

Design Guidelines for Walkable Communities

Kevin McNally
Niehoff Studio – Winter 2010
January 29, 2010

Abstract:

Walkability and walkable neighborhoods are becoming buzzwords in planning today as new urbanism ideas are spreading throughout the profession. But what exactly is the meaning of a walkable neighborhood, and what are its characteristics? We live in a nation that has become overly dependent on the automobile and have built in primarily low-density development patterns over the last half century. In order to live sustainably into the future, we must begin to rethink neighborhoods and communities in order to promote walkability. Certain design decisions for streets and sidewalks can be used to create walkable communities. If certain standards and guidelines are followed in urban neighborhoods, it is the hope that we can reduce our dependence on automobiles and create a safe and comfortable environment for pedestrians. This research was conducted using manuals from the American Planning Association and manuals that give guidelines to creating walkable communities and calming traffic. The findings helped to provide a framework of design guidelines that can help to provide safe, walkable environments for pedestrians.

Introduction:

Many communities today are suffering from a growing dependence on automobiles as the main mode of transportation. The main cause of this dependence is through low-density, sprawling development patterns. The use of low-density development leads to a disconnection between pedestrians and neighborhood cores by creating neighborhoods that expand outside of residents' walking zone comfort. These areas then begin to cater to the needs and safety of motorists, which in turn can create a dangerous and unfriendly atmosphere for pedestrians. This

pattern of development can quickly become cyclical and lead to a further decrease in pedestrians throughout a community, further driving community members' dependence on automobiles.

Today, as the costs of transportation increase and environmental issues are being magnified by the commuter lifestyle of numerous Americans, communities, especially within urban areas, must begin to redesign their neighborhoods in order to promote sustainable, livable areas with alternative modes of transportation. These communities must promote safe and walkable streets where pedestrians and bicyclists feel comfortable, safe, and welcome, and where the scale of the neighborhood responds to the individual, not the automobile. There are three questions that this research project seeks to answer about the process of designing for walkable communities: (1) What are the benefits of a walkable community?, (2) What are the fundamental needs and principles used to design for a walkable community?, and (3) What can be done to reduce automobile speeds in order to increase safety for pedestrians and promote walkability?

By complying with a wide array of standards and procedures, communities can promote walkability through smart design decisions for roadways and sidewalks. It is the overall goal that, by designing to standards that promote walkable communities, dependence on the automobile will begin to decrease and, in the process, provide numerous benefits to the social, environmental, and economic characteristics of communities. This paper will be divided to address the three research questions, first dealing with the benefits of walkable communities before moving on to the principles of design for walkable communities and the process of traffic calming.

What is Walkability?

Before we get to the three research questions, let's first define walkability and what it means in the context of communities and neighborhoods. Walkability generally refers to various

features of a community or neighborhood that create a place that is easily able to be traveled without the use of an automobile. Generally, residents of an area typically have a walking threshold of ¼ mile, or 5-minute, radius from their homes, meaning anything outside of this area is not within comfortable walking distance (Urban Design Principles). While distance is one method of defining walkable areas, it is more closely tied to the design of the place, including roads and sidewalks. This will be discussed in more detail in the following sections. Another key characteristic which defines walkability is a wide range of land-uses within a community. By allowing a wide array of land-uses within ¼ mile, including retail, civic, educational, and recreational, residents are provided with many destinations and gathering spaces. Medium- to high-density environments produce the most walkable communities, as low-density development is generally too spread out for the ¼ mile walking radius, and does not provide enough pedestrians to maintain a safe environment. Because of this certain areas and communities are more easily redesigned in order to create walkable communities for residents.

Benefits of Walkable Communities

So what is so great about designing neighborhoods with a greater sense of walkability? And what are the benefits of walkable communities? The benefits can be seen across various subtopics and respond to environmental, economic, and social conditions. First of all, walkable communities promote healthier and more sustainable lifestyles for their residents. By reducing dependence on automobiles and automobile trips, residents are able to make the healthy decision to walk to destinations within the community instead of driving. They are also able to have more interactions with community members by choosing to walk. Walkability also reduces the use of cars, reducing residents' expenses on gas and helping decrease CO₂ emissions. By designing for walkable streets, communities create a safer environment for pedestrians and bicyclists within

the community. Through the implementation of sidewalks, crosswalks, and street buffers, pedestrians feel more comfortable traveling within the community. Various design decisions and measures can help to decrease the speed of automobiles on roads, further helping to create safer community access for pedestrians and bicyclists.

Walkable neighborhood design also promotes the economic vitality of communities, bringing business and economic opportunities to residents. High-density, mixed use development allows the opportunity for residents to meet all of their basic needs within the community. All of these reasons argue for walkable communities in order to promote healthy, safe, and thriving communities that help increase environment, economic and social awareness among community members.

Walkable communities are not a recent development in American neighborhood design. In fact, we are merely relying on historical precedents when we redesign communities to promote walkability. In many communities built before World War II and the suburban boom of the mid-20th century, residents were able to meet all of their needs within the community since automobiles were not widely available. But suburban housing and the interstate system changed the way Americans viewed and designed neighborhoods. Many street and neighborhood design practices “can be attributed to early standard-setting based upon readily available state highway department manuals” (Burden 3). These practices helped to lead to communities which responded to the scale of automobiles, not humans, and promote driving conditions which endanger and disregard pedestrians. With the use of design and development patterns, communities can begin to reclaim their walkable characteristics and create greater access, safety, and comfort for pedestrians.

Neighborhood Character

Certain aspects of creating a walkable community must either be well thought out before design, or have the necessary pieces in place to make transformation easier. Certain characteristics of existing neighborhoods lend well towards creating communities that promote walkability, while others may prove to be a hindrance. Some of these aspects can be adopted easier than others.

Density

As stated previously, density is one of the most important characteristics of creating a walkable neighborhood. Before personal automobile transportation, densities in the United States ranged from 40 to 80 people per acre, compared to densities 1/10 of that in developing communities today (Ewing 2). Because of this shift, lower densities have led to a decrease in walkable communities.

Higher densities in an area lead to more residents who are within comfortable walking distances of services, and increases willingness to walk instead of drive. In order to support retail and commercial businesses of a walkable neighborhood, and therefore help spur the economic base of a community, medium- to high-density of residents is needed. Low-density development leaves too many residents outside of the comfortable walking distances needed to create vibrant streets. Higher densities are also required to support public transportation options within a community, generally in the range of 7 to 15 units per acre (Ewing 3).

Density is not a characteristic that is easily transformed in existing communities. Communities are built or evolve to become low, medium, or high-density areas, and can only be changed through the addition or subtraction of housing units and varied housing options. For

this reason, some areas, with existing medium to high-densities, are able to be more easily transformed into thriving, walkable communities.

Fortunately, the study areas which are being focused on this quarter for the Niehoff Studio are in urban areas which already have or have the potential to be transformed into medium- to high-density communities. This will allow for a more successful transition to create walkable neighborhoods.

Mixed Use

Another important characteristic of walkable communities is the availability of mixed land-uses throughout the community. In order to increase walkability in a community, there must first be destinations to which residents want or need to travel to. This can include anything from retail, commercial, parks, transit stations, restaurants, cafes, schools, offices, et cetera. By creating destinations within the 5-minute radius of housing, the streets become more lively and active because people have less need to use automobiles to travel to and from stores, entertainment, and recreation areas.

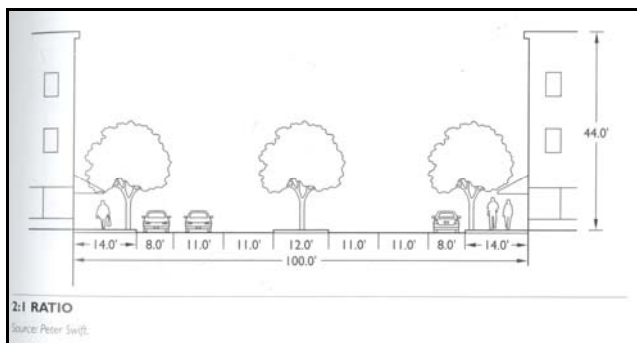
Creating mixed land-uses is an easier process than changing density, as it can be done by changing zoning and future land-use patterns within a community. If a community wants to promote walkability, creating mixed use development opportunities will be a key component of the process. In the case of the study areas for the Niehoff Studio this quarter, mixed land-use requirements are already met in many of the study areas, since most were once thriving urban centers in the past.

Neighborhood Scale

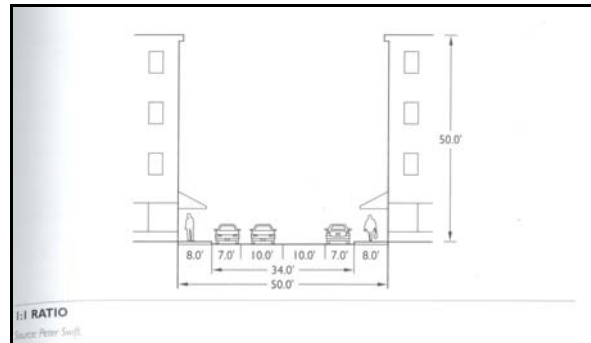
Walkable neighborhoods need to cater to the needs of pedestrians and bicyclists. This means that, ultimately, they also need to respond to the scale of people, not automobiles. Not

only do sidewalks need to be sized right for pedestrians, as we will discuss later, but building heights, street widths, and building details need to be thought of from the perspective of pedestrians.

Building enclosure, or the relationship of building height to building separation, is probably one of the most important of these concepts. In order to create spaces and travel ways that feel comfortable spatially, this ratio should range from 1:1 to 1:4 and should not exceed 1:6 (APA 165). This ideal range for building enclosure will create the perception of an enclosed space that is more comfortable and scaled correctly to pedestrians and create better cross street connections.



2:1 Street Ratio (APA 165)



1:1 Street Ratio (APA 165)

Street and Sidewalk Design

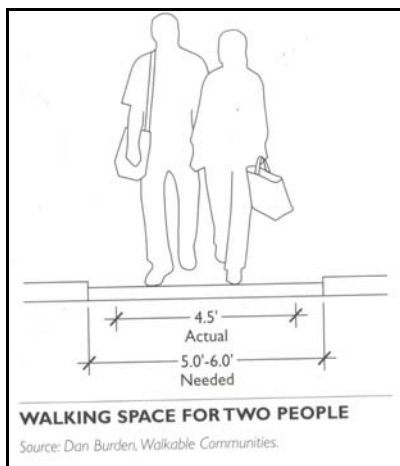
The primary need to design for a walkable community is to create an environment that is safe, comfortable, and attractive to pedestrians within a neighborhood. This requires various methods and standards in order to design sidewalks and streets that create a safe separation between automobile and pedestrian traffic, while also decreasing speeds of automobiles to increase comfort levels among pedestrians and bicyclists.

Sidewalks

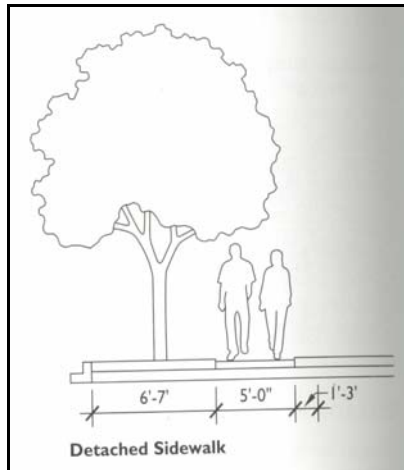
Sidewalks should be designed to create a safe and comfortable walkway for pedestrians, connecting them to neighborhood amenities while providing buffers from vehicular traffic. Specific guidelines and regulations should be followed for sizing, buffers, and crosswalks to increase the walkable nature of a community.

Sizing

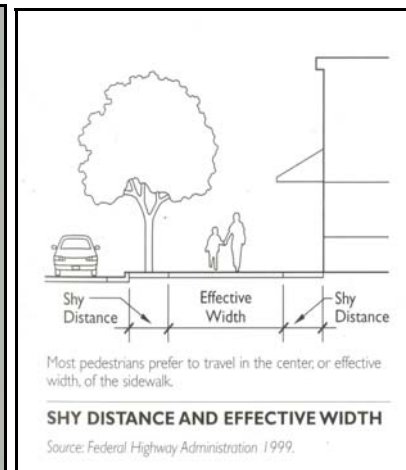
Sidewalks should be designed in a way that responds to its specific location in a community. Sidewalks should be different in residential areas when compared to sidewalks in commercial and retail core of a neighborhood. Sidewalks need to be a minimum of 5 feet wide to accommodate room for two people to walk side by side (APA 280). This size can also increase due to contextual variations. If the sidewalk is aligned with a building façade, wall, or fence an additional 1 to 2 feet should be added; this area is known as the “shy space” (APA 280).



(APA 280)



(APA 280)



(APA 143)

Buffers

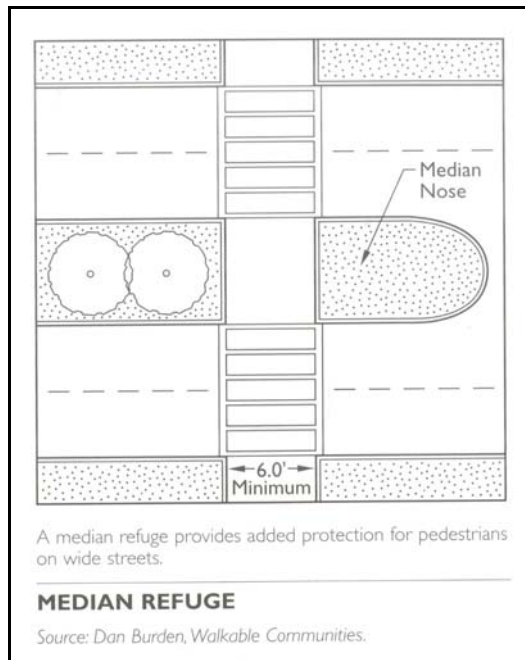
Sidewalks should be accompanied with a “buffer zone” in order to create separation between pedestrians and automobiles. There are two different options for buffer zones. The first is designing a 6 to 7 feet wide planted strip that separates pedestrians from the roadway, which can be used in residential and smaller commercial zones (APA 280). The planted strip can

provide trees that line the street, decreasing the perceived space automobiles have. The second option is to include a furniture zone, ranging anywhere from 4 to 8 feet wide, which creates a similar separation from vehicular traffic (APA 280). Both options for buffer zones can be supplemented with on street parking in order to further increase the zone between pedestrians and vehicular traffic. These various buffer options tend to increase pedestrians' perception of safety while also providing shading and other amenities to them.

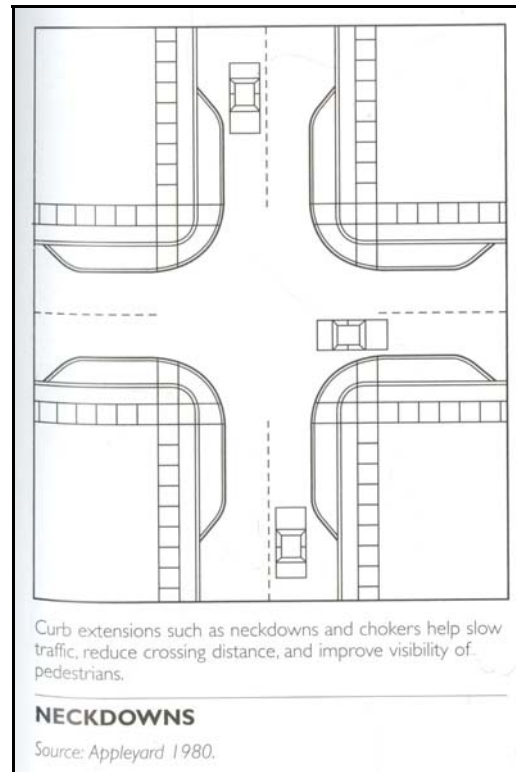
Crosswalks

Crosswalks can be the most dangerous areas for pedestrians due to points of conflict with vehicular traffic, but with good design they can create safe walkways on which pedestrians move with comfort. Well marked crosswalks, mid-block crosswalks, sidewalk flares, and smaller corner radii can all lead to safer and more walkable streets.

Mid-block crosswalks help to improve walkability by providing greater access to areas for pedestrians, while limiting the amount of pedestrians crossing without a crosswalk. They can also help to decrease automobile speeds along blocks because of the presence of pedestrians. It is recommended that crosswalks be placed every 100 feet, and in some areas this may mean the addition of mid-block crosswalks (Ewing 8). On streets that exceed 2 to 3 lanes, median refuge areas should be designed in order to provide protection and resting points to pedestrians.



Median Refuge (APA 281)



Corner Neckdowns (APA 281)

Crosswalk flares, also called neckdowns, can also be designed along streets with on-street parking or public transit stops. Providing flares tends to slow automobile speeds by narrowing lanes, while also decreasing the length of the crosswalk for pedestrians. Flares can range from full-corner flares, half-corner flares, and mid-block flares, depending on the street location and characteristics.

Streets

Vehicular Speeds

Ideal automobile speed limits in neighborhoods that wish to promote walkability are around 20 to 25 miles per hour, with busier and more heavily trafficked street speed limits set at

35 miles per hour (APA 181). Anything greater than these speeds will create an environment that caters too much to automobiles and scares away potential pedestrian street traffic.

Block Length

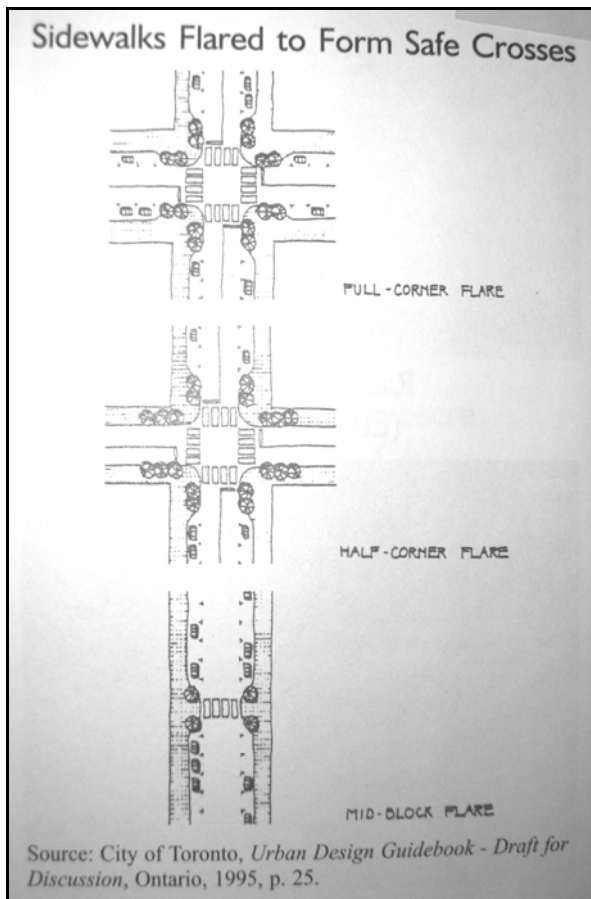
The most important element of streets to promote walkability is block length. Typically, shorter block lengths lead to greater accessibility throughout an area for pedestrians. Shorter block lengths allow for increased opportunities for crossings and provide more direct routes for pedestrians, as well as limiting the time automobiles have to accelerate after intersections. Shorter block lengths also tend to disperse traffic, resulting in fewer roads that are heavily congested by automobiles. To promote walkability, block lengths in the range of 300 to 400 feet are recommended (Ewing 4). Blocks lengths from 500 to 600 feet should provide mid block crossings with connected pass-throughs on every block.

Traffic Calming Measures

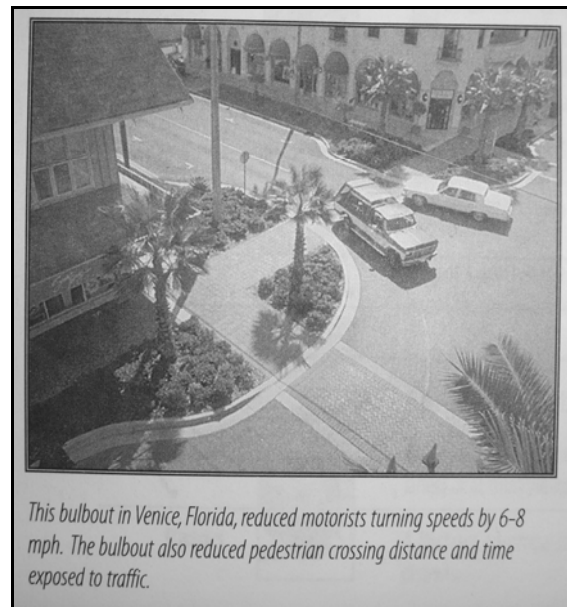
Many different methods are available in order to decrease automobile speeds or reduce high speed cut-through traffic in a neighborhood. A wide number of measures can be found in traffic calming manuals, such as Dan Burden's *Streets and Sidewalks, People and Cars*. The following are a few examples that could prove to be useful in the study areas for this quarter.

As discussed earlier, one of the best ways to control automobile speeds is to create more narrow lanes, thus decreasing the perceived space for drivers. There are a few ways to accomplish this. The first, as was discussed earlier, is with the use of flares or bulbouts, which widen street corners, narrow driving lanes, and create shorter crosswalk lengths. Another form of narrowing streets is through the use of chokers or neckdowns. These are used to narrow streets at major intersections, forcing automobiles to slow when turning onto or off of major

intersections, and become more aware of pedestrians. Another easy method with low costs would be to create bike lanes on roads after narrowing roadways.



Flares (Ewing 9)



Corner Flare (Burden 24)

Gateways can also prove to be a great traffic calming measure, while also forming a landmark at the entrance of a neighborhood or district. Creating a gateway into a community by inserting a large median and narrowing traffic lanes is also successful in making automobiles aware of the community they are entering. Gateways are most effective when a new design scheme is used for sidewalks and buildings, creating a contrasting environment for passing motorists who are forced to take notice (Burden 30). Because of this, strong visual elements are necessary to grab the attention of drivers, and giving the area the look of a destination.

Landscaping treatments can also be successful in helping to slow vehicular speeds in communities. As discussed before, trees planted along the edges of roadways and in medians provide a barrier for pedestrians while also narrowing the perceived amount of space for automobiles. They also can create a more pleasant environment for both pedestrians and motorists, while also creating the image of the roadways as a part of a place or destination, not just a vehicular route (Burden 32).

More traffic calming measures are available, but these may prove to be most successful for the study areas we are focusing on this quarter. By using design measures to calm traffic, streets and sidewalks can become more pleasant and desirable areas for pedestrians. By creating areas where pedestrians feel safe, welcome, and comfortable, there is a greater opportunity for lively and walkable streets to become a reality.

Conclusion

As a society, we are now beginning to see the outcomes of countless planning decisions that were made decades ago throughout urban areas. Many of these decisions led to the creation of our current neighborhood and community systems that are in use throughout the United States today. The movement of people to suburban areas with low-density and highly regulated zoning requirements has led to areas which do not respond well to social, environmental, and economical factors. This pattern of development also led to a greater dependence on the automobile, which has stretched communities thin, and all but eliminated forms of transportation within many communities. While pre-World War II neighborhoods often provided for the opportunity to travel freely by foot, neighborhoods today either do not provide the option or do not create a safe and friendly environment for pedestrians.

In order to reverse these trends, we must begin to look at neighborhood design sustainably, including economical, environmental, and social factors. By designing for communities which promote walkability, we can provide healthy, thriving, and sustainable neighborhoods and will begin to lessen our dependence on the automobile. We can achieve these goals by designing or redesigning communities using a series of standards and procedures that will create streets and sidewalks people will enjoy interacting on. By focusing on increasing safety for pedestrians and not catering to the needs of drivers, neighborhood cores can again become destinations that are easily accessible and that provide numerous entertainment options and necessities. Creating a safe separation and better coordinating the movements of automobiles and pedestrians, neighborhood streets will become more enjoyable and accessible for everyone. And there will be countless benefits, across social, economical, and environmental lines, which will make this renewed pattern of development worth the cost, time, and effort.

The design options presented all provide reasonable options that could be implemented successfully in many of the neighborhoods being studied this quarter in the Niehoff Studio. Many of these neighborhoods already have the characteristics and qualities in place to support walkable communities, but do not have the qualities or amenities of design that make streets and sidewalks attractive to neighborhood residents. By implementing smart design decisions to transform streets, planners can also begin to transform urban neighborhoods, creating walkable, diverse, and thriving areas that residents are attracted to.

Works Cited

Ewing, Reid. *Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth*. Smart Growth Network Manual, 1999.

Burden, Dan. *Streets and Sidewalks, People and Cars: The Citizens Guide to Traffic Calming*. Local Government Commission Center for Livable Communities, April 2000.

American Planning Association. *Planning and Urban Design Standards*. New York: Wiley, 2006.

National Complete Streets Coalition. Website. <http://www.completestreets.org>. 24 January 2010.