

**ACTIVE TRANSPORTATION AS AN INTEGRAL COMPONENT  
OF URBAN TRANSPORT:  
FACTORS INFLUENCING WINNIPEG**

by

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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University  
of Manitoba in partial fulfillment of the requirements of the degree  
of

Master of City Planning

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## ABSTRACT

This practicum is a systematic analysis of active transportation at the planning stage of policy and project development, with specific reference to Winnipeg. Active transportation includes all forms of human-powered transportation, such as walking and cycling. In the past, the City of Winnipeg has considered walking and cycling intermittently and the necessary programs and infrastructure have been developed sporadically. This research bridges plans and actions.

The research systematically analyses plans for integrating active transportation into the city's transportation network. The information gathered, analysed and synthesised provides ideas for future development of the active transportation network in Winnipeg. This research can help City officials integrate active transportation modes into Winnipeg's existing transportation system, and determine means to overcome constraints often cited as barriers by the public.

Factors influencing active transportation use are presented, based on literature and experience from leading jurisdictions. These factors are used as the basis for analysing past, present, and future active transportation programs and infrastructure in Winnipeg. City documents and local user group literature is identified and evaluated based on active transportation content. Also, analysis of local, national, and international planning and design guidelines shows their relevance to active transportation integration into multi-use roadways.

Interviews with representatives from local organisations are conducted to gain perspectives on present and future active transportation projects. Interviews also help gather expert information on the planning process, marketing tools, and knowledge of active transportation.

The research contributes to planning knowledge, specifically transportation planning, by applying established planning theories to the field of active transportation. The research also builds on the links between transportation and land use. Findings show that the two areas affect each other and can not be considered separately.

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*I follow footprints through the snow  
Right down the middle of the road*

D. Michel 2001

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# CHAPTER 1

## INTRODUCTION

### 1.1 THE PRACTICUM

The practicum is a systematic analysis of active transportation policy and project planning in Winnipeg. Active transportation is any form of self-generated (i.e., non-motorised) method of transportation (Go for Green 1998). Analysis summarises why active transportation programs and infrastructure have not been fully developed in the past, and why they deserve a closer look as a viable component of Winnipeg's transportation system.

The research evaluates demand for active modes through benefits and the best means of increasing use. Constraints, such as public safety concerns, are also evaluated. An overview of the issues and options to be considered by transportation professionals is provided, giving them information to help make future decisions.

### 1.2 BACKGROUND

There is a need for increased sustainable transportation use at the local level, as stated in *Towards a Sustainable Winnipeg. An Environmental Agenda*:

The City can also do much to encourage alternative transportation and increased transit use... improving air quality, reducing automobile reliance and contributing to attaining Canada's commitments to the Kyoto Protocol (City of Winnipeg 2001).

In Winnipeg, improvements to sustainable modes of transportation require the formulation of clear, coordinated plans by City departments involved in developing policies and projects (“Unplanned City.” 2002). This statement will be explored in the research.

Active modes of transportation rely on human power. Some of their benefits include:

- decreasing greenhouse gas emissions that are believed to be the leading cause of climate change;
- improving personal health, leading to savings in the health care system;
- promoting community stewardship and improved quality of life by allowing residents to interact with each other and the environment (Go for Green 2000).

### **1.3 OBJECTIVES**

The practicum has four objectives, formulated from the outset to address the research goal. These are:

- *Determine and evaluate factors influencing active transportation use.*

What role does the perception versus the reality of active transportation options play for both individuals on the supply end and those on the user end? Do decision-makers and those implementing the transportation infrastructure fully integrate active transportation into the existing transportation network based on facts and benefits? These

questions are addressed from a review of literature from Canadian and international jurisdictions dealing with the factors that influence active transportation use.

- *Perform a systematic analysis of past active transportation policies, plans, and projects, and their results.*

How important has active transportation been to transportation organisations in Winnipeg? Does the City follow a set of guidelines to develop and design active transportation infrastructure? Analysis of past City documents determines how active transportation programs and projects have been incorporated into the city's transportation network.

- *Critically evaluate current active transportation initiatives being pursued by transportation planning organisations.*

What are the City's plans for developing active transportation programs and infrastructure in Winnipeg? Are active transportation principles reflected in City policies? Do user groups foresee similar gaps in demand and usage as the City does? To answer these questions, information is drawn from interviews conducted with City officials and local transportation experts.

- *Determine opportunities for development of future active transportation programs and infrastructure, and make recommendations.*

What needs should be fulfilled and what opportunities should be pursued?

Recommendations are made based on existing documentation and interview responses.

Recommendations consider all factors related to demand.

#### **1.4 SCOPE**

The research focuses on municipal and non-governmental organisations whose mandate is to improve transportation systems in Winnipeg. Their work is the initial step in providing active transportation programs and infrastructure to the public. This research provides a comprehensive assessment of past and present planning practices in this mid-sized city.

Real and perceived barriers to active transportation use are identified. This is complemented by examination of City and user group documents describing past active transportation projects that have been attempted or completed in Winnipeg. This inventory helps differentiate between the perceptions of active transportation held by individuals and the realities of it. By understanding the factors affecting active transportation, transportation professionals can design and market infrastructure and programs that contribute to a multi-modal transportation system.

This research covers new ground in its setting (Winnipeg) and in its approach (determining factors that influence users, transportation professionals, and decision-

makers). Findings consider the local situation while highlighting the issues that should be considered by transportation professionals and decision-makers.

## **1.5 METHODOLOGY**

The research is based on two principal sources: published documentation and interviews.

### *1.5.1 Published Documentation*

Published material ranges from general sustainable transportation literature from national organisations, such as Transport Canada, to specific local documents, such as *TransPlan 2010* (City of Winnipeg and the Province of Manitoba 1998). Also, documents are sought from all three levels of government, and active transportation user groups, such as Resource Conservation Manitoba.

National and international design guidelines are also analysed to determine their relevance to the Winnipeg context. These are supplemented with analysis of local design guidelines.

### *1.5.2 Interviews*

Seven semi-structured interviews were conducted with representatives in City of Winnipeg departments involved in transportation issues, and experts in the field of active transportation who did not represent a particular mode. The semi-structured interview method was used because it allows for focused information gathering on broad and specific issues (University College Cork 2002). These interviews supplemented the information already collected in the review and analysis of published documents. Together, the interviewees represented a broad range of transportation planning interests. Interviewees were identified from a series of initial interviews conducted to gain a better understanding of active transportation in Winnipeg.

- *Participants*

Interview participants were selected for their knowledge of active transportation in Winnipeg, including past projects, present active transportation developments, and future plans. In addition to their statements, information was also gathered on an informal basis from representatives of other related organisations. This was necessary, as the research progressed, because gaps in the researcher's knowledge needed to be filled. This information was not used in the formal evaluation of interviews, but rather as supplementary material throughout the document. Interviewees were identified and selected from the following organisations:



- Executive Policy Committee, City of Winnipeg;
- Community Services, City of Winnipeg;
- Planning, Property and Development Department, City of Winnipeg;
- Public Works Department, City of Winnipeg;
- Resource Conservation Manitoba (RCM);
- Winnipeg Transit, City of Winnipeg.

- *Method*

The use of a semi-structured interview guide ensured that participants' specific areas of interest and expertise were covered. The interview guide was created, tested, revised, and then approved by the University of Manitoba's Ethics Board before being used. The guide includes a series of short-answer questions and open-ended questions to gain a wide range of responses in a short period of time. These interviews were recorded for further analysis and to ensure reliability without bias from the interviewer's own perceptions during the session.

- *Questions*

Interview questions determined previous active transportation programs and infrastructure in each participant's organisation. The questions also identified those present and future plans and projects that integrate active transportation. The questions maintained the anonymity of individual participants as agreed to in the Ethics process.

### *1.5.3 Other Information Gathering Activities*

During the research, other activities were undertaken to help inform the practicum. These included:

- Researching and presenting papers on sustainable and active transportation at national conferences. This involved gathering information and interviewing local experts. Papers were co-written with authors from the Faculty of Engineering, which provided a complementary perspective to planning.
- Attending international conferences, where information was gathered from presentations, forums, committees, and individuals.
- Participating in planning conferences geared towards particular segments of the population (i.e., youth, residents of a specific area, transportation professionals).
- Participating in Winnipeg presentations and public consultation sessions where local active transportation information was gathered.

## **1.6 CHAPTER ORGANISATION**

This practicum is divided into 8 chapters, including introductory and concluding chapters. Chapter 2 is a literature review in the fields of sustainable transportation, active transportation, and planning theory. Chapter 3 identifies and analyses demand for active transportation, including the benefits and constraints of active transportation, indicators of use, and ways of marketing and promoting active modes to the public. Chapter 4 identifies and analyses contemporary planning and design guidelines that are used by transportation planning organisations in Winnipeg, including international sources and accepted national and local guidelines. Chapter 5 is an analysis of past active transportation policies, projects and their effects in Winnipeg. It covers documents written or commissioned by the City over the past 60 years. Chapter 6 presents current

active transportation policies and projects being implemented or planned for the future. This information is gathered from interviews with City officials and local transportation experts. Chapter 7 discusses these findings and presents an analysis based on the information gathered throughout the practicum. Finally, Chapter 8 presents a synopsis of the research findings.

## **1.7 LIMITATIONS**

The research does not include surveys or focus groups with members of the public. The outcome of this research is intended to help planning organisations implement more active transportation infrastructure and encourage the public to use it. This involves analysis of past practices within the city to determine the best means of developing and promoting active transportation in the future.

However, the public is involved after the practicum is complete, in the dissemination phase of the research. The public has access to the research by reading the project at the University of Manitoba library, and by attending conferences where the researcher discusses findings.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This chapter is a literature review of alternatives to the personal automobile. Specifically, active transportation literature is reviewed. This includes the benefits and constraints that influence demand for active transportation, existing policies, and the programs and infrastructure in place in Canada and internationally. The chapter presents ways cities are dealing with automobile dependence. The best means of promoting active transportation is also presented, as there is little published information about the role of social marketing in promoting active modes of transportation. Framing existing literature around the case of Winnipeg is a unique undertaking.

The literature is from international, national, and local sources. The research draws on the expertise of organisations outside of Winnipeg to complement local experts, including:

- American Centres for Disease Control and Prevention (CDC);
- Association of Pedestrian and Bicycle Professionals (APBP);
- Better Environmentally Sound Transportation (B.E.S.T.);
- Canadian Urban Transit Association (CUTA);
- Centre for Sustainable Transportation;
- City of Ottawa;
- Federation of Canadian Municipalities (FCM);
- Go for Green;
- National Highway Traffic Safety Administration ((NHTSA);
- Organization for Economic Cooperation and Development (OECD);
- Transportation Association of Canada (TAC);
- Transport Canada (TC);

- Transportation Research Board (TRB);
- US Department of Transportation (US DOT);
- Victoria Transport Policy Institute (VTPI).

These sources are recognised for their transportation research and publications. Other sources relevant to the research are consulted, as shown in the reference list.

## **2.2 TERMINOLOGY**

### *2.2.1 Livability*

The concept of livability underlies this research, and is the reason why integration of active transportation into Winnipeg's transportation network would enhance residents' quality of life. Livability depends on the quality of the transportation system available to residents. Livability encompasses those elements of home, neighbourhood, and metropolitan area that contribute to safety, economic opportunities and welfare, health, convenience, mobility, and recreation (Vuchic 1999). It is not quantitatively measured, but is a qualitative indication of individuals' sense of comfort and happiness with their surroundings.

### *2.2.2 Balanced Transportation System*

The term 'balanced transportation system' is often used, but rarely defined. A balanced system includes transit, walking, cycling and automobiles and provides people with appropriate transportation choices (Burgess et al. 2002). It provides a choice of

modes and allows the user to select the appropriate one depending on factors such as time, cost, and level of fitness.

### *2.2.3 Sustainable Transportation*

The field of sustainable transportation is broad and includes several modes that offer individuals an alternative to using their personal vehicle. Many organisations worldwide use the term, but there is no consensus on a definition. One useful definition is:

A sustainable transportation system is defined as one in which fuel consumption, vehicle emissions, safety, congestion, and social and economic access are of such levels that they can be sustained into the indefinite future without causing great or irreparable harm to future generations of people throughout the world (Richardson 1999).

Sustainable transportation includes active modes, as well as modes such as transit, carpooling, car-sharing, and concepts such as telecommuting. Sustainable transportation modes provide alternatives to the personal automobile, which have lower levels of fuel consumption and improve social and economic access.

### *2.2.4 Active Transportation*

Active transportation is also used by Go for Green, a national non-profit organisation whose mission is to encourage outdoor physical activity that protects, enhances or restores the environment (Go for Green 2002). Active transportation is any form of self-generated (i.e., non-motorised) method of transportation (Go for Green

1998). Types of active transportation include walking, cycling, skating, in-line skating, skiing, and canoeing. For the purposes of this research, the terms walking and cycling are often used interchangeably with active transportation, as they are the most prominent modes of active transportation. However, this does not discount the importance of other active modes of travel, such as skating in the winter months.

#### *2.2.5 Social Marketing*

Social marketing is the design, implementation, and control of programs calculated to influence the acceptability of social ideas, and involves considerations of product planning, pricing, communication, distribution, and marketing research (Kotler and Zaltman 1972). Social marketing entails the promotion of ideas as products. Traditional marketing schemes involve tangible products, making the transaction concrete, but, as in the case of active transportation, the product is a behaviour so the transaction is intangible.

### **2.3 PRINCIPAL SOURCES OF INFORMATION**

#### *2.3.1 United States*

Principal sources of information from the United States include the US Department of Transportation (US DOT) and the Transportation Research Board (TRB). The US DOT provides examples of active transportation infrastructure from several

States, statistics on use, and research on the safe integration of active transportation into the overall transportation system. TRB provides the latest in active transportation research, including type of users, interactions between them and other system users, analysis of the benefits and constraints of active modes, and means of marketing their use.

Other organisations in the United States, such as America Walks, the Association of Pedestrian and Bicycle Professionals, and the National Center for Bicycling and Walking, provide resources for increasing active transportation use that are equally applicable to the Canadian context. These are organisations of professionals working in various cities developing and running programs to get people more active. The activities of these organisations influence the research conducted by TRB and US DOT.

### *2.3.2 Canada*

In Canada, there is no national organisation for professionals in the specific field of active transportation. Rather, there are several organisations across the country that network together, and some professionals choose to join American organisations, such as the Association of Pedestrian and Bicycle Professionals. Examples of often-cited regional organisations in Canada include Vélo Québec, the Victoria Transport Policy Institute, B.E.S.T. (Better Environmentally Sound Transportation), and Moving the Economy.



Environment Canada and Transport Canada are two federal departments that have sustainable transportation policies. They have developed a series of strategic direction statements for all future decision-making in their respective departments.

- Improve access by providing environmentally sound transportation options best adapted to the specific circumstances, giving people attractive choices as to how they meet their access needs.
- Give priority to less polluting, lower impact modes of transportation in the design of transportation systems and urban areas such as pedestrian and cycling paths (Environment Canada and Transport Canada 1997).

Canada Mortgage and Housing Corporation (CMHC) has funded many research projects in the broader field of sustainable development. CMHC is exploring the relevance of sustainable development to all aspects of daily life, including transportation, where residents of urban areas can live sustainably by using alternatives to the automobile (Canada Mortgage and Housing Corporation 2001). The report, *Implementing Sustainable Community Development: Charting a Federal Role for the 21st Century*, describes a survey conducted with 37 'elite' developers, development consultants, planners, and 'champions' well known for their efforts to promote sustainable development (Peck and Associates 2000). Participants were asked questions about how they approach various aspects of sustainable development in their practice, with one aspect being transportation. Those surveyed were asked whether they had ever tried to encourage alternatives to the motor car as a means of transportation, such as including bicycle lanes, or using traffic calming. Responses addressed the barriers that exist in trying to encourage transportation alternatives. Of interest to the practicum, one participant stated that in the suburbs it is difficult to consider sustainable transportation

because of existing infrastructure, and the network of financial incentives for auto use and disincentives for alternatives.

The Victoria Transport Policy Institute provides many current resources on its web site. Topics cover transportation choices, including cycling and walking, reasons for choosing sustainable modes, and means of altering travel mode selection (Victoria Transport Policy Institute 2002). These topics outline transportation choices, and present reasons for the lack of sustainable travel support from planning bodies, including a lack of policy direction, uncoordinated planning efforts, and land use pressures.

Go for Green and Tools of Change are two organisations dealing with the promotion of active transportation and sustainable transportation through national programs that address local issues and examples of best practice from across the country. Their web sites include up-to-date sources of information, practitioners' views, and relevant examples to the Winnipeg region.

## **2.4 ISSUES FROM LITERATURE**

### *2.4.1 Transportation/Land Use Interface*

All modes have a purpose in a transportation system, but the social problems engendered by auto-centred transport are reaching a critical point (Freund and Martin 1993). One way of dealing with this dependence is to decrease unnecessary trips or

combine trips to reduce travel time. Lewis Mumford promoted the benefits of reducing the need to travel. A good transportation system minimises unnecessary transportation and offers a change of speed and mode to fit a diversity of human purposes (Mumford 1968). Unnecessary trips are those that could be combined with other trips to minimise the overall amount of travel. Many of his observations and predictions have now been realised, with urban transportation systems centred on personal motorised travel.

Mumford does not elaborate on whether it is the transportation system or land use patterns that determine the number of trips taken by individuals on a typical day. New development dictates where transportation infrastructure is needed to move people and goods. As a result, the roadway system develops. The need, cost, and politics of development can not be ignored when explaining how transportation fills the need to move people and goods. For example, because of the low cost of land outside a city core and the political influence that developers may have, new development is built in unserved locations. Roads then have to be built to move residents and goods in and out of this area. Therefore, it is a combination of many factors that determines how many and what types of trips are made on a daily basis.

Traditional land use planning practices have addressed transportation and land use as separate elements. Sprawl is an indication that land use and transportation affect each other and are closely linked. There is only one answer to solving this problem: work on both issues together (Burden 2001). The best means of accomplishing this is to have the professionals involved in these areas (planners, engineers, developers, elected officials)

working together and not focusing on individual components of the broader issue. An advantage of this practice is that several issues that arise in all these areas are addressed, including resource allocation, cost mitigation, environmental preservation, and climate change. The end result is the adoption of land-use policies that support rather than frustrate sustainable transportation systems (Resource Conservation Manitoba 1999). For example, these policies mitigate climate change by addressing land use and transportation together.

Traditional land use planning discourages walking and cycling because of the great distances and lack of infrastructure between origins and destinations. Although the goal of active living is to integrate physical activity into the daily routine, the greater part of most cities and towns is built in a way that discourages people from travelling on foot or by bicycle (Bradshaw and Sherwood 1999). Present land use patterns, particularly suburban developments, are auto-centric, but can be modified to allow for a greater variety of uses, enabling individuals to more easily convert short-distance trips to active modes.

#### *2.4.2 Funding*

Government funding agencies should enforce criteria that require localities to achieve a variety of modes, i.e., use of more transit, bicycling, walking, and car pooling to reduce vehicle miles travelled (VMT) (Kelbaugh 1997). By funding more sustainable modes of travel, government agencies demonstrate to the public the importance they

attach to transportation alternatives and encourage residents to use alternatives to their vehicles for some trips. In the long term, funding policies will reflect the beliefs and actions of a critical mass of people who presently recognise that auto-dependency has to shift to lower levels of car use and higher levels of accessibility and environmental quality (Alvord 2000).

In the United States, federal funds are available for active transportation projects under the Transportation Equity Act for the 21st Century (TEA-21) and its predecessor, the Intermodal Surface Transportation Equity Act (ISTEA) (USDOT 2002).

Organisations such as the National Bicycle and Pedestrian Clearinghouse recognise the importance of linking a variety of modes together in order to make them accessible to the greatest number of users. For example, integrating bicycle use with transit can increase the number of transit riders and fare revenue, by drawing on those who live too far to walk to transit stations. The environmental benefits of drawing on these travellers can also be significant. Converting transit access trips from auto to bike, or converting car commutes to bike-n-ride transit trips, can produce significant emission reductions (National Bicycle and Pedestrian Clearinghouse 1995).

The Canadian Federal Government cannot achieve a shift in transportation behaviours alone. It is responsible for negotiating Canada's international commitments on climate change, but has limited powers to influence land use and those modes of transport, except aviation, that are the greatest contributors to unsustainability (Neville 1997). A Canadian sustainable transportation initiative must come from a shared vision

and equal responsibility between the public, and Federal, provincial, and municipal governments.

Canada (or the United States) does not have one organisation that is responsible for all aspects of the transportation system. For example, cycling relates to several jurisdictions, including transportation, recreation, health and safety, environment, energy, community development, and tourism. This can be detrimental as no one agency or body takes responsibility for the creation of an overall cycling-friendly environment (Clarke 2000). Each mode of transportation falls under a series of jurisdictions, limiting the ability of any one organisation to secure funding.

#### *2.4.3 Integration with Public Transit*

Often, users must either drive or actively transport themselves to major transit stations. All drive-alone access trips to rail stations emit levels of pollutants that are not much below those of the typical 10-mile solo commute (Cervero 2001). Mixed-use environments allow more people to live near transit. They also provide pedestrians with more opportunities to use active transportation. Further, mixed-uses allow residents to combine trips, resulting in a decrease of unnecessary trips.

Walking and cycling are integral components of a transit system. To attract the greatest number of riders in new communities, transit must provide bus stops sufficiently close to residents. The standard for Winnipeg is that all residences should be located

within a 400-metre walking distance of the collector streets on which transit service is to be provided (Winnipeg Transit 2000). This ensures that residents do not perceive the walking distance to a bus stop as an obstacle.

Examples of transit integration in Canada can be found in Vancouver, Toronto, and Ottawa. Vancouver has developed extensive cycling infrastructure through organisations working to promote cycling as a viable option for residents (B.E.S.T. 2002). Bicycles are allowed on transit (with some restrictions) and bicycle lockers are located at strategic locations throughout the service area (Translink 2002). Toronto is recognised for encouraging transit-oriented development. Tax incentives provided for residential construction within 1,500 feet of subway stations have resulted in higher density nodes that include a mix of commercial and service uses (Freund and Martin 1993).

Similar growth patterns have occurred on a smaller scale in Ottawa around Transitway stations. 3,200 residential units and 440,000 m<sup>2</sup> of institutional and commercial space was built near Transitway stations in the eight years prior to 1996 (Rathwell and Schijns 2002). Bicycle racks on major routes and bicycle lock-up facilities at destinations allow transit riders to combine modes of transportation for longer distance trips. The Ottawa model is more applicable to Winnipeg because of its size, climate, and because it presently centres on a bus system and not a rail system.

#### *2.4.4 Active Transportation Programs and Infrastructure*

AM and PM peak hour counts are conducted on a regular basis for motorised vehicles across the country, but these ignore walking and cycling peak hour trips as well as all other types of trips not occurring during these time periods. Many urban transportation infrastructure decisions are made based on this narrow share of overall daily trips, and thus ignore the travel needs of many residents. Collision data must provide a clear picture of all roadway users in order to develop the safest possible transportation system.

Sustainable transportation literature recognises that encouraging individuals to leave their vehicles requires that more infrastructure be in place. For instance, contributors to the B.E.S.T. (Better Environmentally Sound Transportation) discussion list often describe how to improve public transit infrastructure in city centres. Examples include car-free streets, exclusive bus and streetcar lanes, and transit priority signals. In Winnipeg infrastructure development is dictated by weather conditions. The majority of use will be during warmer seasons. However, active transportation use can be year-round and should not be discounted. With proper education and awareness raising, anyone can partake in active transportation during colder months. As well as awareness raising programs, driving can be discouraged by:

- decreasing parking space availability and charging more to park downtown;
- limiting the number of vehicles allowed in a central zone;
- and encouraging employees to purchase transit passes.



Transit infrastructure improvements must be combined with expanded active transportation infrastructure. In Winnipeg, an example of this is the inclusion of a path, where possible, running the length of the proposed Southwest Transit Corridor linking downtown with the University of Manitoba's Fort Garry campus (City of Winnipeg and Province of Manitoba 2001). The Southwest Transit Corridor is a proposed dedicated busway system, which is the first component of a city-wide network of dedicated busways (Winnipeg Transit 2000). An adjacent active transportation path would fulfil one of Winnipeg Transit's future strategy components: that individual and group modes of travel be more fully integrated (Winnipeg Transit 2000). Specifically, building new paths and linking them to existing paths, roadways and transit corridors can create a useful network for cyclists.

Go for Green offers resources dealing specifically with increasing active transportation use in ways often overlooked by conventional transportation planning, such as in established communities where the infrastructure is already built (Go for Green 1997). This is most relevant to Winnipeg, because most of the city is already built up. Another area of potential active transportation use often overlooked is in the workplace. Methods for increasing participation levels in the workplace include providing lockers, shower and storage facilities, encouraging walking or cycling to daytime meetings, and creating an active transportation group to advise on measures that can enhance active transportation user-friendliness (Go for Green 1998).

In 1998, Go for Green commissioned a survey of Canadians to determine participation levels in walking and cycling among adults and school-aged children. Results provide a general baseline from which to estimate participation levels and interest in using active modes in Winnipeg. When asked whether they walk at least sometimes to any destination, 52 percent of respondents in Manitoba answered yes, and 65 percent of respondents living within 2.5 km of their destination responded that they walk at least sometimes (Environics and Go for Green 1998). This shows that a large percentage of Manitobans already walk as a means of transportation.

Other surveys have been conducted that provide information on participation levels in active transportation and interest levels in altering transportation behaviours. *Canadians' Opinions and Attitudes Toward Climate Change* provides information about how Manitobans view sustainable transportation (Pollara 1999). This survey includes sections on climate change and associated behaviour shifts. Results are divided into Canadian regions, including Manitoba.

One of the survey questions is of particular interest to this practicum as it addresses the importance of environmentally friendly attributes in the purchase of motor vehicles. The top three attributes that Manitobans state they look for when purchasing a vehicle are safety of the vehicle, low fuel consumption, and a less polluting motor vehicle (Pollara 1999). Individuals declare they are also aware of the environmental concerns of driving and show an interest in receiving information on other modes of transportation.

B.E.S.T., PedNet, tlc.net, and the Manitoba Cycling Association have Internet discussion lists dealing with sustainable and active transportation (See reference list for full addresses). The B.E.S.T. discussion list, based in Vancouver, provides information from across North America on incentives for using sustainable modes of transportation and ways to improve existing transportation infrastructure. PedNet, developed in Ottawa, provides information on pedestrian-related issues from North American and European practitioners in the transportation field. PedNet is a valuable resource as all posted messages are related to pedestrian rights and pedestrian infrastructure.

#### *2.4.5 Promotion*

The book *Divorce your Car!* outlines reasons for the public's love affair with the personal automobile, and ways to move beyond a reliance on the car. The book explores the role of marketing and advertising in ensuring individuals' continued fixation on the automobile. Altered travel behaviour could result from a marketing campaign on active transportation, focusing on the 'love affair' with a healthy body and environment.

Given the choice between two travel modes, individuals choose the easiest one – the one that has immediate benefits to them. With a shift to active transportation, physical fitness would improve, vehicle miles of travel and vehicle emissions would decline, less money would be spent for automobile travel, and social interaction would increase (Blomberg et al. 2000). Self-interest has great power over the choices

individuals make. Advocating active transportation is only successful if community as well as individual factors are identified and understood.

Trying to promote the benefits of active transportation to individuals, especially drivers, is a challenging task for transportation professionals. For drivers, the road is a medium, while for pedestrians and cyclists, the route is an experience (Untermann 1984). Individuals travelling by active modes have the chance to look around and observe their surroundings more than drivers and vehicle passengers. Drivers spend valuable time in traffic jams, finding vehicle parking, and paying to store vehicles while they go about their daily activities. Promoting active transportation to drivers should focus on showing them that travelling by active modes is not wasted time if the experience is pleasant, comfortable, and efficient.

#### *2.4.6 Health/Physical Activity*

An urban transportation system that revolves around the personal automobile means that fewer people benefit health-wise from the activities of walking and cycling (Litman 2002). Exercise does not have to be reserved for the gym; it should be an integral part of daily activity. For example, the Canadian Fitness and Lifestyle Research Institute states that only a third of young Canadians aged five to 17 are active enough for optimal growth and development (DeMont 2002). This is partly a result of being driven to school by their parents who believe that the route is unsafe to walk. However, it is

these same large numbers of parents and children in automobiles that are in part creating unsafe conditions (Engwicht 1999).

Parents can also benefit from the health aspect of active transportation and improve the sense of safety in their neighbourhoods by not chauffeuring their children to school. Parents can be great role models by walking with their children. This has the added benefits of more 'eyes on the street' to spot unsafe behaviours, and promoting social interaction between neighbours.

## **2.5 THEORY**

### *2.5.1 Social Learning*

Planning theory helps explain transportation mode selection, both from the individual's perspective and from the network decision-making perspective. Transportation planners are charged with balancing both the individual and common interests. Friedmann identifies 'change agent' as one role for planners. Change agents are professionals who bring certain kinds of knowledge to their client group, and in so doing encourage, guide, and assist their clients in the process of changing ideas and behaviour (Friedmann 1987). Resistance must be addressed when trying to alter behaviour. Social planners must be skilled in solving planning problems, but they also must be able to teach their publics to find solutions for themselves. The planner's job is to advise, or lay the groundwork for, the decisions of others, and not to act himself

(Friedmann 1974). This description of the planner's role is in the context of the professional realm. Friedmann's models and ideas are still relevant today.

Education and opportunities, which are provided in a favourable learning environment, influence individuals (Bandura 1972). In order for the experience to be favourable, it must be advantageous over another previously held experience. Cues and prompts are then required to encourage continual use. These cues and prompts can be external or internal (Rotter 1982). An individual's own beliefs are also a factor in whether they choose to alter their original behaviour. Thus, a mix of both external and internal cues brings about the greatest behaviour change in society.

Some cues are not consciously identified. It is not necessary that the person is able to verbally express conscious awareness of cues, but only that it can be demonstrated that he/she was reacting to them (Rotter 1982). This applies to transportation mode selection, where it is the end result that matters. Planners can refer to active transportation benefits when designing cues and prompts to encourage the greatest number of individuals to choose their travel mode wisely.

### *2.5.2 Advocacy Planning*

Advocacy planning, like social learning, is closely related to social marketing, because a distinct group is required to market new ideas to a larger community. Advocacy is an exchange transaction in which a highly credible source popularises a

concept and thereby generates widespread demand for it (Fine 1981). Central to this process is the practice of mutual learning, where the general and abstract knowledge of some is wedded to the particularistic and personal knowledge of others (Friedmann 1974). Transportation professionals and the public can learn from each other.

### *2.5.3 Zone of Influence*

Transportation professionals play an important role in influencing decision-making (Holmes 1997). They need to advocate all forms of transportation because the influence of the personal automobile has disadvantaged segments of the public, including children, the elderly, the poor, and transit-dependent individuals. These individuals are often not represented in the decision-making process.

Auto-dominated cities create a group of people we may call 'access-to-exchange-disadvantaged' (ATED). People who are ATED are often elderly, poor, disadvantaged, handicapped, children, parents without access to a second car and those who choose not to own a car. Between 40 and 60 per cent of the population in most Western cities are ATED (Engwicht 1993).

The personal automobile has a marked effect on the decision-making process of the built environment.

The influence of the automobile is not only seen in terms of social patterns but also in terms of physical space. The personal automobile has dictated the very character of urban life, most obviously in the design of the modern city (Lowe 1990). Cars have a zone of influence, requiring space for moving through, but also requiring space for

storage in several locations. This is a large amount of land that could otherwise be used differently by society.

The automobile's zone of influence reaches both those who do drive and those who do not drive, by limiting their range of local pursuits. Engwicht discusses a study conducted by Appleyard in San Francisco where he investigated residents' definition of 'home territory' on three different streets: one with light vehicular traffic; one with medium traffic; and one with heavy traffic. He showed that the heavier the traffic on a street, the less residents ventured into their immediate neighbourhood. Residents on the light traffic street identified an area including their front yards, sidewalks, and roadway as 'home territory'. In contrast, residents of the heavy traffic street only identified their driveway as 'home territory' (Engwicht 1993). This shows that residents' social zone of influence decreases as the vehicular zone of influence increases.

The demand by automobiles for space increases as the number of vehicles and their speed increases. A safety buffer is required for vehicles travelling at greater speeds, which adds to the loss of available space for society. This creates a transportation system that is designed around the automobile and promotes their use. The automobile's zone of influence is a concept that needs better understanding. Residents will only change their travel behaviours when the design of roadways dissuades driving as the primary mode for all trips.



## 2.6 CONCLUSIONS

Today there is widespread public support for the inclusion of non-motorised modes in urban transportation systems. Advocacy groups are ready to promote improved conditions for walking and cycling, and governments at all levels recognise the importance of active transportation infrastructure to a multi-modal system. All parties involved must work towards the same goal of providing a variety of travel options. The United States Department of Transportation makes a succinct statement about the importance of this:

The challenge for transportation planners, highway engineers and bicycle and pedestrian user groups ... is to balance their competing interest in a limited amount of right-of-way, and to develop a transportation infrastructure that provides access for all, a real choice of modes, and safety in equal measure for each mode of travel (USDOT 2001).

This is equally applicable to Canada and particularly Winnipeg, where any attempt to diversify a transportation system is only successful through coordinated effort between all levels of government, advocacy groups, and professional associations.

In Winnipeg, active transportation infrastructure must be viewed as safe, comfortable, effective, and efficient in all weather conditions for residents to use it. The literature review identifies these characteristics as important from experience in other jurisdictions. Theories help explain how existing transportation systems have been planned, function, and continue to develop. A systematic analysis of active transportation is based on this general literature review.

## **CHAPTER 3**

### **DEMAND FOR ACTIVE TRANSPORTATION**

This chapter identifies and analyses demand for active transportation use. This includes benefits of active transportation in several areas of society, constraints (specifically safety concerns and a lack of well-designed facilities), indicators of use within the transportation network, and means of promoting active transportation to the public. Many factors influence the demand for active modes of travel, dependent on the mode, on the way they are implemented, and on the users.

#### **3.1 BENEFITS**

Active transportation infrastructure has to be in place and be used in order to demonstrate benefits. Users will be encouraged to integrate these modes if they benefit from them. Improvements to the non-automotive transportation system can provide benefits comparable in magnitude to other transportation improvement objectives, such as reductions in congestion and pollution (Litman 2001). Many trips are made by a single mode, but those trips that include a combination of modes must be planned for and included in system assessment.

Everyone is a pedestrian at one point in all trips. Planning for the pedestrian should be the first step in any new development as walking is used by everyone and is the most vulnerable mode in terms of safety issues. It is more convenient, cheaper, and

usually faster than any automobile trip for travel up to 400 meters (Vuchic 1999).

Walking infrastructure is part of the design of a livable built environment.

The benefits of the bicycle should not be overlooked in the urban setting. It is a small vehicle which is easily stored or parked and can transport a person pedalling at a brisk, but not strenuous, pace of about 10 km in half an hour (Bennett 2001). It can be used for most daily trips in an urban setting because these involve short distances. However, the private automobile is usually chosen instead because it is convenient and its costs are hidden. Until travel behaviours change, the car and the bicycle will continue to compete for resources and physical space.

Table 3.1 lists some of the benefits of active transportation in the areas of personal health, the environment, the economy, safety, land use, and society.

**Table 3.1 Benefits of Active Transportation**

Health	Active transportation is easily integrated into daily life by combining physical activity with travel time
	Research shows that moderate physical activity reduces the risk of premature death, heart disease, obesity, high blood pressure, adult-onset diabetes, osteoporosis, stroke, depression and colon cancer
	A Health Canada study found a strong association between premature mortality due to respiratory disease and airborne particulates (i.e. motor vehicle emissions)
	People who exercise regularly have 14 percent lower claims against their medical insurance and spend 30 percent fewer days in the hospital
Environment	Each motor trip that is switched to cycling or walking avoids releasing 26 grams of hydrocarbon, 20 grams of carbon dioxide, and 1.6 grams of nitrogen oxides per passenger mile
	Active transportation can contribute to national and global commitments for pollution prevention and reduction of greenhouse gas emissions responsible for climate change/global warming
	Epidemiological analyses indicate that as many as 8% of all non-accidental deaths in the country are related to air pollution
	Active modes do not cause disruptions to the local community environment, such as raising of dust and ground vibrations

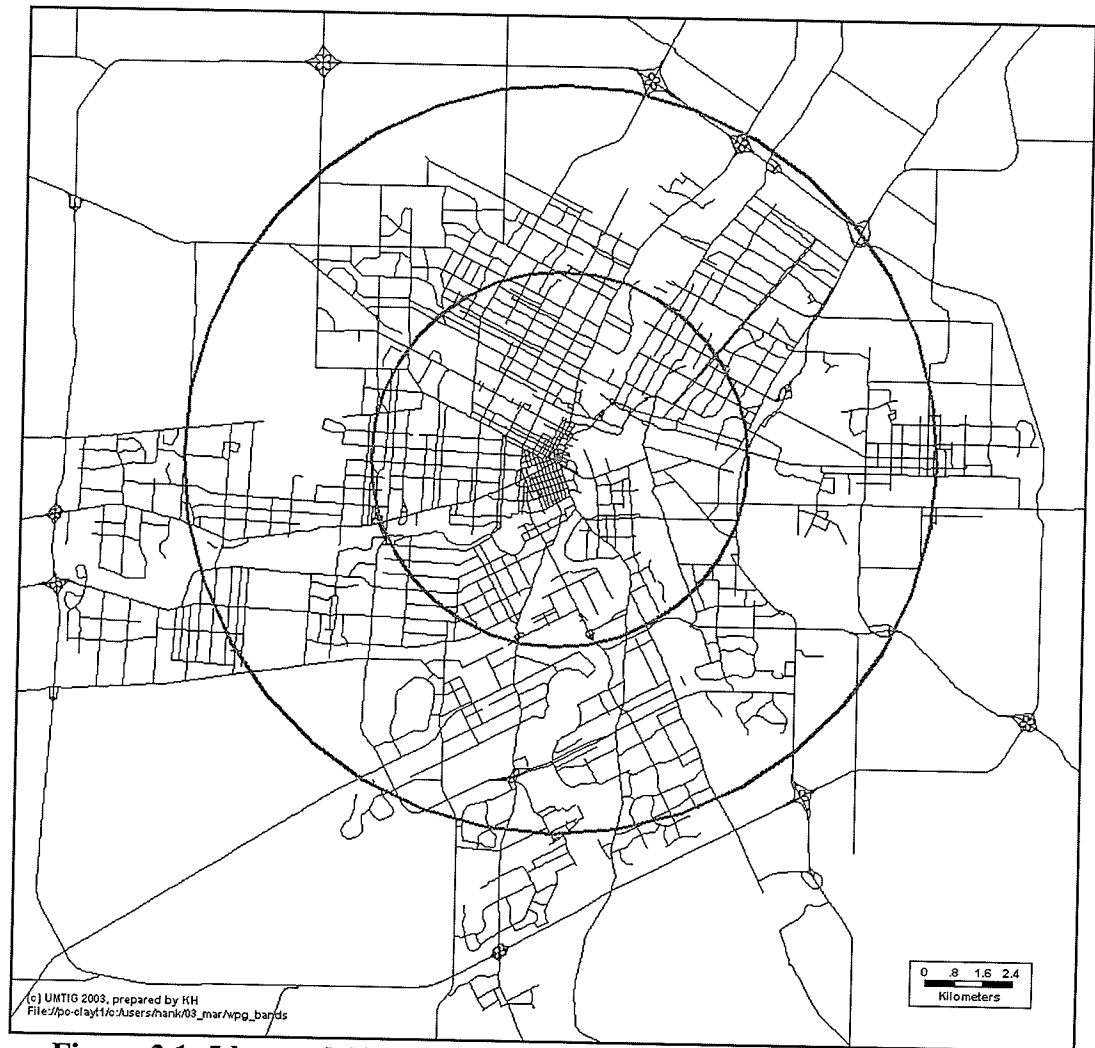
Economy	
	The most energy-efficient and least costly mode of transportation is muscle power
	The research shows that there is no obvious gain in economic efficiency from developing automobile dependence in cities. There are, on the other hand, associated costs in terms of greater energy consumption, poorer air quality, and more deaths from road accidents
	The annual cost of urban personal motor vehicle accidents, pollution, congestion, parking, roads and land not paid by users is \$26.5 billion
	In Canada, the environmental costs of transportation are estimated at \$14-36 billion per year
	The Conference Board of Canada estimates that a 10% increase in the proportion of Canadians who are physically active could save \$102 million annually from the treatment of ischemic heart disease
	At the workplace, active transportation leads to reduced costs associated with on-site parking facilities for employees and visitors, and motor-dependent modes of workplace travel
	Reducing noise increases property values in residential areas, particularly if the noise of the morning commute is lessened
	Investing and supporting a modal shift to active transportation can stimulate economic development in several ways including downtown revitalisation, rural and urban trails, tourism, and job creation in businesses which service active modes like cycling
Safety	
	A shift from personal vehicle use to an active mode may help reduce the incidence of motor vehicle crashes. In 1995, motor vehicle crashes in Canada killed 3,347 people and injured 241,800. From 1986 to 1995, a total of 5,179 pedestrians were killed by motor vehicles and 157,703 were injured
	Active transportation leads to a reduction of crime and fostering of a greater sense of personal and family security in a community, through increased "eyes" on the street with walkers, cyclists and the like being active in the neighbourhood
Land use	
	A shift to more active modes of transportation is conducive to more compact urban land use, and requires less land for roadways and parking
	Residents appreciate active transportation infrastructure, such as walking and cycling paths in residential neighbourhoods. Walking and cycling-friendly environments are also good marketing tools for developers
	A shift to active transportation leads to a reduction in public expenditures on costly transportation infrastructure for motor-dependent modes
Society	
	Rail-trails and other pathways are also an expression of community pride and character, and in many cases a means of preserving the natural and historical resources of a region
	A positive relationship between exercise and job satisfaction and reduced absenteeism has been empirically demonstrated

(Sources: Bradshaw and Sherwood 1999, Go for Green 1998 and 2000, National Bicycle and Pedestrian Clearinghouse 1995).

## *Commuting*

The vehicle occupancy rate during the morning rush hour in Winnipeg is 1.2 persons (Resource Conservation Manitoba 2000). In Canada, three out of every four Canadians drive their own vehicle to work (Transport Canada 2001). Each vehicle releases greenhouse gases (GHG) into the atmosphere and takes up valuable land for parking purposes (which is non-functional when not being used for parking). Many of these trips can be eliminated by telecommuting, carpooling, taking the bus, or using an active mode of travel. Walking or cycling to work is one way Winnipeggers can effect change, improve their personal health, and that of their community.

The ideal trips to convert to active modes are those of less than 10 km. Across Canada, a metropolitan area commuter's median distance to work in 1996 was 7.4 km (Go for Green 2000). Coincidentally, for commutes of about 5 km or less, cycling time is recognised as the fastest of all modes from door to door (Go for Green 1998). In Winnipeg, for commutes of about 10 km or less, cycling time is often comparable to vehicular travel (Manitoba Cycling Association 2001). However, upon further analysis of the Winnipeg situation, routes 5 km from the city centre are direct and manageable for the average person in all weather conditions (See Figure 3.2). Distances of 10 km from the city centre are also reasonable for the average person under good weather conditions.



**Figure 3.1 5 km and 10 km distances from Winnipeg city centre**

Commuters who can shift from driving their personal vehicle to using active modes to get to work should be targeted by marketing campaigns. The benefits of active transportation are numerous, and commuters should be targeted because they witness first-hand the disadvantages of driving, to themselves and their community.

Walking and cycling are accessible to Canadians of all ages and economic levels. Most vehicle trips during the span of a day are short distances. Studies show that half of all car trips are 5 kilometres or less, and one-third are 2 kilometres or less (Go for Green

1996). Educating individuals about changing their travel behaviours for short trips can have a great impact on how transportation modes are funded by government (Go for Green 1996). This will also have positive benefits for both residents' health and the environment.

Trips related to school, shopping, and leisure destinations can also be converted to active modes. The mean distance travelled to routine destinations is 3.2 km, a reasonable distance for walking (Environics and Go for Green 1998). This distance is also reasonable for cycling. As well, since some of these trips do not depend on deadlines or personal appearance, individuals may not mind arriving at the destination at their leisure and in clothing not suitable for the workplace.

### **3.2 CONSTRAINTS**

The way we design and build our communities affects whether growth enhances our quality of life (Rails to Trails Conservancy 2001). Winnipeg's size and land uses are continually changing, but there are means of addressing how and where the city grows, and how this will affect Winnipeggers' quality of life. Constraints to active transportation use include misconceptions of the ease of use, weather conditions and the existing built infrastructure. Addressing these constraints is equally as important as promoting the benefits of active modes of travel. Users, transportation professionals, and decision-makers can all benefit from a better understanding of these constraints.

## *Weather*

In Winnipeg, weather considerations are an important factor when choosing a mode of travel. Cold and snow during the winter months can affect potential pedestrians and cyclists' choice of mode. Weather is more of a barrier to cyclists than to pedestrians. However, the three countries of the world with the most bicycling participation are northern countries - Holland, Denmark, and Finland (Go for Green 2000). Any new active transportation program or infrastructure in Winnipeg should address winter, precipitation, and wind conditions by drawing on the experiences of other northern cities and particularly winter cities with similar cold conditions. Outreach and education can teach users why and how to maximise walking and cycling opportunities in any seasonal condition.

Winnipeg is more easily compared to other cities with a similar climate, such as Canadian prairie cities. Winter cycling is becoming an increasingly popular activity as the benefits become better understood. For example, the bicycle is used for the winter commute in Regina by an increasing number of people because it is good exercise and helps save money from ever-increasing gas prices (The Ottawa Citizen 2003). As well, a winter cyclist in Alaska wrote on the *Bicycling Life* website that it became obvious to him that he was having an easier time getting around on slippery days than most of the drivers (Andersen 1999). These examples show that the average commuter can overcome specific barriers.



Weather conditions in Winnipeg can be obstacles preventing the use of active modes. However, many of these conditions can be overcome with proper equipment and education. The winter season can prevent some cyclists from venturing out because of the snow and icy conditions making it difficult to handle a bicycle, yet there are many more days where cycling is viable. On average, there are 223 days in a year free of significant snow or ice accumulation in Winnipeg (Thom 1981). Neither should precipitation discourage individuals from using active modes. With proper clothing, one can stay dry and reach a destination much faster than driving. Winnipeg is a windy city, but again, this should not discourage individuals from venturing outside, because buildings and natural barriers lessen the wind's effects.

### *Land Use*

The Canada Mortgage and Housing Corporation states that studies indicate a strong link between automobile ownership, use, and the way communities are planned (CMHC 2000). This affects greenhouse gas emissions. CMHC conducted a study to determine how best to develop cities in order to decrease personal vehicle use and, ultimately, GHG emissions. It found that infill development increases residential population in inner areas and inner suburbs more effectively than greenfield development in moderating the growth of GHG emissions, even if the new greenfield neighbourhood is neo-traditional rather than typical auto-dependent suburban in design (CMHC 2000). Active transportation-oriented infill design at the neighbourhood scale helps mitigate

GHG emission levels, by giving residents active choices of transportation to move around their community.

The use of the private automobile as the primary transportation mode has encouraged cities like Winnipeg to sprawl because affluent residents can travel longer distances more easily. This has meant that more roads are built to satisfy drivers. However, this has also meant a related increase in the need for extended infrastructure, such as water and waste disposal, and a decrease in meeting the needs of the inner city.

The interests of automobile owners are served by the existing decision-making process, while the interests of those reliant on transit and active transportation (30 to 50 per cent of the population in most American cities) are not presently being met to the same extent (Holmes 1997). Suburban municipalities (largely developed because of the personal automobile) have brought about a shift in planning away from the city centre. The growing power and infrastructure demands of suburban municipalities have drawn public investment and political attention away from the problems of city cores and from common regional issues shared by all residents (Kenworthy and Raad 1998).

All residents of a city are entitled to accessibility (See Chapter 5) in the transportation network. No group or person should be allowed to improve its share of exchange opportunities (between modes and travel purposes) at the expense of another group or person unless this action is necessary to right an existing unjust distribution (Engwicht 1993). Increasing road infrastructure can decrease the funding available for

walking and cycling infrastructure. It also feeds the false notion that vehicular movement benefits the majority.

The existing built environment of cities like Winnipeg is a constraint to widespread active transportation use. This is especially true in outer areas where distances between activities are longer, roads are more intimidating because of higher traffic speeds, and the layout of streets creates physical barriers to walking and cycling (Go for Green 2000). In Winnipeg, existing suburban neighbourhoods pose unique constraints to active transportation use, but these can be overcome with design techniques that improve residents' quality of life, and improve the efficiency of modes from which to choose.

Existing street patterns can be made more efficient to all modes by using innovative design techniques. For example, bicycle lanes can be painted along existing vehicular lanes (Association of Pedestrian and Bicycle Professionals 2002). For the painted delineation to be efficient year-round, maintenance is required during winter months. Another option for winter cities is the use of bollards to delineate cycling lanes. Although it is rarely possible to retrofit streets in established neighbourhoods, it is often possible to make use of natural land features, utility corridors, waterways and other open spaces to create walking and cycling trails (Burden 2001). These additional linkages provide users another set of transportation options to reach their destination.

Some of the designs for new developments include sidewalk standards, narrower streets, higher densities near transit, and fewer cul-de-sacs that affect bicycle connectivity (Hoel and Miller 2000). These examples of design considerations specifically apply to suburban developments. Some can be integrated into traditional designs, while others require a rethinking of suburban neighbourhoods. However, each one provides residents with a greater variety of mode choices.

### *Information Sharing*

Not only is the city's physical landscape a potential constraint, but how that landscape affects a community can also be a constraint. Public needs and concerns must first be understood to avoid developing underused active transportation programs and infrastructure. Seeking community input is a necessary planning tool that becomes one component of developing an active transportation plan. Ignoring public involvement – or giving it short shrift – can not only limit a plan's support and its likelihood of implementation; it can also reduce a plan's relevance to the community (Tracy Williams Consulting 1996). This applies to all transportation programs and infrastructures in a city's overall transportation plan.

The most common type of constraint is a misconception of active transportation. Misconception is often based on fear and should be addressed so that active transportation becomes a viable option for a greater percentage of trips. A lack of skill, fear of injury, feeling uncomfortable, and a lack of support are barriers that individuals

present as reasons for not choosing active transportation. By training, mandate, and institutional tradition, most transportation planners are so focused on cars, highways, and large-scale transit systems that they overlook bicyclists and walkers as practitioners of transportation (Ketcham et al. 1993). Transportation professionals and decision-makers must address misconceptions in the design of active transportation programs and infrastructure.

### *Safety*

Concerns for safety, security, and comfort are based on the perceptions of individuals in a certain situation. Pedestrians and cyclists are the most vulnerable in accidents with automobiles. The mass and speed of cars automatically means that they take over streets, intimidating and endangering pedestrians and cyclists (Lowe 1990). The rate of injuries and deaths among pedestrians and cyclists can not be ignored. Pedestrian fatalities are 36 times higher than car occupant fatalities per km travelled, and bicycle fatalities are 11 times higher than car occupant fatalities per km travelled (Dijkstra and Pucher 2000).

Many of these accidents could be avoided with better education of motorists, pedestrians, and cyclists. Motorists need to understand the rights of pedestrians and cyclists, and realise their presence and vulnerability in the transportation system. Pedestrians need to understand their rights. Cyclists need to understand that they are considered vehicles, and fall under the same rules as vehicles. Most traffic laws do not

differentiate between bicycles and other vehicles (Hill 1986). Cyclists are often overlooked in education campaigns, as evidenced by the discrepancy of behaviours - some cyclists behaving as pedestrians riding on sidewalks - and others having learned to behave as a vehicle and ride on the right side of the roadway and follow all vehicular rules.

All individuals travelling by active modes must be educated about how to safely use active transportation infrastructure, but their comfort level will also depend on the education of other travellers, particularly drivers. Reducing accidents between motorists and pedestrians or between motorists and cyclists will help increase active transportation use. However, simply educating drivers will not decrease the number of accidents. The most effective programs are those that combine education with traffic law enforcement (Insurance Institute for Highway Safety 2001). For example, driver training programs should include a component addressing interactions with pedestrians and cyclists.

Once the driver is fully licensed, there should be strict enforcement of traffic laws. Driver behaviours are best altered when there is something at stake, in this case the privilege of a driver's license. A combination of education and law enforcement should be used for all travellers. Ensuring safety in the transportation system requires educating and enforcing laws equally for drivers, pedestrians, cyclists, and others.

### 3.3 INDICATORS OF USE

Indicators of use help transportation professionals and decision-makers determine where infrastructure improvements are required, how residents are getting around presently, and could potentially alter their travel behaviours in the future, and what educational programs are required to ensure that the infrastructure is properly used.

The ultimate goal of transport is access; the ability to obtain desired goods, services and activities. But access is difficult to measure so transport planning tends to focus on traffic (vehicle movement) and mobility (the movement of people and goods). Transportation investments are often evaluated based on their ability to reduce congestion, increase traffic speeds, or facilitate the movement of people and freight (Litman 1999)

To be effective, indicators of use such as access, must be examined for any shifts from personal vehicle use to active transportation.

The National Cooperative Highway Research Program (NCHRP) provides a list of indicators to be used when determining the performance of a transportation system.

These indicators fall under several categories, including:

1. Accessibility
2. Mobility
3. Economic Development
4. Quality of Life
5. Environmental and Resource Conservation
6. Safety
7. Operational Efficiency
8. System Condition and Performance (National Cooperative Highway Research Program 2000)

Together, a measure of these indicators provides an overview of transportation use, both vehicular and sustainable modes. They include the quantitative and qualitative factors

that influence modal choice. A short list of these is used in Chapter 5 to evaluate past City of Winnipeg projects.

### **3.4 MARKETING**

Indicators of use apply to new infrastructure to track growth in use and potential for expansion to other areas, but these indicators will be useless if no one is aware of the infrastructure's existence. Therefore, any new active transportation program or infrastructure must be marketed to the public, transportation professionals, and decision-makers. Active transportation programs and infrastructure should be promoted to these three segments of Winnipeg residents by addressing the benefits to individuals rather than the novelty aspect. Knowing the people you are trying to target and knowing what they like will facilitate a promotional program that to some extent caters to what they want while encouraging them to try new transportation modes (Wolf 2001).

The promotional campaign highlights why residents should begin to alter their travel behaviours and why the new project is beneficial to them (Wolf 2001). A targeted marketing campaign for active transportation programs and infrastructure will answer these questions by using captivating facts, and will describe how to use the new program or infrastructure in a simple way so as not to overwhelm potential users.

All marketing campaigns must be targeted to a specific audience. In the case of active transportation programs and infrastructure, it is not good enough to target the



public, that is Winnipeg residents. You need to persuade the small group of people who can actually change things (Wolf 2001). Promoting new programs and infrastructure to those who are most likely to use them ensures a greater success rate. Targeting local transportation professionals ensures that the word gets out to the public through the right channels. An education campaign can also prevent project overlap and ensure cooperation between organisations and departments.

Significant external barriers will prevent many potential users from altering their travel behaviour. It is key to assess these barriers and constraints before any program or infrastructure is developed, and then to reassess them once the project is in place. It is also important to assess whether it is realistic to overcome the identified external barriers (McKenzie-Mohr and Smith 1999). If these barriers can not be overcome it may prove futile to develop the project. However, it could also imply that residents' perceptions, and ultimately behaviours, need to change, so successful promotion of the project will involve focusing on the benefits to individuals, while addressing their reluctance.

For example, the weather barriers in Winnipeg help determine individuals' mode selection not only in winter but throughout the year. It is easy to become set in one's ways using a mode that seems effortless throughout the year to commute to work. For this reason prompts are necessary to encourage individuals to break their driving habit. In early June, the Commuter Challenge is one program that encourages drivers to try a different mode in an encouraging and competitive environment and hopefully shift some of their mode choice away from the personal vehicle during warmer months (Resource

Conservation Manitoba 2002). This program helps prompt a shift in mode choice to more sustainable and active modes.

Social marketing comprises the right mix of conventional marketing concepts and sustainability concepts that have proven successful in actually altering behaviours. Philip Kotler and Gerald Zaltman first developed the concept of social marketing in 1971. Social causes can be advanced more successfully through applying principles of marketing analysis, planning and control to problems of social change (Cartwright 1972). Social marketers differ from traditional marketers, because instead of selling products and services, they sell ideas that lead to social change (Health Canada 2001).

### **3.5 CONCLUSION**

Identification and analysis of benefits and constraints to active transportation helps transportation professionals and decision-makers assess the existing transportation system in Winnipeg. Walking and cycling encourages a greater level of social interaction and gives the city a more relaxed, friendly feeling (Engwicht 1993). Active modes of travel must be given serious consideration if this is the image of their city that residents want.

## **CHAPTER 4**

### **CONTEMPORARY PLANNING AND DESIGN GUIDELINES FOR ACTIVE TRANSPORTATION**

This chapter identifies and analyses contemporary transportation planning and design guidelines from several jurisdictions. These help illustrate how the City of Winnipeg has approached active transportation in past design projects, and whether it is becoming a more important aspect of overall network design.

The term vehicle is used extensively throughout this chapter and includes both motorised and non-motorised machines such as bicycles, mopeds, motorcycles, automobiles and trucks (Hope and Yachuk 1990). The term 'motorised vehicle' does not include human-powered bicycles.

#### **4.1 INTERNATIONAL PLANNING AND DESIGN GUIDELINES**

##### *4.1.1 The Netherlands*

Many countries have active transportation design guidelines, particularly bicycle design guidelines. For the purposes of this research, the Netherlands' *Sign Up for the Bike. Design Manual for a Cycle-Friendly Infrastructure* is analysed, as the country is perceived as a leader in the field of active transportation. The document covers cyclist

characteristics, potential cycling infrastructure use, and required accessories and furnishings.

The document gives a list of cyclist characteristics that should be addressed in the planning and design of bicycle infrastructure. For example, discomfort is identified as a contributing factor in deciding whether or not to travel and which mode of transport to choose (Centre for Research and Contract Standardization in Civil Engineering 1993). Alleviating as much of this discomfort as possible by designing facilities that people will feel safe and comfortable using is one way of creating a transportation system that offers a variety of modes.

The level of cycling infrastructure integration within the overall transportation system is also discussed. Cyclists must be given equal consideration as motorised vehicle drivers, because they are also considered vehicles. The quality of infrastructure offered to cyclists should be measured with the same criteria as the quality offered to other road users (Centre for Research and Contract Standardization in Civil Engineering 1993). However, this means that cyclists must also share the same obligations as drivers. Treating motorists and cyclists with the same rights and obligations will help create efficient and safe facilities.

The Netherlands model differs from what is found in many North American cities, like Winnipeg, where cyclist facilities are not given equal consideration as

vehicular facilities, and where motorists are disciplined for their actions, but cyclists often go undisciplined for not following the rules of the road.

The Dutch document offers a 'Programme of requirements' intended to aid in the design of cycling-friendly infrastructure. These requirements can easily apply to pedestrians or motorists. The list includes:

- |                       |  |
|-----------------------|--|
| <i>Coherence</i>      | The cycling infrastructure forms a coherent unit and links with all departure points and destinations.   |
| <i>Directness</i>     | The cycling infrastructure continually offers the cyclist as direct a route as possible (so detours are kept to a minimum).                                      |
| <i>Attractiveness</i> | The cycling infrastructure is designed and fitted in the surroundings in such a way that cycling is attractive.  |
| <i>Safety</i>         | The cycling infrastructure guarantees the road safety of cyclists and other road users.  |
| <i>Comfort</i>        | The cycling infrastructure enables a quick and comfortable flow of bicycle-traffic (Centre for Research and Contract Standardization in Civil Engineering 1993). |

These requirements are factors used by individuals to determine trip mode. For example, if an individual feels safer driving to a destination rather than cycling, the automobile will be chosen. However, if a cycling path is more direct to a destination than the street system, the bicycle will be chosen. These are factors that are unconsciously weighed before all trips.

A glossary is included with the Dutch guidelines, but it does not define the term vehicle. However, the term is not used in the document. This could be an indication that it is not part of the transportation lexicon in the Netherlands. Overall, the document

provides a point of comparison between the way North American and European cycling is incorporated into the transportation network. The Netherlands can be used as an example of best practice and can be tailored to suit the Winnipeg context and lexicon, specifically with consideration of weather issues not present in the Netherlands.

#### *4.1.2 American Association of State Highway and Transportation Officials*

The American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets* provides design guidelines for individual transportation modes and for the interface between modes. Facility guidelines are detailed and include several scenarios to illustrate that not all infrastructure has been built similarly in the past. Definitions are not given for bicycle or pedestrian, but 'design vehicle' is defined as including passenger cars, buses, trucks, and recreational vehicles (American Association of State Highway and Transportation Officials 2001).

The document identifies access and mobility as transportation indicators that are considered in classifying highway and street networks functionally (AASHTO 2001). These indicators are used throughout the text to explain how roadway designs function. For example, they are used to describe the function of local roads and streets (AASHTO 2001).

There are discrepancies between how pedestrian and cycling movements are addressed in roadway design. The section dedicated to pedestrian movement states:

Because of the demands of vehicular traffic on congested urban areas, it is often very difficult to make adequate provisions for pedestrians. Yet provisions should be made, because pedestrians are the lifeblood of our urban areas, especially in the downtown and other retail areas (AASHTO 2001).

This is in contrast to another statement indicating where trips of one type predominate, the facility should be designed to fit the specific needs of that type of trip (AASHTO 2001). While realising that walking is an important form of transportation, often the most predominant type of trip is driving. Therefore, facilities will be designed to meet the needs of vehicular travel.

Similar discrepancies exist with the document's treatment of cycling: the street and highway system as it presently exists is sufficient to accommodate bicycle travel (AASHTO 2001). This recognises that cyclists and drivers have the same rights to use the roadway system. However, the statement ignores the fact that not all cyclists feel comfortable using the roadway. Off-road pathways are an important component of a city's transportation network and should not be overlooked.

## **4.2 NATIONAL PLANNING AND DESIGN GUIDELINES**

### *4.2.1 Transportation Association of Canada*

The Transportation Association of Canada's (TAC) *Manual of Uniform Traffic Control Devices for Canada* gives a recommended standard for signals and signage to be

used across Canada (National Committee on Uniform Traffic Control 1998). Pedestrian signals and signage are given equal attention as vehicular signals and signage. Pedestrian control devices are in their own section, while bicycle control devices are integrated into the sections dealing with vehicular control devices. This is consistent with bicycles being considered vehicles.

The Transportation Association of Canada's *Geometric Design Guide for Canadian Roads* (TAC 1999) and its predecessor, the *Urban Supplement to the Geometric Design Guide for Canadian Roads* (TAC 1995) present guidelines for all roadways in Canada. These two documents are the standards that many jurisdictions utilise, including Winnipeg. The *Urban Supplement to the Geometric Design Guide for Canadian Roads* recognises the diversity of modes that roadways serve.

In the urban environment, there are many conflicting demands placed on the street system, including those of passenger cars, trucks, transit vehicles, cyclists and pedestrians. It is important to recognize that the street system must be effectively shared (TAC 1995).

The shared nature of roadways is important as people look for alternatives to the private automobile in accessible, mixed use neighbourhoods.

Emphasis is placed on slower moving modes. The urban street is no longer simply a traffic thoroughfare, but is part of an urban environment in which there is increased awareness of urban dwellers and their desire for improved quality of life (TAC 1995). Active transportation is a recognised means of increasing quality of life because it promotes social interactions, improved personal health, and a cleaner environment. The



Transportation Association of Canada recognises active modes, specifically the bicycle, as viable forms of transportation in a transportation system.

Cycling can play an important role in an urban area's transportation system. However, cyclists need sufficient space to allow them to operate with safety and convenience rather than simply being assigned to whatever residual space is available after the needs of vehicular traffic are accommodated (TAC 1995). Having proper infrastructure will ensure cyclists' safety.

#### *4.2.2 Canadian Institute of Planners*

The Canadian Institute of Planners (CIP) developed the *Community Cycling Manual – A Planning and Design Guide* to address the planning, design, construction, education and enforcement of bicycle facilities. The Canadian Institute of Planners is primarily concerned with planners, but the manual was also written for designers, engineers and landscape architects, who all play an important role in developing cycling infrastructure in Canada.

Representatives from several areas within the active transportation field were involved in preparing the document. The document presents guidelines from the initial development phase to the completion and follow-up phase of cycling infrastructure. It also includes an example accident report form and a glossary of cycling terms.

The first section presents reasons why cycling should be part of a transportation system, including its existing popularity as a recreational pursuit, its contribution to pollution control, its efficiency, and its low cost within a transportation network. The authors focus on integration within the existing network because bicycle facilities are considered part of the basic planning, design and implementation of transportation facilities. This decreases the overall costs compared to providing separate bicycle facilities or increasing motor vehicle facilities (Hope and Yachuk 1990). However, this ignores the fact that many cyclists and potential cyclists do not feel safe sharing the roadway system with motorised vehicles.

The document does not specify that cycling facilities can be part of the roadway system while being visually separated, as painted cycling lanes alongside the outside vehicle lane demonstrate. Separate facilities are also important to develop in cities such as Winnipeg, where a great number of potential users would be more likely to consider cycling if separate infrastructure were provided.

Lack of visual cues for motorists is also a barrier that affects the level of cycling in a city. For example, Vancouver, Ottawa, and Toronto have more cyclists using the roadway system than Winnipeg, which becomes obvious to drivers. Cities such as Winnipeg, with fewer cyclists on the roadway system, do not give drivers a visual cue that cyclists share the same space.

The *Community Cycling Manual* includes some technical illustrations that are useful to transportation professionals designing and implementing cycling infrastructure in Winnipeg. The majority of the document addresses the social aspects of planning. For example, one section describes characteristics of cyclists, including age and skill. Much of this document is dedicated to qualitative factors that determine cycling facility design and use.

Overall, this manual is useful to all transportation professionals across Canada because it is general enough to apply to any city. In Winnipeg it is already being used for reference in City departments (City of Winnipeg Transportation Division 2002). The manual takes the reader from the initial stages of cycling infrastructure planning to the follow-up necessary once facilities are in place. Used in combination with more technical documents it can provide the basis for developing and retrofitting a transportation system to include better cycling facilities.

#### **4.3 CITY OF WINNIPEG PLANNING AND DESIGN GUIDELINES**

In 1991, the City of Winnipeg's Streets and Transportation Department prepared the *Transportation Standards Manual*, which the Department is presently updating. The purpose of the manual is to ensure that additions and/or modifications to the street system are designed and constructed consistently and in conformance with current practice in Canadian street design (City of Winnipeg Streets and Transportation Department 1991). The manual recognises that it does not contain an exhaustive summary of all parameters

required to design a street or street network. Designers are referred to Canadian and American standards for further clarification.

The present document deals inconsistently with active modes of transportation. It states that streets are classified according to differences in traffic service and land service provided, but traffic service types are not enumerated. Examples of street classification include major thoroughfares, minor arterial streets, and local residential streets. Each of these has different traffic types, including vehicular traffic, commercial vehicle traffic, bicycle traffic, and pedestrian traffic. However, the only mention of active modes of transportation is in the 'Traffic Features' section under each street classification. Only pedestrian movement is included, which ignores the presence of cyclists and other wheeled active modes of transportation that may be using the roadway.

### *Cycling*

There is no mention of cycling in the original document, but it will be included in the updated version (City of Winnipeg Transportation Division 2002). Bicycles are considered vehicles and by law must use the same street system as motorised vehicles. There clearly is a need to include bicycles under the definition of traffic to encourage cyclists to safely use the appropriate infrastructure and to ensure that their visible presence will educate drivers to share the road.

## *Walking*

References to pedestrian infrastructure are provided on an *ad hoc* basis. The provision of sidewalks is never guaranteed, but the pattern is to provide at least one sidewalk along streets with heavier traffic (such as arterial and collector streets) and only provide a sidewalk along streets with less traffic volume (such as a local residential street) if warranted. The document points out that a local street mostly serves traffic that has an origin or destination along its length. The document should draw a link between the provision of sidewalks and the mode by which all trips originate and terminate - walking. Local streets are where sidewalks and other pedestrian facilities are most warranted. Residential areas include people walking to and from bus stops and children walking to and from school, and commercial and industrial areas include people walking to and from bus stops or a parked vehicle.

The Public Works Department can take the opportunity when updating the *Transportation Standards Manual* to promote walking through facility provision along roadways. Policy direction can be taken from *Plan Winnipeg...2020 Vision* (City of Winnipeg 2001). Also, Winnipeg Transit can be used as a resource, because it recognises the importance of pedestrian infrastructure to its operation. "Transit users are pedestrians at the start and end of their trips. Sidewalks and pedestrian walkways should be located and designed to encourage walking trips and to shorten walking distances to transit stops" (Winnipeg Transit 2000).

The statement is made that pedestrian corridors may be provided where warranted, but 'warranted' is not defined in the document (City of Winnipeg Streets and Transportation Department 1991). For this, one must consult the Transportation Division's Standards and Practices Manual. This does raise the question of whether the level of warrant is unique to each situation, and if so, should it be included in a standards manual? The accepted definition of a warranted situation should be clearly stated in the *Transportation Standards Manual* so that all City professionals have access to it and share an understanding of it. Consistency will also help pedestrians and cyclists determine their personal level of safety and comfort with a particular street. With that information they can determine a route that best suits their needs.

When discussing alignment design, there is some reference to the transportation system being shared by several modes. The primary objective in the design of any street system is to provide a safe, efficient, and aesthetically pleasing access and circulation system for both pedestrians and motorists (City of Winnipeg Streets and Transportation Department 1991). Safety, efficiency, and access are key indicators of a multi-modal transportation system. However, if the design standards manual focuses on the street system as the realm of motorised vehicles (personal and commercial), these indicators will not be present.

Finally, recommendations are provided for subdivision street design. This section has yet to be updated, but provides some indication that the City of Winnipeg has long-established views about providing automobile transportation over other transportation

options. For example, it is recommended that transit bus routes in new residential areas be routed along residential collector streets, which include sidewalks on both sides. This is a good practice as pedestrians will feel safe walking on sidewalks and will have easier access to transit stops if sidewalks are provided on both sides of the street. Yet, how do these pedestrians move safely and comfortably to and from these collector streets if their houses are on local residential streets that don't have a sidewalk? One solution is to provide pedestrians with a consistent network of sidewalks. Pedestrians should be able to expect a consistent network of sidewalks just as drivers expect a continuous network of streets.

In terms of safety, recommendations for proper subdivision street design include minimising the number of pedestrian and vehicle conflict points, land use arrangements, and pedestrian routes (City of Winnipeg Streets and Transportation Department 1991). Safe design of the street system should include the provision of sidewalks to physically separate pedestrians from vehicles, thus decreasing the possibility of conflict and injury.

The *Transportation Standards Manual* addresses vehicular transportation over other modes of transportation, such as cycling, that also share the right-of-way. Preliminary analysis of the updated manual shows that there is a greater effort to include other modes of transportation, but it remains to be seen whether this will translate into the provision of a transportation system that incorporates a variety of modes.

Interviewees for this research were asked whether the City developed its own planning and design standards, and some respondents were aware of the *Transportation Standards Manual*, while others were not. This shows that it is not shared amongst all those involved in the design and implementation of transportation infrastructure, so there is little chance for other City departments to comment on its content or contribute their knowledge to transportation system development in Winnipeg.

#### **4.4 CONCLUSION**

This chapter helps determine whether City departments should be using a set of guidelines to achieve improved integration of active transportation into the city's existing transportation network. Analysis of existing planning and design guidelines provides a basis from which to analyse previous active transportation projects. This is undertaken in the next chapter. Guidelines provide some information on what designs other jurisdictions are using and their inclusion of active transportation. In the future, the inclusion of active transportation infrastructure will promote the use of a variety of travel modes.



## CHAPTER 5

### PAST POLICIES, PROJECTS, AND RESULTS OF ACTIVE TRANSPORTATION IN WINNIPEG

This chapter is an evaluation of past City of Winnipeg documents in terms of their sustainable and active transportation content (Clayton et al. 2002). A systematic analysis of past active transportation policies, projects and their results is necessary to gauge how the City approaches active transportation today and how it might do so in the future. Analysis of active transportation in Winnipeg includes other forms of sustainable transportation, because they are closely connected. For example, all transit users start and end their trip as pedestrians.

The City of Winnipeg has not formally defined 'sustainable transportation'. However, in the past the City has included related principles of sustainable transportation - and specifically active transportation - in its plans and projects. The term 'sustainable transportation' first appears in City documents in the 1990s, but remains undefined. For example, *TransPlan 2010* lists several provisions that a transportation plan should supply, including a sustainable transportation system that is environmentally-friendly (City of Winnipeg and the Province of Manitoba 1998). The definition of the term is not provided in this document, but is referenced to another source. Prior to this, documents used related terms, such as access and balance. These related terms hint at the principles of sustainable transportation, and are still relevant today. Active transportation is not a term officially recognised in any City documentation.

## **5.1 CITY OF WINNIPEG KEY DOCUMENTS**

Tables 5.1, 5.2, and 5.3 synthesise selected transportation planning documents in terms of sustainable transportation content by mode, goals and actual results of study recommendations, and present key indicators of use. The documents were selected based on two criteria:

- they had to deal with transportation planning;
- they had to be commissioned or written by the City.

Many were recommended by associated professionals. Indicators were then chosen that represent society's basic needs in a transportation system.

The first table, Table 5.1, lists the selected documents by year, and indicates the degree of inclusion of pedestrian issues ('Peds'), cycling issues, and public transit (an indicator of active transportation acceptance and use) (See legend following table).

**Table 5.1: Degree of inclusion by sustainable transportation mode for all reports considered**

REPORT		LEVEL OF FOCUS ON SUSTAINABLE TRANSPORTATION, BY MODE		
DATE	TITLE	PEDS	CYCLISTS	TRANSIT
1946	Transportation Greater Winnipeg	○	—	—
1959	Future Development of the Greater Winnipeg Transit System	—	—	●
1966	Winnipeg Area Transportation Study	⊙	—	●
1973	The Winnipeg Bicycle Route Study	○	●	—
1974	City of Winnipeg Public Transit Study – Progress Report: Five Year Program	—	—	●
1974	City of Winnipeg Public Transit Study: Downtown Transit. Second Progress Report	⊙	○	●
1975	Downtown Area Shuttle Monitoring Report (D.A.S.H.)	—	—	●
1978	Winnipeg Southwest Transit Corridor Study. Summary Report	○	—	●
1979	The Winnipeg Regional Transportation System. Existing Conditions	—	—	●
1982	Preliminary Design Study for the Kildonan Corridor	○	⊙	⊙
1993	Winnipeg Bicycle Facilities Study. Final Report	—	●	—
1993	Plan Winnipeg...Toward 2010	⊙	⊙	⊙
1995	CentrePlan	⊙	—	⊙
1995	Reserved Lanes for Transit and Cyclists on Main Street and Osborne Street	○	⊙	●
1998	TransPlan 2010	⊙	⊙	⊙
2000	Direction to the Future. The Guide to Better Transit for Winnipeg	⊙	⊙	●
2001	Towards a Sustainable Winnipeg. An Environmental Agenda	⊙	⊙	⊙
2001	Plan Winnipeg...2020 Vision	⊙	○	⊙
2001	WINSMART	⊙	⊙	●

Legend:

- Primary focus of report
- ⊙ Some mention of transportation mode
- Brief mention of transportation mode
- No mention of transportation mode

Overall, it was found that transit was consistently considered. Winnipeg Transit has continued to develop service-enhancing programs, while ridership levels have been declining. These programs include improvements to pedestrian infrastructure as well as improvements to cycling infrastructure, to encourage walking and cycling as complementary forms of transit travel. Conversely, mention of walking and cycling in City documents was sporadic for most of the period, but has been increasing over the last decade. After 1993, mention of cycling has particularly increased, as a result of the *Winnipeg Bicycle Facilities Study*. The report made several recommendations that the City has continued to incorporate into its actions.

Next, plans and projects undertaken by the City were determined. Table 5.2 illustrates the intended goals of the projects as well as the actual results.

**Table 5.2: Goals and results of Winnipeg's transportation plans and projects**

REPORT		GOALS	RESULTS
DATE	TITLE		
1946	Transportation Greater Winnipeg	Vision for greater Winnipeg in the transportation sector	Remained the definitive planning document until the 1980 <i>Plan Winnipeg</i> document
1959	Future Development of the Greater Winnipeg Transit System	Review the long-term future of transit in Winnipeg	Basic recommendation to implement a rapid transit system was undertaken
1966	Winnipeg Area Transportation Study	A comprehensive study of Winnipeg's future transportation needs	Recommendation for a transit-oriented transportation system was not approved by the City
1973	The Winnipeg Bicycle Route Study	Address the increase in cycling popularity and determine the need for increased cycling infrastructure	Assiniboine path constructed; Wellington Crescent and Scotia Street closures to private vehicles
1974	City of Winnipeg Public Transit Study – Progress Report: Five Year Program	Produce a series of transit related projects in response to City's guidelines for future development	City implemented some of these projects
1974	City of Winnipeg Public Transit Study: Downtown Transit. Second Progress Report	Produce a series of recommendations to integrate a downtown distribution system with the area-wide system	City established downtown, off-peak shuttle service
1975	Downtown Area Shuttle Monitoring Report (D.A.S.H.)	Review the D.A.S.H. service to establish whether objectives were met	D.A.S.H. service achieved its three objectives
1978	Winnipeg Southwest Transit Corridor Study. Summary Report	Study the feasibility of a transit corridor between downtown and the University of Manitoba	Plans are still underway to establish such a link
1979	The Winnipeg Regional Transportation System. Existing Conditions	Focus on street conditions that may need updating	Report findings were incorporated into the revised development plan for Winnipeg
1982	Preliminary Design Study for the Kildonan Corridor	Phase one of an inner ring project; concentrating on the North area of Winnipeg	Phase 1 was completed (Bridge between two major arterials: Main St and Henderson Hwy)
1993	Winnipeg Bicycle Facilities Study. Final Report	Overview of the need to provide further cycling facilities	Recommendations were incorporated into TransPlan 2010

REPORT		GOALS	RESULTS
DATE	TITLE		
1993	Plan Winnipeg...Toward 2010	Prepare a long term plan to guide the city	City has recently adopted Plan Winnipeg...2020 Vision
1995	CentrePlan	Implement a new development corporation for downtown revitalisation	The City has established CentreVenture
1995	Reserved Lanes for Transit and Cyclists on Main Street and Osborne Street	Implement reserved lanes along Main Street and Osborne Street for the exclusive use of transit and cyclists	Both lanes implemented
1998	TransPlan 2010	Provide background on Winnipeg's transportation system and make recommendations for future development	Implementation of Waverley bike path, transit bike racks, steps towards transportation demand management
2000	Direction to the Future. The Guide to Better Transit for Winnipeg	Make several recommendations for future expanded transit use	Several recommendations have been implemented, and others are in the planning phase
2001	Towards a Sustainable Winnipeg. An Environmental Agenda	Provide environmental principles and actions for City to implement	City has implemented some actions, but overall principles are not followed and has not become key policy document
2001	Plan Winnipeg...2020 Vision	Provide guidance for all civic activity. Become foundation for all other City documents	Remains to be determined
2001	WINSMART	Address transportation related greenhouse gas impacts and challenges through federal funding	Remains to be determined whether City proceeds to next round of funding

Discrepancies were found between the recommendations and the outcomes of the plans and projects. For example, *Plan Winnipeg...Toward 2010* recommends that a bicycle and pedestrian pathway plan be prepared for recreational and commuter use.

However, this initiative has not been implemented, and is not included in its follow-up *Plan Winnipeg...2020 Vision*.

A sustainable transportation network can be viewed as the result of measuring a set of indicators to determine how residents can use a variety of modes of transportation to meet their daily trip requirements. The indicators measured will affect how a sustainable transportation system develops. Three indicators were selected based on the objectives of sustainable transportation, and their relevance to the Winnipeg context.

Those suitable to the City of Winnipeg are:

- *Accessibility:*  
Travel time and distance, modal choice, connections, transit, non-motorized modes, customer perception, mobility
- *Quality of Life:*  
Mobility, land use, environmental conditions such as air quality, proximity to services and employment, social interactions, non-discriminatory
- *Safety:*  
Human factors, infrastructure conditions, incidence response, accident-rate, lighting, landscaping, rest areas, non-deserted areas, perceptions of drivers (National Cooperative Highway Research Program 2000)

Weather conditions and protection are integral to each of these indicators, but are not explicitly stated in the description as they are meant to be general and applicable to any city. At the time of further system development, weather factors would need to be addressed. Table 5.3 presents the plans and projects, systematically analysed for their inclusion of the three sustainable transportation indicators.

**Table 5.3: Inclusion of sustainable transportation indicators in Winnipeg plans and projects**

REPORT		INDICATORS		
DATE	TITLE	ACCESS- IBILITY	QUALITY OF LIFE	SAFETY
1946	Transportation Greater Winnipeg	—	—	—
1959	Future Development of the Greater Winnipeg Transit System	◆	◆	—
1966	Winnipeg Area Transportation Study	◆	—	—
1973	The Winnipeg Bicycle Route Study	◆	◆	◆
1974	City of Winnipeg Public Transit Study – Progress Report: Five Year Program	◆	◆	—
1974	City of Winnipeg Public Transit Study: Downtown Transit. Second Progress Report	◆	—	◆
1975	Downtown Area Shuttle Monitoring Report (D.A.S.H.)	◆	◆	—
1978	Winnipeg Southwest Transit Corridor Study. Summary Report	◆	◆	—
1979	The Winnipeg Regional Transportation System. Existing Conditions	—	—	◆
1982	Preliminary Design Study for the Kildonan Corridor	◆	—	◆
1993	Winnipeg Bicycle Facilities Study. Final Report	◆	◆	◆
1993	Plan Winnipeg...Toward 2010	◆	◆	—
1995	CentrePlan	◆	◆	—
1995	Reserved Lanes for Transit and Cyclists on Main Street and Osborne Street	◆	—	—
1998	TransPlan 2010	◆	—	◆
2000	Direction to the Future. The Guide to Better Transit for Winnipeg	◆	—	◆
2001	Towards a Sustainable Winnipeg. An Environmental Agenda	◆	◆	—
2001	Plan Winnipeg...2020 Vision	—	◆	◆
2001	WINSMART	—	—	—

Legend:

- ◆ Includes indicator
- Does not include indicator



Accessibility was most often mentioned in the documents. This shows that the City gives consideration to the ease of movement between locations and between modes of travel. Mention of the other two indicators, quality of life (or its implications) and safety (or related terms) was sporadic. This indicates that these are two concepts that, in the past, were not tied to transportation.

The three indicators are beginning to be recognised in several jurisdictions as an index of sustainable transportation acceptance. How system or facility performance is measured will significantly affect the types of projects that are eventually implemented to enhance performance (NCHRP 2000). Accessibility, quality of life, and safety are three performance indicators that indicate the use of sustainable modes of travel and lead to their inclusion in a city's transportation system.

## **5.2 WINNIPEG BICYCLE ROUTE STUDY**

There are two key City documents that deal specifically with active modes of transportation – in particular, cycling. These warrant detailed consideration as they indicate ongoing active transportation use in Winnipeg.

In 1973, the Transportation Division and the Planning Division produced the *Winnipeg Bicycle Route Study* for the City of Winnipeg. The study determined the feasibility of a system of bicycle paths for the city.

The document has some design guidelines for streets already constructed that include pedestrian and cycling infrastructure. It also includes renditions of cyclist facilities, such as an image of an ice cream shop. The document is an observation of existing facilities. It does not provide concrete actions to increase bicycle use.

At the time, cycling was becoming a popular activity as evidenced by observations made for the study. Most of this growing use was for recreational purposes as opposed to commuting purposes. Low commuter trip usage was attributed to the relatively hazardous cycling conditions which existed on heavily-travelled major streets during peak periods of the day (City of Winnipeg Transportation Division and Planning Division 1973). The study states that because of the physical constraints of the existing street network, planning emphasis should be placed on the development of recreational cycling infrastructure. These separate routes would be used by recreational cyclists, but could also draw some commuter cyclists, who do not feel safe using the street system.

The *Winnipeg Bicycle Route Study* recommends that a system of bicycle routes be developed in Winnipeg consisting of:

- (i) Bicycle Paths – which are ribbons of pavement specifically designed for bicycles located in areas where it is possible to prohibit motor vehicle traffic; and
- (ii) Bikeways – which are well identified, suggested cycling routes, utilizing existing vehicular roadways (preferably minor streets) where cyclists would share the roadway with other types of traffic (City of Winnipeg Transportation Division and the Planning Division 1973).

On-street bikeways were implemented for the Pan Am Games in the summer of 1998 to encourage athletes, delegates, and spectators to cycle to venues around the city

(City of Winnipeg Transportation Division 2002). Since then the signs have not been removed. According to the Manitoba Cycling Association, cyclists assume that by using these paths, they are travelling on a cyclist-friendly route (Manitoba Cycling Association 2002). However, the signing of these routes was not done in conjunction with an educational campaign for motorists and did not include the provision of special cycling infrastructure.

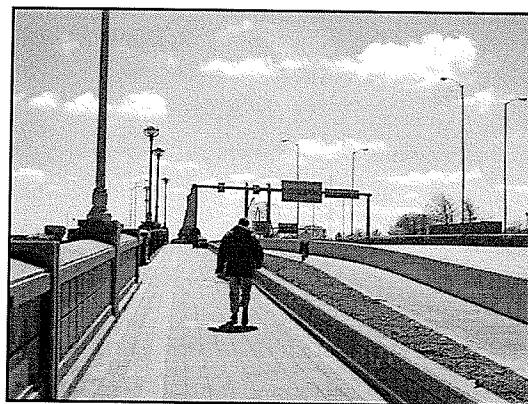
### **5.3 WINNIPEG BICYCLE FACILITIES STUDY**

Twenty years after the *Winnipeg Bicycle Route Study* was released, the Streets and Transportation Department of Public Works commissioned an updated study of cycling in Winnipeg. The purpose of the *Winnipeg Bicycle Facilities Study* was to provide an overview of recreational and commuter cycling needs in Winnipeg, and develop a plan to address some of those needs. This study differs from the *Winnipeg Bicycle Route Study* because it presents the current situation and goes beyond that to present recommendations and realistic ways of implementing improvements.

The study was undertaken with public consultation, which allowed both user groups and the public to voice their concerns, opinions, and needs about cycling in Winnipeg. As in the *Winnipeg Bicycle Route Study*, safety was found to be a major barrier to bicycle use, so separated facilities were preferred. In a survey of Winnipeg bicycle users conducted for the study, respondents felt that recreational facilities were sufficiently developed and maintained by the Parks and Recreation Department.

Respondents felt that it is more important to upgrade facilities for commuting than for recreational uses (Marr Consulting & Communications 1993). Although a formal survey was not conducted for the 1973 study, it is interesting that between the 1973 and 1993 studies the planning focus shifted from recreational cycling to commuter cycling.

The City of Winnipeg still refers to the *Winnipeg Bicycle Facilities Study* as the definitive set of bicycle planning and design guidelines for the city. Many of its recommendations have been carried out, and it has had an important impact on transportation planning in the city. As a result of its recommendations, all retrofit and new street and bridge projects include consideration for cyclists in the planning phase (City of Winnipeg Transportation Division 2002). For example, the Main/Norwood Bridge includes a sidewalk and separate cycling lane in both directions (See Figure 5.1). These recommendations do not always translate into infrastructure construction, but is a positive step in the provision of a multi-modal transportation system.



**Figure 5.1 Main/Norwood Bridge including wide sidewalk for pedestrians and separate lane for cyclists**

## 5.4 CONCLUSION

In summary, while active and sustainable transportation plans and projects have been an inconsistent part of the City of Winnipeg's mandate, some projects have been constructed and are used by Winnipeg residents. For example, the City runs a program of street closures on Sundays and holidays during the summer months. A series of streets are closed to all but necessary local vehicular traffic, allowing pedestrians, cyclists, and other active residents to use the roadway for primarily recreational purposes. As well, several individual projects have incorporated pedestrian and cycling infrastructure, including the Moray Street Extension, the Provencher Pedestrian Bridge, and the Main/Norwood Bridge (City of Winnipeg Transportation Division 2003).

Resident groups have also developed some projects, such as the Seven Oaks Hearts in Motion trail project (City of Winnipeg Transportation Division 2002). This project, based on an Irish program and developed between several partners – including the City of Winnipeg – is a forty-two-kilometre trail through the Seven Oaks neighbourhood. It includes markings at one-kilometre intervals, highlighted facilities, and historical sites. The trail encourages people to walk for leisure, good health, and fun.

Indicators such as the three used for this analysis would help to ensure that sustainable transportation becomes part of Winnipeg's existing transportation system. Accessibility, quality of life, and safety should be incorporated into all transportation

planning and decision-making processes. Past plans and actions provide a benchmark by which to measure present and future progress in the field of active transportation.

## **CHAPTER 6**

### **CURRENT ACTIVE TRANSPORTATION POLICIES AND PROJECTS IN WINNIPEG**

This chapter presents results of interviews carried out with City officials and local transportation experts. Interviews were carried out to determine active transportation projects presently in the planning stages and planned for the future.

#### **6.1 INTERVIEW PROCESS**

Individuals from City of Winnipeg departments and local experts in active transportation issues were consulted to supplement the information gathered from documents. These individuals were selected based on their positions within the City's transportation planning system and their expertise with regard to past, present and future active transportation projects.

An interview guide was developed as a way to keep the information gathering process in line with the research objectives. A specific list of questions was formulated.

The interviewer using an interview guide is free to make decisions about how and when to ask questions based on what is already known, or can be judged, about the respondent and the feedback obtained during the interview as to the respondent's knowledge of and ease in discussing various subjects (Jones 1996).

This proved to be a good tool as participants had varying levels of knowledge of the subject. It allowed the interviewer to tailor the interview to each participant.

Participants were sent a copy of the interview guide in advance of the face-to-face interview, allowing them to formulate answers and verify information, and to save time during the actual interview. The interview guide was divided into three sections, each dealing with an aspect of active transportation planning in Winnipeg. These included:

- background information on the participant and their knowledge of past active transportation projects;
- the planning process involved in developing and implementing active transportation projects and programs;
- outcomes and next steps required to further promote the use of active transportation modes in Winnipeg.

The interview guide is shown in Appendix A.

Once the consent form was signed and the tape-recorder started, the researcher asked each question and allowed the participant to answer it fully. The researcher also encouraged each participant to elaborate on topics of interest or aspects related to their own expertise or personal experience. These personal experiences illustrate how transportation professionals approach the topic of active transportation in their daily lives. However, the researcher steered the conversation back to the interview guide if the conversation went too far off-topic. Also, a definition of active transportation was included to ensure that each participant approached the subject the same way as the researcher understands it. This allowed for a standard analysis of responses as all participants shared the same understanding of the term (Fowler and Mangione 1990).



## 6.2 BACKGROUND INFORMATION

The first set of questions established participants' backgrounds, including their organisation's history, mandate and mission, and their position within the organisation. These questions helped determine whether active transportation was already an integral component of each organisation's scope of work. They also allowed participants to reflect on what their organisation has done to date, what it intends to do in the future, and how active transportation could be a stronger component of their mandate.

The final two questions of the background information section were deliberately broad to gain insight into participants' actual knowledge of past and future active transportation programs and projects. The Marr Report (*Winnipeg Bicycle Facilities Study*) was mentioned as the impetus for improvements to cycling infrastructure in Winnipeg. The report, written in 1993, outlines several recommendations for improving cycling infrastructure in the city. As one interviewee stated: "We have done a number of things to improve the safety of cyclists on our streets since the Marr Report. Whenever we do a bridge, pedestrian and cyclist needs are looked after in the broader context."

The Southwest Transit Corridor was the proposed project mentioned by the most participants. "It has always been a part of the design that, between downtown and the University of Manitoba along the railway right-of-way, not only would an exclusive roadway for buses to travel on with stations at various points be developed, but parallel to that would be built a bicycle pathway system." Other responses included downtown

active transportation improvements, such as the Riverwalk, Provencher Bridge, and the Commuter Challenge.

### **6.3 PLANNING PROCESS**

The second section of the interview guide addressed the planning process for active transportation programs and projects. Participants were asked whether established planning and design guidelines as well as their own organisational guidelines are used to develop active transportation infrastructure. Winnipeg Transit, the Public Works Department, and the Planning, Property and Development Department use Transportation Association of Canada guidelines both for facilities and signage. Other standards are borrowed from the Institute of Transportation Engineers, the Canadian Institute of Planners, the Transportation Research Board, and Vélo Québec. Internal guidelines have been developed from these sources as well as the local Marr Report, which serves as the blueprint for all cycling infrastructure development in Winnipeg. As one interviewee described: “It outlines the list of projects that form part of our long range plan.”

When asked whether there is a cooperative effort between planning and implementation organisations and how this works in practice, answers were unanimous on the part of City officials. “Definitely”, as one participant put it. However, among those experts on the periphery of the City organisation, answers were less positive. They stated that there is coordination, but that it could be better. “It comes down to people being very busy.” All participants did state that they interact with colleagues by sitting

on various committees and these committees provide a good forum for information sharing.

Next, interviewees were asked whether public consultation is an important component of project development, and what form it takes. Two important points arose from responses. The Public Works and Planning, Property and Development departments are mandated to involve public consultation in any process, and it is an important component of any project development. "I think it's critical, because what we are trying to do to some extent is change people's lifestyle, travel pattern, and if the public doesn't buy into that it doesn't matter what we say." Also, one of the planner's roles was defined as a facilitator who listens to the community and incorporates their values and needs into all projects, rather than acting as an outside expert.

Several participants stated that often it is the public that approaches transportation officials with ideas for projects in areas where they see a need. "Sometimes smaller groups tend to come up and drive the process." In these cases transportation officials take on the role of facilitator, helping get a program or project up and running through the proper channels.

Forms of public consultation used include surveys, questionnaires, open houses, focus group sessions, steering groups, and newsletters to communicate project development. Large-scale projects must go through a formal City process. As one participant pointed out: "There would be another opportunity for citizens to participate

through the zoning process.” These methods allow Winnipeg residents to be involved from inception right through to completion and follow-up for a program or project.

Next, participants were asked who the final decision-makers are in terms of active transportation programs and infrastructure, and whether transportation experts can affect the decision-making process. The universal response to this question was that City Council is the final decision-maker. All participants were clear about their role within the decision-making process. A couple of participants mentioned planners as playing an important role in the final decision-making process, through involvement in committees. Each participant was sure of their responsibilities to the public (whether from a planning perspective or as an outside expert), and how they can affect the decisions made by Council. As one participant stated: “Planners give Council the preferred options and they make the decision.”

The next question was meant to encourage participants to think about the role of active transportation in the overall system, and gave the researcher an indication of participants’ existing knowledge of active transportation. Interviewees were asked what role the benefits and constraints of active transportation play in the development of a program or project. Most responses identified the environmental and health benefits of active transportation. As well, a couple of participants stated that knowledge of the benefits is intrinsic to any project because they are not tangible. “We don’t quantify it, but in a broader context we are aware of the benefits.” Several participants mentioned

the winter climate as the greatest constraint to active transportation use. Another constraint that was mentioned was a lack of existing infrastructure in the city.

The next question was meant to gain a better understanding of safety in Winnipeg's transportation system. How are safety concerns addressed, and are there incompatibilities between modes that prevent the development of active transportation programs and infrastructure? All participants agreed that safety is a concern; however, they disagreed on how to address it. Examples given of safety concerns around Winnipeg included poor lighting, sidewalks that just end, and a lack of education among both drivers and cyclists. Examples of good safety designs in Winnipeg included slanted grates, cycling signs, and diamond lanes reserved for buses and bicycles.

One participant stated that users are separated, particularly on bridge re-design projects. "On our larger projects we separate them, human-powered lanes and traffic lanes." Three other participants stated that users are not separated. "We try and get both cyclists and drivers to interact together." "We didn't do that here (widen the diamond lane) because of space constraints, and I'm not sure we can do that here because the way our streets are designed, the lanes are at their maximum width." "They (cyclists) are legally entitled to occupy the space they are occupying."

Further to this last remark, the interviewee went on to state: "What does frustrate drivers is when cyclists straddle the middle of the lane. That's an educational thing for the cyclist." This is an interesting statement because the participant argues that cyclists

are legally allowed to be using the street system, but yet does not specify that the cyclist must be as close to the curb as possible (Province of Manitoba 1985). This statement is revisited in the next chapter.

Physical barriers are seen as incompatibilities for active transportation, including sidewalks that abruptly end at someone's private property and the many rivers and rail lines that cross the city. As participants stated, these barriers can not be changed and will continue to affect active transportation program and project development.

The last question of the planning section allowed participants to take a step back and consider Winnipeg as a whole. This was achieved by asking how Winnipeg's landscape serves to promote or hinder the development of an active transportation network. The natural landscape was stated as both a benefit and a hindrance to active transportation use. The rivers and flat landscape provide ideal settings for walking and cycling, but flooding and winter weather are constraints to year-round use.

The built environment was often mentioned as a constraint to active transportation infrastructure development. One interviewee stated: "In Winnipeg, everything is really spread out, not everything is downtown, which makes it difficult." The inclusion of cycling lanes on new bridges was stated as a step in the right direction. As well, one participant recognised the lack of knowledge as a barrier to active transportation infrastructure development. "From an institutional perspective, what hinders us is education and awareness around active transportation benefits."

## 6.4 OUTCOMES AND NEXT STEPS

The last section of questions revolved around the outcomes of past projects and future plans in the field of active transportation. In terms of increased basic knowledge, a few participants mentioned that the public is becoming increasingly aware of active transportation and its benefits. In terms of the creation of stakeholder networks, it was stated that stakeholders have been around for as long as the use of active modes but, in the past, may not have cooperated and shared resources to arrive at common goals. Presently there is better contact between stakeholders, experts, and City officials. One participant stated: "Now there's a network that can be used to share information on transportation demand management issues and things like that."

All participants recognised the value of marketing campaigns. Two of them mentioned the Commuter Challenge as an example of a successful local initiative that was well promoted. However, some participants stated that the City does a poor job of marketing new programs and infrastructure, suggesting that it takes a passive approach to marketing where infrastructure is installed and then it is assumed that pedestrians and cyclists will find it. A few of the statements made regarding marketing active transportation included: "We have responded to trends as opposed to we have created trends"; "I think some of the things that have happened in the seventies (cycling infrastructure) were well-promoted at the time, but we have become more complacent with respect to promoting active transportation"; and "We are more of an observer."

Next, participants were asked what indicators are used to measure the outcomes of active transportation programs and infrastructure, and whether evaluation is an integral component of the process. Means of evaluation included user counts, population surveys, public feedback, and observation. Responses were varied as to the level of evaluation required for a project, which depends on the project and the department or organisation in charge of its development. One participant stated: “We don’t measure how much use any particular facility gets from pedestrians and cyclists, partly because of shrinking resources.” (Upon further research, it was found that the Public Works Department has in some cases conducted pedestrian and cyclist counts, such as on the Main/Norwood Bridge cycling lane.) Another participant stated that the level of evaluation conducted has to improve and must tie into City policy. “We should use one indicator as a measure of pathway connections that would relate back to Plan Winnipeg, at a higher level.”

Interviewees were then asked to consider the positive outcomes of past programs and projects. Most participants stated that the inclusion of active transportation is improving with recent interest but there is still a long way to go. Two participants mentioned active transportation in terms of the long-term policies of Plan Winnipeg. “Plan Winnipeg tells us that increased public use of active transportation is driving the process because it is appearing in it.” However, active transportation is not a stand-alone policy in the latest *Plan Winnipeg...2020 Vision*. One interviewee mentioned: “We have the pieces there but we don’t have a policy that says we want an active transportation program that has these things as part of integrating sustainable transportation.” These



statements show that as attention from users and stakeholders grows, change will occur and active transportation will begin to appear in policy documents.

The next question revisited the benefits of and constraints to active transportation in terms of which ones need better understanding in order to move forward. Participants were asked what benefits should be better promoted and what constraints need better understanding. The benefits that need more promotion include environmental and health and well-being benefits. No participant mentioned the economic, social, or safety benefits. The constraints that require better understanding include an awareness of active transportation among upper management in businesses, who can promote active transportation among employees and ensure the inclusion of support infrastructure such as bike lockers and shower facilities.

For the City system, one participant stated: “The fact is that there isn’t a higher level policy.” “We don’t have a total system here,” is how another participant described the reason for a lack of understanding on the part of the public, transportation officials, and City Council. These statements show that there is a need to further develop City policies to guide active transportation program and infrastructure development and then the necessary resources and partnerships will develop to follow through. The current infrastructure is such that motorists do not have to respect cyclists and pedestrians because they do not have equal resource allocation.

The last question asked participants to describe the next necessary steps for active transportation inclusion in the city's transportation system. Three participants stated that a first step would be to develop a committee charged with capital as well as education initiatives in the field of active transportation. "That will promote some interest from City Council to provide some significant staff dedication." A corporate commitment would come from public demand. "You can have all the policy you want, but unless there is a large user group pressuring or desiring these services they won't make it into the budget." All participants agreed on this. Active transportation can only become a more integral component of Winnipeg's existing transportation system with interest from the public as well as policies that ensure the City follows through with programs and projects.

## **6.5 CONCLUSION**

The interview process provided a large amount of useful and relevant information to supplement the information gathered from documents. This chapter presented participants' statements as they were given during the interviews. The next chapter analyses these statements, draws comparisons to previously gathered information, and presents a series of recommendations for active transportation development.

## **CHAPTER 7**

### **DISCUSSION**

This chapter is a discussion based on the interviews of Winnipeg experts. It draws on the information gathered from research to analyse interview responses. Results are presented in a series of topics. Observations are made about what can be learned from the practicum research, the state of active transportation in Winnipeg, and the state of active transportation in general. Recommendations are provided based on the information gathered from interviews and published documentation.

Representatives from City of Winnipeg departments shared information on past plans and projects and future plans for active transportation development. To complement their statements, local transportation experts were asked about past and present City initiatives and the need to further develop existing infrastructure and programs. Participants provided an up-to-date glimpse of active transportation in the city from their experience and expertise.

The statements made by participants are informative; however, it is unclear whether their statements reflect the public's views on walking and cycling. It is difficult to determine whether participants' statements always represented public opinion or were based solely on professional experience.

## 7.1 GENERAL OBSERVATIONS OF INTERVIEWS

Overall, the interviewer found that there was much agreement between interviewees. They all stated that active transportation had not been a priority for the City in the past and that it should become one in the future. Interviewees also stated that there had been a lack of active transportation project development in the past, but that progress was being made to address active transportation in the city's overall transportation system.

Some participants mentioned that the benefits of active transportation are understood but not explicitly stated in City policy and projects. When prompted, all participants listed the health and wellness benefits of walking and cycling before the environmental benefits. In this case, this small sample is representative of the public's understanding of the health benefits of walking and cycling, because they are more tangible than the environmental benefits (Burgess et al. 2002).

Active transportation marketing campaigns are beginning to shift from a focus on the environmental benefits to the health benefits. Building promotional campaigns around the health and wellness aspects of active transportation provides a personal and concrete message (McKenzie-Mohr and Smith 1999). Environmental benefits should not be overlooked, but are less tangible because individuals cannot see the positive change in the short term in their daily lives.

## 7.2 CITY STRUCTURE

In Winnipeg, transportation professionals are spread throughout several City departments. This is not a situation unique to Winnipeg, as Litman points out:

Conventional planning reflects reductionist decision-making, in which problems are assigned to a specialized organization with narrowly defined responsibilities. One agency is typically given responsibility for solving traffic congestion problems, another reduces accidents, another protects the environment, while others determine the location of public facilities, such as schools. Often, one agency's solutions exacerbate another agency's problems (Litman 1999).

As for all cities, the structure of the City of Winnipeg is unique, but this description certainly applies to Winnipeg as projects are often spread over several departments. This can reduce the effectiveness a department has in implementing a program or project, and can tie up resources.

Based on interviews and background research there seems to be a need to develop realistic and innovative ways to share information across departments in the existing City structure, which will promote the best use of resources to develop programs and infrastructure. This does not only apply to active transportation projects, but also to other multi-departmental projects. As the example of active transportation shows, some projects are spread across several City departments. There are many individuals involved and, as a result, there is a dislocation of up-to-date information. Information and resource sharing would facilitate the development of active transportation programs and infrastructure within the existing transportation system.

Having transportation professionals working in several departments also affects whether land use and transportation are addressed together or separately. City policies and actions should reflect the link between land use and transportation. The City has a direct influence over the demand for transportation in two ways:

- Land use decisions determine the density of the city and the proximity of residences to employment and major activity centres. These, in turn, affect the amount of travel and average trip lengths.
- The City's decisions about the nature and mix of transportation infrastructure and services supplied directly affects the transportation mode choices made by Winnipeg residents (Winnipeg Transit 2000).

Past land use and transportation decisions have impacted how residents get around the city today. The expansion of roadway and bridge capacity has created a good network to get around by personal vehicle (Winnipeg Transit 2000). However, a decentralisation of residences, employment, and services has made it difficult to improve and expand transit and active transportation networks. Transportation expansion follows land use changes, but there is too often an emphasis on developing vehicular infrastructure before more sustainable transportation infrastructure. Having transportation professionals working in a more centralised organisation would help ensure a transportation system that reflects land use decisions.

### **7.3 SAFETY**

The safety of active transportation is one area not similarly addressed by all City of Winnipeg departments. Some officials focus on safety between modes, such as the interaction between vehicles and bicycles on roadways, while others focus on the

personal safety of users, such as the amount of lighting along a pathway. A coordinated effort would result in projects that equally address safety between modes and personal safety.

When addressing safety concerns, all City officials need to know the rights and responsibilities of road users, including drivers, cyclists and pedestrians. Officials must present a consistent message to all users that they are to obey the law. One interview participant stated that cyclists are entitled to use the roadway, and that they should ride on the right to avoid frustrating drivers. In fact, according to the province's *Highway Traffic Act*, cyclists can operate on the roadway system, but must ride as close as possible to the right-hand side or curb (Province of Manitoba 1985). This is often presented in an inconsistent message to cyclists and drivers. If cyclists are allowed to use the roadway while maintaining a position on the right-hand side, then this should be advertised and enforced.

Safety, security, and comfort concerns must be understood to avoid accidents involving pedestrians and cyclists. Addressing these safety concerns enables individuals to consider active modes of travel as a viable option. Decision-makers and transportation officials benefit from increased internal awareness of active transportation, including the advantages of modal sharing - that is, combining an active mode for part of the trip with another mode, such as transit. An understanding of perceived constraints held by residents towards active transportation helps all interested organisations promote the facts and benefits, as well as avoid public misconceptions.

## **7.4 EXPERIENCE OF OTHERS**

Another observation that came from the interviews is the need for all City officials and related experts to be aware of local initiatives and projects, such as Seven Oaks' Trails in Motion and the Bishop Grandin Greening Corridor Group. Projects undertaken by other groups can be promoted by the City to form part of the overall active transportation network in Winnipeg. Working with these groups can free up resources and create a knowledge base of expertise for other cities to emulate.

At present, Winnipeg has several active transportation programs and related infrastructure in place and in development. Cities such as Ottawa, Toronto, and Vancouver have incorporated some pedestrian and cycling infrastructure into their existing transportation networks, while developing programs to encourage its use. The active transportation infrastructure projects around Winnipeg are disconnected from each other, making it difficult for users to easily reach a destination. Other cities can be models for the completion of a network of walking and cycling infrastructure in Winnipeg.

Lacking from all interview responses was an acknowledgement of the benefits of drawing upon the experiences of active transportation in other jurisdictions. Winnipeg has a cold climate and is geographically isolated from other Canadian cities, leading to it not being easily influenced by experiences of active transportation in other cities - be they



Canadian or international. Officials in Winnipeg can learn from colleagues and counterparts where walking and cycling programs have been tested. This information is useful for providing both best practices and failures, equally valuable in the initial stages of project development. Several forums for sharing information and learning from others exist, including email discussion lists where messages and questions are posted and read by experts around the world, and conferences where experiences are shared and used to enlighten interested officials to get new programs and projects started.

The interviewees stated that a network of experts in Winnipeg was forming and that the knowledge of active transportation was spreading. The next step should be to seek valuable information from sources that have already gone through the initial stages of project development and can provide the information required to avoid hurdles to successful project implementation. This does not discount the fact that Winnipeg is a unique city like any other, with its own unique set of factors affecting transportation use.

## **7.5 FUNDING**

When considering why Winnipeg has not developed a comprehensive active transportation program in the past, it is important to remember that most other Canadian municipal jurisdictions have treated active transportation similarly. In this regard, Winnipeg is not unique. As well, Canada does not have a federal mandate to develop and promote active transportation at the local or provincial scale.

This is in contrast to the United States where state and local jurisdictions are obliged to plan for and implement active transportation infrastructure in transportation systems. TEA-21 and its predecessor, ISTEA, set aside funding specifically for the development of active transportation. For example, every State has an active transportation coordinator, whose duties are to oversee and implement pedestrian and cycling projects (USDOT 2002).

The benefits of this dedicated funding are obvious and some Canadian municipalities are beginning to employ active transportation coordinators. Federal departments in Canada are also developing programs and infrastructure within their portfolio, but this is on a project-by-project basis. There is still a lack of dedicated funding for a national active transportation strategy. As municipal governments continue to implement local active transportation initiatives and as Canada looks to the United States as a model, a national active transportation funding strategy will develop. The federal government needs to take the initiative and develop similar funding requirements as those in the United States.

## **7.6 POLICY**

Many interviewees were aware of the City's long-term policy documents. A few mentioned the lack of active transportation policy content. The concept of active transportation needs to be an inclusive component in all City policy documents, such as *Plan Winnipeg...2020 Vision* and *TransPlan 2010*. At present, policies that relate to

active forms of transportation are spread throughout *Plan Winnipeg...2020 Vision*. As well, several policies make mention of cycling and walking separately. Some of these include:

- Supporting the creation of a pedestrian-friendly downtown environment.



**Figure 7.1 Example of wide sidewalk for good pedestrian movement in downtown Winnipeg**

- Supporting cycling and other alternative modes of transportation to and within the downtown.
- Ensuring that pedestrian comfort and safety are given paramount consideration in the transportation networks of neighbourhoods.
- Minimizing walking distances to transit in the planning of new developments and making transit connections quick, easy, and weather-protected.
- Improving cyclist comfort on the arterial street system through the expansion of curb lanes and the establishment of cycle lanes where feasible (City of Winnipeg 2001).

The development of active transportation programs and infrastructure must be a policy itself in order to promote a transportation network that allows users to easily move from one mode to another. This will ensure that it is a priority, while recognising that it

is one integral component of a sustainable city. Examples of inclusive active transportation policies from *Plan Winnipeg...2020 Vision* include:

- Using streets and sidewalks, river corridors, pathways, and green spaces as an interconnected network to integrate the downtown and connect it with the whole city.
- Integrating the needs of pedestrians and cyclists into the planning and design of urban transportation facilities for both work trip and recreational use (City of Winnipeg 2001).

These two policies include walking and cycling together. All City policies should be inclusive of all active modes of transportation in order to support a multi-modal transportation system.

Policy documents such as *TransPlan 2010* will only be effective if they apply to all City departments. As well, they must be regularly updated to ensure that they are applicable to the Winnipeg context, after the document is published and the public consultation and research has been completed.

## **7.7 RECOMMENDATIONS**

Throughout the research, recommendations have been formulated based on the information gathered. These recommendations are provided primarily for the benefit of transportation planners in the City of Winnipeg, but are useful to all jurisdictions and transportation experts in organisations at the local level. The recommendations are cost-effective and can be easily applied to Winnipeg in four broad categories: City structure, policy, planning and design, and marketing. An increase in the provision of active

transportation programs and infrastructure would be embodied in action on the following recommendations:

*City Structure:*

- Address land use and transportation as a single issue.
- Develop new ways to share information across City departments and among all transportation experts.
- Develop common language and goals for all City transportation professionals.
- Create more equitable resource allocation between private automobile, transit, cyclists and pedestrians.

*Policy:*

- Plan for pedestrians first and foremost in transportation system: all trips include pedestrian components and these users are by definition the most vulnerable.
- Have one policy for active transportation in Plan Winnipeg. One that sets out the future components of an active transportation program in Winnipeg.
- Make active transportation an integral component of all City policy documents.
- Develop a list of indicators of active transportation use and of overall system performance.

*Planning and Design:*

- Draw on the experiences of other cities, both best practices and practices to avoid.
- Work with other groups to expand the local active transportation network while freeing up resources and increasing knowledge sharing.
- Develop a committee charged with active transportation capital projects and education initiatives.
- Address active transportation benefits and constraints in system development.
- Develop standards and guidelines for public participation in the planning process.
- Develop one set of design guidelines that includes all modes and is accessible to all departments.
- Include cyclists' infrastructure needs in new roadway design, which will decrease long-term and retrofit infrastructure costs.
- Visually separate on-street bicycle lanes from vehicular traffic.
- Provide a mix of on-street and pathway systems for both commuter and recreational cyclists. This will address individual comfort levels.
- Connect the entire existing active transportation network to allow for longer distance trips.

### *Marketing:*

- Focus on the health benefits of active transportation in all marketing campaigns.
- Develop a public education and awareness campaign, because there needs to be a combination of policies and public pressure to advance active transportation projects.
- Take a pro-active approach to marketing City active transportation programs and infrastructure.
- Plan for and promote multi-modal trips in City projects.
- Develop a targeted marketing campaign for commuters to show the ease of converting short-distance trips to, from, and at the workplace.
- Make active transportation presentations to Council, City staff, interest groups and the public.
- Ensure all transportation experts attend training sessions on active transportation.
- Encourage stewardship at the City level (for example, promote employees cycling to work).

## **7.8 CONCLUSION**

Interviews with City of Winnipeg officials and local experts helped identify current policies, plans and projects being developed by the City and user groups. Participants included policy makers, engineers, planners, transit specialists, and representatives of area user groups, with knowledge of the level of active transportation use among Winnipeg residents. Their comments helped identify potential areas of improvement for active transportation integration. Recommendations have been formulated from these comments. A vision of active transportation in Winnipeg based on interviews and published documentation is presented in the next chapter.

## CHAPTER 8

### CONCLUSIONS

This chapter presents the findings of the research. A review of the objectives set out for the practicum is conducted to determine whether they were met. To conclude, a vision of active transportation is described.

#### 8.1 FINDINGS

The practicum analyses active transportation, with particular reference to related plans, projects, and their results in Winnipeg. The following is a summary of the research findings in relation to the objectives set out in Chapter 1.

- *Determine and evaluate factors influencing active transportation use.*

Analysis of the literature reveals the benefits and constraints affecting the adoption of active transportation. The facts on active transportation are often misunderstood and lead to a percentage of potential users not considering walking or cycling as viable travel options. Decision-makers and transportation professionals must also be aware of the benefits and constraints that affect users in order to provide a choice of modes within a transportation system. In Winnipeg, this means paying particular attention to the constraints of winter weather that influence individuals' choice of modes.

Winnipeg is not unique in having an automobile-dominated transportation system. The connections between land use and development influence the type of transportation infrastructure implemented. What can be learned from the literature review is that, to encourage active transportation, the first step would be to implement programs and infrastructure, but this should be done in combination with education and awareness-raising campaigns among residents, transportation officials and decision-makers. This has been proven to work in other cities, where walking and cycling are becoming increasingly recognised as valuable modes of travel.

- *Perform a systematic analysis of past active transportation policies, plans, and projects, and their results.*

Chapter 5 is an analysis of past City documents related to active transportation. Until now, active transportation program and infrastructure development has been sporadic. Most often, actions have not followed plans. More research should be conducted into the reasons for a disconnection between what is planned and what is produced. On the other hand, one document that exemplifies a connection is the *Winnipeg Bicycle Facilities Study* produced by Marr Consulting in 1993. It makes several recommendations about incorporating cycling into the existing transportation network. Several recommendations were carried into project implementation. Today it is still upheld as a best practice document by the City and transportation professionals.

The identification of City and international guidelines used to design infrastructure within multi-use roadways is conducted in Chapter 4. Design guidelines



set infrastructure standards for transportation professionals. The City of Winnipeg uses several guidelines to design its roadway system. Guidelines include mention of walking and cycling, but do not promote the design of roadways around these users.

- *Critically evaluate current active transportation initiatives being pursued by transportation planning organisations.*

To evaluate the City's active transportation initiatives, information is drawn from interviews conducted with City officials and local transportation experts. Chapters 6 and 7 present an analysis of interview findings. The City's present plans for developing active transportation programs and infrastructure in Winnipeg are discussed and compared to the projects of local active transportation groups. Active transportation experts working outside the City system have different methods available to them to encourage residents to use active modes. Working with City officials to develop best practice programs and infrastructure would free up resources and promote knowledge sharing. Mutual training would also occur as the transportation professionals working outside the City system get to focus on active transportation more than their City counterparts who in turn have a good understanding of project implementation processes.

An analysis of City policy documents shows that most policies deal with walking and cycling as separate issues. Walking and cycling are also mentioned in other policies as means of creating a livable city. However, the concept of active transportation is not yet a stand-alone policy, separate from other policy areas. An umbrella policy that deals

with all forms of active transportation would ensure a choice of modes in the existing transportation system.

- *Determine opportunities for development of future active transportation programs and infrastructure, and make recommendations.*

Existing documentation and interview responses help determine the needs that must be fulfilled and the opportunities that should be pursued in the future. Factors related to demand and to Winnipeg's unique situation form the basis for all recommendations.

Traditionally, active transportation has been a relatively insignificant component of the overall transportation system. If Winnipeg is to offer a multi-modal system to its residents, walking and cycling must play more significant roles in the transportation network. Analysis reveals what programs and infrastructure are in place, what the intent was in their development, and how Winnipeggers received them.

The knowledge of active transportation and its benefits will only increase among the public, transportation professionals, and decision-makers with an improved avenue for information sharing. As Manheim et al. state:

Community interaction can be viewed as the process of communications necessary to incorporate social, economic, and environmental considerations into all phases of a transportation planning and decision-making process. Information must be exchanged by the transportation agency and other agencies, officials, interest groups, and the general public (National Cooperative Highway Research Program 1975).

Each of these segments has important information to share that will lead to a multi-modal transportation system.

Lessons learned from this research explain the reasons why active transportation has taken a back seat to other modes of transportation in Winnipeg and other cities. Research findings can help educate transportation professionals who in turn will help inform decision-makers. Transportation decisions will be made based on the needs of all Winnipeg residents, including those unable to own an automobile or those who choose not to drive. The car's influence on both the physical and social environment will be curtailed from an informed decision-making process.

Winnipeg has a long way to go before walking and cycling will receive as much funding and use as other modes of travel. However, Winnipeg is in a position to take advantage of the potential of active transportation and develop a best practice city, where policies are reflected in the social and built infrastructure. Transportation planning organisations must become the catalysts for this development. This research should be shared with the appropriate officials to effect change in the planning of active transportation.

## **8.2 VISION OF ACTIVE TRANSPORTATION**

A vision of active transportation is a city where municipal actions reflect planning policy and the public's needs. To arrive at this, all City departments address land use and

transportation as a single issue while working with interest groups to develop and market a range of active transportation programs and projects. Financial resources are allocated to create a multi-modal transportation system employing sustainable transportation indicators to ensure continued use by all residents.

### **8.3 AVENUES FOR FUTURE RESEARCH**

This practicum set out specific objectives that have been met. In completing the practicum, many avenues of future research have been determined, including:

- Compare and contrast the content and effects of active transportation policies in other cities than Winnipeg.
- Survey Winnipeg residents to determine how to increase active transportation use. Develop community-based social marketing strategy from survey findings.
- Determine active transportation funding programs and opportunities.
- Apply established public participation planning methods to active transportation projects.

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#### Discussion Lists:

[www.best.bc.ca](http://www.best.bc.ca)

[www.cycling.mb.ca](http://www.cycling.mb.ca)

[www.pednet.org](http://www.pednet.org)

[www.tlcnetwork.org](http://www.tlcnetwork.org)

## **APPENDIX A**

### **INTERVIEW GUIDE**

For the purposes of this interview guide, active transportation means all forms of human-powered transportation, examples being walking, cycling, skating, or any combination of these modes.

#### **Background Information**

- How long has your organisation been in existence?
- What are your responsibilities within your organisation?
- Is active transportation a priority for your organisation? Is it a component of your organisation's mandate? If not, why not?
- Have pedestrians/cyclists needs usually been incorporated into the city's overall transportation programs and infrastructure?
- What are the major existing and proposed active transportation plans, projects, and programs in Winnipeg today?

#### **Planning Process**

- Are established planning and design guidelines used to develop active transportation infrastructure? Does your organisation have its own series of planning and design guidelines?
- Is there a cooperative effort between planning and implementation organisations to develop the active transportation network? And if so, how does this work in practice?
- Is public consultation an important component of active transportation program and project development? And, if so, what forms of public consultation are used?
- Who are the final decision-makers? Can transportation experts affect the decision-making process?
- What role do the benefits and/or constraints of active transportation play in the development of a program or project?
- How are safety concerns addressed? Are there incompatibilities between modes of travel that prevent active transportation development?
- How does Winnipeg's landscape serve to promote or to hinder the development of an active transportation network?

## Outcomes and Next Steps

- What are the results of planning efforts in the field of active transportation, tangible as well as less tangible results?
  - Improvements in basic active transportation knowledge?
  - Creation of stakeholder networks?
  - Marketing campaigns?
- What indicators are used to measure the outcomes of active transportation programs and infrastructure? Is evaluation an integral component of the process?
- Is the inclusion of active transportation improving with recent interest and attention?
- What benefits should be better promoted? What constraints need better understanding?
- What are the next necessary steps in advancing active transportation as an integral component of the Winnipeg transportation system?