

HEALTHY CITY

Active London

ML
BUREAU DE SANTÉ DE
MIDDLESEX-LONDON
HEALTH UNIT
www.healthunit.com

Evidence-Based
Recommendations for Policies
to Promote Walking and Biking

Executive Summary

Active transportation should be the preferred mode of travel for London, Ontario. Active transportation plays a critical role in the development of an environmentally stable, economically viable and healthy city. It is defined by the City of London and the Public Health Agency of Canada as any form of human powered transportation (e.g., walking, cycling, skateboarding). A rapidly growing body of research based in the City of London indicates that increased rates of active transportation will improve the viability of the City as it continues to grow. It is recommended that active transportation be made a higher priority in the City of London's Official Plan and subsequent municipal policies and community-wide initiatives.

Using an evidence-based approach that focuses on London-specific analysis and the most recent and pertinent literature from studies of other cities, this report identifies the benefits and predictors of active transportation. It reflects the 2005 Provincial Policy Statement, as issued under the authority of the Planning Act. This section calls for the promotion of healthy, active communities through appropriate planning, urban design, and transportation measures.

The report is structured in the following format:

- What the Research Tells Us – Overview of evidence-based peer reviewed literature on the benefits of, and community design influences of active transportation;
- Benefits of Active Transportation – The health, economic, and environmental benefits of supporting active transportation;
- Community Design Influences Active Transportation – Identification of how planning, designing, and building of London influences active transportation;
- Where We Are Now – An in-depth look at the City of London's active transportation infrastructure and progress; and
- Where We Must Go – Recommendations to support the growth and usage of active transportation.

What the Research Tells Us

- Fewer Canadians (6.8%) and specifically Londoners (8.2%) are choosing modes of active transportation than ever before.
- The majority of children in London would rather walk or bike to school than be driven.
- Physical inactivity is directly associated with \$3.7 billion loss in economic productivity and \$1.6 billion in Canadian health care costs annually.

Benefits of Active Transportation

- Adults who walk or cycle to work are significantly less likely to be overweight and more likely to have higher fitness levels.
- Cycling infrastructure projects create nearly 50% more local jobs per \$ of investment than equivalent investments in road-only infrastructure projects.
- A 5% increase in the walkability of a residential neighbourhood will decrease the exposure to toxic air pollution from nitrogen oxides and volatile organic compounds by 6%.

Community Design Influences Active Transportation

- The increased presence of pathways, sidewalks, and public streets in the immediate neighbourhood each significantly increase the likelihood that one will walk to shop.
- More street trees in a child's neighbourhood will significantly increase the likelihood they will travel actively to and from school.
- Neighbourhoods designed with a grid-like layout including shorter block lengths are more conducive to higher rates of active transportation.

Where We Are Now

- Only 8% of all trips made by Londoners on a typical weekday are utilizing active transportation modes.
- More than 1 out of 5 residents in the planning districts of Central London and North London use an active mode of transportation to work.
- About half of elementary school children who live within 1 mile of their school walk or bike to school; however, rates of active transportation drop significantly the further a child lives from their school.
- The City of London's network of bike routes is mostly comprised of 'signed' and 'unsigned' routes on roads (rather than segregated lanes and paths) that provide no protection from motor vehicles sharing the roads.
- Multiuse paths and sidewalks are significant predictors of increased levels of active transportation to work and shop.
- Commercial districts that have on-street parking and stores located close to the street are more supportive of active transportation than districts with large parking lots and large building setbacks.

Where We Must Go

- A commitment must be made in the Official Plan to ensure the provision of new active transport infrastructure and the maintenance of what is in place.
- A strengthening of the language in the Official Plan is needed to promote active transportation as a preferred mode of travel to that of the automobile.
- Amendments must be made to sections of the Official Plan to officially encourage developers and builders to explicitly include support infrastructure for active transportation.
- Policies in the revised Official Plan must focus on the unique needs of students to accommodate active transportation.

Table of Contents

Executive Summary	i
Contributors	iv
List of Figures	v
Introduction: Active Transportation	1
What the Research Tells Us	2
The Benefits of Active Transportation	3
<i>Health Benefits</i>	3
<i>Economic Benefits</i>	3
<i>Environmental Benefits</i>	3
Community Design Influences Active Transportation	4
Where We Are Now	5
<i>The Journey to Work</i>	6
<i>The Journey to School</i>	7
<i>Infrastructure</i>	9
<i>Sidewalks and Streets</i>	11
<i>Multiuse Pathways</i>	12
<i>Commercial Floor Area Ratios</i>	13
Where We Need to Go – Recommendations	14
<i>Provision of Infrastructure</i>	14
<i>Strengthen Language on Active Transportation</i>	14
<i>Development Standards</i>	15
<i>Targeted Active Transportation Plans</i>	16
<i>School Neighbourhood Policies</i>	17
Conclusion	17
Glossary of Terms	18
References	19

Contributors

This report was prepared by the Human Environments Analysis Laboratory (HEAL) on behalf of Middlesex-London Health Unit and funded through the Province of Ontario under the Healthy Communities Partnership.

Authors

Dr. Jason Gilliland, Associate Professor of Geography, Health Sciences, and Paediatrics, Western University;

Director, HEAL, Western University

Doug Rivet, M.A. Geography;

Research Associate, HEAL, Western University

Steve Fitzpatrick, B.A. Honours Geography;

Research Associate, HEAL, Western University

Collaborators

Mary Lou Albanese, RN, BScN, MSA;

Manager, Healthy Communities and Injury Prevention, Middlesex London Health Unit

Bernadette McCall, RN, HBA, BScN, MA;

Public Health Nurse & Coordinator, Healthy Communities, Middlesex London Health Unit

Sarah Maaten, MSc.

Epidemiologist, Environmental Health & Chronic Disease Prevention Services, Middlesex London Health Unit

Acknowledgements

We also wish to acknowledge the support of:

The Healthy Communities Partnership Middlesex-London

Sandra Kulon, *GIS Research Associate, HEAL, Western University*

Cite Reference as: Middlesex-London Health Unit (2012) Healthy City/Active London: Evidence-Based Recommendations for Policies to Promote Walking and Biking. London, Ontario: Author.

List of Figures

Figure 1: A Bicycle Parked Along Ridout Street	1
Figure 2: Two London Children Walk to School	2
Figure 3: Unsigned versus Signed and Marked Bike Lane in London	5
Figure 4: Active Transportation to Work	6
Figure 5: Londoner Walking to Work at Queens and Wellington	6
Figure 6: London School Children, Active Transportation, and the Influence of Distance	7
Figure 7: Active Transportation Accessibility for School Aged Children	8
Figure 8: Bike Paths in the City of London	9
Figure 9: Multiuse Paths in the City of London	10
Figure 10: Sidewalks and Streets for Active Transportation	11
Figure 11: Sidewalk Insets	11
Figure 12: Accessibility to Multiuse Paths	12
Figure 13: Multiuse Paths	12
Figure 14: Commercial Land Usage	13
Figure 15: Commercial Space Insets	13

Introduction: Active Transportation

Active transportation should be the preferred mode of transportation for London. Defined by the City of London and the Public Health Agency of Canada as any form of human powered transportation (City of London, 2004; Public Health Agency of Canada, 2010), active transportation includes but is not limited to walking and cycling.^{1,2} A rapidly growing body of research indicates that increased rates of active transportation provide numerous environmental, economic, and health benefits to those who travel by active modes, as well as society at large. These benefits, discussed later on in this report, have been officially recognized in other Ontario cities (for example, Region of Waterloo's Active Transportation Master Plan) and by various levels of governments throughout Canada. Indeed, the City of London has already acknowledged the benefits of active transportation, by introducing a Bicycle Master Plan (2005) and recommending in its Transportation Master Plan (2004) that active transport "...should be aggressively promoted"³ further reinforced in the London 2030 Transportation Master Plan.⁴ Council has also recently endorsed the Toronto Charter for Physical Activity, demonstrating a commitment to policies, services, and action that prioritize walking and cycling. We therefore recommend that active transportation be made a higher priority in the City of London's Official Plan reflect this commitment, and that subsequent municipal policy and community-wide efforts be developed to continue to move London forward over the coming years.

The purpose of this position statement is to concisely identify key evidence with respect to active transportation, and from this evidence develop policy recommendations that can be worked into the City of London's revised Official Plan, as part of the ReThink London review process that began in May of 2012. These recommendations take into account the benefits of people choosing active modes of transportation for 'utilitarian' journeys: i.e. trips to work, to shop, or to school. While the many physical and mental health benefits of walking, jogging, cycling, skating, or skateboarding for recreation and leisure are widely acknowledged, the specific focus of this report is on active travel for utilitarian trips.

Using an evidence-based approach that focuses on London-specific analysis done by the Human Environments Analysis Laboratory (HEAL) at Western University, as well as the most recent and pertinent literature from studies of other cities, this report identifies the benefits and predictors of active transportation. Additionally, the reported findings are translated into a series of concise recommendations that will hopefully prioritize active transportation within the City of London's revised Official Plan.

Public interest in how London develops, grows, and changes is mounting, as demonstrated by the thousands of followers of the ReThink London movement on Twitter and Facebook. The official policies guiding urban growth must reflect this public interest, and position London as a city that supports active transportation and healthy lifestyles. The following sections provide empirical evidence of the many benefits, predictors, and potentially effective interventions of increasing active transportation.



Figure 1: A Bicycle Parked Along Ridout Street

Photo by Jason Gilliland

What the Research Tells Us

Rapidly increasing rates of obesity in Canada has been widely recognized as a nationwide public health crisis. The rate of being overweight or obese in London and Middlesex County increased by more than 7% between 2003 and 2010, to the point where just over half of the adults in our region are considered overweight or obese based on their body mass index (BMI).⁵

A Canadian study reported that physical inactivity is directly associated with \$1.6 billion in annual Canadian health care costs, and a \$3.7 billion loss in economic productivity from contributions of physical inactivity to various illnesses such as increased cardiovascular disease, multiple cancers and type II diabetes.⁶ Within London, heart disease and stroke represent about 20% of deaths per year (over 1500), and diabetes another 3% (200 deaths).⁷ Contributing to these rates is the fact that fewer Canadians are choosing active modes of transport than ever before, cause for alarm on multiple fronts.

Very few adults in London, Ontario use active transportation to get to work. In the 2006 Canadian Census, only 8.2% of adults in London reported that they typically walked or biked to work; nevertheless, this rate is slightly higher than the Ontario average, as only 6.8% of adults across the province reported walking or biking to work.⁸ On the other hand, more than 8 out of 10 adults in London (82.3%) report that they drive, or are driven in, a private automobile to work; the Ontario average is slightly lower at 79.2% of adults.⁹ An analysis of historical survey data in the Greater Toronto Area revealed that rates of active transportation to and from school in the GTA have declined from 53.0%–42.5% for 11–13 year olds, and 38.6%–30.7% for 14–15 year olds between 1986 and 2006.¹⁰

London In-Depth



Figure 2: Two London Children Walk to School
Photo by Jason Gilliland

When asked how they travel to school, **nearly two-thirds (64%)** of children who lived within walking distance (1.6km) of their school reported that they **travel actively**.¹¹

Although encouraging, London can do better. 47.0% of Middlesex-Londoners aged 12 and under, and 30% of those aged 12 -19, reported being **inactive during leisure time activities**.¹²

Additionally, 76% of children reported they would **prefer** to travel actively.¹³

The Canadian Physical Activity Guidelines recommend 60 minutes of moderate-to-vigorous intensity physical activity a day for those aged 5 to 17, and 150 minutes per week for those aged 18 and older.¹⁴ Achieving these levels can do much in preventing the aforementioned conditions that afflict citizens of Middlesex and London. As the following section details, there are multiple benefits to be had from incorporating active transportation into your travel to work, school or shop.

The Benefits of Active Transportation

Health Benefits:

- Adults who walk or cycle to work are significantly more likely to have **lower body mass indexes (BMIs), smaller waist circumferences, and higher fitness levels** (Evidence from a study of 3,546 US adults between 38 and 50 years of age)¹⁵
- Students who walk to school average **24 additional minutes of moderate-to-vigorous physical activity (MVPA)** per day compared to non-walkers, satisfying nearly half of the required 60 minutes of MVPA per day (Evidence from a study of 219 grade 5 students in South Carolina)¹⁶
- Young adults who actively commute to work or school have significantly **healthier bodyweights and fitness levels**, and experience a **reduced risk of obesity and high blood pressure** (Evidence from a US study of 2,364 young adults from 1985 to 2005)¹⁷

Economic Benefits:

- Investment in the construction of bicycle facilities such as multi-use paths **yields an economic return of approximately nine times the initial expenditure** for the local economy (Evidence from study assessing the economic impact of bicycle facilities in North Carolina)¹⁸
- Cycling infrastructure projects **create a total of 11.4 local jobs** for each \$1 million spent and pedestrian-only projects create 9.9 jobs per \$1 million, while road-only projects create 7.8 jobs per \$1 million (Evidence in US dollars from a 2011 study)¹⁹
- Investment in walking and cycling infrastructure **generates more full-time equivalent jobs** per dollar spent than investments in road-only infrastructure (Evidence from a study of 11 US cities)²⁰
- Every \$1 investment in infrastructure for biking and walking leads to a **\$2.94 savings in direct medical expenditures** (Evidence from a cost-benefit analysis of multiuse trails in Lincoln, Nebraska)²¹

Environmental Benefits:

- Neighbourhoods with dense development, high street connectivity, and access to transit opportunities will produce up to **25% less energy** from motorized vehicles compared to those areas built without active transportation in mind. (Evidence from a study of 10,148 participants in Atlanta)²²
- A 5% increase in the walkability of residential neighbourhoods will **decrease the exposure to toxic air pollution** from nitrogen oxides and volatile organic compounds by 6% (Evidence from a study of 1,228 respondents in King County, Washington)²³

Community Design Influences Active Transportation

A growing body of research, particularly in fields of planning and public health, indicates that the way we plan, design, and build our cities and neighbourhoods can have a significant influence on whether or not people will walk or bike to work, school, or shop. The section below identifies some well-established environmental predictors of active transportation.

London In-Depth

- The **greater distance a child lives from their school**, the less likely they are to travel actively to and from school (*Evidence from multiple cities, incl. London, Ontario*)^{24,25}
 - **More street trees** in a child's neighbourhood significantly increases the likelihood they will travel actively to and from school (*Evidence from a study of 614 children in London, Ontario*)²⁶
 - An **increased number of major intersections and major streets to cross** along the shortest route between home and school significantly decreases the likelihood a child will walk home from school. (*Evidence from a study of 614 children in London, Ontario*)²⁷
 - The **increased presence of pathways, sidewalks and public street trees** in the immediate neighbourhood each significantly increase the likelihood that one will walk to shop. (*Evidence from a study of 711 adults in London, Ontario*)²⁸
-
- Neighbourhoods designed with a **grid-like layout** including **shorter block lengths** are more conducive to higher rates of active transportation (*Evidence from a Californian study of 55,428 adults using a telephone survey*)²⁹
 - **Safety concerns** are the primary reason that senior citizens do not engage in active transportation (*Evidence from a study of 127,610 respondents to the nationwide Canadian Community Health Survey*)³⁰
 - People located 2,500 metres or **further from a multiuse trail system** are significantly less likely to use it (*Evidence from a study of 3,121 trail users in Minneapolis*)³¹
 - Neighbourhoods with **high street connectivity and greater access to transit stations** are associated with increased levels of active transportation (*Evidence from a Portland study of 1,221 adults in 120 neighbourhoods*)³²
 - Parents who **perceived themselves as being familiar with the physical layout of their neighbourhood** are significantly more likely to permit their children to walk or bike to and from school (*Evidence from a study in San Francisco study of 357 school parents*)³³

Where We Are Now

The current state of active transportation in London has been documented in various reports generated in preparation for the London 2030 Transportation Master Plan (also known as “Smart Moves”) that will guide transportation planning in the City of London for the next 20 years, as well as ongoing academic studies by researchers in the Human Environments Analysis Laboratory at Western University.



Figure 3: Unsigned (Colborne Street) versus Signed and Marked (Queens Avenue) Bike Lane in London
Photos by Stephen Fitzpatrick

London In-Depth

As part of the *SmartMoves* planning process, a household transportation survey was administered by telephone to over 14,600 randomly selected participants within the City of London between September 2009 and January 2010 (see: www.london.ca/smartmoves). The *SmartMoves* survey found that:

- City of London residents make an average of 620,000 trips on a typical weekday.
- Of these weekday trips, only 8% are made by active transportation modes (i.e., walking & cycling), another 8.5% are made via public transit (i.e., LTC buses), 3.5% by school bus, and approximately 80% are made by automobile, as driver or passenger (only 1% of those being taxi or motorcycles).
- Analysis of 2006 Canada Census data (20% sample) by HEAL researchers revealed findings similar to those reported by *SmartMoves*: fewer than 1 in 12, or 8.2%, of adults in London reported that they typically walked or biked to work; whereas, 82.3% of London commuters reported driving or being driven to work.

The Journey to Work

The map entitled “Active Transportation to Work” (**Figure 4**) reveals significant geographic variations in levels of active transportation to work, with highest levels (i.e., over 20% of adults commute to work by active transportation) observed in the *planning districts* of (1) Central London, where the central business district (CBD) of the city and numerous office and service jobs are located; and (2) North London, which incorporates the ‘Old North’ area of the city which is home to many students and faculty employed at nearby Western University. Other planning districts with higher than average proportions of adults (i.e., > 15%) who actively commute to work include: (3) the ‘Old South’ area of South London; and (4) the ‘Old East Village’ area of East London; both neighbourhoods include substantial commercial areas and are located in close proximity to ‘downtown’.

All of the areas with the highest levels of active commuting to work tend to be older, centrally-located neighbourhoods (i.e. built primarily before WWI) with certain common environmental features such as: a high mix of land uses; a well-connected, grid-iron street layout; and a high proportion of streets provided with sidewalks on both sides. In the following sections, we will examine the geographic distribution of environmental features in London that encourage active transportation.

Figure 4: Active Transportation to Work – This map represents the percentage of adults who utilize active transportation, walking or bicycle, to commute to their place of employment.
Source: HEAL; Statistics Canada (2006)

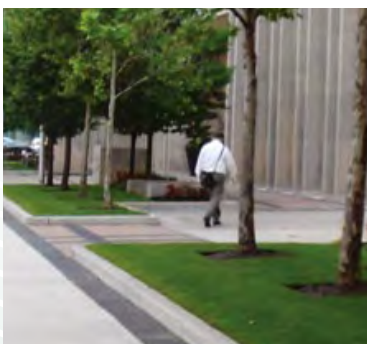
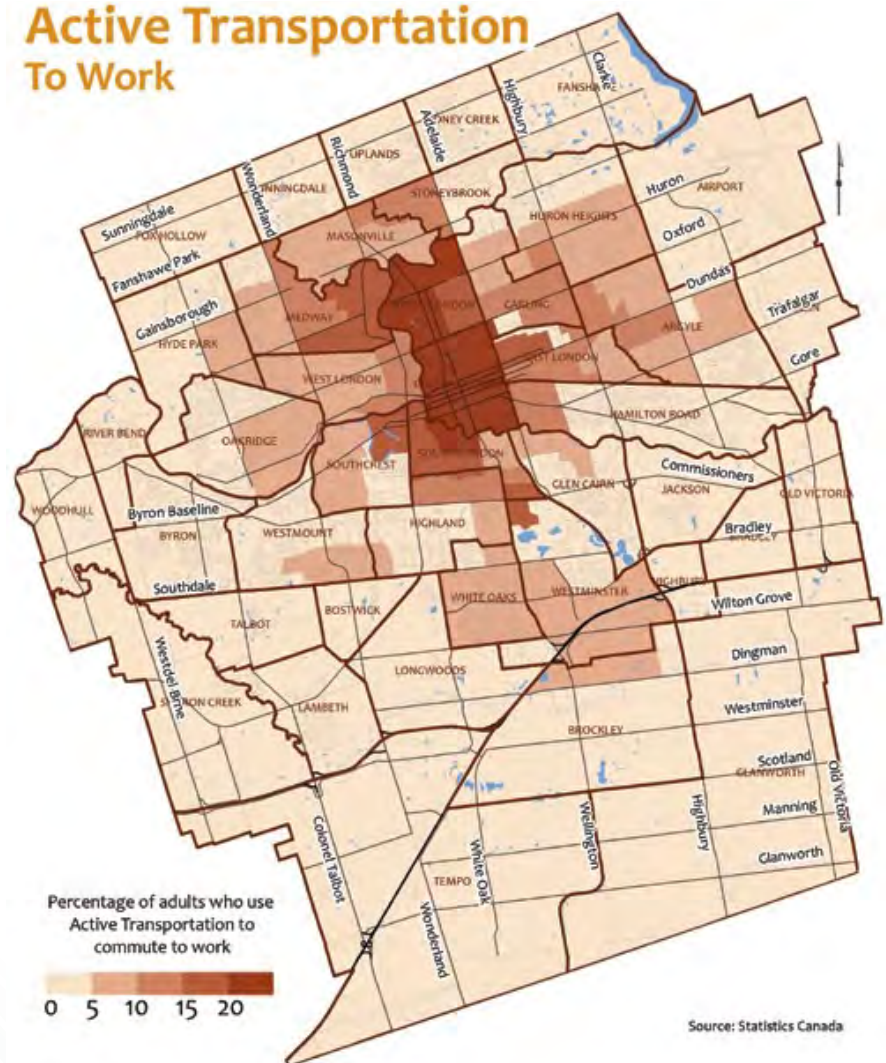


Figure 5: Londoner walking to work at Queens and Wellington

Active Transportation To Work



The Journey to School

In peer-reviewed studies investigating the influence of environmental factors on rates of active travel to and from school, the most important predictor is always distance. The smaller the distance between home and school, the more likely a child is to walk or bike. The graph below (**Figure 6**), based on a HEAL study of 811 children in grades 7 and 8 from elementary schools across London, Ontario, clearly demonstrates the direct relationship between distance

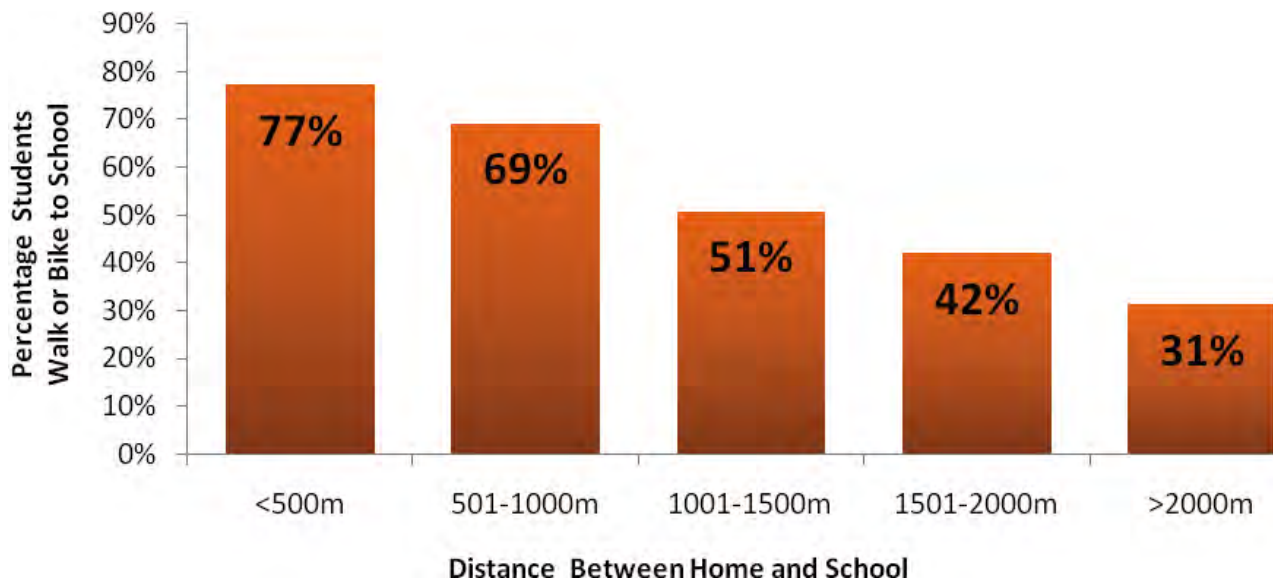


Figure 6: London School Children - Active Transportation, and the Influence of Distance Source: HEAL (2010)

Arguably, the most important cause of the declining rates of active travel to school among children in Canada and the United States over the past four decades is the gradual loss of ‘neighbourhood schools’ and the subsequent increase in the number of students who are driven, by bus or private automobile, to schools beyond walking distance of their home. The proportion of students in the US who lived within 1.6km of their school dropped from about 1 in 3 (34%) in 1969 to only 1 in 5 (21%) by 2001.³⁴ Conversely, a recent study of over 800 elementary students in London determined that about 3 out of 5 (61%) students lived within 1.6km of their school.³⁵ In other words, the majority of students lived within walking distance of their school. **Figure 7** shows the areas of London that are accessible within 1.6km of elementary and secondary schools in the public (TVDSB) and separate (LDCSB) boards. It is highly likely that closing schools in older, walkable neighbourhoods will decrease children’s likelihood of walking to school, and thereby lowering their overall physical activity levels and associated health benefits.

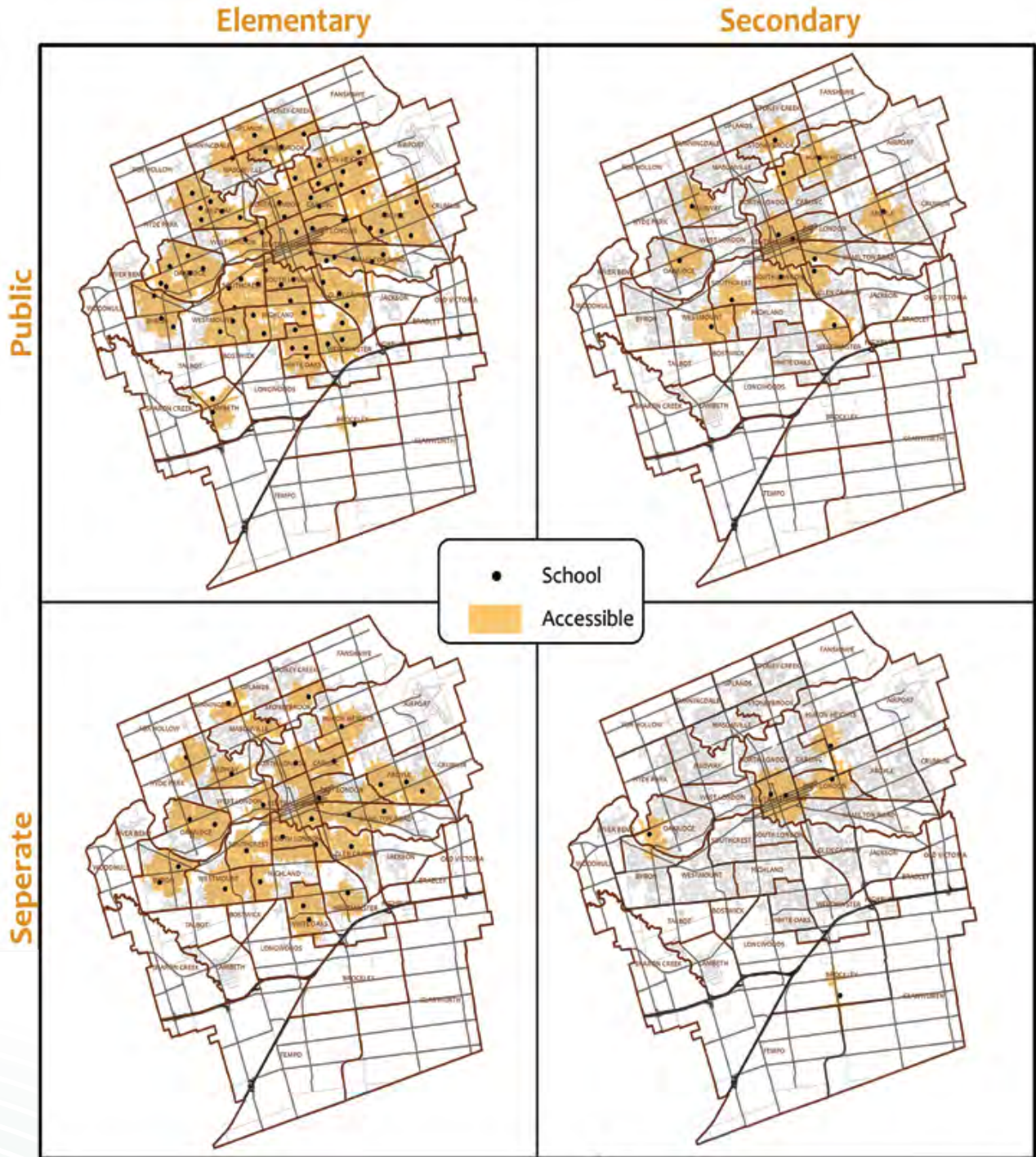


Figure 7: Active Transportation Accessibility for School Aged Children – Areas of London that are accessible within 1.6 km of area schools. Source: HEAL; Ministry of Education (2011)

Infrastructure

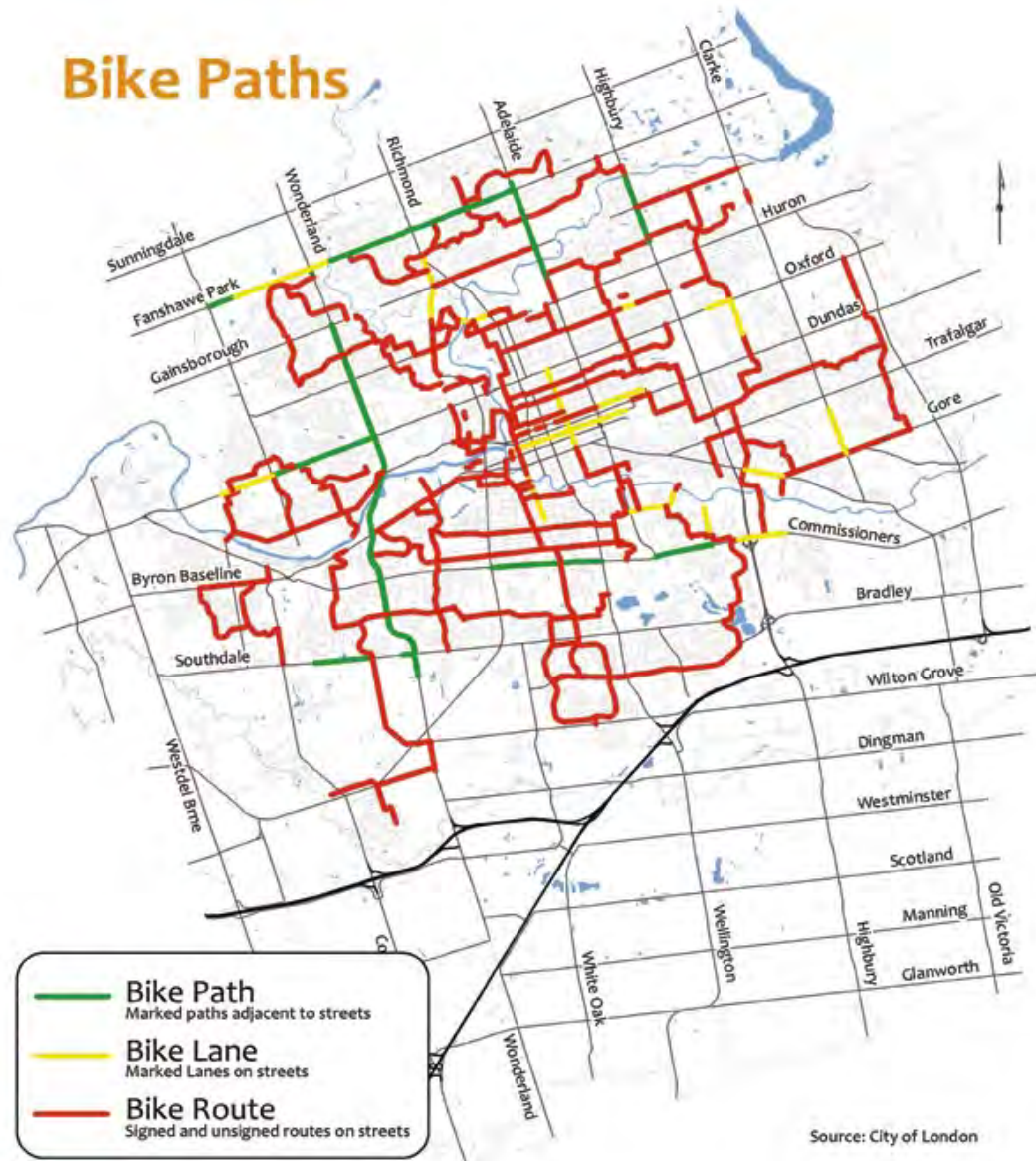


Figure 8: Bike Paths in the City of London – Path (Green): marked paths adjacent to streets; Lane (Yellow): marked lanes located on streets; Route (Red): signed or unsigned routes on streets.
Source: HEAL; City of London (2010)

Numerous studies have shown that the accessibility and quality of certain public infrastructure such as bike paths, multi-use paths, sidewalks, and streetlights can significantly increase rates of active transportation in a given area. **Figure 8** (above) reveals the spatial extent of the City of London's bike network, identifying different locations of bike paths (marked paths adjacent to streets), bike lanes (marked lanes on streets), and bike routes (signed or unsigned routes on streets). While most of the city appears to be connected by the bike network, most of the network is comprised of 'routes', rather than 'paths' or 'lanes' and therefore do not provide any protection from cars and trucks that occupy the roads.

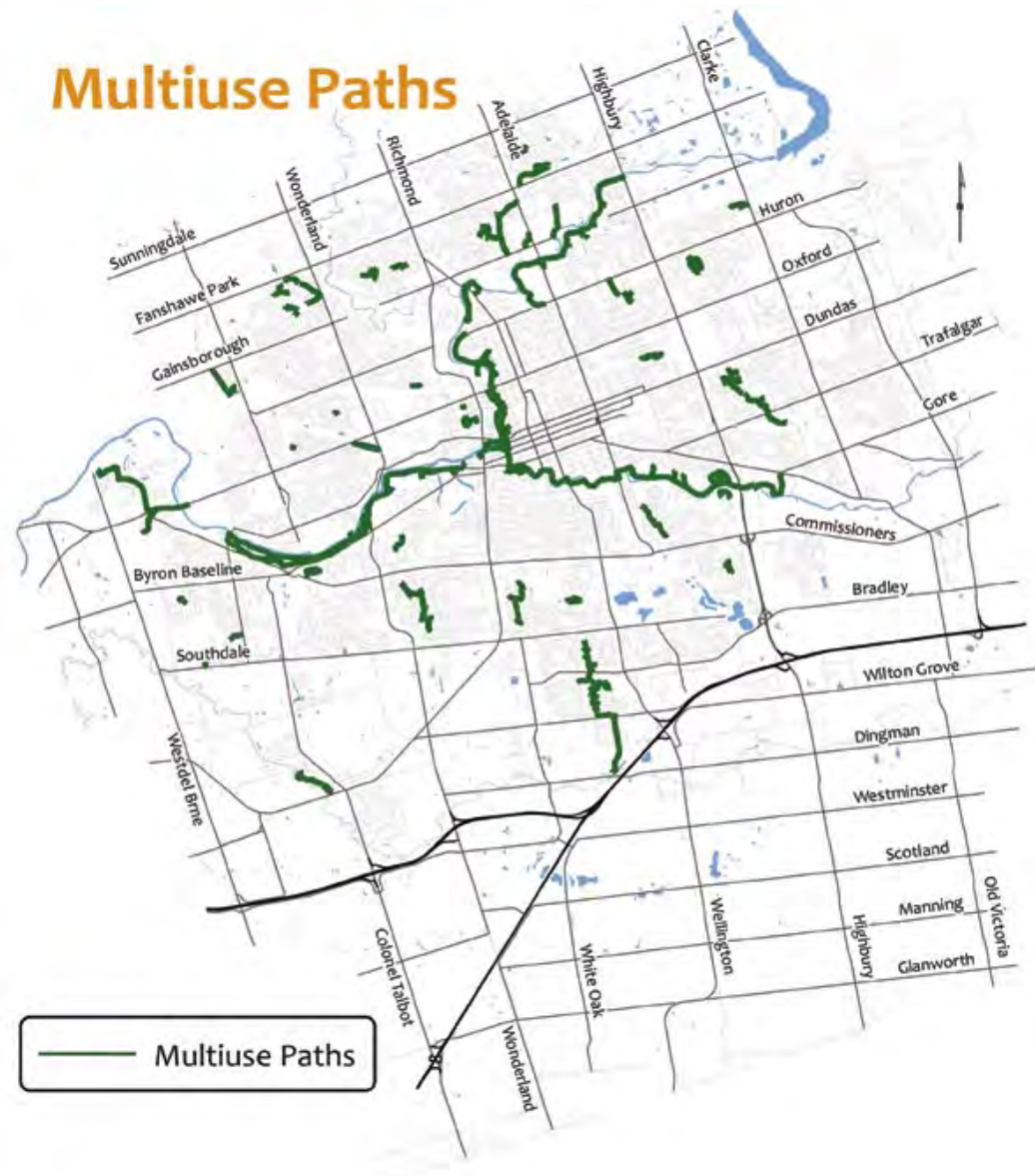


Figure 9: Multiuse paths in City of London
 Source: HEAL; City of London (2010)

Accessibility to London's multi-use pathway system (see **Figure 9**, above) has also been shown in HEAL studies to be significantly correlated with increased levels of active transportation to work and shop. Multi-use paths are segregated from city streets, making them much safer for pedestrians than bike lanes or bike routes, and they are also typically well-paved, making them more comfortable for those who wish to walk, jog, cycle, wheel, or in-line skate.

Sidewalks and Streets

An acknowledged factor for improving active transportation is the location and accessibility of sidewalks. Commuters in London and other cities are more likely to travel actively when sidewalks are present, particularly when they are wide, adequately buffered from traffic, and connected to the existing street network. Roads with sidewalks on only one side that do not extend the entire length of the road are less likely to be used for active commuting compared to roads with continuous sidewalks.

The ratio represented on **Figure 10** (at right) assigns a number to a specific street segment that compares the measure of sidewalk length to the length of the road it parallels, providing an indication of how conducive certain roads are to walking. For example, a long segment of road with incomplete sidewalks on only one side would score low, likely between 0 and 0.5. Conversely, a road with largely uninterrupted sidewalks on both sides would score high, likely between 1.5 (at right **Figure 11**).

Sidewalks and Streets Ratio for AT

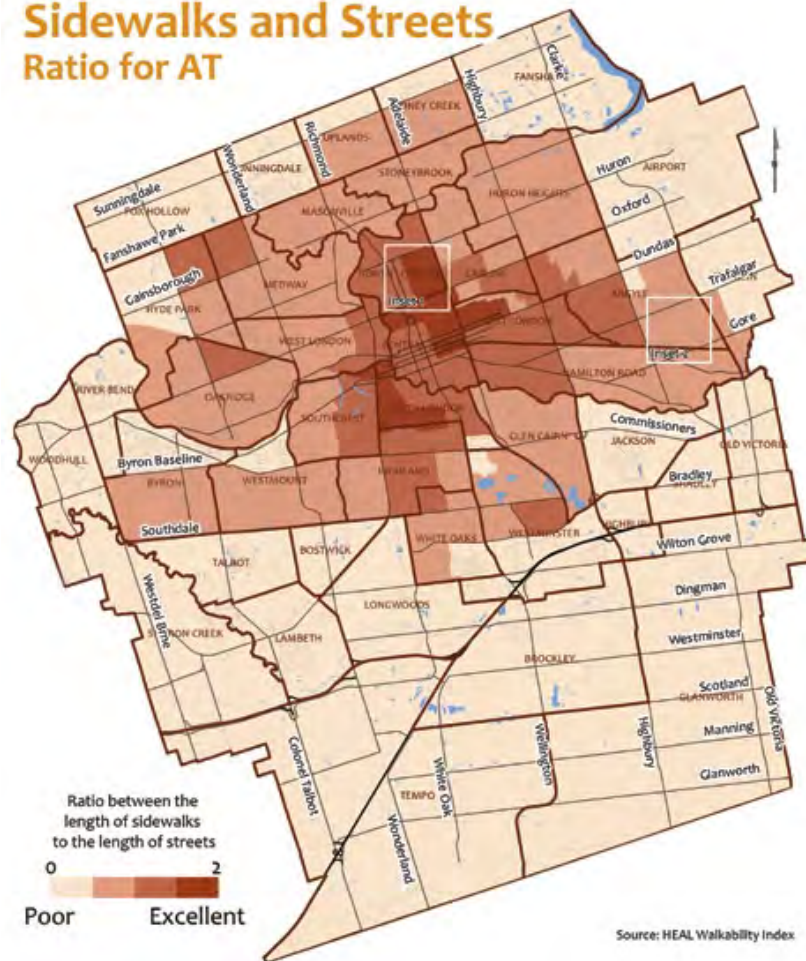


Figure 10 (Above): Sidewalks and Streets for Active Transportation – Areas with ‘Excellent’ sidewalk ratios have roads with sidewalks on both roadsides while areas with ‘Poor’ ratios have no or only partial sidewalks provided. Source: HEAL; City of London (2010)

Figure 11 (Below): Sidewalk Inset - Inset 1 is an example of an ‘Excellent’ sidewalk ratio in North London. Inset 2 is an example of a ‘Poor’ ratio in Argyle. Source: HEAL; City of London (2010)



Multiuse Pathways

Sidewalks are not the only critical component to improving active transportation. Multi-use paths provide an opportunity to establish linkages between different neighbourhoods for the use of walking, cycling, and other forms of active transportation. Successful multi-use paths have ample width, are well-maintained, well-connected to the street network, and extending to opportunity structures such as places of employment or education.

Figure 12 (at right) highlights accessibility of the multi-use path system by identifying the proportion of addresses in each census tract that are within 500m of a path. Census tracts with a greater number of addresses accessible to pathways (darker) are more conducive to active transportation than those with a less access to multi-use pathways.

As can be seen from **Figure 13** (at right), pathway systems, when linking two or more disconnected streets, can improve the overall connectivity of a neighbourhood and reduce distances between destinations.

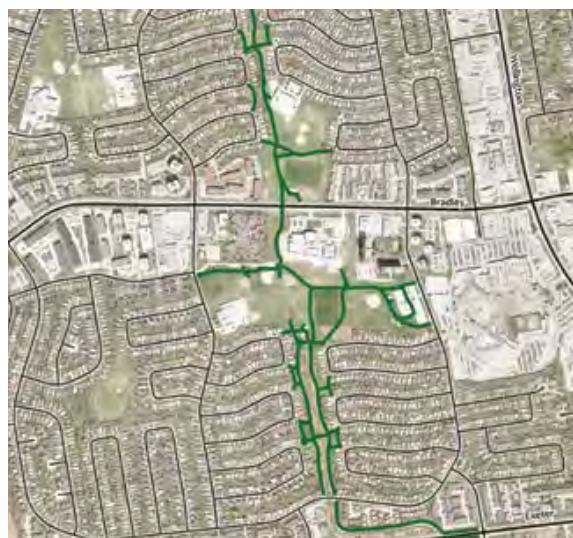
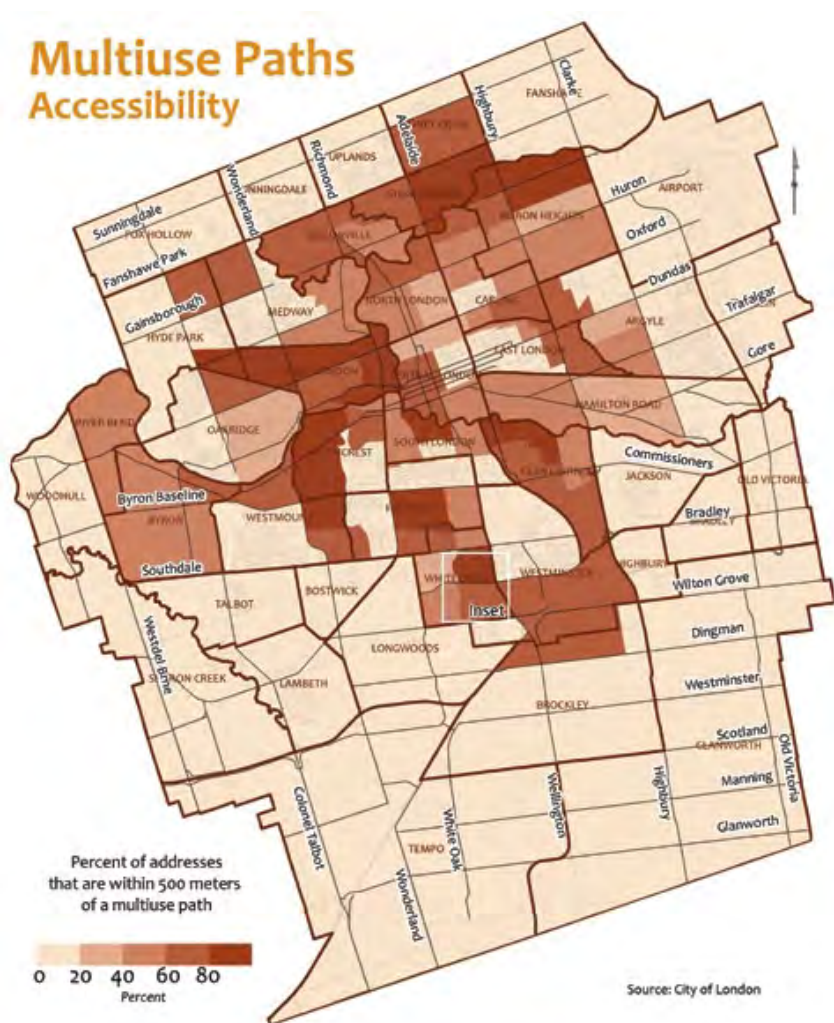


Figure 12 (Above): Accessibility to Multiuse Paths – Linkages between neighbourhoods is a critical component to creating environments that enhance active transportation. Source: HEAL; City of London (2010)

Figure 13 (Left): Multiuse paths can be designed to create vital connections to streets and neighbourhoods that would otherwise be disconnected from the city. Source: HEAL; City of London (2010); SWOOP (2010)

Commercial Floor Area Ratios

Retail density is a critical element of any walkable and bikable community. Researchers have long argued that sprawling, low-density communities that favour large lots and ‘big box’ stores with massive parking lots are far less encouraging to active transportation.

Figure 14 (at right) visualizes commercial floor area ratios in census tracts throughout the city. The ratio is calculated by dividing the total area of all the building footprints of commercial establishments in the census tract (CT) by the total land area dedicated to commercial activities. This provides a visual comparison between census tracts that have sparse commercial development and those which are more compact and dense. Areas with higher ratios are more conducive to active transportation. The insets within **Figure 15** (below) compare the built environments with high versus moderate ratios.

Commercial Land Usage Buildings and Areas

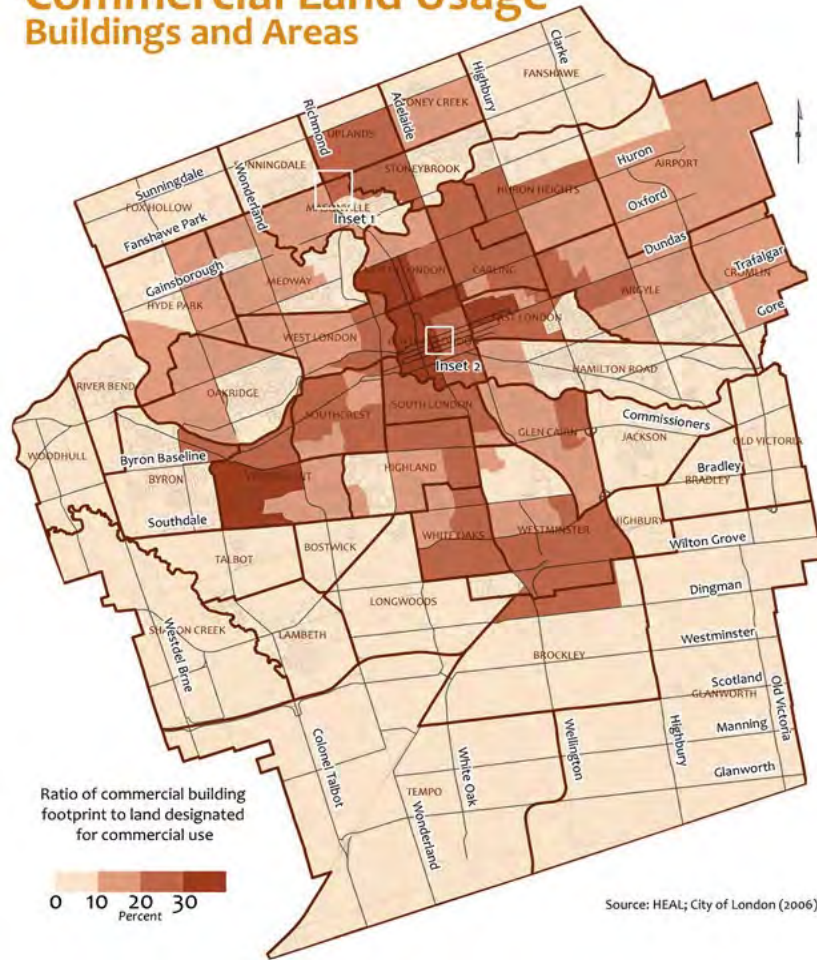


Figure 14 (Above): Commercial Land Usage – Areas that reduce the sprawling effect of ‘big box’ stores by maximizing the space a commercial building occupies on a parcel of land increases ‘Commercial Floor Area Ratios’ and enhances active transportation.
Source: HEAL; City of London (2006)

Figure 15 (Below): Commercial Space Insets - Commercial spaces with large parking lots and large setbacks (Inset 1, moderate commercial floor area ratio) lower the likelihood of active transportation than those with street parking and small setbacks. (Inset 2, high commercial floor area ratio)
Source: HEAL; City of London (2010); SWOOP (2010)



Where We Must Go - Recommendations

Based on the evidence considered above, a number of recommendations to support active transportation are outlined below. While the majority of the recommendations are directed at the City of London, there are also roles to be played by other governmental organizations (e.g. MLHU), the private sector, community groups, and residents.

I. Provision of Infrastructure

A commitment must be made in the Official Plan (OP) to ensure the provision of new active transport infrastructure, and the maintenance of existing infrastructure.

Suggested Additions to the Official Plan:

- Barrier-free, aesthetically pleasing urban design linkages such as trails, sidewalks and bike lanes will be provided and maintained between residential, commercial, employment, industrial, institutional and open space as part of London's transportation system; to encourage and support both recreational and utilitarian active transportation.
- Trail planning and design will focus on trails as both recreation and active transportation infrastructure, including a connected and marked system of regional trails and bike paths/lanes to provide safe linkages between residential, commercial, employment, institutional and open spaces.
- Regular Service agreements must be put in place for all multiuse trails and bike paths – marked, signed, and unsigned – to ensure that the quality of the paths is upheld. All trails and bike paths must be kept free of potholes, large cracks in the pavement, clear of snow and ice, or any other deficiencies that could potentially increase risk of injury and discourage use.

II. Strengthen Language on Active Transportation

On the homepage for the “London 2030: Transportation Master Plan” there is a statement that reads: “Active Transportation and Transportation Demand Management (TDM) and a city form that supports them is definitely something to strive for.” While London's current Official Plan calls for a balanced and sustainable transportation system, the language throughout the OP consistently discusses active transportation as a secondary alternative to car travel; when the opportunity is provided active transportation must be promoted as a superior travel option. Sections of the current OP must be revised to reflect the aggressive promotion of active transportation sought by London's 2030 Transportation Master Plan.

Suggested revisions to the Official Plan:

- Section 18.2.11 – Public Transit Policies³⁶
 - (II) c. The establishment of safe, accessible sidewalks, walkways and/or other linkages to connect residential and employment areas to transit services.
 - TO...
 - (II) c. The establishment of **accessible multiuse trails, bike paths, sidewalks, walkways and/or other linkages to provide a safe connection from residential, commercial, and employment areas** to transit services.

- Section 18.2.2 – Transportation Network Corridors³⁷

Streets must serve a number of functions such as providing transportation corridors for all kinds of users and vehicles and providing a right-of-way for underground utilities. Healthy communities will offer a broader range of mobility choices by continuing to work well for vehicles while making bicycling, walking and public transit viable options for many daily trips including the trip to work.

TO...

Streets must **function in a complete fashion, providing equal opportunity for all kinds of users and vehicles, and providing a right-of-way for underground utilities. Healthy communities will offer a broader range of mobility choices; and must promote bicycling, walking and public transit over auto-centric behaviour.**

- 11.1.1 - Design Principles³⁸

vii) A coordinated approach should be taken to the planning and design of streetscape improvements in commercial areas, including the upgrading of building facades, signage, sidewalks, lighting, parking areas and landscaping.

TO...

vii) A coordinated approach **must** be taken to the planning and design of streetscape improvements in commercial areas, including **the installation of bike lanes, bike racks, upgrading of building facades, signage, sidewalks, lighting, parking areas and landscaping.**

- 11.1.1 - Design Principles³⁹

viii) In pedestrian traffic areas, new development should include street- oriented features that provide for the enhancement of the pedestrian environment, such as canopies, awnings, landscaped setbacks and sitting areas.

TO...

viii) In pedestrian traffic areas, new development **must** include street- oriented features that provide for the enhancement of **pedestrian safety and environment, such as traffic calming measures, road crossings, bike racks, street trees**, canopies, awnings, landscaped setbacks and sitting areas.

III. Development Standards

Amendments must be made to sections of the OP regarding development standards. When new development is proposed, the City of London must officially encourage (if not demand) developers and builders to encourage active transportation. Development standards should explicitly include support infrastructure for active transportation.

Suggested additions to the Official Plan:

- Review design standards of new development to ensure that strides are taken to reduce auto dependency in the community by providing for the needs of pedestrians and cyclists with dense residential development; with necessary infrastructure to make active travel safe and convenient.

Suggested revisions to the Official Plan:

- 18.2.11 Public Transit Policies⁴⁰

(iv) ...In the review of a plan of subdivision application or consent, the approval authority may impose conditions relating to the dedication of lands for commuter parking lots, transit stations and related infrastructure for the use of the general public using a public right-of-way

TO...

(iv) ...In the review of a plan of subdivision application or consent, the approval authority shall impose conditions relating to the dedication of lands for **active transportation infrastructure such as multiuse trails, bike lanes, park and recreational spaces**; as well as commuter parking lots, transit stations, and related infrastructure for the use of the general public using a public right-of-way

IV. Targeted Active Transportation Plans

To maintain pace with other regions in Ontario and North America, London must fully embrace and promote active transportation as the preferred means of travel over auto-dependency. In doing so, the City must acknowledge that planning for walking and cycling requires similar, but different techniques. Transportation plans must be developed for a community-wide integrated set of networks and routes that elevate the needs of pedestrians and cyclists above, or at the very least to a balance with, automobile use.

Suggested additions to the Official Plan:

- The City of London prepare a **Pedestrian Master Plan** in addition to the existing Bicycle Master Plan(2005) and **London 2030 Transportation Master Plan**;
- The City of London review and update the **2005 Bicycle Master Plan**;
- The City will implement recommendations from the Pedestrian Master Plan, the Bicycle Master Plan, and the Transportation Master Plan through the development review process;
- These transportation plans will reflect complete street planning policies (as recommended by the MTO) and complement the City of London Urban Design Guidelines, and establish a process that ensures all users are considered in the design, refurbishment or reconstruction of existing and planned streets;
- These plans will guide integrated, accessible and safe multi-modal transportation systems that provide transportation choice, promote sustainability, and a healthy population.

V. School Neighbourhood Policies

Policies in the revised Official Plan must focus on the unique needs that students require to accommodate active transportation; being that action must occur at the school site, as well as the actual routes taken to and from schools.

Recommendations and suggested additions to the Official Plan:

- Collaborate with school boards, as well as parent organizations, to establish policies around location of new school sites to minimize distance students must travel to school;
- Elementary schoolchildren should be permitted to cycle on sidewalks;
- Decisions to close schools in older, established neighbourhoods are to be avoided whenever possible; and must weigh the health consequences of losing an environment that encourages active transportation;
- Work cooperatively with the school boards, transportation department, and police to identify 'school safety zones' and map safe routes to schools. These routes should then be properly signed, made aware to students and parents, have reduced speed limits, and maintained as necessary;
- Work with the school boards and local groups to provide adequate on-site infrastructure needed to support active transportation for school children, especially bike paths and more bike racks and covered bike storage.

Conclusion

This report underlines the critical role that community design plays in supporting active transportation and in developing a future that is environmentally stable, economically viable and healthy for the City of London. Investment in infrastructure and commitment to policy that promotes active transportation is essential to ensure that the City of London continue its leadership role in fostering high quality life through sustainable infrastructure that meets the health and safety needs of its citizens.

Evidence-based research tells us that fewer Canadians and Londoners are choosing modes of active transportation even while the benefits are overwhelmingly positive. There are significant health and economic gains when active transportation is the preferred mode of travel. Going forward, the Middlesex-London Health Unit recommends that the City of London demonstrate strengthened commitment to active transportation through planning and policy implementation that improves the health and quality of life for all Londoners.

Glossary of Terms

Active Transportation – any form of human powered transportation, including but not limited to walking, cycling, skateboarding, rollerblading, etc.

BMI – Body Mass Index. Measured as a ratio of weight to height, calculated by dividing weight (in kg) by height (in metres). Used as an indicator of obesity and being overweight.

Commercial Floor Area Ratio – A ratio calculated by dividing the total area of a commercial building footprint in a parcel by the total land area (parcel size).

Complete Streets – Roadways designed to provide safe, attractive and comfortable use for all users; including pedestrians, motorists, cyclists and public transit.

Connectivity – The extent to which urban form permits or restricts the movement of people and goods through the built environment.

Dense Development – Urban spaces and built environments that make efficient use of available space.

Empirical – Information acquired through the means of observation or experiment.

Environmental Predictors – Components of the built and natural environment which have a causal relationship between people and an investigated outcome.

Evidence-Based Approach – Decision making based upon empirically gathered evidence.

Multiuse Trail System – Networks of pathways that provide an active transportation opportunity for users.

MVPA – Moderate to vigorous physical activity (according to the Canadian Physical Activity Guidelines).

Neighbourhood Schools – Schools which are centrally located within the fabric of a community or neighbourhood, providing students with the opportunity to walk or bike to school.

Nitrogen Oxides – any oxide of nitrogen formed by the action of nitric acid on oxidizable materials; present in car exhausts and harmful to human health.

Significantly Correlated – An observed effect that is large enough to assert that the outcome is not by chance.

Street Connectivity – extent that the street network permits or restricts the movement of people and goods. Usually operationalized as density of intersections in a neighbourhood

Street Trees – Trees situated in the road right of way, planted and maintained by the City of London. Recognized as a strong predictor of active transportation.

Utilitarian travel – Journeys taken for purpose; to work, shop, school, or play.

Volatile Organic Compounds – Harmful airborne organic chemicals with significant negative impact on individual health.

Walkability – The extent to which a built environment is capable of being traversed by foot. Often measured using a synthesis of multiple predictors of walking (including the presence of street trees, sidewalks, multiuse pathways, etc.)

References

1. City of London (2004).Transportation Master Plan, p.79.
2. Public Health Agency of Canada (2010).What is Active Transportation?
<http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/at-ta-eng.php> (Accessed on May 3, 2012).
3. City of London (2004).Transportation Master Plan, p.79
4. Civic Works Committee. (2012, June 19). Agenda III Scheduled Items: 5:00 p.m. – Acting Executive Director, Planning, Environmental and Engineering Services and City Engineer – London 2030 Transportation Master Plan. Retrieved from <http://sire.london.ca/mtgviewer.aspx?meetid=311&doctype=AGENDA>
5. Canadian Community Health Survey, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care
6. Katzmarzyk, P.T., & Janssen, I. (2004). The economic costs associated with physical inactivity and obesity in Canada: An update. *Canadian Journal of Applied Physiology*, 29(1): 90-115.
7. Ontario Mortality Data, Ontario Ministry of Health and Long-Term Care, IntelliHEALTHONTARIO, Date Extracted: April 20, 2012; Population Estimates, Ontario Ministry of Health and Long-Term Care, IntelliHEALTHOntario, Date Extracted: April 20, 2012
8. Statistics Canada (2007).London, Ontario (Code3539036) (table).2006 Community Profiles. Statistics Canada Catalogue no. 92-591-XWE.Ottawa. Released March 13, 2007.
<http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E> (accessed May 20, 2012).
9. Statistics Canada (2007).London, Ontario (Code3539036) (table).2006 Community Profiles. Statistics Canada Catalogue no. 92-591-XWE.Ottawa.Released March 13, 2007.
<http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-591/index.cfm?Lang=E> (accessed May 20, 2012).
10. Buliung, R. N., Mitra, R., & Faulkner, G. (2009). Active school transportation in the greater toronto area, canada: An exploration of trends in space and time (1986-2006). *Preventive Medicine*, 48(6), 507-512.
11. Larsen, K, Gilliland, J., Hess, P.(2011). Route based analysis to capture the environmental influences on a child's mode of travel between home and school. *Annals of the Association of American Geographers*.
12. Canadian Community Health Survey, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care
13. Larsen, K, Gilliland, J., Hess, P.(2011). Route based analysis to capture the environmental influences on a child's mode of travel between home and school. *Annals of the Association of American Geographers*.

14. Toronto Charter for Physical Activity, Global Advocacy Council for Physical Activity, International Society for Physical Activity and Health, May 20, 2010. www.globalpa.org.uk
15. Boone-Heinonen, J., Jacobs Jr., D. R., Sidney, S., Sternfeld, B., Lewis, C. E., & Gordon-Larsen, P. (2009). A walk (or cycle) to the park. active transit to neighborhood amenities, the CARDIA study. *American Journal of Preventive Medicine*, 37(4), 285-292.
16. Sirard, J. R., Riner Jr., W. F., McIver, K. L., & Pate, R. R. (2005). Physical activity and active commuting to elementary school. *Medicine and Science in Sports and Exercise*, 37(12), 2062-2069.
17. Gordon-Larsen, P., Boone-Heinonen, J., Sidney, S., Sternfeld, B., Jacobs, DR., & Lewis, C.E. (2009) Active commuting and cardiovascular disease risk: the CARDIA study. *Archives of Internal Medicine*, 169(13), 1216-1223.
18. Lawrie, J.J., Norman, T.P., Meletiou, M., and O'Brien, S.W. (2006). Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities. *Transportation Research Board News*, 242: 32-34.
19. Garrett-Peltier, H. (2011). Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts. Political Economy Research Institute: University of Massachusetts, Amherst.
20. Garrett-Peltier, H. (2011). Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts. Political Economy Research Institute: University of Massachusetts, Amherst.
21. Wang, G., Macera, C.A., Scudder-Soucie, B., Schmid, T., Pratt, M., & Buchner, D. (2005). A cost-benefit analysis of physical activity using bike/pedestrian trails. *Health Promotion Practice*, 6 (2), 174-179.
22. Frank, L.D., Greenwald, M.J., Winklerman, S., Chapman, J., and Kavage, S. (2010). Carbonless footprints: Promoting health and climate stabilization through active transportation. *Preventative Medicine*, 50 (SUPPL), S99-S105.
23. Frank, L., Sallis, J., Conway, T., Chapman, J., Saelens, B. and Bachman, W. (2006). Many Pathways from Land Use to Health. *Journal of American Planning*. 72,1, 75-87.
24. Larsen, K., Gilliland, J. Hess, P., Tucker, P, Irwin, J, He, M. (2009). Identifying influences of physical environments and socio-demographic characteristics on a child's mode of travel to and from school. *American Journal of Public Health*, 99 (3), 520-526.
25. Babey, S. H., Hastert, T. A., Huang, W., & Brown, E. R. (2009). Sociodemographic, family, and environmental factors associated with active commuting to school among US adolescents. *Journal of Public Health Policy*, 30 (SUPPL. 1), S203-S220.
26. Larsen, K, Gilliland, J., Hess, P.(2011). Route based analysis to capture the environmental influences on a child's mode of travel between home and school. *Annals of the Association of American Geographers*, 102 (X), 1-18.

27. Larsen, K, Gilliland, J., Hess, P.(2011). Route based analysis to capture the environmental influences on a child's mode of travel between home and school. *Annals of the Association of American Geographers*, 102 (X), 1-18.
28. Larsen, K., Gilliland, J. Hess, P., Tucker, P, Irwin, J, He, M. (2009). Identifying influences of physical environments and socio-demographic characteristics on a child's mode of travel to and from school. *American Journal of Public Health*, 99 (3), 520-526.
29. Berrigan, D., Pickle, L. W., & Dill, J. (2010). Associations between street connectivity and active transportation. *International Journal of Health Geographics*, 9.
30. Butler, G. P., Orpana, H. M., & Wiens, A. J. (2007). By your own two feet: Factors associated with active transportation in Canada. *Canadian Journal of Public Health*, 98(4), 259-264.
31. Krizek, L., El-Geneidy, A.M. & Thompson, K. (2007). A detailed analysis of how an urban trail system affects the travel of cyclists. *Transportation*, 34 (5), 611-624.
32. Li, F., Harmer, P. A., Cardinal, B. J., Bosworth, M., Acock, A., Johnson-Shelton, D., et al. (2008). Built environment, adiposity, and physical activity in adults aged 50-75. *American Journal of Preventive Medicine*, 35(1), 38-46.
33. McDonald, N. C., Deakin, E., & Aalborg, A. E. (2010). Influence of the social environment on children's school travel. *Preventive Medicine*, 50(SUPPL.), S65-S68.
34. U.S. Department of Transportation (2004). Summary of Travel Trends: 2001 National Household Travel Survey .
35. Larsen, K., Gilliland, J. Hess, P., Tucker, P, Irwin, J, He, M. (2009). Identifying influences of physical environments and socio-demographic characteristics on a child's mode of travel to and from school. *American Journal of Public Health*, 99 (3), 520-526.
36. City of London (2006). Official Plan - Section 18.2.11 - Public Transit Policies - II, c. http://www.london.ca/Official_Plan/PDFs/Chapter-18.pdf (Accessed on May 20, 2012).
37. City of London (2006). Official Plan - Section 18.2.2 –Transportation Network Corridors. Accessed on May 20, 2012, at http://www.london.ca/Official_Plan/PDFs/Chapter-18.pdf (Accessed on May 20, 2012).
38. City of London (2006). Official Plan - Section 11.1.1 – Design Principles - VII. Accessed on May 20, 2012, at http://www.london.ca/Official_Plan/PDFs/Chapter-11.pdf (Accessed on May 20, 2012).
39. City of London (2006). Official Plan - Section 11.1.1 – Design Principles - VIII. Accessed on May 20, 2012, at http://www.london.ca/Official_Plan/PDFs/Chapter-11.pdf (Accessed on May 20, 2012).
40. City of London (2006). Official Plan - Section 18.2.11 - Public Transit Policies - IV, c. Accessed on May 20, 2012, at http://www.london.ca/Official_Plan/PDFs/Chapter-18.pdf (Accessed on May 20, 2012).

HEALTHY CITY

Active London

**Evidence-Based Recommendations for Policies
to Promote Walking and Biking**

