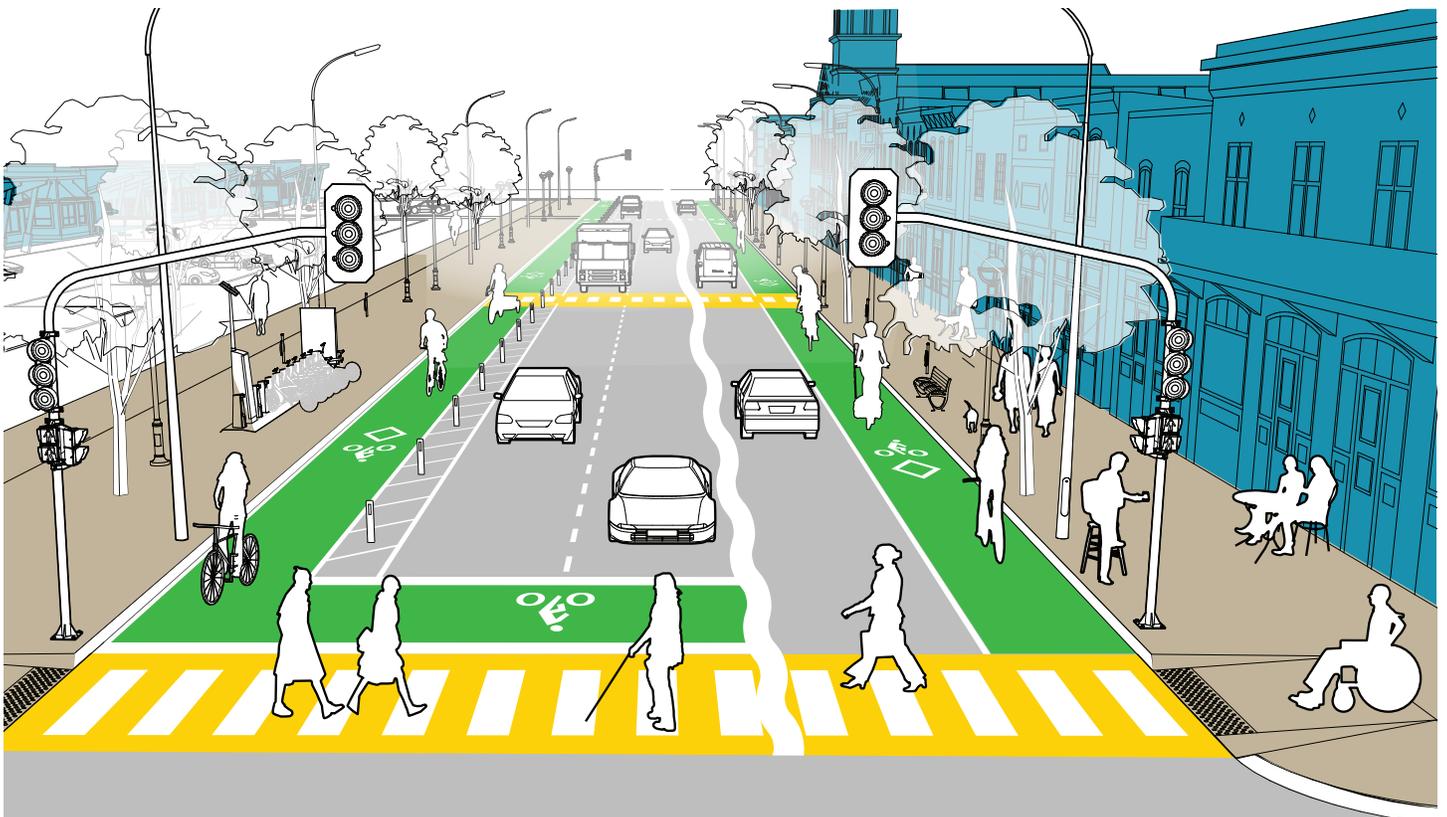


Healthy Streets

Jurisdictional Review

October 2014



Reference

Toronto Public Health. Healthy Streets: Jurisdictional Review. October 2014. City of Toronto.

Copies

Copies of this report can be downloaded at: <http://www.toronto.ca/health>

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1. Introduction

In May 2013, Toronto's City Council recommended that city staff develop Complete Streets Guidelines to help reshape Toronto streets. In advance of the development of the Complete Streets Guidelines, Toronto Public Health (TPH) has commissioned a series of reports. Their purpose is to review the available research evidence in order to inform the City about how the design elements of Complete Streets are associated with more active lifestyles and better health. The reports are: Healthy Streets: Evidence Review; Healthy Streets: Design Features and Benefits; and this report the Jurisdictional Review.

This report deliberately sought to build on other jurisdictions' experience with Complete Streets by speaking with individuals who have been involved with decisions regarding design choices, trade-offs, and prioritizations that have been made in the absence of perfect information. The report's focus is on the health lens. This evidence and practical experience helped to inform the project's associated literature review. The three reports from TPH will subsequently be used to help inform the development of Toronto's Complete Street guidelines to make them as supportive of population health as possible.

Locations were selected by focusing on jurisdictions similar to the City of Toronto (e.g. geographic size, population, neighbourhood contexts, type of built environments and streets). Interviewees came from North American jurisdictions with 4 being Canadian.

Section 2 provides jurisdiction overview information. Highlights resulting from the interviews, including photos and cross-sections, are provided below in Section 3. Section 4 provides some recommended next steps. Key themes were identified during analysis from each question (see Section 5).

2. Key Informant Jurisdiction Overview

Boston, Massachusetts (USA)

- In 2009 Mayor Menino famously declared “The car is no longer king in Boston” (http://contextsensitivesolutions.org/content/reading/boston_complete_streets/) and appointed a Complete Streets Advisory Committee to develop a more inclusive approach to planning and design of the city’s transportation network (not a Complete Streets policy per se).
- Boston’s Complete Streets Guidelines were developed over a period of time and have been in use since 2011. A book version of the guidelines, and accompanying website, was released in 2013 (<http://bostoncompletestreets.org/>).

Calgary, Alberta (CAN)

- Calgary was the first city in Canada to adopt a Complete Streets policy in 2009, approved in the Municipal Development Plan and the Calgary Transportation Plan.
- In 2010 a Complete Streets Program Charter was developed and approved by the City’s Transportation Leadership Team, which set out parameters for a multi-phase, three year program to develop and deliver a Complete Streets Design Guide.
- Interim guidelines were released in 2010 and 2011 (<http://www.calgary.ca/Transportation/TP/Pages/Planning/Calgary-Transportation-Plan/Complete-Streets.aspx>), with the final guideline to be released in 2014.

Chicago, Illinois (USA)

- In 2006 Chicago adopted a Complete Streets policy.
- In 2009 Cook County issued a Complete Streets policy by executive order and it was officially adopted as an ordinance in 2011.
- In 2010 the Chicago Department of Transportation issued a Complete Streets Policy Implementation report recommending the development of Complete Streets guidelines.
- In 2012 Cook County released “Complete Streets Complete Networks: A Manual for the Design of Active Transportation” (<http://www.atpolicy.org/Design>), funded by a “Putting Communities to Work” public health program.
- In 2013 Chicago’s Complete Streets Design Guidelines were released (<http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf>) and a Chicago Complete Streets website was launched (<http://chicagocompletestreets.org/>), funded through a federal grant awarded to the Consortium to Lower Obesity in Chicago Children (CLOCC).
- Active Transportation Alliance was a member of the consultant team that developed the guidelines.

Edmonton, Alberta (CAN)

- On May 22, 2013 Edmonton City Council approved a Complete Streets Policy and accompanying Complete Streets Guidelines (http://www.edmonton.ca/city_government/city_vision_and_strategic_plan/complete-streets.aspx).
- Edmonton is the fourth city in Canada to adopt a Complete Streets policy.
- Edmonton's Transportation Master Plan identified a need for Complete Streets to help implement the seven goals established in the plan, one of which is health and safety (http://www.edmonton.ca/city_government/city_vision_and_strategic_plan/the-way-we-move.aspx).

Hennepin County, Minnesota (USA)

- Hennepin County adopted a Complete Streets Policy in 2009, the first Minnesota county to do so. (<http://www.hennepin.us/completestreets>) Since then, 27 Complete Streets policies have been adopted elsewhere in Minnesota.
- The National Complete Streets Coalition recognized Hennepin County as having one of the top policies in the U.S. (<http://www.smartgrowthamerica.org/documents/cs/resources/cs-in-minnesota.pdf>)

New York City, New York (USA)

- In 2008 NY DOT released *Sustainable Streets* (<http://www.nyc.gov/html/dot/html/about/stratplan.shtml>), New York's first transportation policy and in 2009 released a Street Design Manual (<http://www.nyc.gov/html/dot/html/pedestrians/streetdesignmanual.shtml>) that incorporated a complete streets approach and resulted in the implementation of numerous complete street roadway designs.

Ottawa, Ontario (CAN)

- In 2013 Ottawa incorporated Complete Streets policy language into its Transportation Master Plan as part of the regular five-year update. This included direction to staff to adopt new Complete Streets Guidelines for road design and maintenance. (<http://ottawa.ca/en/preliminary-policy-proposals/4-complete-streets>)

Philadelphia, Pennsylvania (USA)

- In 2009 Philadelphia passed an executive order to develop a Complete Streets Policy.
- In 2012 Philadelphia released a Complete Streets Design Handbook and a bill was passed that mirrored what was in the handbook. The Streets and Planning department subsequently passed regulations which gave the force of law to the processes outlined in the bill and handbook. (<http://philadelphiastreet.com/complete-streets.aspx>)

San Francisco, California (USA)

- San Francisco adopted a local Complete Streets policy in 2005 that was updated in 2010. (<http://www.sfbetterstreets.org/why-better-streets/designing-complete-streets/>) The updated policy was predated by the Transit First Policy (1973) and the Better Streets Policy (2006).
- In 2006, the Metropolitan Transportation Commission adopted a regional policy with a Complete Streets checklist. (http://www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm)

Waterloo, Ontario (CAN)

- In 2011 the City of Waterloo adopted a Complete Streets Policy into its Transportation Master Plan (<http://www.waterloo.ca/en/government/transportationmasterplan.asp>)
- Waterloo is the second municipality in Canada to adopt a Complete Streets policy.
- In 2012 the policy was incorporated in the updated Official Plan.

3. Key Themes from the Interviews

3a. Health Implications of Street Designs

There was a high-level awareness amongst the 16 key informants regarding the relationship between health, transportation, and the built environment. The health benefits associated with facilitating active transportation are taken as a given and viewed as obvious and common sense.

However, for the most part, specific health impacts are not currently being considered or evaluated by transportation and planning staff when design choices are being made. Each key informant was asked about five possible health implications of different street design choices:

- 1) safety/risk of injuries
- 2) levels of physical activity
- 3) harmful air emissions
- 4) shade, heat islands, extreme heat events, UV exposure
- 5) mental health/socialization & social connectedness

Of these, only the first – safety/risk of injuries – was an important consideration for every jurisdiction. Several municipalities had targets associated with reduction in traffic collisions, fatalities and injuries. However, with the exception of San Francisco, this data is not fed back into the decision-making loop regarding specific infrastructure treatments.

As one key informant put it: “Health is a great issue to sell our work, but it’s not a great issue to drive our work.” In fact, transportation infrastructure decisions within the participating municipalities (with the notable exception of San Francisco) are not typically data-driven or evidence based at all, health-based or otherwise. Instead, transportation infrastructure decisions are typically made based on other factors including engineering standards, design guidelines, professional judgment, and commonly accepted or best practice.

3b. Impact of Speed

The impact of speed was a common recurring theme throughout the interviews. Most jurisdictions interviewed are working on implementing urban road design features (e.g. traffic calming) that discourages excessive automobile traffic and speed in order to improve the livability and safety of all road users. The speed reduction measures that were highlighted by those participating in the interviews included:

- a) Reducing turn radii. Narrowing the turn radii at corners prevents high-speed turning movements by right-turning vehicles and thus increases the safety of pedestrians. However until recently it has been common practice for most intersections in North American cities to be built with wide curb radii in order to

facilitate easier turning for large vehicles such as fire trucks and buses. The interviews revealed that this is changing. The majority of the jurisdictions that participated in the interview process identified that it is now standard practice in their cities to tighten turn radii in order to improve pedestrian safety (see more in Section 3d about trade-offs and Section 4d about strategies for prioritizing trade-offs).

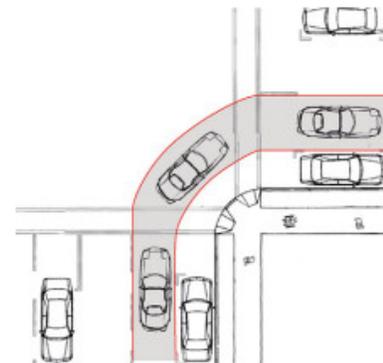
- b) Reducing the size of the design vehicle. Related to the point above, in order to design a street that is safer for pedestrians with sidewalk extensions at the corners and narrow traffic lanes to decrease speeding and accommodate bike lanes, the size of the “design vehicle” needs to be reduced in the street designs. Interview participants from Chicago, Edmonton and San Francisco specifically mentioned the importance of this. In San Francisco’s “Better Streets Design Guidelines”, there is a section on curb radius changes which says: “The designer should distinguish between ‘designing for’ and ‘accommodating’ the needs of large vehicles” (see Figure 1).

Design Vehicles

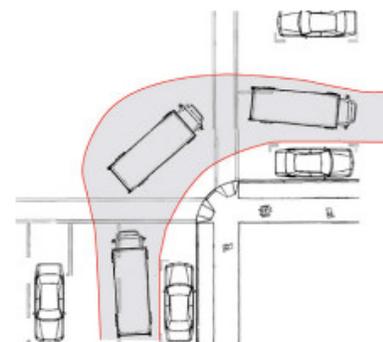
Determining a design vehicle should consider and balance the needs of the various users of a street, from pedestrians and bicyclists to emergency vehicles and large trucks, considering the volume and frequency of these various users.

The designer should distinguish between “designing for” and “accommodating” the needs of large vehicles (see definitions above).

For example, on designated transit or freight routes with frequent large turning vehicles, streets should be “designed for” these vehicles. Where large vehicles are occasional users of a street, there are low traffic volumes, or other characteristics such as high pedestrian volumes necessitate taking greater measures for pedestrian safety and comfort, designers may consider “accommodating” these vehicles.



To ‘design for’ a vehicle turn



To ‘accommodate’ a vehicle turn

Figure 1: San Francisco curb extensions (Photo Credit: “Better Streets” website: “Intersection Design: Design Features: Curb Radius Changes”, City and County of San Francisco: <http://www.sfbetterstreets.org/design-guidelines/intersection-design>)

3c. Cycle Tracks

In response to an open-ended question about specific design features that could influence health outcomes, eight out of ten jurisdictions identified the importance of cycle tracks (see Section 4c). Each jurisdiction is taking a slightly different approach to the actual design (see Section 4e), but the fundamental goal is the same which is to provide a physical separation between motor vehicles and bicycles to increase safety, especially for less experienced cyclists.

3d. Key health information trade-offs

Making trade-offs is a common transportation practice, especially in urban centres with restricted right-of-ways. However the health implications of these trade-offs are not typically considered.

Each key informant was asked about four trade-offs we have encountered in Toronto:

- 1) creating tight corners and/or narrow streets can help to reduce the number and severity of collisions with cyclists & pedestrians, but could slow down first responders;
- 2) adding street trees helps limit the urban heat island effect and provides a refuge for cyclists and pedestrians from the heat and sun, but may limit ability to provide sufficient sidewalk space for pedestrians;
- 3) adding separated bike lanes at grade with the sidewalk makes it safer and more comfortable for cyclists, but can impact on pedestrian space, comfort and safety;
- 4) removing on-street parking to install a bike lane can make it safer and more comfortable for cyclists, but removes the buffer from traffic for pedestrians.

Interestingly, the first tradeoff – regarding tight radii and first responders – is something that was previously a key issue but has since been resolved in all of the jurisdictions that were interviewed. This was accomplished primarily through changing internal practice and processes, in some cases as a result of mayoral directives. What was common between the jurisdictions was a series of face-to-face meetings with transportation staff and Fire Services, and sometimes public health. This has resulted in a change in standard practice whereby first responders are permitted to use the entire ROW and encroach into other travel lanes as necessary, and in some jurisdictions, over mountable curbs designed specifically for this purpose. The interview participants identified several reasons for this successful transition, including: Fire Services demonstrating some flexibility in adapting their standards, by Transportation Departments and Fire Services sitting down and reaching a compromise together, and by Transportation Departments providing evidence regarding the greater number of lives that could be saved by shortening pedestrian crossing distances.

The other trade-offs were considered to a lesser degree.

Several municipalities have developed good strategies for prioritizing street design decision-making. For example:

- San Francisco employs a multimodal hierarchical network perspective to all new programs. Some streets have pedestrian priority, other transit, others bikes. In the bike corridors, they eliminate the traffic stress from them by addressing the intersections with the most severe collisions on the streets that are the least comfortable for most cyclists.
- Chicago has employed a modal hierarchy into their design guidelines (Figure 2) with the pedestrian at the top. Anyone that wants to change this needs to get approval from the Complete Streets review committee. They have also incorporated a “design tree” tool to help engage the community and to guide cross-section selection (Figure 3).
- New York operates with an informal hierarchy: First put in the things that **have** to go in, then what **should** go in, and then what **can** go in. Nevertheless, considerable negotiation is still required for any street change, which may help to preserve the vibrant street life that the city enjoys.

The previous section focused on assembling and applying planning-level information at the beginning of a project. This chapter provides design guidance for creating complete streets. This section describes design trees, which serve as a starting point for the street cross section. It then provides flow charts of best practices for decision making, specifically what to prioritize in design. Lastly, geometric and operational policies are described that are supportive of complete street principles.

3.1 Modal Hierarchy

CDOT will use *modal hierarchies* to inform design and operation decisions. The default hierarchy is: **Pedestrian > Transit > Bicycle > Automobile**. Project-specific alternative hierarchies may be submitted for Compliance Committee approval. Some possible hierarchies include:

- » **Transit > Pedestrian > Bicycle > Automobile** - along a major transit corridor
- » **Bicycle > Pedestrian > Transit > Automobile** - along a bicycle priority street with bikeways or a bicycle boulevard
- » **Automobile > Pedestrian > Bicycle > Transit** - in an industrial corridor or along a parkway with no bus service

Direction, Observation, Iteration

Complete streets design requires direction, observation, and iteration. 1) *Direction* requires both leadership and support: leadership to establish CDOT policies and priorities, and support of the resulting projects and staff who implement them. 2) Street design is not simply a technical or quantitative exercise that should remain fixed for generations. Rather, street design requires *observation* of how people use the space, from drivers to people sitting on stoops. It is with these observations that we can craft the best design. 3) Unlike highway design, street design is *iterative*. At freeway speeds, one needs uniformity and consistency. As speeds slow, options expand. With more possibility comes the need to experiment and adjust based on how users react. The design of a street can always be improved.

Pedestrian First Modal Hierarchy

Figure 2: Modal Hierarchy (Source: Complete Streets Chicago: Design Guidelines. Department of Transportation. 2013)

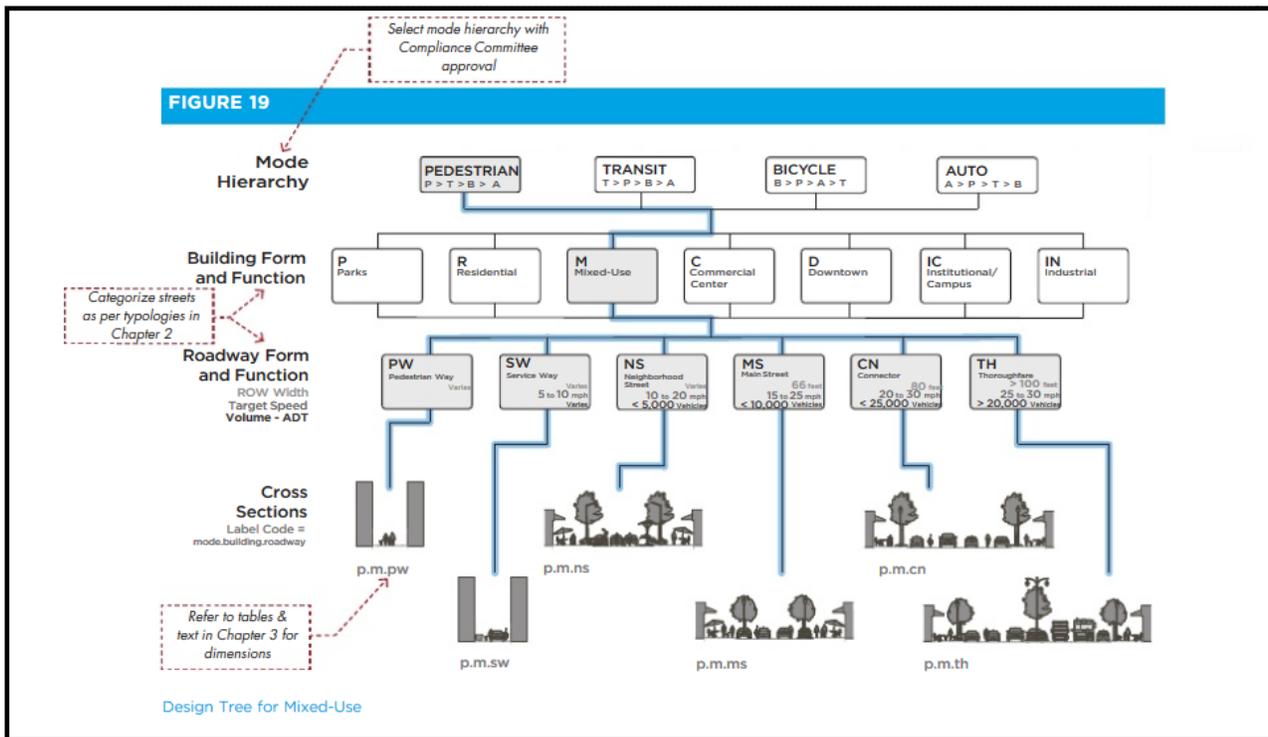


Figure 3: Design Tree (Source: Complete Streets Chicago: Design Guidelines. Department of Transportation. 2013)

4. Summarized Interview Responses

4a. Applying the health lens to Complete Streets policies

Interview question: When your jurisdiction was developing its Complete Streets policy [or approach] was there a health lens applied to it?

Table 1: Health Lens

City	Yes	Indirectly	No	Comments
Boston			X	Not initially. The jurisdiction now includes the public health dimension in their thinking as a result of public health initiating and inviting the interviewee to a public health conference in Washington, D.C.
Calgary	X			Calgary uses a triple bottom line (economic, environmental, and social) for all projects. Health is considered under “social”.
Chicago	X			But at a conceptual level (getting people to use AT) since guidelines were funded through federal grant awarded to the Consortium to Lower Obesity in Chicago Children (CLOCC).
Edmonton		X		One of the goals of the Transportation Master Plan is health and safety.
Hennepin	X			To a certain extent because their Complete Streets work is funded by public health; also for evaluation they rely on public health survey conducted every four years: Survey of the Health of all the Population and the Environment (SHAPE).
New York City		X		In the Sustainable Streets Transportation Master Plan but they don’t have a Complete Streets policy.
Ottawa	X			For moral support.
Philadelphia			X	
San Francisco	X			Yes, one of the goals of the policy is to improve public health and safety. They also use a public health data driven process to prioritize capital improvements.
Waterloo		X		But not a focus of the Transportation Master Plan.

Interview question: When your jurisdiction was developing its Complete Streets policy [or approach] were specific age/ability groups (such as seniors, youth, visually impaired, mobility impaired) considered specifically? I am interested in understanding if consideration of these groups was prioritized or otherwise emphasized. If so, please tell me how this was done. If not, why not?

Table 2: Consideration of Specific Ages and Abilities

City	Yes	No	N/A	Comments
Boston	X			They had an advisory committee comprised of a representative from the disabilities commission, from Walk Boston and a representative from the bicycling community. Their interests were given a lot of priority (particularly accessibility and pedestrian issues) including visiting some sites to see what sidewalk materials are comfortable, for example.
Calgary	X			In the Transportation Master Plan the second goal is: “Promote safety for all transportation systems users” and the third is “Provide affordable mobility and universal access for all.
Chicago	X			The pedestrian plan was developed prior to the Complete Streets policy. It prioritizes all ages. The Complete Streets Guidelines articulates all roads users of all ages and abilities should be able to travel safely/comfortably on Chicago’s streets.
Edmonton	X			The overall goal is to create a network of roadways that are designed to be safe, attractive, comfortable and welcoming to all users. Chapter 3 sets out the Complete Streets process for specific streets: 1) define project goals and scope, 2) identify modal priorities, 3) identify street type, 4) select elements, 5) make tradeoffs, and 6) confirm recommended design.
Hennepin	X			All corridor users are to be accommodated including pedestrians and cyclists and different age groups were emphasized and called out (“all ages and abilities”)
New York City			X	In the Sustainable Streets Transportation Master Plan but they don’t have a Complete Streets policy.
Ottawa	X			Complete Streets are to be for all users regardless of their age and ability. Vulnerable street users (pedestrians and cyclists) are considered first.
Philadelphia		X		The Complete Streets Design Handbook fulfills the Mayor’s executive order to ensure that the all streets accommodate “all users of the transportation system, be they pedestrians, bicyclists, public transit users, or motor vehicle drivers.” Specific age/ability groups were not prioritized or otherwise emphasized. Philadelphia has to comply with the Americans with Disabilities Act (ADA). Seniors and people with disabilities were consulted as part of stakeholder outreach.
San Francisco		X		Specific age/ability groups were not specifically mentioned in the policy. However, demographics (seniors, children, etc.) are one of the factors they look at in doing collision analysis which in turn impacts on design.
Waterloo	X			The intent of the complete streets approach in the Transportation Master Plan was to make streets more inclusive, at a high level. The local accessibility committee was consulted. Complete Streets aligns and is directly tied with the goals of Waterloo’s accessibility report that is updated annually.

4b. Health implications of different street design choices

Interview question: Toronto Public Health has identified several possible health implications of different street design choices¹. For each of the six different health impacts that I will list, please let me know if your jurisdiction considered it in your Complete Streets policy [or approach] and if so, how, and whether you have established a way to evaluate these impacts. If so, please describe your evaluation methods.

Table 3: Consideration of Health Impacts

City	Safety	Physical activity	Harmful air	Shade	Mental Health	Violent Crime
Boston	Yes	Not in Complete Streets policy	Not in Complete Streets policy	Yes (Greenscape section)	Yes (Placemaking at Intersections)	No
Calgary	No	No	Indirectly yes (VKT)	No	No	No
Chicago	Yes, one of the metrics they use	Yes, one of the metrics they use	No	Yes, in companion guide	Yes (activity mapping and social space)	Yes (link crashes & violent crime)
Edmonton	Not directly	Yes, high level	Not directly	Not directly	Not directly	Not directly
Hennepin	Yes	Yes	Yes but doesn't measure	Yes high level, don't track	No	No
New York City	Indirectly, in TMP	Yes, in PlaNYC	No	N/A	N/A	N/A
Ottawa	No	No	No	No	No	No
Philadelphia	Yes, collision reduction	No	No	No	No	No
San Francisco	Yes, but part of other plans	Yes, but part of other plans	No, not explicitly	Yes, but part of other plans	Yes, but part of other plans	Yes, but part of other plans
Waterloo	Yes, at high level in TMP, more on a case by case basis	Yes, at a high level	Indirectly in TMP – reducing vehicle trips	No – in urban design guidelines	Yes, at high level	No

¹ A Healthy Toronto by Design Report: Road to Health: Improving Walking and Cycling in Toronto, April 2012. <http://www.toronto.ca/health/hphe/pdf/roadtohealth.pdf>

4c. Specific health-supportive features and elements of Complete Streets design

Interview question: Are there any specific features or elements of Complete Streets design that your jurisdiction has identified that could influence health outcomes (either positively or negatively)?

Table 4: Elements Influencing Health Outcomes

City	Cycle Tracks*	Buffered bike lanes	Curb extensions; yield lines in front of crosswalks**	Reduce design speed with smaller design vehicle for tighter turning radii***	Pedestrian Islands
Boston	X			X	
Calgary	X				
Chicago	X	X		X	
Edmonton	X			X	
Hennepin	X				
New York City	X			X	
Ottawa	X			X	
Philadelphia	X	X			
San Francisco			X	X	
Waterloo					X

*See Figure 4 and Figure 5.

**See Figure 6 and Figure 7 .

***See Figure 8 .

Provided below are several images related to these complete street components.



Figure 4: Calgary cycle track – 7th Street (Photo Credit: Tom Thivener, City of Calgary)



Figure 5: Ottawa cycle track at sidewalk level – Main Street (Photo Credit: Kornel Mucsi, City of Ottawa)



Figure 6: San Francisco curb extensions (Photo Credit: “Better Streets” website: “Intersection Design: Design Features: Curb Extensions (Bulb-outs)”, City and County of San Francisco: <http://www.sfbetterstreets.org/design-guidelines/intersection-design/>)



Figure 7: San Francisco yield lines in crosswalk (Photo Credit: Timothy Papandreou, San Francisco Municipal Transportation Agency)

4d. Strategies for prioritizing trade-offs

Interview question: When trade-offs need to be made in a Complete Streets design, what strategies or criteria do you use to prioritize the various components and functions?

Table 5: Trade-Offs & Prioritization

City	First responders	Street trees	Bike lanes at grade	On-street parking
Boston	Flexibility regarding using entire ROW (15 metres)	Reduce tree pit to 2.5 wide x 10 long; use structural soil	Minimum standards for pedestrian clearway	Mayor taken on the political battle
Calgary	Flexibility regarding using entire ROW; detailed out intersections in guidelines		Raise cycle tracks by couple of inches; install planting in between pedestrians and bikes	Be prepared; show parking capacity in area is sufficient
Chicago	Flexibility regarding using entire ROW; change size of design vehicle; mountable curbs	Any sidewalk 9 feet or wider has street trees	Don't do it – start with buffered on-street lanes first, move up to this type of design later	
Edmonton	Flexibility regarding using entire ROW	Adhere to 1.5 metre pedestrian space; trees in boulevard; standard is trees on both sides	Do it on one side only – stated preference of potential cyclists	
Hennepin	Advocacy required, otherwise doesn't happen		Don't do it	Bike lane better for peds than traffic lane
New York City	Standard corner radii, Fire changed policy five years ago in response to letter from Commissioner arguing # of fatalities saved through traffic changes substantially more compared to # of deaths saved by shaving off time for Fire	8 feet clearance for busy sidewalks, 5 feet for lower density. City has million tree policy (since impacted by Hurricane Sandy.) Trade-off between strict hierarchy and flexibility required for city	Did one in industrial area, otherwise no room	Put parking on other side of protected bike lanes.

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City	First responders	Street trees	Bike lanes at grade	On-street parking
		vitality.		
Ottawa	Ongoing and handled on a case-by-case basis; but there are examples where they have showed the overall benefit of tighter radius.	Don't compromise on 2 metre minimum	Better than bike lanes and sidewalks at different levels (Holland moving away from this design)	Also need buffer for cyclists – put parked cars on other side of bikes
Philadelphia	Flexibility regarding using entire ROW		Don't do it	
San Francisco	Better Street Design Guidelines includes section on design vehicles (see Figure 6)	Maintain pedestrian clearway	Design issue, don't rule it out	Better than cars adjacent to the sidewalk
Waterloo	Worked through the issues with Fire during TMP process and on individual projects. Reached an agreement that narrow streets don't affect their operations. Agree to minimize the use of vertical alignment features (raised crosswalks, speed humps) which affect them more.		Don't do much of it because of regulations in HTA to merge with traffic in intersections (new Book 18 may help with this)	Bike lanes provide a buffer.

"If you are designing an auto oriented street then limit the street trees or limit the pedestrian space for trees but if pedestrians are first then street trees are essential for improving their environment. ... Even if it's not explicit there is already a hierarchy operating in most cities and it supports auto-oriented design. It's the wrong question [whether to provide wider sidewalks or street trees] because it implies that there is auto-oriented design."

4e. Unsafe or unhealthy design features

Interview question: Are there any concerns that you have, from a health and safety perspective, of any Complete Streets design features that have been implemented either in your jurisdiction or somewhere else?

Table 6: Health & Safety Concerns

City	Narrow bike lanes	Shared car/bike lanes	Two-way cycle tracks on one side of street	Bike lanes on left side of one-way streets	Large buffer required for accessibility requirements can impact on safety of other road users	Narrow medians
Boston	X					
Calgary	X					
Chicago						
Edmonton		X				
Hennepin			X			
New York City						
Ottawa						
Philadelphia				X		
San Francisco					X	
Waterloo						X

“Enough research has been done to know that narrow traffic lanes are safer because they slow down traffic.”

“There is now enough evidence to know now that protected bike lanes are safer than conventional bike lanes.”

4f. Facilitating health in Complete Streets design and decision-making

Interview question: What makes it easy/difficult for your jurisdiction to consider health in Complete Streets design and decision-making?

Table 7: Factors Affecting Consideration of Health

City	Easy	Difficult
Boston	Public awareness about obesity crisis and general awareness about health	
Calgary	Demonstrating success in other projects	Impatience of public to get accustomed to road diet changes
Chicago	Leadership of mayor, strong policy (executive order)	
Edmonton	Good standards with sidewalks on both side is a given, traffic safety that is well funded	Transportation staff don't have health background
Hennepin	Public health funding	
New York City		It's a different animal, public health needs more and different data than transportation does
Ottawa	The term "complete streets" resonates	Engineering procedures and standards are biggest obstacle
Philadelphia	Aligning with priorities of the departments - safety aligns	Health not prioritized or funded within transportation
San Francisco	Culture - San Francisco health conscious and progressive	
Waterloo	Inter-jurisdictional committee to align goals and share information	

"Good policies allow people to do the work they need to do." "Complete Streets as a term resonates better than road diet or traffic calming. Everybody understands that it's for all users."

"The typical approach in North America is to drop the bike facility as you approach the intersection so that you don't have to change anything and bikes mix with cars. This has to be resolved. If you want to get mode share above 5% it's not possible if you don't work out those design elements at intersections."

"Need to look at whose priorities these are. If you want people in transportation to care about health then make them responsible for health."

5. Next Steps

There were several areas that key informants identified that could have implications for other jurisdictions interested in incorporating health into transportation decision-making:

- Public health has epidemiological subject matter expertise and access to data sources currently unavailable to transportation divisions, which if made available, could help pinpoint source problems and making a compelling case for location-specific interventions.
- Embedding public health staff within transportation planning departments is a good way to change current transportation planning practice to include health priorities.
- Active transportation infrastructure and Complete Streets resources meet eligibility requirements for public health grant streams (e.g. Minnesota Department of Health's Statewide Health Improvement Program, U.S. Centers for Disease Control and Prevention Community Transformation Grants, Consortium to Lower Obesity in Chicago Children). Joint applications submitted by transportation and public health are successfully securing competitive grants. U.S. federal health reform programs are the most recent funding opportunities.
- Public health can play an important educational role and can help to keep transportation decisions oriented to why streets need to change and the larger goals of improving health and safety.
- There is a great deal of interest in the economic benefits of active transportation, and public health can provide critical economic health information, especially in the Canadian context, pertaining to injury and premature death prevention

Appendix A – Methods

A total of 16 Key Informants (KI) from 10 cities (5 Canadian, 5 American) were interviewed, between December 4 and 13, 2013. The KIs generally held high levels of authority in their respective cities, including: Director or Manager of Policy and/or Planning (4), Assistant Commissioner (1), Deputy Director (1), Project or Senior Engineer (2), Complete Streets Project Lead/Transportation Planner (3), Project or Program Manager (3), Planning Analyst (1), and Strategic Planner (1). Section 3a provides a few relevant basic facts about each jurisdiction that were mutually agreed upon at the start of the call with each KI.



Figure 8: Locations of Interviewees

Each KI was contacted on an individual basis via email (see Appendix B) and a mutually agreed upon time for a phone interview was chosen. Each KI was provided with an explanation of the project and informed that they could request a copy of the interview questions in advance, and two KIs requested this. One sent back a completed questionnaire prior to the interview and the interview discussion then filled in any missing gaps. One KI, during the interview, requested a copy of the questions, and these were sent following the interview.

There was an interview script (Appendix C) and set of 11 questions (Appendix D) developed jointly by TCAT, UD4H and TPH. Each interview took between 45 minutes and 1 hour. The questions were designed to gain insight into how other jurisdictions with Complete Streets policies and/or guidelines make decisions when health trade-offs or gaps in information exist.

A speaker phone was used for the majority of the calls and the interviewer took detailed notes during each interview.

Appendix B - First Contact Email Script

Dear xxx,

I am working on a project, commissioned by Toronto Public Health, and led by Urban Design 4 Health, Ltd, to explore how jurisdictions who have adopted a Complete Streets policy or approach have integrated health information into their decision-making. The City of Toronto is currently in the process of developing Complete Streets guidelines. To assist in providing a health lens, Toronto Public Health would like to use the practical experience of other jurisdictions to help inform these guidelines.

I would like to request a telephone interview with you (maximum of one hour) at a time that is convenient for you.

[for contacts who were already interviewed by TS:] Your name was provided to me by Emma Feltes, from Transportation Services at the City of Toronto, who interviewed you earlier this fall in relation to the same topic. This interview will not duplicate questions you were asked previously. This interview will focus specifically on finding out how your jurisdiction has made Complete Streets policy choices in circumstances of limited health evidence or in cases of health trade-offs.

[For all other contacts:] I am contacting you because of your expertise and experience with Complete Streets policy in your jurisdiction.

I am scheduling interviews in the time period Dec 2-13. Please let me know your availability and the best number to call you. I would be happy to provide the questions in advance, if you would like.

Thank you very much.

Nancy Smith Lea
Director
Toronto Centre for Active Transportation (TCAT)
Clean Air Partnership
75 Elizabeth Street
Toronto, ON M5G 1P4

Appendix C - Interview Script

As you know, I am working on a project commissioned by Toronto Public Health, and led by Urban Design 4 Health, Ltd, to explore how jurisdictions who have adopted a Complete Streets policy or approach have integrated health information into their decision-making. The City of Toronto is currently in the process of developing Complete Streets guidelines. Toronto Public Health would like to use the practical experience of other jurisdictions to help inform Toronto's guidelines.

I have a series of 11 questions that I will ask you. The interview will take no more than an hour. To facilitate my summarizing of the information shared during our call I will be taking notes as we talk but my notes will not be used to make verbatim transcripts. Do you have any questions before we start?

Appendix D - Interview Questions

	Question	Probes
1	These are the basic facts as we understand them about Complete Streets in your jurisdiction. [CS policy, guidelines, date, size or jurisdiction] Can you confirm that we have this right? Is there anything missing from this basic description?	
2	When your jurisdiction was developing its Complete Streets policy [or approach] was there a health lens applied to it? If so, please tell me how this was done. If not, why not?	What health factors or evidence was considered? How did the final policy [or approach] incorporate health? Was your public health agency involved in developing your Complete Streets policy [or approach, or guidelines]? If so, what was their involvement? What role did they play?
3	When your jurisdiction was developing its Complete Streets policy [or approach] were specific age/ability groups (such as seniors, youth, visually impaired, mobility impaired) considered specifically? I am interested in understanding if consideration of these groups was prioritized or otherwise emphasized. If so, please tell me how this was done. If not, why not?	
4	Toronto Public Health has identified several possible health implications of different street design choices ² . For each of the six different health impacts that I will list, please let me know if your jurisdiction considered it in your Complete Streets policy [or approach] and if so, how, and whether you have established a way to evaluate these impacts. If so, please describe your evaluation methods.	1) safety / risk of injuries (should see decline, especially for vulnerable road users, and low-socioeconomic status groups) 2) levels of physical activity (should see increase, especially for young/old and low-SES) 3) harmful air emissions (should see decrease) 4) shade (should see increase) 5) mental health (should see increase) 6) violent crime (should see decrease) /

² A Healthy Toronto by Design Report: Road to Health: Improving Walking and Cycling in Toronto, April 2012. <http://www.toronto.ca/health/hpbe/pdf/roadtohealth.pdf>

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	<ol style="list-style-type: none"> 1) safety / risk of injuries 2) levels of physical activity 3) harmful air emissions 4) shade, heat islands, extreme heat events, UV exposure 5) mental health/ socialization & social connectedness 6) violent crime / personal safety 	<p>personal safety (should see increase)</p> <p>If people start talking about specific features or elements of Complete Streets design, ask them to hold off on describing in detail for now and focus on evaluation of health impacts.</p> <p>Other prompts, time permitting:</p> <ol style="list-style-type: none"> 1) Is there someone other than you in your jurisdiction who is involved in complete streets design features from a health perspective? 2) Are there other similar topics to the ones I listed that you focus on? If so, how did these new topics become a priority? Are they still a priority at the project phase you are in? 3) Have you thought about the issues I listed previously as being related to health?
5	Are there any other health implications of different street design choices that your jurisdiction has identified that were not mentioned in the previous question?	
6	Are there any specific features or elements of Complete Streets design that your jurisdiction has identified that could influence health outcomes or that have been shown to be health-supportive through an evaluation you conducted (either positively or negatively)? (Describe them)	<p>For example, different types of bike lane designs (cycle tracks versus sharrows) that positively impact cycling mode share and injury reduction more than others or width of street (e.g., wider to accommodate all uses or narrower requiring prioritization of uses).</p> <p>If people start talking about broad trends from the literature, tell them we are interested in specific aspects of design rather than overall trends.</p>
7	We are interested to learn about what trade-offs you have encountered in designing Complete Streets, and what strategies or criteria you use to prioritize the various components and functions. I will provide a list of four trade-offs that we have experienced here in Toronto. For each one, please let us know if this is something that has been an issue for you as well and if so	At the end of the list, ask if there any other trade-offs that they have encountered in their jurisdiction. If so, describe them and how they were handled.

	<p>how decisions were made about how to prioritize.</p> <ol style="list-style-type: none"> 1) Creating tight corners and/or narrow streets can help to reduce the number and severity of collisions with cyclists & pedestrians but could slow down first responders. 2) Adding street trees helps limit the urban heat island effect and provides a refuge for cyclists and pedestrians from the heat and sun, but may limit ability to provide sufficient sidewalk space for pedestrians. 3) Adding separated bike lanes at grade with the sidewalk makes it safer and more comfortable for cyclists but can impact on pedestrian space, comfort and safety. 4) Removing on-street parking to install a bike lane can make it safer and more comfortable for cyclists but removes the buffer from traffic for pedestrians. 	
8	<p>Are there any concerns that you have, from a health and safety perspective, of any Complete Streets design features that have been implemented either in your jurisdiction or somewhere else?</p>	<p>For example,</p> <ul style="list-style-type: none"> • on-street bike lanes next to parked cars (in the “door” zone), • on-street bike lanes that are too wide or narrow, • off-street bike paths at the same level as sidewalks, • speed humps, • streets that are too wide in order to accommodate all road users, • minimum lane/road width for emergency, bus, and other large vehicle access, • exposure of pedestrian/cyclists to vehicular emissions, which are linked to poor respiratory and cardiovascular health and possibly even diabetes, • additional trees helping to clean the air, but also concerns about reduce air circulation and their potential to produce allergens that aggravate

		respiratory conditions.
9	What makes it easy/difficult for your jurisdiction to consider health in Complete Streets design and decision-making?	
10	Do you have any cross-sections, plan views, images or photos or other suggestions for sources of Complete Streets in your jurisdiction that maximize health benefits that you would be willing to share with us for our final report to Toronto Public Health?	
11	Is there anything else you'd like to share with me that would help us better understand how your jurisdiction integrated health information into your decision-making, and to understand how you made choices in circumstances where information was limited or indicated potential trade-offs associated with specific design choices?	

