

# Measures To Mitigate Intersections That Are Conflict Zones For Pedestrians

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## Background Guide for Barry Wellar's Panel Presentation, *Jane's Walk*, 2010



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by  
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### 1. Context

After several communications with Lara Pascali, *Jane's Walk* Ottawa Organizing Committee, I accepted the invitation to participate in a panel discussion to launch the 2010 event. I wish to thank the Committee for the invitation, and to express my pleasure for the opportunity to draw on elements of my research as a means of honouring the work and memory of Jane Jacobs.

*Jane's Walk* is a weekend festival of neighbourhood walking tours. The objective of this pedestrian-focused event is to improve urban literacy by offering insights into local history, planning, design, and civic engagement through the simple acts of walking and observing.

This Guide was prepared in response to the following communication from the Committee regarding related materials of mine that are posted on websites:

“Thank you very much for elaborating on the ideas for your talk. I have had a chance to send your suggestions to the other members of the organizing committee and we are all very excited about what you propose to discuss. We are also interested in the materials you have posted to websites. Would you be able to provide details on what kind of information they contain so that we may better determine how they could be used for the event?”

Based on discussions with the Ottawa Committee members, my contribution to *Jane's Walk* 2010 is a presentation on the topic,

### **Measures to Mitigate Intersections that Are Conflict Zones for Pedestrians.**

As requested by the Committee, I compiled a selection of my materials that are posted on websites for the *Jane's Walk* event. This approach makes the reports quickly and inexpensively accessible to many members of the international *Jane's Walk* community.

Prior to presenting the website materials (titles of reports, descriptions, and urls), I offer a brief commentary on sidewalks, and in particular the connections between sidewalks and crosswalks. I do this for two reasons.

First, very few if any people confine their walking experience to crosswalks, so it is appropriate to explicitly discuss the sidewalk-crosswalk connection before focusing on intersections and crosswalks.

Second, and drawing on lessons from expert witness experience, the measures that serve and promote pedestrians' safety, comfort, and convenience while traversing intersections are also applicable to their experiences walking along sidewalks.

Making this connection explicit is intended to alert readers that the materials listed in this Guide could also be used in the analysis and mitigation of situations involving pedestrians' safety, comfort, and convenience while using sidewalks.

## **2. A Brief Note about Sidewalks and Crosswalks**

Sidewalks and crosswalks are those parts of a community's surface transportation infrastructure which are specifically in place for pedestrians.

However, sidewalks, intersection crosswalks, and mid-block crosswalks are not within the sole purview of pedestrians. That is, they are also used (usually, crossed over) for the movement of bicycles, scooters, private motor vehicles (cars, trucks, minivans, SUVs, trains, etc.), and public motor vehicles (buses, streetcars, trains, etc.).

During *Jane's Walk 2010* events, there will no doubt be many occasions when the walking tour includes a walk around the block, on the sidewalk. It is my expectation that during those walks there will be situations when the walkers encounter bicycles, cars, minivans, SUVs, pick-up trucks, buses, etc., crossing over, straddling, blocking, and otherwise "interfering" with a casual walk around the block.

These vehicular intrusions may be disruptive as well as irritating, and could account for collisions between vehicles and pedestrians.

All in all, the intrusions are a negative mark against the walkability of a block face or, for that matter, the quality of walkability all the way around a block if there are numerous intrusions.

Further, the sidewalks may be narrow in places, cluttered with street furniture, have uneven or broken pavement slabs, be missing curbs, and have metal posts located in awkward places.

These design and maintenance features may be irritating, and could even account for injuries to pedestrians. All in all, such features are a negative mark

against the walkability of a block face or, for that matter, the quality of walkability all the way around a block if there are numerous instances of design and maintenance shortcomings.

Moreover, should the weather turn “inclement”, sidewalks can be immersed in water, coated in slush, covered by ice and/or snow, and be reduced in size or made difficult to negotiate by snow banks. If proper maintenance procedures are not applied, pedestrians are at risk of slip-and-fall events.

All in all, maintenance shortcomings involving weather-related conditions are negative marks against the walkability of a block face or, for that matter, all the way around a block if there are numerous instances of such shortcomings.

The connection between the comments about the shortcomings of sidewalks, and the objectives of *Jane’s Walk*, may be outlined as follows.

If going for a walk is a miserable experience due to shortcomings that begin with the sidewalk itself, then the experience of improving our urban literacy through insights into local history, planning, design, and civic engagement through the simple act of walking and observing is diminished, if not severely compromised. To change that experience from negative to positive, the source of the problem needs to be mitigated.

It is my belief that tour leaders and walk participants could do an excellent job of documenting such shortcomings. I urge them to do so, and I further urge them to communicate their findings in writing, such as by email, to their municipal councillors.

Further, and as a means of precipitating action, it may be useful to suggest to councillors that the municipality has duty of care and standard of care obligations to deal with safety-related matters which are identified in the lists of sidewalk shortcomings.

Readers who wish to know more about duty of care and standard of care matters are invited to examine the report, “Application of Walking Security Index Research to Standard of Care Situations and Analysis“ which is posted on the website of the Federation of Urban Neighbourhoods. Details about accessing the report are provided in section 3.

After that brief comment on sidewalks, I have several background statements about the other component of the surface transportation infrastructure which is specifically designed to serve pedestrians by linking sidewalks: the crosswalk.

In brief, crosswalks are the designated walking spaces for pedestrians in intersections, or between intersections in special cases, such as at mid-block locations. Crosswalk areas are usually defined by two parallel, painted lines that may be from several metres to five or more metres apart depending upon

pedestrian volumes, and the interior (between the lines) may be highlighted by painted stripes.

In terms of design and function, crosswalks may run from corner to corner across two up to 8 or 10 or more vehicle lanes, and some intersections also have diagonal crosswalks that permit travelling “kitty corner”. (For graphic displays see entries B and C in section 3.)

Finally, crosswalks may be made of brick, stone, or other material which differentiates them from asphalt or concrete pavement, and they may be raised several centimetres above pavement level, usually as part of a traffic calming initiative.

With very few exceptions, the shortcomings that befall sidewalks from the pedestrians’ perspective also befall crosswalks. As a result, the negative marks against the walkability of a section of a block face, or all the way around a complete block due to problems with the sidewalk(s) are also applicable to the walkability of crosswalks.

And that brief commentary on sidewalks leads me to the conflict zone theme in the title of my *Jane’s Walk* presentation, ***Measures to Mitigate Intersections that Are Conflict Zones for Pedestrians***.

When pedestrians leave sidewalks and enter the crosswalks of intersections to go from one city block to another, they sometimes enter what is too-often a conflict zone. The situation may be briefly described as follows.

The piece of roadway containing the crosswalk that is used by pedestrians is also used (crossed over) by cyclists and motor vehicle operators. When there are no pedestrians using or wanting to use the crosswalk, there is no conflict.

However, when both pedestrians and other road users occupy or want to occupy all or parts of the crosswalk at the same time, the potential for conflict arises. And, unfortunately, potential conflict becomes real conflict – physical, mental, social, emotional, and political – when crosswalk collisions and near-collisions occur between vehicles and pedestrians.

Many aspects of the conflicts at intersections between pedestrians and vehicles were investigated during the Walking Security Index (WSI) project, which was funded by the Region of Ottawa-Carleton and the City of Ottawa from 1995 until 2002. The results of the WSI research are published in 35 or so reports, some of which are hardcopy.

One such hardcopy document is *Perspectives on Pedestrian Safety*, the proceedings of the 1996 Ottawa-Carleton Pedestrian Safety Conference. I am pleased to make copies of the proceedings available to a number of *Jane’s Walk* participants in Ottawa.

In addition to the hardcopy reports, there are a number of other WSI and WSI-related reports which are digital and are generally available online to anyone with Internet access. Items which are posted on open access websites are by their nature open to all who visit the sites. Cases in point, for example, are [slideshare.net](http://slideshare.net), and numerous university sites and academic association sites.

The exceptions include proprietary bodies such as journals and associations, which make materials available only to members. And, there are other enterprises which market their document retrieval and provision services through the Internet, and provide materials for a fee.

For this Guide, I identified eight WSI project and project-related reports that: a) contain data, analyses, indexes, findings, models, references, suggestions, recommendations, etc., which bear on mitigating intersections as conflict zones for pedestrians; and b) are posted on websites.

Readers interested in learning about other WSI reports have several options, including electronic searches and publication listings posted on [wellarconsulting.com](http://wellarconsulting.com). The hardcopy reports are available at various libraries which purchased collections of WSI reports, as well as by inter-library loan.

Finally, copies of some WSI reports are available at cost for distribution to libraries, government agencies, or other bodies that make their materials available to the public. Inquiries about obtaining (hardcopy) WSI reports should be sent to [wellarb@uottawa.ca](mailto:wellarb@uottawa.ca).

### **3. Walking Security Index Project and Related Reports Posted on Websites that Provide Background Information for "Measures to Mitigate Intersections that Are Conflict Zones for Pedestrians".**

The Committee requested details about the contents of walk-related reports that I have posted on websites, and the interest of the Committee is most appreciated. However, I believe that task is better left for another day because it is a very onerous assignment. What I propose instead is to limit the WSI references to eight reports which are directly pertinent to my *Jane's Walk* presentation. It is my expectation that readers who examine the included materials will be able to decide whether they should find and review other WSI and WSI-related reports.

Each of the selected reports is accompanied by a brief explanation for its inclusion, and the url of the website or websites where it may be viewed, downloaded, etc. The reports are presented in chronological order.

#### **A. Lessons Learned from the Walking Security Index (WSI) Project on How to Achieve Street-Smart Urban Transportation Improvements (2002).**

The Walking Security Index Pilot Study was completed in May 2002, and this presentation and a workshop were given later that month at the 2002 conference

of the Canadian Institute of Planners. In addition to listing all the project publications to the end of the pilot study, the presentation summarizes the lessons learned from designing and testing the indexes, and urges municipalities to focus on making substantive improvements to the walking infrastructure in order to better serve the safety, comfort, and convenience of pedestrians.

Source:

<http://www.slideshare.net/wellarb/lessons-learned-from-the-walking-security-index-wsi-project-on-how-to-achieve-streetsmart-urban-transportation-improvements>

**B. Application of the Walking Security Index (WSI) to Achieve Urban Transportation Improvements that Serve and Promote Pedestrians' Safety (2004).**

After presentations at conferences of specialized or discipline-oriented groups such as planners, geographers, engineers, and information system professionals, the Canadian Multidisciplinary Road Safety Conference, sponsored by the Canadian Association of Road Safety Professionals, was an opportunity to present and discuss the Walking Security Index (WSI) with a multidisciplinary audience.

I participated in Session 5A, Vulnerable Road Users. The following four paragraphs are from the abstract. If non-members of CARSP have difficulty accessing the slide presentation, please feel welcome to contact me at [wellarb@uottawa.ca](mailto:wellarb@uottawa.ca) and I will send you the PowerPoint slides. Rather than attempt to summarize the abstract, parts of several pertinent sections are repeated.

“The Walking Security Index Design Study (1995-1998) and the Walking Security Index Pilot Study (1999-2002) were funded by the Region of Ottawa-Carleton (now, City of Ottawa). The goals of the studies were, respectively, to design indexes that measure how well signalized intersections in Ottawa-Carleton serve and promote pedestrians' security (safety, comfort, convenience), and to test the indexes for operationality.”

My objective in this paper is to “... to indicate how the WSI experience could be instructive for agencies considering the use of indexes or other quantitative instruments to better measure and address situations that affect pedestrians' safety.”

“For this presentation, the decision points selected for discussion are: 1. Establishing citizens as experts in specifying the variables that define “safety” from the perspectives of pedestrians; 2. Defining and assessing “improvements” in terms of impacts on pedestrians' safety that result from changes to transportation policies, regulations, infrastructure, etc.; 3. Defining street smart in terms of how well measures and procedures used by planners, traffic engineers,

law enforcement officers and other road safety professionals have operational regard for pedestrians' safety; and 4. Applying Pedestrian Impact Assessment (PIA) principles to policing, development, infrastructure, planning, zoning or other decisions and actions of public agencies that affect pedestrians' safety."

"The presentation is concluded by a brief commentary on the contribution of Walking Security Index research to the road safety aspect of expert witness testimony given at the recent civil trial, *New vs. the City of Moose Jaw*, and others. The 2004 trial judgment awarded more than \$12 million to Miss New, who was severely injured while crossing an intersection on her way to kindergarten in 1990."

Source:

<http://www.carsp.ca/index.php?0=documents&1=112>

### ***C. Adapting Walking Security Index Concepts and Procedures to Serve and Promote the Mobility of Children (2007).***

The annual meeting of the Association of American Geographers included two sessions on *Improving the Mobility of Children*. In this paper I review the origins of the WSI project, and the index formulation processes for the Intersection Volume and Design Index (IVDI), the Quality of Intersection Condition Index (QICI), and the Driver Behaviour Index (DBI) are outlined.

Consideration is then given to how each of the macro indexes (IVDI, QICI, and DBI) can be modified to explicitly represent the interests of children in road and intersection designs and operations, and in motor vehicle safety and enforcement programs.

Of particular relevance to my *Jane's Walk* remarks is the explicit reference to crosswalks and the fail-to-yield transgressions at intersections by motor vehicle operators. The presentation is concluded by discussing how the indexes can be applied by parents and advocacy groups, as well as by law enforcement, planning, engineering and other agencies, to ensure that the levels of convenience, comfort and safety experienced by children while walking or biking exceed those of private motor vehicle operators, and actively serve and promote the mobility of children.

Sources:

[http://people.hofstra.edu/geotrans/tqsg/publications/Mobility\\_Children\\_2007.pdf](http://people.hofstra.edu/geotrans/tqsg/publications/Mobility_Children_2007.pdf)

<http://www.slideshare.net/wellarb/adapting-walking-security-index-concepts-and-procedures-to>

**D. Sustainable Transport by Design or by Default, the Wasteful Ride Is Over, (2007) and  
E. Sustainable Transport: Is There Anybody Here Who Can Win this Game? (2007)**

For the 2007 conference of the National TravelWise Association (NTWA) in Belfast, NI, I prepared a set of PowerPoint slides for my keynote address, and I also prepared a text which discussed each slide. This approach was adopted to assist NTWA members and others who were not able to attend the conference, or who may have learned about the presentation after it had been given, and wished to know the content of my remarks.

Emphasis in the NTWA presentation was on sustainable transport principles and practices. However, and as suggested by slides and text, sustainable transport principles and practices can be used directly, or as the basis of measures to mitigate intersections that are conflict zones for pedestrians.

Sources:

<http://www.slideshare.net/wellarb/sustainable-transport-is-there-anybody-here-who-can-win-this-game-3>

[http://www.transport-action.ca/dc/wellar\\_travelwise2007.pdf](http://www.transport-action.ca/dc/wellar_travelwise2007.pdf)

[http://www.transport2000.ca/geog/sustain\\_belfast\\_2007.pdf](http://www.transport2000.ca/geog/sustain_belfast_2007.pdf)

**F. How Citizens Can Make a Difference in Defining and Achieving Walkability (2008).**

At a workshop organized by the Pedestrian Charter Steering Committee, Region of Waterloo, I discussed how citizens can strategically and tactically leverage scarce resources to most effectively influence the regard given to walkability in the policies, programs, plans and associated legal and administrative documents of local governments and their agencies. Walkability at crosswalks is a basic concern to all pedestrians, and these materials suggest how citizens can make their wishes known.

Sources:

<http://www.transport-action.ca/dc/Waterloo%20Workshop%20Final.pdf>

<http://www.slideshare.net/wellarb/how-citizens-can-make-a-difference-in-defining-and-achieving-walkability>

**G. Application of Walking Security Index Research to Standard of Care Situations and Analysis (2009).**

In this report I provide community associations with suggestions for using the WSI research and reports to address safety issues affecting pedestrians on the streets, lanes, and sidewalks of their communities.

Source:

<http://www.urbanneighbourhoods.ca/walkrept.pdf>

**H. Careless Driving and Public Safety: Curtail the Pandemic by Raising the Bar (2009).**

I believe that many of the collisions between motor vehicles and pedestrians are the result of careless driving by the vehicle operators.

The careless driving report identifies and examines events and practices associated with careless driving, makes suggestions to drivers, law enforcement agencies, and provincial and municipal governments about steps to curtail the frequency of careless driving events in Ontario, and proposes how the Federation of Urban Neighbourhoods could assist drivers, law enforcement agencies, and provincial and municipal governments raise the bar in order to achieve a significant reduction in careless driving practices.

A number of comments are made in the report about pedestrians as victims of careless driving practices, with the intersection being a location at which many vehicle-pedestrian collisions occur.

Sources:

[http://www.urbanneighbourhoods.ca/wellar\\_driving.pdf](http://www.urbanneighbourhoods.ca/wellar_driving.pdf)

<http://www.transport-action.ca/dc/TACarelessDrivingandPublicSafety.pdf>