



ACTIVE CITY

DESIGNING FOR HEALTH

Reference

Toronto Public Health, City of Toronto Planning, City of Toronto Transportation Services and Gladki Planning Associates. Active City: Designing for Health. May 2014 City of Toronto.

Prepared by

Gladki Planning Associates and DTAH in collaboration with Toronto Public Health, City of Toronto Planning and City of Toronto Transportation Services.

Acknowledgments

Financial support for this project was provided by the Intohealth Partnership, a Healthy Communities Partnership funded by the Government of Ontario. No endorsement is intended or should be inferred

Toronto Public Health would like to acknowledge New York City's Active Design Guidelines as inspiration for this document.

Special thanks to the Project Advisory Committee for their comments and review of this report:

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Thanks also to:

- Key informants and staff participants from City of Toronto divisions who participated in the Active City Forum discussions and interviews on healthy built environments.
- Dr. Karen Lee, Adjunct Professor, Schools of Public Health, University of Toronto and University of Alberta and Dr. Gayle Nicholl, Dean of the Faculty of Design, OCAD.
- Kelly Drew and Sudha Sabanadesan of Toronto Public Health for their assistance in the preparation of this report.
- Kim Perotta and Shawn Shirrey formerly of Toronto Public Health

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Chronic diseases are the leading cause of death and disability in Toronto. Physical activity has been shown to reduce mortality of chronic diseases such as heart attacks, strokes, diabetes and some types of cancers including colon and breast cancer. The design and development of our cities shapes how we go about our day to day lives and in turn influences our level of physical activity.

Urban features such as building design, how spaces connect, development density, the mix of land uses, parks, road networks, walking and cycling infrastructure, and public transit, all have an impact on our activity level and general health.

An Active City creates a built environment that integrates physical activity into day to day living. This includes accessible recreation facilities, parks, and social spaces for people of all ages and abilities. By making physical activity fundamental to commuting, errands or appointments, an Active City makes healthier choices easier.

The policies and design decisions we make today will have a lasting impact on the health of future generations. Toronto has already taken many steps toward becoming an Active City. The Official Plan lays out a strong vision for the city, embedding health into policies that guide development. Investment in cycling infrastructure and public realm supports active transportation. Healthy urban planning and transportation policies and programs work hand in hand with public education and public health programs to create a healthy Active City.

There are still many parts of Toronto that need improvement before they fully support active living for all residents. This report aims to raise awareness and encourage support and implementation of the key principles that will make Toronto an Active City for All.

Jennifer Keesmaat

Chief Planner and Executive Director, City Planning

I often speak about the simple, hopeful, powerful act of children walking to school. Children who walk are far more likely to be active throughout the day and more likely to carry that enthusiasm for physical activity into adulthood. We need that enthusiasm in future Torontonians to help create a culture of physical activity that will ensure healthy citizens. But we need more than enthusiasm. We need to be mindful in the design and planning of our City to encourage more opportunities for activity – stairs that are enticing, animated and vibrant streetscapes that invite walking and cycling, public squares that bring people together, and innovative parks that encourage all kinds of recreational activity.

The vision of Toronto's Official Plan is about creating an attractive and safe city that evokes pride, passion and a sense of belonging – a city where people of all ages and abilities can enjoy a good quality of life. This vision is of a city with vibrant neighbourhoods that are part of complete communities, green spaces of all sizes, and a city with a wealth of recreational opportunities that promote health and wellness. The Active City: Designing for Health report supports this vision and the policies of the Official Plan by identifying how the built environment can be shaped to promote opportunities for physical activity. The report also emphasizes the importance of a diverse mix of land uses, densities that support a provision of local services, safe routes for pedestrians and cyclists, connected neighbourhoods, and high quality public spaces. It illustrates this with excellent examples of successful plans such as Regent Park, Lawrence-Allen, Artscape Wychwood Barns, Parkway Forest and the Union Station Pedestrian Priority zone, to name a few.

Above all, an active city is planned and designed to allow better choices - to take the stairs, walk the block, cycle to work or even complete that 20 minute workout in the nearby park at lunch.

Stephen Buckley

General Manager of Transportation Services

Toronto is a city that works. Since arriving in late 2012, I have been continuously impressed by the collaborative approach that is taken to ensure the City of Toronto is building an ever more liveable, sustainable and active place to live, work, and play. Transportation Services performs a key role in maintaining and enhancing the City's right-of-way and is committed to making the streets of Toronto safe and inviting for all users.

Transportation Services makes our public realm more liveable through new street projects such as parklets, pedestrian zones, and "flexible" streets, like Market Street. We enhance the pedestrian experience by providing clear and continuous sidewalks as much as possible, animated and attractive spaces, and amenities like benches and other street furniture. The Division also makes our streets more visually appealing through graffiti removal, community art installations, and neighbourhood improvement projects that beautify and green the city.

Toronto is an exceptional city for keeping active by using a bicycle, with cycling commuter share that is greater than all of the largest North American cities. We are enhancing our on-street cycling network, adding cycle tracks to high-volume cycling routes in the downtown core, and experimenting with new tools such as bike signals and 'contra-flow' lanes. Further, our multi-use trails plan builds on the existing 286 km network by adding 77 km of new trails for cyclists.

Finally, our team works around the clock to maintain Toronto's roads, sidewalks, and bikeways, ensuring Torontonians can get around safely any time of year. We are committed to supporting walking, cycling and transit as key transportation priorities, and look forward to working with our partners in Public Health and City Planning to continue to ensure that Toronto's streets are designed to address the needs of all residents - regardless of age, ability, or mode of travel.



About the Healthy Toronto by Design Report Series

Healthy Toronto by Design was released by Toronto Public Health in October 2011 and was the first in a series of reports on how local communities shape the health of their residents. The report noted that healthy cities are cities that are livable, prosperous and sustainable. They are cities with high quality built and natural environments, public transit, housing, culture, education, food and health care. Healthy cities do not just happen. They result from creative vision, strategic decision-making and thoughtful implementation that respects the needs and challenges of all residents. They happen by design – through intentional investment and provision of infrastructure, programs and services with health in mind. This report is one of a series that explore what makes a healthy city. Visit Toronto Public Health’s website at <http://www.toronto.ca/health/reports> for copies of the reports in the series.

- **Toward Healthier Apartment Neighbourhoods** synthesizes zoning barriers and opportunities to promote healthy neighbourhoods, particularly in clusters of residential apartment towers in low income areas and inner suburbs of Toronto.
- **The Walkable City** summarizes the findings of a Residential Preferences Survey that gauges public demand for walkable versus more auto-oriented neighbourhoods, and links this information with travel choices, physical activity levels and body weight.
- **Inventory of Best Practices** showcases examples of innovative practices and policies across city government in Toronto that promote healthy built environments.
- **Road to Health** synthesizes evidence on health benefits and risks associated with walking, cycling and physical activity related to the use of public transit, as well as economic assessments and specific strategies to increase the use and safety of active transportation in Toronto.
- **The Health Impact Assessment Software Tool** has been developed to assist policy and decision-makers understand how different approaches to neighbourhood design might impact health-related outcomes such as physical activity levels, body weight and greenhouse gas emissions. A technical report synthesizes information on the development of the tool and results of pilot testing.

Image: Skating on the Humber River in the early 20th century.
Source: Toronto Archives.



About this Report

Active City: Designing for Health focuses on the city's physical built environment to create healthy places that encourage active living for all Torontonians. This report outlines design principles to guide changes to neighbourhoods, streets and buildings so that physical activity becomes a regular part of everyday life for more people.



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IT'S THE
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INTRODUCTION

What is an Active City? The World Health Organization (WHO) defines a healthy, active city as a city that continually creates and improves opportunities in the built and social environments and expands community resources to enable all its citizens to be physically active in day-to-day life.¹

“Active City: Designing for Health” elaborates on the built environment component of the WHO’s comprehensive approach for promoting active living (Figure 1).

What is the Built Environment?

The built environment is part of our physical surroundings and includes the buildings, parks, schools, road (and transit) systems, and other infrastructure that we encounter in our daily lives.

What is Active Living?

Active living is a way to integrate physical activity into daily routines. Active living includes all types of activities like playing or doing tai chi in the park, gardening, taking the stairs or walking to or from public transit.

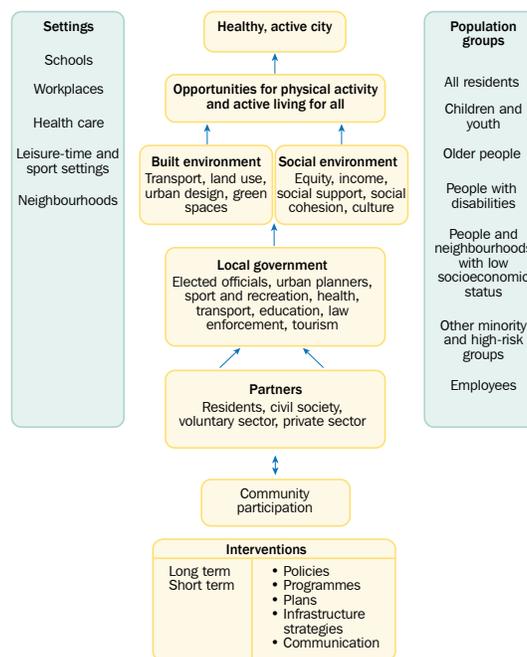
Active transportation, which refers to all forms of human-powered travel like walking, bicycling or skateboarding, is an integral part of active living.

An Active City Encourages Active Living

Regular physical activity whether it is for travel or pleasure is good for everyone. Even moderate intensity activities that make you sweat or breathe just a bit harder can play an important role in maintaining or improving good health.

A considerable number of people are not meeting recommended physical activity levels—in Toronto, about 60 per cent of people aged 12 and older were below recommended levels for physical activity during their leisure time in 2008. Creating an Active City with built environments that support active living can help people get more exercise.

Fig. 1. A framework for creating a healthy, active city.



Source: *A Healthy City is an Active City: A Physical Activity Planning Guide* (2008). World Health Organization.

Why does Toronto need an Active City Now?

Public health units have always promoted active lifestyles for healthy living. More recently, health advocates and local governments have begun to realize that the design of built environments can influence people’s everyday choices for active living. There is now enough health evidence showing that changes in neighbourhood, street and building design that encourage regular physical activity as a normal part of people’s daily lives can be a part of the solution to reduce risk factors and incidence of chronic disease and illness.²⁻⁴

(1) Edwards P, Tsouros AD. *A Healthy City is an Active City: A Physical Activity Planning Guide*. World Health Organization; 2008.

(2) Coupland K, Rikhy S, Hill K, McNeil D. *State of Evidence: The Built Environment And Health 2011-2015*. Public Health Innovation and Decision Support, Population & Public Health, Alberta Health Services; 2011.

(3) Croucher K, Wallace A, Duffy S. *The Influence of Land Use Mix, Density and Urban Design on Health: A Critical Literature Review*. Glasgow: Glasgow Centre for Population Health and the Scottish Health Impact Assessment Network; 2012.

(4) Kent J, Thompson SM, Jalaludin B. *Healthy Built Environments: A Review of the Literature*. Sydney: Healthy Built Environment Program, City Future Research Centre, University of New South Wales; 2011.

Implementing Active City design principles can help improve the health and safety of the population by:

- Increasing physical recreational activity and use of active transportation
- Reducing collisions and injuries
- Developing and influencing policies to support good health, sustainability and health equity

Who are the Active City project partners?

This Active City project was initiated by Toronto Public Health in consultation with City Planning, Transportation Services and the Tower Renewal Office. The representatives from these divisions show leadership in their support for creating healthy built environments.

Who is this report for?

This report is geared towards people with any interest or role in the design and construction of built environments for health. It outlines health rationale for guiding changes and delivering projects that shape the built environment. It calls on the development community, government agencies, elected officials, non-governmental organizations (NGO's) and the public to help make Toronto an Active City for all.



Image: bikeride/london, shutterstock

BACKGROUND

In the nineteenth century, North American cities were crowded, polluted, unsafe places that made living in them unhealthy. Between the mid-1850s to early 1900s, early city dwellers in Canada fell ill with water-borne diseases like cholera and typhoid fever.⁵

Other communicable diseases such as scarlet fever, diphtheria, measles, whooping cough, and tuberculosis were also very common.

Early collaborations between public health, public works and planning units led to considerable improvement in living conditions in cities. Public health interventions led to investments for treating drinking water and sanitation systems to reduce communicable diseases, City by-laws requiring the proper disposal of garbage, the construction of sewers, and the development of a wastewater disposal system and clean water supply for the city.⁶

By 1900, most buildings in Toronto were connected to the new water mains and sewers. This resulted in better living conditions for many people who would have been using outhouses or throwing their chamber pot contents into the street or yard. In 1910, Toronto was one of the first cities in the world to chlorinate drinking water; the chlorination of sewage and water filtration followed in 1915. In July 1915, Maclean's magazine declared Toronto the healthiest of large cities in the world.⁷

Chronic Diseases: A Growing Challenge

Just as public health units worked effectively with other city departments to address infectious diseases, these alliances may once again become vital for dealing with modern day health problems. Chronic diseases which are diseases and illnesses of long duration and generally slow progression are now the main cause of death and disability in Canada. The majority of the top ten causes of death in Toronto are chronic diseases (Table 1). In 2009/2010, more than one out of four people were affected by one or more common chronic health conditions that included asthma, cancer, diabetes, heart disease or high blood pressure.*



Sewer outlet at the foot of Yonge St.

Toronto Archives

(5) Public Health Agency of Canada. Canada's Public Health History. Chief Public Health Officer's Report on the State of Public Health in Canada 2008. Ottawa: Public Health Agency of Canada, 2008.

(6) Toronto Public Health. An Infectious Idea: 125 Years of Public Health in Toronto. 2008.

(7) Hancock T. Healthy cities and communities: Past, present, and future. *National Civic Review*. 1997;86(1):11-21.

(8) Booth GL, Creatore MI, Gozdyra P, Glazier RH. Patterns of Diabetes Prevalence, Complications and Risk Factors. In: Glazier RH, Booth GL, Gozdyra P, Creatore MI, eds. *Neighbourhood Environments and Resources for Healthy Living-A Focus on Diabetes in Toronto: ICES Atlas*. Toronto: Institute for Clinical Evaluative Science, 2007.

It is well known that the people on low incomes are more likely to experience chronic diseases and negative health outcomes. In Toronto, neighbourhoods with high levels of diabetes (Figure 2) were lower income areas that were also rated as the least "activity friendly" in the city (Figure 3).⁸ This means that socioeconomically disadvantaged residents who tend to experience higher rates of chronic disease may be exposed to further health risks due to living in neighbourhoods that provide fewer opportunities for physical activity.

* Canadian Community Health Survey, 2009/2010, Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care Science, 2007.

(9) Warburton DE, Katzmarzyk PT, Rhodes RE, Shephard RJ. Evidence-informed physical activity guidelines for Canadian adults. *Applied physiology, nutrition, and metabolism*. 2007;32(S2E):S16-S68.

(10) Toronto Public Health. *Toronto Health Status Report 2010*. 2010.

(11) Janssen I. Health care costs of physical inactivity in Canadian adults. *Applied Physiology, Nutrition and Metabolism*. 2012;37(4):803-806.

(12) Becker R, Silvi J, Ma Fat D, L'Hours A, Laurenti R. A method for deriving leading causes of death. *Bulletin of the World Health Organization*. 2006;84(4):297-304.

Health Fact: Physical activity reduces the risk of over 25 chronic conditions, including coronary heart disease, stroke, hypertension, breast cancer, colon cancer, type 2 diabetes and osteoporosis.⁹

Physical Inactivity and Obesity: Preventable Risk Factors for Chronic Disease

Physical inactivity and obesity are major contributing factors to many chronic diseases that are actually preventable (Table 1). Yet many Torontonians are overweight or obese (about one in five adolescents and four out of ten adults in 2008). Many Torontonians are also not physically active enough (60 per cent of those aged 12 and older were below recommended levels for physical activity during their leisure time in 2008) (Table 2).¹⁰

Societal Cost of Physical Inactivity

The cost of physical inactivity in Canada is substantial: it was estimated at \$6.8 billion in 2009, which represented 3.7 per cent of overall health care costs.¹¹ This estimate included direct costs for drugs, hospital and physician care as well as indirect costs related to work loss due to injury, illness, disability and premature death.

Many aspects of modern living contribute to inactivity and obesity. Compared to the past, people's lives are now generally more sedentary: jobs and household chores are less laborious, entertainment is more video- or screen-based, and transportation is more car-centered. Cities and neighbourhoods can contribute to inactivity when the design of features and infrastructure make it difficult for people to get around by walking, cycling and living more active lives.

Table 1: Top 10 Causes of Death[†] in Toronto, 2009

	Cause of Death	Number of Deaths
1	Ischaemic Heart Disease*	2394
2	Dementia and Alzheimer Disease*	1154
3	Cancer of Lung and Bronchus*	1013
4	Cerebrovascular Disease*	997
5	Cancer of Colon, Rectum, and Anus*	582
6	Chronic Lower Respiratory Diseases*	547
7	Diabetes*	505
8	Cancer of Lymph, Blood, and Related*	497
9	Influenza and Pneumonia	490
10	Diseases of the Urinary System	392

* chronic diseases

Data Source: Vital Statistics, 2009, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: August 2012.

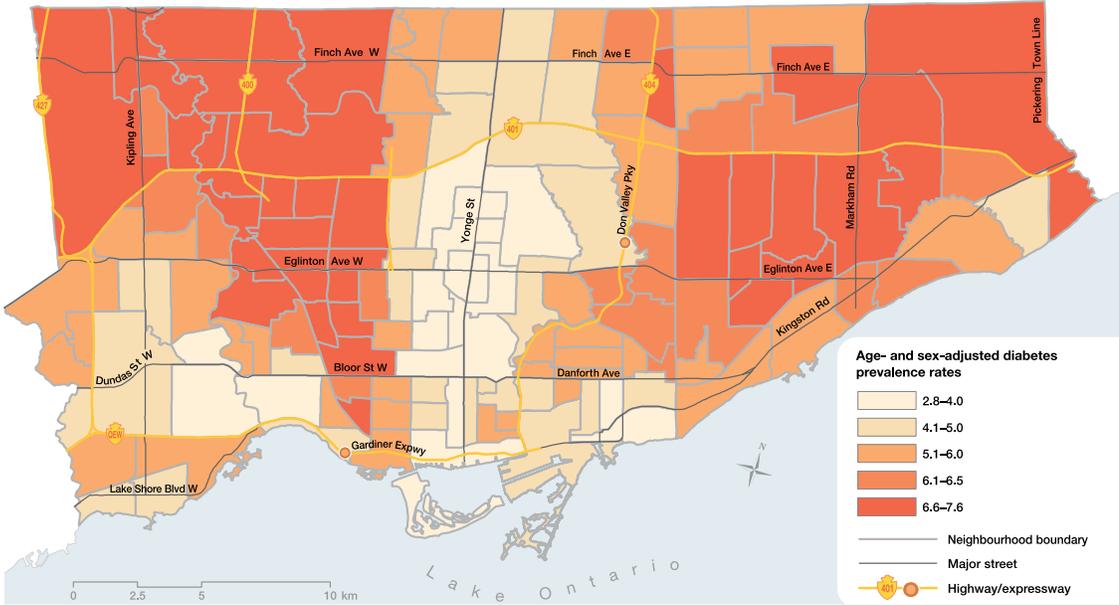
[†]Leading Causes of Death are based on a standard list developed by Becker, et al¹² for the World Health Organization (WHO) that was modified by the Association of Public Health Epidemiologists of Ontario in 2008.

Table 2: Per cent Torontonians Moderately Active or Active During Leisure Time by Age

Percent of Torontonians		
Age	2001	2008
12-19	61	62
20-44	36	42
45-64	32	37
65+	33	39

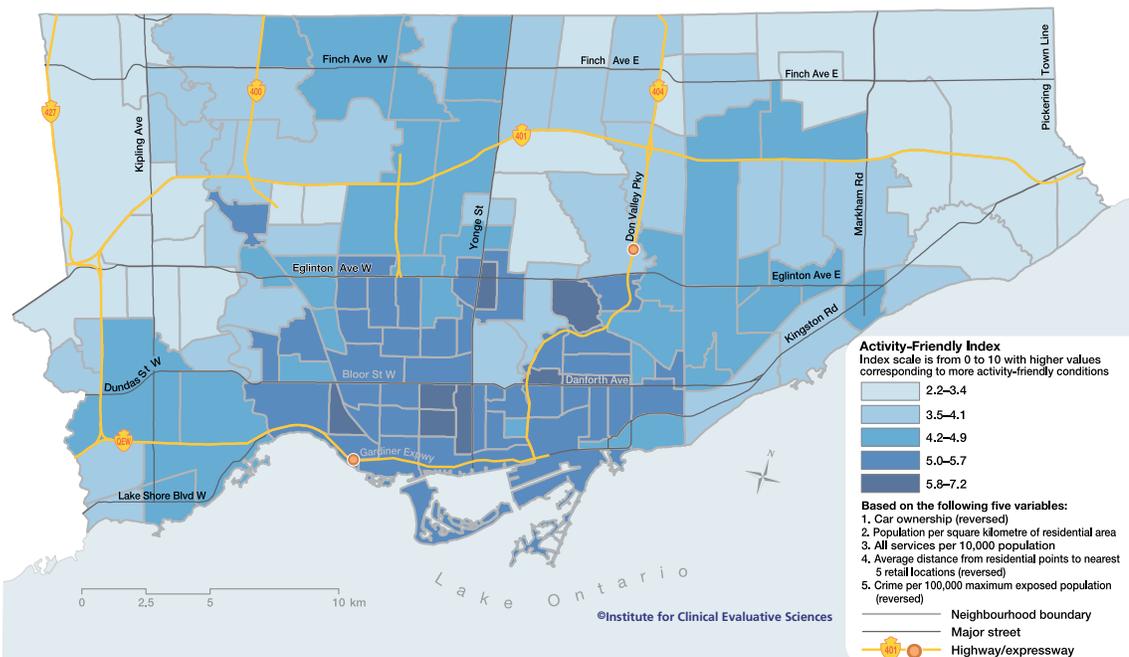
Toronto Health Status 2010, Toronto Public Health

Figure 2: Diabetes prevalence in Toronto Neighbourhoods¹³



(13) Glazier RH, Booth GL, Gozdyra P, Creatore MI. *Neighbourhood Environments and Resources for Healthy Living-A Focus on Diabetes in Toronto: ICES Atlas*. Toronto: Institute for Clinical Evaluative Science; 2007.

Figure 3: Activity-Friendly Index by Neighbourhood¹³

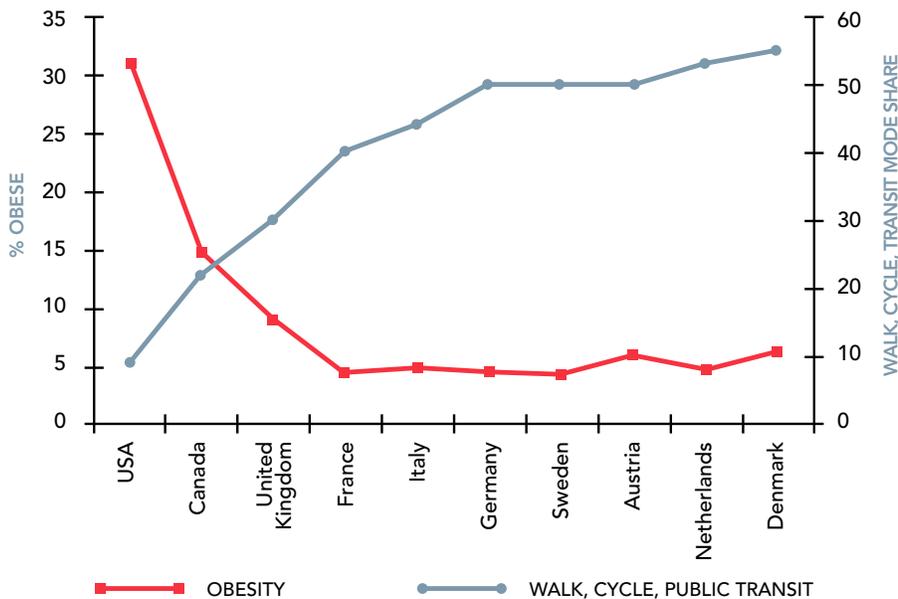




BUILT ENVIRONMENT AND HEALTH EFFECTS

There is a growing body of research on the important role and effects that built environments have on human and population health.

Figure 4: Population-level relationship between obesity and combined walking, cycling, and transit mode share.^{14, 15}



(14) Transport Canada. *Active Transportation in Canada: A Resource and Planning Guide*. 2011.

(15) Bassett DR, Pucher J, Buehler R, Thompson DL, Crouter SE. Walking, cycling, and obesity rates in Europe, North America, and Australia. *Journal of Physical Activity and Health*. 2008;5(6):795-814.

(16) Sallis JF. *Power of Place in Shaping Physical Activity*. Presentation to Toronto Public Health. 2013.

(17) Toronto Public Health. *The Walkable City: Neighbourhood Design and Preferences, Travel Choices and Health*. 2012.

(18) Jacobsen PL. Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Injury prevention*. 2003;9(3):205-209.

(19) Frank LD et al. (2006). Many Pathways from Land Use to Health: Associations between Neighbourhood Walkability and Active Transportation, Body Mass Index, and Air Quality. *Journal of the American Planning Association*.

Active Living and the Built Environment

- Active living is about incorporating more physical activity into all aspects of our lives.
- Street design, bike lanes and sidewalks; housing types and neighbourhood design; patterns of development; the provision of trees, parks, green space and recreational facilities; and the location of jobs, schools and services are all important components of the built environment.
- Design of neighbourhoods, streets and buildings can influence how people get around and travel, which in turn influences their physical activity levels and health.¹⁶
- A recent study found that the majority of Toronto residents are willing to trade-off larger houses and larger lot sizes to live within walking distance of commercial areas and public recreation.¹⁷
- More than half of the Toronto residents surveyed expressed a strong preference for street designs that allow them to walk, cycle or take transit even if means that there will be greater foot and car traffic on their streets. Relatively few (12%) expressed a strong preference for streets designed to discourage foot and car traffic.¹⁷
- While concern about safety can act as a barrier to active living, as the number of people walking or bicycling increases the rate of collisions between motorists and walkers or bicyclists declines (a phenomenon referred to as “safety in numbers”).¹⁸
- Communities that have sidewalks, on-street parking, buildings set close to the sidewalk and attractive features such as art, trees and benches appear to improve the perception of an area’s safety and

(20) Raine KD, Muhajarine N, Spence JC, Neary NE, Nykiforuk CI. Coming to consensus on policy to create supportive built environments and community design. *Canadian Journal of Public Health*. 2012;103(9):eS5-eS8.

(15) Bassett DR, Pucher J, Buehler R, Thompson DL, Crouter SE. Walking, cycling, and obesity rates in Europe, North America, and Australia. *Journal of Physical Activity and Health*. 2008;5(6):795-814.

(21) Hamer M, Chida Y. Active commuting and cardiovascular risk: a meta-analytic review. *Preventive Medicine*. 2008;46(1):9-13.

(17) Toronto Public Health. *The Walkable City: Neighbourhood Design and Preferences, Travel Choices and Health*. 2012.

(22) De Hartog JJ, Boogaard H, Nijland H, Hoek G. Do the health benefits of cycling outweigh the risks? *Environmental Health Perspectives*. 2010;118(8):1109.

(23) Rojas-Rueda D, de Nazelle A, Tainio M, Nieuwenhuijsen MJ. The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study. *BMJ: British Medical Journal*. 2011;343.

(4) Kent J, Thompson SM, Jalaludin B. *Health Built Environment: A Review of the Literature*. Sydney: Healthy Built Environment Program, City Future Research Centre, University of New South Wales; 2011.

(24) Kelly J-F, Breadon P, Davis C et al. *Social Cities*. Melbourne: Grattan Institute; 2012.

walkability.¹⁹

- The most effective approach for influencing physical activity rates is likely one that applies multiple interventions to different aspects and features of the built environment.²⁰

Health Benefits of Active Transportation

- In countries where walking and cycling to work was more common, obesity and diabetes rates were lower and overall rates of physical activity were higher (Figure 4).¹⁵
- Active commuting that incorporates walking and cycling is linked to reduced cardiovascular risk.²¹
- Toronto residents who live in the most walkable neighbourhoods walk and use public transit more often, drive fewer kilometres and reported lower body-mass index than residents in less walkable neighbourhoods.¹⁷
- The health benefits of increased physical activity due to active transportation have been shown to outweigh the risks of increased exposure to air pollution²² and road traffic accidents.²³
- Higher density areas, combined with other environmental features of mixed land use and increased connectivity can increase the share of active transportation use.⁴

Mental Health Benefits Linked to Built Environments

- Since people with serious mental health conditions, are at risk of chronic physical conditions and people with chronic physical conditions are at risk of poor mental health, encouraging physical activity can improve

both physical and mental well-being.

- Vibrant neighbourhoods that promote active living improve mental health by fostering a sense of social inclusion, connectedness and belonging by encouraging social contacts and gatherings.²⁴
- Built environment features and high quality public open spaces that draw people “out and about” to interact with others and the natural environment have been linked to good health, less stress and fewer depressive symptoms.⁴

Health Effects of Air and Noise Pollution

- Encouraging active transportation use instead of motor vehicle travel contributes to cleaner air, reduced greenhouse gas emissions, environmental sustainability and quieter urban spaces.²⁵
- Traffic-related air pollution due to harmful motor vehicle emissions is a potential cause of cardiovascular mortality and morbidity, non-asthma respiratory symptoms, impaired lung function and lung cancer,²⁶ and worsening of asthma.²⁷
- In cities, traffic sounds like revving engines, car alarms and horn blasts, road and tire friction are a major source of noise.
- Noise is not immediately life-threatening but it has been linked to negative health effects including annoyance, interference with communication, disturbance of rest, sleep and concentration, hearing damage, and increased risk of stress-related illnesses including cardiovascular diseases.²⁸

PLANNING AND DESIGN FOR ACTIVE LIVING

Planning and design guidelines have become an increasingly common approach for promoting physical activity through changes in the built environment in cities around the world.

Active City: Designing for Health was modeled after New York City's innovative Active Design Guidelines (2010). In Ontario, several local and regional governments have also issued reports on the planning and design of built environments for improved health.

The Toronto Official Plan sets out a vision for Toronto and details goals, objectives and policies to manage and direct physical change and its effects on the social, economic and natural environment. It envisions an attractive and safe city that evokes pride, passion and a sense of belonging - a city where people of all ages and abilities can enjoy a good quality of life. A city with, among other things, green spaces of all sizes and public squares that bring people together and a wealth of recreational opportunities that promote health and wellness.

The built environment can make it easy or hard to incorporate physical activity into daily routines, be it recreational physical activity or active transportation. This section presents four elements that interact in the built environment to influence levels of physical activity. An understanding of the relationship between these elements forms the foundation for the Active City Principles that follow.

1. Proximity: Access to Destinations and Amenities

Proximity is the distance between starting points and destinations. People are more likely to choose active transportation if destinations like work, school, child care, and shopping are easily reached by walking or cycling. In contrast, if amenities or services are lacking in an area or if destinations are far apart, people are more likely to rely on motor vehicles to

get around. Similarly, people are more likely to use parks and recreational facilities if they are easily accessible. Whether land uses such as residential, office, institutional, retail, open spaces and parks are mixed together or segregated greatly impacts proximity.²⁹

2. Connectivity: Routes through the Built Environment

Connectivity is the ease of travel between two points.²⁹ It describes the possible connections between roads, sidewalks, trails, laneways and cycling lanes people use to get around. The more direct the routes are and the greater the number of available routes between locations, the higher the connectivity. Areas with high connectivity and many direct, barrier-free routes linking places where people want to go and networks that link local routes to city-wide ones can make active transportation a more attractive travel option and improve accessibility to destinations.

3. Quality of the Human Environment: Design Elements and Effects

The quality of the human environment is about attractiveness in an aesthetic sense and people's experience of places.³⁰ Attention to the quality and beautification of areas and elements like parks and open spaces, streetscapes, lighting, street furniture (like benches for sitting, umbrellas for shade), building façades, and "in-between" spaces in the public realm can help make people feel safe and comfortable using and moving through public and open spaces in their neighbourhood. The design of parks, community facilities and school yards can impact the kinds of physical activities that take

(4) Kent J, Thompson SM, Jalaludin B. *Healthy Built Environments: A Review of the Literature*. Sydney: Healthy Built Environment Program, City Future Research Centre, University of New South Wales; 2011.

(25) Transport Canada. *Active Transportation in Canada: A Resource and Planning Guide*. 2011.

(26) Brauer M, Reynolds C, Hystad P. *Traffic-Related Air Pollution and Health: A Canadian Perspective on Scientific Evidence and Potential Exposure-Mitigation Strategy, Final Report prepared for Health Canada*. 2012.

(27) HEI Panel on the Health Effects of Traffic-Related Air Pollution. *Traffic-Related Air Pollution: A critical review of the Literature on Emissions, Exposure and Health Effects*. Boston, MA: Health Effects Institute; 2010.

(28) World Health Organization. *Burden of disease from environmental noise: Quantification of healthy life years lost in Europe*. Copenhagen, Denmark: WHO Regional Office for Europe; 2011.

(29) Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of behavioral medicine*. 2003;25(2):80-91.

(30) Gehl J. *Life Between Buildings: Using Public Space*. Washington DC: Island Press; 1987.

(31) Commission on Social Determinants of Health. *Closing the gap in a generation: health equity through action on the social determinants of health*. Geneva: World Health Organization; 2008.

place in them. Designing features on a human-scale also matters to people's experience of the city. Parts of the city with wide streets and arterial roads designed with the efficiency of car use in mind are likely to discourage people from walking or using active transportation especially if they feel vulnerable and exposed to traffic. In contrast, areas with narrower streets, well-maintained sidewalks, traffic calming measures or cycling lanes for example are better matched in scale to slower modes of non-motorized travel.

4. Equity: Addressing Health Inequities by Design

Health inequities are differences in health outcomes due to avoidable, unfair systematic distribution of resources or access to services. Generally, the social gradient of health indicates that the poorest have the worse health outcomes, and as socio-economic status improves, so do health outcomes.³¹ Eliminating health inequities involves removing barriers and promoting access to resources that people need to improve their health. Addressing health inequities by design means that the most health-disadvantaged populations and the areas with fewest resources to promote active living are given priority when improvements are being planned and built.



Image: Goodluz, shutterstock

PRINCIPLES FOR AN ACTIVE CITY

The following ten principles are presented to guide improvements in the way we build our city so that it is possible, convenient, normal and safe for everyone to be physically active every day. Accompanying the principles are strategies for addressing various aspects of an Active City.

In most situations, more than one principle will apply. For example, land-use mix and density of an area work together in communities to affect proximity of destinations. High density areas without an adequate mix of land uses are not likely to promote active living as there is less to do or fewer places to go to within walking or cycling distance of where people live or work. Land-use mix without adequate density is unsustainable because there are not enough people to support the shops, services and facilities even if some live within walking or cycling distance.

The principles and strategies draw on common approaches that have been highlighted in other planning guidelines and reports that can be applied in Toronto. When applying these principles, the uniqueness and diversity of Toronto's places, spaces and people should be taken into consideration.

Case studies have been selected to illustrate how the principles can be successfully implemented and result in improved health and well-being.

An effort was made to showcase large and small initiatives, and city-wide and local/ neighbourhood projects representing different areas of Toronto. Some inspirational cases from other cities are also included.

TEN PRINCIPLES FOR AN ACTIVE CITY

1. An Active City shapes the built environment to promote opportunities for active living.
2. An Active City has a diverse mix of land uses at the local scale.
3. An Active City has densities that support the provision of local services, retail, facilities and transit.
4. An Active City uses public transit to extend the range of active modes of transportation.
5. An Active City has safe routes and facilities for pedestrians and cyclists.
6. An Active City has networks which connect neighbourhood, to city-wide and region-wide routes.
7. An Active City has high quality urban and suburban spaces that invite and celebrate active living.
8. An Active City has opportunities for recreational activities and parks that are designed to provide for a range of physical activities.
9. An Active City has buildings and spaces that promote and enable physical activity.
10. An Active City recognizes that all residents should have opportunities to be active in their daily lives.



PRINCIPLE 1

An Active City shapes the built environment to promote opportunities for physical activity

The ultimate goal of an Active City—to improve population health—seems straightforward, but the processes of creating policies and programs that support active living can be quite an involved process. People can have many reasons for not being physically active and there is more than one way to build environments for active living. In the end, making Toronto an Active City will require individuals, groups, governments and public and private sector partners to come together with a commitment to applying a wide range of initiatives and evaluating the outcomes.

An Active City...

- Recognizes the effects of built environments on health—conducts research, monitors and shares information and data with partners and public
- Seeks to understand community needs and engages a broad range of partners, sectors, communities to get input into planning, decision-making processes and evaluation of projects
- Recognizes a mix of social, economic, political and environmental health policies is required to positively influence levels of physical activity
- Collaborates with other governments and agencies to fund and support projects and investments in infrastructure that encourage physical activity and active transportation

Research findings:

The most effective approach for influencing physical activity rates is likely one that applies multiple interventions to different aspects and features of the built environment.²⁰



(20) Raine KD, Muhajarine N, Spence JC, Neary NE, Nykiforuk CI. Coming to consensus on policy to create supportive built environments and community design. *Canadian Journal of Public Health*. 2012;103(9):eS5-eS8.

CASE STUDIES - TORONTO



Source: TCHC



Source: DTAH

Regent Park

In 2005, the Toronto Community Housing Corporation began to redevelop its landmark public housing project, Regent Park.

Regent Park had been a post-War experiment in inner city slum clearance. Over the following half century, Regent Park suffered significant decline due to poor maintenance, and an overabundance of poorly framed and indefensible interior space that lacked a sense of ownership.

Set over several phases, the Regent Park Revitalization will see most of the existing buildings removed. The surrounding street grid will be reintroduced and extended into the site, and new buildings will be specifically

designed to address the street. Significantly, the new Regent Park will be a mixed-use and mixed-income community, with the introduction of retail uses on the outer streets and a substantial number of market residential units.

The new Regent Park will include a special street linking the planned Central Community Park with the existing Nelson Mandela School. Regent Park Boulevard will be lined with trees and feature rolling curbs and a special paving treatment. It will also be fully closable to traffic during festivals and other public events. Retail uses, the Daniels Spectrum Arts and Cultural Centre, the Aquatic Centre and the community's central park will all face onto the street, making it function something like a town square.

McCowan Precinct Plan

McCowan Precinct is one of four precincts within the Scarborough Centre. Centres are areas that include an important mix of retail, government, institutional, cultural, employment and residential uses.

The existing McCowan Precinct was initially developed as an industrial employment area that favoured vehicular movement. McCowan Precinct will evolve from a primarily industrial and employment area to a mixed-use pedestrian and active transportation supportive neighbourhood. As part of a mixed-use centre, redevelopment of the McCowan Precinct will introduce a well-considered grid network of complete streets and human scaled



Source: City of Toronto

blocks that encourages walking for local trips, improves safety and connectivity, and allows for land use and built form to evolve and adapt over time. The proposed cycling network is extensive, connecting all major streets within the Precinct to the rest of the Centre.

Lawrence-Allen Neighbourhood

The Lawrence-Allen Neighbourhood, southeast of Yorkdale Mall, is dominated by the large post-war Lawrence Heights housing project. Consisting mostly of townhouses arranged around courtyards, and overlaid by a serpentine network of pathways, Lawrence Heights embodies the mid-twentieth century ideal of rigidly separating pedestrians and automobiles. Although it provides a home for many low-income people, the community has suffered as a result of its low density, lack of retail or employment uses, large unprogrammed open spaces and impediments to movement.

The current plan to revitalize the neighbourhood will partially stitch it back into the grid and break up its existing ring road system. Much of the new development's

mass will orient to Allen Road, with retail uses and broad pedestrian walkways placed along each side. The intention is to convert the sunken highway into something more akin to a broad boulevard. Pedestrians will be able to experience a more permeable road network with a more appealing public realm, better programmed parks for activities, and buildings unambiguously oriented to the street.

When implemented, the plan for the Lawrence-Allen Neighbourhood will see the historically troubled and physically separated area far better integrated into the city.

PRINCIPLE 2

An Active City has a diverse mix of land uses at the local scale.

(16) Sallis JF. *Power of Place in Shaping Physical Activity*. Presentation to Toronto Public Health. 2013.

(29) Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of behavioral medicine*. 2003;25(2):80-91.

(32) McCormack G, Giles-Corti B, Bulsara M (2008). The relationship between destination proximity, destination mix and physical activity behaviors. *Preventive Medicine*. 46: 33-40.

Diverse land-use mix refers to multiple uses—residential, office, retail, other commercial, institutional, entertainment, recreation, cultural, and parks and open spaces—integrated within an area. Increasing the land-use mix brings services and destinations closer to each other, makes it easier to walk or cycle to places, and improves accessibility to recreational spaces like parks and community facilities. Generally research suggests that people are willing to walk about 400 metres or cycle about 2.5 kilometres to get to a destination. These distances may increase if the destination is desirable; however, the time it takes to walk or cycle may prevent people from using active transportation for farther destinations.

An Active City...

- Fosters mixed land use in neighbourhoods and supports access to a variety of destinations including stores and services for daily living within walking or cycling distance
- Encourages infill development to increase land-use mix
- Encourages a mix of residential and employment density to increase opportunities for walking and cycling to work
- Concentrates smaller retail establishments near other amenities and discourages “big box” developments at the periphery of a neighbourhood

Research findings:

Features and quality of neighbourhoods, streets and buildings can affect how people get around and travel, which in turn affects their activity levels and health.¹⁶

Mixed land use is considered the community design variable most likely to affect the walkability of neighbourhoods.²⁹

A study from Western Australia found that an increased mix of destinations in a neighbourhood encourages otherwise sedentary individuals to walk for transport, while encouraging higher levels of transport-related physical activity among already active individuals. Each additional type of destination in the neighbourhood was associated with approximately ten minutes more of transport-related walking per two week period per person. The authors concluded that increasing the diversity of destinations should be considered highly important in the development of new neighbourhoods and for retrofitting existing neighbourhoods.³²

CASE STUDIES - TORONTO



Source: bittermelon, flickr

Artscape Wychwood Barns

Wychwood Barns, developed on the site of a former TTC streetcar yard, is an example of a dynamic, mixed-use facility that combines residential, institutional, recreational and retail uses. Situated on public land partly operated by the non-profit organization Artscape, it provides housing and studios for artists, community space, and the site for a regular farmers' market, a community garden, and park.

Lauded architecturally for its reuse of the original streetcar storage building, Artscape Wychwood Barns is equally recognized for its broad and deliberate mixing of land uses. It adds an array of new community functions to draw pedestrians and cyclists from the surrounding residential context.



Source: DTAH

Market 707

Since 2010, the Scadding Court Community Centre transformed its Dundas St. W. façade into an international market by lining up shipping crates and converting them into small retail spaces. For a nominal fee, low-income start-up retailers can rent a shipping crate, and are responsible for outfitting it themselves. The low-budget move, named Market 707 after its address, features an array of ethnically diverse foods and enlivens the existing streetscape, extending some of the vibrant, fine-grained character of nearby Kensington Market.

Although ultimately temporary in nature, Market 707 demonstrates the dramatic change made possible when retail is dropped into an

otherwise single-use, poorly animated street environment. The project promotes walking by giving pedestrians a better street experience, as well as a number of new potential destinations.

PRINCIPLE 3

An Active City has densities that support the provision of local services, retail, facilities and transit.

(33) Centre for Research on Inner City Health at St. Michael's Hospital. *Peel Healthy Development Index. Final Report.* Peel Public Health; 2009.

(4) Kent J. Thompson SM, Jalaludin B. *Healthy Built Environments: A Review of the Literature.* Sydney: Healthy Built Environment Program, City Future Research Centre, University of New South Wales; 2011.

(29) Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of behavioral medicine.* 2003;25(2):80-91.

Areas with higher densities of people, residential units and employment can support more local services, retail, facilities and higher levels of public transit. These areas have destinations in close proximity compared to suburban forms that are characterized by low densities and single or segregated land use which makes it harder to use active transportation. Exactly how much density is required to increase the share of active transportation is less well understood, although a recommended best practice is to cluster areas of high residential density around nodes of retail and/ or transit.³³

An Active City...

- Encourages development and densities that make local amenities and services like shops, schools, cafes, banks, libraries and grocery stores or markets viable
- Encourages infill development to increase residential and/or employment densities
- Encourages a mix of residential and employment density to increase opportunities for walking and cycling to work especially along nodes and avenues
- Discourages development resulting in areas with low densities and single or segregated land uses

Research findings:

Higher density areas, combined with other environmental features of mixed land use and increased connectivity can increase the share of active transportation use.⁴ As density increases, per capita hours and vehicle kilometres travelled (VKT) decline; and walking, bicycling, and transit use increase.²⁹

CASE STUDIES - TORONTO



Source: DTAH

Parkway Forest

As a substantially built-out city, Toronto's opportunities for shaping its environment lie in creative forms of redevelopment. The city's legacy of suburban "towers-in-the-park" style high-rise complexes presents an opportunity for infill and densification.

A typical example of this arrangement, located at the intersection of Sheppard Avenue East and the Don Valley Parkway, Parkway Forest was recently the subject of a revitalization master plan. Partially stimulated by the Sheppard Subway (which terminates at the Fairview Mall, across the street), Parkway Forest is undergoing substantial redevelopment and intensification that will see much of its underutilized open space infilled with street-oriented buildings. The new buildings will primarily consist of podiums combined with towers. Five of the original 17-storey towers are to be retained, and a community centre will be added. A network of streets and enclosed walkways will be added to the interior of the site, in something of a hybrid between the original design and that of the more urban, gridded communities favoured today.



Lakeshore Village / Goodyear Development

Substantial increases in suburban density can also be achieved by the redevelopment of major properties, as well as through city or area-wide planning.

Built in 1917, the Goodyear Tire and Rubber Plant in New Toronto closed its doors in 1987. The following year, the property (along with the adjacent Anaconda Brass site) was bought by the Daniels Corporation which remediated the lands and constructed seven cooperatively-owned high rises surrounding a quadrangle, and also included stacked townhouses along the Lakeshore Boulevard façade of the site.

In an area that was traditionally industrial and low-rise residential in character, the Lakeshore Village development represented a substantial increase in density. That increase was warranted by ample transit access afforded to the site by the Lakeshore/Queen streetcar line and Kipling and Islington buses, as well as the nearby Humber College campus. Although the redevelopment itself did not achieve a mix of uses, nearby shopping on Lakeshore Blvd. made it a walkable community. Today, Lakeshore Village stands as a major precedent for future high density redevelopment of south Etobicoke's brownfields.

CASE STUDY - USA



Tysons Corner, Virginia, USA

Tysons Corner, located not far from Washington, DC, is a car-oriented conglomeration of suburban office parks and shopping malls, mostly constructed in the 1960's. It was recently designated for a 40-year plan of intensification that aims to convert it to a mixed-use, pedestrian-friendly 'downtown' environment, the urban centre of suburban Fairfax County. When completed, it may be one of the largest such suburban intensification projects in North America.

The plan features denser, street-oriented buildings infilled into existing parking lots, as well as improvements to the public realm, a finer grain of streets and several new higher order transit

stations. The eventual goal is a walkable, urban community that will continue to fulfill its role as an employment node with 100,000 residents and 200,000 jobs.

While still in its early stages, Tysons Corner has been used across North America as a precedent for intensification and making suburban nodes more pedestrian friendly. It could serve as an example for Toronto's outlying commercial and employment conglomerations, especially the provincially-designated Etobicoke and Scarborough Urban Growth Nodes.

PRINCIPLE 4

An Active City uses public transit to extend the range of active modes of transportation.

Public transit can help get people to more and farther destinations. Use of public transit supports active transportation because people often walk or cycle as part of the trip. The research shows that the use of public transit contributes to increased levels of physical activity by promoting walking. Public transit can also increase the range of recreational amenities like parks and community facilities that can be accessed by people who do not have cars.

An Active City...

- Makes public transit a viable mode of transport to and from work
- Encourages development of transit oriented communities to support mixed land uses
- Improves the pedestrian realm around transit nodes
- Improves cycling facilities at transit nodes
- Ensures public transit accessibility for everyone

Research findings:

Among the 35 per cent of Torontonians who commute to work by public transit, 93 per cent report that they walk to their transit stop. About seven out of ten of these transit walkers say it takes them 5 minutes or less to walk to their transit stop.³⁴

A study of New York residents found that as the density of bus and subway stops increased, obesity rates among residents decreased, after controlling for socioeconomic factors.³⁵

(34) Ipsos Reid. *Walking Habits and Attitudes Report*. Prepared for City of Toronto. 2013.

(35) Rundle A, Roux AV, Free LM, Miller D, Neckerman KM, Weiss CC (2007). The urban built environment and obesity in New York City: a multilevel analysis. *American Journal of Health Promotion*. 21(4 Suppl): 326-334.



CASE STUDIES - TORONTO



Source: Secondarywaltz flickr



Source: DTAH

Toronto Bicycle Stations and Bus Racks

Finding ways to better integrate transit and cycling has long been a challenge, especially when dealing with stations and vehicles where space is at a premium.

In 2010, the City of Toronto began a Bicycle Station program, which provides enhanced facilities for parking around certain transit hubs. Bike Stations feature security cameras and locked indoor rooms with individual racks, accessed via an electronic key that is purchased by members.

The Union Bicycle Station on York St. was the first to open, providing 24 hour-access to 120 parking spaces. After the Union Station Revitalization is complete, showers and change rooms will be added.

A typical user might arrive in the morning by train, bus or subway, and then go on to complete their commute to work by bicycle. At night, they would be able to safely stow their bicycle on-site before returning home by transit.

All TTC and GO buses are now also equipped with front-end bicycle racks. While limited to buses, they offer an advantage over bike stations, in that users may cycle on both ends of their transit trip. Bicycle racks are not only beneficial to multi-modal commuters, but also can play a role in extending the range of recreational cycling opportunities, especially in accessing large parks and rural areas on the periphery of the city.

Lawrence West Subway Walkway Design

Even modest improvements to the pedestrian realm can result in significant benefits.

A short pathway south of Lawrence West subway station had gained the reputation as a site for assaults, discouraging local residents from walking to the subway. The path, running parallel to the Allen Expressway and connecting Lawrence Avenue West with Fairholme Avenue, had poor sightlines due to its crooked shape and dense surrounding foliage. The combined efforts of Toronto Police Services, Transportation Services (Traffic Operations, Road Operations, Right-of-Way Management) and the local councillor led to the straightening of the path, the redesign of a private fence, the pruning of vegetation and removal of dead trees.

Encouraging pedestrians, particularly women and children, to walk to suburban transit stations means the provision of routes in which people can feel safe at all times of day and night.



Source: DTAH

Union Station Pedestrian Priority Zone

Union Station is Canada’s busiest rail hub, drawing commuters from as far away as Barrie, Kitchener and Niagara Falls. GO Transit estimates 165,000 of its riders, as well as thousands of TTC and VIA Rail passengers, pass through the station daily. Expansions to GO Train service are expected to double its ridership within the next 10 to 15 years, putting even more pressure on Union Station and its surrounding public realm, especially Front Street—currently a congested mix of taxis, cars, bicycles and jaywalking pedestrians.

Following the recommendations of the Union Station District Plan the City is designating

Front Street as a “pedestrian priority zone,” in which the current station plaza will extend forward to encompass the entire street, employing a special paving treatment. Vehicles will be allowed into the area, but forced to yield for pedestrians. A smaller, fully-pedestrianized plaza has already been opened on the south side of Union Station, adjacent to the Air Canada Centre.

Once complete, along with the interior renovations to Union Station, the pedestrian priority zone will be a landmark accommodation to the hundreds of thousands who walk to and from Union Station daily.

PRINCIPLE 5

An Active City has safe routes and facilities for pedestrians and cyclists.

Real or perceived concerns about personal safety related to crime or violence, or traffic safety when sharing road space with fast-moving vehicles can prevent people from using active transportation. For example, parents may feel they are keeping their children safe by driving instead of walking to school; women tend to be more concerned than men about the safety of cycling in mixed traffic and the importance of lighting on walkways; and elderly people have indicated concern about the condition of sidewalks and importance of benches for walking. As well as addressing safety concerns to encourage walking and cycling, providing facilities along routes can create environments that are more inviting for pedestrians and cyclists.

An Active City...

- Includes sidewalks where there are no sidewalks, and on both sides of all streets where possible and appropriate
- Makes the pedestrian realm safe with complete and continuous sidewalks in good condition
- Includes a buffer such as the curb, street furniture zone, and/or on-street parking to provide a separator between moving vehicular traffic and pedestrians
- Adds mid-block connections and crossings, where appropriate, such as areas with long blocks and few signalized intersections
- Considers pedestrian scrambles where significant pedestrian volumes or crowding issues are identified
- Provides enough time for pedestrians of all ages and abilities to cross at signalized intersections

- Separates bicycles from pedestrians and discourages cyclists from riding on sidewalks
- Expands and improves bikeway facilities, including on-street bike lanes, on-street bike paths (cycle tracks), bike boxes and off-street bike paths
- Builds separated bicycle lanes where possible
- Maintains sidewalks, bicycle lanes and paths and provides a plan for year-round maintenance
- Applies traffic calming measures where appropriate to promote safer streets

Research findings:

Traffic calming measures, such as narrowing traffic lanes, road diets (lane reduction), curb extensions or speed bumps, can improve safety and perceptions of safety which encourages active transportation.³⁶

In countries with low rates of cycling and high rates of car use, traffic safety concerns have been identified as a major constraint on cycling. Perceived traffic danger to cyclists is an important deterrent particularly for women, individuals who currently do not cycle, and those who are beginner or infrequent cyclists.³⁷

(36) National Collaborating Centre for Healthy Public Policy. *Urban Traffic Calming and Health: A Literature Review*. 2011.

(37) Pucher J, Buehler R (2008). Making cycling irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews*. 28(4): 495-528.

CASE STUDIES - TORONTO



Source: wvs, flickr

Pedestrian Priority Phasing, or “Scramble” Intersections

Sometimes named the “Barnes Dance” after American traffic engineer Henry Barnes, scramble intersections began to appear in North American cities in the 1940s. They offer a considerable benefit to pedestrians by allowing them to cross diagonally, as well as straight across, at major four-way intersections. This necessitates a phase in the signaling in which all traffic is stopped.

In 2007, Toronto Council voted to introduce scramble intersections to major intersections where pedestrian crowding was becoming a problem and where the number of pedestrians significantly outweighed the number of vehicles.

A study of the Yonge – Dundas intersection, for example, showed that 76 per cent of users were pedestrians, compared to only 17 per cent drivers. Some 70,000 pedestrians crossed the intersection during an eight-hour period of a typical weekday.

Current scramble intersections are Yonge and Dundas and at Yonge and Bloor. Although traffic has been slowed moderately, user surveys have shown broad support for the approach.



Source: DTAH

Sherbourne Street Separated Bicycle Lanes

Safety is a concern for many cyclists. Separated bicycle lanes, typically preferred over on-street lanes in Europe, provide a more substantial buffer between bicycles and cars. Separated bicycle lanes have recently been added on Sherbourne Street, improving the level of protection offered to cyclists. The lanes use a visually demarcated concrete rolling curb to separate them from the roadway. In winter, they are ploughed and salted separately from the street (forming a small wall of snow that acts as a further barrier from traffic). Emergency vehicles are nevertheless able to mount the curbs when turning, or if they are required to approach a building.



Source: Waterfront Toronto

The Martin Goodman Trail

The Martin Goodman Trail is part of the 730-km Waterfront Trail that connects 41 communities from Niagara to Quebec along the Canadian Shores of Lake Ontario and the St. Lawrence River.

It runs approximately 56 kilometres from the Humber Bridge in the west to the Rouge River in the east.

It also serves as a major commuter route from neighbourhoods near the lake—such as Mimico, Swansea, Parkdale, Leslieville and the Beaches—to downtown. With current and future development going on along the waterfront, its significance to commuters is likely to increase. The Trail is the centrepiece for the revitalization of Queens Quay through the Central Waterfront.

CASE STUDY - NETHERLANDS



Source: EnvironmentalBlog, Flickr

Hovenring Bicycle Bridge, Eindhoven, Netherlands

In a country already known for its cycling infrastructure, the Netherlands' Hovenring Bicycle Bridge nevertheless stands out as an especially striking example.

The bridge was a response to the problem of getting bicycles across a busy suburban roundabout of intersecting arterial roads. Previously, four sets of lights had been set up at each entrance to the roundabout, forcing both drivers and cyclists to endure long wait times.

The Hovenring solution was to convert the road to a single, regular intersection, while moving bicycles to a circular suspension bridge above

traffic. This both reduced car wait times, and eliminated wait times altogether for bicycles. The elegant ring, demonstrates the possibilities opened up when the needs of cyclists are taken into account in arterial road design. It opened to the public in 2012.

PRINCIPLE 6

An Active City has networks which connect neighbourhood, to city-wide and region-wide routes.

An effective network allows people to travel from one place to many others. People should find it easy to combine different modes of transport (transit, walking and cycling) and have access to a variety of routes (commuter and recreational). The ideal active transportation network is like a road network: it provides “local roads” that join to “arterial roads” and then to “regional roads” for reaching destinations that are further away.

An Active City...

- Provides an interconnected grid network to facilitate pedestrian movement
- Puts active transportation first by planning for pedestrian and cyclists first as priorities when designing the road network
- Provides more route options and choices for active travel
- Integrates multi-modal networks — pedestrian, bicycle and transit—to facilitate use of multiple modes of travel
- Locates protected bicycle lanes along major arterials to increase connectivity
- Connects short distance, fine-grained local networks with arterial networks to enable longer travel routes by active transportation (especially cycling)

Research findings:

A high level of street connectivity is an important component of an area’s walkability.³⁸ Generally, walkable neighbourhoods have shorter blocks and a greater number of intersections.³⁹



Image: spotmatik, shutterstock

(38) Sinnett D, Williams K, Chatterjee K, Cavill N. *Making the case for investment in the walking environment: A review of the evidence.* Living Streets, London; 2011.

(39) Ewing R, Cervero R. Travel and the built environment: A meta-analysis. *Journal of the American Planning Association.* 2010;76(3):265-294.

CASE STUDIES - TORONTO



Source: ParkBus



Source: roland, flickr

ParkBus

While much of the public transit system focuses on commuting and inter-city travel, ParkBus connects Torontonians to several popular summer recreation destinations—including Algonquin, Killarney, Grundy Lake and French River Provincial Parks and Bruce Peninsula National Park. The service was developed in 2010 by a group of Toronto outdoors enthusiasts who wanted to make summer camping and hiking experiences possible without cars. The buses are able to carry a limited number of bicycles.

ParkBus has since received funding from the Ontario Ministry of Tourism and the Trillium Foundation and is expanding its network of operation across the province.

Bike Share Toronto program (Formerly BIXI)

Bike Share Toronto (BST) Program allows user to rent bicycles for short periods of time from a number of automated stations located in the downtown core. Bicycles can be returned to any station in the network.

The bike-sharing network currently offers access to 1,000 bicycles via 80 fully automated and conveniently located BIXI stations in the downtown area. It appeals to short distance commuters, particularly those who combine bicycle and transit trips, as well as tourists and infrequent cyclists. A user might complete their transit journey to work with a BST bike, or they might use it to attend a meeting, shop or buy lunch. Bike Share Toronto has become an important extension to the transportation system serving Toronto residents and visitors.

In less than three years, the bike share program has proven to be very successful and has become an important part of Toronto's transportation system with more than 4,400 paid subscribers and more than 1.8 million trips taken during this time.

Bike Share Toronto program is going strong into its 4th year of operation. The program will continue to operate after an agreement was reached between the City and Public Bicycle System Company (PBSC), the company that developed "BIXI" also administered the BIXI Toronto service, launch in May 2011. The City's actions will preserve bike sharing for Toronto, place the system on firm financial footing and provide it with a solid business plan under the management of the Toronto Parking Authority (TPA). The City plans to expand the number of bike share stations from 80 to 102 in 2014.



Source: stevenharris, flickr

PATH System

The 29 km PATH system of tunnels and underground retail has become such an integral part of Toronto's Financial District that few could imagine the city without it.

Currently, the PATH is considered by the Guinness Book of Records to be the longest underground shopping complex in the world, with 1,200 shops and employing 5,000 people.

Most importantly, however, the PATH allows over 100,000 daily commuters to walk up to 2km each way from Union Station to their place of work in a sheltered environment, a volume of pedestrian traffic that could not be accommodated on sidewalks alone.

CASE STUDY - DENMARK



Source: Steven Vance, flickr

Bicycle Lane System, Copenhagen, Denmark

Along with Amsterdam, Copenhagen has become a world leader in cycling networks. With a climate comparable to Toronto, Copenhagen demonstrates the degree to which a popular cycling culture can be stimulated by public policy.

Like most European and North American cities, Copenhagen had seen a dramatic decline in cycling following World War II, as road infrastructure increasingly favoured the automobile. By 1975, there were fewer cyclists than ever, but public opinion was shifting due to a greater awareness of environmental issues and the influence of the human-centred urban design movement led by Copenhagen architect Jan Gehl.

While some bicycle lanes existed earlier, the city's system took off substantially in the 1980's with the launch of its iconic three-level streets in which cars, bicycles and pedestrians are each separated by 5-9 cm curbs. The symbolic first curb, carved from stone, was donated by the Danish Cycling Federation. Today, Copenhagen has 400 km of bicycle lanes, most of them placed along major arterial roads, separated by a curb and ploughed in winter. In 2010, 36 per cent of the city's population commuted by bicycle and the City has stated that its goal is to reach 50 per cent by 2015.

PRINCIPLE 7

An Active City has high quality urban spaces that invite and celebrate active living.



(30) Gehl J. *Cities for People*. Washington DC: Island Press; 2010.

(40) Frank LD, Engelke PO (2001). The built environment and human activity patterns: Exploring the impacts of urban form on public health. *Journal of Planning Literature*. 16(2): 202-218.

Urban and suburban spaces for walking or cycling – both routes and destinations – should not just be functional; they can also be fun and exciting. Regardless of whether an individual seeks a calming, quiet city oasis, or vibrant, exciting city scene or awe-inspiring grandeur of art or urban structures, an Active City should provide and maintain many different, wonderful and inviting spaces and vibrant streets where people want to go to and linger.

An Active City...

- Designs the public realm to a high standard
- Incorporates cultural and historic references using art, monuments and plaques to give places a unique quality
- Uses high quality materials so that public open spaces remain in good repair and survive seasonal changes and variable weather conditions
- Makes spaces flexible for different activities and multiple users

Quotable:

“In a society [that is] becoming steadily more privatized with private homes, cars, computers, offices and shopping centers, the public component of our lives is disappearing. It is more and more important to make the cities inviting, so we can meet our fellow citizens face to face and experience directly through our senses. Public life in good quality public spaces is an important part of a democratic life and a full life.”³⁰ Jan Gehl, Professor of Urban Design, author and founder of Gehl Architects, Copenhagen, Denmark.

Research findings:

Pedestrians and cyclists are more sensitive to urban design features of the built environment than motorists. Walking and cycling travel is much slower than automobile travel, which allows the traveler to notice differences in landscape. A visually rich pedestrian environment has a streetscape that provides irregular and complex features as these factors maintain the pedestrian’s sensory attention and interest.⁴⁰

CASE STUDIES - TORONTO



Source: Payton Chung, flickr



Source: ericvery, flickr

Gould and Willcocks Pedestrian Zones

After years of lobbying by the Ryerson Students' Union, Ryerson University agreed in 2010 to pedestrianize much of Gould Street, which forms the campus's core. Gould Street had previously been overwhelmed by pedestrians during the school year, as students moved between classes, often dodging traffic. The formal Gould Street pedestrian zone links the previously pedestrianized portion of Victoria Street, between Gould and Gerrard Streets, to Devonian Pond and the revitalized Image Arts Building.

A similar, but smaller, pedestrian zone was launched at the same time on Willcocks Street in the University of Toronto's St. George Campus. Both areas were permanently designated pedestrianized by the City in 2012.

Widely embraced by the two university administrations, Gould and Willcocks Streets host programming such as frosh week festivities, fairs, farmers' markets, athletic challenges and food trucks. Both streets remain closed off to traffic with movable planters and await more substantial landscape treatment.

Market Street Flex Space

The opportunity for a stunning new urban space emerged with the redevelopment of a private building on Market Street, immediately to the west of St. Lawrence Market. Currently a side-entrance to the Market, the street had narrow sidewalks and was in poor repair.

The project will see the space converted into a flex street that includes the removal of curbs and a special paving treatment. This street will provide much needed space for outdoor festivals or seating for the Market in summer months.

Market Street will test the application of curbless streets in Toronto.

PRINCIPLE 8

An Active City has opportunities for recreational activities and parks that are designed to provide for a range of physical activities.

Living closer to parks and recreation centres makes it easier to go and to use the space for sports and physical recreation. Access to parks and open green spaces has been linked to positive mental health outcomes like decrease in stress. Green spaces may be particularly important for the mental health and well-being of urban residents seeking places to escape the noise and intensity of urban settings.

An Active City...

- Provides shade, shelter and rest areas for people to gather
- Builds amenities like washrooms, seating, water fountains, lighting, shade and signage with internationally recognizable symbols to support use of parks and public open spaces
- Plants street trees for shade and pleasurable environments
- Designs parks and community spaces to promote a variety of physical activities
- Offers novel experiences in parks and public open spaces

Research findings:

Studies have indicated that proximity to parks and green spaces is associated with increases in physical activity.⁴¹ Parks and green spaces can also have positive effects on mental health.^{42,43}



Image: bikeriderlondon, shutterstock

(41) Kaczynski AT, Henderson KA. Environmental correlates of physical activity: a review of evidence about parks and recreation. *Leisure Sciences*. 2007;29(4):315-354.

(42) Croucher K, Myers L, Bretherton J. *The Links between green space and health: A critical literature review*. Stirling: Greenspace Scotland; 2007.

(43) Townsend M, Weerasuriya R. *Beyond Blue to Green: The benefits of contact with nature for mental health and well-being*. Melbourne, Australia: Beyond Blue Limited; 2010.

CASE STUDIES - TORONTO



Source: DTAH



Source: Andrew Pick, flickr

Outdoor Gyms

Like playgrounds for adults, outdoor gyms offer typical gym machine equipment, free of charge. Recently, Toronto has installed outdoor gyms in Woodbine Beach Park, Julius Deutsch Park, Sally Bird Park, and Glen Ravine Park. The equipment includes chest presses, leg presses, seated back rows, and elliptical trainers, all of which are designed to withstand the full range of weather conditions.

The somewhat complex machines represent a new step for Toronto parks, but are in keeping with the tradition of simpler outdoor exercise stations—such as chin-up bars—that have existed in city parks since the 1930's. They allow the general public,

including low-income people, to access gym equipment, and encourage the combination walking and gym routines.

Two of the four gyms were privately funded, using equipment donated to ParticipACTION, while the other two were funded by the City as “playground improvements.”

Toronto Off-Road Bicycle Parks

Since its origins in the 1970s, off-road cycling—including mountain biking and BMX—has become an increasingly popular activity.

Toronto is currently home to two landscaped off-road bicycle tracks, at Wallace-Emerson Park and Bayview Arena and the City is preparing to construct a third facility at Sunnyside, immediately south of High Park. Designed by British Columbia bike park specialist Jay Hoots, who has developed about 40 trails across North America, the newest park is planned to include a loop trail, as well as a number of obstacle or skills courses and jumps. It will also include amenities such as a bicycle repair station and snack bar.

CASE STUDY - COLOMBIA



Source: Saul Ortega, flickr

A natural off-road bicycle trail was also recently opened at Crothers Woods in the Don Valley. This was the result of successful cooperation between the City of Toronto, the Toronto and Region Conservation Authority and local mountain bikers who had previously been using the area informally. The City formalized a route, and the bikers agreed to limit their activities to lands not deemed environmentally sensitive.

Ciclovía, Bogota, Colombia

Since 1976, Bogota, Colombia has offered car-free weekends and holidays on a string of its major roads. Beginning with the work of local activists, “ciclovías” share some characteristics with the Reclaim the Streets movement, in which pedestrians set up couches and hold parties on public streets. Bogota’s ciclovía is now a 110 km-long municipally-sanctioned road closure that allows cyclists to spread out and traverse the city in comfort. Increasingly, it is expanding beyond cycling to include other on-street recreational activities open to all, including rollerblading, yoga and dancing.

Former Bogota mayor Enrique Peñalosa, and his brother Gil Peñalosa, substantially expanded the program and successfully promoted it internationally. Ciclovías of varying lengths and frequencies now exist across Latin America, the United States, and in several European and Australian cities. In Canada, Winnipeg, Halifax, Vancouver, Ottawa, Calgary and Hamilton have all hosted ciclovía-like events.

PRINCIPLE 9

An Active City has buildings and spaces that promote and enable physical activity.

(44) Lee KK, Perry AS, Wolf SA et al. Promoting routine stair use: evaluating the impact of a stair prompt across buildings. *American journal of preventive medicine.* 2012;42(2):136.

Since Torontonians spend a fair amount of time inside, it makes sense to consider how a building's site and design can promote physical activity. Encouraging stair climbing has been a primary focus for increasing physical activity levels indoors. Studies indicate that increases in stair usage can effectively result in weight reduction. And just a few inexpensive prompts or signage can motivate people to step up.

An Active City...

- Provides building facilities that support exercise
- Encourages stair-climbing by designing attractive, open, well-lit and centrally placed stairways and posting clear signage, prompts or motivation messaging about health benefits or calories expended to increase stair use
- Discourages escalators in new buildings as they discourage stair use and yet do not provide the full accessibility benefit of elevators
- Considers how buildings affect the public realm, frame public spaces and animate the streetscape to create pedestrian-friendly and human scale environments
- Makes all new buildings street-oriented with primary entrances facing the street
- Conceals car parking areas by locating them underground or behind the building and away from the street
- Avoids non-pedestrian oriented built forms like drive-through commercial operations

Research findings:

New York City researchers observed that stair use increased immediately after signs saying “Burn Calories, Not Electricity” were posted next to elevators and stairwells in buildings and that the increases were maintained after nine months.⁴⁴



CASE STUDIES - TORONTO



Source: Ian Mutton, flickr

Toronto Dominion Centre Park

Although most of Toronto's notable parks and open spaces are public, they can also be privately-owned. A starkly minimalist oasis of grass and granite, bordered by Mies van der Rohe's Toronto Dominion Centre, the Toronto Dominion Centre Park is in fact a deck covering underground parking for the complex. In 1985, it received its iconic public art installation, The Pasture—a metal herd of cows—by artist Joe Fafard. The park continues to draw crowds of office workers from across the Financial District, who walk there to enjoy lunch or break times, and to take part in events such as concerts or festivals.



Source: Hairin Pontarini Architects

The Well, on Wellington

A joint venture between RioCan REIT, Allied Properties REIT, and Diamond Corp developing 6.47 acres between Wellington and Front Streets west of Spadina in Toronto.

It's a full site, multi-use developing incorporating office space, residences, shops, restaurants, green space and landscaped pedestrian laneways. This project integrates a live-work-play on one site to a greater extent than any other development in Toronto.

The vision for the community is one that flows together synergistically. Connecting the existing King St W developments as a seamless extension through lively pedestrian realm.

CASE STUDY - USA



Source: lavernue, flickr

"Take the Stairs!" Campaign, New York City, USA

"Burn Calories, Not Electricity" is the New York City Public Health department's slogan in their program to encourage New Yorkers to choose stairs over elevators. Their "Take the Stairs!" campaign makes green plaques with that slogan available to building participating owners.

Perhaps more significantly, New York City has also modified the fire code to allow glass fire doors to replace opaque ones. The glass doors (which must still meet minimum fire-proofing standards) offer a more appealing entranceway to stairways that might otherwise only be used during emergencies.

PRINCIPLE 10

An Active City recognizes that all residents should have opportunities to be active in their daily lives.

It is well known that certain groups experience increased risk of ill-health. While social inequalities and discrimination are at the root of health inequalities, changes to built environments can address some issues of unequal access to healthy environments that support active living. An equitable Active City can strive for better representation, meaningful engagement and discussion of diversity issues in local planning and public forums. Such an approach incorporates the needs and perspectives of diverse communities and groups based on their experiences and interactions with their environments.

An Active City...

- Gives priority to improving conditions and access to opportunities for active transportation and active living in higher needs, low-income neighbourhoods
- Promotes mixed uses in less walkable, low-income neighbourhoods
- Creates flexible spaces that can meet needs of diverse users (sport and recreational walkers; children through to adults; different ethno-cultural groups)
- Ensures public facilities are accessible to a wide range of use
- Actively recruits diverse groups including elderly and young men and women, Aboriginal, newcomer and racialized groups, people living on a low income, lesbian, gay, bisexual, transgender (LGBT), and people of differing abilities and other at risk groups to provide input into city planning and decision-making processes of projects affecting the built environment

- Recognizes the needs of different groups as well as the barriers that prevent them from engaging in recreational physical activity and active transportation and addresses these issues in planning and decision-making
- Ensures a mix of housing type, tenure and affordability in neighbourhood revitalization projects and includes places and facilities where families and children can go to play and meet each other in the community

Research findings:

Over the years, poverty in Toronto has become concentrated in the suburban northwest and northeast.⁴⁵ Toronto Public Health's *The Walkable City* (2012) reports that many of these same areas are not as walkable as the downtown core.¹⁷

Promoting transit use and associated activities like walking or cycling can also help equalize opportunities for physical activity. Access to fitness facilities is more prevalent among certain groups in the population—typically, males, whites, and individuals with higher levels of education and income. However, when walking and cycling as part of transport are considered, socioeconomic discrepancies in physical activity are reduced.⁴⁶

(45) Hulchanski JD. *The three cities within Toronto: Income polarization among Toronto's neighbourhoods, 1970-2005*. Cities Centre, University of Toronto, Toronto; 2010.

(17) Toronto Public Health. *The Walkable City: Neighbourhood Design and Preferences, Travel Choices and Health*. 2012

(46) Berrigan D, Troiano RP, McNeel T, DiSogra C, Ballard-Barbash R (2006). Active transportation increases adherence to activity recommendations. *American Journal of Preventive Medicine*. 31(3): p. 210-216.

CASE STUDIES - TORONTO



Good Food Markets

Pedestrian-oriented environments can sometimes spring up instantly. The intensive, outdoor nature of farmers' markets encourages walking and cycling, community interaction, and improves access to nutritious foods. They illustrate that "mixed-use" can be a temporal, as well as a geographic, blend. Unfortunately, the local food movement rarely permeates into low-income communities.

In response, FoodShare, the Toronto-based non-profit food security organization, has launched a series of "Good Food Markets" in low-income neighbourhoods across the city identified as 'food deserts' where even supermarkets remain beyond walking distance. The Good

Food Markets sell produce distributed by FoodShare, participating farmers and food producers. Presently, FoodShare operates weekly markets year-round in six locations, as well as seasonally in another six locations, and offers shorter term 'mobile market' stops in five locations. The organization has stated that 79 per cent of Good Food Market customers return, and that nutrition and health has been significantly improved in the communities they serve.

Bike Host Program

Many newcomers to Toronto come from rural areas, or places where cycling is uncommon. Others may be intimidated by heavy traffic, or simply unfamiliar with the city.

In response to this, local non-profit organization CultureLink set up the "Bike Host" program, in which newcomers are paired with experienced Toronto cyclists to explore the city and become comfortable with cycling in it. As well as biking in pairs, the program includes scheduled group rides, social events and training sessions.

Bike Host began in 2011, and runs during the summer in the city's west end.

POLICIES FOR AN ACTIVE CITY

City Policies and Directions that Support an Active City

A number of city policies and strategic directions have been and can be used to support active transportation and active living initiatives.

- Toronto Official Plan's (OP) sections on Shaping the City (re-urbanization and better growth management), transportation, and public realm policies support an Active City.
- Toronto's Zoning By-law supports an Active City through provisions based on principles of good urban design, mixed use zones and requirements that support public open spaces.
- The City's Sustainable Planning Framework which is a planning tool that identifies suitable indicators and measures for mixed use and dwelling diversity, proximity to transit, pedestrian and bike connectivity, minimizing block lengths, and safe and vibrant streets.
- Toronto Walking Strategy (2009) aims to build a physical and cultural environment that supports walking including vibrant streets, parks, public spaces and neighbourhoods to encourage people to walk and to walk often.
- The City's Traffic Calming Policy provides guidance on ways to change the street environment that will make it more attractive for walking.
- To support and implement the OP, several city guidelines and policies serve as reference tools for planning and urban design that address key aspects of build and public open space design, and vibrant, attractive streets.
- The Urban Design Guidelines deal with the full range of urban design issues from the development of entire civic centres and new residential communities to the design of specific building types or individual public and semi-public spaces.
- The Streetscape Manual focuses on improving the city's street networks and the design quality in the public right-of-way, with an emphasis on coherence, beauty, durability, accessibility, pedestrian amenity and tree canopy.
- The Coordinated Street Furniture program and the Vibrant Streets Guidelines deals with street amenities including transit shelters, benches, recycling bins, publications boxes, information and way-finding signs.
- Toronto's Complete Streets Guideline (currently under development) will provide a vision of a street network designed for all users—motorists, transit users, cyclists, pedestrians and people with disabilities. This initiative is expected to make road networks safer, more livable, and welcoming to everyone.
- The Bike Plan (currently under revision) provides guidance on the delivery and development of on-street and off-street bike lane networks, including associated cycling infrastructure
- The Bikeways Trail Implementation Plan, includes 77 km of new bikeway trails which may be used for active

transportation and recreation, the new trails will build on the existing network of 286 km of bikeway trails.

- Guidelines and studies exist for different types of building forms:
 - Toronto's Tall Building Design Guidelines establish performance measures for the evaluation of tall building development applications. The document emphasizes design excellence, heritage conservation and sustainable design and focus on the quality of living conditions in and around the buildings and their effects on the public realm.
 - Avenues and Mid-Rise Buildings Study and Infill Townhouse Design Guidelines also address issues related to building dimensions, setbacks, facades, building materials, and landscaping to improve the quality of public open spaces for active living.
- The Toronto Green Standard (TGS) is a two-tier set of performance measures for sustainable site and building design for new development. Tier 1 is required through the planning process and Tier 2 is a voluntary higher standard incentivized through a Development Charge refund. Its purpose is to promote site and building designs that address air quality, greenhouse gas emissions, energy efficiency, water quality and efficiency, solid waste and ecology. The performance measures for pedestrian and cycling infrastructure required in Tier 1 promote active transportation.
- Toronto's Parks Plan (2013) calls for abundant, high quality and equitable access to parks and trails that can support physically activity and active living. The incorporation of equity principles in both the Parks Plan (2013) and Recreation Service Plan (2013) through the design, distribution and development of new parks and recreation facilities such as playgrounds, recreation centres, sports fields and ball courts is important for achieving equitable health outcomes.
- Toronto Public Health's Shade Guidelines (2010) were approved by City Council. The policy aims to provide shade when the city plans or develops new facilities or refurbishes existing sites. Shade helps protect people from excess summer heat and ultraviolet radiation and provides comfortable environments for physical activity.
- The City of Toronto is required to comply with the Accessibility for Ontarians with Disabilities Act (AODA) by establishing policies, practices and procedures which are consistent with accessibility standards. Specifically, the AODA's Accessibility Standards for Built Environment focuses on removing barriers in public spaces and buildings for any new development and major changes to existing features.

