Re-orienting Mid-Sized City Downtowns for Pedestrians

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Introduction

Much has been written about the importance of bringing people, particularly pedestrians, back to downtowns of cities of all sizes. Pedestrians in downtowns impact the success and health of central business districts (CBD) and overall city functioning (Filion et al., 2004, Filion and Hammond, 2009, Gehl, 2011, Jacobs, 1961, Speck, 2012). Cities, and especially downtowns that lack a supportive human or pedestrian environment, struggle to be attractive places for employment, liveability, retail, recreation and socializing and fuel a reinforcing cycle of “no people, no people” (Gehl, 2010 and 2011) and the dispersion of urban form (Filion et al., 1998).

This paper examines the performance of the built environment and pedestrian infrastructure for creating safe and lively places for people to travel, recreate and socialize in three mid-sized cities (metropolitan regions with 100,000 to 600,000 populations), with a specific focus on the hallmark of a downtown, its central street. It discusses the importance of the built environment for the well-functioning downtown areas as well as the conditions that support three core outdoor activity patterns identified by Jan Gehl. We also demonstrate how such conditions are tied to overall planning orientations i.e., automobile and separated uses or pedestrian and integrated/mixed uses.

One of the best indicators of a great place, including a downtown, is whether people are present in its central street – walking, shopping, stopping, chatting, etc. or as Gehl calls it, life. Roads and their right-ways are a city’s largest public space. The planning and design of any street can support a variety of uses and users reflecting priorities and performance of the infrastructure itself. The central street in downtowns showcase the best of what a city offers clustered within walking distance i.e., commerce, culture, transit and amenities.

Demographic shifts related to two large population segments, aging baby boomers and millennials who desire accessibility to amenities, transit, walkability and lower expenses, provide the timely context for the importance of this study. These lifestyle preferences, associated urban policy and land use strategies (such as revitalization efforts and significant government investments directed to public infrastructure in key urban areas, in transit, roads and educational buildings), illuminate specific development and planning opportunities for downtowns. Canadian mid-sized cities would be wise to leverage these factors for successful transformation of their downtowns into safe, vibrant and sustainable centres oriented around pedestrians.

Making the case

Pedestrians walking downtown

Intense pedestrian activity in North American urban regions occurs in shopping malls, traditional commercial streets, parks and trails. In a healthy region, the downtown would represent the peak of pedestrian movement. The growth of shopping malls and big box stores on city peripheries has reduced the concentration of pedestrians in the downtown. Long-term vibrancy of the downtown, however, requires investment in the pedestrian experience. Pedestrian conditions are key to the success of a downtown. The better these conditions, the more people will walk, stay and congregate, generating intense synergy effects. Appealing walking conditions are also conducive to longer pedestrian journeys,, extending the area where downtown synergies take place and bringing pedestrian animation and vibrancy to more areas of the city. Synergies can be defined as the interactions between activities to their mutual benefit. Examples of downtown synergies relying on pedestrian movement include people walking from the office to a restaurant,
from the hotel to the convention centre or the theatre, from their downtown apartment to their office or to cultural activities, and so on.

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As the primary mode of transportation-located within a downtown area, walking constitutes the main vector interconnecting activities in a downtown setting. Walking is therefore critical to the generation of synergy effects between different categories of downtown activities. Such pedestrian-based synergy effects confer a unique locational advantage to downtown activities, especially given the tendency in urban North America to separate land uses by function, often in large specialized zones, thereby making reliance on the car a near necessity and ruling out functional walking.

The attention we give to the economic advantages of high downtown walking volumes should not cause us to overlook the other benefits of walking. Downtown pedestrian movements also foster health benefits as well as feelings of happiness originating from taking part in the sidewalk animation of an urban area and from the sense of freedom associated with walking (Frank, Engelke and Schmid, 2003).

Pedestrians recreating and socializing downtown

Gehl has explored how cities create places for people by giving priority to pedestrians engaged in a range of activities, many of which are for non-travel purposes. He identifies three types of outdoor human activities: necessary, optional or recreational and social activities.

- **Necessary activities** are those that one has to do like going to school or work, waiting for a bus or bringing goods to customers and these typically occur under all conditions or in spite of conditions.
- **Optional activities** are recreational such as walking along a promenade, standing to view, sitting to enjoy, playing or people watching. These are the most popular city activities though require good quality conditions, climate (or weather protection).
- **Social activities** are exchanges in life activity and can range from chance encounters to planned common activities like markets or protests. Greeting exchanges, stopping to talk, small talk at a bus stop or bench and asking directions are other examples. This type of activity includes spontaneity and unpredictability such as, children or youth hanging out or playing. Without these social activities, a place, including a street, is lifeless.

Gehl tells us that the greatest urban attraction is people and city life: it is by watching, listening and experiencing others that we gather information about people and society, and this also serves as entertainment. In this way, these pedestrian non-travel activities like recreating and socializing, also generate synergies as with walking. For Gehl and Jacobs, the automobile is the death of life, the gradual breakdown of opportunities of city space to function as meeting place.
more time in the downtown is a simpler and more effective strategy than increasing numbers of visitors to animate a place according to both Gehl and Filion. This is interesting in light of North America’s relatively new and focused attention on active transportation i.e., necessary walking and suggests that greater consideration be given to non-travel pedestrian activities in shaping our places, downtowns and central streets.

Built environment for all pedestrian activities

The road right-of-way (ROW) physically frames the built environment and all experience for all road users, motorized and non-motorized. For pedestrians, sidewalks on each side of the street are the only near-dedicated, legal space. Other spaces are shared and include:

- building frontages (with utility hookups, patios, signs, awnings, steps and ramps),
- planting strips (with trees, light posts, signs, planters, bike parking and seating),
- curbs (with drains, grates and parking provisions), and
- road crossings (with timed, regulated permissions to use that space).

This means that the proportion of pedestrian (and cycling) space within a central street’s ROW is much smaller relative to motorists’.

We divided environmental conditions into four categories that shape walking, recreating and socializing activities: safety, buildings, spaces and planning orientation. Each category consists of measurable criteria. We identified a total of seventeen (17) criteria. The categories and criteria were developed by combining factors from Gehl’s Life Between Buildings and Cities for People, Filion’s healthy downtown study results as well as known walkability criteria. Though these can be quantified, they produce qualitative experiences.
Safety

Safety, perceived and actual, is a pre-requisite to all outdoor activities including the decision to walk, recreate or socialize in downtowns and on streets. The risk of collisions, injuries and fatalities for pedestrians and feeling unsafe, impact whether people tolerate the environment for necessary activities like walking, shopping, playing etc.

Roads, automobile speeds, volumes and noise pose the greatest real and perceived safety risks to pedestrians. For example, pedestrians have been shown to have a 90% chance of survival when struck by a car travelling at 30 km/h or below, but less than 50% chance of surviving an impact at 45 km/h. Pedestrians have almost no chance of surviving an impact at 80 km/h (WHO, 2004). This of course, does not account for acute and chronic injuries. Roads can be designed and calmed to reduce speed, volumes and noise. Driveways pose safety risks to pedestrians by creating conflict zones, even hidden ones in the direct path of the walker. People of all abilities must have necessary and legal space to use roads safely without being struck by automobiles. Formal and informal crossings are adapted and applied in different contexts, according to engineering standards though these are being experimented with. Some types of crossings perform better safety-wise: those with visible road markings, beacons or lights, visual and audible signals, longer time intervals to cross, smooth, even surfaces and those raised above grade. The ability to cross roads frequently to connect to other routes, and access buildings and spaces is also a safety issue. Without

Safety is measured by contrasting:

- size of the lane – one way, multiple wide lanes to two way, single and narrow lanes,
- automobile speed,
- number of traffic calming interventions,
- number of driveways, and
- road crossing types and numbers.

<table>
<thead>
<tr>
<th>Safety</th>
<th>Less protected</th>
<th>More protected</th>
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<tbody>
<tr>
<td>Lanes</td>
<td>1-way &gt;2 wide lanes</td>
<td>2-way 2 narrow lanes</td>
</tr>
<tr>
<td>Automobile speed (km/hour)</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Traffic calming interventions (street parking, corner bulbouts, corner trees)</td>
<td>None</td>
<td>4+</td>
</tr>
<tr>
<td>Crossing types and number</td>
<td>Unmarked, narrow, unknown priority</td>
<td>Zebra marks, lights/beacon, known priority</td>
</tr>
<tr>
<td>Driveways per block</td>
<td>&gt;4</td>
<td>none</td>
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</tbody>
</table>
frequent crossings e.g., long blocks, pedestrians will cross mid-block without any protection exposing themselves to collision risks.

Buildings

Interesting façades with store windows, restaurants, bars and cafés contribute to such an environment compared to long, bland walls of brick or glass. In summer patios and terraces also add to the animation of sidewalks. The match between the rhythm of space and that of time also plays a role in enhancing the walking environment (Lefebvre, 1992). The vertical and narrow façades of traditional commercial streets are better adapted to walking speeds than the wide footprints and large walls typical of newer developments. In their shopping study, Gehl et al. (2006) found that there was seven times more city life in front of active facades compared to passive facades showing that “people come where people are.”

This category was measured by:
▷ the number of vertical facades,
▷ the number of doors,
▷ the number of walls, and
▷ whether a block’s buildings showed architectural details and quality materials.

### Buildings

<table>
<thead>
<tr>
<th>Less engaging</th>
<th>More engaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical facades per block</td>
<td>0-1</td>
</tr>
<tr>
<td>Doors per block (Gehl uses per 100m)</td>
<td>0-5</td>
</tr>
<tr>
<td>Walls per block</td>
<td>10+</td>
</tr>
<tr>
<td>Architectural details per block</td>
<td>0-1</td>
</tr>
</tbody>
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Dalhousie Street, Brantford. Copyright Queen’s Printer for Ontario, photo source: Ontario Growth Secretariat, Ministry of Municipal Affairs and Housing
Spaces are areas between buildings, oftentimes framed and produced (or not) by buildings and their edges. They represent the allocation of space for different uses and users such as cars, pedestrians and cyclists. They can be accessible or inaccessible, have obstacles and can provide areas for rest, play, socializing, shade and protection from weather.

Spaces can be evaluated by considering:

- sidewalk width,
- number of trees per block,
- number of seating areas per block, and
- the presence of accessible, visible green, public or open space.
Planning orientation

We weighed the overall planning orientation by contrasting environments built for automobiles versus pedestrians (and cyclists). This would be evidenced by how compact the environment makes walking easy and quick to amenities as compared to driving—the built environment benefits of a lifestyle that supports living, working, recreating and socializing nearby. We would find clustering and mixing of land uses, an ideal and convenient condition for pedestrians to access various types of amenities and services. If dispersed, the road grid would be less direct with distances suitable for driving not walking. Land uses would be separated. In downtowns the space consumed by large volumes of cars for purposes of circulation and parking, hampers the possibility of concentrating activities within a walkable perimeter. We would expect to see few if any surface parking lots and few if any pedestrian-activated push buttons in pedestrian-prioritized downtowns and streets. Priority crossings for pedestrians and cyclists may be present and road space for cyclists would reflect a planning orientation geared to pedestrians. Also, a pedestrian’s trip begins and ends on foot, with no need for parking in the presence of transit services. Transit requires far less space than automobiles and carries large numbers of passengers into downtowns and along central streets at points of origins and destinations relative to transit stations, stops and walking distances (Ryan and Frank, 2009). Like public transit, cycling can

Criteria in this category included:

- compactness versus dispersion measured by intersection density in four 1 km² quadrants surrounding the central downtown street (representing a 10-12 minute walking catchment area to the central street),
- the extent to which priority has been given to automobiles compared to non-motorized modes of transportation throughout the corridor,
- transit service, and
- integration/mixing of land use versus separated, specialized land uses.

<table>
<thead>
<tr>
<th>Planning principles</th>
<th>Auto-centric</th>
<th>Pedestrian-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact vs. dispersed in walkshed (intersection density/1km²)</td>
<td>&lt;20</td>
<td>71-90</td>
</tr>
<tr>
<td>Traffic planning priority along CBD main street</td>
<td>Fast, auto-centric, no bike supports, many crossing buttons</td>
<td>Slow, pedestrian-oriented, multiple bike supports, no crossing buttons</td>
</tr>
<tr>
<td>Transit along CBD main street</td>
<td>No service, no cross connections</td>
<td>Every 15 mins, 300m stops, more than 1 cross connection, amenities</td>
</tr>
<tr>
<td>Integration vs. separation over street and walkshed (Rs+Cs+Is_Es)</td>
<td>Few land types, separated, specialized mono uses</td>
<td>Many mixed land types</td>
</tr>
</tbody>
</table>
Given the adverse conditions confronting them, one can see why mid-sized city downtowns have declined over the past decades. Many of these downtowns reached an economic and cultural apex in the mid-1950s before the near universal reliance on the automobile and competition from suburban malls. In response to this transition, mid-sized cities, successive efforts to prevent the decline and revitalization of downtowns.

1. The first wave included urban renewal initiatives focusing on the construction of downtown versions of the suburban shopping malls that were then being built (Filion and Hammond, 2009).
2. Subsequent measures targeted the older built environment, by upgrading store façades and infrastructures in large part by updating urban furniture. However, these interventions failed to bring substantial revitalization to mid-sized city downtowns. They were not up to task of tackling suburban competition.
3. More recently, revitalization efforts have involved economic development strategies directed at economic sectors known for their predilection for core areas and older urban sectors. This included the downtown location of public sector facilities, especially cultural and post-secondary educational establishments, housing developments and, in some instances, the introduction of LRT systems. It remains to be seen if these approaches will succeed in reversing downtown decline.

Future revitalization efforts will need to heed the pedestrian environment of mid-sized city downtowns, improving these conditions to achieve and fully benefit from pedestrian-based synergy effects. The situation prevailing in suburban multi-functional centres, developed in response to nodal growth planning objectives, sounds a warning bell for mid-sized city downtown revitalization strategies (Calthorpe and Fulton, 2001). In many cases these suburban centres have been successful in attracting different types of activities – retailing, offices, housing, public sector establishments. But in most instances, they encounter...
problems in generating synergy effects due to the poor prioritization and quality of their pedestrian environment, fragmented by large arterials and surface parking lots, and lacking street frontages adapted to the rhythm of walking (Filion, 2007). Compared to these suburban centres, most of which are greenfield developments, downtowns of mid-sized urban regions are advantaged by a traditional built texture better suited to pedestrians. But over time this texture has been disrupted by parking lots, vacant and demolished buildings and large pedestrian-phobic structures, the legacy of urban renewal initiatives. Synergy within these downtowns can also be impaired by an insufficient concentration of activities and/or a lack of complementarity between these activities.

Case studies and findings

Using Brantford, Hamilton and Kitchener downtown boundaries, we evaluated each downtown central street against our four major categories and their criteria. In Brantford, this was Dalhousie Street, and King Streets in Hamilton and Kitchener. Our assessment consisted of quantifying and contrasting ideal conditions associated with a maximum score to least favourable conditions having a minimum score. Initially, central streets were evaluated block by block on each side of the street by walking, stopping and experiencing at street-level. Next, streets were evaluated aerially, using Google Street View in 3D. We also used Google Earth and GIS to measure and confirm our data and findings.

Safety

Each central street varied considerably in their pedestrian safety performance. In many respects and apart from its western end at Victoria Street with five wide lanes, Kitchener’s King Street is closest to an ideal downtown street. It scored highest in traffic calming interventions, had fewer risky driveway interruptions, car traffic moved slower and marked
crossings were used relatively well. Oddly, despite the street modifications, very narrow crossing widths and corner crossing obstructions were problematic forcing pedestrians to enter the roadway, move around corner bollards and utility poles, exposing them to risk of car collisions, albeit slower moving cars. Still, two people were unable to walk side-by-side in several crossings without stepping outside their legal protection zone.

Hamilton’s King Street performed relatively well on safety in the International Village neighbourhood and a newly redesigned two block stretch of King on the south side at James Street, and was sufficient through its core. International Village had several traffic calming interventions and traffic generally moved slower at that end. Beginning at Catherine Street where the number of lanes increases, traffic speeds and noise considerably, the use of marked and timed crossings were well used. Risks increased along King where surface parking lots and very wide driveway interruptions existed, often unmarked and coming from below-grade.

Sections of Brantford’s Dalhousie Street performed better safety-wise where there were blocks of consistent traffic calming near the new Laurier University buildings, marked crossings and no driveways. The south side of the street had many more driveways, several unmarked crossings, and crossings with unknown priority between pedestrians and cars which lowered this central street’s safety performance.

Spaces

Brantford and Hamilton’s central street performed variably depending on the block, area and side of the street. Hamilton’s International Village consistently had trees, seating options, narrower sidewalks with occasional signage obstructions while Hamilton’s core fell short on both sides despite having wider sidewalks and fewer obstructions. Recently redesigned King Street by Gore Park in Hamilton offered more seating and although technically accessible, remains cut off for most pedestrians by the sheer road width, speeds, volumes and noise creating real and perceived safety hazards just to get there. South side of Dalhousie Street, Brantford scored better than its north side given trees, seating and the new public Harmony Square. Except for its edges, King Street in Kitchener ranked better than the other cases with its transformation and some provision of wider sidewalks, many trees and seating options and an accessible square outside City Hall. Curbside patios and raised street parking designs provide a buffer for pedestrians with clear demarcation of the clearway. However, this approach is not continuous running approximately half the distance of the downtown central street. The redesigned space also contains multiple garbage and recycling containers, proliferation of bollards, poles, and signs that although not in the clearway, feel cluttered.

Buildings

In all cases, the blocks that retained their original buildings had historical charm, many doors and when walking alongside these buildings, had a strong sense of rhythm. However, these stretches occurred sporadically and in many instances, the ground level façades had been covered up with modern treatments, leaving the second and third storeys with the heritage, noticeable only if one looks up, down the block or across the street. The heritage blocks did indeed perform better and had many more doors and an absence of walls. These included George to Queen blocks in Brantford, International Village and Catherine to Hess blocks in Hamilton and in Kitchener primarily around Queen, Gaukel and Cedar. Some newer infill buildings have attempted to create
modern vertical facades, however typically lack details with bland and too much glass, detracting from the intended effect. Those buildings mimicking heritage styles would be more successful if they had enough detail and more doors.

Every downtown case contained at least one problematic building such as a shopping mall, large hotel or government building that created long, boring stretches of walls with no windows, oftentimes windy and dark, and the larger blocks result in longer walking distances before legal crossing options are available. In both Kitchener and Hamilton, large hotels had overhead breezeways connecting to the shopping centres leaving a heavy, darkness underneath for pedestrians and visitors. In Hamilton’s case, two large hotels have also been given wide, car-oriented entrances for loading and parking that widen the road and generate vast unused space.

Sections with large institutions and government buildings also reduced the building performance due to walls, few doors, if highly modern, glass walls and they all created much more wind. In some instances, blocks that performed poorly contained a greenspace or surface parking lot.

The strength of each MSC downtown was their overall compact urban form and connectedness making walking distances to and from their CBD and central street manageable and providing route flexibility for pedestrians and cyclists.

Planning Orientation

The strength of each MSC downtown was their overall compact urban form and connectedness making walking distances to and from their CBD and central street manageable and providing route flexibility for pedestrian and cyclists. This was evidenced with mainly very high to relatively high intersection densities in Brantford, Hamilton and Kitchener downtowns, a legacy of historically planned pre-World War II tight street grids. Exceptions to this were Hamilton’s downtown core and Brantford’s southerly downtown district. In Hamilton, block sizes and central streets widths were expanded as part of major urban renewal programs 30-60 years earlier to accommodate fast, high volume automobile traffic and significant buildings that consumed large or several blocks. The southern portion of Brantford’s downtown area was redeveloped with a dispersed, indirect road pattern also around large land parcels which later became spaces for a casino, large, multi-storey parking structures, large format retail and its civic centre, a major hockey arena built in 1967 as a Canadian Centennial project.

Each city’s central street is a primary transportation corridor capable of supporting a multi-modal network although each downtown differed substantially in their integration of modes other than the automobile. Dalhousie Street, Brantford and King Street,
Hamilton to a much greater extent, remain as major thoroughfares facilitating fast movement and high volumes of cars and commuters, connecting to other fast, wide arterials and the QEW Highway in Hamilton’s case. Getting through the downtown, beyond the central street and to other areas is the goal, not stopping in the downtown. In Brantford, there is one major road alternative around the core, Clarence Avenue/Icomm Drive whereas in Hamilton, there are multiple parallel, multi-lane arterials such as York, Cannon, Barton and Hunter. Hamilton’s King Street actually widens significantly (two, one way lanes to over four) as one moves closer to the core (King and James Streets) and remains that way to access the QEW Highway just beyond the downtown boundary. Kitchener’s central street, King, has undergone a massive road transformation into what is known as a “complete street” (a street designed for everyone’s safety and use). Its two-way, two lane corridor deviates remarkably from the other cases to better accommodate non-motorized walking and cycling modes while supporting a relatively high automobile volume only with slower speeds. Kitchener also has parallel roads for cars to travel and the Highway 8 ramps to connect to Highway 401 are well beyond the downtown boundary making its central street less ideal as a highway route.

Surprisingly, none of the central streets in any of the cases had posted speed limits (though data indicated 50 km/hour) and in some stretches in all three cases, automobiles were travelling faster, particularly where roads widened or the number of lanes increased. Brantford utilized more pedestrian-activated buttons (Hamilton had none and Kitchener one) giving clear priority to motorists unless a button is pressed.

Cycling lanes were not present in any case though as part of Kitchener’s King Street transformation, a bicycle boulevard has been created whereby cyclists are encouraged to ride down the centre of the road while motorists share the road and travel at the speed of the cyclist.
During our study period, most cyclists were not using the centre lane and either preferred curbside riding or riding on the sidewalk. This would suggest that cyclists may still not feel safe or understand how to use the street, despite its redesign. Bike parking facilities were either missing or haphazard in all cases with Kitchener having more in number though still few per block. Hamilton and Brantford lacked bike parking along many blocks on both sides of the street, illustrating non-consideration and servicing of this mode. Pedestrian priority or beaconed crossings were absent from any of the cases though some intersections could warrant these given high pedestrian volumes at King and James in Hamilton, Queen and King in Kitchener and Market and Dalhousie in Brantford, for example. These intersections have more students and possibly more active nightlife.

Transit frequency and connections vary across each downtown central street. By far, Hamilton’s King Street is a strong, key transit corridor with multiple intercity and intracity bus routes, cross-connections with 5 to 10 minute service about every 200 m. Two intercity terminals (rail and bus) are nearby and within 1 km walking distances. Kitchener too, has serviced its central street and core well with multiple intracity bus routes, cross connections and with relative frequency and stops (15 minute service and approximately every 300 m). Regional rail lies within it 1 km northern quadrant though less convenient and somewhat disconnected from its intracity bus connections. Brantford is the exception with bus transit routed off and parallel to its central street connecting to its intracity and intercity Darling Street transit terminal. Like Kitchener, its regional rail station, while at its outer edge of its 1 km northern quadrant, remains accessible by walking though less convenient and disconnected from its core.

Re-orienting downtowns as places for pedestrians

Like many MSC, each downtown case and its central street and blocks differ in their progression, sometimes starkly, toward considering, planning and designing their built environments around the full spectrum of pedestrian activities as compared to automobiles. Indeed, these differences reflect the history and multiplicity of policies and downtown revitalization initiatives in effect over decades. They also point to contrasts and tensions, including within themselves, in undertaking two broad types of supportive approaches:

1. those that reprioritize central business districts and central streets for pedestrians and their mobility, and
2. placemaking approaches with a strong focus on public space design for recreational and social pedestrian activities.
Known as smart growth, an approach to mix land uses and transportation options to develop compact, walkable places for people to live, work and play, fundamentally shifts previous land use and transportation models oriented around automobiles and specialized, separated land uses. Central to downtown placemaking approaches, are putting people first to address their needs and the quality of public spaces.

**Smart growth for mid-sized city downtowns**

Smart growth policies aimed at creating safe, walkable, cyclable and transit-oriented MSC downtowns and neighbourhoods benefit not only the performance of the MSC downtowns and their central streets but have been shown to improve road safety, reduce road costs, drive new business and office relocations, increase commercial rents and property values, and support millennial and retiree lifestyles (Smart Growth America, 2015a, 2015b, 2016).

**Provincial and municipal smart growth oriented policies**

Based on smart growth principles, Ontario’s Places to Grow initiative and The Big Move integrate land use and transportation legislation, investments, policy, plans and tools that link provincial and municipal prosperity, livability and mobility to create walkable communities and downtowns in identified growth centres across the Greater Golden Horseshoe (and partly Northern Ontario). These growth centres serve as mixed use multi-modal mobility hubs. Many of these growth centres are downtowns of MSCs.

The first Growth Plan for the Greater Golden Horseshoe (GGH) from 2006 is now being updated to reflect new, higher targets for mixing land uses, employment, multi-modal transportation and housing options, and residential densities in order to create “complete communities.” Within these growth centres, integration and intensification of land use and transportation types are clustered, generating synergy effects between different categories of downtown activities.

The Northern Growth Plan (2011) addresses the unique contextual factors to develop a thriving northern regional economy grounded in the resource sector, improved transportation networks, entrepreneurship and partnerships with indigenous communities. Given the focus on MSC in this paper, only two northern cities and their downtowns meet the threshold: Thunder Bay and Greater Sudbury.

Smart growth oriented policies and plans can be found in many municipalities advancing MSC central business districts and streets for pedestrians. Through Official Plans and zoning by-laws, MSC downtown growth centres within the GGH must conform to the Places to Grow Act by leveraging their public transit to achieve targets around building intensification, and density of people and employment. Targets reflect the size of the MSC and their transit service e.g., larger MSCs like Hamilton and Kitchener have higher targets compared to a smaller MSC like Brantford. These targets help MSC downtowns add, deliver, attract and retain more pedestrians to their core whether as residents, employees or people in transit. This is especially important for MSCs to curb further low density, segregated land use development that has historically pulled residents and activity away from downtowns, fostered greater auto-dependence and damaged MSC downtowns (Filion et al., 2004). In a recent analysis of over 600 companies, Smart Growth America and Cushman and Wakefield (2015a) showed that the decision factors to move offices to downtowns (including small and MSCs) were based on walkability, transportation choices, unique office spaces, and a clean, safe environment. They then identified how towns and MSCs can proactively create the kinds of places these companies want for their employees and corporate identity. By adding residential land uses and diversifying housing types into their CBDs, mid-sized cities support convenience
and walkable lifestyles embraced by millennials, retirees and the preferences of childless households (Filion et al., 1999).

Creating walkable neighbourhoods is embedded within provincial smart growth and public transit policy. Municipalities plan for all modes of transportation through their transportation, transit and trails master plans, as well as parking, circulation, levels of service and forecasting models – the basis for prioritizing infrastructure (re)investments and design interventions. Like municipalities of all sizes, existing transportation models are weak in allocating costs, risks and benefits to non-motorized modes of transportation against better understood motorized modes. MSCs, their downtowns and central streets are particularly challenged to deviate from current transportation and parking models given how convenient automobile use and how unfamiliar sustainable modes have become in these communities and commercial districts.

Complete Street projects cost significantly less than conventional transportation projects, and delivered transportation benefits like better safety performance, more people, and were related to broader economic gains like increased employment and higher property values (2015a, 2016). They also found that the safer conditions created by Complete Streets projects avoided a total of $18.1 million in collision and injury costs in one year alone (2015). A post-project level of service evaluation of Kitchener’s downtown King Street transformation would be highly relevant to other MSCs.

**MSC downtown placemaking and design**

Central streets can become the heart of downtowns again and efforts to restore their value within MSCs as a whole and as gathering places are growing. Downtown placemaking approaches are often focused on leveraging downtown assets such as heritage buildings and spaces, developing a sense of place and improving their design. Strong, compelling downtown visions and strategies that re-engage people and stakeholders in their districts can propel revitalization efforts.

**Quality of buildings and spaces**

Municipalities, developers, building owners and leasors, engaged residents and Business Improvement Associations (BIAs) are involved in addressing the quality of buildings and spaces. Municipalities have many policy, planning and standardizing instruments to inform, plan, guide, design and implement public space and building requirements in downtowns and streets for a consistent look and feel. These include parks, waterfront and public space master plans, urban design, streetscape, transit stop and shelter, greening and bicycle parking manuals, expectations about heritage buildings, patio and retail signage permitting, seating plans, and the Accessibility for Ontarians with Disabilities Act (AODA). Compared to major policy and plans, these may seem minor and unimportant lending them to be overlooked, applied haphazardly or interpreted with wide variability.
As was clearly the case across all our MSC downtown central streets, the quality of the pedestrian environment was broken, may have been unprotected from cars and weather, interrupted, posed collision risks, had walls, missing heritage facades, may have lacked amenities such as seating and trees, had barriers in walkways, and could be cluttered.

While not comprehensive to address all of the above design aspects, two regulations may offer clearer and stronger design parameters: the AODA and new form-based codes. The purpose of AODA is to develop, implement, and enforce accessibility standards for Ontarians with disabilities. Through regulations, accessibility standards have been set for information and communications, employment, transportation, the design of public spaces, and customer service and are currently in force. All of these standards apply to MSC downtowns and along their central streets. Municipalities have specific requirements under the AODA and the regulations, including the provision of accessible transportation services, accessibility policies and plans, information and websites, new or redeveloped public spaces. Accessibility benefits more than people with disabilities. In terms of downtown roads, sidewalks and public spaces, anyone using wheels, such as parents with strollers, shoppers with buggies, visitors with suitcases, injured with crutches, and the aged with walkers would all be better served if AODA standards were implemented.

New form-based codes are regulatory tools, unlike the listed majority of design quality instruments, and address the gaps in land use, transportation and building policy. The relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks are clearly regulated.

**Figure 3: Different approaches to zoning contrasted with form-based codes (Form-based Code Institute, 2017)**

<table>
<thead>
<tr>
<th>Conventional Zoning</th>
<th>Zoning Design Guidelines</th>
<th>Form-Based Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density use, FAR (Floor Area Ratio), setbacks, parking requirements, maximum building heights specified</td>
<td>Conventional zoning requirements, plus frequency of openings and surface articulation specified</td>
<td>Street and building types (or mix of types), build-to lines, number of floors, and percentage of built site frontage specified</td>
</tr>
</tbody>
</table>
Since collision risk is greatest in downtown intersections, pedestrians need:

- to be given clear crossing priority
- high visibility crosswalks with consistent design application
- sensible alignment and wider space for multiple people
- a single, smooth surface with no trip hazards
- stop bars and greater distance between stop bar and crosswalk

Ground-level design matters:

- attracts walking, stopping and shopping vs. travelling through
- enables standing and chatting (resulting in spending more time downtown)
- narrow, high-quality vertical facades with many doors create pleasant rhythm and interest (not intimidating or boring walks)
- offers barrier-free entry and frames walking clearway space

Photos by Neluka Leanage
Re-orienting downtowns and central streets for pedestrians means:

- rethinking wide-laned, one-way arterials and speeds through downtowns
- re-routing, slowing and quieting downtowns with alternative automobile routes, space redesigns and landscaping
- planning and designing for high quality pedestrian and transit experiences to leverage demographic shifts and build a critical mass and synergies
- re-assessing performance beyond traffic and parking toward non-automobile and place services
- planning and designing first for pedestrian safety, then other pedestrian activities
- re-allocating space and facilities within the right-of-way to pedestrians, cycling and transit
- giving pedestrians priority and frequent crossings and time without push buttons
- creating the best outdoor experiences and walking trips.

Quantity and quality of pedestrian space is critical for safe, enjoyable, lasting travel and visiting experiences:

- adequate dimensions for mobility (minimum accessibility standards for public spaces under AODA)
- free from obstacles – vertical surface utilities, stands, signs, bins, and poles
- stable, smooth, flat surface materials
- comfortable and sufficient places to sit, wait for transit, watch and eat
- shade, shelter, buffer from automobile noise, pollution, rain, wind, etc.

Photos by Neluka Leanage
Conclusions

The results from this research show that the downtowns and central streets of these three mid-sized cities vary considerably in their pedestrianization. Each case has implemented smart growth measures variably, however re-prioritizing MSC downtowns as places intended to serve pedestrians rather than automobiles has not yet been fully embraced by any of these cities and their performance scores reflect partial support. We would expect Hamilton and Brantford’s downtowns to struggle the most in keeping pedestrians in their core for the longest time on account of their challenges to re-orient downtown and central street planning away from the automobile (seen by thoroughfares, surface parking and multiple driveways) and toward safe, pedestrian-intense activities. Their central streets serve as primary transportation corridors, carrying automobile traffic through the downtown. Kitchener shows greatest promise by their significant re-balancing of travel modes despite mixed performance of design elements. In each case though particularly in Hamilton, downtown gateways and/or exits are so abrupt, unsafe and unpleasant that arriving and departing on foot, bicycle or wheelchair serves to repel, not invite, one to return.

Re-prioritizing MSC downtowns as places intended to serve pedestrians rather than automobiles has not yet been fully embraced by any of these cities and their performance scores reflect partial support.

The design of buildings and spaces also has mixed results across each case, each side of the street and between blocks. Some blocks perform much better reflect recent redevelopment efforts and what appears to be neighbourhood branding along blocks such as Hamilton’s International Village and Brantford’s Harmony Square area. Other blocks and sides contain long stretches of unanimated spaces and walls from indoor shopping malls, large hotels or new condominiums and institutions (in Kitchener’s case).

The relevance of this study to other MSC downtowns is two-fold: smart growth- and multi-modal-oriented policy and design do support downtown pedestrianization and the quality of spaces; however, multiple and consistent interventions on re-orienting planning and design are needed across all four categories to improve downtown and central street performance. As Filion (2004) suggests, historical character and street-level activity not found in suburban contexts do distinguish these downtowns and should be emphasized. However, building and space elements tend not to remedy the riskier safety conditions in predominantly auto-dominated and separated functional corridors. To match lifestyles of key demographic groups in order to generate a critical mass of people and synergies downtown, focusing on a smaller area of the downtown or a few blocks with greatest assets would first create a clear and physical safe and sense of place with the clustering of amenities and range of high quality pedestrian activities. In a smaller area, more people would perceptibly be in the core, and it would serve as the best, significantly different example of what is possible to residents and detractors. Similar concentration of planning changes and infrastructure improvements could be expanded accounting for and applying post-intervention lessons from the first stages.
References


Smart Growth America. (March 2015a) Core Values: Why American Companies are Moving Downtown.

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