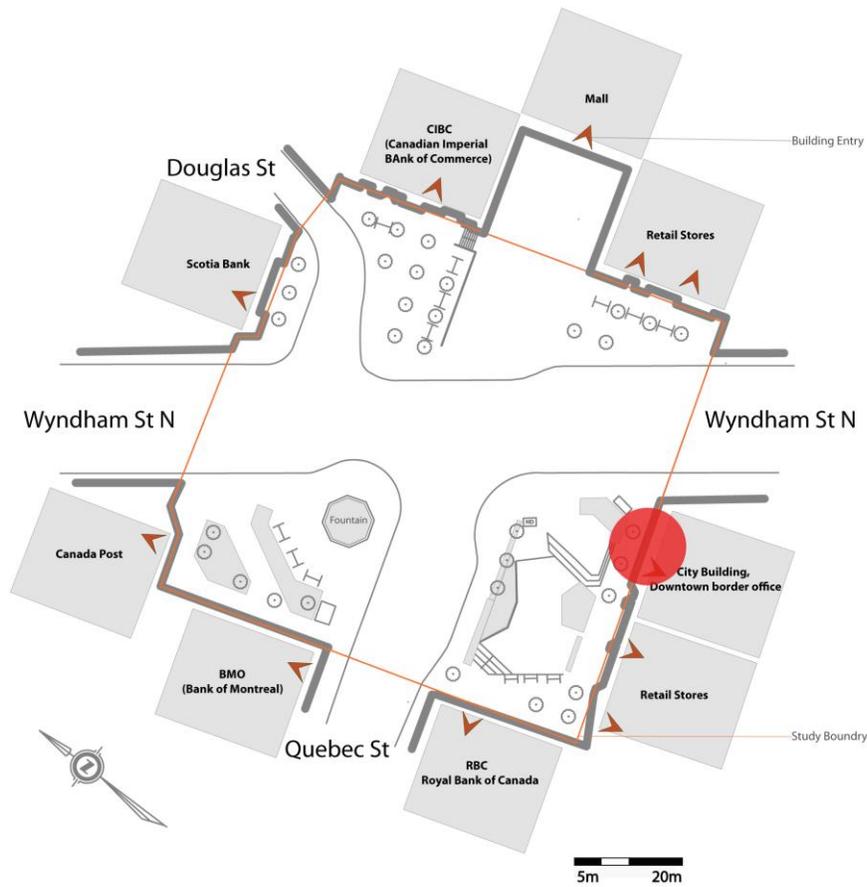
**Figure 3- 7** Saint George's Square - Looking south – southeast - June 9<sup>th</sup>, 2012 – 11:10 AM



**Figure 3- 8** Saint George's Square - Looking north – northwest - June 10<sup>th</sup>, 2012 – 1:00 PM

### **3.4 Data Collection**

Observations of Saint George's Square were conducted from a commercial building (Figure 3-9) that is adjacent to the square and which offered an unobstructed view of the square. The observation location also had the advantage of allowing the observer to be unnoticed and therefore not influencing the behaviour of those observed.



**Figure 3- 9** Commercial building location

### 3.4.1 Observation and Mapping

In collecting valid behavioural observation data, sampling periods are very important (Zeisel, 1984). As the goal of this study was to collect and map people’s behaviour both pre and post transit change, it was important to create a sampling scheme that reflected typical use of the square. To do this, an observation sampling timeline was created that would capture the range of behaviours that might vary widely over the course of a day and day of the week.

Observations were carried out in two phases. The first phase occurred before the public transportation hub was moved out of Saint George’s Square (pre-change period). And the second phase occurred shortly after the public transportation hub moved (post-change period).

Each day (i.e., Monday, Saturday, etc.) of observation was split into two sessions; the first session started at 6:00 am and ended at 4:00 pm (Table 3-1). The second session started in the next week at the same day from 4:00 pm and ended at 3:00 am (Table 3-1).

In this study, mapping refers to collection of the number, location and categorized behaviour (e.g., sitting, standing, walking, biking, people with strollers, and wheelchairs) of people who were using Saint George's Square at the time of research observation. A base map was used to record each user's location and activity.

Observations were made and recorded on fifteen-minute intervals. One map was made for every 15-minute period of observation. At each time of the observation, all users' locations and activity were recorded and mapped (Figure 3-3). At those times in which the number of users increased so highly that counting and locating them by eye became impossible, photographs were taken every 15 minutes and later transcribed from the photographs to the map of that period.

The first stage of data collection was undertaken before the public transportation hub was removed from Saint George's Square to the Transit Terminal, a site located approximately 200 meters away from the square. Observations were recorded from May 7<sup>th</sup> until May 20<sup>th</sup>, 2012. Observation times for the pre- change period are shown in Table 3-1 below.

**Table 3- 1** Pre change period observation time line

	<b>6:00 AM - 4:00 PM</b>	<b>4:00 PM - 3:00 AM</b>
<b>Monday</b>	7.May.2012	14.May.2012
<b>Thursday</b>	10.May.2012	17.May.2012
<b>Friday</b>	11.May.2012	18.May.2012
<b>Saturday</b>	12.May.2012	19.May.2012
<b>Sunday</b>	13.May.2012	20.May.2012

The transit hub was removed from Saint George’s Square on May 21<sup>st</sup>, 2012 and the second stage of data collection was undertaken two weeks after the public transportation hub was relocated to the new Transit Terminal, Guelph Station. Data was collected from June 4<sup>st</sup> to June 18<sup>th</sup>. The observation time line in the post- change period is shown in Table 3-2 below.

**Table 3- 2** Post change period observation time line

	<b>6:00 AM - 4:00 PM</b>	<b>4:00 PM - 3:00 AM</b>
<b>Monday</b>	4.June.2012	11.June.2012
<b>Thursday</b>	7.June.2012	14.June.2012
<b>Friday</b>	8.June.2012	15.June.2012
<b>Saturday</b>	9.June.2012	16.June.2012
<b>Sunday</b>	10.June.2012	17.June.2012

Each stage of observation was conducted for 5 days in a week: Thursday, Friday, Saturday and Sunday plus one Monday, Tuesday or Wednesday. The last four days of the week were important because their pattern of usage was perceived to be distinctive. From the initial observation it was identified that the remaining three days have a similar pattern, so the decision was made to collect data on only one of them.

### **3.4.2 Intercept Interviews**

In order to determine the origin and destination of square users, their mode of travel, the time they reported they spent in the square, and their activities, intercept interviews were conducted. See Appendix 1 for the interview questions.

The procedure for selecting interview subjects was based on a semi-random selection of adult users in Saint George's Square. Fifty interviews were conducted in the pre-change period and fifty interviews in post-change period. Two rounds of interviews were done in each day of the study. One round was done between 11:00 AM to 1:00 PM. The second round was done between 5:00 PM to 7:00 PM.

In each round five interviews were taken. Interviewees were sampled from each corner of the square and one in front of the mall (Figure 3-3). Potential interviewees were approached and asked if they would participate in a short research questionnaire. If the interviewee agreed, questions were read to the participant and their comments were recorded in writing by the interviewer. Each interview lasted approximately three to five minutes, except for those that interviewees had more comments to share and talk about.

### **3.4.3 Temperature**

Temperature data and weather event conditions were not collected directly from the study area. However, throughout the duration of the study, minimum and maximum temperatures and significant weather variations were documented for each day of the study utilizing data from the City of Kitchener's airport climate observation station. This was done to capture any significant

weather changes that may have influenced user behaviour in the study area. Throughout the study period no significant changes in temperature or weather conditions were recorded.

### **3.5 Summary**

In this chapter the methods of this research are explained and discussed. Research design and the required approaches to accomplish collecting data are described. The time lines of pre and post change periods and the location of the observation are explained. The users categorized behaviour and the methods to record their location and time in the Saint George's Square are defined. Intercept interviews and the procedure of selecting interviewees are presented. Finally, location and the method used to obtain temperature data are explained.

## CHAPTER IV

### Results

#### 4.1 Overview

This chapter includes the results of this study. Data from observations, intercept interviews and temperature data are presented and the relationships between variables are discussed. Descriptive statistics are used to analyze the research data and graphically illustrate the results in the format of charts and graphs.

#### 4.2 Users' Activity Mapping:

Based on the collected data the following hours were identified (Table 4-1). These periods represent times when the total number of users was more or less than 10 percent of the mean across all sampled periods.

**Table 4- 1** Hours with similar number of users

6:00 AM - 7:59:00 AM
8:00 AM - 8:59:00 AM
9:00 AM - 10:59:00 AM
11:00:00 AM - 1:59 PM
2:00:00 PM - 3:59 PM
4:00:00 PM - 5:59 PM
6:00:00 PM - 10:59 PM
11:00:00 PM - 12:59 AM
1:00:00 AM - 2:59 AM

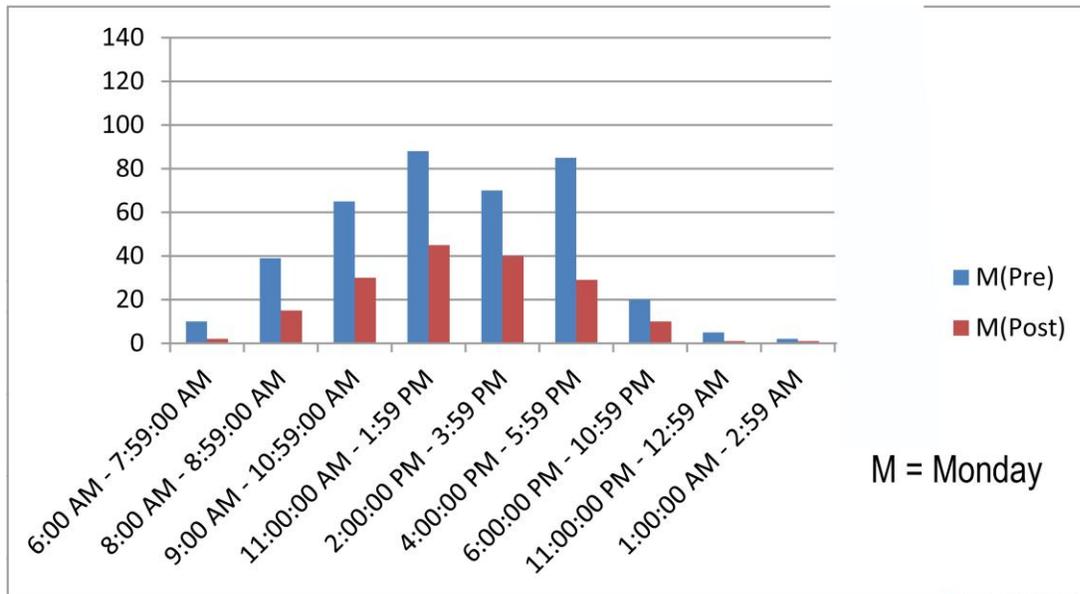
In each day, the average number of users of these periods are calculated and shown as follows:

(Table 4-2 to Table 4-6)

### 4.2.1 Mondays

**Table 4- 2** Average number of people for different hours on Mondays

TIME\Day	M(Pre)	M(Post)
6:00 AM - 7:59:00 AM	10	2
8:00 AM - 8:59:00 AM	39	15
9:00 AM - 10:59:00 AM	65	30
11:00:00 AM - 1:59 PM	88	45
2:00:00 PM - 3:59 PM	70	40
4:00:00 PM - 5:59 PM	85	29
6:00:00 PM - 10:59 PM	20	10
11:00:00 PM - 12:59 AM	5	1
1:00:00 AM - 2:59 AM	2	1



**Figure 4- 1** Average number of people for different hours on Mondays in pre and post change period.

As can be seen from Table 4-2 and Figure 4-1, the number of users throughout the pre-change Monday is between 1.8 to 2 times larger than the number of users in post-change Monday.

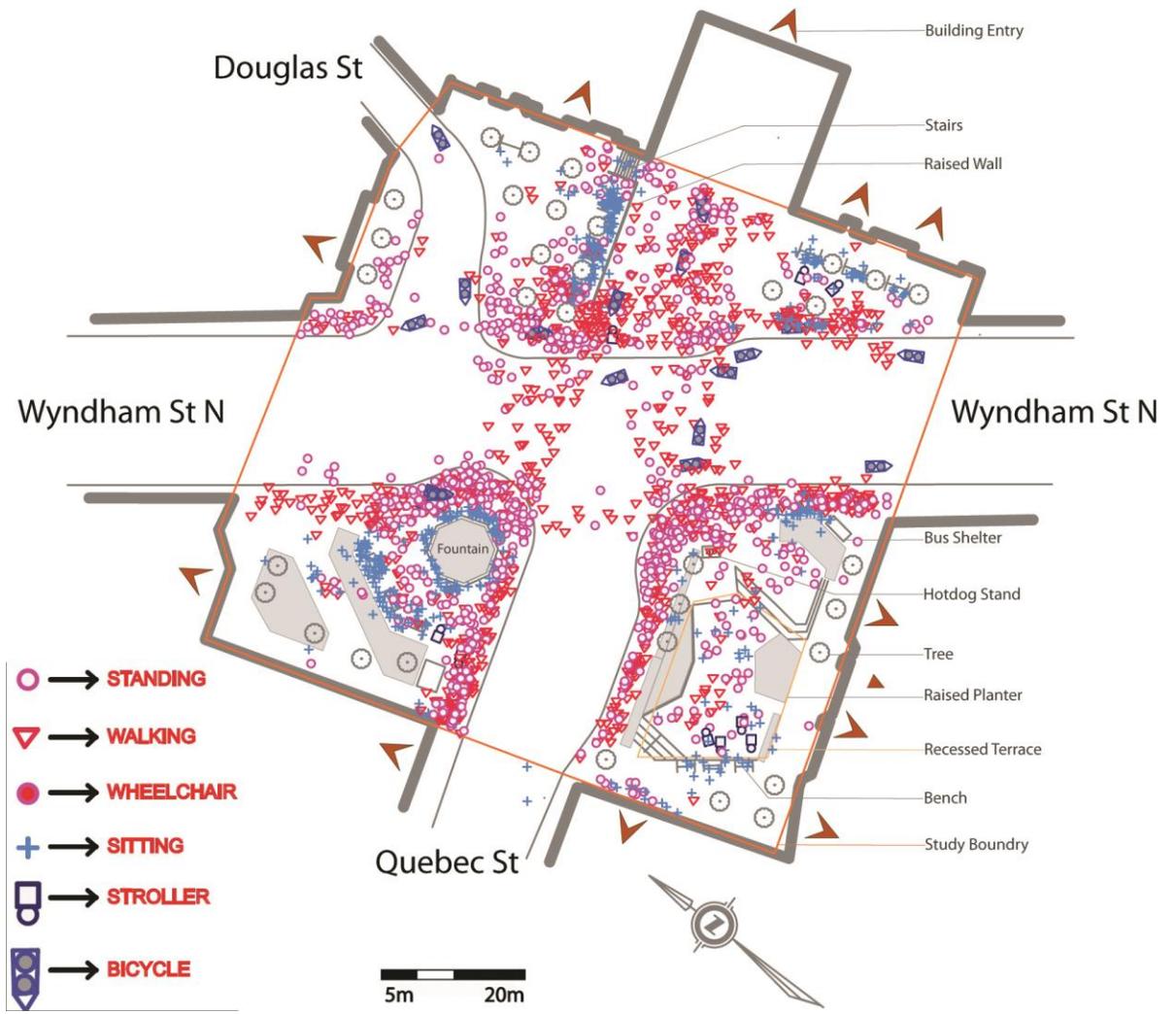


Figure 4- 2 Mapped behaviour of Saint George's Square users – Monday – Pre-change period

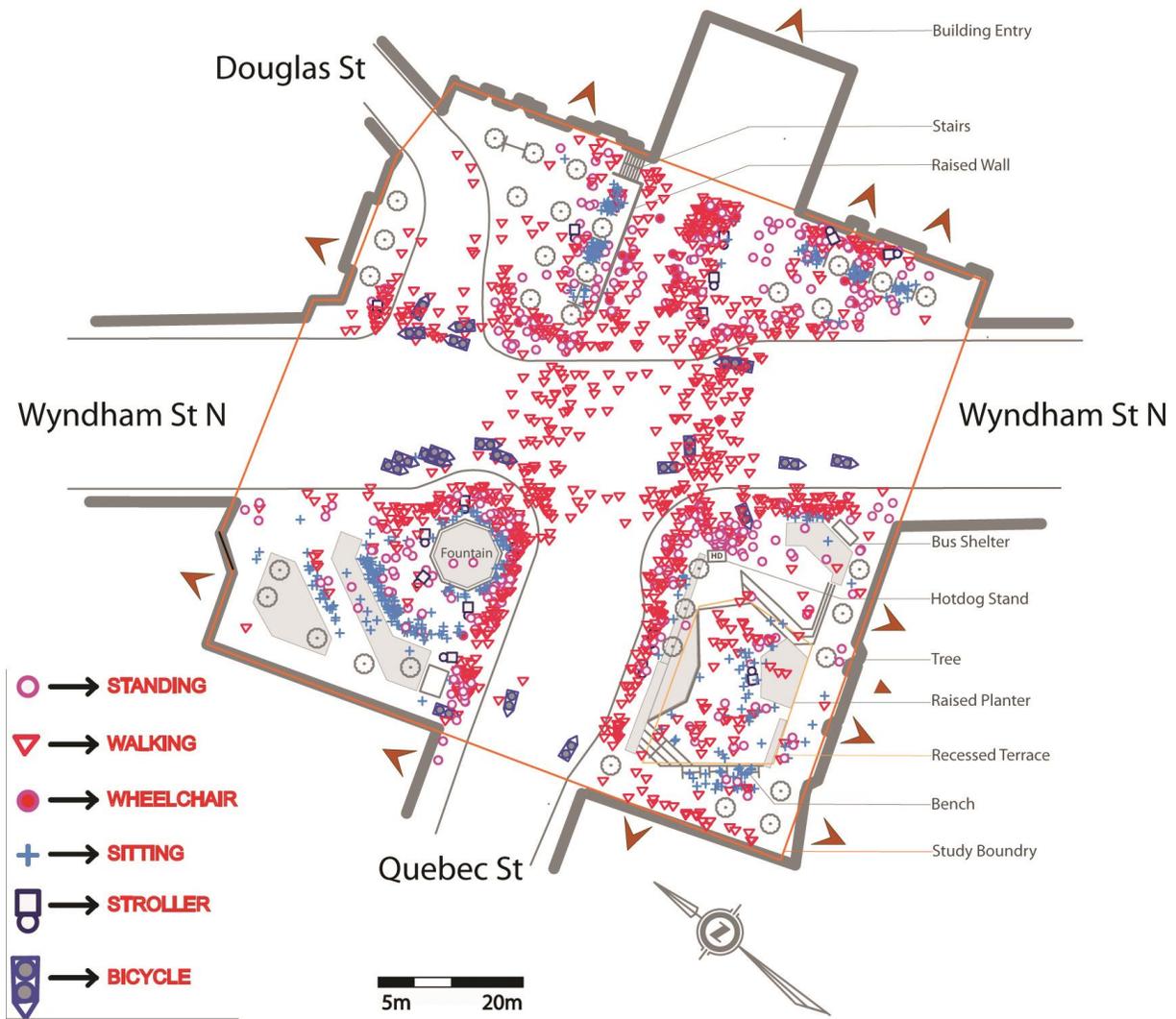
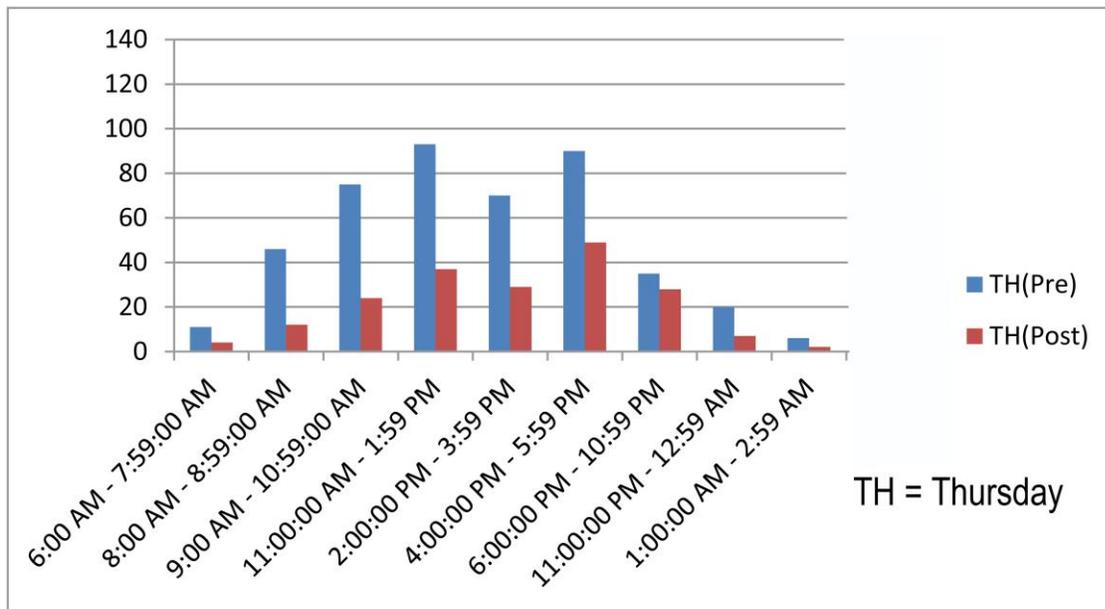


Figure 4- 3 Mapped behaviour of Saint George's Square users – Monday – Post-change period

## 4.2.2 Thursdays

**Table 4- 3** Average number of people for different hours on Thursdays

TIME\Day	TH(Pre)	TH(Post)
6:00 AM - 7:59:00 AM	11	4
8:00 AM - 8:59:00 AM	46	12
9:00 AM - 10:59:00 AM	75	24
11:00:00 AM - 1:59 PM	93	37
2:00:00 PM - 3:59 PM	70	29
4:00:00 PM - 5:59 PM	90	49
6:00:00 PM - 10:59 PM	35	28
11:00:00 PM - 12:59 AM	20	7
1:00:00 AM - 2:59 AM	6	2



**Figure 4- 4** Average number of people for different determined hours for Thursdays in pre and post change period.

Table 4-3 and Figure 4-4 show that the number of users throughout the pre-change Thursday is between 1.8 to 3 times larger than the number of users in post-change Monday.

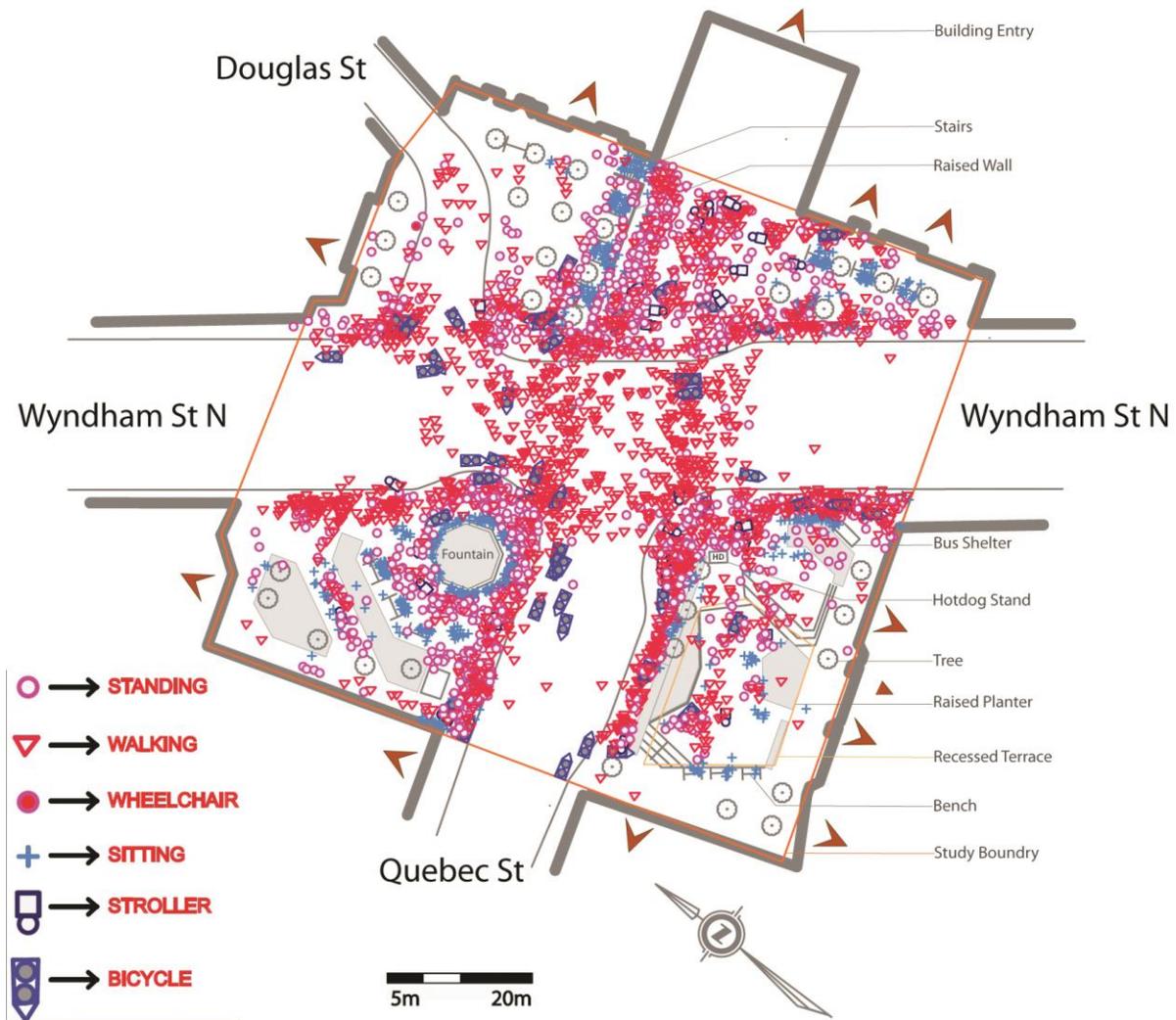


Figure 4- 5 Mapped behaviour of Saint George’s Square users – Thursday – Pre-change period

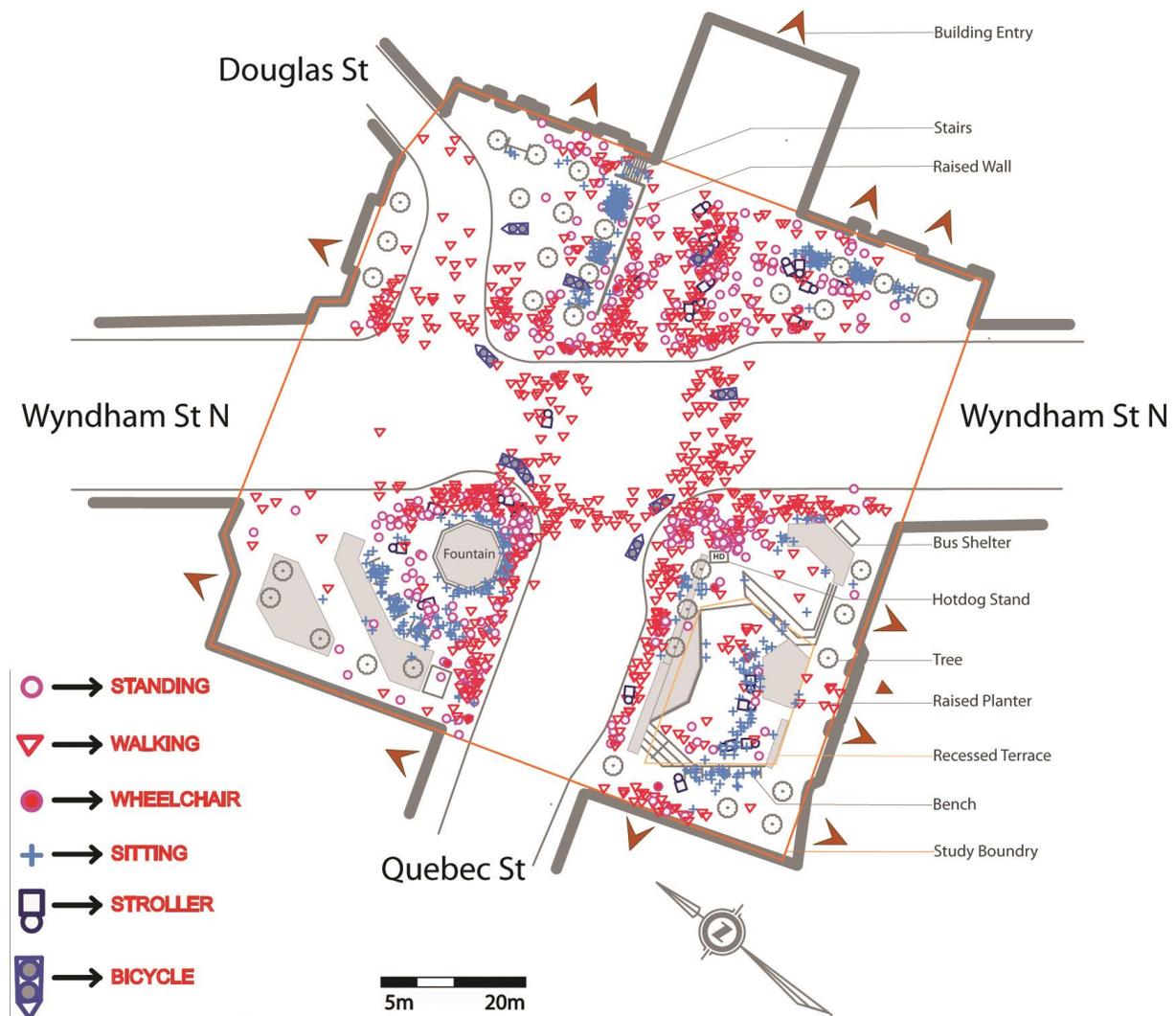
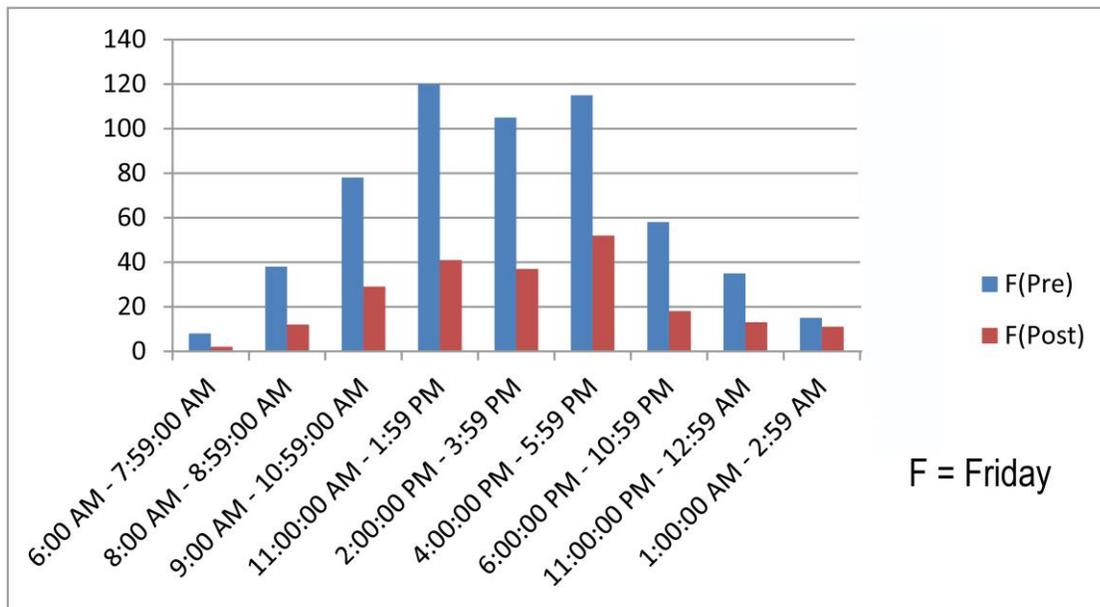


Figure 4- 6 Mapped behaviour of Saint George’s Square users – Thursday – Post-change period

### 4.2.3 Fridays

**Table 4- 4** Average number of people for different hours on Fridays

TIME\Day	F(Pre)	F(Post)
6:00 AM - 7:59:00 AM	8	2
8:00 AM - 8:59:00 AM	38	12
9:00 AM - 10:59:00 AM	78	29
11:00:00 AM - 1:59 PM	120	41
2:00:00 PM - 3:59 PM	105	37
4:00:00 PM - 5:59 PM	115	52
6:00:00 PM - 10:59 PM	58	18
11:00:00 PM - 12:59 AM	35	13
1:00:00 AM - 2:59 AM	15	11



**Figure 4- 7** Average number of people for different hours for Fridays in pre and post change period.

It can be understood from Table 4-4 and Figure 4-7 that the number of users throughout the pre-change Friday is between 1.4 to 3 times larger than the number of users in post-change Friday.

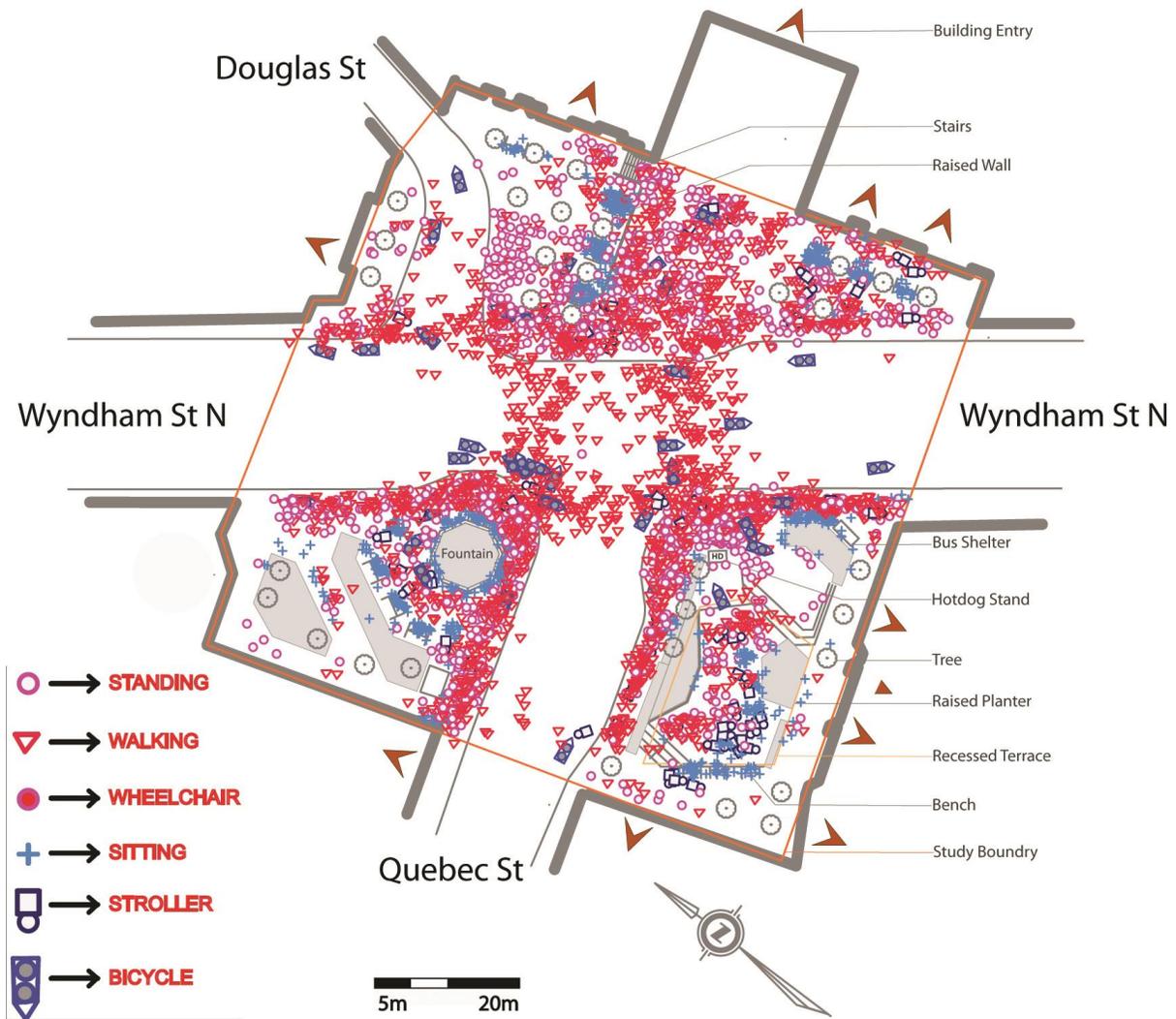
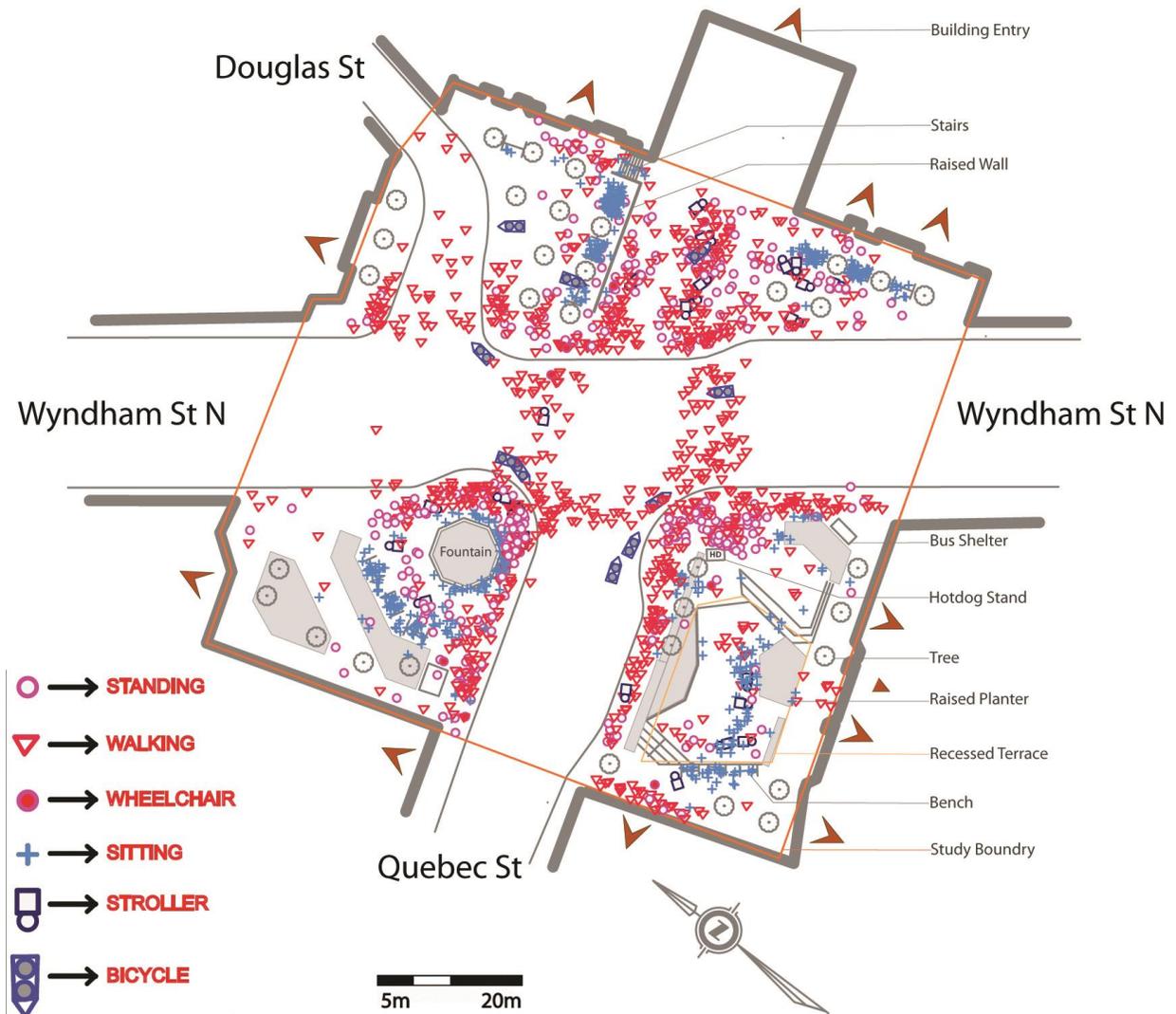


Figure 4- 8 Mapped behaviour of Saint George’s Square users – Friday – Pre-change period

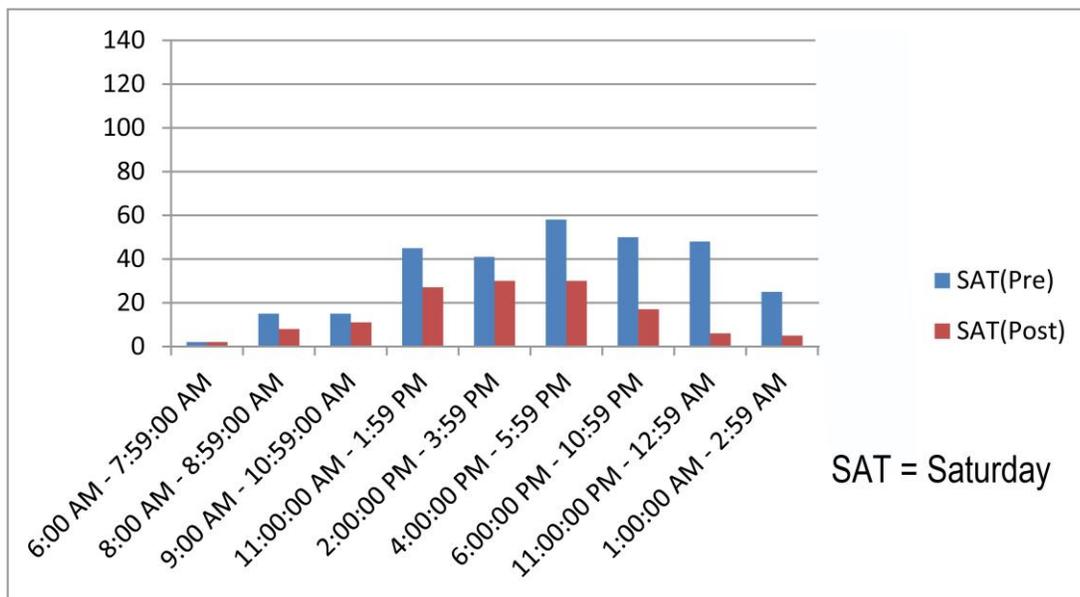


**Figure 4-9** Mapped behaviour of Saint George's Square users – Friday – Post-change period

#### 4.2.4 Saturdays

**Table 4- 5** Average number of people for different hours on Saturdays

TIME\Day	SAT(Pre)	SAT(Post)
6:00 AM - 7:59:00 AM	2	2
8:00 AM - 8:59:00 AM	15	8
9:00 AM - 10:59:00 AM	15	11
11:00:00 AM - 1:59 PM	45	27
2:00:00 PM - 3:59 PM	41	30
4:00:00 PM - 5:59 PM	58	30
6:00:00 PM - 10:59 PM	50	17
11:00:00 PM - 12:59 AM	48	6
1:00:00 AM - 2:59 AM	25	5



**Figure 4- 10** Average number of people for different hours for Saturdays in pre and post change period.

Table 4-5 and Figure 4-10 show that except the 6:00 AM to 7:59 AM period, the number of users throughout the pre-change Saturday is between 1.4 to 3 times larger than the number of users in post-change Saturday.

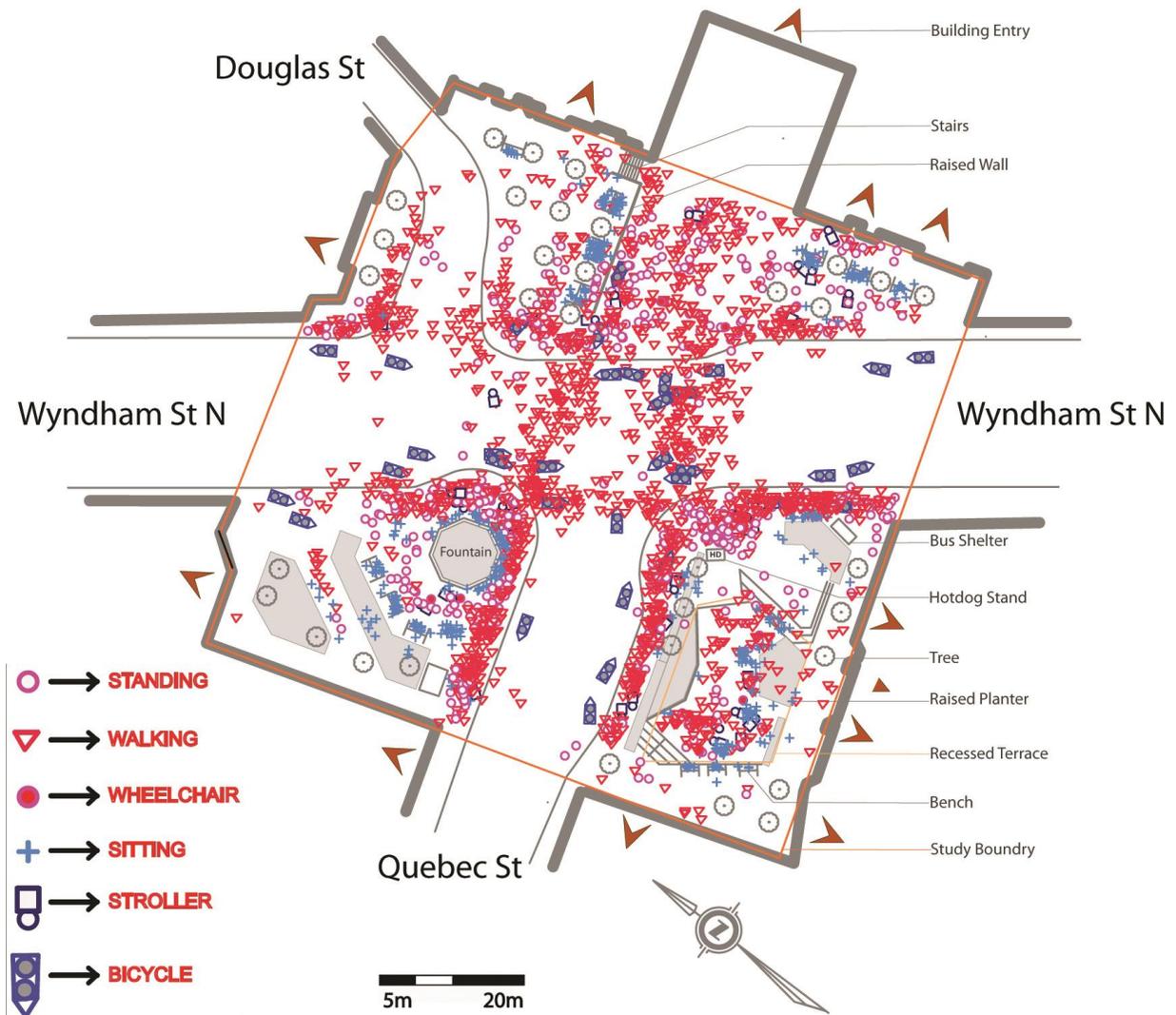


Figure 4- 11 Mapped behaviour of Saint George’s Square users – Saturday – Pre-change period

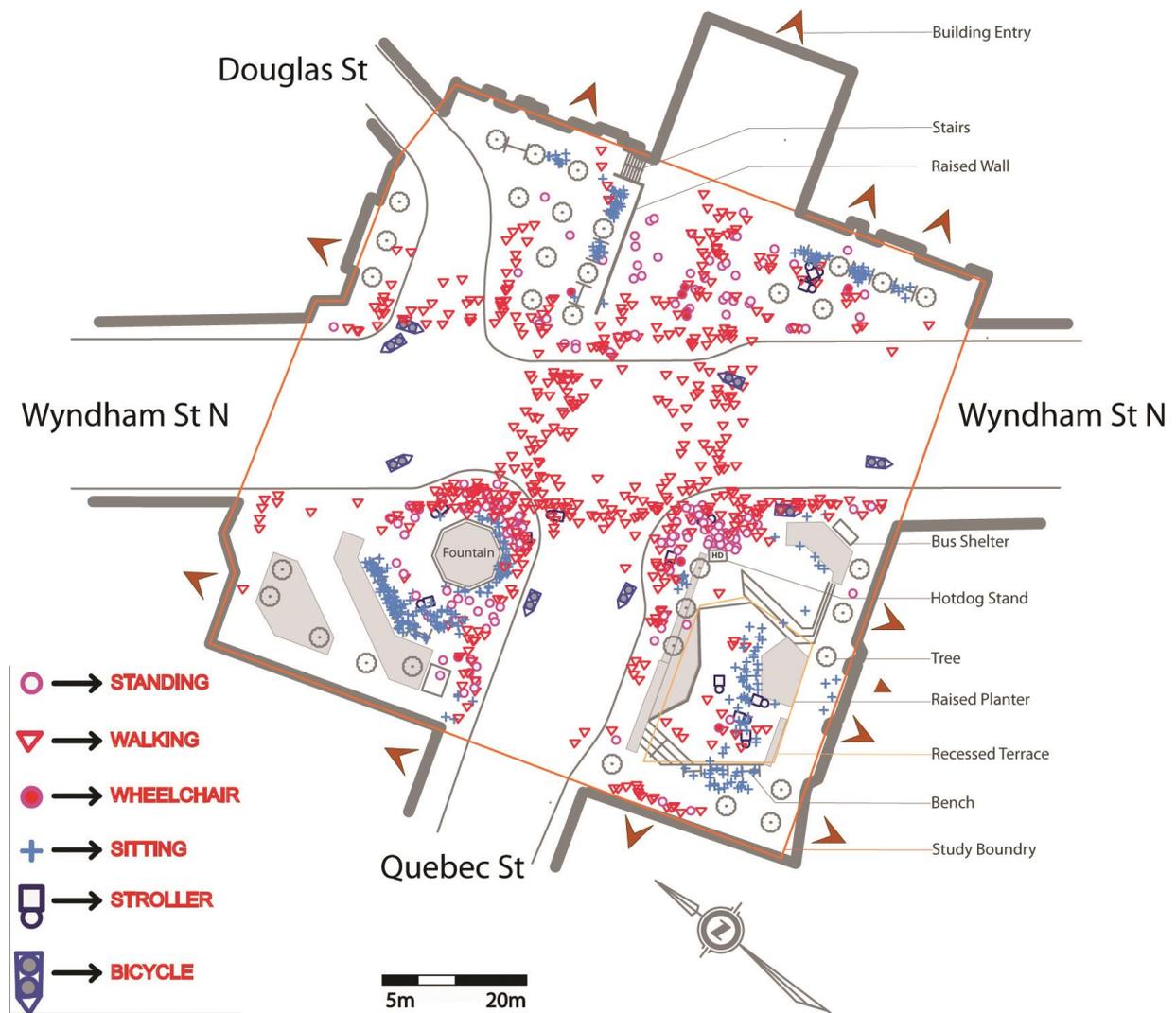
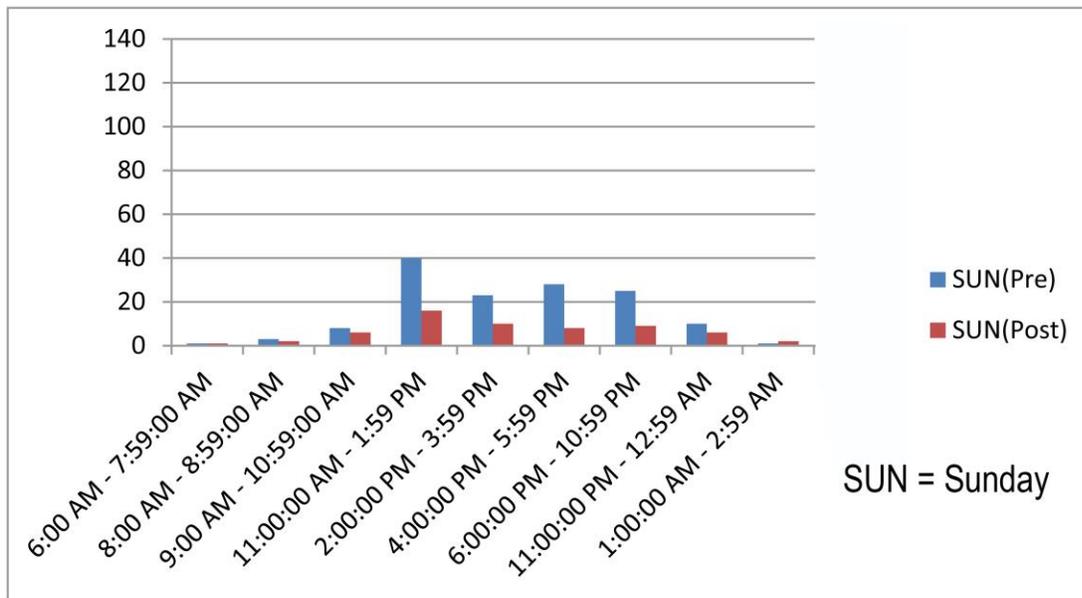


Figure 4- 12 Mapped behaviour of Saint George’s Square users – Saturday – Post-change period

### 4.2.5 Sundays

**Table 4- 6** Average number of people for different hours on Sundays

TIME\Day	SUN(Pre)	SUN(Post)
6:00 AM - 7:59:00 AM	1	1
8:00 AM - 8:59:00 AM	3	2
9:00 AM - 10:59:00 AM	8	6
11:00:00 AM - 1:59 PM	40	16
2:00:00 PM - 3:59 PM	23	10
4:00:00 PM - 5:59 PM	28	8
6:00:00 PM - 10:59 PM	25	9
11:00:00 PM - 12:59 AM	10	6
1:00:00 AM - 2:59 AM	1	2



**Figure 4- 13** Average number of people for different hours for Sundays in pre and post change period.

Table 4-6 and Figure 4-13 show that except the 6:00 AM to 7:59 AM period, the number of users throughout the pre-change Sunday is between 1.3 to 3 times larger than the number of users in post-change Sunday.

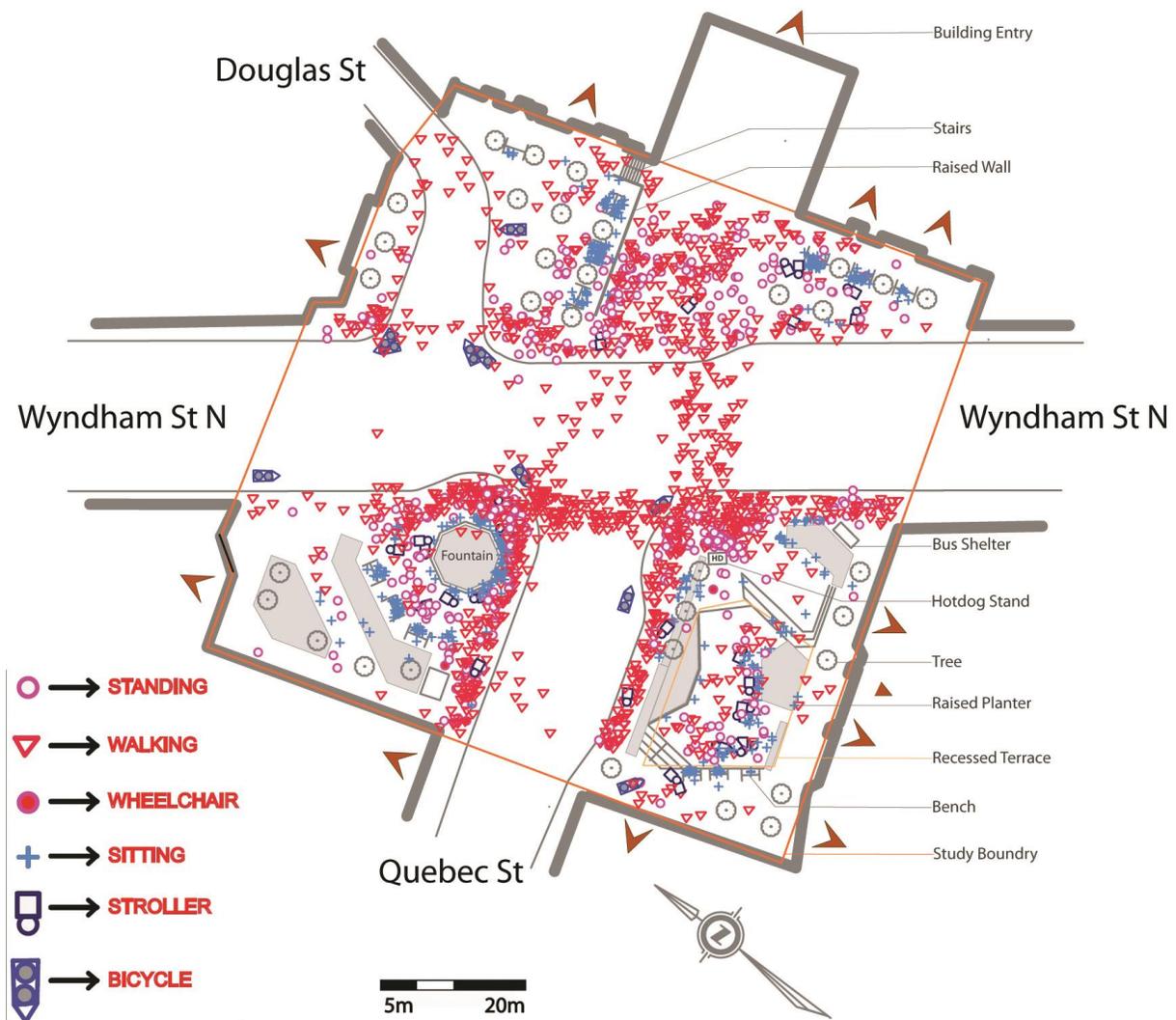


Figure 4- 14 Mapped behaviour of Saint George's Square users – Sunday – Pre-change period

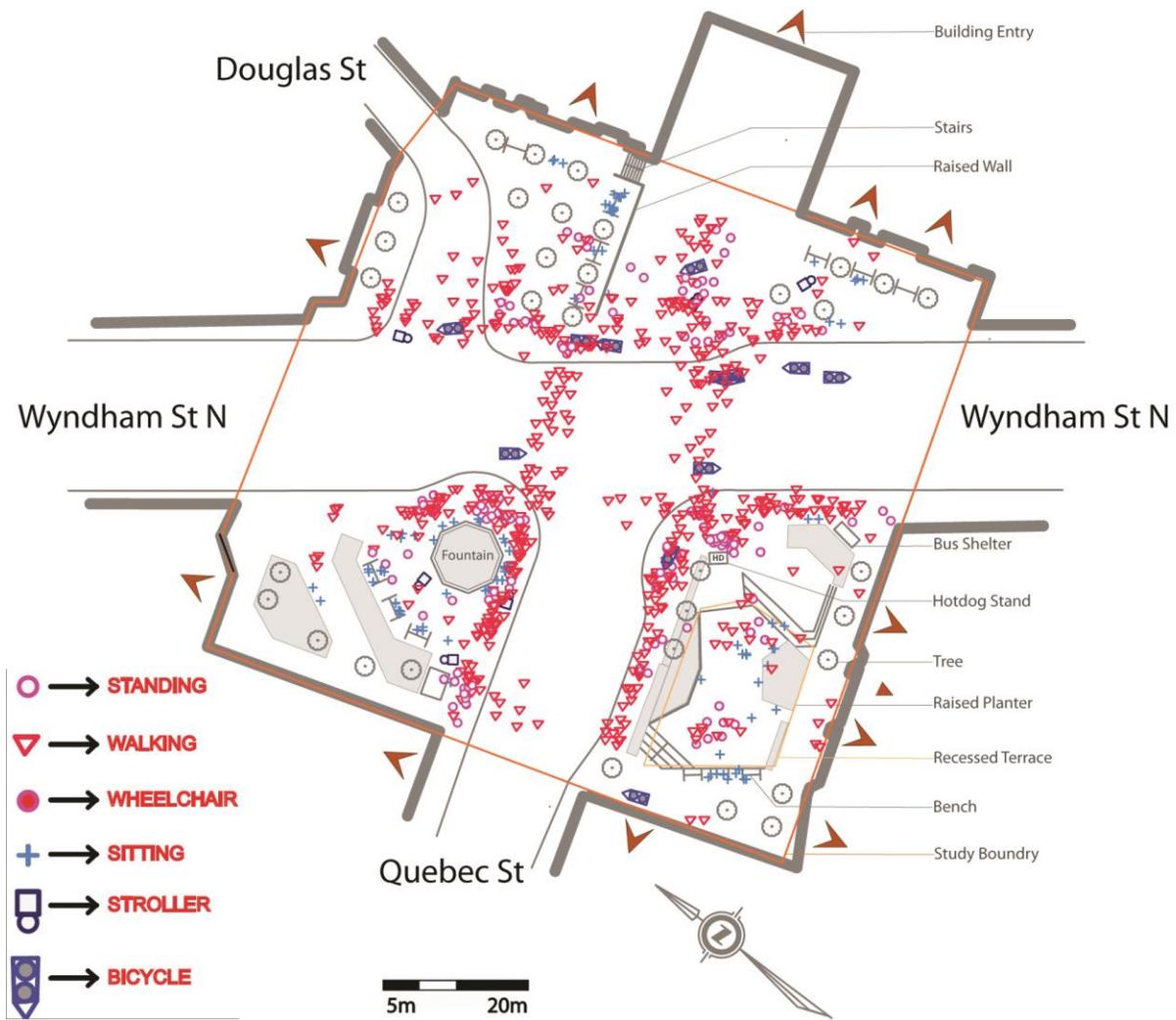


Figure 4- 15 Mapped behaviour of Saint George’s Square users – Sunday – Post-change period

#### 4.2.6 Total Number of Users

For each period of the study, the total number of users for each day is calculated (Table 4-6).

Also the total number of each period is shown.

**Table 4- 7** Total number people observed each day

	<b>WEDNESDAY</b>	<b>THURSDAY</b>	<b>FRIDAY</b>	<b>SATURDAY</b>	<b>SUNDAY</b>	<b>Total Number of users</b>
<b>Pre -Change Period</b>	3179	4168	4977	2865	1328	16517
<b>Post - Change Period</b>	1553	2013	2002	1346	603	7517

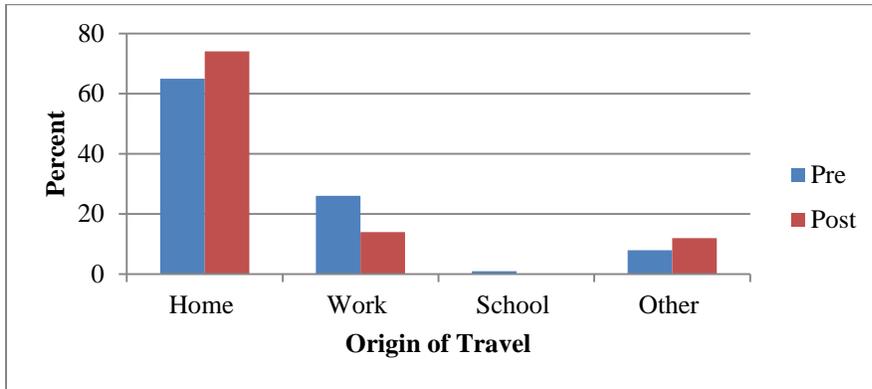
#### 4.3 Intercept Interview Data Results:

One hundred people were interviewed in this research study. Fifty people were interviewed in the pre-change period and 50 people in the post-change period. With the purpose of understanding the differences between pre and post interview responses, all the intercept interview responses were entered into a Microsoft Excel spreadsheet and the following bar charts and figures were produced.

##### 4.3.1 Origin of Travel:

**Table 4- 8** Origin of travelers to Saint George’s Square for the pre and post change period (Number of pre-change interviewees =50 and Number of post-change interviewees =50)

<b>Origin of Travel</b>	<b>Pre</b>	<b>Post</b>
Home	64%	74%
Work	26%	14%
School	2%	0%
Other	8%	12%



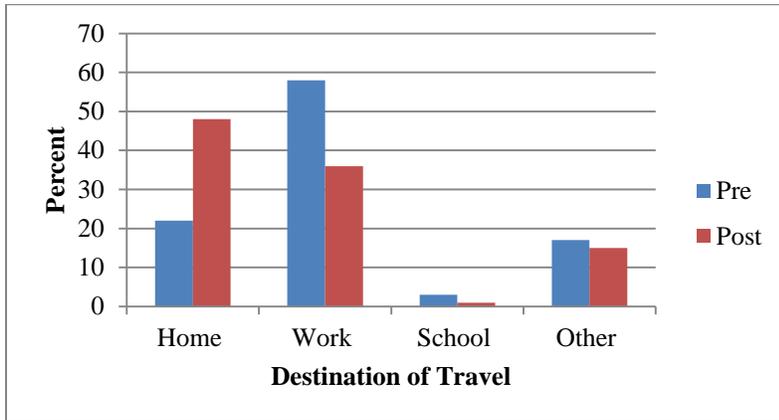
**Figure 4- 16** Origin of travelers to Saint George’s Square for the pre and post change period.

As can be seen in the Table 4-8 and Figure 4-16 the percentage of users who had travelled to Saint George’s Square from home rises from 64 percent in the pre-change period to 74 percent in the post-change period. But, it drops down from 26 percent to 14 percent for people who their travel origin is their work.

#### 4.3.2 Destination of Travel:

**Table 4- 9** Changes in the percentage of the destination of travelers to Saint George’s Square for the pre and post change period (Number of pre-change interviewees =50 and Number of post-change interviewees =50).

Destination of Travel	Pre	Post
Home	22%	48%
Work	58%	36%
School	4%	2%
Other	16%	14%



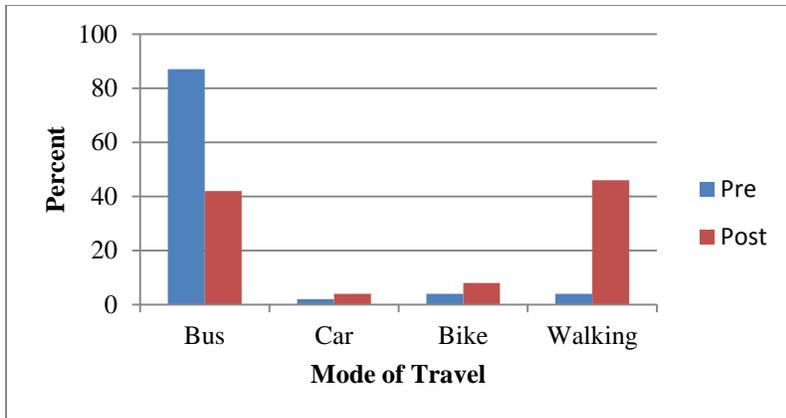
**Figure 4- 17** graphically illustrates table 4-3 data variations

Table 4-9 and Figure 4-17 show that the percentage of users who were leaving Saint George’s Square for their home rises from 22 percent in the pre-change period to 48 percent in the post-change period. For people who were going to work pre-change drops from 58 percent to 36 percent for pre to post change periods and from 4 percent to 2 percent for the people that were going to school.

### 4.3.3 Mode of Travel:

**Table 4- 10** Changes in the percentage of the mode of travelers to Saint George’s Square for the pre and post change period (Number of pre-change interviewees =50 and Number of post-change interviewees =50).

Mode of Travel	Pre	Post
Bus	86%	42%
Car	2%	4%
Bike	4%	8%
Walking	8%	46%



**Figure 4- 18** Graphical illustration of table 4-4 data

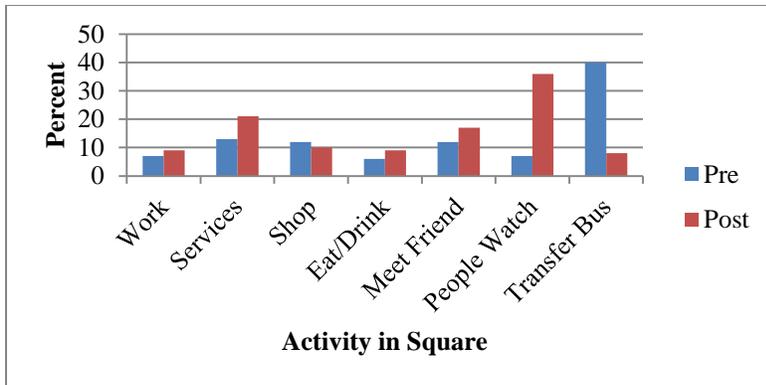
It can be seen in the Table 4-10 and Figure 4-18 that the percentage of users who were using the bus to arrive at Saint George’s Square dropped from 86 percent in the pre-change period to 42 percent in the post-change period. But, it rose from 2 percent to 4 percent for people using cars. It also rose from 4 percent to 8 percent for people with bikes, and from 8 percent to 48 percent for people walking to the square.

#### 4.3.4 Activity in Square:

**Table 4- 11** Changes in the percentage of different activities of Saint George’s Square users for the pre and post change period (Number of pre-change interviewees =50 and Number of post-change interviewees =50).

:

Activity in Square	Pre	Post
Work	6%	10%
Services	14%	20%
Shop	12%	8%
Eat/Drink	6%	10%
Meet Friend	12%	16%
People Watch	10%	28%
Transfer Bus	40%	8%



**Figure 4- 19** Graphical illustration of table 4-5 data

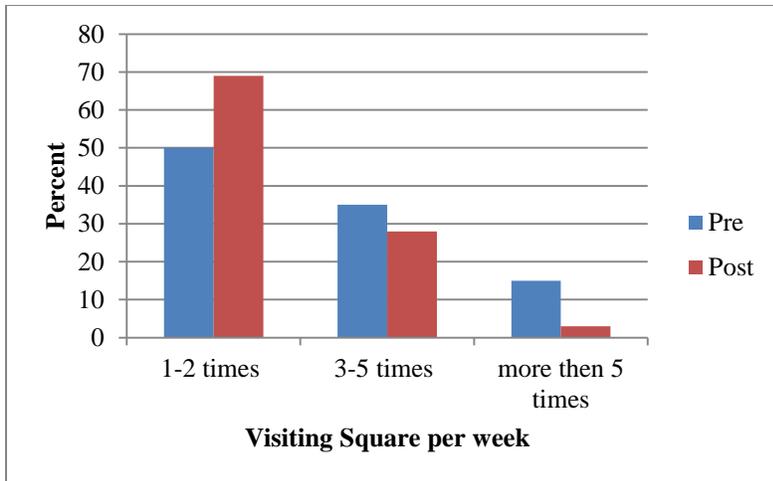
From Table 4-11 and Figure 4-19 it can be seen that the percentage of users who were in Saint George’s Square going to or coming from work remained almost the same with 6 percent in the pre-change and 10 percent in the post-change period. This trend is almost the same for shopping that varied from 12 to 8 percent, and also Eat/Drink that changed from 6 to 10 percent.

The percentage of users who were using the square for bus transfers dropped from 40 percent in the pre-change period to 8 percent in the post-change period. It however rose from 12 percent to 16 percent for users meeting friends and from 10 percent to 28 percent for users coming to the square to people watch.

#### 4.3.5 Visiting Square per Week:

**Table 4- 12** Changes in the percentage of visiting per week for Saint George’s Square users in the pre and post change period (Number of pre-change interviewees =50 and Number of post-change interviewees =50).

Visiting Square per week	Pre	Post
1-2 times	50%	68%
3-5 times	34%	28%
more then 5 times	16%	4%



**Figure 4- 20** Graphical illustration for Table 4-6 data

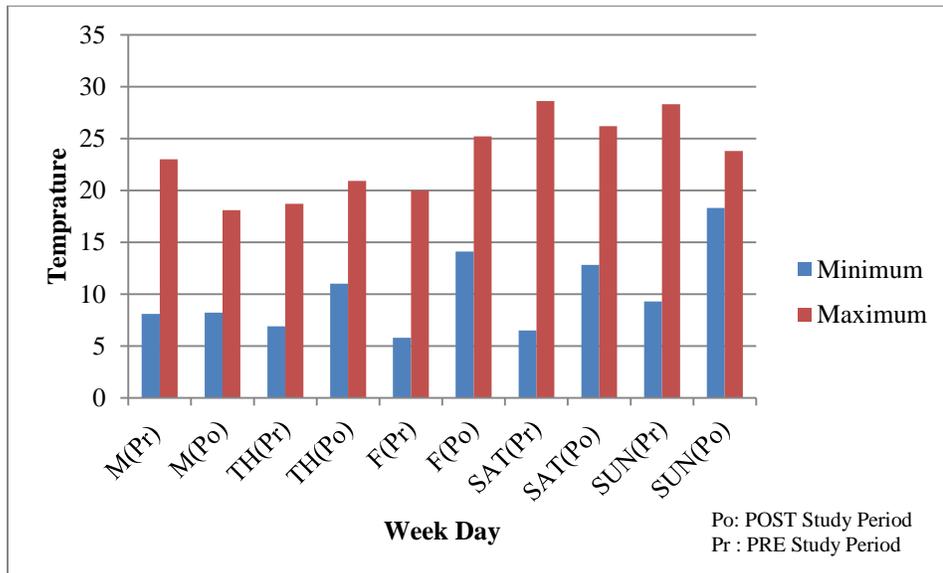
Table 4-12 and Figure 4-20 show the percentage of people who came to Saint George’s Square one or two times per week. This rose from 50 percent in the pre-change period to 68 percent in the post-change period. The percentage dropped from 34 percent to 28 percent and from 16 percent to 4 percent for people coming to Saint George’s Square 3 to 5 times per week or more than 5 times a week respectively.

#### 4.4 Temperature Statistic Results:

Of concern to the investigator was the influence of exceptionally hot (greater than 30 degrees C) or cold (less than 5 degrees C) temperatures on the number and behaviour of Saint George’s Square users. Temperatures were collected for each day of the study and the minimum and maximum temperature of each day throughout the research period is seen in Table 4-12.

**Table 4- 13** Minimum and Maximum Temperature (Celsius) of Kitchener station for each day throughout the study period. *Note:* M=Monday, TH=Thursday, F=Friday, SAT= Saturday, SUN=Sunday, Pr=Pre change study period, Po=Post change study period

Temperature\Day	M(Pr)	M(Po)	TH(Pr)	TH(Po)	F(Pr)	F(Po)	SAT(Pr)	SAT(Po)	SUN(Pr)	SUN(Po)
Minimum	8.1	8.2	6.9	11	5.8	14.1	6.5	12.8	9.3	18.3
Maximum	23	18.1	18.7	20.9	20	25.2	28.6	26.2	28.3	23.8



**Figure 4- 21** Graphical illustration of Temperature variations in Table 4-7.

Table 4-13 and Figure 4-21 shows there were no extreme temperatures (greater than 30 degrees C or less than 5 degrees C) and no precipitation throughout the study.

#### 4.5 Summary

Results obtained from the data collection are presented above. Data includes observation data, intercept interview summaries and temperature data.

Specifically, the relationships between the number of people in pre and post change period are presented. The study periods with similar user numbers are presented. The average numbers of users for these determined periods are presented based on each day of the study period. The resulting numbers are graphically shown and the pre and post week-days are compared. Based on these comparisons it is clear that the total number of observed Saint George's Square users in the post-change period (N=7,517) is less than 50 percent of the number of users in the pre-change period (N=16,517).

As well, the results from intercept interviews in pre-change and post-change period are presented and the variations between the two periods are graphically illustrated. One of the interesting comparisons is the total number of users before and after the transit hub change.

A discussion of the implications of the research results are discussed in the next Chapter and the principal observations arising from the research and analysis of Saint George's Square are presented.

## CHAPTER V

### Discussion

#### 5.1 Overview

The results from the research in Saint George's Square are shown the last chapter. In this chapter the implications of the results will be discussed. The first section will discuss the pattern of behaviour in the pre-change period followed by an explanation of the post-change period public behaviour in the Saint George's Square. Finally, the limitations of this study are discussed.

#### 5.2 Pattern of Activity

##### 5.2.1 Mondays:

Pre (Figure 4-2), Post (Figure 4-3)

In the northwest area of Saint George's Square, and on the Monday of the pre-change period, the majority of standing users were very close to the intersection of Wyndham St. N and Quebec St. Also, walking, bicycle, and wheel chair users moved in pathways alongside the Wyndham St. N or Quebec St. Sitting and stroller users generally stayed around the fountain or the benches close to it. On the Monday of the post-change period, the majority of standing users were around the fountain. The walking and wheelchair users were close to fountain and near the Wyndham St N and Quebec St. intersection. The sitting and stroller users seemed to have the same pattern of use as in the Monday of pre-change period.

In the southwest area of Saint George's Square, and on the Monday of pre-change period, standing users were close to the hotdog stand and to the edge of Wyndham St. N and Quebec St. intersection. Walking and wheelchair users were close to the bus shelter and also the pathway

alongside Quebec St. The sitting users stayed close to the bus shelter and the benches adjacent to the recessed terrace. Stroller users and a few users in other measured categories were scattered in the recessed terrace area. On the Monday of the post-change period, standing users mostly stayed close to the hotdog stand. Walking and wheelchair users moved in pathways alongside the Wyndham St. N and Quebec St. Although the majority of sitting users were observed in the same area of benches near the recessed terrace, more were sitting and walking in the recessed terrace compared to the Monday pre-change period.

At the intersection of Wyndham St. N and Quebec St., and for the Monday pre- and post-change period, walking and wheelchair users moved between East and west side of Wyndham St. N and Quebec St. intersection. Also, bicycles were mostly observed alongside Wyndham St. N.

In the northeast area of Saint George's Square, and Monday of the pre-change period, standing users stay close to the intersection of Wyndham St. N and Douglas St. Walking and wheelchair users clustered between Wyndham St. N and a raised wall. Sitting users took the stairs and sat on benches alongside the north of a raised wall. On the Monday of the post-change period, standing, walking and wheelchair users were distributed mostly alongside the raised wall and close to the intersection of Wyndham St. N and Douglas St. The pattern of sitting users is the same for Monday the pre-change period with higher numbers of people around the benches.

In the central eastern area of Saint George's Square, standing, walking and wheelchair users clustered closer to the Wyndham St. N in the pre-change period compared to post-change period in which they clustered closer to the building entry.

In the southeast of Saint George's Square, and in the Monday of pre-change period, standing, walking and wheelchair users stayed close to pathway alongside the Wyndham St. N. The sitting and stroller users clustered around the benches. On the Monday of the post-change period, the standing, walking, wheelchair, and stroller users were observed between the benches and the southeast border of the study area. The pattern of sitting users remains the same as in the Monday pre-change period.

### 5.2.2 Thursdays

Pre (Figure 4-5), Post (Figure 4-6)

In the northwest area of Saint George's Square, and on the Thursday of the pre-change period, the majority of standing users were observed around the fountain and very close to the intersection of Wyndham St. N and Quebec St. Also walking and wheel chair users used the pathways alongside the Wyndham St. N or Quebec St. and close to the north and northwest border of the study boundary. The sitting and stroller users stay around the fountain or benches close to the raised planters. On the Thursday of the post-change period, the majority of standing users stayed in between the fountain and the intersection of Wyndham St. N and Quebec St. The walking and wheelchair users move around the east to the south of the fountain and also in the pathway alongside the Quebec St. Except the north side of the fountain which is not well used, the sitting and stroller users seemed to have the same pattern of usage as on the Monday of the pre-change period.

In the southwest area of St. George's Square, and on the Thursday of the pre-change period, the majority of standing, walking and wheelchair users clustered in pathways alongside Wyndham

St. N and Quebec St. The sitting users stayed close to bus shelter and the benches adjacent to and within the recessed terrace. Stroller users and a few users in each behaviour category scattered in the recessed terrace area. On the Thursday of the post-change period, standing users mostly stay between the hotdog stand and the intersection of Wyndham St. N and Quebec St. Walking and wheelchair users moved in pathways alongside the Wyndham St. N and Quebec St. The majority of sitting and stroller users stayed in or around the recessed terrace.

Near the intersection of Wyndham St. N and Quebec St. and for the Thursday pre- and post-change period, walking and wheelchair users moved between the east and west side of Wyndham St. N and Quebec St. intersection. Bicycles traveled alongside the Wyndham St. N and Quebec St.

In the northeast area of Saint George's Square, and on the Thursday of the pre-change period, standing users stayed close to the intersection of Wyndham St. N and Douglas St. They also clustered alongside the north side of raised wall. Walking and wheelchair users clustered between Wyndham St. N and the raised wall. Sitting users used the stairs and benches alongside the north side of the raised wall. In the Thursday of the post-change period, standing, walking and wheelchair users cluster close to the intersection of Wyndham St. N and Douglas St. The pattern of sitting users is almost the same as for the Thursday pre-change period.

In the central eastern area of Saint George's Square, and on the Thursday of the pre-change period, standing, walking, wheelchair and stroller users clustered closer in three spots: 1) alongside the south of raised wall, 2) close to the Wyndham St. N and 3) close to the building

entry. On Thursday of the post-change period, the pattern of use is similar to Thursday pre-change.

In the southeast of Saint George's Square, and on the Thursday of the pre-change period, standing, walking and wheelchair users stayed close to the pathway alongside the Wyndham St. N. They also clustered between benches and the southeast border of the study area. Sitting users clustered around the benches. On the Thursday of the post-change period, standing, walking, and wheelchair users are more disbursed, but the sitting users stayed around the benches. Also on the Thursday of post-change period the corners of Saint George's Square were not being used.

### 5.2.3 Fridays

Pre (Figure 4-8), Post (figure 4-9)

In the northwest area of Saint George's Square, and on the Friday of the pre-change period, the majority of standing, walking and wheelchair users clustered around the fountain and also in the pathways alongside Wyndham St. N and Quebec St. Sitting and stroller users gathered around the fountain and benches close to the raised planters. On the Friday of the post-change period, the majority of standing, walking and wheelchair users stayed around the fountain and Wyndham St. N. They also gathered alongside Quebec St and close to the west border of the study boundary. The walking and wheelchair users moved around the east to the south of the fountain and also in the pathway alongside the Quebec St. Except the north side of the fountain which was almost not used, the sitting and stroller users seemed to have the same pattern of use as on the Friday of the pre-change period.

In the southwest area of Saint George's Square, and on the Friday of the pre-change period, the majority of standing, walking and wheelchair users clustered in pathways alongside Wyndham St. N and Quebec St. They also gathered in the recessed terrace area. The sitting and stroller users stayed close to bus shelter and the benches adjacent to and within the recessed terrace. On the Friday of the post-change period, standing users mostly stayed between the hotdog stand and the intersection of Wyndham St. N and Quebec St. Walking and wheelchair users moved in pathways alongside the Wyndham St. N and Quebec St. They also gathered in the southwest side of study boundary. The majority of sitting and stroller users stayed in or around the recessed terrace.

At the intersection of Wyndham St. N and Quebec St. and for Friday pre- and post-change period, walking and wheelchair users moved between the east and west side of Wyndham St. N and Quebec St. intersection. Bicycles moved alongside the Wyndham St. N and Quebec St.

In the northeast area of Saint George's Square, and on the Friday of the pre-change period, standing users stayed close to Douglas St. Walking, bicycle and wheelchair users moved alongside Wyndham St. N. Sitting users took the benches alongside the north side of the raised wall. In the Friday of post-change period standing users stayed close to the northeast side of the boundary study. Walking and wheelchair users moved alongside of Wyndham St. N and Douglas St. The pattern of sitting users was almost the same as on the Friday pre-change period.

In the central eastern area of Saint George's Square, and on Friday of the pre-change period, standing, walking, wheelchair and stroller users covered almost this entire area. On Friday of the

post-change period, except for the west side of the raised wall which is almost not used, standing, walking and wheelchair users clustered alongside three spots: 1) south side of the raised wall, 2) alongside the Wyndham St. N. and 3) close to east side of the study boundary.

In the southeast of Saint George's Square, and on the Friday of the pre-change period, standing, walking, stroller and wheelchair cover almost this entire area except the benches that were occupied by sitting users. On the Friday of the post-change period, standing, walking and wheelchair were distributed near the benches. The benches were occupied by sitting users.

#### **5.2.4 Saturdays**

Pre (Figure 4-11), Post (Figure 4-12)

In the northwest area of Saint George's Square, and on the Saturday of the pre-change period, the majority of standing, walking and wheelchair users clustered around the fountain and also in the pathways alongside Wyndham St. N and Quebec St, Sitting and stroller users gathered around the fountain and benches close to the raised planters except the northwest side of the fountain. In the Saturday of the post-change period, the majority of standing, walking and wheelchair users stayed around the fountain and close to the intersection of Wyndham St. N and Quebec St. Except for the north side of the fountain that had few users observed, the sitting and stroller users seemed to have the same pattern of use as on the Saturday of the pre-change period.

In the southwest area of Saint George's Square, and on the Saturday of the pre-change period, the majority of standing, walking and wheelchair users clustered in pathways alongside Wyndham St. N and Quebec St. They also gathered in recessed terrace area. The sitting and

stroller users stayed close to the bus shelter and the benches adjacent to and within the recessed terrace. On the Saturday of the post-change period, standing users mostly stayed between the hotdog stand and the intersection of Wyndham St. N and Quebec St. Walking and wheelchair users moved in pathways alongside Wyndham St. N. They also gathered in the southwest side of study boundary. The majority of sitting and stroller users stayed in or around the recessed terrace.

In the intersection of Wyndham St. N and Quebec St. and for Saturday pre- and post-change, walking and wheelchair users moved between the east and west side of Wyndham St. N and Quebec St. intersection. Bicycles moved alongside the Wyndham St. N and Quebec St.

In the northeast area of Saint George's Square, and on the Saturday of the pre-change period, standing users stayed in the north side of the raised wall. Walking and wheelchair users moved alongside Wyndham St. N and Douglas St. Sitting users occupied benches alongside the north side of the raised wall. In the Saturday of the post-change period, walking and wheelchair users moved alongside the Wyndham St. N and Douglas St. The pattern of sitting users is almost the same as on the Saturday pre-change period but users moved toward the northeast side of the study boundary.

In the central eastern area of Saint George's Square, and on Saturday of the pre-change period, standing, walking, wheelchair and stroller users covered almost this entire area. On Saturday of the post-change period, standing users were near the south side of the raised wall. Walking and

wheelchair users gathered alongside the Wyndham St. N, and close to the east side of study boundary.

In the southeast of Saint George's Square, and on the Saturday of the pre-change period, standing users stayed between the benches and the southeast side of the study boundary. Walking and wheelchair users moved alongside the Wyndham St. N. Sitting and stroller users gathered around benches. On Saturday of the post-change period, sitting and stroller users stayed around the benches.

### 5.2.5 Sundays

Pre (Figure 4-14), Post (Figure 4-15)

In the northwest area of Saint George's Square, and on the Sunday of the pre-change period, the majority of standing, walking and wheelchair users clustered around the fountain and also in the pathways alongside Wyndham St. N and Quebec St. Sitting and stroller users gathered around the fountain and benches close to the raised planters. On the Sunday of the post-change period, the majority of standing, walking and wheelchair users stayed between the fountain and Wyndham St. N and Quebec St. Except the west side of the fountain which is almost not used, the sitting users utilized the fountain and the benches close to the raised planters.

In the southwest area of Saint George's Square, and on the Sunday of the pre-change period, the majority of standing, walking and wheelchair users clustered in pathways alongside Wyndham St. N and Quebec St. They were also distributed in the recessed terrace area. The sitting and stroller users stayed close to the bus shelter and the benches adjacent to and within the recessed

terrace. On the Sunday of the post-change period, standing, walking and wheelchair users utilized the pathways alongside Wyndham St. N and Quebec St. They also gathered in the recessed terrace. The majority of sitting users were observed on benches close to the recessed terrace.

In the intersection of Wyndham St N and Quebec St. and on the Sunday of the pre-change period, walking and wheelchair users moved between the north and west side of Wyndham St. N and the Quebec St. intersection. Bicycles mostly moved alongside the Wyndham St. N. On the Sunday of the post-change period, walking users moved between the east and west side of the Wyndham St. N and Quebec St. intersection. Bicycles moved alongside the Wyndham St. N.

In the northeast area of Saint George's Square, and on the Sunday of the pre-change period, standing users stayed in the north side of the raised wall and also close to Wyndham St. N. Walking and wheelchair users moved alongside Wyndham St. N and toward Douglas St. Sitting users used benches alongside the north side of the raised wall. On the Sunday of the post-change period, walking and wheelchair users moved alongside the Wyndham St. N and toward Douglas St. The pattern of sitting users is almost the same as during the Sunday pre-change period but generally users moved toward the northeast side of the study boundary.

In the central eastern area of Saint George's Square, and on the Sunday of the pre-change period, standing, walking, wheelchair and stroller users covered almost the entire area. On Sunday of the post-change period, standing, walking and wheelchair users gathered alongside the Wyndham St. N and close to the east side of study boundary.

In the southeast of Saint George's Square, and on the Sunday of the pre-change period, standing and stroller users stayed close the benches. Walking and wheelchair users moved alongside Wyndham St. N. They also moved between benches and the southeast side of study boundary. On the Sunday of the post-change period, standing and walking users stay close to the Wyndham St. N.

### **5.3 Level of Activity**

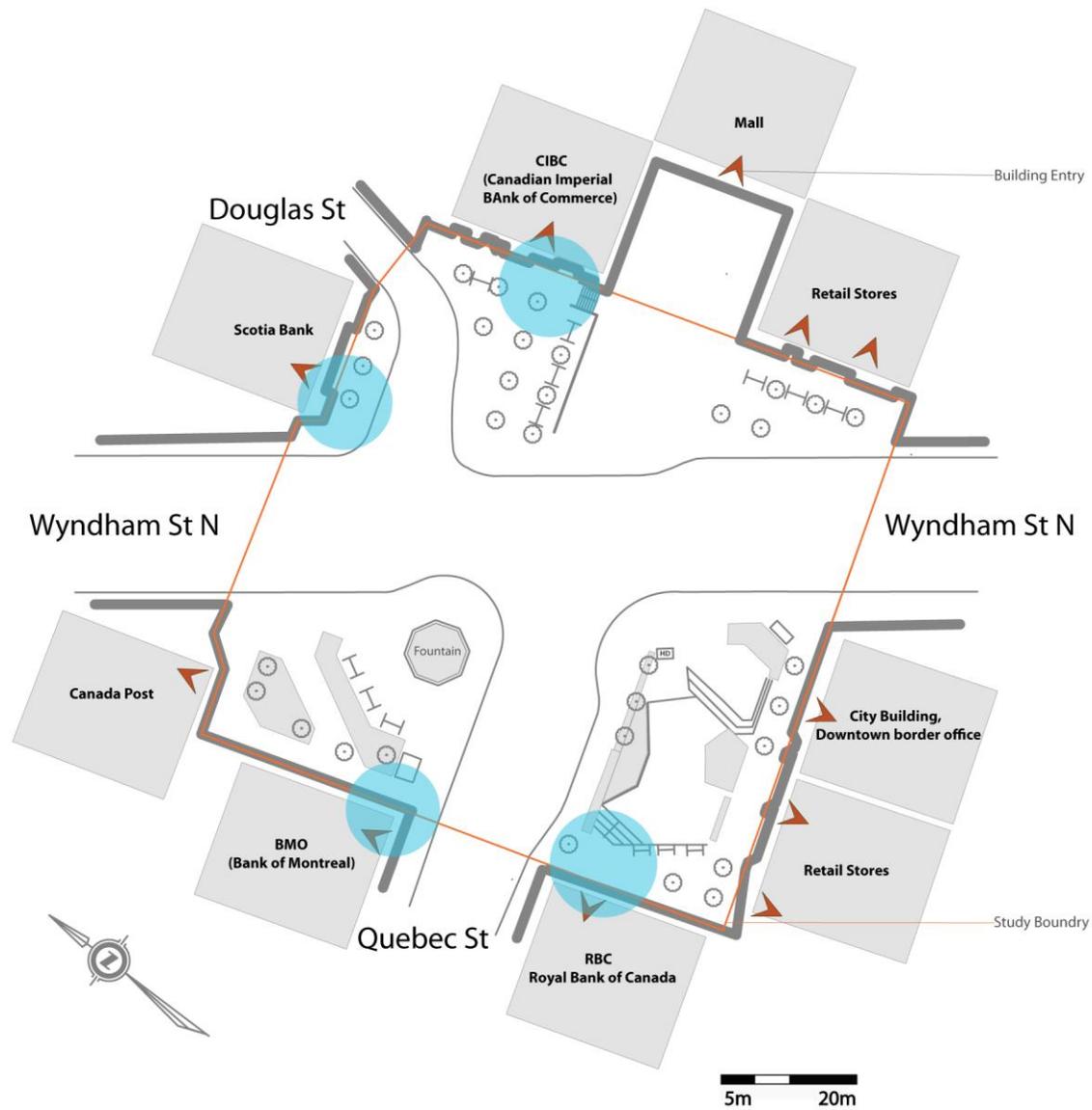
During the weekdays of the pre-change period three peaks of high activity were observed which are from 8:30 am to 9:30 am, from 12:30 to 2:00 pm and from 3:30 to 5:30 pm. These peak times occurred possibly due to the commute to work, lunch hour, and the end of the workday.

The morning and the afternoon peak use times are made of people using Saint George's Square to transfer between buses. The noon peak use time is composed of people who stay in Saint George's Square for a longer period and were involved in activities such as socializing, having lunch outdoors, or watching people. Also, the number of users socializing and people watching increased in the late afternoon.

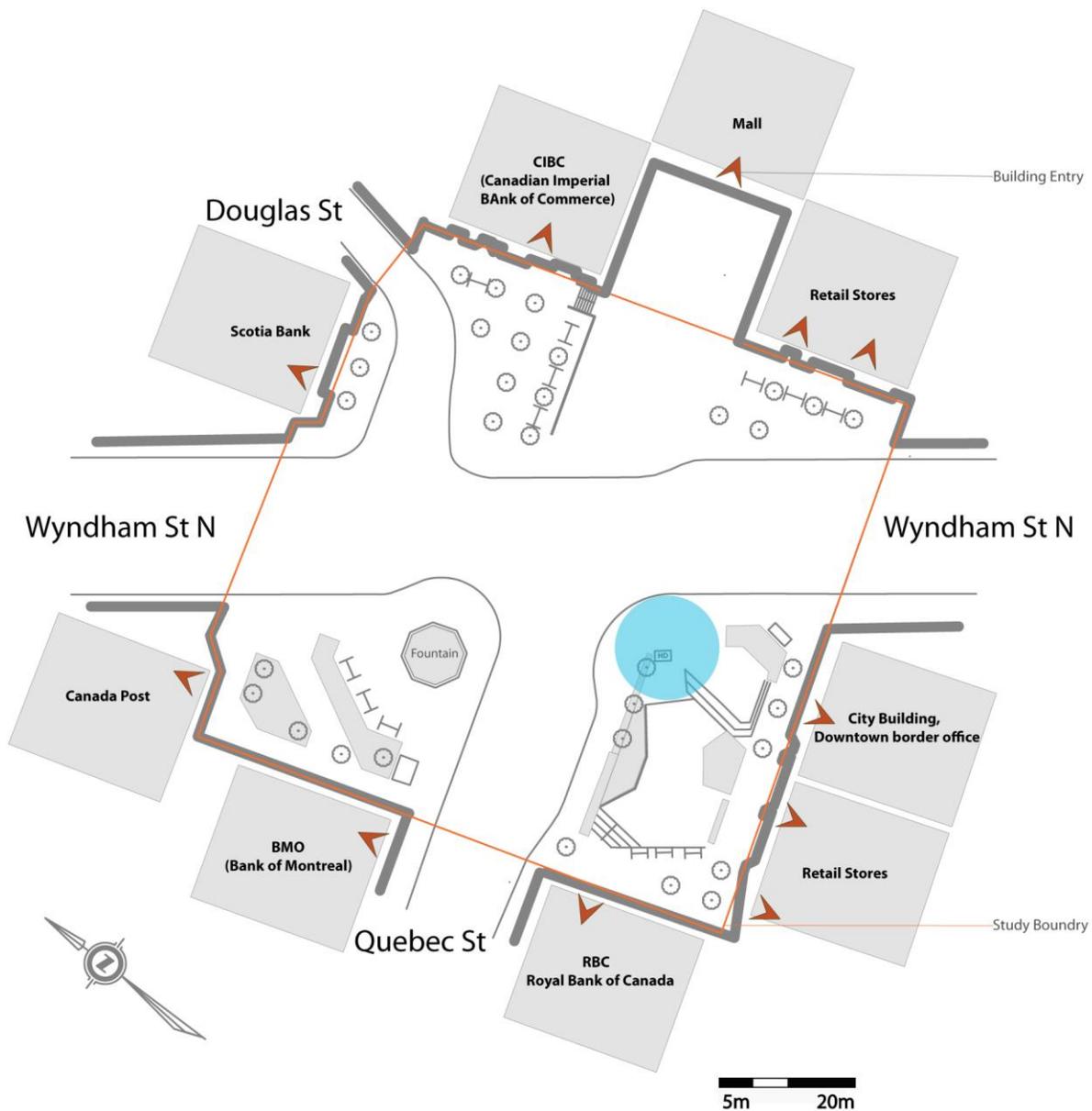
Throughout the week, the number of evening users was less than daytime users but increased on Thursday, Friday and Saturday evenings. At lunch time, between 11:00 am to 2:00 pm, the number of users rises gradually throughout the week.

Due to the increase of the Saint George's Square users, on Thursday, Friday and Saturday some quick rises can be observed at the opening time of bars between 10:00 pm to 11:00 pm, and also at

closing time between 2:00 am and 3:00 am. At these periods of time, the use of three corners of the square in which bank cash debit machines are located increased (Figure 5-1). Also, the density of use increases at the closing time of the bars from 1:30 to 2:30 am around the food vendor (hotdog station), which is located at the southwest corner of Saint George’s Square (Figure 5-2). Furthermore, destination-oriented people moving to the ATM cash machines or the food vendor were observed.



**Figure 5- 1** Areas with increased level of activity in late night



**Figure 5- 2** Hotdog Vendor Location

Observations provided insight about activity patterns in Saint George's Square. Based on these observations, transit transfer activity was the most common use for Saint George's Square patrons.

Just before (approximately two to three minutes) buses arrived at Saint George's Square the number of users increased significantly and then dropped dramatically right after buses left the square (approximately one to two minutes).

## 5.4 Intercept Interviews

Most of square patrons using buses were transferring directly and did not remain in the square, based on intercept interviews. Accessing services including banks and health appointments were some of the main reasons for people who said their main destination was Saint George's Square. Some interviewees said that, "I have to go to bank almost two to three times a week. One of the main reasons for me to take bus routes that come to Saint George's Square is that I can do my banking with a quick stop while I am heading home or going to work". Another one said, "As far as I remember in the last few years I have been using Saint George's Square bus station every single day to get to work".

Some interviewees, mainly elderly people, indicated that, "My doctor is in this mall [Quebec mall which is adjacent to Saint George's Square] and I have to come every once a while. You know there are a bunch of doctors in that mall".

The majority of users, who came to Saint George's Square for other purposes such as meeting, eating, or shopping, used other modes of travel like walking, cycling, or cars. For example some of them indicated that, "I work close by and I really enjoy coming to Saint George's Square for my lunch". Another said, "Sometimes I have my lunch with colleagues outside in that corner – pointing to the recessed terrace." And one interviewee mentioned that, "I like this guy's hotdogs

[pointing to vendor machine] sometimes I walk here to get one”.

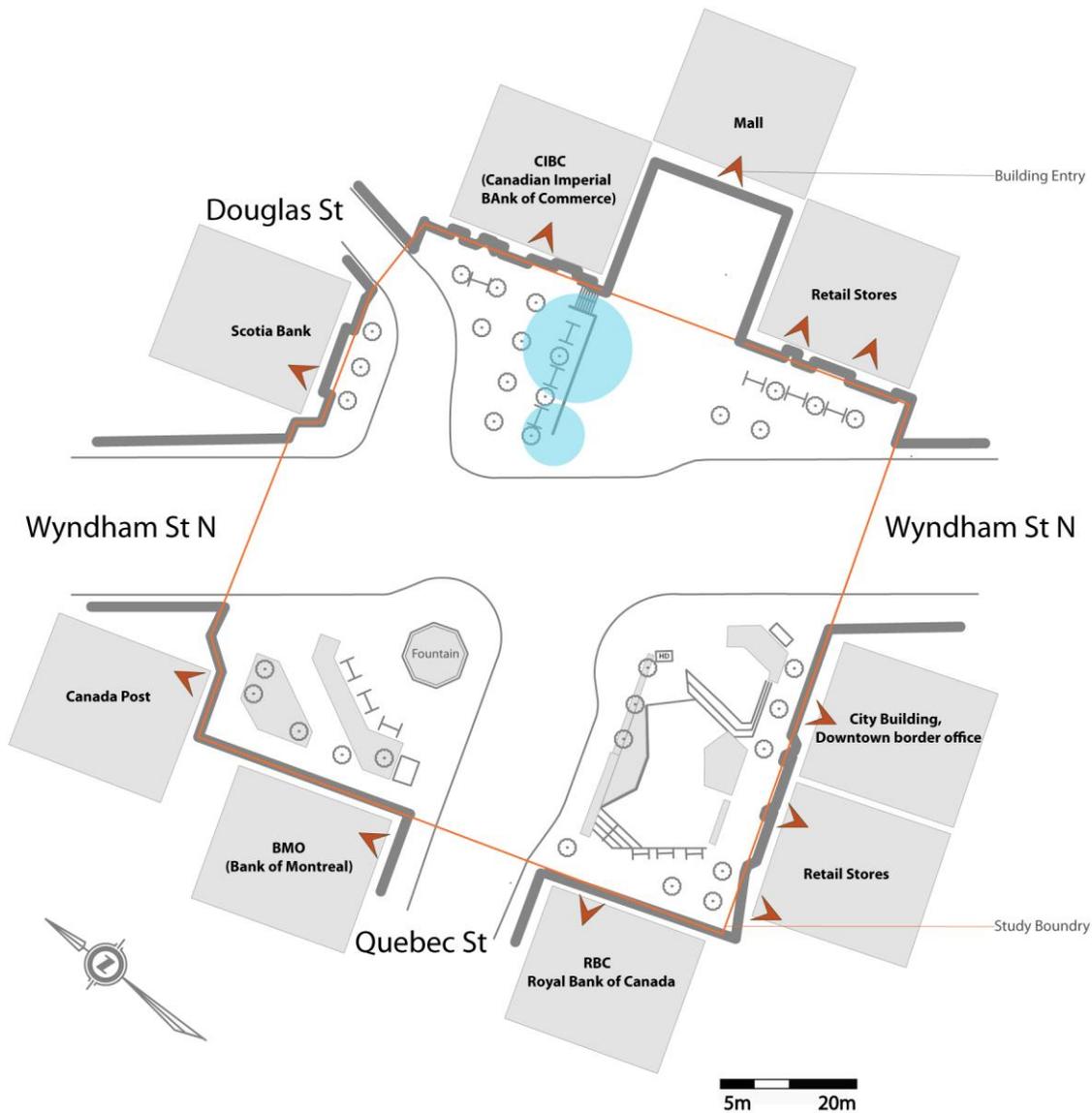
Moreover, based on the intercept interviews and field observations, the second major group of users were those people who spent a longer time than the average at the four corners of the Saint George’s Square. These users reported spending their time watching people, meeting their friends and relaxing. They said, “I like coming to Saint George’s Square. It is very alive, and I enjoy watching a lot of people passing by”. Also an elderly user commented, “I retired a few years ago and since then and before it also I and my friends used to come to Saint George’s Square regularly. We are a group of five using this spot to meet”.

In the pre-change period, users of St. George’s Square said they were engaged with various activities occurring more frequently over an extended period of time. They use downtown for various activities and services such as banks, health, business, public administration, dining, shopping, or going to events. They mostly complained about the poor physical quality of Saint George’s Square. Also they were concerned about the negative interaction they happen to have sometimes with some of Saint George’s Square patrons who were mainly occupying the north-eastern quadrant of the square both throughout the day and into the early evening. People interviewed said they were not comfortable with a group of younger people that spent time in the square. Some interviewees commented, “They yell at any one that passes by them”. This group of young people are referred to here as “Constituency Patrons”.

Most of the interviewees travel to the downtown by walking or driving. Those coming by private auto often suggested that more parking was needed.

After moving the bus transfer stops from Saint George's Square to the Transit Terminal, the most significant discovery was that the number of users and their activity throughout the day and night was reduced dramatically. Also users, who were not using Saint George's Square for transit but were using it for activities such as eating, meeting friends, people watching etc., were spending more time in the square post-change. They said that, "I used to come to Saint George's Square before buses left. But now I like it better. It is quieter". Another said, "I usually have a coffee with my friends in the afternoon here [Saint George's Square] and I feel it more relaxing these days". And, "I come here with my child almost every day. I like it here especially when some people are playing music". Most of these users stated that they feel more "safe" and comfortable in Saint George's Square because of the removal of the buses. They said, "Thank god! Those crazies are gone. [referring to the constituency patrons] Now I can stay here without hearing any shouting or yelling every once a while"

The number of constituency patrons was dramatically reduced from the northeast quadrant of Saint George's Square (Figure 5-3) where they spent most of the daytime and early evening. As well, the frequent clustering of youth on the north side of the wall discontinued following the change of the transit node. As a result, the use of the northeast quadrant of Saint George's Square completely changed from a "dangerously active" to "quiet and safe" corner, based on the opinions of some of the intercept interviewees. Some of the interviewees that appeared to be skaters said that, "We did not like to go to that spot [where constituency users stayed] but now we have been practicing there a few times".



**Figure 5- 3** Pre-change period- constituency users’ location

Based on the field observations and the intercept interviews, it is notable that people, especially the elderly and parents, tended to stay in Saint George’s Square longer in the post change period compared to pre change period. They said, “We enjoy it better. There is no bus and crazy traffic

of people just moving around. Less sounds, less hassle [laughing]!” Another guy said that, “when buses were here they blocked my view; now it is more open”.

## 5.5 Temperature

The results gathered from temperature observations indicate that the minimum temperature in the pre-change period was 5.8 degree C and the maximum temperature in the pre-change period was 28.6 degree C. The minimum temperature in the post-change period was 8.2 degree C and the maximum temperature in post-change period was 26.2 degree C.

As previously discussed the pattern of users’ behaviour changed in post-change period compared to the pre-change period, but the temperature did not change significantly in the pre- and post-change periods. It is assumed that temperature likely did not influence observed changes in behaviours because the temperatures were fairly consistent throughout the pre and post change period (Figure 4-21).

## 5.4 Summary

A discussion of the implications of the research results are discussed in this chapter and the principal observations arising from the research and analysis of Saint George’s Square are presented. The categorized behaviours of users in each day of the pre- and post-change periods are presented, compared and discussed. The variation in the number of users in different times of the pre- and post-change period study is elaborated. Also intercept interview results and the interpretation of the temperature results are discussed in this chapter.

## CHAPTER VI

### Conclusion

#### 6.1 Overview

A summary of the research process, as well as the implications of the research findings is presented in this Chapter. Also, the potential for future research is discussed.

#### 6.2 Summary of the Research

The objectives of this study were to understand the physical structure and the layout of Saint George's Square, recognize the pattern of users' behaviour both pre- and post-transit change, and understand, in a very general fashion, users' attitudes about the square. These have been met by this research by mapping the layout, physical structure and the adjacent neighbourhood use of Saint George's Square, documenting and analysing the number of users and types of use before and after transit change, and by collecting qualitative information about the Saint George's Square users through interviews.

Saint George's Square's location was mapped to understand its physical structure and layout. Also, human behaviour was systematically observed over a period of time for pre- and post-transit change. Observation of the location and behaviour of Saint George's Square users were mapped and collected to document the changing pattern of user behaviours. Furthermore, qualitative information from users was obtained via intercept interviews.

The results of this research suggest that public transit could be an important factor in the use of public squares, especially when transit hubs are located within squares. In this study, more people spent more time in Saint George's Square in the presence of public transit. However, the type of use did change after the transit hub was moved. This research found that the type of use, the duration of use, the location of use, and type of user were different in post-transit change. In the pre-change period, the northeastern quadrant of the square was occupied by two distinct groups of users- a group of youth gathered around the Saint George's Square sign, and a group of middle age to older users gathered on the benches along the top of the wall, adjacent to the Canadian Imperial Bank of Commerce entrance. In the post change period these two groups no longer frequented these locations in the square and had not relocated to other areas in the square based during the study period.

Based on the results of this research it is evident that public transit could be one of the important design elements that significantly affect the quantity and quality of use in urban squares.

An understanding of the relationship between public transit and the users of public squares is important for the successful design of these spaces. Landscape architects and urban designers should take into account the factors that influence the use of public squares. Planning and design decisions that do not consider such factors are likely to have unanticipated results.

In addition, an awareness of the types of patrons who use public squares and their preferences is important in order to make decisions that protect the public square features that are valued by the related group.

### 6.3 Future research

Additional research needs to be done with longer time periods of observation, possibly throughout different seasons of the year to understand variations in users' behaviour patterns. In this research, observations were conducted over a month in the summer. In order to gain a more accurate understanding of users' behaviours, (as both a baseline and post transit hub change) it would be beneficial to see how users' behaviours change over a broader period of time and throughout the year.

As well, detailed climate data collection that includes accurate local temperatures would be useful in clarifying how weather and temperature might influence use and behaviour. A more local collection of climate data in which sun and shade areas are documented would help to know more about the locations users prefer during different times of day and night.

In addition, a more targeted study to find out about the variations in space use of different types of user groups (e.g., the elderly, constituency patrons, etc.) would be very beneficial in indicating where different users tend to engage in certain behaviours. The reasons for the constituency patrons vacating the Saint George's Square remain unanswered but pose intriguing question for future research.

Also, interview questions with more detail and broader options would likely better reflect the complexity of reasons people use public squares. A detailed survey of people's motivations for using Saint George's Square might lend an additional facet of information to better understand such factors that Saint George's Square patrons consider important.

In this research, it was found that the number of users in the square was reduced dramatically and the duration of people's time within Saint George's Square increased significantly with the change in public transit. Exploring this research result further would be an interesting area of focus for future research as this outcome challenges the notion that high levels of activity are generally desirable. Future research is needed that distinguishes the quality of the experience of civic space from levels of activity.

In this study, changes in user behaviour were observed and documented following the change of one dynamic element, the removal of the transit hub function from the Saint George's Square. Given the significant change observed in the pattern of use from only one programmatic change, these results point to the need for a much greater focus on the study of the programmatic design of civic spaces as a pre-requisite to the introduction of physical design interventions. In order to fully understand the implications of programmatic changes on the use of civic space, civic programming and management should form an integral part of the process of civic space design. As well it is imperative that changes in the programming of the civic space be monitored over time to understand the impact of changes on user behaviour.

#### **6.4 Limitations of the research**

A limitation of the study was the sampling of behaviour observations and interviews. Because changes in transit were expected to happen quickly, behaviour observations were conducted in a shorter than desirable period of two weeks prior to transit change and two weeks after changes in transit had occurred. Also, this research was done throughout May and June 2012 and use may

be substantially different at other times of the year. A few weeks of sampling that occurred in early summer may not be reflective of use at other times of year, particularly those times when University of Guelph students are in school.

Furthermore, observations can only capture the number of people and only certain behaviours were categorized and recorded. This may mean that other types of user activities were missed and not included. Another potential limitation of the study was that the interviews were brief and it may not reflect the complexity of reasons people used the Square. While this study used multiple methods to investigate the effect of public transit on Saint George's Square use and people's behaviour, there may be extraneous reasons for pre and post square use that were not covered by this research.

## **6.5 Concluding thoughts**

Creating strategies by which community liveability can be attained has been one of the important issues in urban research for at least the last 50 years. Although many aspects of liveability such as land use, mix of uses, etc. continue to be the subjects of research, the influence of urban transit hubs in the public realm has not been explored sufficiently as the results of this study demonstrate.

An appreciation of the relationship between public transit and use could lead to a better understanding of public behaviour and the ephemeral characteristics of a public space. These research results appear to have some implications for the design characteristics related to public square transformation and development.

In the beginning of this study it was unclear what affects would be observed with the changes in transit that the City of Guelph had implemented. Following the analysis of data it was observed that the use of Saint George's Square was influenced significantly by public transit. The number of users and the time they spent in the square varied considerably after public transit was relocated. Also it was seen that people behaved differently with changes in transit. What these results show is that transit decisions should be carefully considered not only in the context of costs and mobility but also in how transit hubs can affect behaviour.

Reinvesting in the city's urban civic spaces in order to make a community more liveable is perhaps the most important goal in city planning. Public squares play a significant role in the liveability of a city and further research regarding factors affecting their use would help us to enhance our understanding of their application for future urban design and development. Cities are perhaps the most complex of all human creations and all designers have an obligation to better understand how best to make them liveable for the people that share space with each other and their built habitat.

## References

- Burcher, L. (2012). Who is your civic space? *ISOCARP*, 2-6. Retrieved from [http://www.isocarp.net/projects/case\\_studies/cases/list01.asp?accepted='yes'&year='2012'](http://www.isocarp.net/projects/case_studies/cases/list01.asp?accepted='yes'&year='2012')
- Burrow, C. (1877). *The Annals of Guelph*. Guelph: Herald Steam Printing House.
- Carr, S., Francis, M., Rivlin, L. G., & Stone, A. M. (1992). *Public Space*. Cambridge: Cambridge University Press.
- Chidister, M. (1986). The Effect of Context on the Use of Urban Plazas. *Landscape Journal*, 5(2), 115-127.
- City of Saskatoon. (2011). *Public Spaces, Activity and Urban Form*. City of Saskatoon.
- Florida, R. (2009). *Who's your city?* Vintage Canada Edition.
- French, J. S. (1978). *Urban Spaces: A Brief History of the City Square*. Dubuque, Iowa: Kendall/Hunt Publishing Company.
- Girouard, M. (1985). *Cities and People*. New Haven & London: Yale University Press.
- Googlemap. (n.d.). Retrieved from [http://maps.google.com/maps?q=city+of+Guelph&um=1&ie=UTF-8&sa=X&ei=KewHUYL9GcmwyQHv7oGwBA&ved=0CAsQ\\_AUoAA](http://maps.google.com/maps?q=city+of+Guelph&um=1&ie=UTF-8&sa=X&ei=KewHUYL9GcmwyQHv7oGwBA&ved=0CAsQ_AUoAA)
- Jotham, N. (1991). Downtown Guelph, Tour in 1920s. *The Guelph Historical Society's volumes on the History of Guelph*, 14.
- Maitland, B. (1985). *Shopping Malls: Planning and Design*. Essex, England: Construction Press.
- Marcus, C. C., & Francis, C. (1998). *People Places: Design Guidelines for Urban Open Space*. New York: John Wiley & Sons, Inc.

- Miles, D. C., Cook, R. S., & Roberts, C. B. (1978). *Plazas for People*. Washington, D.C.: Project for Public Spaces, Inc.
- Mumford, L. (1961). *The City in History Its Origin, Its Transformation, and Its Prospects*. New York: Harcourt, Inc.
- Reps, J. (1965). *The Making of Urban America*. Princeton: Princeton University Press.
- Saskatoon, C. o., Inc., S. S., & Saskatchewan, U. o. (2011). *Public Spaces, Activity and Urban Form*. City of Saskatoon.
- Waterston, E. (1978). Galt, John, The Founder of Guelph. *The Guelph Historical Society's volumes on the History of Guelph*, 9.
- Whyte, W. H. (1980). *The Social Life of Small Urban Spaces*. Washington, D.C.: Conservation Foundation.
- Zeisel, J. (1984). *Inquiry by Design*. New York: W.W. Norton & Company.

## Appendices

### Appendix A Intercept Interview Questions

1-How did you travel to the square today? Bus, car, bike or walking
2-Where did you travel from? Home, work, school, other
3-What is the closest intersection that you traveled from?
4-Where are you going to from here?
5-(If traveled by bus) how often do you take the bus to Saint George's Square?
6-(If traveled by other mode) How often do you come to Saint George's Square?
7-Did you come here today for your:  Work, school, services (bank, appointments, etc.), shop, eat/drink, events, meet friends, people watch, or transfer buses
8-Do you visit Saint George's Square at other times to:  Work, services (bank, appointments, etc.), shop, eat/drink, events, meet friends, people watch, or transfer buses
9-Is there anything else you want to share about Saint George's Square?