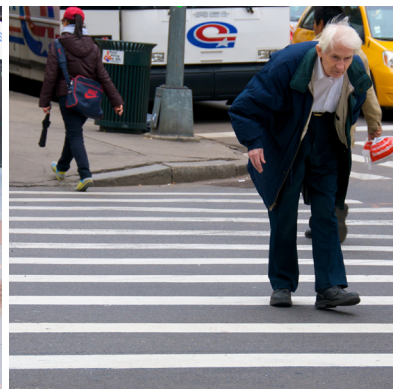
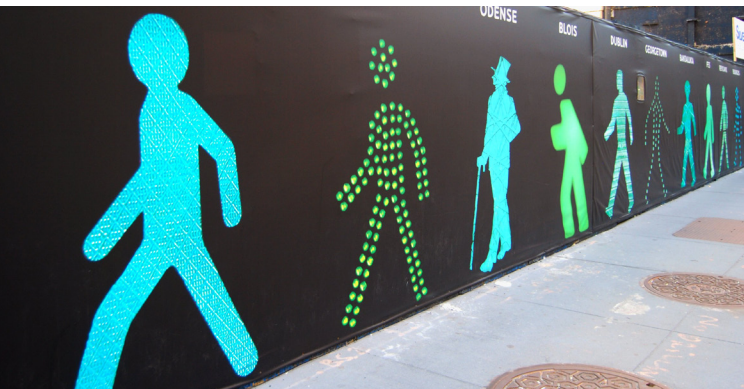




Steps to a Walkable Community

A Guide for Citizens, Planners, and Engineers



SAM SCHWARTZ
ENGINEERING

America
WALKS

Making America a Great Place To Walk

Steps to a Walkable Community

A Guide for Citizens, Planners, and Engineers



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Steps to a Walkable Community

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Sam Schwartz Engineering

Introduction



Samuel I. Schwartz, P.E., President & CEO

Sam Schwartz is President and CEO of Sam Schwartz Engineering (SSE), a transportation planning and engineering firm.

Previously, Mr. Schwartz was Traffic Commissioner and Chief Engineer/ First Deputy Commissioner for the New York City Department of Transportation. He is a licensed Professional Engineer in New York, New Jersey, Pennsylvania, Connecticut, and Florida.

As a traffic engineer, it is my honor to present *Steps to a Walkable Community: A Guide for Citizens, Planners, and Engineers*. This publication is one of the first to address the need for multidisciplinary, grassroots-led solutions to improve the walking environment in U.S. cities and suburbs.

For far too long, our profession continued to build more roads, wider roads, and faster roads while knowing full well we were running out of capacity and making transport systems less efficient.

During my lifetime, the Verrazano-Narrows Bridge between Brooklyn and Staten Island was built with 12 car lanes but no bikeway, walkway, or transit right-of-way. Most of the Interstate System built in the past half-century had no provisions for walkers, bike riders, or transit.

And yet we've known for years about the benefits of walking: less unhealthy weight gain, lowered risk of type-2 diabetes, lower blood pressure and cholesterol, decreased risk of colon and breast cancers, and increased life expectancy. Walkable communities better retain their property values, they create level playing fields for economic opportunities, and they help create social cohesion.

Even more important for traffic engineers: Walking is incredibly efficient. Nearly a third of all car trips taken in this country are a mile or less in length—the equivalent of at most a 20-minute walk. Moving those trips out of cars and onto sidewalks would solve many of our transportation conundrums.

We as engineers have the technical know-how to design and construct walkable communities. The methods are deceptively easy: Build good transit systems and integrate them into existing infrastructure. Design transportation systems with pedestrians in mind. Construct multiple, direct connections within dense, mixed land use developments. Coordinate transit, walking, cycling, and automobile networks.

It's time for traffic engineers to reassume a leadership role in planning for the future well-being of our cities, towns, and suburbs. We can do it by joining medical professionals and city planners in designing healthy, walkable communities. I'm proud to have Sam Schwartz Engineering lead by example with this collaboration with America Walks.

A handwritten signature in black ink that reads "Sam Schwartz". The signature is written in a cursive, flowing style.

Samuel I. Schwartz
President & CEO, Sam Schwartz Engineering

America Walks

Introduction

Walking is a distinctive and fundamental human activity that yields incredible benefits to our communities. Walkable communities provide affordable, healthy, and enjoyable places to live, work, and play. In addition to providing social benefits, walkable communities make economic sense: They both command higher property values and are more affordable when people have to spend less on transportation.

You—each individual, organization, and business—have the power to create this reality by making your community more walkable. At America Walks, we strive to support you in this endeavor.

This guide, *Steps to a Walkable Community*, provides you with the best and brightest strategies to move you toward a more walkable community. We have worked to capture both time-tested and new and innovative tactics that are realistic and achievable. Dive in and learn about these exciting initiatives.

America Walks aims for this resource to be your first stop in shopping for exciting walking projects, campaigns, and initiatives. As such, we commit to ongoing updates to this work, so visit www.americawalks.org to learn about the newest innovations.

Finally America Walks is committed to working with you and your community to make these projects reality. Chapter 1 of this guide provides a basic outline for how to effectively organize your grassroots campaign. We offer support services including informational trainings, in-depth campaign-development workshops, on-line webinars, and phone support.

We wish you success in your efforts to Make America a Great Place to Walk!



Scott Bricker,
Director, America Walks



Scott Bricker, Executive Director

Scott Bricker is Executive Director of America Walks, a national nonprofit whose mission is making America a Great Place to Walk!

Mr. Bricker has more than 17 years of experience helping communities implement active transportation plans and managing organizations.

How to Use This Guide

Why do we need *Steps to a Walkable Community*?

Walking is a fundamental form of transportation with far-reaching impacts on our nation's transportation infrastructure, public health, economic development, and social equality. Over the past century, however, walk-friendly communities and transportation systems have given way to automobile-oriented residential and circulation patterns. The consequences of accommodating driving at the expense of walking are apparent in current obesity levels and traffic-congestion dilemmas.

Steps to a Walkable Community is about building communities where people are allowed the choice of getting to their destinations on foot. Since barriers to walking often take a variety of forms, from land use patterns to driving behaviors, the tactics used to overcome them should also be diverse. *Steps to a Walkable Community* compiles multidisciplinary tactics that readers can assemble into custom strategies designed for their community's circumstances. The guide contains tactics for building or rebuilding cities and suburbs in ways that encourage walking. The guide is also about making walking in cities safer, and it provides traffic-engineering techniques to achieve that. *Steps to a Walkable Community* also describes methods of organizing advocacy to reach these goals.

Who will use *Steps to a Walkable Community*?

Steps to a Walkable Community addresses everyone who plays a role in creating walkable environments. This includes urban planners, landscape architects, transit and traffic engineers, government agencies, private developers, citizens, and advocates. Given its broad audience, this guide features a wide variety of tactics at many different scales, from individual intersection treatments to statewide policy initiatives. The tactics contained here are intended to be applied and adapted to suit the needs of communities across the country.

How should readers use *Steps to a Walkable Community*?

Steps to a Walkable Community has been designed as a practical resource for all those interested in promoting walking and improving the walking environment in several ways:

- 1** The guide outlines how investing in walking and walking infrastructure can help address many of our nation's most pressing problems. The benefits of walking are grouped into five main categories—health, safety, transportation, social equity, and economic—and then distilled into two-page fact sheets that readers can use as talking points to help justify investments in walking infrastructure improvements.
- 2** This guide is not intended to be a comprehensive guide to every walk-friendly tactic, but rather a compilation of innovative, multidisciplinary tactics that can improve walking in your community from a variety of different angles. These multidisciplinary tactics are grouped by approach: advocacy, policy, land use, design and engineering, encouragement and education, and enforcement. Almost every method included here has been successfully implemented in North America. Each tactic is then described in a standardized, easy-to-read format under the following headings: definition, benefits, considerations, appropriate contexts, guidance, professional consensus, treatment adoption, and case study (where needed).
- 3** While readers are encouraged to explore the whole range of possible tactics included in this guide, the itemized Table of Contents allows readers to navigate directly to a specific walking-benefits fact sheet (e.g., Safety Facts), approach (e.g., Land Use), or tactic (e.g., Retrofit Street Connectivity). The Table of Contents in the PDF version permits readers to click on page number of an individual tactic to be directed to that page in the document.
- 4** This guide is designed to allow readers to assemble multiple tactics into a customized strategy suited to the specific concerns and circumstances of their community. Case studies illustrate how tactics can be combined into successful strategies to create meaningful change and improvements to a community's walking environment. Sam Schwartz Engineering and America Walks are also creating a website (walksteps.org) to help readers select among these tactics and other emerging ideas to create innovative strategies to improve walking in their communities.

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Health Benefits of Walking

"Walking is our best strategy for improving health....The epidemic of chronic diseases is becoming the number-one cost issue in almost every country in the world. We need a national agenda that creates a culture of health and where people can walk. Walking can be done anywhere, all you need is shoes.... It can be done easily and has huge benefits."

— George Halvorson,
Chairman & CEO, Kaiser Permanente

Problem Overview

- The average American spends more than 100 hours commuting to work each year.¹
- Each hour spent in a car per day is associated with a 6% increase in the likelihood of obesity.²
- The 2009 National Household Travel Survey revealed that walking trips accounted for 11% of all reported travel trips, yet walking projects receive less than 2% of federal transportation funding.
- In 1974, 66% of children in the U.S. walked or rode a bicycle to school, and by 2000, that number dropped to 13%³, more than an 80% decrease.
- This drastic erosion of walking contributes significantly to the health crisis that is rooted in Americans' lack of physical activity:
 - » Less than half of Americans meet the physical activity guidelines⁴ of 150 minutes per week of moderate physical activity for adults and 420 minutes per week for youth.⁵
 - » Between 1960 and 2005, the obesity rate among American adults rose from 13% to 35%, according to the Centers for Disease Control and Prevention (CDC).⁶
 - » 17% of children and adolescents ages 2 to 19 years are obese, according to the 2009–2010 National Health and Nutrition Examination Survey.⁷
 - » Physical inactivity costs an estimated \$177 billion per year in medical costs⁸, and accounts for 16% of all deaths in both men and women.⁹

Walking as a Solution

- One of the U.S. Department of Health and Human Services Healthy People 2020 objectives is to encourage walking and cycling to get to work, school, and errands. This strategy helps build exercise into people's daily commute, since most people do not have time to exercise.¹⁰
- Walking is particularly important for elderly, disabled, and lower-income people who have fewer opportunities to participate in sports or formal exercise programs.¹¹
- Walking and cycling can help reverse poor health trends:¹²
 - » Countries where walking and cycling are most common have the lowest obesity rates, whereas countries with the highest rates of car use for travel have the highest obesity rates (see Figure 2).¹³
 - » Each 0.62 mile walked per day is associated with a 5% decrease in likelihood of obesity.¹⁴
 - » Walking and cycling as part of everyday travel is as effective as structured workouts for improving health.¹⁵
- Walking infrastructure is cost-effective:
 - » In 2005, the CDC found that the annual per capita cost of building and maintaining multiuse trails was \$209 per person, whereas the per capita annual direct medical benefit of using the trail was \$564 per person. This equates to a 300% return on investment.¹⁶
- Walking to school is good for children's cognitive health and learning ability. It improves children's concentration, boosts moods and alertness, and enhances memory, creativity, and overall learning.¹⁷

1. United States Census. Americans Spend More Than 100 Hours Commuting to Work Each Year, Census Bureau Report. March 30, 2005. http://www.census.gov/newsroom/releases/archives/american_community_survey_acs/cb05-ac02.html

2. Frank L., Andersen M., Schmid T. Obesity relationships with community design, physical activity, and time spent in cars. *American Journal of Preventive Medicine*. 2004. 27(2):87–96.

3. Jackson, Dr. Richard; Sinclair, Stacy. *Designing Healthy Communities*. USA: John Wiley & Sons, 2012.

4. American Psychological Association. *Sedentary Lives Can Be Deadly: Physical Inactivity Poses Greatest Health Risk*. 2009. <http://www.sciencedaily.com/releases/2009/08/090810024825.htm>

5. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*. Fact Sheet for Professionals. 2008. <http://health.gov/paguidelines/factSheetProf.aspx>

6. Centers for Disease Control and Prevention. *Health, United States, 2011 with Special Feature on Socioeconomic Status and Health*. 2012. <http://www.cdc.gov/nchs/data/hus/hus11.pdf>

7. Ogden, Cynthia L.; et. al. Prevalence of Obesity in the United States, 2009–2010. *National Center for Health Statistics Data Brief*. No. 82. January 2012. <http://www.cdc.gov/nchs/data/databriefs/db82.pdf>

8. American Public Health Association. *Health Impact Assessment*. n.d. <http://www.apha.org/NR/rdonlyres/C2D5F8CB-206C-4F02-B692-42903F5CBE86/0/HIATranFACTshtfinalrevised510.pdf>

Additional Resources

- American Public Health Association: <http://www.apha.org/transportation>
- American Heart Association: <http://www.startwalkingnow.org/>
- Every Body Walk: <http://everybodywalk.org/>
- Kaiser Permanente: <http://centerfortotalhealth.org/tag/george-halvorson/>
- Dr. Mike Evans: <http://www.youtube.com/watch?v=aUalnS6HIGo>
- National Coalition for Promoting Physical Activity: <http://www.ncppa.org/>

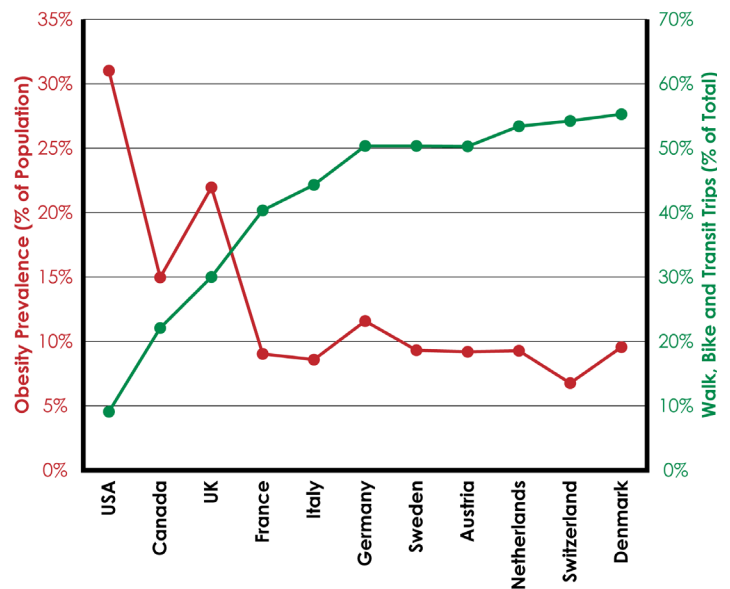


Figure 1: Transportation and Obesity Rates. Source: John Pucher, *Promoting Safe Walking and Cycling to Improve Public Health: Lessons from the Netherlands and Germany*, 2003 http://www.hsph.harvard.edu/healthdesign/ppt-pdf/pucher_revised.pdf

- American Psychological Association (2009, August 10). Sedentary Lives Can Be Deadly: Physical Inactivity Poses Greatest Health Risk. <http://www.sciencedaily.com/releases/2009/08/090810024825.htm>
- U.S. Department of Health and Human Services. 2009. Developing Healthy People 2020: Physical activity and fitness. <http://www.healthypeople.gov/hp2020/Objectives/TopicArea.aspx?id=39&TopicArea=Physical+Activity+and+Fitness>
- Litman, Todd. Economic Value of Walkability. Victoria Transport Policy Institute, February 2011. <http://www.vtpi.org/walkability.pdf>
- San Benito County Bikeway and Pedestrian Master Plan, May 2009. http://www.sanbenitorideshare.org/pdf/bikeway/San_Benito_Bikeway_Ped_Plan_DRAFT.pdf
- Bassett, Jr., David; Pucher, John; Buehler, Ralph; Thompson, Dixie L.; Crouter, Scott E. Walking, Cycling, and Obesity Rates in Europe, North America, and Australia. *Journal of Physical Activity and Health*. 2008. (5) 795–814. <http://policy.rutgers.edu/faculty/pucher/jpah08.pdf>
- Frank L, Andersen M, Schmid T. Obesity relationships with community design, physical activity, and time spent in cars. *American Journal of Preventive Medicine*. 2004. 27(2):87–96.
- Ibid. Citing: Dunn, A., et al. 1999. Comparison of lifestyle and structured interventions to increase physical activity and cardiorespiratory fitness: a randomized trial. *JAMA*, 281, 327–34.
- Wang, Macera, Scudder-Soucie, Schmid, Pratt, and Buchner. A Cost-Benefit Analysis of Physical Activity Using Bike/Pedestrian Trails. *Health Promotion Practice*. 2005. 6 (2), 174–179.
- Jackson, Dr. Richard; Sinclair, Stacy. *Designing Healthy Communities*. USA: John Wiley & Sons, 2012.

Safety Benefits of Walking

"The fatalities on America's roadways are equivalent to a midsize commercial airliner falling out of the sky every other day. The magnitude of roadway crashes is not well publicized, while a single airplane crash would make headlines across the nation."

— Scott Bricker,
Executive Director, America Walks

Problem Overview

- In 2009, there were 33,808 traffic fatalities in the United States and 2.2 million people were injured on the nation's roadways.¹
- In the U.S., every 12 minutes someone dies in a car crash and every 10 seconds someone is injured and taken to an emergency room.²
- For people ages 1 to 33, traffic crashes are the single greatest cause of fatalities and disabilities.³
- Twelve teenagers (between 16 and 19 years of age) die every day because of a car crash.⁴
- There is, on average, one crash-related pedestrian death every two hours, and one pedestrian injury every 8 minutes.⁵
- Pedestrians are 1.5 times more likely than passenger vehicle occupants to be killed in a car crash on each trip.⁶
- In addition to loss of life, traffic crashes cost about \$164 billion annually in property damage and injuries⁷, which is an annual per-person cost of \$1,051.
- The cost of traffic crashes for pedestrians is \$10 billion annually.⁸
- Speed matters: only 5% of pedestrians would die if struck by a vehicle traveling at 20 mph or less. At 30 mph, there's a 40% chance of fatal injury if struck; at 40 mph, the chance of dying increases to 80%, and at 50 mph, it reaches 100%.⁹
- In urban areas, crashes tend to happen more often in places where there are relatively higher traffic speeds and more conflicts between roadway users.¹⁰

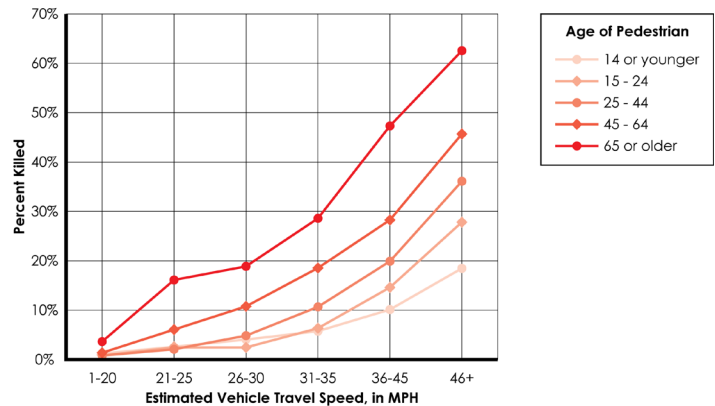


Figure 1: Fatal Injury Rates by Vehicle Speed, by Pedestrian Ages. Source: Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups, US Department of Transportation National Highway Traffic Safety Administration, 1999. <http://www.nhtsa.gov/people/injury/research/pub/hs809012.html>

1. National Highway Traffic Safety Administration. U.S. Transportation Secretary LaHood Announces Lowest Traffic Fatalities in Six Decades. September 2010. <http://www.nhtsa.gov/PR/DOT-165-10>
2. Centers for Disease Control and Prevention. Save lives, save dollars. Prevent motor vehicle-related injuries. August 2010. <http://www.cdc.gov/injury/pdfs/cost-MV-a.pdf>
3. Litman, Todd; Fitzroy, Steven. Safe Travels: Evaluating Mobility Management Traffic Safety Impacts. Victoria Transport Policy Institute. May 2012. <http://www.vtpi.org/safetrav.pdf>
4. Centers for Disease Control and Prevention. Coordinating Center for Health Promotion Centers for Disease Control. Physical activity and good nutrition: Essential elements to prevent chronic diseases and obesity. 2008. <http://www.cdc.gov/nccdphp/publications/aag/pdf/dnppa.pdf>
5. National Highway Traffic Safety Administration. Traffic Safety Facts 2008 Data: Pedestrians. <http://www-nrd.nhtsa.dot.gov/Pubs/811163.PDF>
6. Beck, LF; Dellinger, AM; O'Neil, ME. Motor vehicle crash injury rates by mode of travel, United States: Using exposure-based methods to quantify differences. *American Journal of Epidemiology*. 2007. 166. 212-218.
7. American Public Health Association. At the Intersection of Public Health and Transportation: Promoting Healthy Transportation Policy. 2009. 6. <http://www.apha.org/NR/rdonlyres/0ECFA0F5-1C85-4323-A051-903513BE3B30/0/AttheIntersectionPHandTransportationNewCover.pdf>
8. Centers for Disease Control and Prevention. New CDC Study Finds Annual Cost of Motor Vehicle Crashes Exceeds \$99 Billion. August 25, 2010. http://www.cdc.gov/injury/presroom/story_archive/motorvehicle.html#cost-MV
9. U.S. Department of Transportation National Highway Traffic Safety Administration. Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups. October 1999. <http://www.nhtsa.gov/people/injury/research/pub/hs809012.html>

Walking as a Solution

- Walkable urban neighborhoods are significantly safer than automobile-dependent locations: Any urban-homicide risk increase, which is actually small or nonexistent, is more than offset by the higher traffic-fatality risk in suburban and rural areas.¹¹
- Walking helps people get out of their cars: The risk of getting into a traffic crash increases with the average amount of travel each person spends in a car (per-person vehicle travel). Reducing that amount lowers the risk of traffic crashes for everyone.¹²
- The more people that are walking or bicycling, the less likely drivers are to collide with them. Policies that increase the numbers of pedestrians and cyclists are effective in improving the safety of those on foot and bike.¹³
- Investing in walking infrastructure saves money in the long-run: The National Safety Council estimates the cost of a pedestrian fatality at \$4.3 million¹⁴, while a curb extension costs as little as \$50,000¹⁵, and a high-visibility crosswalk costs about \$1,200.¹⁶
- Making roads safer for walkers helps make roads safer for everyone. Reducing traffic speeds can improve total traffic safety. In the Netherlands, 20 mph zones are associated with a 42% decrease in all crashes, 46% decrease in serious injury and fatal crashes, and 62% decrease in serious crashes for motor-vehicle occupants.¹⁷
- Investing in walking infrastructure can reduce the increased risk of injury many seniors face due to their slower walking speeds. Pedestrian crossing islands, particularly on multi-lane highways, can provide older pedestrians a safe place to wait for the signal to change, while countdown pedestrian signals tell people how much time remains to safely cross the street.¹⁸

10. Ibid.

11. Litman, Todd; Fitzroy, Steven. Safe Travels: Evaluating Mobility Management Traffic Safety Impacts. Victoria Transport Policy Institute. May 2012. <http://www.vtppi.org/safetrav.pdf>

12. Ibid.

13. Jacobsen, P.L. Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Injury Prevention*. 2003. 9:205–209. <http://injuryprevention.bmj.com/content/9/3/205.full.pdf>

14. San Francisco Municipal Transportation Authority. Toolbox of Traffic Calming Devices. n.d. <http://www.sfmta.com/cms/ocalm/documents/ToolBoxofTCDevices.pdf>

15. San Benito County. San Benito Bikeway and Pedestrian Master Plan. Chapter 9: Implementation. 2009. http://www.sanbenitorideshare.org/pdf/bikeway/San_Benito_Bikeway_Ped_Plan_DRAFT_Ch9.pdf

16. Grundy, Chris. Effect of 20 mph traffic speed zones on road injuries in London, 1986–2006: controlled interrupted time series analysis. *BMJ*. 2009. <http://www.bmj.com/content/339/bmj.b4469.full>

17. Florida Department of Transportation State Traffic Engineering and Operations Office. Keeping Seniors Safe and Mobile. Engineering and Planning Resources. n.d. <http://www.safeandmobileseniors.org/EngineerAndPlannerResources.htm>

18. Ernst, Michelle. Dangerous by Design: Solving the Epidemic of Preventable Pedestrian Deaths. Transportation for America. 2011. 28. <http://t4america.org/docs/dbd2011/Dangerous-by-Design-2011.pdf>

Transportation Benefits of Walking

"Walking is incredibly efficient. Nearly a third of all car trips taken in this country are a mile or less in length—the equivalent of a 20-minute walk. Moving those trips out of cars and onto sidewalks would solve many of our transportation conundrums."

— Samuel I. Schwartz, P.E.
President & CEO, Sam Schwartz Engineering

Problem Overview

- In 2010, road congestion caused 4.8 billion hours of travel delay, wasted 1.9 billion gallons of fuel, and resulted in total congestion costs of \$115 billion in 439 U.S. urban areas.¹
- American Society of Civil Engineers estimates it will cost \$5 trillion to repair our nation's crumbling infrastructure—not counting the cost of repairing² the minor streets, curbs, walks, and pipes that serve our homes.³
- The Congressional Budget Office predicts that the U.S. Highway Trust Fund, which helps fund the federal transportation budget, will reach zero by 2014.⁴ In 2011, highway "user fees" (gasoline and other direct auto taxes) paid only about half the cost of building and maintaining the nation's network of highways, roads, and streets.⁵
- The "fundamental law of highway congestion," suggested by Anthony Downs in 1962 and affirmed by further research, concludes that building or widening roads creates a proportional increase in driving.^{6,7} Expanding roads potentially increases air pollution, noise pollution, collisions, and adverse health outcomes.

Trip Distance	% of Trips	Walk Time	Walk / Bike %
< 1/2 mi	14%	10 min	46%
< 1 mi	28%	20 min	35%
< 2 mi.	40%	40 min	26%

Table 1: Analysis of Trips Taken in the United States by Distance, Percentage, Time, and Mode. Source: FHWA 2006-2009 National Household Travel

Walking as a Solution

- Walking can carry a significant portion of the transportation load: Trips less than 2 miles represent about 40% of all trips.⁸
- Walking is critical to a functioning transportation system and can provide many benefits, including:
 - » Walking infrastructure improvements can help create more compact, mixed, multi-modal, communities where residents drive less and use other travel modes.^{9,10}
 - » Walking can help reduce traffic and parking congestion, improve safety, conserve energy conservation, and reduce pollution.¹¹
 - » Walking infrastructure improvements can improve vehicular access. Most motorized trips involve walking or cycling links to reach transit or to travel between parked cars and destinations. Parking lots, airports, and commercial centers are all pedestrian environments.¹²
- Americans are moving away from dependency on cars:
 - » The National Household Travel Survey (NHTS) revealed that per-capita U.S. vehicle travel use peaked in 2001, total U.S. vehicle miles traveled (VMT) peaked in 2007, and total fuel consumption peaked in 2006. U.S. vehicle travel has leveled off and decreased despite continued population and economic growth. By 2010, it was about 10% below the long-term trend projections.¹³

1. Texas Transportation Institute. Urban Mobility Information. Traffic Problems Tied to the Economy, Study Says. Texas A&M University. 2011. <http://mobility.tamu.edu/ums/media-information/press-release/>

2. American Society of Civil Engineers. 2009 Report Card for America's Infrastructure. <http://www.infrastructurereportcard.org/>

3. Strong Towns. Our Current Situation. n.d. www.strongtowns.org/facts/

4. Laing, Keith. CBO reports highway trust fund headed for bankruptcy in 2014. *The Hill*. January 31, 2012. <http://www.thehill.com/blogs/transportation-report/highways-bridges-and-roads/207839-cbo-reports-highway-trust-fund-headed-for-bankr>

5. Dutzik, Tony; Davis, Benjamin. Do Road Pay for Themselves? US PIRG. 2011. www.uspirg.org/sites/pirg/files/reports/Do-Roads-Pay-for-Themselves.pdf

6. Duranton, Gilles; Turner, Matthew A. The Fundamental Law of Road Congestion: Evidence from US Cities. *American Economic Review*. 2011. 101(6): 2616–52.

7. Kockelman, Kara et al. Research on relationships between transportation infrastructure and increase in vehicle miles traveled: the effects of highway capacity expansion on land and development. Center for Transportation Research, The University of Texas at Austin. 1999. http://www.ce.utexas.edu/prof/kockelman/public_html/EPAFinalReport.pdf

8. Litman, Todd. Short and Sweet: Analysis of Shorter Trips Using National Personal Travel Survey Data. Victoria Transportation Policy Institute. 2010. www.vtpi.org/short_sweet.pdf

- » Fewer Americans are getting driver's licenses. Only 22% of licensed drivers today are younger than 30, a significant decrease from 33% in 1983. Those under 40 accounted for 50% of drivers in 1983 and now account for less than 40% of drivers. Between 1983 and 2008, the percentage of 18-year-olds with driver's licenses fell from 80% to 65%, the percentage of 17-year-olds with driver's licenses decreased from 69% to 50%, and the percentage of 16-year-olds with driver's licenses decreased from 46% to 31%.¹⁴
- » Nationally 11% of transportation trips are walking trips¹⁵ and 15%–30% of all urban trips involve at least one walking link.¹⁶

Potential Benefits	Improved Walking Conditions	Increased Walking
	<ul style="list-style-type: none"> • Improved user convenience • Improved accessibility • Option value • Increased local property values 	<ul style="list-style-type: none"> • User enjoyment • Improved public health • Increased community cohesion
	Reduced Car Use	More Walkable Communities
	<ul style="list-style-type: none"> • Reduced traffic congestion • Reduced road and parking costs • Consumer savings • Fewer traffic crashes • Energy conservation • Reduced air and noise pollution 	<ul style="list-style-type: none"> • Improved accessibility • Lower transportation costs • Reduced sprawl costs • Habitat preservation • More livable communities

Table 2: Nonmotorized Transportation Benefits. Source: Todd Litman

9. Bartholomew, Keith; Ewing, Reid. Land Use-Transportation Scenarios and Future Vehicle Travel and Land Consumption. *Journal of the American Planning Association*, Winter 2009. (75) 1. http://faculty.arch.utah.edu/bartholomew/Individual%20Files/08_Scenario_JAPA.pdf

10. Frank, Lawrence D.; Greenwald, Michael J.; Kavage, Sarah; Devlin, Andrew. An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. State of Washington Department of Transportation. April 2011. <http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf>

11. Litman, Todd. Evaluating Non-Motorized Transport Benefits and Costs. Victoria Transport Policy Institute. 2011. www.vtppi.org/nmt-tdm.pdf

12. Ibid.

13. Litman, Todd. The Future Isn't What It Used to Be – Changing Trends and Their Implications for Transport Planning. Victoria Transport Policy Institute. May 2012. <http://www.vtppi.org/future.pdf>

14. Sweatman P., Shope J., Schneider, L. Driving forces: fewer young people, but more elderly with driver's licenses. *University of Michigan Transportation Research Review*. 2011. 42 (4). http://www.umtri.umich.edu/content/rr42_4.pdf

15. Pedestrian and Bicycle Information Center. Pedestrian Crash Facts. n.d. <http://www.walkinginfo.org/facts/facts.cfm>

16. Litman, Todd. Economic Value of Walkability. Victoria Transport Policy Institute. February 2011. <http://www.vtppi.org/walkability.pdf>

Social Equity Benefits of Walking

"...If you believe that society should strive to promote equality and happiness, you push to make your roads integrated and humane, from space for walking to space for cars and transit. And in my mind, the most advanced cities are the ones with the best-quality sidewalks."¹

— Enrique Peñalosa,

former mayor of Bogotá, Colombia, and president of the Institute for Transportation and Development Policy

Problem Overview

- Over the past 50 years development trends have created low-density suburbs and exurbs that require people to go further distances to satisfy basic needs and often make travel by foot impossible:
 - » Suburban subdivisions often lack sidewalks and feature multilane highways that cannot be safely crossed by foot.³
 - » Schools are often placed on the fringe of communities along wide, busy thoroughfares that prevent children from biking or walking to school.⁴
 - » There are few transportation options for nearly two-thirds of residents living in unincorporated areas, small towns, and rural communities: 41% have no access to transit; and another 25% live in areas with below-average transit services.⁵
- These development patterns disproportionately affect those with low incomes and communities of color:
 - » Low-income households are more reliant on walking, cycling, and transit infrastructure for personal mobility. A Brookings Institution report reveals that 7.5 million American households, or 10% of households, do not have access to a private vehicle. Nearly 60% of those households have incomes below 80% of their regional median income. Families without a vehicle, however, often live in places that lack active transport investments.⁶
 - » In 2006, 45% of jobs in the largest of the country's metro areas were farther than 10 miles from the urban core, where the disproportionate numbers of low-income and minority populations live.⁷ These suburban jobs are often reachable only by private car, which further isolates low-income and minority populations from economic opportunities.
- » African-Americans make up 12% of the U.S. population, yet they account for 20% of pedestrian fatalities.⁸
- » Hispanics suffer a pedestrian death rate that is 62% higher than non-Hispanic whites, and African-Americans suffer a pedestrian death rate that is almost 70% higher than non-Hispanic whites.⁹
- » Americans in the lowest 20% of the income bracket spend 42% of their total annual income on transportation, while middle-income households spend 22% of their annual income on transportation.¹⁰ High transportation costs make low-income families limit their spending on other basic needs, such as health-care expenses, food, and clothing.¹¹
- Walking is critical for accessibility:
 - » One-third of all Americans are not able to drive, either because they are too old, too young, too poor, or have some form of disability.¹²
 - » 1 in 5 Americans faces a physical limitation that affects his ability to travel for his daily needs.¹³
 - » More than 50% of Americans 65 and older who do not drive stay home on a given day because they lack transportation options.¹⁴
- Federal transportation funding compounds these inequities:
 - » Not a single dollar of the U.S. transportation budget is dedicated solely to walking.
 - » Less than 2% of federal transportation funds are spent on pedestrian facilities.¹⁵

1. Grunow, Francis. Leading with vision: A conversation with transit innovator Enrique Penalosa. Model D Media. January 17, 2012. <http://www.modeldmedia.com/features/penalosa112.aspx>

2. Dombroski, Matthew. Securing Access to Transportation for the Urban Poor. *Columbia Law Review*. Vol. 105, No.2. March 2005. 503–536.

3. Ibid.

4. Surface Transportation Policy Project. Mean Streets Report. Chapter 2. The Dangers of Walking Less. 2002. www.transact.org/report.asp?id=159

5. Alliance for Biking and Walking et. al. Testimony for the Record Submitted to: Senate Committee on Banking, Housing and Urban Affairs Hearing. Public Transportation: Priorities and Challenges for Reauthorization. May 19, 2011. www.naccho.org/advocacy/testimony/loader.cfm?csModule=security/getfile&PageID=193952

6. Tomer, A. Transit Access and Zero-Vehicle Households. Metropolitan Policy Program. Brookings Institution. 2011.

7. Kneebone, Elizabeth. Sprawl revisited: The changing geography of metropolitan employment. Metropolitan Policy Program. Brookings Institution. 2009. <http://www.brookings.edu/research/reports/2009/04/06-job-sprawl-kneebone>

8. Pucher, John; Renne, J.L. Socioeconomics of Urban Travel: Evidence from the 2001 NHTS. *Transport Quarterly* 57. 2003. 49–77. <http://policy.rutgers.edu/faculty/pucher/TQPuchRenne.pdf>

9. Alliance for Biking and Walking et. al. Testimony for the Record Submitted to: Senate Committee on Banking, Housing and Urban Affairs Hearing. Public Transportation: Priorities and Challenges for Reauthorization. May 19, 2011. www.naccho.org/advocacy/testimony/loader.cfm?csModule=security/getfile&PageID=193952

10. Sierra Club and US PIRG. Transit Fact Sheet. 2003. http://www.sierraclub.org/sprawl/reports/transit_factsheet.pdf

Walking as a Solution

- Walking improves mobility, consumer cost savings, fitness and health, and social interaction.¹⁶
- Increasing community walkability improves home values, residents' health, and localized air quality.¹⁷
- More compact urban form designed around transit stations can reduce travel costs, wages, and housing costs, which can lead to substantial net benefits for lower-income households.¹⁸
- Improved walkability allows residents to save on transportation costs:¹⁹ The typical annual transportation cost for households in neighborhoods with bus and rail transit was \$3,000 lower than the cost in communities with no access to transit.²⁰
- According to one CDC-funded study, trails can be beneficial in promoting physical activity among those groups traditionally at highest risk for inactivity, especially women and individuals in lower socioeconomic groups.²¹

Additional Resources

- PolicyLink: www.policylink.org

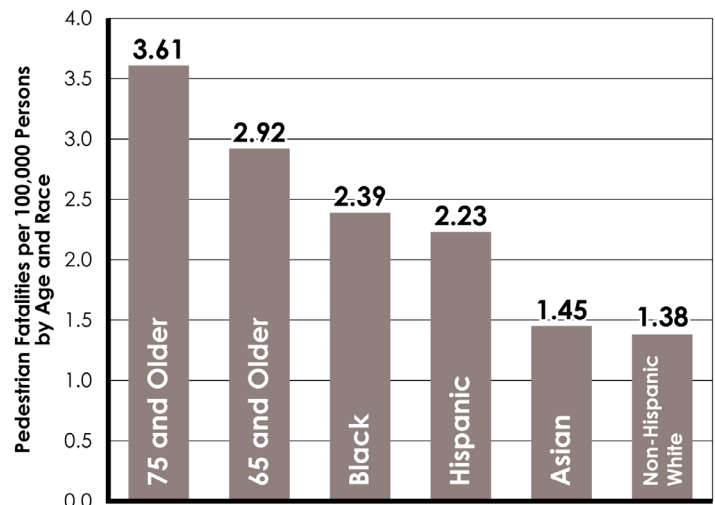


Figure 1: Pedestrian Fatality Rate Per 100,000 Persons by Age and Race. Source: *Dangerous by Design, Transportation for America, 2011*

11. Leadership Conference Education Fund. Where we need to go: civil rights roadmap in transportation equity. 2011. <http://www.scribd.com/fullscreen/52846576>

12. Rails to Trails Conservancy. Active Transportation for America: A Case for Increased Federal Investment in Bicycling and Walking. Rep. Print.

13. Alliance for Biking and Walking et al. Testimony for the Record Submitted to: Senate Committee on Banking, Housing and Urban Affairs Hearing. Public Transportation: Priorities and Challenges for Reauthorization. May 19, 2011. www.naccho.org/advocacy/testimony/loader.cfm?csModule=security/getfile&PageID=193952

14. Surface Transportation Policy Institute. Aging Americans: Stranded Without Options Fact Sheet. 2012. www.transact.org/library/reports_html/seniors/fact_sheet.asp

15. Dombroski, Matthew. Securing Access to Transportation for the Urban Poor. *Columbia Law Review*. 105 (2) March 2005. 503–536.

16. Litman, Todd. Economic Value of Walkability. February 2011. Victoria Transport Policy Institute. www.vtpi.org/walkability.pdf

17. Leinberger, C.; Alfonzo, M. Walk this way: the economic promise of walkable places in Metropolitan Washington, D.C. Brookings Institution. 2012. www.brookings.edu/research/papers/2012/05/25-walkable-places-leinberger

18. Rodier, Caroline; Abraham, John E.; Dix, Brenda N.; Hunt, John D. Equity Analysis of Land Use and Transport Plans Using an Integrated Spatial Model. Report 09–08. Mineta Transportation Institute. 2010. [www.transweb.sjsu.edu/MTIportal/research/publications/documents/Equity%20Analysis%20of%20Land%20Use%20\(with%20Covers\).pdf](http://www.transweb.sjsu.edu/MTIportal/research/publications/documents/Equity%20Analysis%20of%20Land%20Use%20(with%20Covers).pdf)

19. Litman, Todd. Transportation Affordability: Evaluation and Improvement Strategies. Victoria Transport Policy Institute. June 2011. www.vtpi.org/affordability.pdf

20. Robinson, Emily. New Report: When Transportation Costs Considered, Some Chicago Area Affordable Housing Isn't Affordable. Center for Neighborhood Technology. February 2, 2012. www.cnt.org/news/2012/02/01/5597/

21. Ibid.

Economic Benefits of Walking

"The creation of safe and attractive walking and cycling environments in towns and cities is a necessary condition for success and is central to improving them for shoppers, visitors, workers, and residents alike. In other words, quite apart from pro-walking and pro-cycling arguments based on sustainability, the environment, health, community cohesion, or social inclusion, there is a strong business case for improving walking and cycling conditions."

— Dr. Rodney Tolley¹

Conference Director of Walk21

Problem Overview

- Transportation is the second largest household expense in the United States. Driving a newer sedan in 2011 cost an average annual amount of \$8,946 (60¢ per mile) while driving an SUV cost \$11,360 (76¢ per mile).²
- Each additional car in a household budget reduces that household's mortgage capacity by about \$150,000; reducing a car adds back that much mortgage capacity.³
- Households in automobile-dependent communities have few ways to reduce their transportation costs in response to unexpected events such as job losses and fuel-price spikes. The 2008 mortgage collapse took place on the auto-dominated suburban fringe, while walkable communities, whether in the city or the suburbs, held their value.⁴
- According to the Center for Neighborhood Technology (CNT), housing does not qualify as "affordable" if the costs of housing plus transportation exceed 45% of household income.⁵ The farther you get from the urban core, the more transportation costs increase due to sprawl, longer commute distances, and fewer opportunities to walk, bike, or use transit. The map of Minneapolis in Figure 1 shows affordable housing without factoring in transportation costs. This map places affordable housing (in yellow) primarily in the suburban areas. When transportation costs are factored into housing expenses, as depicted on the map in Figure 2, the number of affordable neighborhoods is much smaller and found primarily in central neighborhoods.⁶

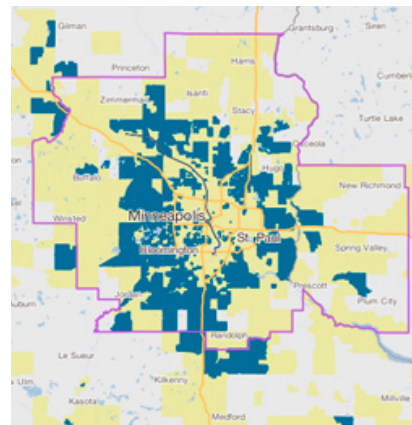


Figure 1: Affordable Housing (in yellow) in Minneapolis / St. Paul without Factoring In Transportation Costs. Source: Center for Neighborhood Technology. H+T Affordability Index

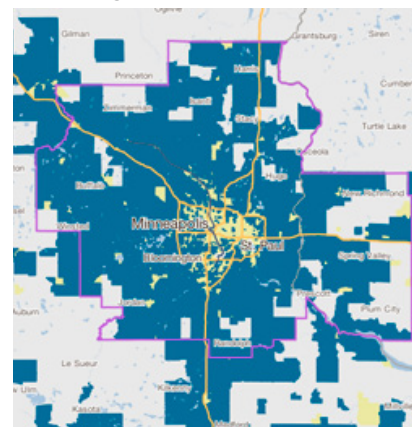


Figure 2: Affordable Housing (in yellow) in Minneapolis / St. Paul with Transportation Costs Factored In. Source: H+T Affordability Index, Center for Neighborhood Technology

1. Tolley, Rodney. Good for Business: Benefits of Making Streets More Walkable and Cycling Friendly. Heart Foundation. 2011. http://www.heartfoundation.org.au/SiteCollectionDocuments/GoodforBusinessFINAL_Nov.pdf
2. AAA. Cost of Owning and Operating Vehicle in U.S. Increased 1.9% According to AAA's 2012 'Your Driving Costs' Study. 2012. <http://newsroom.aaa.com/2012/04/cost-of-owning-and-operating-vehicle-in-u-s-increased-1-9-percent-according-to-aaa%E2%80%99s-2012-%E2%80%98your-driving-costs%E2%80%99-study/>
3. Freedman, Robert. Walkable Living Makes Strides. *RealtorMag*. National Association of Realtors. November 2008. <http://realtormag.realtor.org/news-and-commentary/commentary/article/2008/11/walkable-living-makes-strides>
4. Leinberger, Christopher B. Walk, Don't Drive, to the Real Estate Recovery. 2011. <http://www.brookings.edu/up-front/posts/2011/04/28-recovery-leinberger>
5. Center for Neighborhood Technology. True Affordability and Location Efficiency. H+T Affordability Index. 2012. <http://www.htaindex.org/#2>
6. Ibid.
7. National Association of Realtors. Smart Growth Program. Smart Growth in the 21st Century Class. n.d. <http://www.realtor.org/programs/smart-growth-program/smart-growth-in-the-21st-century-class>
8. Center for Neighborhood Technology. Transportation and Community Development. 2012. <http://www.cnt.org/tcd/>
9. Leinberger, Christopher B. Walk, Don't Drive, to the Real Estate Recovery. Brookings Institution. 2011. <http://www.brookings.edu/up-front/posts/2011/04/28-recovery-leinberger>

Walking as a Solution

- Communities that develop according to smart-growth principles, which include walkable street networks, cost less for individuals to live in and cost less for local governments to administer.⁷
 - Location-efficient neighborhoods with walkable streets, access to transit, and a variety of amenities have lower household transportation costs than inefficient neighborhoods do.⁸ This ability to cut back on transportation costs allows for greater resiliency and lower foreclosure rates.⁹
 - Creating a walkable environment can improve an area's economy.¹⁰
- » Retailers sometimes favor automobile access over nonmotorized access (e.g., wider sidewalks, bike lanes, and traffic calming) because they assume drivers spend more than those who travel by other modes. In many urban areas, however, most customers arrive by walking, cycling, or taking transit. Although drivers tend to spend more per trip, pedestrians and cyclists shop more frequently and spend more per capita over a month or a year.^{11,12,13}
 - » A Washington, DC study concluded that walkable commercial leases were 27% higher than high-quality suburban space and had a much lower vacancy rate (8% vs. 12%).¹⁴
 - » More walkable sites command higher property values: On a 100-point scale, a 10-point increase in walkability increases property values by 1% to 9%.¹⁵ Within a typical U.S. metropolitan region, a one-point increase in Walkscore is associated with a \$700 to \$3,000 increase in home values.¹⁶

Smart Growth Reduces Affordability	Smart Growth Increases Affordability
<ul style="list-style-type: none"> • Urban growth boundaries that reduce developable land supply • Increase in building-design requirements 	<ul style="list-style-type: none"> • Higher-density development reduces land requirements per housing unit • Reducing parking and setback requirements reduces land requirements per housing unit • Allows more diverse housing options, including secondary units, apartments over shops, loft spaces, etc. • Reduces fees and taxes for in-fill housing • More accessible housing reduces housing and transportation costs

Table 1: Smart Growth and Household Affordability Impacts.
Source: Todd Litman, *Evaluating Criticism of Smart Growth*, 2012

Additional Resources

- Todd Litman, Victoria Transport Policy Institute: www.vtpi.org
- Christopher B. Leinberger, Brookings Institution: www.chrisleinberger.com

10. Hass-Klau, Carmen; Crampton, Graham; Benjari, Rabia. Economic Impact of Light Rail: The Results of 15 Urban Areas In France, Germany, UK, and North America. *Environmental & Transport Planning*. 2004. <http://etphassklau.co.uk>

11. Transportation Alternatives and Schaller Consulting. *Curbing Cars: Shopping, Parking and Pedestrian Space in SoHo*. 2006. www.transalt.org/files/newsroom/reports/soho_curbing_cars.pdf

12. Sztabinski, Fred. *Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto's Annex Neighbourhood*. The Clean Air Partnership. 2009. www.cleanairpartnership.org/pdf/bike-lanes-parking.pdf

13. Malatest & Associates. *Victoria Regional Rapid Transit: Survey of Businesses, Property Owners, and Customers*. BC Transit. 2010. www.transitbc.com/vrrt/displaypdf/Business_Survey_Results.pdf

14. Leinberger, Christopher B. *The Option of Urbanism – Investing in a New American Dream*. Island Press. 2007.

15. Pivo, Gary; Fisher, Jeffrey D. *The Walkability Premium in Commercial Real Estate Investments*. University of Arizona. 2010. www.u.arizona.edu/~gpivo/Walkability%20Paper%20February%202010.pdf

16. Cortright, Joe. *Walking the Walk: How Walkability Raises Home Values in U.S. Cities, CEOs for Cities*. 2009. www.ceosforcities.org/files/WalkingTheWalk_CEOsforCities1.pdf

Advocacy Tactics

Introduction

This first chapter provides insights on how to approach projects that can increase the number of people walking and that will make your community more walkable. We provide an advocacy structure to help you make your goals a reality, whether it's a short-term project to build walking awareness or a long-term strategy for institutional or systems change.

This is also an introduction to America Walks, an organization dedicated to "Making America a Great Place to Walk!" America Walks provides comprehensive workshops and training aimed at supporting your work, so feel free to contact America Walks for more information or for suggestions on the advocacy process.

Community involvement is the process to expand the awareness of, demand for, and participation in a positive cause. Tactics can range from talking to neighbors and engaging a congregation in healthy and spiritual walks to executing a complex policy campaign. Whether you are a parent hoping to improve accessibility or a director of a walking organization, the process of community involvement will help you win improvements for your community.

Follow these steps to best advocate for walking improvements:

1. Assess your organization and network of supporters
2. Define the issue
3. Set (campaign) goals
4. Assess resources and opportunities
5. Target decision-makers and create a champion
6. Communicate
7. Set tactics and timelines
8. Manage resources

Whether you are running a small project or multiyear effort, we recommend that you structure your work into a campaign format that will focus efforts toward accomplishing specific goals. We believe that the step-by-step advocacy model¹ can guide you and your group through the process of planning campaigns or projects to encourage walking. Following the step-by-step process will let you zero in on specific projects to make the most focused change, whatever your resource levels.

It is important to note that these steps might not play out in a linear fashion. For example, when starting out, you may define an issue and set goals in a way that helps you recruit others to your group. This larger group may redefine or refine the issue in a somewhat different way and identify new specific goals to guide and motivate the new group. In any community-involvement process, participants should be willing to reconsider their approach and tactics as they find new audiences to target or messages that support action. While these steps are ones that every project will implement, their sequence and frequency will vary according to circumstances.

Material in this section is derived from the Alliance for Biking and Walking's "Winning Campaigns™ Training Workbook." Visit PeoplePoweredMovement.org/wctraining

Step 1. Assess Your Organization and Network of Supporters

It is important to do a self-assessment prior to or while you are defining the issue. The more people who help with a campaign, the more success you will have. Identify your prospective partners and discuss who you are and what your interests are. Allow your group to realize its commonalities and differences.

Your role will shape the focus of the walking project. For example, I am:

- A parent...and want my child to be able to safely walk to school.
- A religious leader...and want to improve the health of my congregation.
- A human resources manager...and want to make employees more alert and healthy, increasing productivity and reducing medical costs.
- A main-street business association...and want to increase customer foot traffic.
- A health coalition...and want to promote walking as an entry point to a healthy lifestyle.
- A walking-advocacy organization...and want to improve walking and accessibility.

Now that you have established your role, you can better define the issue you care about.

Step 2.

Define the Issue

Advocacy

Policy
Land Use
Design & Engineering
Encouragement & Education
Enforcement

Tactics

Clearly defining the issue in context with your perspective(s) will lead toward setting effective goals. Most community change begins with planning a campaign, or a project that has tangible, measurable goals and objectives. A group's mission may be broad (e.g., creating a successful business environment on Main Street), but the defined issue of a campaign should focus on a specific topic (e.g., Main Street is unpleasant to walk along and dangerous to cross).

Create an issue statement by building on the self-assessment from Step 1:

- Identify the problem that exists. As an example, a parent might say: "My child can't safely walk to school because there are no sidewalks and cars travel too fast."
- Identify the solution. Following our example, the parent would say: "We need to install sidewalks and reduce the speed limit to 15 mph in the area."
- Identify how to implement the solution. Continuing our example, the parent would say: "The city council needs to pass legislation that lowers the speed limit and funds sidewalk installation."
- Put it together into a succinct statement. Completing our example, the issue statement would be: "My child can't safely walk to school because there are no sidewalks and cars travel too fast. We need to install sidewalks and reduce the speed limit to 15 mph in the area. The city council needs to pass legislation that lowers the speed limit and funds sidewalk installation."

Formulating an issue statement will build the foundation for your campaign and help you focus on achieving the overall goal of your campaign.

Quick Tip:

Meet with your whole group and break into teams of four. Each team comes up with an issue statement on its own. Then, as a whole group, combine the best parts to formulate one that all can get behind.

Step 3.

Set (Campaign) Goals

The next step is creating campaign goals, or changes that you hope to achieve through your campaign. An ideal goal is a “SMART” goal: Specific, Measurable, Achievable, Realistic, and Timely. You can also divide goals into three types: short term, medium term, and long term. People or organizations with limited resources may focus on short-term goals but build in a long-term goal to increase capacity or to have another organization continue the effort.

For the purposes of planning your campaign, your long-term goal should be achievable with this campaign. Your short- and medium-term goals are incremental steps toward realizing your long-term goal. It's okay for the short- and medium-term goals to be small. Those victories keep people energized to win the long-term goal! Be sure to include a target-completion date with each goal.

Following the example for the need to get the city council to fund sidewalks and lower the speed, your goals might be:

Short-Term Goals:

- In one month, to triple our supporters by engaging more people from the community
- In two months, to build relationships with community leaders to build local support
- In two months, to identify what is needed to win the support of city council members
- In three months, to secure 70% of needed donations to fund our campaign

Medium-Term Goals:

- In four months, to reach out to businesses near the school to support the resolution
- In five months, to build a coalition and draw 200 people to the council meeting in support

Long-Term Goal:

- In six months, after the council passes the resolution to lower the speed limit and install the sidewalks, to celebrate your win

Quick Tip:

Campaign goals help you focus on winning your campaign. You can always come back and revise as you move through the process. Some organizations might need to consider how a campaign will affect the overall goals of the group (e.g., increased budget, increased exposure, etc.).

Step 4. Assess Your Resources and Opportunities

Advocacy

Policy

Land Use

Design & Engineering

Encouragement & Education

Enforcement

Tactics

It's now time to align your goals with your current resources, strengths, and opportunities. It's also important to identify any shortcomings that may need to be addressed to make your campaign stronger and more successful. Work with your organization's leadership to analyze your campaign.

First identify the internal strengths and weaknesses that you, your group, or your organization may have. Then identify external opportunities and threats to your campaign. This will help you uncover what can influence your success, especially when looking at specific allies and opponents of your campaign. This assessment is a natural bridge between your goals and identifying whom you need to target in order to achieve that change. The chart below will help you in this section:

Internal Analysis	
What strengths exist in your organization because of the people your campaign brings to the table? • • •	What weaknesses exist in your organization because of the people your campaign brings to the table? • • •

External Analysis	
What opportunities exist in your organization? Who are some of your allies to help you win your campaign? • • •	What threats exist in your organization? Who are some of your opponents who could prevent you from winning your campaign? • • •

Quick Tip:

Identify your allies and your opponents, and then target the people in the middle, or those whom you can sway to your side. Sequence your tactics to create short-term successes that build longer-term momentum for change.

Step 5. Target Decision-Makers and Create a Champion

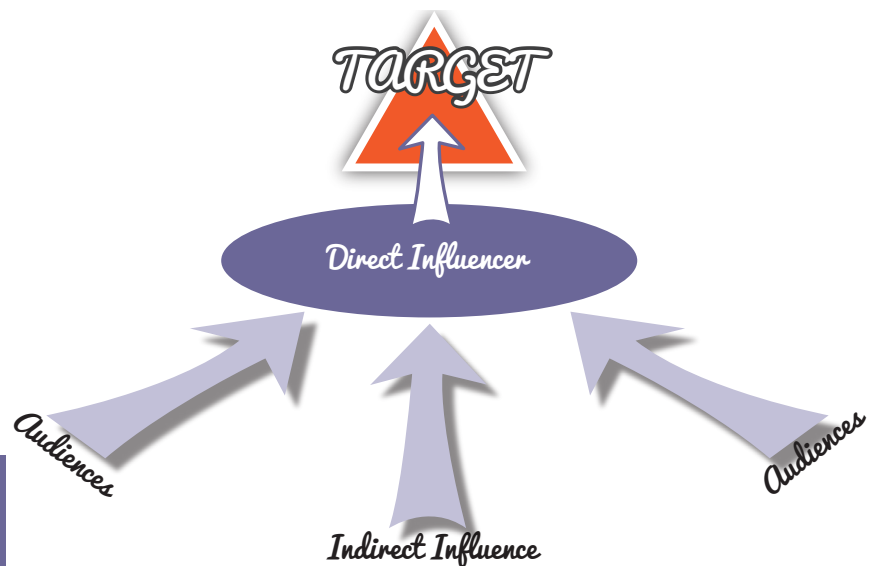
We know that community leaders have a lot competing for their attention. It can take a long time to develop champions for your cause, so it is critical to lay the foundation for this type of support. With the backing of influential champions, the results of your campaign can improve exponentially.

The critical question to answer when it comes to winning your campaign is, Who has the power to make the change you need to achieve your goals?

Be as specific as possible when identifying your targeted audience. You may have to do some research by talking to people, or reviewing websites in order to identify these names. You may start out listing the “town council” as a target, but you’ll likely need to identify two or three city council members who are the swing votes. These are the people to target in winning support for your efforts. To exert influence on your target, you may need to win the support of people who have direct or indirect influence over him or her, such as other community members or council members.

Develop a map to reach each target by asking the following questions:

- Who is the person who has the power to make the change to win the campaign?
- What people or organizations have direct influence on your targets—the people whose support you need?
- Whom do you know who knows your target and has influence to sway them in your direction?
- What people have indirect influence over your target?
- What audiences do your target listen to when considering decisions?



Quick Tip:

Identifying your targets and convincing them to side with your campaign can lead to developing a champion for your cause. Sometimes all it takes is changing one person's mind to help walking become a hot topic for your community.

Step 6. Communicate

Change depends on communication—talking to people, posting fliers, emailing constituents, earning press and editorials, using social media, etc.—to build support for your campaign. Effective communication depends on the message as well as the medium. You will be most successful if you can provide a comprehensive range of objective reasons that support your walking campaign. These can focus on benefits for economic development, transportation, health, recreation, etc.

- First, brainstorm your message and determine how to most effectively reach your audiences.
- Test your message with select target audiences and refine it before expanding its reach. Not everyone is going to agree that your proposal is worth the time and money.
- Make sure your communication emphasizes tangible benefits as well as "feel good" arguments. It is always more persuasive to make an appeal from the standpoint of fulfilling a need rather than a want.

Develop an "elevator speech" that you can use whenever you have 30 seconds with someone to get them interested in your campaign. Using the previous example of safer routes to school, a good elevator speech would restructure the issue statement in Step 2 to the following speech:

Hook	The other day, my son John was walking home from school and a car almost hit him. He and his friend face this danger every day trying to get home from school.
Problem	There are no sidewalks and cars move very fast, making it unsafe for our children.
Solution	We need to get sidewalks installed and reduce the speed limit to 15 mph in the area.
Call to Action	Will you sign our petition and attend the city council hearing in support of legislation that lowers the speed limit and funds sidewalk installation?

Use this model to modify the message to persuade the target audiences you identified in Step 4.

Step 7.

Set Tactics and Timelines

Now create your to-do list of actions, or tactics to achieve your campaign goals, and specify a timeline for their completion. Tactics are what you must do immediately (or soon!) to accomplish a long-term strategic goal.

Consider the following questions when coming up with tactics for your campaign:

- What needs to be done?
- Who will contact whom?
- What will be your group's first coordinated effort?
- How will you communicate your message?
- How will you develop community or political support? Will it be:
 - » An informational public meeting?
 - » A series of one-on-one meetings?
 - » A letter-to-the-editor campaign?
 - » An effort to persuade your town government to pursue a policy change?

After your group has identified tactics to win your campaign and accomplish your long-term goal, you can use the following tool to track your tactics.

What Is the Tactic?	Assigned to Whom?	Date of Completion	Update / Notes

This chart helps you track your progress on your action plan. Your group can even upload it to a file-sharing system, such as Google Docs, for real-time updating.

As previously mentioned, the process is not always linear. As you proceed, unanticipated opportunities may present themselves, so tactics may change and evolve. Sometimes you'll need to revisit a step or start a new sequence of tactics based on circumstances. In any change campaign, participants should be willing to reconsider tactics, add new audiences, and refine messaging.

Quick Tip:

Identifying a leader for each task is crucial to ensuring accountable progress. Allow people the opportunity to volunteer for tasks, but also ensure that leaders have the ability to get the job done.

Step 8. Manage Resources

Advocacy

Policy

Land Use

Design & Engineering

Encouragement & Education

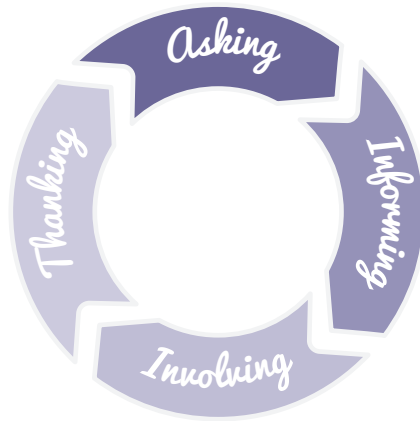
Enforcement

Tactics

Staff and Volunteers

For most small-scale efforts, managing resources may have more to do with people than with dollars. People, whether they are staff or volunteers, are needed to lead groups, write letters, attend meetings, and help with communication.

A key step is asking for help to complete tasks. Make sure your volunteers feel valued and included in the overall effort. Small tokens of appreciation, whether gift certificates, T-shirts, or shout-outs, can let volunteers know you value their efforts. Consider this a circular process (pictured below) of asking (for help or funds), informing people about progress and needs, involving people in the advocacy effort, and thanking people for their time or money, which then leads back to asking.



Money

Many campaigns require financial resources to meet more substantial goals. These funds can be used to pay for staff, materials, communication tools, etc. There are many helpful resources that can guide your efforts to raise money. A critical component of fundraising is ensuring that your financial requests pay for clearly articulated plans. Consider giving funders or organizational leaders budget authority in your planning processes to build their interest and investment.

With fundraising, follow the same cycle of Asking → Informing → Involving → Thanking → Asking.

Conclusion

Our step-by-step model to plan a winning campaign gives you a framework to create a solid action plan to persuade people to help with your issue. Now that you have a framework for your campaign, we invite you to read through this tool kit for sample projects and tactics that you can employ to improve walking in your community.

America Walks is committed to supporting your local advocacy efforts with a variety of activities that include phone calls, webinars, informational trainings, and campaign-development workshops. Contact us at campaigns@americawalks.org to learn more about our services.

Policy Tactics

Introduction

While readers might find tactics that are technically policies in other chapters of this guide, this chapter focuses on policies that can create a broad-level framework for improving walking conditions and encouraging walking in a community. Some of these tactics can be integrated into each other—for instance, measurable performance indicators can be incorporated into pedestrian master plans and complete streets policies—while others serve as catalysts for other walk-friendly infrastructure improvements and programs.

Improving by Policy: San Francisco

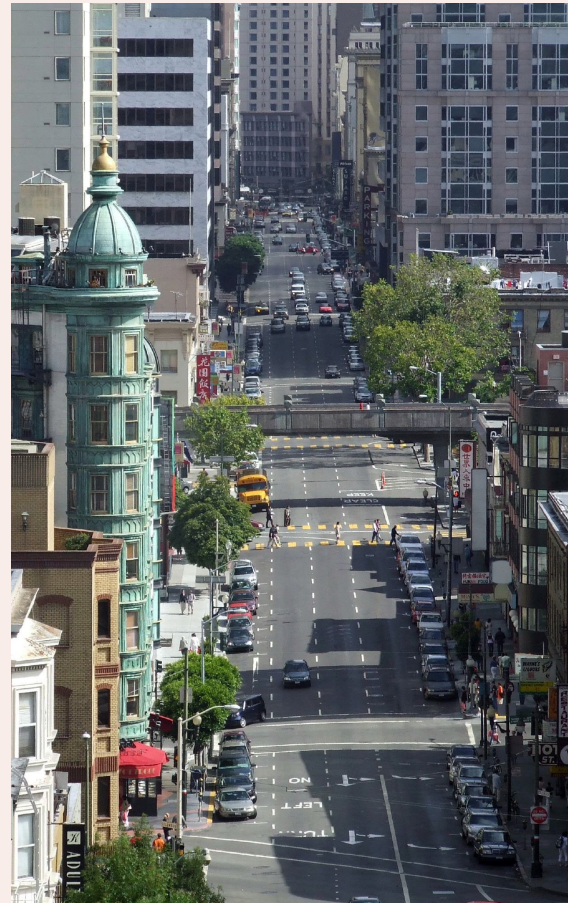
San Francisco has made itself a more walkable community through a variety of policy approaches. The city first passed a Better Streets Policy in 2006 to create a unified set of standards, guidelines, and implementation strategies for its pedestrian environment.

While agencies coordinated to create the Better Streets Plan, however, residents were still being hurt on the streets. Between 2005 and 2008, San Francisco averaged about 800 pedestrian injuries a year.¹

In December 2010, the same month the Better Streets Plan was approved,² then Mayor Newsom issued an Executive Directive (which was reaffirmed by Mayor Edwin Lee) to channel agency goals toward reducing pedestrian injuries. The directive created a pedestrian safety task force to coordinate agency efforts, and it called for both short-term safety improvements and the creation of a long-term pedestrian strategic plan.

The Pedestrian Safety Action Plan, to be published in 2012, will include measurable performance indicators to help hold agencies accountable to the plan's goals and ensure that implementation strategies address existing safety challenges.³

The San Francisco Department of Public Health has also been developing health-impact assessment tools to better examine future pedestrian needs and judge how ongoing and upcoming plans, such as road pricing and the Treasure Island Community Transportation Plan, will affect public health.⁴



The North Beach neighborhood of San Francisco.
Source: Solyanka, Flickr

1. Pedestrian Safety Advisory Committee. 2010 Report to the Board of Supervisors City and County of San Francisco. January 2011. <http://www.sfmta.com/cms/cpdsafe/documents/PSACReportDRAFTFINAL010611.pdf>

2. San Francisco Planning Department. Better Streets San Francisco. n.d. <http://www.sf-planning.org/ftp/BetterStreets/index.htm>

3. Bialick, Aaron. Ped Action Plan Ready Soon. Will SF Commit to Building Ped Infrastructure? Streetsblog.org. April 11, 2012. <http://sf.streetsblog.org/2012/04/11/ped-action-plan-ready-soon-will-sf-commit-to-building-ped-infrastructure/>

4. Walk Friendly Communities. San Francisco, CA. Community Highlights. Walk Friendly Communities. n.d. http://www.walkfriendly.org/communities/community_cfm?ID=87

Establish an Executive Directive

Definition Executive orders or mayoral directives can create or modify policies that affect city operations. In the case of walking, mayoral directives can kick-start the creation of pedestrian action plans, pedestrian-oriented street design guidelines, and multiagency collaborations to meet safety goals set by mayors.

Benefits

- Faster and easier to institute than an ordinance to be adopted by the city council
- Unifies multiple goals, vision policies, and programs
- Helps institute regular public or multiagency hearings to increase agency accountability, educate the public and elected officials, and review existing practices for potential opportunities for improvement
- Encourages other jurisdictions and private companies to follow suit and support the initiatives
- Provides impetus for city council–crafted bills and resolutions to institutionalize efforts to meet the goals of the mayoral directive

Considerations

- Potentially limits the initiative to the term of the mayor who issues the directive

Appropriate Contexts

- Countries, states, counties, cities, and towns with strong mayoral or head managerial roles

Guidance

- Outline a strong policy vision
- Set clear, measurable goals to keep efforts focused
- Create a strong role for advocacy groups to promote agency accountability
- Provide bold leadership at the agency level to support reflection and reform
- Provide initial and ongoing mayoral support:
 - » Reaffirm goals publicly
 - » Attend task force meetings
 - » Push agency heads to prioritize the directive's goals
- Regularly evaluate progress toward the directive's goals
- Publicly publish reports of those evaluations to foster transparency, keep the directive's goals and progress in the media spotlight, and encourage agency accountability

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

- New York, NY: [PlaNYC](#)
- San Francisco, CA: [Pedestrian Safety Executive Directive](#)
- Seattle, WA: Mayor's 10 Point Plan for Pedestrian Safety



San Francisco. Source: Chris Streeter, Flickr

Case Study: San Francisco

For being such a compact, walkable city, San Francisco was surprisingly dangerous for pedestrians. More than 3,500 pedestrians were injured in the city between the years of 2005 and 2008. The figure amounted to more than 800 annual average pedestrian injuries a year—more than 100 of which were severe or fatal injuries.¹

San Francisco's city agencies had been trying to address this mounting problem, but individual agencies focused on the quality of the pedestrian infrastructure while others addressed safety concerns on an intersection-by-intersection basis; the agencies lacked concerted coordination and clear common goals to focus their efforts on bringing down the numbers of pedestrian injuries.

Then Mayor Gavin Newsom delivered a Mayoral Executive Directive in December 2010. The executive directive focused agency efforts on improving pedestrian safety in San Francisco. Not only did the directive provide a clear, unifying goal for city agencies and bring political support for addressing pedestrian safety, but it also provided a clear framework for systematically implementing solutions. The directive focused on severe and fatal injuries; set clear numerical targets for severe and fatal injury reductions; focused on vehicle speeds; defined achievable near-term actions; and established a citywide Pedestrian Safety Task Force to facilitate interagency coordination and community engagement.²

In the months following the mayoral executive directive, the mayor's office attended the monthly Pedestrian Safety Task Force meetings to reinforce the ongoing commitment of elected officials and encourage city agencies to prioritize pedestrian safety in their projects and policies. Additional subcommittees, each led by specific city agencies, worked through how they would address pedestrian safety through different approaches, including engineering, enforcement, and data collection. The directive asked subcommittees to orient their efforts toward understanding local contexts and achieving near-term actions in order to inform longer-range goals to be added into a Pedestrian Strategic Action Plan.

Near-term actions included implementing 15 mph school zones; identifying "high injury corridors," which were the 5% of streets where 55% of severe or fatal pedestrian injuries occurred; targeting enforcement on those high-injury corridors; expanding the traffic-engineering toolkit to better address high speed and risk factors on high-traffic streets; piloting "home zones"; and developing data-driven computer models to analyze high-risk locations and the quality of pedestrian infrastructure.³

1. Pedestrian Safety Advisory Committee. 2010 Report to the Board of Supervisors City and County of San Francisco. January 2011. <http://www.sfmta.com/cms/cpdsafe/documents/PSACReportDRAFTFINAL010611.pdf>

2. Office of the City and County of San Francisco Mayor's Office. December 20, 2010. <http://sfmayor.org/ftp/archive/mayornewsom/press-release-mayor-newsom-signs-pedestrian-safety-executive-directive/index.html>

3. San Francisco Department of Public Health correspondence. March 25, 2012.

Establish an **Advisory Council** or **Safety Task Force**—or Both

Definition A pedestrian advisory council is typically a volunteer committee of informed residents who provide guidance on a city's pedestrian policies, programs, and plans, and make recommendations for pedestrian improvements. A task force, often created through an executive directive, is convened to develop the framework for short- and long-term actions to create safe, pedestrian-oriented public space. The scopes of advisory councils or task forces can also expand from walking to “active living” in order to include public health and bicycle advocates.

Council or task force members should include representatives from city agencies responsible for public space and streets, and representatives from other agencies that influence walking safety and policies, such as fire and police departments, senior services, utility companies, housing authorities, public health departments, etc. Members should also include community representatives, whether they are members of pedestrian advisory councils; community groups; associations for seniors, the disabled, or the medical profession; or walking-advocacy organizations.

Benefits

- Facilitates interdepartmental and community coordination and communication
- Reinforces pedestrian concerns as a public and governmental priority
- Encourages and reinforces agency support
- Helps agencies reach short-term goals and understand local context to inform longer-range pedestrian safety plans
- Name an agency to lead the task force, and hold it accountable to meeting its goals
- The committee convener should demonstrate initial and ongoing support by:
 - » Attending meetings (where appropriate)
 - » Publicly reaffirming goals
 - » Applying continual pressure on city agencies to prioritize committee goals and recommendations

Considerations

- Potential communication and funding hurdles between multiple agencies
- Competing objectives of participating agencies or community organizations
- Potential lack of power if not supported by strong elected or agency leadership
- Regularly report progress back to agencies and the general public
- Attend other meetings to advance efforts

Professional Consensus

- Task forces and advisory councils are established means of evaluating structural needs and proposing institutional reforms within federal, state, and municipal governments
- In the absence of official endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Appropriate Contexts

- Countries, states, counties, cities, and towns

Guidance

- Set clear goals to keep committee efforts focused
- Create and stick to an agenda for meetings
- Create a role for advocacy groups to support agency accountability
- Provide bold leadership at the agency level to support reflection and reform



Sustainable Streets in Chicagoland Workshop.
Source: Center for Neighborhood Technology, Flickr

Case Study: Chicago

Former Chicago Mayor Richard M. Daley created the Mayor's Pedestrian Advisory Council (MPAC) in 2006 after learning that the city of Chicago had the third-highest number of pedestrian fatalities in the country. (Until then, regular safety-data analyses performed by the Chicago Metropolitan Agency for Planning did not include pedestrian safety.)¹

MPAC is co-chaired by the commissioner of the Chicago Department of Transportation and includes representatives from community groups, local advocacy organizations, and city, state, and federal transportation groups, including Access Living, Active Transportation Alliance, Center for Neighborhood Technology, Chicago Department of Public Health, Chicago Department of Transportation, Chicago Metropolitan Agency For Planning (CMAP), Chicago Park District, Chicago Police Department (CPD), Chicago Public Schools (CPS), Chicago Transit Authority (CTA) – Planning, Children's Memorial Hospital, Department of Environment (DOE), Department of Family and Support Services, Department of Housing and Economic Development, Federal Highway Administration (FHWA) – Illinois Division, Illinois Department of Transportation, Institute of Traffic Engineers/MUTCD, Local Initiatives Support Corporation (LISC)/Chicago, Mayor's Office for People with Disabilities (MOPD), Metropolitan Planning Council, Midwest Latino Health Research, Training and Policy Center, National Highway Traffic Safety Admin (NHTSA) – Great Lakes, Northwestern University, and the University of Chicago. (The council's other co-chair position is currently held by Dr. Kyran Quinlan, MD, MPH, University of Chicago Children's Hospital.)²

MPAC meets quarterly to highlight pedestrian concerns and safety measures within city and state planning initiatives. The interagency council meetings help break down departmental silos, coordinate pedestrian initiatives in different agency programs, and bring pedestrian issues to the forefront of planning initiatives. As an example, MPAC created the vision statement as well as the goals and objectives for Chicago's first-ever pedestrian plan, to be released in 2012.³

Examples

Many states and cities have convened pedestrian task forces, pedestrian advisory councils, pedestrian-bicycle councils/task forces, or active living councils/task forces, including:

- Chicago, IL: [Mayor's Pedestrian Advisory Council](#)
- Los Angeles, CA: [Pedestrian Advisory Committee](#)
- Milwaukee, WI: [Bicycle and Pedestrian Task Force](#)
- Portland, OR: [Pedestrian Advisory Committee](#)
- San Francisco, CA: [Pedestrian Safety Advisory Committee](#)

1. Federal Highway Administration. Office of Safety. Evaluation of the Focused Approach to Pedestrian Safety Program. n.d. http://safety.fhwa.dot.gov/ped_bike/ped_focus/efapsp020509/find.cfm

2. City of Chicago. Chicago Pedestrian Plan. Mayor's Pedestrian Advisory Council. <http://chicagopedestrianplan.org/mayors-pedestrian-advisory-council/>

3. City of Chicago. Chicago Pedestrian Plan. Past Events. MPAC Meeting on November 10, 2010. <http://chicagopedestrianplan.org/past-event/mpac-meeting-on-november-10-2010/>

Prioritize Pedestrians in Street User Hierarchy

Definition A street user hierarchy provides the framework for transportation policies, directing which mode should be considered first from a design perspective. A street hierarchy that prioritizes pedestrians would rank street users in the following order: pedestrians, cyclists, transit users, freight transporters, taxi drivers, and private-vehicle drivers. This policy framework also charges each street user to show increased prudence toward more vulnerable street users. The street user-hierarchy framework can also specify and standardize expected travel behavior by clearly identified zones, such as 45 mph, 30 mph, and 20 mph zones.

Benefits

- Promotes safe mobility for street users regardless of age, physical ability, or mode
- Helps support livability, sustainability, public health; and economic, climate-change, social-equity, and congestion-management goals when integrated with public transit

Considerations

- Existing codes of funding structures that may conflict with a pedestrian-oriented street user hierarchy
- Existing legal statutes that may contradict a pedestrian-oriented street user hierarchy

Appropriate Contexts

- Policy framework at national, state, and local departments of transportation

Guidance

The Association of Pedestrian and Bicycle Professionals specifies near-term actions to implement this policy, including:

- Strengthening and publicizing the U.S. Department of Transportation policy statement Accommodating Bicycle and Pedestrian Travel: A Recommended Approach
- Surveying best-practice policies that encourage safety and increased walking and bicycling, including U.S. Complete Streets policies, the German national bicycling plan, the United Kingdom Cycling City program, and Swiss legislation on human-powered mobility
- Developing a national strategy to improve education for transportation professionals on walking and bicycling design and planning

Professional Consensus

A 2009 study of five European countries, which was sponsored by the Federal Highway Administration, American Association of State Highway and Transportation Officials, and National Cooperative Highway Research Program, assessed approaches to improve pedestrian and bicyclist safety and mobility. The resulting report recommended national, state, and local transportation policies that give nonmotorized modes the highest priority in the road user hierarchy.

Examples

- [Europe](#)¹
- [Canada](#)
- [Oregon](#)², [New York](#)³, and [Delaware](#)⁴ have adopted related vulnerable-user legislation, which imposes harsher penalties on reckless drivers if they hurt "more vulnerable" street users, such as pedestrians, cyclists, or skateboarders



A 20 mph zone in Chapel Allerton, Leeds, U.K.
Source: Richard Thomson

Case Study: France

Inspired by Belgium's 2004 street code, France⁵ adapted its street code in 2008 to reflect the philosophy that all street users should be able to move about safely, no matter their age, physical abilities, or mode of travel. The updated street code instituted a general principle of prudence, specifying that each street user must show increased prudence toward more vulnerable users.

Toward that end, the street code specifies travel behavior by defined zones: the 45 mph, 30 mph, and 20 mph zones; the pedestrian priority zone; and then pedestrian areas. Standardizing the definitions and signage of these zones helps street users adapt their behavior. For drivers, that means slowing down vehicular speeds to the posted limits and ceding priority to pedestrians within pedestrian and 20 mph zones. For cyclists, that means the ability to cycle in both directions down one-way streets within pedestrian-priority and 20 mph zones. For pedestrians, that means the privilege of crossing the street outside marked crosswalks within pedestrian areas, pedestrian-priority zones, and 20 mph zones. Each traffic zone requires a continuous and clear route for pedestrians with reduced mobility; pedestrian-priority zones must also include clearly marked dedicated pedestrian-only areas.⁶

1. Heydecker, BG; Robertson, SA. Evaluation of Pedestrian Priority Zones in the European area. Report to the Korea Transport Institute KoTI. Centre for Transport Studies. University College London. July 2009. <http://eprints.ucl.ac.uk/18963/1/18963.pdf>
2. Oregon Department of Transportation. Bicycle and Pedestrian Program. Laws and Regulations. http://www.oregon.gov/ODOT/HWY/BIKEPED/laws_regs.shtml
3. New York State Vehicle and Traffic Law. Section 1146. [http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=\\$\\$VAT1146\\$\\$@TXVAT01146+&LIST=SEA4+&BROWSER=BROWSER+&TOKEN=45956353+&TARGET=VIEW](http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=$$VAT1146$$@TXVAT01146+&LIST=SEA4+&BROWSER=BROWSER+&TOKEN=45956353+&TARGET=VIEW)
4. State of Delaware. Governor Signs "Vulnerable Users" Law. August 12, 2010. <http://governor.delaware.gov/news/2010/1008august/20100812-law.shtml>
5. Ministère de L'Ecologie, de L'Energie, du Développement durable, et de L'Amenagement du territoire. The "code de la rue" (street use code) programme in France. October 2008. http://www.certu-catalogue.fr/catalog/product/view/id/915/?_SID=U&link=1139&link=1139
6. Ministère de L'Ecologie, de L'Energie, du Développement durable, et de L'Amenagement du territoire. The "code de la rue" (street use code) programme in France. October 2008. http://www.certu-catalogue.fr/catalog/product/view/id/915/?_SID=U&link=1139&link=1139

Develop a Pedestrian Master Plan

Definition A pedestrian master plan provides an overview of the walking transportation network and identifies improvements that will enhance and encourage walking throughout the community.¹

Benefits

- Encourages walking
 - Increases pedestrian safety
 - Provides mobility and access for all
 - Offers alternatives to driving
 - Reduces pollution
 - Connects to transit
 - Fosters economic growth
 - Increases social interaction on streets
 - Builds strong communities and livable neighborhoods
 - Helps address obesity and health concerns
- » Identify and prioritize locations that need improvement
 - » Create pedestrian design guidelines
 - » Identify potential capital investment projects to address those needs
 - » Prioritize and identify funding sources, create a timeline for project completion
 - » Review, revise, and recommend transportation and land use policies²
 - » Provide guidance to integrate accessibility and other modes of transportation into the pedestrian network
 - » Include multidisciplinary approaches to improving the pedestrian environment through changes in enforcement, education, encouragement policies, and, if appropriate, legislation
 - » Adopt measures to evaluate implementation strategies

Considerations

- Potential communication and funding hurdles among multiple agencies
- Competing objectives of participating agencies or community organizations

Appropriate Contexts

- Counties, cities, and towns; any jurisdiction with control of pedestrian infrastructure

Guidance

- Create a public-outreach process to solicit and incorporate the perspectives of multiple stakeholders: walking and mobility-advocacy groups, residents, business owners and developers, elected officials, and media
- Create a technical outreach process to solicit and incorporate input from the fields of engineering, planning, landscape architecture, law enforcement, transit, education, and public health
- A pedestrian master plan should:
 - » Present a vision, goals, and objectives
 - » Examine existing pedestrian conditions and their use

Professional Consensus

- In the absence of official endorsements from national associations or governments, cities are turning to best practices employed by other municipalities

Examples

Many U.S. cities have created and adopted pedestrian master plans, including:

- [Denver, CO](#)
- [Santa Barbara, CA](#)
- [Seattle, WA](#)
- [Washington, DC](#)



16th Street Mall, Denver. Source: Tracie7779, Flickr

Case Study: Denver

Denver created a 2004 Pedestrian Master Plan as a response to previous citywide planning documents. Its 2000 Comprehensive Plan directed the city to provide more transportation choices and encourage modes that reduced impacts on urban environments. Blueprint Denver, which followed a year later, referred to the pedestrian environment as the city's primary transportation element and recommended that Denver create a pedestrian master plan.³

The pedestrian master plan created a citywide pedestrian network, recommended pedestrian-friendly policies, and identified improvement projects in order to fulfill its stated goals of safety, accessibility, education, connectivity, streetscape, land use, and public health. To guide the plan's development, Denver created an advisory team with staff from the city's Public Works, Community Planning and Development, and Parks and Recreation departments, along with citizen advisers.⁴

The advisory team reviewed existing city plans and conducted a citywide inventory to determine where sidewalks were attached, detached, or missing. Denver held four public workshops to learn which pedestrian issues and concerns were most important to the public.

The city created a pedestrian network by adopting all of the enhanced bus-transit corridors and the Green Streets as pedestrian routes and supplementing them based on a geographic-information-systems (GIS) analysis of pedestrian destinations. If an enhanced bus-transit corridor or a green street did not already connect concentrations of pedestrian destinations, the city identified additional pedestrian routes to bridge them. The GIS model was based on five land use features: light rail transit stations, schools, parks, and libraries. Sidewalk locations were then weighted based on the type of land use feature and their proximity to them.⁵ The city then held five additional public workshops to confirm the best streets were selected within the pedestrian-route network. The public also recommended specific pedestrian upgrades.⁶

Denver's sidewalk system had traditionally been built and paid for by individual property owners, one project at a time. The Pedestrian Master Plan recommended the city play a more direct role in building and maintaining sidewalks and crossings. The plan proposed to study three new mechanisms to fund small to medium projects: assessing an annual sidewalk fee from property owners, authorizing the Public Works Manager to require adjacent property owners to upgrade their sidewalks to meet City standards, and creating an annual sidewalk-maintenance program within Denver's Capital Improvement Project Budget. The plan outlined the next steps to ensure successful implementation of the new system: Assess the pedestrian network to identify needs and integrate them into the city's project list; allocate resources to ensure consistent pedestrian-friendly standards are met; support the creation of a pedestrian-advocacy group; and pursue alternative funding mechanisms to help finance pedestrian infrastructure.⁷ The city is making strides in these efforts; it updated its curb and sidewalk regulations in 2007,⁸ and has supported the 2011 start of WalkDenver, a nonprofit pedestrian-advocacy group, as it tries to get the city certified as a Walk Friendly Community.⁹

1. Federal Highway Administration Designing Sidewalks and Trails for Access. Part II of II: Best Practices Design Guide. May 2012. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks203.cfm

2. Pedestrian and Bicycle Information Center. Planning Activities. <http://www.walkinginfo.org/develop/activities.cfm>

3. City and County of Denver. City and County of Denver Pedestrian Master Plan. August 2004. iv. <http://www.denvergov.org/infrastructure/DenverPublicWorksPolicyandPlanning/CompletedProjects/PedestrianMasterPlan/tabid/442851/Default.aspx>

4. Ibid. 1.

5. Ibid. 2, 16–18.

6. Ibid. 1.

7. Ibid. 2

8. City and County of Denver. Denver Department of Public Works. Office of the Manager. Rules and Regulations. Sidewalk and Curb Ramp Construction. October 2007. <http://www.denvergov.org/dpw/DepartmentofPublicWorks/RulesandRegulations/SidewalkandCurbRampConstruction/tabid/441598/Default.aspx>

9. Johnson, Kirk. Denver is Urged to Hit the Sidewalks. *New York Times*. February 13, 2012. <http://www.nytimes.com/2012/02/14/us/denver-pedestrians-promote-walkings-urban-potential.html>

Use Measurable Performance Indicators in Pedestrian Policies

Definition Measurable performance indicators are crucial elements of evaluating the effectiveness of a policy. Policies should specify goals and objectives for each initiative and create a set of indicators, or performance measures, that can be tracked to assess the effectiveness of that initiative. A monitoring program should also set a regular schedule for data collection and assessment. Typical performance measures include pedestrian counts, crash data, retail vacancy rates or retail revenue, vehicle speeds along identified corridors, and the quantity and quality of walking infrastructure such as sidewalks and ramps.

Benefits

- Documents policy benefits and areas for improvement
- Justifies continued or altered funding levels
- Guides policy makers

Considerations

- Lack of standardized data-collection methods and insufficient data
- Lack of standardized evaluation methods and tools to measure performance indicators
- Finding appropriate and consistent evaluation and data-collecting techniques

Appropriate Contexts

- Municipal pedestrian master plans
- Sustainable streets policies
- Environmental and climate-change policies

Guidance

- Performance measures should be:
 - » Quantitative and objective
 - » Supported by substantial evidence
 - » Clearly linked to plans and priorities
 - » Easy to collect data for, calculate, and interpret
 - » Linked to mitigation
- Each performance measure needs:
 - » A starting-point measurement with which to compare future data
 - » A desired trend line, or direction of the desired outcome for each performance measure, to judge the amount of progress made towards meeting a stated goal
- Evaluations should be scheduled at continual, regular intervals

Professional Consensus

- Recommended by the Centers for Disease Control and Prevention¹
- A 2011 ITE Informational Report recommends performance measures for policies that affect walkability beyond the field of transportation, such as:
 - » Land use
 - » Public health
 - » Livability
 - » Sustainability
 - » Economics



Before



After

New sidewalk along 39th Avenue South in Southeast Seattle. Source: *Seattle DOT*

Case Study: Seattle

Seattle's [Pedestrian Master Plan](#) specified [performance measures](#) for each of its four main goals. Performance measures for its safety goal to reduce the number and severity of crashes involving pedestrians include:

- The rate of crashes involving pedestrians
- Vehicle speeds along identified corridors
- School participation in pedestrian-safety, education, and encouragement programs
- The incidence of safe behaviors by drivers and pedestrian, including awareness of pedestrian laws

For its equitable goal to make Seattle a more walkable city for all, the equity performance measures include:

- City investments toward High Priority Areas
- Public communication about pedestrian issues
- Transit ridership
- Mode share (more people walking)

For Seattle's vibrancy goal to develop a pedestrian environment that sustains a healthy community and supports a vibrant economy, the city measures:

- Streetscape vibrancy (either through retail vacancy rates or revenue)
- Pedestrian activity

And lastly for its health goal of promoting walking to improve health and prevent diseases, the city measures:

- Self-reported physical activity
- The number of children walking or biking to or from school

The city then created baseline measurements, performance targets, data-collection frequency standards, and assigned data-collection responsibility for each of the plan's stated goals. Data collected by the city's staff and the Seattle Pedestrian Advisory Board will be used to establish trends to inform the development of specific targets. These targets will be set when the Pedestrian Master Plan is updated in 2014.²

Examples

Plans incorporating monitoring systems and performance measures include:

- Seattle, WA: [Pedestrian Master Plan](#)
- New York, NY: [NYCDOT Sustainable Streets](#)
- Clark County, WA: [Health Impact Assessment](#)

1. Centers for Disease Control and Prevention. [CDC Transportation Recommendations](http://www.cdc.gov/transportation/recommendation.htm). <http://www.cdc.gov/transportation/recommendation.htm>

2. Seattle Department of Transportation. Performance Monitoring and Stewardship. Pedestrian Master Plan. http://www.seattle.gov/transportation/pedestrian_masterplan/pmp_monitor.htm

Incorporate **PROWAG** into Pedestrian Policies

Definition The Americans with Disabilities Act (ADA) requires ADA transition plans for jurisdictions. The Accessibility Guidelines for Pedestrian Facilities in the Public Right Of Way (proposed PROWAG) provide technical specifications required to make walking infrastructure accessible to people of all abilities.

Once the Access Board issues its final rule, the Department of Justice and the Department of Transportation will adopt these proposed PROWAG guidelines as standards. While PROWAG is not yet finalized, all new and altered facilities have been required to be “accessible to and usable by” individuals with disabilities since the publication of the ADA implementing regulations in 1991. Accordingly, jurisdictions should incorporate PROWAG into pedestrian policies and plans.

Benefits

- Enhances mobility for people of all ages and abilities
- Provides access to services and locations for people with limited mobility and for people with sensory or cognitive limitations
- Creates safer, more accessible transportation infrastructure for everyone’s use
- Begins bringing a community into legal compliance with the ADA

Considerations

- Liability for having inadequate accessibility policies or inadequate implementation of accessible infrastructure
- Funding for prioritizing and planning infrastructure improvements
- Funding for implementing infrastructure improvements

Appropriate Contexts

- Pedestrian master plans
- Street design guidelines
- Complete Streets policies
- ADA transition plans mandated by the Americans with Disabilities Act of 1990 for all public agencies with more than 50 employees
- All public rights-of-way as they are built or altered

Guidance

- Update the ADA transition plan as well as other relevant pedestrian policies to include proposed PROWAG
- Address all existing infrastructure, prioritizing transit access and corridors
- Require employees and contractors to demonstrate their knowledge of accessibility topics, and hold them accountable
- Partner with transit providers and require them to include accessible transportation infrastructure
- Consult with representatives from disability agencies and organizations throughout planning, design, and implementation of facilities
- Include a means for residents to suggest locations for accessibility improvements
- Ensure PROWAG are followed throughout planning, design, and implementation of transportation facilities

Professional Consensus

- Once comments are reviewed and vetted, the Access Board will issue final PROWAG guidelines that will be adopted by the U.S. Department of Justice and Department of Transportation and become the new minimum design standards under the ADA for both new construction and alterations of pedestrian facilities in the public right-of-way.¹
- The 2005 draft PROWAG has already been identified by USDOT as the current best practice in accessible pedestrian design under the Federal Highway Administration's Federal-aid (504) regulation.²

Examples

- [Minnesota DOT](#)
- [Ohio Department of Transportation](#)

Case Study: Minnesota

In 2002, the Minnesota Department of Transportation (Mn/DOT) realized that its response to Title II of the Americans with Disabilities Act of 1990 was due for an update. The department's original needs assessment and retrofit of curb ramps needed upgrading, the department still lacked an ADA Transition Plan, and the Access Board had just released recommendations about how to provide mandated detectable warnings at curbs.³ The department eventually created two positions to address this need: an ADA Implementation Coordinator to draft an ADA Transition Plan and integrate ADA guidance into department policy, and an ADA Design Program Engineer to translate that policy into design guidance for staff and contractors. Mn/DOT decided to adapt and adopt the Access Board's 2005 draft Public Rights-of-Way Accessibility Guidance (PROWAG) design specifications using a multipronged approach.

In February 2010, the agency officially adopted PROWAG for all projects in the design and construction phase and all work in Mn/DOT rights-of-way, including work done under permit or by agreement by other agencies or private entities.⁴ "PROWAG helped us think through what ADA policies would look like on the ground in varied rights-of-way," says Kristie Billiar, Mn/DOT's ADA Implementation Coordinator. "The guidelines are not incongruent to good pedestrian design." PROWAG is also the basis for Mn/DOT's ADA Transition Plan, which nears completion.⁵ Mn/DOT also incorporated all but three minor elements of PROWAG into the pedestrian-design chapter of its Road Design Manual.⁶ Todd Grugel, Mn/DOT's ADA Design Program Engineer, complements the Road Design Manual with [additional design guidance and webinars](#)⁷ on how to implement PROWAG in specific projects. Future plans include also incorporating PROWAG into the intersection chapter of Mn/DOT's Road Design Manual and adding accessible design specifications to Requests for Proposal in order to ensure qualified adherence to accessibility standards.⁸

1. Markesino, Jerry, and Barlow, Janet. Special Report: Accessible Public Rights-of-Way Planning and Design for Alterations. Public Rights-of-Way Access Advisory Committee, Subcommittee on Technical Assistance. August 2007. <http://www.access-board.gov/prowag/alterations/guide.htm>

2. Ibid.

3. Billiar, Kristie. ADA Implementation Coordinator, Mn/DOT. Personal correspondence, July 23, 2012.

4. Sahebjam, Khani. Technical Memorandum No. 10-02-TR-01. Public Rights-of-Way Accessibility Guidance. Engineering Services Division. Minnesota Department of Transportation. February 11, 2010. <http://dotapp7.dot.state.mn.us/edms/download?docid=887529>

5. Billiar, Kristie. ADA Implementation Coordinator, Mn/DOT. Personal correspondence, July 23, 2012.

6. Elle, Michael. Transmittal Letter No. (10-01), Chapter 11 Special Designs. Office of Technical Support Design Services Section. Minnesota Department of Transportation. March 2, 2010. <http://dotapp7.dot.state.mn.us/edms/download?docid=1140093>

7. Minnesota Department of Transportation. Accessibility. n.d. <http://www.dot.state.mn.us/gda/tools.html>

8. Billiar, Kristie. ADA Implementation Coordinator, Mn/DOT. Personal correspondence, July 23, 2012.

Adopt a Complete Streets Policy

Definition While traditional traffic engineering designs streets primarily for vehicles, a Complete Streets policy directs transportation planners and engineers to design and operate rights-of-way for safe access for everyone on the street, regardless of age, ability, or mode of transportation.

Benefits

- Creates a street network that is better and safer for drivers, transit users, pedestrians, and bicyclists
- Creates a cost-effective way to improve safety and accessibility for everyone using the roads
- Helps the vitality of town centers by allowing everyone, whether on foot, bike, or public transportation, to reach community hubs and businesses
- Creates safer routes for children to reach school and activities, giving them more opportunities to exercise and gain self-confidence
- Encourages walking and active lifestyles among residents of all ages and abilities
- Helps reduce congestion¹
- Helps reduce risk to pedestrians²
- Helps reduce carbon emissions³

Considerations

- Coordinating among the multiple jurisdictions responsible for the street network and streetscape design
- Ensuring the policy will be effectively implemented and enforced in practice
- Finding funding for the planning and implementation of the policy

Appropriate Contexts

- Countries, states, counties, cities, towns
- Metropolitan planning organizations and regional planning commissions

Guidance

- Build a Complete Streets coalition with transportation planners and engineers, public-health professionals, public officials, and walking and cycling advocates and experts

- The National Complete Streets Coalition specifies that a Complete Streets policy should include the following:
 - » A vision for how and why the community wants to complete its streets
 - » The definition that "all users" refers to pedestrians, bicyclists, and transit passengers of all ages and abilities, as well as trucks, buses, and automobiles
 - » The specification the policy applies to new and retrofit projects, including design, planning, maintenance, and operations, for the entire right-of-way
 - » Clear procedures for any exceptions
 - » The goal to create a connected network for all modes
 - » Reference to progressive design guidelines
 - » Context-sensitive design procedures and solutions
 - » Performance standards with measurable outcomes
 - » Next steps for policy implementation

Professional Consensus

- Endorsed by the American Society of Civil Engineers⁴
- Endorsed by the Centers for Disease Control and Prevention⁵
- The Complete Streets: Best Policy and Implementation Practices guide evolved from collaboration between the American Planning Association, the National Complete Streets Coalition, and the National Policy and Legal Analysis Network to Prevent Childhood Obesity, with funding from the Federal Highway Administration, the National Association of Realtors, Blue Cross Blue Shield of Minnesota, the Ruth Mott Foundation, and the Robert Wood Johnson Foundation
- Endorsed by AARP, with additional guidance in its Planning Complete Streets for an Aging America report⁶



Accommodating multiple modes on 15th Avenue SE, Minneapolis, MN. Source: Michael Hicks, Flickr

Case Study: Minnesota

The Minnesota Complete Streets Coalition has had remarkable success: Minnesota passed a Complete Streets policy in 2008 and then turned Complete Streets language into law in 2010. To date, 25 communities within the state have adopted Complete Streets policies. The Coalition's success can be traced to the strength of its partnerships, which it has cultivated by proactively reaching out to potential skeptics, such as engineering associations, and untraditional allies, such as the American Lung Association, in addition to logical supporters, such as the Twin Cities Bicycling Club. The result is a 70-plus multidisciplinary member base that can effectively speak to the benefits and concerns raised by Complete Streets concepts. The Coalition continually works to expand the Complete Streets movement. It provides free online advocacy and policy toolkits for communities interested in building support for and passing local Complete Streets policies. But passing a law is only part of the challenge—the law also needs to be implemented. To that end, the Minnesota Complete Streets Coalition partnered with the Minnesota Department of Transportation (Mn/DOT) to help the state agency amend transportation design standards and policies and routinely implement Complete Streets in its streets projects.



A conceptual rendering of a Complete Street. Source: Chris Hardwicke, Sweeny Sterling Finlayson & Co

Examples

More than 300 different types of Complete Streets policies have been adopted by states, counties, and cities, including⁷:

- Louisiana Department of Transportation: [Complete Streets Policy](#)
- Mid-Ohio Regional Planning Commission: [Complete Streets Policy](#)
- Hennepin County, MN: [Complete Streets Policy](#)
- Lee County, FL: [Resolution No. 09-11-13](#)
- Salt Lake County, UT: [Ordinance No. 1672](#)
- Roanoke, VA: [Complete Streets Policy](#)
- New Haven, CT: [Complete Streets Design Manual](#)
- Tacoma, WA: [Complete Streets Design Guidelines](#)

1. National Complete Streets Coalition. Incomplete streets breed congestion. <http://www.completestreets.org/complete-streets-fundamentals/factsheets/ease-congestion/>
2. National Complete Streets Coalition. Complete Streets Fact Sheets. Benefits of Complete Streets. <http://www.completestreets.org/complete-streets-fundamentals/factsheets/>
3. National Complete Streets Coalition. Livable Communities Fact Sheet. <http://www.completestreets.org/complete-streets-fundamentals/factsheets/livable-communities/>
4. American Society of Civil Engineers. July 30, 2011. <http://www.completestreets.org/webdocs/resources/ASCE-PS537.pdf>
5. Centers for Disease Control and Prevention. CDC Recommendations for Improving Health through Transportation Policy. April 2010. <http://www.cdc.gov/transportation/docs/Transportation%20Fact%20Sheet.pdf>
6. AARP. Planning Complete Streets for an Aging America. May 2009. <http://assets.aarp.org/rgcenter/ppi/liv-com/2009-12-streets.pdf>
7. National Complete Streets Coalition. Complete Streets Policy Analysis: A Story of Growing Strength. April 27, 2011. <http://www.completestreets.org/webdocs/resources/cs-policyanalysis.pdf>

Assess Pedestrian Projects, Plans or Policies with Health Impact Assessment

Definition Health Impact Assessment (HIA) is a process that analyzes the potential health impacts of a proposed plan, project, or policy that is typically outside the public-health realm,¹ such as transportation or land use decisions. An HIA provides evidence to help health be considered in that decision-making process. An HIA² usually suggests ways of mitigating, monitoring, and/or managing the health impacts of a project. It can also recommend project implementation or prioritization strategies to maximize the health benefits for a community.

Benefits

- Clarifies the health impacts of a proposed project
- Helps maximize health benefits for community members
- Educates decision-makers to help them make informed decisions
- Assesses how projects will affect all community members, especially vulnerable populations
- Improves cross-sector collaboration in decision-making
- Supports transportation and land use decisions that reduce traffic-related injuries or accidents, and that improve air quality and/or promote physical activity
- Supports sustainable transportation and land use developments that encourage walking
- Helps engage stakeholders in the decision-making process

Considerations

- HIA is a relatively new practice that must be transparent and well-documented to help ensure its credibility with decision-makers and the general public
- HIA is a decision-support tool, not a decision-making tool; it should create an impartial evidence-based assessment, not an advocacy campaign

Appropriate Contexts

- Local and regional plans, policies, and developments, such as pedestrian master plans, comprehensive plans, waterfront redevelopments, and waste-transfer plans
- HIAs are typically completed by state or regional public-health departments, or nonprofit public-health organizations

Guidance

- Time an HIA carefully. HIAs must inform decision-makers before they make a decision. Schedule enough time for a full assessment, with flexibility to address community concerns
- Conduct an HIA only if decision-makers are interested in the outcome
- Tailor the approach and scope of an HIA to fit each identified project; HIAs can focus on broader health outcomes or the specific impacts of a project or plan³
- Incorporate relevant data, including literature reviews, primary-data collection, and stakeholder consultation
- Human Impact Partners suggests an HIA should follow six steps:
 - » Screening to identify projects or policies for which an HIA would be useful
 - » Scoping to identify the health impacts to evaluate, methods for analysis, and which populations are affected
 - » Assessment to evaluate a community's existing health conditions and its potential health impacts
 - » Recommendations to manage those health impacts, including ways to better distribute health burdens and benefits or maximize secondary health benefits of a policy
 - » Reporting to communicate findings and recommendations to decision-makers
- Evaluation to track the HIA's impact on the decision-making process, civic development, and the community's overall health

Professional Consensus

- Endorsed by the CDC as a [practical tool](#) for analyzing health impacts of transportation policies, programs, or projects
- HIA is promoted by:
 - » [Centers for Disease Control and Prevention](#), Healthy Community Design Initiative
 - » National Prevention, Health Promotion and Public Health Council
 - » Institute of Medicine committee of Public Health Strategies to Improve Health
 - » U.S. Department of Health and Human Services Action Plan on Disparities
 - » White House Childhood Obesity Task Force Action Plan
 - » [The Health Impact Project](#), funded by Robert Wood Johnson Foundation and Pew Charitable Trusts
 - » [Human Impact Partners](#)
 - » [National Association of City and County Health Officials](#)

Examples

- Clark County, WA: [Comprehensive HIA: Clark County Bicycle/Pedestrian Master Plan](#)
- Duluth, MN: [6th Ave East Duluth HIA](#)
- Aberdeen, NC: [Aberdeen Pedestrian Transportation Plan HIA](#)
- Spokane, WA: [Spokane University District Pedestrian & Bicycle Bridge HIA](#)
- Crook County/City of Prineville, OR: [Rapid HIA Bicycle and Pedestrian Safety Plan](#)

Case Study: Washington

The Clark County, WA, Public Health Department collaborated with the Department of Community Planning to conduct a comprehensive Health Impact Assessment (HIA) for the County's Bicycle and Pedestrian Master Plan. Adopted in 2010, the Bicycle and Pedestrian Master Plan identifies policies and projects to facilitate cycling and walking. The planning and public-health departments conducted an HIA to discern health impacts associated with the plan and recommend implementation strategies to maximize residents' health benefits.

First, the planning and public-health department used geographic information systems (GIS) to determine baseline conditions and health impacts to different population groups based on their proximity to infrastructure projects.⁴ Then they conducted a literature review to establish relationships between those factors and estimate health impacts. Impacts on children and on other populations at greater risk for obesity were highlighted in the research. The departments interviewed stakeholders and collected public input to guide the HIA process and define how decision-makers would use the HIA. The final report included 11 recommendations to help the Bicycle and Pedestrian Master Plan fully realize its potential health benefits. One recommendation was to create a comprehensive inventory of sidewalks to help prioritize pedestrian projects.⁵

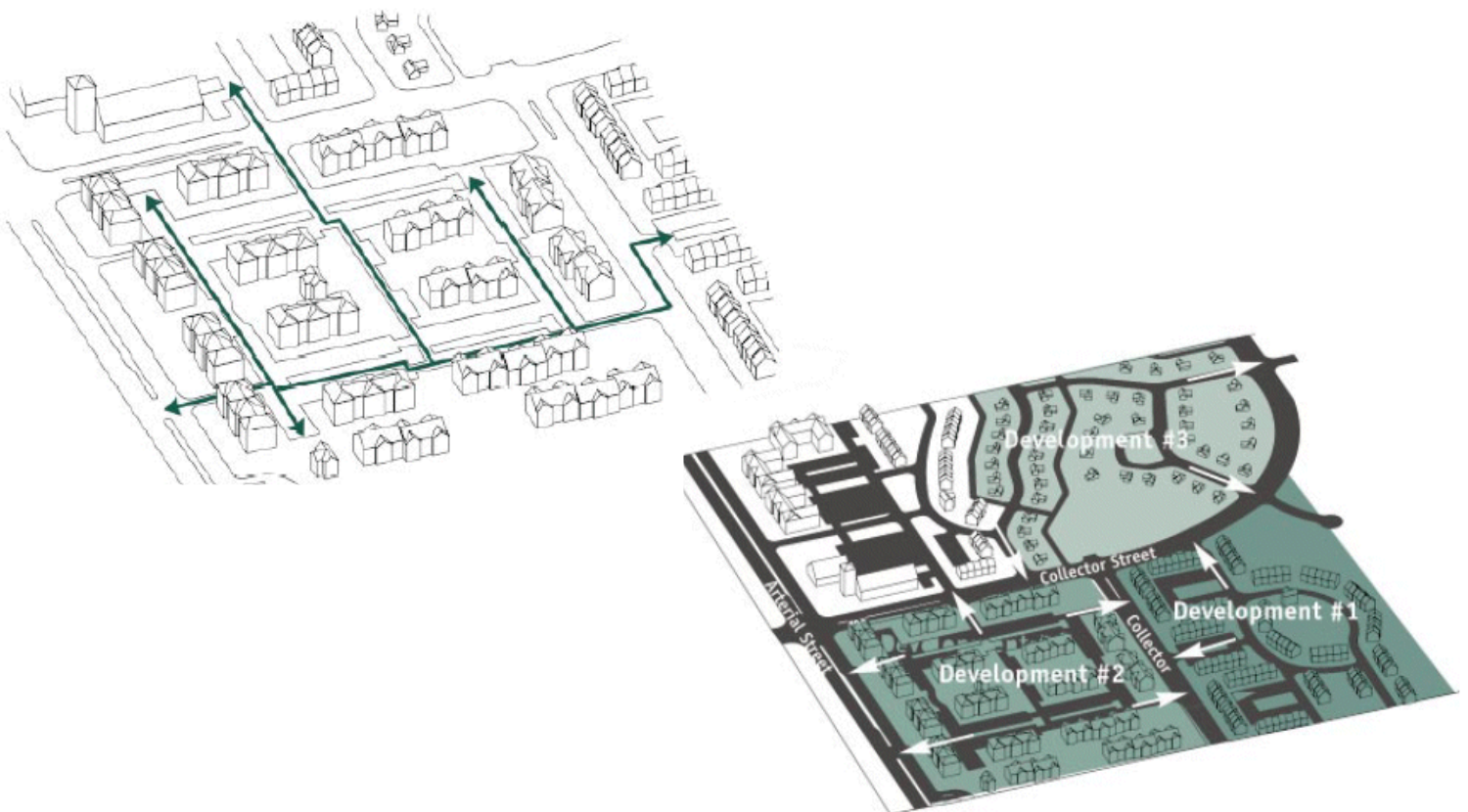
The HIA identified priority projects based on their potential to increase physical activity and reduce health disparities among populations.⁶ Clark County then revised its Bicycle and Pedestrian Master Plan to incorporate, either partially or fully, all 11 of the HIA recommendations.⁷

1. Haggerty, B., Melnick, A., & Hyde, J. (2011). Transportation, Pedestrian Facilities, Bike Facilities. Presentation at Planning Active Walkable Neighborhoods Conference. Washington. www.activelivingresearch.org/node/12179
2. Melnick, A., Hyde, J., Haggerty, B., Lebowsky, L. (2010). Comprehensive Health Impact Assessment: Clark County Bicycle & Pedestrian Master Plan. Clark County, WA. www.clark.wa.gov/public-health/reports/facts.html
3. Haggerty, B., Melnick, A., & Hyde, J. (2011). Transportation, Pedestrian Facilities, Bike Facilities. Presentation at Planning Active Walkable Neighborhoods Conference. Washington. www.activelivingresearch.org/node/12179
4. Clark County Public Health (2011). Evaluation of Health Impact Assessment: Bicycle and Pedestrian Master Plan. http://bikeportland.org/wp-content/uploads/2011/12/HIA_BPplan-copy.pdf
5. Melnick, A., Hyde, J., Haggerty, B., Lebowsky, L. (2010). Comprehensive Health Impact Assessment: Clark County Bicycle & Pedestrian Master Plan. Clark County, WA. www.clark.wa.gov/public-health/reports/facts.html
6. Haggerty, B., Melnick, A., & Hyde, J. (2011). Transportation, Pedestrian Facilities, Bike Facilities. Presentation at Planning Active Walkable Neighborhoods Conference. Washington. www.activelivingresearch.org/node/12179
7. Clark County Public Health (2011). Evaluation of Health Impact Assessment: Bicycle and Pedestrian Master Plan. http://bikeportland.org/wp-content/uploads/2011/12/HIA_BPplan-copy.pdf

Land Use Tactics

Introduction

The term “land use” refers to the policies and programs that determine the size, use, location, and density of buildings and development. The shape of suburbs and cities is determined by land use policies, whether in the form of zoning regulations, subdivision ordinances, fire codes, or parking minimums. The following strategies and tactics attempt to reshape communities to better support walking. Tactics range in scale and scope, from subdivision ordinance reform to policies that create temporary destinations worth walking to in what used to be vacant land or buildings.



Cary Design Guidelines Manual depicting street connectivity in residential communities. Source: Town of Cary, NC

Support Street Life with Mixed-Use, **Form-Based Zoning**

Definition Form-based zoning codes are legal regulations that direct the physical form and placement of buildings within communities. Form-based codes focus on the relationship between buildings and the streetscape, generally with the goal of creating appealing, pedestrian-oriented public spaces. In contrast, traditional zoning regulations focus on separating residential, commercial, and manufacturing uses and do not determine the exact form and location a building would take. Form-based codes typically include a regulating plan or map designating where different built-form standards apply, specifications for required streetscape elements and built-form standards, an explanation of the review process for applications and developments, and a glossary of terms.

Benefits

- Creates quality, human-scaled built forms and public space
- Makes the code easier to discuss, judge, and enforce because descriptions and visuals of built-form regulations are more accessible to non-planners
- Easily matches and maintains existing neighborhood character
- Replaces single-use areas with mixed-use zones

Considerations

- Since form-based codes are binding laws, a community can be financially liable for litigious disputes
- Form-based code includes technical terms that are subject to legal interpretation and need to be defined in a glossary

Appropriate Contexts

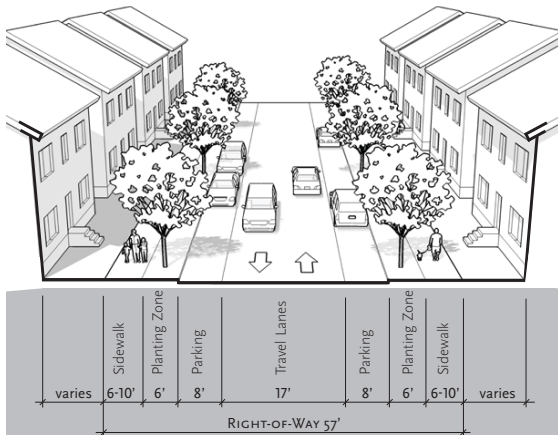
- Historic districts
- Transit-oriented developments
- Main Street corridors
- Revitalization districts
- Downtown areas
- Commercial centers in existing neighborhoods
- New developments
- Campus developments
- Mixed-use districts

Guidance

- Formulate an overall vision for the community through a broad-based public-input process. The vision can then be adopted into a comprehensive plan to establish local land use policies and create political momentum for code reform
- Examine existing codes to see where they fail to guide development toward the established community vision
- Determine whether form-based codes are the best approach to meeting the community vision, again through a broad-based public-input process
- Write the code with regular revisions and reviews through a public-participation process
- Confirm that the code is constitutional in its language and application, especially relating to the primary legal considerations of property rights, due process, equal protection, and free speech (relating to adult uses)¹
- Revise existing regulations and incentives that contradict the goals and envisioned outcomes of the form-based code initiative
- Train developers, government workers, and community members on how the code works

Professional Consensus

- The American Planning Association gave its 2011 National Planning Excellence Award to the Miami21 form-based code



An example of form-based code specifications for residential streets. Source: *City of Dallas Article XIII Form Districts*

Case Study: Standish

A town of about 10,000 citizens 18 miles west of Portland, ME, adopted a new comprehensive plan in 2006 with the main goal of conserving the town's rural character while directing most of its future growth into village centers. While the plan set the policy direction for future growth, many details of how that future growth should look weren't specified. To help Standish better clarify and direct its future growth, the planning nonprofit organization [GrowSmartMaine](#) led sessions to help the community come up with visions for Standish Corner, an area intended to be the community's primary commercial and residential growth center. To help residents understand the impacts of different forms and development patterns, the workshops featured photo simulations of two different growth scenarios that attendees could vote on. Once the community understood and established a vision, the town selected a form-based code for implementing ordinances and hired a consulting firm to draft the language of the code. Thanks to its broad base of support, the town council approved the form-based code unanimously.²

Examples

Many U.S. neighborhoods, cities, and counties have adopted form-based codes, including:

- [Albuquerque, NM](#)
- [Arlington, WA](#)
- [Miami, FL](#)
- [Davidson, NC](#)
- [Woodford County, KY](#)

1. White, Mark. Form-Based Codes: Practical and Legal Considerations. Institute on Planning, Zoning & Eminent Domain. November 18, 2009. p. 17. http://www.planningandlaw.com/uploads/SMW_Paper-Presentation.pdf

2. GrowSmartMaine. Maine Model Town—Standish. June 8, 2011. <http://www.growsmartmaine.org/standish>

Manage Parking to Promote Walking

Definition A combined set of policies (often under the jurisdiction of multiple municipal agencies) to manage the supply of parking in order to reduce car use and encourage development where people can walk to their destinations. Land-use zoning, tax policies, curbside regulations, and subdivision ordinances are all means of regulating the provision and use of parking.

Benefits

- Helps create more walkable development
- Improves pedestrian safety
- Encourages in-fill development
- Eases redevelopment of older urban centers where buildings were often built without parking provisions
- Reduces underused parking facilities, which reduces costs to taxpayers and developers and encourages additional development
- Reduces traffic and congestion
- Potentially increases retail sales with faster parking turnover
- Overcomes an impediment for affordable-housing construction

Considerations

- Policies that change the supply, price, or management of parking should be implemented alongside improvements to transit, walking, and cycling infrastructure to most effectively reduce car use
- Determining the appropriate amount of parking is challenging on many levels and often varies by a community's specific context and goals

Appropriate Contexts

- Regional transportation plans
- Municipal master plans
- Transportation-demand-management studies
- Zoning updates and rezonings
- Community transportation plans

Guidance

- At every step, engage, educate, and learn from the public, especially businesses, at the city and local scale to gain support for policy implementation and maintenance
- Reduce or remove minimum-parking requirements and set parking maximums in urban centers and urban villages
- Provide incentives for parking-reduction programs such as parking cash out, shared parking, and park-and-ride
- Restrict the location of parking to reduce its impact on street life
 - » Prohibit front-surface parking lots between buildings and the street; require parking behind or underneath buildings
 - » Restrict the number and size of driveways (create alleys to consolidate driveway access to the street or consolidate parking lot entrances to fewer, signalized intersections)
- Require bicycle parking in new developments

Professional Consensus

- In the absence of official endorsements from national associations or governments, cities are turning to best practices employed by other municipalities
- Endorsed within the guidebook *Reforming Parking Policies to Support Smart Growth: Toolbox/Handbook of Parking Best Practices and Strategies for Supporting Transit Oriented Development in the San Francisco Bay Area*¹



Seattle ended parking minimum standards in its downtown. Source: Puget Sound Regional Council

Case Study: Seattle

Seattle's parking-management strategy dates back to its first Comprehensive Plan, adopted in 1994 in response to Washington State's 1990 Growth Management Act. The state mandated city and county comprehensive plans and defined their goals, which included reducing urban sprawl and encouraging in-fill development. Within that political framework, Seattle created a Comprehensive Plan based on an "urban village" development model whose purpose was to direct new development into existing urban centers and villages.² Both the city departments of transportation (SDOT) and planning and development (DPD) created parking policies toward that end.

DPD ended parking-minimum standards for downtown³ and implemented a one-space-per-1,000-square-feet-of-nonresidential-development policy. Parking spaces had to be inside, behind, or beside buildings. Parking requirements could be waived altogether in a development along a designated pedestrian corridor. The plan provides incentives for large development programs, including parking cash out, shared parking, and park-and-ride.⁴ SDOT began by articulating a priority system for curb space depending on district type. Commercial-area curb space was designated to be used first for transit, then loading, short-term parking, shared-vehicle parking, and, lastly, for ordinary private-car parking.⁵

Residential curb space went first to transit, then loading, then local resident and shared-vehicle parking, and finally individual public use.⁶ "It helps to have these goals articulated in a plan," says Margo Polley, Strategic Advisor for SDOT's Parking Operations and Traffic Permits Section. "I can't tell you how many times I've cited them when responding to complaints about lack of residential parking in commercial districts. It helps people see the bigger picture." SDOT then created a Transportation Strategic Plan in response to the city's Comprehensive Plan.⁷

Examples

- [Seattle, WA](#)
- [San Francisco, CA](#)
- [Washington, DC](#)

1. Metropolitan Transportation Commission. Reforming Parking Policies to Support Smart Growth: Toolbox/Handbook of Parking Best Practices and Strategies for Supporting Transit Oriented Development in the San Francisco Bay Area. June 2007. http://www.mtc.ca.gov/planning/smart_growth/parking/parking_seminar/Toolbox-Handbook.pdf
2. City of Seattle. Toward a Sustainable Seattle Comprehensive Plan. Adopted July 25, 1994. Revised 2004. http://www.seattle.gov/DPD/cms/groups/pan/@pan/@plan/@proj/documents/Web_Informational/cos_004485.pdf
3. City of Seattle. Title 23 Land Use Code. Subtitle III Land Use Regulations. Division 2 Authorized Uses and Development Standards. Chapter 23.49 Downtown Zoning. Seattle Municipal Code.
4. Walk Friendly Communities. Walk Friendly Communities Profile: Seattle, WA. n.d. http://www.walkfriendly.org/communities/profiles/WFC_Seattle.pdf
5. Seattle Department of Transportation. Curb Use Priorities in Seattle. <http://www.seattle.gov/transportation/parking/parkingcurb.htm>
6. Ibid.
7. Polley, Margo. SDOT Parking Operations and Traffic Permits Section. Personal correspondence. September 19, 2011.

Add **Street-Connectivity Minimums** into Subdivision Ordinances

Definition Subdivision and zoning ordinances can establish a minimum level of street connectivity for future residential developments to create neighborhoods that are conducive to walking, bicycling, and transit use. Street connectivity consists of a road and/or path network that provides multiple routes and connections between destinations. It includes parallel routes, cross connections, many points of access, and short block lengths. Minimum standards of street connectivity can be based on maximum allowable lengths of blocks or by connectivity indexes of street links to intersections.

Benefits

- » Provides shorter, more direct routes between destinations, which encourages walking and cycling as a means of transportation
- » Reduces vehicle speeds
- » Reduces severity of accidents
- » Helps keep local trips on local streets rather than clogging arterial roads and highways
- » Provides route alternatives to drivers to avoid congestion and construction delays
- » Reduces travel distances as well as vehicle miles of travel
- » Improves both emergency access and response times
- » Allows for more efficient utility connections
- » Creates efficient trash and recycling routes
- » Facilitates bus-route and transit planning

Considerations

- Public and developer education about the need for and benefits of frequent street connections
- Developers may resist street connectivity requirements due to the potential decrease in developable land

Appropriate Contexts

- Subdivision ordinances for new developments
- Comprehensive Plan as the basis for future regulations
- Zoning provisions

Guidance

- Street-connectivity standards for new developments often take the form of maximum allowable block length or an index based on the number of street links divided by the number of street nodes
- Maximum-block-length determinations should factor in existing block dimensions, topography, and the desired scale, character, and connectivity the community aims to achieve. For example, in Portland, OR, the maximum block length is 530'; in Austin, TX, it's 600'; and in Ft. Collins, CO, it's 660'¹¹
- One-way streets operate best in pairs that are no more than a quarter-mile apart²
- Align with existing local street grid to create four-way intersections
- Introduce policies and practices to help keep travel speeds down
- The Charlotte, NC, subdivision ordinance specifies:
 - » Preferred street spacing ranges from 400' to 600' by context, requiring, say, three blocks for a 1,400 ft-wide property within a transit-station area
 - » No individual block face should exceed 1,000' (with certain exceptions)

Professional Consensus

- Endorsed by the American Planning Association's Model Street Connectivity Standards Ordinance³
- Endorsed by the Congress for the New Urbanism Benefits (CNU) through its Connected Street Networks
- Supported by the Institute of Transportation Engineers through its alliance with the CNU on its proposal for federal "network" designation of areas meeting connectivity criteria. The proposal requested that all streets in a network, including sidewalks, would be eligible for investment for projects that maintain or improve the function of the network

Examples

- [Franklin, TN](#)
- [Cary, NC](#)
- [Austin, TX](#)
- [Portland, OR](#)

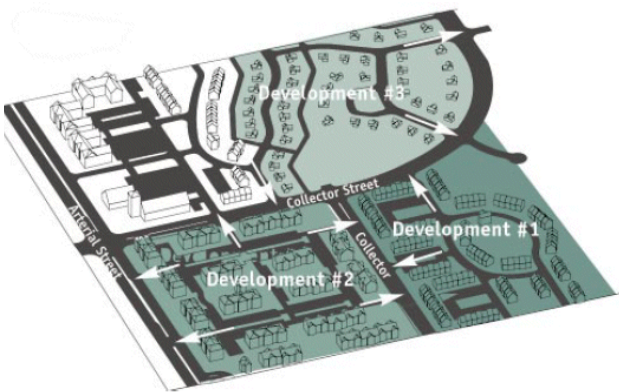
Case Study: Cary

Through the process of creating its 2001 Land Use Plan, the town of Cary, NC, formulated goals for itself: retain a sense of place, have a more human-scale and pedestrian-oriented environment, avoid strip development along arterials, focus commercial activity into discrete nodes, and increase connectivity. Street connectivity was seen as a way to foster a sense of community by creating places that encouraged informal, casual interactions and meetings.⁴

The town emphasized street-connectivity standards when creating its Design Guidelines, which immediately followed the Land Use Plan. The guidelines outlined connectivity characteristics, such as developments should be linked by roads and continuous sidewalks and have easy-to-use internal-circulation networks for all modes of travel. The guidelines also divided developments into different categories and provided developers with illustrative plans and a checklist of desired elements for each development type. For residential subdivisions, the design guidelines recommended reducing the use of cul-de-sacs or adapting them to include pedestrian or bicycle connections.⁵

The 2003 update to Cary's Land Development Ordinance mandated that blocks should be no more than 1,250' in length to create minimum street-connectivity standards for new residential development.⁶

The town's 2007 Pedestrian Plan recommended further updates to the Design Guidelines and Land Development Ordinance to improve pedestrian connectivity standards throughout the town. Recommended edits included requiring vehicular and pedestrian access to at least two public streets for all developments with more than 100 residential units and creating a pedestrian connectivity index to supplement the existing vehicular-oriented street connectivity index.⁷



Cary Design Guidelines illustrating how developments should provide multiple route choices. Source: Town of Cary, NC

1. Meck, Stuart; Morris, Marya; Kelly, Eric Damian; Bishop, Kirk. Model Smart Growth Codes, Interim Planning Advisory Service Report. Chicago: American Planning Association, 2006.
2. Pedestrian and Bicycle Information Center, 2004.
3. Meck, Stuart; Morris, Marya; Kelly, Eric Damian; Bishop, Kirk. Model Smart Growth Codes, Interim Planning Advisory Service Report. Chicago: American Planning Association, 2006.
4. The Town of Cary, North Carolina. Cary Design Guidelines. 2001. <http://www.townofcary.org/Assets/Planning+Department/Carydesi.pdf>
5. Ibid.
6. Town of Cary, North Carolina. Chapter 7: Development and Design Standards. Land Development Ordinance. http://www.amlegal.com/pdf/files/Cary_pdf/LDO_CH07.pdf
7. Town of Cary, North Carolina. Section 4: Existing Plans and Policies. Cary Pedestrian Plan. 2007. <http://www.townofcary.org/Assets/Planning+Department/Planning+Department+PDFs/pedestrian/draft/Cary+Section+4+-+Existing+Plans+and+Policies.pdf>

Retrofit Street, Walking, and Bicycle Connections into Existing Suburbs

Definition The construction of new street, bicycle, and/or pedestrians connections between existing streets on municipal land or private property.

Benefits

- Provides shorter, more direct routes between destinations, which encourages walking and cycling as a means of transportation
 - Reduces vehicle speeds and severity of accidents
 - Increases mobility options for kids and families
 - Helps keep local trips on local streets rather than clogging arterial roads and highways
 - Provides route alternatives to drivers to avoid congestion and construction delays
 - Reduces travel distances and vehicle miles traveled
 - Improves emergency-response times
 - Allows for more efficient utility connections
 - Creates efficient trash and recycling routes
 - Facilitates bus-route and transit planning
- For pedestrian or bicycle connectivity:
 - » Those that would significantly reduce the walking/cycling distance to reach important land use destinations
 - » Those that would significantly reduce the walking/cycling distance to reach existing pedestrian and/or bicycle networks

Guidance

- Finish connecting on existing rights-of-way paired with infrastructure improvements for community cooperation
- Investigate potential utility easements, alleyways, and planned streets that were never constructed as potential rights-of-way for connections
- Purchase private land lots, construct the desired street, sidewalk, or multiuse path, and then resell the property
- Line up political support
- Be the first to frame the discussion about street/pedestrian/bicycle connectivity
- Anticipate potential arguments and sources of resistance, and address them from the outset through a variety of ways, including:
 - » Talking points in traditional and social media outreach
 - » Proactive stakeholder meetings with potential opponents
 - » Talking points in public-education campaign material
- Contextualize local opposition through broad-based surveys revealing the general perspective of area residents. Work with local politicians or community partners to survey a large community base
- Build in flexibility in the project's scope and timeline to accommodate public concerns
- Create and articulate specific benefits for neighborhoods both "upstream" and "downstream" of a proposed street link.

Considerations

- Educating the public about the need for and benefits of frequent street connections
- Funding and logistics for procuring the necessary right-of-way
- Ensuring connections are accessible to people with disabilities

Appropriate Contexts

- Subdivision stub streets that were planned as through-streets and approved by the local government but never completed
- Potential street connections that would link important land uses, such as residential neighborhoods to elementary schools
- Potential street connections that would improve access to transit or greenways
- For street connectivity:
 - » Those that would divert traffic from congested streets or intersections
 - » Those that would significantly reduce driving distances for residents



Before



After

Drivers created an informal dirt path between Lawing School Rd and Northwoods Forest Dr until Charlotte DOT constructed the street connection. Source: Charlotte DOT, vc.charmeck.org

Case Study: Charlotte

In 2006, the city of Charlotte, NC, created a Street Connectivity program within its Department of Transportation (CDOT) to run the "inventory and implementation of needed street connections within and between neighborhoods as well as the construction of new connectors and local streets to provide improved access and connectivity for future development." The program is funded primarily through federal Congestion Mitigation Air Quality (CMAQ) grant money. The CDOT Street Connectivity Program filters existing street connections that fail to meet its new subdivision-ordinance standards through an engineering analysis and prioritization process.

Potential street connections are analyzed through a geographic-information-systems (GIS) mapping tool for:

- Potential land use linkages: What street pairs would be connected within a distance of 1/3, 2/3, and 1 mile?
- Mode impact: Would there be new access to transit or a greenway?
- Road-network impact: Would the connection divert drivers away from congested intersections or roadway segments?
- Route-directness impact: Which connection would make the biggest change in the ratio of route lengths between any two destinations as the crow flies versus the road network?

The CDOT reviews high-ranking potential street-connection candidates for construction feasibility to filter out any that contain fatal flaws or significant environmental or cost prohibitions. Projects that already have local community and political support are then prioritized. CDOT's Street Connectivity program, however, has encountered significant public resistance to new street links. Obstacles to public approval include perceptions that street connections will increase traffic speeds or volumes, affect neighborhood crime rates, or lower property values.

Street-connection retrofit projects that win community support need to have political support, flexibility in the scope and timeline of the project to accommodate community concerns and requests, and clear, tangible benefits for neighborhoods both "upstream" and "downstream" of a proposed street link.³

Professional Consensus

- Endorsed by the Pedestrian and Bicycle Information Center¹
- A Sprawl Retrofit strategy endorsed by the Congress for the New Urbanism²
- In the absence of official endorsements from national associations or governments, cities are turning to best practices employed by other municipalities

Examples

- [Charlotte, NC](#)
- [Cary, NC](#)

1. Pedestrian and Bicycle Information Center. How Can We Make Pedestrian/Bicycle Connections in Cul-de-Sac Developments? University of North Carolina Highway Safety Research Center. Nd. <http://www.bicyclinginfo.org/faqs/answer.cfm?id=3466>
 2. Congress for the New Urbanism. Sprawl Retrofit. Congress for the New Urbanism. 2011. <http://www.cnu.org/sprawlretrofit>
 3. Matt Magnasco. Street Connectivity Program Manager. Charlotte DOT. Personal correspondence. March 26, 2012.

Create Transit-Oriented Development (TOD)

Definition TOD is a compact, high-density, mixed-use development benefiting from its proximity to transit by supporting transit use, walking, and cycling.

Benefits

- Creates walkable, mixed-use neighborhoods
- Reduces automobile dependence
- Expands transportation options
- Reduces traffic congestion
- Increases transit ridership
- Reduces combined housing and transportation cost burden for households
- Potentially revitalizes neighborhoods

Considerations

- Higher square-footage costs and lending requirements for in-fill development
- Existing zoning policies that hinder TOD projects
- Local opposition to nearby higher-density developments
- Coordinating between transit agencies and developers
- Accommodating park-and-ride, bus service, and rail service without compromising pedestrian access and safety
- Negotiating reduced parking needs of TOD residents with increased parking demands of park-and-ride transit users

Appropriate Contexts

- Fixed-rail and bus-rapid-transit nodes
- High-frequency bus-transit nodes
- Ferry landings

Guidance

- Create a strategic station-area development plan incorporating public input, and ideally backed by existing zoning regulations that recognize TOD principles
- Where existing regulations do not encourage TOD, proposed zoning exemptions could include reduced parking minimums, suggested densities of 30 dwelling units per residential acre, mandatory bicycle parking, density bonuses for affordable housing, or expedited entitlement reviews¹
- Market TOD projects to the lending community by highlighting their market viability and development designs that feature direct, safe, and appealing connections to transit²

Professional Consensus

- TCRP Report 102: Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects³

Examples

Many US cities and counties have adopted transit-oriented development concepts, including:

- [Arlington County, VA](#)
- [Baltimore, MD](#)
- [Chicago, IL](#)
- [Dallas, TX](#)
- [El Paso, TX](#)
- [Los Angeles, CA](#)
- [Montgomery County, MD](#)
- [Portland, OR](#)
- [San Francisco Bay Area, CA](#)



Clarendon Metro station, Arlington, VA.
Source: Joe Loong, Flickr

Case Study: Arlington

Arlington County, VA, is one of the most successful examples of transit-oriented development (TOD) in the United States. In a [case study](#) prepared for the Transit Cooperative Research Board,⁴ the authors zeroed in on successful TOD tactics employed by Arlington County officials. One of the county's first steps was to create a general land use plan (GLUP) that set the broad policy framework for guiding development decisions along the Metrorail corridor. The county then introduced sector plans for individual sector plans that specified land-use and zoning ordinances, as well as urban design, transportation, and open-space guidelines for each station area. These plans included density bonuses, as-of-right zoning overlays, and supportive infrastructure investments to help achieve transit-oriented development

within a quarter-mile radius around each Metrorail station. Arlington County officials regularly reviewed and revised the GLUP and sector plans to make sure provision were up to date, market-responsive, and aligned with community goals. Subsequent revisions added mixed-use designations, emphasized urban design, and promoted higher-density development along the Metrorail corridors while maintaining lower residential density elsewhere in the county. The report also highlighted other factors believed to have contributed to the success of TOD in Arlington County, including a politically progressive residential base and the structure of the county's political system. In Arlington, county board members are elected at-large on staggered terms.

In addition, the county manager is appointed by the board rather than elected, which eliminates the usual tension that exists between legislative and executive officials at the local level. Since members serve at-large, the authors argue, they feel less pressure to respond to particular constituent demands and gripes about spot-traffic congestion.⁵ The Metrorail corridor also ran the length of Wilson Boulevard, which at the time was declining into a suburban slum lined by motels and dated strip malls. The county officials recognized the opportunity for redevelopment and tax-base benefits that TOD could provide for local schools and services.

The results of these policies are impressive: Since 1980, total office space in the county has doubled to more than 50 million square feet, with 70% of the office space located within the county's two Metrorail corridors. Additionally, the number of housing units in Metrorail corridors increased from 5,700 to more than 35,000 over the past 40 years. The Rosslyn-Ballston corridor has also emerged as one of Northern Virginia's primary retail addresses.⁶

1. Transit Cooperative Research Program Report 102: Transit-Oriented Development in the US: Experiences, Challenges, and Prospects. 2004. s-3
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_102.pdf

2. Ibid.

3. Ibid.

4. Ibid.

5. Ibid. 248.

6. Ibid. 240-241.

Provide **LOS Exemptions** for Pedestrian, Transit, and Bicycling Infrastructure Improvements

Definition This land use policy modifies how transportation impacts are analyzed and mitigated: When a proposed development would have a significant impact on motor-vehicle levels of service (LOS) in certain areas (transit corridors, transit stations, neighborhoods, or protected intersections), the policy would allow developers to replace automobile LOS mitigation with improvements for pedestrians, transit, or cyclists.

Benefits

- Encourages walking and cycling
- Encourages higher-density development where desired
- Provides transparent, predictable process of transportation analysis for developers
- Encourages smart-growth development

Considerations

- Potential congestion and traffic delays

Appropriate Contexts

- Transit corridors, transit station areas
- Planned communities
- Transit-oriented development
- Areas zoned for moderate-to-high densities

Guidance

- Identify specific areas where the policy would be appropriate
- Create a reasonable and predictable process for traffic-impact analysis for developers to factor into financial and planning decisions
- Use traditional LOS analysis methods to determine effect on traffic
- Define the thresholds for significant impacts based on commonly agreed upon standards, such as state or federal guidelines
- Determine and announce up front how these transportation-impact fees would be calculated and assessed through a publicized fee structure that includes an annual inflation factor¹

Professional Consensus

- In the absence of official endorsements from national associations or governments, cities are turning to best practices employed by other municipalities

Examples

- [San Jose, CA](#)



Striped parking lanes and pedestrians signs help create multimodal streets in San José, CA.
Source: Richard Masoner / Cyclelicious, Flickr

Case Study: San José

In the 1960's, San José, CA, grew rapidly in automobile-oriented growth patterns until roadways became congested and undeveloped land more scarce. San José updated its transportation policy in 2005 to give priority to pedestrians, transit, and bicyclists in specific locations. Those areas included parts of the city zoned for higher densities, planned communities, and transit-oriented development. All proposed development, whether in a Special Planning Area (SPA) or not, had to evaluate whether it would substantially increase traffic congestion.

Traditional methodologies evaluate motor-vehicle delays at an intersection. Any proposed development (above a threshold size) that would result in a substantial increase in traffic must prepare a Transportation Impact Analysis (TIA). The new policy modifies how transportation-impact analyses and mitigations are conducted in SPAs. In addition to describing existing vehicular facilities, the TIA for a proposed development in an SPA must also identify the existence, status, and condition of pedestrians, bicycle, and transit facilities and systems. If a proposed development in an SPA creates a significant vehicle LOS impact, then the project must include transportation-system improvements benefiting transit, bicyclists, or pedestrians. San José defines a significant vehicle LOS impact as either: (1) causing the LOS at an intersection to fall below D; or (2) contributing the equivalent of 1% or more to existing traffic congestion at an intersection already operating at LOS E or F.

For projects that will produce one impact for up to 400 trips, the fee is \$2,000 per trip; for two or more impacts for up to 400 trips, the fee is \$3,000 per trip. For projects producing more than 400 trips, the fees are assessed during the California Environmental Quality Act analysis. The net effect of the policy is that when a development proposal would have significant impacts on identified Transit Corridors, Transit Stations, Neighborhoods, or Protected Intersections, automobile mitigation is replaced with improvements for pedestrians, transit, or bicyclists.²

1. Brazil, John. Addressing Pedestrians in Roadway Level of Service Analysis: A San José, California Case Study. 2009.
<http://www.walk21.com/papers/Brazil.%20John-Addressing%20Pedestrians%20in%20Roadway%20Level%20of%20Serv.pdf>

2. Brazil, John. Addressing Pedestrians in Roadway Level of Service Analysis: A San José, California Case Study. 2009.
<http://www.walk21.com/papers/Brazil.%20John-Addressing%20Pedestrians%20in%20Roadway%20Level%20of%20Serv.pdf>

Diversify

Suburban Land Use Regulations

Definition Land use regulation amendments, ideally based on a vision created with broad-based public input, can encourage higher density and more diverse land uses in low-density residential developments.

Benefits

- Contributes to walkable, dynamic streets
- Improves transit service and use
- Improves efficiency of energy, land, and infrastructure use
- Creates a larger customer base for local retail and services
- Increases opportunities for affordable housing

Considerations

- Potential to change the character of neighborhoods
- Increased demand for amenities and open space in areas with increased densities
- Potential pushback to higher densities from developers and residents

Appropriate Contexts

- Single-family housing developments

Guidance

- Consider zoning amendments that encourage:
 - » In-fill and row-house development
 - » New and diverse housing types, such as the construction of small homes in alleyways, above garages in single-family housing developments, or in the form of secondary suites within single-family houses or multi-family apartment buildings (i.e., basement apartments or smaller suites within multi-family buildings)
 - » Increased density and greater allowable bulk (higher allowable building heights and sizes) in areas close to transit
 - » Low-impact commercial or manufacturing uses at specific locations, such as a convenience store, day-care facility, or studio space
- Establish a context-sensitive approach to zoning amendments with flexibility for specific neighborhood needs, historical built form, and concerns
- Amend associated amendments in city bylaws, policies, and development incentives to support these zoning changes
- Address provision of the increased needs for open space and public amenities associated with anticipated higher densities

Professional Consensus

- A [Sprawl Retrofit](#) strategy endorsed by the Congress for the New Urbanism¹

Examples

- [Vancouver, BC](#)



Laneway homes in Vancouver, BC, replace traditional garages and face onto an alleyway.
Source: Michael Geller

Case Study: Vancouver

The Vancouver City Council approved and adopted former Mayor Sam Sullivan's EcoDensity initiative in 2008 in an effort to increase the city's housing density while reducing its environmental impact. The council's approval capped a two-year-long process of public and legislative outreach and discussion. The resulting EcoDensity charter outlined the goals of its initiative to overhaul land use regulations, which included:

- Strategically achieving greater densities in land use patterns and locations where biggest environmental, affordability, and livability are possible
- Promoting forms of density that respect neighborhood character
- Encouraging the creation of walkable communities, improving biking and transit infrastructure, and reducing automobile use and ownership
- Ensuring diverse jobs and economic activity close to home for minimal commuting

The EcoDensity initiative required developers to give pedestrians priority in transportation-demand-management strategies for new projects. The initiative was associated with earlier city decisions to allow auxiliary rental units within single-family detached homes, such as basement apartments; and later, the city gave most homeowners the ability to build "laneway houses," or free-standing rental units along the rear lane or alley of their properties.

In order for these policies to increase density without radically changing the character of the neighborhoods, the city placed regulations on the size and location of these additional rental units. To that end, basement suites should create minimal impact on the outward appearance of single-family homes. For laneway houses, city regulations specify that the structures can be up to 750 square feet in size, one-and-a-half stories in height, and on lots that have to be at least 33 feet wide; laneways cannot become separate condominiums but must remain part of the main property. EcoDensity measures also included a mandate to create a "Five-Minute City" where shopping, parks, restaurants, and basic services are within a five-minute walk from the homes of city residents.²

1. Congress for the New Urbanism. Sprawl Retrofit. <http://www.cnu.org/sprawlretrofit>

2. City of Vancouver. EcoCity Initiatives/EcoDensity. 2009. <http://vancouver.ca/commsvcs/ecocity/>

Transform Underutilized Malls into Walkable Destinations

Definition Underutilized strip centers, malls, and aging office parks are ideal locations to transform into dense, mixed-use, walk-friendly destinations. The effort usually requires revising funding priorities, zoning regulations, and urban design guidelines in order to implement that walkable vision.

Benefits

- Increases walking and cycling opportunities
- Improves economic vitality of an area
- Reduces congestion
- Reduces expenditures on transportation, water, and utility infrastructure

Considerations

- Costs and resources required for public education and outreach
- Funding for adapting or creating new street networks
- Coordination among multiple jurisdictions and agencies

Appropriate Contexts

- Underutilized strip centers, malls, and aging office parks
- Underutilized industrial parks or warehouses

Guidance

- Appoint a task force to organize regular and meaningful public participation, such as a series of community workshops, outreach events, and public meetings
- Build bridges between elected officials and land owners
- Develop alternative long-term development scenarios to be used as the basis of public discussion
- Use transit-oriented development principles as toolkit for a context-sensitive approach that considers other nodes and/or forms of transit, including bus rapid transit and ferries
- Investigate and address all other jurisdictional regulations and incentives that might affect or be effected by proposed land use amendments

Professional Consensus

- A [Sprawl Retrofit](#) strategy endorsed by the Congress for the New Urbanism¹

Examples

- [Mizner Park](#), Boca Raton, FL
- [BelMar](#), Lakewood, CO
- [Mashpee Commons](#), MA
- [Surrey Central City](#), Vancouver, BC²
- [Tysons Corner](#), Fairfax County, VA



Tysons Corner, VA, 2010. Source: La Citta Vita, Flickr

Case Study: Tysons Corner

Tysons Corner, VA, is a sprawling cluster of shopping malls and office parks at the intersection of four major highways in Northern Virginia's Fairfax County. The regional economic hub contains more than 100,000 jobs but hosts fewer than 20,000 residents. Every day, thousands of commuters flood highways en route to jobs in Tysons Corner and create congestion throughout the area. With forecasts for continued growth in the region, the Fairfax County Board of Supervisors launched a multiyear revisioning campaign for Tysons Corner.

In 2010, the Board amended Fairfax County's comprehensive plan to call for high-density, mixed-use development around four new Tysons Corner Metro Rail stations to be created in an extension of Metro Rail's Silver Line service. The plan's main long-term goal is to make Tysons Corner home to 200,000 jobs and 100,000 residents by 2050. Toward that aim, the plan also includes adding parks, open space, and trails, and creating local recreation and cultural centers.

To help implement the revised comprehensive plan, the Board of Supervisors created a new zoning district with new transportation-design standards and urban design guidelines. A new development review process prioritizes pedestrian circulation, pedestrian perspectives, and the public realm in future site and building designs, transportation plans, and utility plans, with the goal of "an urban street grid, appropriately dimensioned and designed streetscape, and well-located, high-functioning parks and open spaces."³

1. Congress for the New Urbanism. Sprawl Retrofit. n.d. <http://www.cnu.org/sprawlretrofit>
2. 10 Sprawl Repair and Regeneration Projects. Master in Urbanism Regenerating Intermediate Landscapes. May 25, 2012. <http://intermediatelandscapes.com/2012/05/25/10-sprawl-repair-and-regeneration-projects/>
3. Tysons Corner Urban Design Guidelines. January 24, 2012. 13. http://www.fairfaxcounty.gov/tysons/design/download/tysons_udg.pdf

Encourage **Temporary Uses** in Vacant Buildings and Sites

Definition Local governments can create policies or programs to direct or fund temporary programming in privately or publicly owned vacant buildings or lots in order to create safer, more dynamic streets and sidewalks. Temporary uses can range from pop-up retail and art exhibitions to urban farms and community gardens.

Benefits

- Establishes a standard how-to process for community groups organizing temporary uses in vacant spaces and/or lots
- Provides funding streams for temporary uses in vacant structures or lots
- Directs temporary programming to meet governmental goals
- Governmental backing can give temporary programs and programmers a greater sense of legitimacy with property owners
- Provides city-owned land and buildings as potential locations
- Temporary uses in vacant buildings and lots:
 - » Attracts people to the site, creating a more dynamic, walkable, and safer street
 - » Creates new economic development and cultural opportunities
 - » Helps establish a community hub
 - » Discourages vandalism and illegal occupation of a vacant space
 - » Improves appearance of the vacant space, improving residents' quality of life
 - » Potentially attracts investors to the site
 - » Creates a potential incubator for start-up businesses, new community organizations, and nonprofit groups
 - » Potentially increases residents' access to support services
 - » Potentially increases access to fresh food

Considerations

- Existing codes and permitting processes are geared toward long-term use and permanent tenants, unsuited to temporary uses
- Lack of landlord-tenant lease templates for flexible time frames

- Cost of general liability coverage, potentially offset by existing coverage of participating community or nonprofit organizations
- Logistics and costs of utilities

Appropriate Contexts

- Neighborhoods that have been identified for redevelopment in local master plans
- Underutilized spaces, such as empty stores, vacant lots, unrented offices, and abandoned warehouses or factories
- Neighborhoods with access to transit

Guidance

- Create a working group with property owners; artist organizations; representatives from municipal, cultural, equity, food-security, planning, and permitting departments; and regulatory agencies to investigate barriers to temporary uses and recommend solutions for:
 - » Permitting processes
 - » Code variances
 - » Real estate negotiation and lease templates
 - » Insurance coverage
 - » Connecting temporary space to tenants
- Build an online database of available spaces for artists, studios, entrepreneurs, urban-gardening groups, or farms
- Design a selection mechanism like a request for proposal (RFP) for distributing seed funding to spur temporary uses of vacant spaces
- Select a project manager to spearhead community collaborations and schedule programming for the temporary space
- Determine and measure appropriate data measurements to evaluate the impact of the temporary use, whether through foot traffic, number of visitors, real estate availability or values, local perceptions of safety or vibrancy of streetscape, etc.



The former R.L. Christian Library transformed into a "Temporium" in Washington, DC. Source: Daquella Manera, Flickr

Case Study: Washington, DC

The Washington, DC, Office of Planning (OP) launched its Temporary Urbanism initiative in 2010 to help transform vacant spaces into dynamic destinations. The initiative emerged out of a 2009 OP forum that brainstormed ways to "catalyze collaborative action across the creative, green, technology, nonprofit, education, and technology sectors."² The OP's current Temporary Urbanism program is the ArtPlace grant program, which provides \$75,000 for each of four Art and Culture "Temporiums" that would open for three to six months in the neighborhoods of Anacostia, Brookland, Central 14th Street, and Deenwood. The funding for the program comes from a national private-public partnership that aims to revitalize neighborhoods across the country by using the arts as an economic-development tool.

The OP requires applicants to partner with other, ideally DC-based, organizations; line up three to five potential vacant sites with written approval from the property owners; draft a proposal and budget for the future programming; and possess relevant past experience. The current program builds on three previous OP-organized retail Temporiums. The first took place in a vacant city library kiosk on H Street in 2010; the latter two opened in vacant storefronts in the neighborhoods of Mt. Pleasant and Shaw.

While the ArtPlace program provides funding and direction for temporary uses, the OP clarifies that applicants are responsible for obtaining their own permits, leases, and liability insurance for these spaces. DC's zoning and building-code regulations, however, aren't suited to the needs and time frames of temporary tenants. The OP points to a need for new short-term lease templates and regulations better suited to temporary uses. It sees a business opportunity for brokers who help connect short-term tenants with short-term real estate availability. It also is looking into adapting its regulations to provide zoning and regulatory exceptions for short-term uses.³

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities
- Urban-farming uses endorsed by the United States Department of Agriculture's National Institute of Food and Agriculture [Community Food Projects Competitive Grant Program](#)

Examples

- Washington, DC: [Office of Planning Temporary Urbanism](#)¹
- Detroit, MI: [Detroit Food Policy Council](#)

1. Washington, DC, Office of Planning. Temporary Urbanism Initiative. <http://planning.dc.gov/DC/Planning/Across+the+City/Other+Citywide+Initiatives/Temporary+Urbanism+Initiative>

2. Washington, DC, Office of Planning. "Actionomics[dc]." 2009. <http://planning.dc.gov/DC/Planning/Across+the+City/Other+Citywide+Initiatives/Actionomics/ci.Actionomics%5Bdc%5D.print>

3. Fidler, Eric. "Temporary uses can enliven city neighborhoods." Greater Greater Washington.org. November 8, 2011. <http://greatergreaterwashington.org/post/12674/temporary-uses-can-enliven-city-neighborhoods/>

Permit **Park(ing) Day** Every Day

Definition Inspired by Park(ing) Day, the annual event that invites citizens to transform metered parking spots into temporary public parks, cafes, and on-street bike parking, a local jurisdiction can create a simple, standard permit process to transform parking spots into longer-term public spaces.

Benefits

- Creates new dynamic, pedestrian-oriented public space
- Increases pedestrian right-of-way, often creating wider effective sidewalk clearances for foot and wheelchair traffic
- Activates streetscapes
- Improves pedestrian safety
- Reduces traffic
- Creates public improvements with minimal public expense
- Gives businesses and organizations a new way to interact with their community
- Encourages local businesses and commercial organizations to have a broader civic engagement

Considerations

- Reduces curbside parking
- Requires multiple agency approvals
- Drainage study may be needed
- Requires ongoing maintenance and supervision

Appropriate Contexts

- Roadways with curbside parking lanes
- Curbside location in close proximity to the applicant's establishment or organization
- Relatively level roadway surface
- Curbside locations at least 20 feet from the corner of an intersection or driveway
- Roads with permitted speeds under 25 mph¹

Guidance

- Seek a community partner to educate and engage the public
- Determine who is eligible to apply for the new-use-of-the-curbside permit. New York City restricts applicants to local businesses or institutions that own or operate on the ground floor of a building facing that curbside location; San Francisco permits business improvement districts as applicants
- Create a pilot project and use its success to pave the way for changing permitting processes to extend the pilot into an ongoing program
- Work with community partners to publicize the program and its request for applications or proposals (RFP)
- Encourage applicants to regularly check in with city staff to clarify expectations, learn about resources, and understand design requirements early in the process
- Focus the program on the creation of new public space and ensure its public use
- Develop ongoing maintenance agreements obligating the maintenance partner to clean and maintain the space
- Create a sample maintenance agreement for interested partners

Professional Consensus

- The [Parklet Impact Study](#) from the San Francisco Great Streets Project found that the number of people stopping to socialize and engage in positive behavior increased significantly at all three studied locations²

Examples

- [Los Angeles, CA](#)
- [New York, NY](#)
- [Oakland, CA](#)
- [Philadelphia, PA](#)
- [San Francisco, CA](#)

Case Study: San Francisco

The cities of New York and San Francisco have taken the concept of Park(ing) Day and created official programs to repurpose curbside parking into public space on a longer-term basis. The San Francisco [Parklet](#) program seeks applications from business improvement districts, retail stores, and restaurants for the opportunity to design, construct, and maintain the spaces for one-year leases that can be renewed on an unlimited basis. The program specifies design standards for the Parklet while streamlining the permitting process, reducing fees to a minimum. The Parklet can feature tables and chairs as long as they are distinct from the existing furniture of the parklet's sponsor, bike parking, benches, and landscaping features.

While privately sponsored, the program explicitly states that all seating within repurposed curbside spaces must not be reserved for customers but remain free and open to any member of the public. Parklet permit holders are required to maintain the site, secure any moveable furniture overnight, and show proof of \$1 million in liability insurance.

The program is a resounding success: The city has received about 30 applications for each of the three rounds of requests for proposals (RFP) it has put out so far, and there are 70 more businesses on a list to be notified when the next RFP is released. Since the program's inception in late 2009, 27 Parklets have been installed, 11 Parklet projects are about to go into implementation, and 27 more projects are in varying stages of the design and permitting process.³

Mayor Gavin Newsom at the 2010 opening of Cafe Mojo Parklet in San Francisco, CA. Source: [SFCitizen.com](#)



1. San Francisco Planning Department. Request for Proposals for Temporary Sidewalk Extension "Parklets". November 7, 2011. http://sfpavementtoparks.sfplanning.org/images/Parklet_Call_for_Projects_110711.pdf
2. Pratt, Liza. Parklet Impact Study. San Francisco Great Streets Project. 2011. http://sfgreatstreets.org/wp-content/uploads/2012/01/Parklet_Impact_Study.pdf
3. San Francisco Planning Department. Request for Proposals for Temporary Sidewalk Extension "Parklets." November 7, 2011. http://sfpavementtoparks.sfplanning.org/images/Parklet_Call_for_Projects_110711.pdf

Design & Engineering Tactics

Introduction

This collection of design and engineering tactics is not intended to be comprehensive, but rather highlight the innovative, nonmandatory tactics that accommodate or encourage walking. They are grouped into four categories: design guidance, traffic-analysis techniques, intersection elements, and signal treatments.

- Design guidance focuses on physical layouts and elements of streets, sidewalks, and crossings.
- Traffic-analysis techniques count and account for pedestrians in traffic analysis.
- Intersection elements list physical additions to road crossings that improve safety.
- Signal treatments list the types and timing plans of traffic lights that can improve the safety of walkers. We do not include pedestrian countdown signals, although we recommend that communities adopt them. Why? Countdown signals are now standard within the Manual on Uniform Traffic Control Devices (MUTCD), which means that departments of transportation are already obliged to use countdown signals whenever they add or replace pedestrian signals.

This chapter includes some Federal Highway Administration–recommended treatments; the full list of federal “proven countermeasures,” or safety elements, can be found at

<http://safety.fhwa.dot.gov/provencountermeasures/>



A pedestrian crossing island with accessible-design features including a level, cut-through pedestrian path and detectable warnings in the form of truncated domes, New York, NY. Source: Gerard Soffian

Pedestrian-friendly sidewalk and streetscape infrastructure in Santa Barbara, CA. Source: Ken Lund, Flickr

Adopt **Context-Sensitive** Street Design Guidelines

Definition Context-sensitive street design guidelines require a collaborative approach to transportation planning. They need a shared stakeholder vision, comprehensive understanding of contexts, and design flexibility to balance the transportation needs of multiple modes while enhancing community and natural environments.

Benefits

- Helps integrate land use and transportation planning
 - Helps preserve environmental, scenic, aesthetic, historic, and natural resources
 - Accommodates all road users
 - Generally improves safety
 - Helps make communities more livable
 - Increases stakeholder receptiveness
 - Increases walking opportunities
- » Address community and social issues
 - » Address aesthetic treatments and enhancements
- Consider designing roads to meet a target, or desired travel speed, rather than a 'design speed,' or essentially the maximum speed that can be maintained by the design features of the roadway.² Consider retrofitting roads to achieve those target speeds

Considerations

- Accommodating competing uses within a limited amount of space

Appropriate Contexts

- Local street design guidelines
- State and local departments of transportation strategic-plan and project-management manuals
- Federal and state project-management guidance

Guidance

- Guidelines should address both the planning process and design considerations
- NCHRP Report 642: Quantifying the Benefits of Context Sensitive Solutions provides 15 guiding principles for context-sensitive solutions, including¹:
 - » Use interdisciplinary teams
 - » Involve stakeholders
 - » Seek broad-based public involvement
 - » Achieve consensus on purpose and need
 - » Address alternatives and all travel modes
 - » Consider a safe facility for users and community
 - » Maintain environmental harmony

Professional Consensus

- Endorsed within the Federal SAFETEA-LU transportation bill Section 6008. Section 109(c) (2) of title 23, USC context-sensitive solutions³
- Endorsed by the Federal Highway Administration Context-Sensitive Solutions program⁴
- Endorsed within the NCHRP Report 642: Quantifying the Benefits of Context Sensitive Solutions⁵
- Endorsed by the Institute of Transportation Engineers within its publication Designing Walkable Urban Thoroughfares: A Context-Sensitive Approach
- Endorsed by Joint AASHTO / FHWA Context Sensitive Solutions Strategic Planning Process⁶

Examples

- NJDOT/PennDOT Smart Transportation Guidebook
- Oregon Neighborhood Street Design⁷
- Seattle, WA
- New York, NY
- Charlotte, NC
- Elk Grove, CA



A rendering of the Manayunk Bridge Path project, to be funded by the Pennsylvania Community Transportation Initiative, which supports Smart Transportation goals. Source: John Boyle, Bicycle Coalition of Greater Philadelphia

Case Study: PA and NJ

In 2008, the Pennsylvania and New Jersey departments of transportation, in collaboration with the Delaware Valley Regional Planning Commission, published *The Smart Transportation Guidebook*. The publication provided the framework for updating all other DOT processes around six tenants: Adapt solutions to the context, tailor the approach, plan projects with community collaboration, accommodate alternative transportation modes, use sound professional judgment, and scale the solution to the size of the problem. The guidebook played a strong role in shaping updates to PennDOT's Design Manual Part 1 and 2. The updated procedures emphasized design flexibility based on surrounding land uses and street users. The new design processes now encourage engineers to consider the needs of all road users in addition to their surrounding land uses and integrate them into designs.⁸ As a result, more than one project could be reevaluated using Smart Transportation principles and redesigned for vehicle speeds and street geometry more suitable to the cyclists and pedestrians who would be sharing the roadway.⁹

1. Stamatiadis, Nikiforos; Kirk, Adam; Harman, Don; Hopwood, Theodore; Pigman, Jerry. NCHRP Report 642: Quantifying the Benefits of Context-Sensitive Solutions. Transportation Research Board of the National Academies. June 30, 2009. http://contextsensitivesolutions.org/content/reading/nchrp_report_642_ndash_quantifi_resources/nchrp_rpt_642.pdf/
2. Federal Highway Administration. Speed Concepts: Informational Guide. September 2009. http://safety.fhwa.dot.gov/speedmgmt/ref_mats/fhwas10001/
3. Federal Highway Administration. <http://www.fhwa.dot.gov/context/what.cfm>
4. Federal Highway Administration. Context Sensitive Solutions. <http://contextsensitivesolutions.org/>
5. NCHRP Report 642: Quantifying the Benefits of Context Sensitive Solutions. Transportation Research Board of the National Academies. http://contextsensitivesolutions.org/content/reading/nchrp_report_642_ndash_quantifi_resources/nchrp_rpt_642.pdf/
6. Center for Transportation and the Environment. Results of Joint AASHTO/FHWA Context Sensitive Solutions Strategic Planning Process Summary Report March 2007. http://contextsensitivesolutions.org/content/reading/results_of_joint_aashto_fhwa_co_resources/portlandsummary_final_050107.pdf/
7. Neighborhood Streets Project Stakeholders. Neighborhood Street Design Guidelines. An Oregon Guide for Reducing Street Widths. November 2000. <http://www.oregon.gov/LCD/docs/publications/neighborstreet.pdf?ga=t>
8. Hare, Brian. Chief of Design Services Division. PennDOT Personal correspondence. September 28, 2011.
9. Ibid.

Adopt Accessible & Attractive Streetscape Design Guidelines

Definition The shape and amenities of sidewalks, crosswalks, and plazas are often determined by streetscape design guidelines. These guidelines can require that walking infrastructure is accessible to all persons regardless of ability or stature, and they can help create a safe, pleasant place for people to walk, sit, stand, and move around.

Benefits

- Increases accessibility for all people on the street, especially those with visual or mobility impairments
- Creates safe, accessible, and convenient walking connections
- Encourages walking for all ages and abilities
- Supports transit use for all ages and abilities
- Helps create an appealing and comfortable streetscape

Considerations

- Accommodating competing uses within a limited amount of space
- Accommodating curbside parking

Appropriate Contexts

- Any jurisdiction that is responsible for the design of the streetscape beyond the portion of the right-of-way used for vehicle purposes

Guidance

- Create a community advisory committee to meet regularly with guidelines staff during the creation of pedestrian-environment design guidelines
- Reach out to the general public for input through community meetings, surveys, and an interactive website
- Collaborate with technical agency staff to ensure feasibility of proposed guidelines
- Guidelines should:
 - » Incorporate proposed Public Rights-of-Way-Accessibility Guidelines (PROWAG) to ensure universal access
 - » Minimize pedestrian risk from vehicles
 - » Address pedestrian concerns, like safety, lighting, shade, seating, and sidewalk clearances and crossings
 - » Create safe public space and seating

- » Address ecological concerns, including on-site stormwater management and the creation of local habitats where feasible

- » Create safe access to transit

- Guidelines should address aesthetic and accessibility concerns simultaneously where feasible, as exemplified in these San Francisco Better Streets suggestions¹:

- » Add street trees, landscaping, stormwater facilities, and furnishings to:

- Projects that dig up sidewalks

- Traffic-calming projects

- » Include curb extensions in curb-ramp construction projects

- » Add pedestrian-oriented lighting when upgrading roadway lighting

- » Consolidate utilities, parking meters, signs, and poles to widen sidewalk clearances on any streetscape-improvement project

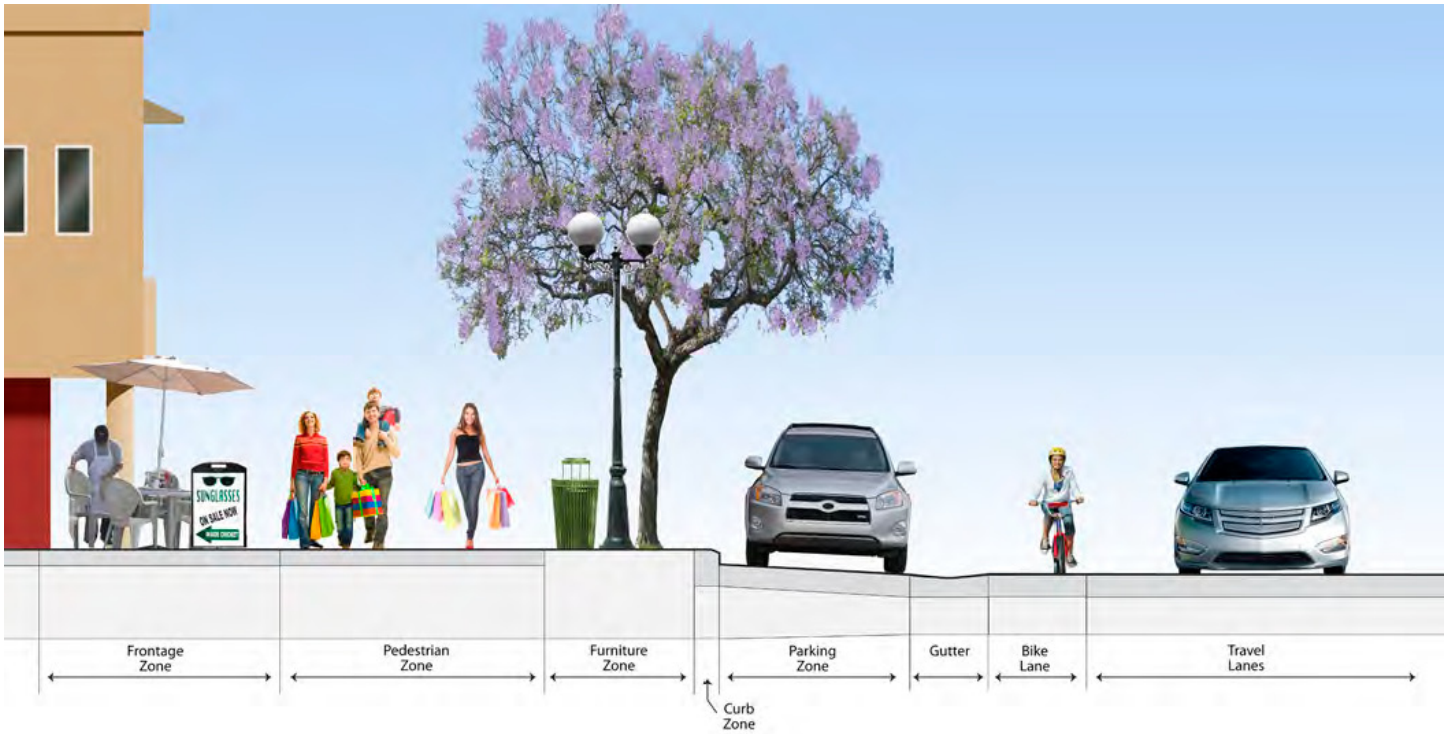
- » Include public art on projects that create new structures in the right-of-way

Professional Consensus

- In the absence of national academic or association standards, jurisdictions are looking to best practices of other jurisdictions

Examples

- San Francisco, CA: [The Better Streets Plan](#)
- Seattle, WA: [Seattle Design Guidelines](#)
- New York, NY: [NYCDOT Street Design Manual](#)
- Los Angeles County, CA: [Model Design Manual for Living Streets](#)



This street cross section illustrates how streetscape elements can be integrated to create pleasant, safe environments for multiple modes of travel. Source: Michele Weisbart, *Model Design Manual for Living Streets*

1. San Francisco Planning Department. The Better Streets Plan. December 2010. 5-4. http://www.sf-planning.org/ftp/BetterStreets/docs/FINAL_5_Street_Designs.pdf

Narrow or Reduce Travel Lanes

Definition Streets frequently have more space allotted to cars than is necessary. This tactic entails redesigning new or existing roadways to reduce the width and number of travel lanes wherever possible. Techniques for achieving this include “road diets” and reducing travel-lane widths. A “road diet” typically refers to converting a roadway with two lanes in each direction to one lane in each direction with a center turning lane and bike lanes on the side.

Benefits

- Provides more roadway width for sidewalks and bicycle lanes
- Often shortens crossing distances for pedestrians
- Creates more space for medians, bike lanes, on-street parking, transit stops, and landscaping
- Improves pedestrian and cyclist safety
- Makes more efficient use of underused pavement
- May slow vehicular speeds

Considerations

- Be cautious of 9'–10' travel lanes in the following contexts:
 - » Four-lane arterial roads
 - » Four-leg stop-controlled arterial intersections¹
 - » High-speed roadways with narrow shoulders²
 - » High-speed curvy roadways³
 - » Locations with high volumes of buses and/or trucks

Appropriate Contexts

- Roadways with average daily traffic (ADT) of 20,000 vehicles or less may be good candidates for a road diet
- The American Association of State and Highway Transportation Officials recommends the following minimum travel lane widths by context⁴:
 - » Freeways: 12'
 - » Urban and suburban arterials: 10'
 - » Rural arterials: 11'
 - » Collector roadways: 10'
 - » Local roads: 9'

- » Reduced-speed urban areas (45 mph and under): 10'
- » Urban and suburban commercial centers: 9'⁵
- » Urban and suburban commercial neighborhoods: 9'–11'

Guidance

- Travel-lane widths should not be based on the widest width allowable, but on the narrowest safe width
- Evaluate transit routes, the number and design of intersections along the corridor, the number of driveways, and operational characteristics before implementing a road diet
- Consider designing local streets that are too narrow for two full lanes to accommodate alternating two-way traffic
- Analyze and understand the effects of the proposed change, and obtain input from the community stakeholders
- Include contextual safety improvements in the project, such as intersection turn lanes, signing, pavement markings, signals or stop signs, transit stops, medians, sidewalk improvements, and bike lanes

Professional Consensus

- AASHTO permits lane-width minimums of 10' on urban arterial and collector roadways with posted speed limits of 45 mph or less and 9' lane-width minimums on local roads⁶
- Endorsed by [Federal Highway Administration](#)
- Endorsed by PennDOT/NJDOT's [Smart Transportation Guidebook](#), which encourages designers to “make full use of the normal range of travel lane widths....depending on context and project goals.”

Examples

Many cities stripe 10' lanes on urban arterials, including:

- [Arlington, VA](#)
- [Charlotte, NC](#)
- [Eugene, OR](#)
- [Portland, OR](#)
- [Santa Monica, CA](#)
- [Burbank, CA](#)
- [New York, NY](#)



Before restriping narrower travel lanes on 27th Street, in Oakland, CA, workers first sketched out the new street dimensions. Source: Eric Fischer, Flickr

1. Potts, Ingrid B.; Harwood, Douglas H.; Richard, Karen R. Relationship of Lane Width to Safety for Urban and Suburban Arterials. TRB 2007. Annual Meeting Submission.
2. Federal Highway Administration Office of Safety. Lane Widths. http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.htm
3. Federal Highway Administration Office of Safety. Lane Widths. http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.htm
4. PennDOT, NJDOT. Smart Transportation Guidebook. March 2008. 45. <http://www.smart-transportation.com/assets/download/Smart%20Transportation%20Guidebook.pdf>
5. A member of the Institute of Transportation Engineers is more cautious about 9' lanes, recommending them only on local streets or when adjacent to bike lanes
6. American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets. 2010. 477.

Build a Comprehensive Sidewalk Network

Definition Sidewalks are roadways for walkers; they need to be comprehensive, integrated, and connected. Many communities and cities have discontinuous sidewalk systems that need connecting or upgrading to get people where they need to go. To most efficiently use their resources, jurisdictions should survey and analyze existing sidewalks to prioritize sidewalk improvements.

Benefits

- Encourages walking by creating a safe, direct means of getting around on foot
- Connects people and neighborhoods to businesses, schools, and job opportunities by building an integrated and comprehensive sidewalk network
- Encourages social interaction
- Reduces pedestrian conflicts with vehicles
- Provides consistent accessibility for everyone, especially children, seniors, and people with mobility limitations

Considerations

- Construction costs
- May require reclaiming right-of-way from existing front yards and lawns
- Funding for continual maintenance
- May require narrowing of the roadway

Appropriate Contexts

- Urban and suburban residential, commercial, and arterial streets
- Access points and paths to and from transit, schools, parks, and other services

Guidance

- Survey existing conditions
- Track and store existing sidewalk conditions, possibly using a geographic information system (GIS)
- Perform in-field assessments of existing conditions and existing ADA/PROWAG compliance
- Address need for safe and accessible street crossings between sidewalks

- Analyze sidewalk conditions in relation to census and land use data
- Determine appropriate sidewalk widths based on existing volumes of people and adjacent land uses. Zupan and Pushkarev posit sidewalk minimums in Urban Space for Pedestrians¹
- Prioritization criteria can include:
 - » Potential demand (proximity to pedestrian attractors and corridor function)
 - » Potential pedestrian risk (presence of physical buffers between moving traffic and pedestrians, traffic volumes, traffic speeds)
 - » Existing sidewalk need (level of maintenance and ADA compliance)
 - » Existing population need (health and socioeconomic levels of adjacent population)
- Solicit public input and discussion when creating a matrix to prioritize projects
- Consider alternative, cheaper sidewalk and street designs to achieve infrastructure- and stormwater-management goals
- Create a separate program for community-requested safety and sidewalk improvements
- Install ADA and PROWAG²-compliant infrastructure

Professional Consensus

- AASHTO maintains that "Providing people safe places to walk is an essential responsibility of all government entities involved in constructing or regulating the construction of the public right-of-way"³
- The policy of the U.S. DOT is that bicycling and walking facilities should be incorporated into all transportation projects unless "exceptional circumstances" exist⁴



Seattle DOT's Sidewalk Development Program connects sidewalk gaps, as exemplified by this project on 39th Avenue South. Source: Seattle DOT

Case Study: Seattle

Seattle used a GIS-based approach to prioritize potential sidewalk projects. The city first analyzed sidewalk needs based on the presence and characteristics of existing sidewalks, such as physical buffers, traffic speeds and volumes, and block length. The city then analyzed sidewalks based on three demand analyses—potential pedestrian demand, socioeconomic / health equity, and corridor function—and weighted them by category to determine areas of most need.⁵

Seattle created an alternate Neighborhood Projects Fund to construct projects proposed by residents.⁶ Seattle's sidewalk improvements are funded by the city's nine-year \$365 million Bridging the Gap levy, supplemented by state or federal grants.⁷

Examples

- [Seattle, WA](#)
- [Austin, TX](#)
- [Charlotte, NC](#)

1. Zupan, Jeffrey M. and Pushkarev, Boris. *Urban Space for Pedestrians*. The MIT Press. Cambridge. 1975. 149. <http://www.scribd.com/doc/36643404/Urban-Space-for-Pedestrians>
2. U.S. Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Right of Way. July 2011. <http://www.access-board.gov/provac/nprm.htm>
3. American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets. 2010.
4. U.S.DOT. "Accommodating Bicycle and Pedestrian Travel: A Recommended Approach—A U.S. DOT Policy Statement on Integrating Bicycling and Walking Into Transportation Infrastructure," Transportation Equity Act for the 21st Century (TEA-21) <http://www.fhwa.dot.gov/environment/bikeped/design.htm>
5. City of Seattle. Appendix A: Methodology and Analysis. Seattle Pedestrian Master Plan. 2009. http://www.seattle.gov/transportation/pedestrian_masterplan/docs/Methodology_Appendix040209_fixed.pdf
6. Seattle Department of Neighborhoods. 2012 Neighborhood Projects Fund. n.d. <http://www.seattle.gov/neighborhoods/btansrcrf/>
7. Seattle Department of Transportation. Bridging the Gap - Building a foundation that lasts. n.d. <http://www.seattle.gov/transportation/BridgingtheGap.htm>

Integrate **Transit, Walking, and Cycling** into Projects

Definition The needs of transit, cyclists, and pedestrians should be integrated within the design and scope of transportation projects. This can be accomplished by improving infrastructure, modifying design speeds, reconfiguring roadways, and adapting traditional traffic analysis.

Benefits

- Creates safe convenient walking and cycling routes to and from transit and trip generators
- Recalibrates priorities from vehicles to people
- Provides opportunities for walking and cycling, which improves the emotional and physical health of participants
- Increases bus-passenger trips

Considerations

- Traffic-calming and safety improvements may negatively affect bus service and vehicle capacity
- Projects typically span multiple jurisdictions, requiring increased collaboration between traffic engineers, technical specifications, and political priorities
- Transit riders and pedestrians often do not have vocal constituencies to advocate for infrastructure improvements or counteract negative perceptions

Appropriate Contexts

- Roadway repaving and redesign projects
- Specifications for third-party roadway reconstruction (water main or utility work necessitating repaving)
- Community visioning processes and plans

Guidance

- Conduct traffic analysis in terms of person delay rather than vehicle delay to better account for all the people on the road. The Highway Capacity Manual (HCM), which outlines the computational procedures for determining the capacity and quality of service of roadways and intersections, focuses primarily on vehicle delay. HCM does not account for the passenger-efficiency of buses. Any delay should be recalculated from the number of vehicles to the number of passengers traveling through the corridor

- Determine the appropriate design speed of transportation redesigns with the safety and convenience of pedestrians in mind
- Integrate transit priority elements into street redesigns. Complete streets often slow traffic, which improves overall street safety, but can negatively affect bus services on that street. Including bus lanes, signal priority, and other bus-focused elements can ensure that these projects also promote transit use.
- Design safe, convenient infrastructure for the entire door-to-door transit-trip passenger experience, including the routes between the transit stop, stops for travel in both directions (including street crossings), the location of the transit stop, the method of payment, and the transit vehicle itself
- Incorporate Public Rights-of-Way-Accessibility Guidelines (PROWAG) to ensure universal access throughout the infrastructure improvements
- Expand the concept of Complete Streets to the network; consider modes by network and routes rather than requiring every mode to be located on the same street

Professional Consensus

- In the absence of official guidance from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

Individual cities that have integration policies include:

- San Francisco, CA: [The Better Streets Plan](#)
- New York, NY: [NYCDOT Sustainable Streets](#)



Select Bus Service on First and Second Avenues in New York, NY. Source: Noah Kazis, *Streetsblog New York*, streetsblog.org

Case Study: New York

In 2009, NYC Department of Transportation (NYCDOT) and MTA New York City Transit (NYCT) teamed up to design and implement the M15 Select Bus Service (SBS) line along First and Second Avenues in Manhattan. The SBS project, which was modeled after bus rapid transit to provide subway-like service with buses, aimed to meet goals previously outlined in Mayor Bloomberg's PlaNYC sustainability plan and NYCDOT's strategic plan, as well as NYCT's Capital Plan. This SBS project gave NYCDOT and NYCT the opportunity to reexamine existing infrastructure in order to improve transit and all modes on two major Manhattan thoroughfares.

The First and Second Avenue SBS project redesigned streets from lower Manhattan to 125th Street, reducing the number of lanes available for general traffic in certain sections in order to provide consistent dedicated bus lanes and off-board fare collection. (A transit signal-priority system that grants SBS buses an extended green light at intersections will also be activated on parts of the route.) The project also included pedestrian islands at selected intersections and parking-protected or curbside bike lanes from Houston Street to 34th Street on both avenues.¹ Since 2010, the bicycle facilities have been and continue to be extended substantially.^{2,3}

By integrating transit and transportation planning, NYCDOT and NYCT were able to improve safety and efficiency for almost everyone on the roadways. (By not providing accessible pedestrian signals, however, some of these new streetscape features can act as barriers to people who are blind.) In the year since service began in October 2010, bus ridership increased by 9% and bus speeds improved by 15% to 18%. Traffic injuries fell by 21% in roadway sections with full treatment redesigns, and bicycle volumes increased by 18% to 177%, while traffic speeds and volumes remained about the same.⁴

1. The City of New York. Bus Rapid Transit. http://www.nyc.gov/html/brt/html/routes/first_ave.shtml

2. New York City Department of Transportation. First Avenue Complete Street Extension. Presentation to Community Board 8. September 7, 2011. http://www.nyc.gov/html/dot/downloads/pdf/201109_1st_2nd_aves_bicycle_paths_cb8.pdf

3. New York City Department of Transportation. First and Second Avenues Complete Street Extension. Presentation to Community Board 11. December 6, 2011. http://www.nyc.gov/html/dot/downloads/pdf/20111206_1st_2nd_aves_bicycle_paths_cb11.pdf

4. New York City Department of Transportation and Metropolitan Transportation Authority New York City Transit. Select bus service M15 on First and Second Avenues: Progress Report. November 2011. http://www.nyc.gov/html/brt/downloads/pdf/201111_1st2nd_progress_report.pdf

Create Slow Zones

Definition Slow zones consist of engineered traffic-calming measures such as speed humps, roundabouts, curb extensions, signs, optimized signal timing, and street markings to slow vehicles down to 20 miles per hour (mph) within clearly defined areas.

Benefits

- Slows vehicular traffic
- Reduces casualties and collisions substantially (e.g., 42% in London)¹
- Reduces number of casualties and collisions on adjacent streets²
- Reduces severity of traffic injuries
- Reduces cut-through traffic
- Encourages walking and cycling by creating a safer, more welcoming streetscape
- Potentially adds greenery and amenities to the streetscape
- Improves safety for all street users, regardless of age or ability

Considerations

- Access for commercial deliveries
- Access for emergency vehicles
- Access for those with mobility or vision disabilities
- Access for transit
- Potential loss of curbside parking

Appropriate Contexts

- Residential and local streets
- Town centers
- School campuses and surroundings
- Private property, planned communities, and resorts
- Parking lots and surroundings of shopping centers and outdoor markets
- Areas without major through traffic or thoroughfares
- Urban areas with excessive speeds³
- Areas with high numbers of recorded accidents involving children⁴
- Areas with high numbers of existing or expected pedestrians and/or cyclists⁵

Guidance

- Begin by building support among a diverse set of stakeholders
- Consult with all relevant stakeholders, including emergency services, police, local residents, transportation and public-health professionals, and driver organizations throughout all project stages
- Create a public-involvement process to incorporate residents' input on the type and location of proposed traffic-calming measures
- Establish a 20 mph speed limit across a district and not just an individual road⁶
- Each zone entrance should have signs showing clearly that drivers are entering a reduced speed zone
- Install appropriately designed traffic measures at regular intervals about 200' apart⁷
- Coordinate signal timing to move vehicles in a slow, steady pace
- Install traffic-calming measures systematically, such as:⁸
 - » Vertical measures: raised intersections, speed tables, speed humps
 - » Horizontal measures: curb extensions, chicanes, and realigned intersections
 - » Road narrowing: gateways, curb extensions, reduced pavement or lane width, and intersection narrowing
- Accompany traffic-calming measures with plantings or street furniture to distinguish the roadway treatments, create a more walkable area, and encourage lower speeds⁹
- Incorporate Public Rights-of-Way-Accessibility Guidelines (PROWAG) to ensure universal access in traffic-calming treatments
- Create a public-service education campaign to reduce vehicle speeds
- Measure crash data and vehicle speeds before and after implementation to demonstrate the benefits of speed zones¹⁰



Mayor Michael Bloomberg announcing the city's expanded Slow Zones program. Source: New York City Department of Transportation

Case Study: New York

In November 2011, the New York City Department of Transportation (NYCDOT) launched its first Neighborhood Slow Zone pilot program in the Claremont neighborhood of the Bronx. The area was selected for its relatively high frequency of serious traffic crashes and for its definable boundaries that could be easily marked for a zone. The goal of the program was to slow down the speed limit from 30 mph to 20 mph in order to reduce number and severity of traffic crashes within the zone.¹²

To do so, NYCDOT installed blue "gateway" signs at each of the 14 street entrances to the zone. Within the quarter-square-mile area, NYCDOT added 28 signs marking the 20 mph speed limit, nine speed bumps in addition to the existing five, and 45 "20 mph" road markings.¹³

NYCDOT's launch of the Claremont pilot coincided with the start of its new application process allowing communities throughout the city to request their own slow zones. NYCDOT evaluated community applications for slow zones using criteria such as severity crashes per mile, the number of schools and senior- and day-care centers, and the presence of truck and bus routes. The agency will work with communities to design the slow zone traffic-calming measures before presenting the proposals to Community Boards for approval and implementing them.¹⁴ NYCDOT then announced the launch of 13 slow zones throughout New York City slated for implementation in 2012.¹⁵

Professional Consensus

- [Recommended](#) by the Centers for Disease Control and Prevention¹¹
- The AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities includes Reduced Speed Zones, but only within the context of Chapter 2.5.4 Chapter Traffic Control and Crossings Near Schools

Examples

- [Hoboken, NJ](#)
- [New York, NY](#)

1. Grundy, Chris; Steinbach, Rebecca; Edwards, Phil; Green, Judith; Armstrong, Ben; Wilkinson, Paul. Effect of 20 mph traffic speed zones on road injuries in London, 1986–2006: controlled interrupted time series analysis. *British Medical Journal*. 2009; 339:b4469 <http://www.bmj.com/content/339/bmj.b4469.full?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=%25252220+mph%252522&searchid=1&FIRSTINDEX=0&sortspec=date&resourcetype=HWCIT>

2. Ibid.

3. Department for Transport. Local Transport Note 01/07. Traffic Calming. March 2007. 36. <http://assets.dft.gov.uk/publications/local-transport-notes/ltn-1-07.pdf>

4. Ibid.

5. Ibid.

6. Department for Transport. Local Transport Note 01/07. Traffic Calming. March 2007. 34. <http://assets.dft.gov.uk/publications/local-transport-notes/ltn-1-07.pdf>

7. Ibid. 36.

8. O'Fallon, Carolyn; Sullivan, Charles. Slow zones: their impact on mode choices and travel behavior. NZ Transport Agency research report 438. March 2011. <http://www.nzta.govt.nz/resources/research/reports/438/docs/438.pdf>

9. Ibid.

10. Department for Transport. Local Transport Note 01/07. Traffic Calming. March 2007. 35. <http://assets.dft.gov.uk/publications/local-transport-notes/ltn-1-07.pdf>

11. Centers for Disease Control and Prevention. CDC Transportation Recommendations. <http://www.cdc.gov/transportation/recommendation.htm>

12. New York City Department of Transportation. About DOT Press Release # 11-97. November 21, 2011. http://www.nyc.gov/html/dot/html/pr2011/pr11_97.shtml

13. Ibid.

14. New York City Department of Transportation. About DOT Neighborhood Slow Zones. <http://www.nyc.gov/html/dot/html/about/slowzones.shtml>

15. The City of New York. News from the Blue Room. PR-258012 July 10, 2012.

Turn **Underutilized Asphalt** into Grass and Other Uses

Definition Underutilized, excessive roadway and/or parking space can be reassigned to pedestrian and/or bicycle uses. Underutilized or excessive roadways have more travel lanes (or parking spaces) than necessary for the number of cars using them. New uses of roadway or parking space could include public plazas with planters and seating areas, buffered bicycle lanes, and widened sidewalks.

Benefits

- Encourages walking and cycling
- Creates new public space
- Improves safety for pedestrians as well as drivers and their passengers
- Potentially provides an economic boost in areas with more space allotted to pedestrians
- Potentially improves traffic circulation in and around redesigned areas
- Potentially improves access to open space

Considerations

- Funding traffic analysis to assess existing conditions and predict potential impacts of roadway adjustments, which could be reduced with pilot projects using temporary materials
- Community or political resistance to unfamiliar configurations of street space
- Funding ongoing maintenance requirements

Appropriate Contexts

- Underutilized vehicular roadways in areas with high pedestrian volumes, such as
 - » Central business districts
 - » Main Streets and downtowns in smaller cities
 - » Near parks, playgrounds, schools, senior citizen communities
- Unusual intersection configurations
- Underutilized arterial streets alongside popular destinations like malls or recreation centers
- Proximity or relevance to local groups or business improvement districts to take on programming and maintenance responsibilities for newly created public spaces
- Underutilized surface lot and curbside parking space

Guidance

- Analyze existing and proposed traffic conditions
- Communicate and coordinate with local stakeholders for their support and design input throughout the design and planning process
- Implement traffic changes using temporary materials to test the performance of plaza space so that redesign changes can be made or removed before investing resources to construct a capital project
- Be sure the design of plazas or public space considers the needs of people with disabilities, including defining the space in a manner that is identifiable and detectable by pedestrians who are blind
- Partner with a local organization or city department to provide ongoing maintenance and programming for the new public space
- Provide movable street furniture and additional greenery where possible
- Continually monitor before and after conditions for traffic and safety impacts, economic impacts, and real estate values in and around the project

Professional Consensus

- Traffic lane reductions are based on standard AASHTO guidelines, Highway Capacity Manual software procedures, and the Manual on Uniform Traffic Control Devices
- NACTO Urban Bicycle Design

Examples

- Portland, OR: Greenways
- San Francisco, CA: Castro Commons
- New York, NY: [Green Light for Midtown](#)



Pedestrian plaza filled with sculptures by Eleanora Kupencow in DUMBO, Brooklyn, NY. Source: *New York City Department of Transportation*

Case Study: New York

The New York City Department of Transportation (NYCDOT) removed two of four vehicular lanes along Broadway between Columbus Circle and Union Square in Midtown Manhattan (a distance of 2 miles) and built a buffered bicycle lane and pedestrian plazas using temporary materials like textured paint and roadway markings in the newly freed roadway space. This reallocation of street space was one of many traffic-flow adjustments through Midtown Manhattan that included left-turn restrictions at specific intersections, new turn-only lanes, and the closing off of Broadway to traffic within Times Square, Herald Square, and Madison Square.

NYCDOT conducted a feasibility analysis that indicated these proposed changes would improve traffic flow on Sixth and Seventh Avenues and increase safety along Broadway. Closing sections of Broadway at these major avenues shortened crossing distances for pedestrians and helped streamline traffic into more predictable patterns to reduce crash rates and pedestrian-vehicular conflicts. NYCDOT collected extensive data on travel times, traffic volumes, pedestrian volumes, and traffic accidents in the months just prior and following project implementation—including data from GPS units in taxis.

According to this data, the project is delivering on its expectations. Findings show that travel speeds for northbound trips throughout West Midtown improved 17% while southbound trips fell by 2%. Travel speeds for eastbound trips increased by 5% and westbound trips by 9%. Injuries to motorists and passengers in the project area decreased by 63%, and pedestrian injuries fell by 35%. The number of people walking in Times Square grew by 11%, and pedestrian volumes increased by 6% in Herald Square. The number of pedestrians walking in the roadway on Seventh Ave. decreased by 80% in Times Square.¹

1. New York City Department of Transportation. Green Light for Midtown Evaluation Report. January 2010. http://www.nyc.gov/html/dot/downloads/pdf/broadway_report_final2010_web2.pdf

Build Pedestrian and Cyclist Bridges

Definition These are bridges designed exclusively for pedestrians and bicyclists where at-grade solutions can't be found—often over railways, waterways, or highways—that provide needed transportation links for walkers and cyclists.

Benefits

- Encourages walking and cycling
- Connects areas and transportation networks separated by barriers such as waterways, railways, or highways
- Encourages activities and economic development in previously isolated areas
- Provides an alternative to at-grade crossings
- Creates a potential architectural attraction
- Potentially minimizes travel time

Considerations

- Potential negative impact on vitality of adjacent land uses
- Construction costs
- Time and money for alternatives analysis, design, and environmental-review processes
- Ensuring security
- Considering design safety
- Pedestrian and cyclist convenience and compliance: An Institute of Transportation Engineers study determined 70% of pedestrians would use an overcrossing if the travel time were equal to that of an at-grade crossing, while very few would use an overcrossing if it took 50% longer to use than an at-grade crossing¹

Appropriate Contexts

- Where physical barriers such as waterways and highways cut off neighborhoods or nonmotorized transportation networks
- Where existing at-grade crossings have a history of pedestrian crashes, or don't meet ADA standards
- Where large numbers of school children cross busy streets
- Where seniors or mobility-impaired pedestrians need to cross a major roadway
- Where railway agencies prohibit at-grade railroad crossings
- Integrated into new transit and/or rail bridges

Guidance

- Exhaust at-grade solutions first, as those are often more walkable and less expensive
- Locate bridges so that they are on the normal path of pedestrian travel with the least amount of vertical difference possible
- Connect bridges to current or future pedestrian/bicyclist destinations, like transit hubs, parks, schools, job centers, arenas, and neighborhoods
- Design logical, direct, clearly marked access points to and from the bridge
- Provide access options for different modes and mobility levels, such as ADA ramps and stairs with a bike gutter
- Retrofit nearby routes and intersections to accommodate pedestrians and cyclists
- Design bridges wide enough for expected numbers of pedestrians and cyclists
- Incorporate PROWAG into design elements
- Provide adequate lighting for safety and security of bridge users
- Consider screens to prevent falling debris
- Provide at least an 8' clearance for emergency or maintenance vehicles
- Budget for ongoing maintenance

Professional Consensus

- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities²
- [Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way \(PROWAG\)](#)³
- Institute of Transportation Engineers' [Improving Pedestrian Environments Through Innovative Transportation Design](#)⁴
- [Pedestrian/Bicycle Overcrossings: Lessons Learned](#)⁵

Examples

- Chicago, IL: [BP Bridge](#)
- New York, NY: [78th Street Pedestrian Bridge](#)
- Omaha, NE and Council Bluffs, IA: [Bob Kerrey Pedestrian Bridge](#)
- Pittsburgh, PA: [Hot Metal Bridge](#)
- Portland, OR: [Portland-Milwaukie Light Rail Bridge](#)
- Winnipeg, MB: [Esplanade Riel](#)



BP Bridge in Millennium Park, Chicago, IL. Source: Chris Metcalf, Flickr



78th Street pedestrian bridge, New York, NY. Source: New York City Department of Transportation

1. American Association of State Highway and Transportation Officials. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004. 96.
2. AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004. 94–96.
3. U.S. Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way. July 2011. <http://www.access-board.gov/prowag/nprm.htm>
4. Institute of Transportation Engineers. Improving Pedestrian Environments Through Innovative Transportation Design. 2005. <http://www.ite.org/activeliving/ImprovingPedestrian.pdf>
5. Renfro, Rory. Pedestrian/Bicycle Overcrossings: Lessons Learned. Portland State University, 2007. http://web.pdx.edu/~jdill/Files/Renfro_Bike-Ped_Overcrossings_Report.pdf

Redesign Arterial Streets for Pedestrians

Definition Arterial streets, typically multilane thoroughfares designed to speed cars from one destination to another, are often hazardous to people on foot. The Tri-State Transportation Campaign found that 60% of pedestrian deaths in the tri-state region of New York, New Jersey, and Connecticut took place on arterial roadways.¹ Redesigning arterial streets for pedestrians involves adapting roadway geometry (including reducing or narrowing travel lanes), traffic-signal plans, and adjacent land uses of multilane thoroughfares to better accommodate non-automobile uses and create a safer, pedestrian-friendly environment.

Benefits

- Improves safety for pedestrians, cyclists, and drivers²
- Creates a unique local identity to compete with malls and big-box retail
- Increases economic activity through quality public environment
- Encourages active lifestyles through better walking and cycling infrastructure
- Increases property values

Considerations

- Arterial roads are often managed by multiple jurisdictions along their length, which complicates funding as well as design and decision processes
- Changing driving behavior to reduce speeding and increase yielding to pedestrians on car-oriented thoroughfares is a challenge³
- Accommodating safety redesigns with vehicle volumes

Appropriate Contexts

- Arterial roads with transit stops and limited walking infrastructure
- Arterial roads lined by retail

Guidance

- Interest communities and cities in redesign possibilities with a public visioning meeting, design charette, or design competition
- Work with business improvement districts; since pedestrian-friendly environments see higher retail profits, use funds for street restructuring
- Create mid-block neckdowns and crosswalks
- Create safe crossings with signals or medians
- Narrow roadways wherever traffic volumes and safety allow
- Build pedestrian crossing islands
- Widen medians into transit stops and/or landscape the median
- Widen sidewalks where needed or desired
- Plant street trees to act as a buffer between pedestrians and traffic
- Construct a buffered bicycle path or shared-use greenway
- Consolidate and minimize the number of driveways to reduce turning conflicts
- Program temporary uses in parking lots at off-peak hours
- Create pocket parks in open or vacant space between retail buildings
- Connect pocket parks on one side of the street to the other through crosswalks, mid-block chokes, and medians
- Rezone adjacent land uses for denser development

Professional Consensus

- Transportation for America, a national coalition for transportation reform, analyzed data from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System. Its 2011 *Dangerous by Design* report revealed that more than 52% of the 47,067 pedestrians killed over a 10-year period died on principal or minor arterial roads. Nearly 60% of the 34,260 pedestrian deaths in urban areas occurred on arterial roads.⁴ The report cited that streets that were safest for pedestrians were also safest for drivers⁵ and recommended retrofitting high-crash roads for safety.⁶ The MAP 21 federal transportation bill identifies pedestrian and bicycle crashes as part of the mandatory Highway Safety Improvement Program.
- Endorsed within *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, a guidebook published by the Institute of Transportation Engineers and the Congress for the New Urbanism

Examples

- Orlando, FL
- Toronto, ON

Case Study: Toronto

Kingston Road, a six-lane highway in Toronto, Ontario, became the subject of several "revisioning" sessions. The first of these visions emerged from a two-week design charrette sponsored by *Canadian Architect* magazine and the City of Toronto in 2006, which recommended an incremental design strategy. The vision include pocket parks connecting crosswalks and medians, and temporary uses set in urban parking lots to create a denser public space and help bridge the six-lane roadway.⁷

The city of Toronto then sponsored its own study with recommendations to rezone adjacent land uses for denser development and redesign the roadway to accommodate bicycles and pedestrians to be adopted in Toronto's official five-year plan.⁸



A rendering of a Kingston Road revisioning in Toronto, ON. Redesign elements include pocket parks, crosswalks, occupiable medians, and temporary parking lot activities. Source: Chris Hardwicke, Sweeny Sterling Finlayson & Co

1. Tri-State Transportation Campaign. Most Dangerous Roads for Walking And How States Can Make Them Safer. January 2010. 2. http://www.tstc.org/reports/Most_Dangerous_Roads_2009.pdf
2. Dumbaugh, Eric; Li, Wenhao. Design for the Safety of Pedestrians, Cyclists, and Motorists in Urban Environments. *Journal of American Planning Association*. Vol. 7, No. 1, Winter 2011.
3. Alvarez, Lizette. "On Wide Florida Avenues, Running for Life." *New York Times*. August 15, 2011. <http://www.nytimes.com/2011/08/16/us/16pedestrians.html?pagewanted=all>
4. Ernst, Michelle. *Dangerous by Design: Solving the Epidemic of Preventable Pedestrian Deaths*. Transportation for America. 2011. 25, 26.
5. Dumbaugh, Eric; Li, Wenhao. Design for the Safety of Pedestrians, Cyclists, and Motorists in Urban Environments. *Journal of American Planning Association*. Vol.7, No.1, Winter 2011.
6. Ernst, Michelle. *Dangerous by Design: Solving the Epidemic of Preventable Pedestrian Deaths*. Transportation for America. 2011. 30.
7. Hardwicke, Chris. *Creating Walkable Environments along Suburban Arterial Roads. Case study: Cliffside Neighbourhood, Kingston Road, Toronto*. Walk21 Toronto Conference Papers. 2007. http://www.walk21.com/conferences/conference_papers_detail.asp?Paper=369&Conference=Toronto
8. City of Toronto City Planning. Staff report for action – Final Report – Kingston Road 'Avenue' Study. 2009. [Toronto.ca/planning/kingstonroad_cliffsidecommunity.htm](http://toronto.ca/planning/kingstonroad_cliffsidecommunity.htm)

Collect Pedestrian Data

Definition This refers to a systematic approach of counting pedestrians and walking activity within a defined area or jurisdiction. Data-collection methods are continually evolving but typically include manual counts, automatic recording technologies, origin-destination surveys, geographic-information-systems (GIS) analysis of census and land-use data, as well as intercept surveys. Databases of pedestrian information should catalog pedestrian crash locations and stratify crash details by crash type, time of day/year, weather conditions, demographics, and other variables.

Benefits

- Establishes performance measures to evaluate pedestrian policies and programs
- Helps in comparing and prioritizing proposed projects
- Provides justification for grants and further funding
- Helps justify continued need for pedestrian access and infrastructure
- Documents trends in walking activity, safety, and facilities
- Helps link walking with transit¹
- Determines peak hour and seasonal adjustment factors that can be used to estimate pedestrian volumes
- Identifies locations for walking-infrastructure improvements
- Helps integrate nonmotorized modes into multimodal transportation models and analyses²
- Highlights exposure of most vulnerable pedestrians (elderly, school children, people with disabilities)
- Identifies clusters of crash locations

Considerations

- Funding for staff resources and equipment
- Organizing and training for volunteers or staff³
- Data results that reveal low numbers of walkers⁴

Appropriate Contexts

- Proposed project areas
- Project areas before and after implementation
- High-volume street nodes, corridors, and cordons

- Central business districts
- Multiuse paths and trails

Guidance

- Create pocket parks in open or vacant
- Clearly state data-collection goals both internally and to the general public
- Establish a tailored data-collection methodology that reflects local needs and counts both systematic and peak uses of walking infrastructure
- Consider incorporating cost-reducing strategies such as
 - » Installing automated pedestrian-counting technology like infrared and video counts (e.g., Eco-Counter and Miovision),
 - » Using volunteers
 - » Integrating nonmotorized modes into existing vehicular data collection⁵
- Assign dedicated staff or a project manager to set up data-collection equipment, staff locations, tabulate results, and share findings
- Supplement automatic count data with
 - » Manual counts
 - » 24-hour counts at select locations and dates to show infrastructure use
 - » Origin/destination surveys
 - » GIS census analysis to identify factors that influence bicycling and walking⁶
 - » Models to extrapolate pedestrian volumes across a larger geographical distribution
- Collect and analyze data on a regular basis
- Publicly publish the results



A typical sidewalk in San Francisco, CA. Source: Taylor Hand, Flickr

Case Study: San Francisco

In addition to conducting manual pedestrian counts and installing automatic counters at select locations, the San Francisco Municipal Transportation Agency (SFMTA) recently created a pedestrian-volume model to extrapolate walking activity across a larger swath of the city. SFMTA first conducted manual and automated pedestrian counts at 50 study intersections with a variety of characteristics, from which the SFMTA estimated the average number of pedestrians crossing at each intersection over the course of a year. Then the agency used linear regression modeling to identify statistically significant relationships between the land use, transportation system, local environment, and socioeconomic characteristics near each intersection and that intersection's annual pedestrian-volume estimate.

The significant factors were used to create a model that determined pedestrian volumes were positively associated with the number of households and jobs near each intersection. The model also found significantly higher pedestrian volumes at intersections in high-activity zones with metered on-street parking, in areas with fewer hills, near university campuses, and traffic signals. Results are being used by city agencies to inform citywide pedestrian safety-policy and investment.⁹

Professional Consensus

- [Endorsed](#) within the U.S. DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations⁷
- [Endorsed](#) by Alta Planning & Design through its National Bicycle and Pedestrian Documentation Project⁸
- [Endorsed](#) by the Pedestrian and Bicycle Information Center

Examples

- [San Francisco, CA](#)
- [Seattle, WA](#)

1. Federal Highway Administration. FHWA Guidance: Bicycle and Pedestrian Provisions of Federal Transportation Legislation. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/bp-guid.cfm
2. Schneider, Robert; Patton, Robert; Toole, Jennifer; Raborn, Craig. Pedestrian and Bicycle Data Collection in United States Communities: Quantifying Use, Surveying Users, and Documenting Facility Extent. Federal Highway Administration. January 2005. 4. http://www.pedbikeinfo.org/pdf/casestudies/PBIC_Data_Collection_Case_Studies.pdf
3. Hudson, Joan; Qu, Tong-Bin; Turner, Shawn. Forecasting Bicycle and Pedestrian Usage and Research Data Collection Equipment. Capital Area Metropolitan Planning Organization. December 2010. 4. <http://tti.tamu.edu/documents/TTI-P2009330.pdf>
4. Schneider, Robert; Patton, Robert; Toole, Jennifer; Raborn, Craig. Pedestrian and Bicycle Data Collection in United States Communities: Quantifying Use, Surveying Users, and Documenting Facility Extent. Federal Highway Administration. January 2005.
5. Schneider, Robert; Patton, Robert; Toole, Jennifer; Raborn, Craig. Pedestrian and Bicycle Data Collection in United States Communities: Quantifying Use, Surveying Users, and Documenting Facility Extent. Federal Highway Administration. January 2005. 4. http://www.pedbikeinfo.org/pdf/casestudies/PBIC_Data_Collection_Case_Studies.pdf
6. National Bicycle and Pedestrian Documentation Project. <http://bikepeddocumentation.org/>
7. LaHood, Ray. United States Department of Transportation. Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations. Signed March 11, 2010. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm
8. National Bicycle and Pedestrian Documentation Project. <http://bikepeddocumentation.org/>
9. Schneider, Robert J.; Henry, Todd; Mitman, Meghan F.; Stonehill, Laura; Koehler, Jesse. Development and Application of the San Francisco Pedestrian Intersection Volume Model. San Francisco Municipal Transportation Agency. July 2011. <http://128.121.89.101/cms/wproj/documents/TRBAbstract.pdf>

Integrate Pedestrian LOS Criteria into Traffic Analyses

Definition Traditional traffic analysis evaluates the adequacy of a road design to meet vehicular travel demand using a quantitative measurement of delay called level of service (LOS). For many years, traffic-analysis procedures didn't adequately address pedestrian travel demand in these road-design evaluations. The current Highway Capacity Manual (HCM) addresses this analysis gap with new multimodal LOS methodology. HCM's multimodal LOS methodology, however, doesn't include a lot of the factors that might influence walkability, such as adjacent land uses and sidewalk amenities.¹ As a result, some traffic engineers have independently created pedestrian level-of-service criteria to rate road designs for pedestrians, usually using an alphabetical scale from A to F.

Benefits

- Creates a consistent, systematic way to evaluate existing conditions
- Allows comparison and evaluation of different improvements
- Provides an objective way to identify needs and prioritize improvements
- Establishes minimum level of service standards
- Clarifies baseline conditions for proposed mitigations
- Helps jurisdictions mandate walking-infrastructure standards in private developments and public infrastructure

Considerations

- Lack of comprehensive data collection on existing walking conditions
- Pedestrian criteria is often hard to quantify in software analysis
- Walking criteria might not account for specific contexts, e.g., a slower-is-better approach to traffic speeds along a shopping street
- Do-it-yourself walking criteria can be difficult to compare across jurisdictions or integrate into standard analyses

Appropriate Contexts

- Transportation master plans
- Pedestrian master plans
- City and state environmental-impact analyses
- Community-based neighborhood plans

Guidance

- Create a public-outreach process to solicit and incorporate the perspectives of residents, business owners, advocacy groups, and other stakeholders
- Create walking audits with numbered evaluations of criteria that can supplement or be added to pedestrian LOS evaluations
- Include standard categories of pedestrian LOS evaluation, such as:
 - » Directness
 - » Continuity
 - » Street crossings
 - » Visual interest and amenities in walking areas and adjacent land uses
 - » Security
 - » Physical conditions of paths or sidewalks
- Vary evaluation techniques by:
 - » Analysis scope (citywide, neighborhood, district)
 - » Evaluation category
 - » Whether a proposed development is project- or site-specific
- Consider adjusting thresholds for criteria based on the specific pedestrian needs of defined areas or area types (residential, commercial, industrial, etc.)
- Require that traffic-impact studies for significant developments include a pedestrian-impact assessment using this pedestrian LOS criteria



Crowded sidewalks in Seattle, WA. Source: Brian Teutsch, Flickr

Case Study: Kansas City

When creating its 2003 [Walkability Plan](#), the Kansas City Planning and Development Department modeled its pedestrian-system evaluation criteria on the concept of automobile level of service or LOS. Level of service is a measurement of delay ranging from A to F. Kansas City created pedestrian level-of-service criteria that measured directness, continuity, street crossings, visual interest and amenities, and security.

While evaluation techniques varied by the level of analysis (citywide, neighborhood, district) and from methods used for project- or site-specific developments, all the evaluations considered these five basic pedestrian levels of service criteria. The city then adjusted the minimum standard for each criteria according to the specific pedestrian needs of each area, based on input from City of Kansas City Departments of Planning and Development and Public Works, public opinion, and professional practice. Citywide evaluations used crime data to determine safety levels and geographic-information-system (GIS) maps to evaluate the directness and continuity of the municipal sidewalk network. Neighborhood and district evaluations relied on community surveys and walking audits to measure existing conditions and needs for the five pedestrian LOS criteria.

Pedestrian LOS criteria for project- and site-specific developments are measured with ratios and checklists clarified by the project boundaries. For instance, directness is based on a ratio of the actual distance from trip origin to trip destination divided by the minimum distance between those two points for locations and routes within the project area. Kansas City's Walkability Plan then recommended that traffic-impact studies, required for significant proposed developments, be modified to include a pedestrian-impact assessment using the city's pedestrian LOS criteria. Incorporating a pedestrian traffic-impact analysis into traffic-impact studies would promote consideration of pedestrian mobility in design plans and pedestrian-impact mitigations in proposals. It would also provide the city with the legal authority to require pedestrian improvements to serve the development.²

Professional Consensus

- In the absence of official guidance from national associations or governmental organizations, cities are turning to best practices employed by other municipalities.

Examples

Other cities that have created their own pedestrian level-of-service criteria include:

- [Charlotte, NC](#)
- [Fort Collins, CO](#)
- [Kansas City, MO](#)
- [Montgomery County, MD](#)

1. Transportation Research Board of the National Academies. HCM2010: Highway Capacity Manual. Volume 3: Interrupted Flow. Chapter 17: Urban Street Segments. December 2010. 17–50.

2. City Planning & Development Department. Walkability Plan. City of Kansas City, Missouri. March 20, 2003. <http://www.kcmo.org/idc/groups/cityplanningdevelopmentdiv/documents/cityplanninganddevelopment/walkability.pdf>

Analyze **Person Delay** Instead of Vehicle Delay

Definition In Highway Capacity Manual (HCM) traffic analysis, “person delay” is defined as the total time required to move individuals, as opposed to their vehicles, through a particular lane of an intersection. This approach to analyzing traffic through intersections is more transit- (and pedestrian-) friendly than measuring vehicle delay.

Benefits

- Helps give people an alternative to cars for personal travel
- Captures the overall impact of a project and its mitigation strategies on travelers, regardless of their mode of travel
- Creates an evaluation method that better recognizes the efficiencies of transit, potentially allowing a bus lane to be a mitigation for the traffic impacts of a proposed development
- Helps justify transportation improvements toward transit-friendly designs

Considerations

- Calculating person-delay is not traditionally done in HCM traffic-analysis procedures, and isn't calculated automatically by Highway Capacity Software¹

Appropriate Contexts

- The environmental-review process for proposed actions that might change the roadway capacity for surface transit (buses):
 - » Any proposed action, or its mitigation, that might increase surface transit capacity (e.g., a bus-rapid-transit project that might dedicate a traffic lane exclusively to buses)
 - » Any proposed mitigation that might reduce traffic capacity on a street accommodating bus service

Guidance

- Calculate person delay by multiplying the highway capacity software-derived volumes for each vehicle type by vehicle occupancy (e.g., bus passengers), and then by the intersection-based average vehicle delay in each lane group
- In the absence of bus-lane delay calculation in Highway Capacity Software, measure delay from the right-turn lane, since right turns originate from the bus lane in a typical configuration
- Multiply person delay for people traveling in cars using the average vehicle occupancy of cars in that corridor; work trips are about 1.1 or 1.2 people per vehicle while other trip types are closer to 2.0

Professional Consensus

- The 2010 [Best Practices in the Use of Micro-Simulation Models](#) report prepared by AECOM for AASHTO highlighted calculation of person delay as a desired feature of micro-simulation models²
- The 2008 NCHRP Report 618, [Cost-Effective Performance Measures for Travel Time Delay, Variation, and Reliability](#), recommends mobility and reliability measures that include factors “using units such as persons”³
- Volume IV of the 2007 FHWA Traffic Analysis Toolbox, [Guidelines for Applying CORSIM Microsimulation Modeling Software](#), lists person delay within its selection of potential measures of effectiveness for project analysis⁴

Examples

- New York, NY: [City Environmental Quality Review](#)
- Santa Monica, CA: [Comprehensive plan update](#)



Bus passengers in New York, NY. Source: Noah Kazis, Streetsblog New York, streetsblog.org

Case Study: New York

New York City Department of Transportation (NYCDOT) wanted to create a transit-friendly review process for proposed projects that better recognized the transportation efficiency of buses. So NYCDOT worked with the Mayor's Office of Environmental Coordination to require person-delay calculations for proposed transportation or land-use projects that affect bus lanes.

The new requirements were written into the 2010 City Environmental Quality Review (CEQR) manual⁵ and carried into the 2012 CEQR manual. The manual also specified that if a bus lane decreases the person delay at an intersection, adding a bus lane can be used to mitigate a project's potential traffic impacts.⁶ The new evaluation criteria gave both developers and the City a more nuanced means of judging the potential impacts and benefits of proposed projects.

The NYCDOT calculates person delay for transit riders by using intersection-based average vehicle delay and multiplying it by the number of vehicle occupants passing through that intersection. To

determine the existing number of transit passengers traveling through an intersection, the NYCDOT first figures out the number of buses operating on that street. In New York City, MTA New York City Transit (NYCT) and/or MTA Bus schedules are publicly available. The information specifies how many buses on each route travel through the intersection during the analysis hours. The number of buses on each route is then multiplied by the average number of passengers on that route at that time. Occupancy should be determined for each route, as ridership levels may vary by route. NYCT and MTA Bus occupancy levels can be found from recent ride checks or point checks. The frequency and types of other buses should also be measured during analysis hours.⁷

The number of passengers should be multiplied by the average vehicle delay experienced by the lane group in which the bus is traveling. In the build case, the projected number of buses per hour by route should be multiplied by the projected average number of passengers on that bus by route. That number of passengers should then be multiplied by the average vehicle delay experienced by the lane group in which the bus will be traveling. To calculate the person delay for general vehicle traffic, multiply the average vehicle delay for each lane group by an estimate of vehicle occupancy, which can typically be obtained from a metropolitan planning organization or by observation.⁸

1. Federal Highway Administration. 6.0 Comparison of Highway Capacity Manual (HCM) and Simulation. http://ops.fhwa.dot.gov/trafficanalysisitools/tat_vol1/sect6.htm
2. Sbayfi, Hayssam; Roden, David. Best Practices in the Use of Micro Simulation Models. Prepared for AASHTO Standing Committee on Planning. March 2010 http://statewideplanning.org/wp-content/uploads/259_NCHRP-08-36-90.pdf
3. Cambridge Systematics, Inc., Dowling Associates, Inc., System Metrics Group, Inc., Texas Transportation Institute. NCHRP Report 618. Cost-Effective Performance Measures for Travel Time Delay, Variation, and Reliability. Transportation Research Board of the National Academies. 2008. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_618.pdf
4. Federal Highway Administration. Guidelines for Applying CORSIM Microsimulation Modeling Software. January 2007. http://ops.fhwa.dot.gov/trafficanalysisitools/tat_vol4/vol4_guidelines.pdf
5. The City of New York Mayor's Office of Environmental Coordination. Chapter 16: Transportation. 2010 CEQR Technical Manual. http://www.nyc.gov/html/oec/downloads/pdf/2010_ceqr_tm/2010_ceqr_tm_ch16_transportation.pdf
6. The City of New York Mayor's Office of Environmental Coordination. Chapter 16: Transportation. 2012 CEQR Technical Manual. http://www.nyc.gov/html/oec/downloads/pdf/2012_ceqr_tm/2012_ceqr_tm_ch16_transportation.pdf
7. Beaton, Eric. NYCDOT Director of Transit Development. Personal correspondence. October 4, 2011.
8. Ibid

Daylighting

Definition To “daylight” an intersection is to clear sight lines between pedestrian crossings and oncoming cars, usually by creating no-parking zones at the curbs in front of crosswalks at that intersection.

Benefits

- Improves drivers' sight lines of pedestrians waiting at intersection curbs, particularly of children and people in wheelchairs who are blocked from view by parked cars
- Improves visibility between pedestrians and drivers making turns
- Improves pedestrians' sight lines of approaching cars, allowing them to make eye contact with drivers from the sidewalk

Considerations

- Decreases the amount of available curbside parking
- Removing on-street parking could increase vehicle speeds

Appropriate Contexts

- Intersections where pedestrian crashes are common
- Intersections where no sidewalk exists or sight lines are poor
- Intersections where parked vehicles next to the crosswalk block sight lines
- Intersections near schools

Guidance

- Install no-parking signs to mark the existence and length of no-parking zones
- Daylight at least 20' (about one parking space) from the crosswalk at the near and far side of the intersection on urban streets with 20–30 mph speed limits¹
- Daylight at least 50' (about two parking spaces) in advance of crosswalks at each intersection approach on streets with 35–45 mph speed limits²
- Daylight at least 30' in advance of each signal, stop sign, or yield sign³
- Prohibit drivers from standing or parking vehicles at the curb within 20' of a crosswalk at an intersection or within 30' of any signal, stop or yield sign, or traffic-control signal⁴
- Evaluate impacts of daylighting by collecting crash data

Professional Consensus

- Parking setbacks are included in AASHTO guidelines

Examples

- [New York, NY](#)
- [Hoboken, NJ](#)



Daylighting at the intersection of Third Avenue at Union Street, Brooklyn, NY.
Source: *The Consumerist*, Flickr

1. American Association of State Highway and Transportation Officials. *Geometric Design of Highways and Streets*. 2004. 52
2. Ibid.
3. Ibid.
4. Federal Highway Administration. 56. Remove/Restrict Parking. Other Measures. n.d. <http://safety.fhwa.dot.gov/saferjourney/library/countermeasures/56.htm>

Raised Crosswalks

Definition A raised crosswalk is a higher section of pavement with a marked crosswalk. It is placed across the street to encourage drivers to slow down. Raised intersections usually have sloped ramps for the driver leading and following the flat raised-crosswalk section.

Benefits

- Improves pedestrian safety
- Reduces vehicle speeds
- Increases pedestrian visibility
- Eliminates the need for a separate curb ramp
- Resolves the accessibility challenges of narrow sidewalks

Considerations

- Possible discomfort when driving over raised crosswalks or intersections
- May not be appropriate for emergency routes, bus routes, or high-speed streets
- May not be appropriate at signalized intersections where prevailing speeds are too fast for crosswalk treatment
- Difficult for snow removal

Appropriate Contexts

- Minor collector or residential streets with moderate traffic
- Alleys and shared public ways
- Intersection of low-volume and high-volume streets, such as local access lanes of multi-way boulevards
- Where a street changes its function or street type²

Guidance

- Construct a 10–15' plateau 2–3" shorter than sidewalk level with straight 6' ramps on either side
- Consider drainage: relocate catch basins, install trench drains or drainage pipes where necessary
- Install ADA ramps and detectable warnings (truncated domes) at the street edge for people with vision impairments
- Incorporate proposed PROWAG accessibility guidelines into design
- Highlight crosswalks with smooth, colored roadway surface materials rather than textured materials to ensure universal access³
- Evaluate impacts of daylighting by collecting crash data

Professional Consensus

- A recommended countermeasure within the FHWA's Pedestrian Safety Guide and Countermeasure Selection System
- A recommendation of the February 2010 International Technology Scanning Program, sponsored by the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the National Cooperative Highway Research Program

Examples

- San Francisco, CA
- Cambridge, MA
- Boulder, CO



Raised crosswalk on Water Street, in downtown Harrisonburg, VA. Source: thanh.ha.dang, Flickr

1. San Francisco Planning Department. The Better Streets Plan. December 2010 p. 5-8. http://www.sf-planning.org/ftp/BetterStreets/docs/FINAL_5_Street_Designs.pdf
2. David Kent Ballast Architectural Research Consulting. Initiative on Dimensional Tolerances in Construction Dimensional Tolerances for Surface Accessibility Final Report. Access Board Research. January 2011. 1.1.6. <http://www.access-board.gov/research/tolerances/final-report.htm>

Pedestrian Crossing Islands

Definition Located on the roadway between opposing lanes of traffic, pedestrian crossing islands separate pedestrians from vehicles at intersections or mid-block locations. They are typically raised medians or islands, though lower-cost versions can be made of pavement markings only. Crossing islands can also be referred to as center islands, refuge islands, or pedestrian islands.

Benefits

- Reduces pedestrian crashes by up to 46% at marked crosswalks¹
- Reduces motor vehicle crashes by up to 39% at unmarked crosswalks²
- Provides pedestrians a safe place to stop midway across the road
- Increases visibility of pedestrian crossings, particularly at unsignalized crossings³
- Provides a cost-effective option to curb extensions because drainage problems are not as common in the center of the roadway
- Helps lower vehicle speeds approaching pedestrian crossings
- Provides space for supplemental signage on multilane roadways

Considerations

- Balancing competing needs within a limited roadway width
- Crossing islands at intersections or near driveways may affect left-turn access⁴
- Crossing islands may affect operations of wide-load vehicles⁵

Appropriate Contexts

- Marked and unmarked crosswalks adjacent to transit stops, between pedestrian origins and destinations, and in areas with significant foot traffic
- Areas with many school children, seniors, or other vulnerable pedestrians
- Multilane roadways in urban and suburban areas
- Intersections with significant numbers of pedestrian and vehicles traveling at high speeds

Guidance

- Provide pedestrian crossing islands through the crosswalk where medians are present or space exists
- Build islands at least 4' in width (preferably 8') and of adequate length and width for the anticipated number of pedestrians⁶
- Design islands with level cut-through foot paths for ADA accessibility
- Provide detectable warnings (truncated domes) at each edge of the island cut-through area for ADA accessibility
- Highlight islands with signs, striping, and reflectors

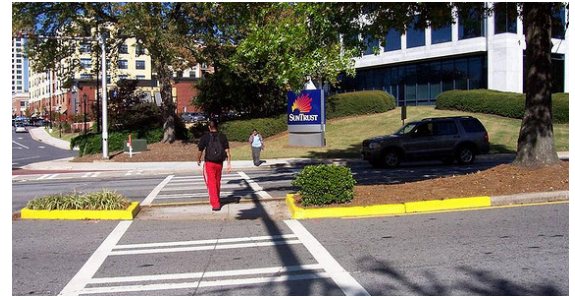
Professional Consensus

- The Federal Highway Administration (FHWA) Office of Safety includes medians and pedestrian crossing islands in their list of [Proven Safety Countermeasures](#)⁷

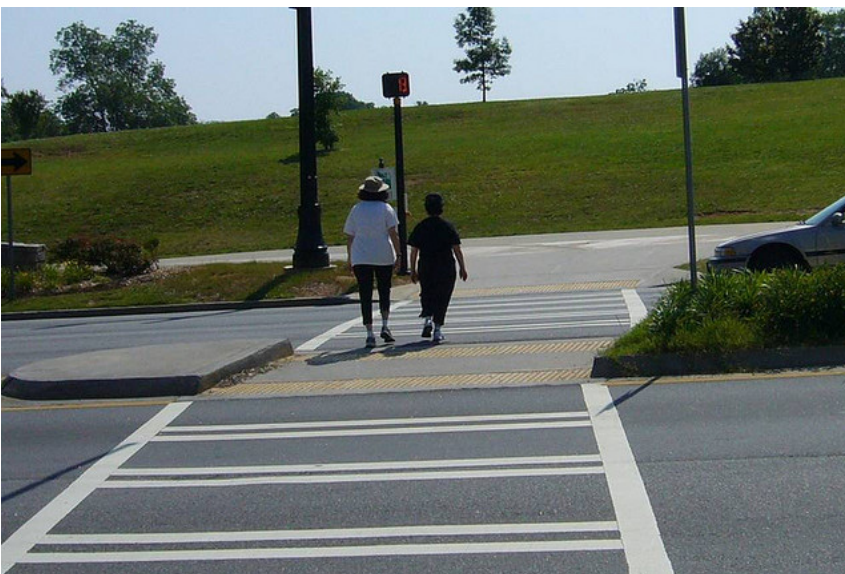
Examples

The FHWA is promoting wide-spread integration of median and pedestrian crossing islands into state practices. States that have adopted the countermeasure include:⁸

- [Florida DOT](#)
- [New York DOT](#)
- [Oregon DOT](#)



Examples of pedestrian crossing islands.
Source: Above, PEDS.org, Flickr; Center, Richard Drdul, Flickr; Below, PEDS.org, Flickr



1. Federal Highway Administration Office of Safety. Proven Safety Countermeasures. Medians and Pedestrian Crossing Islands in Urban and Suburban Areas. http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.htm
2. Ibid.
3. Ibid.
4. Federal Highway Administration Office of Safety. Traffic Calming, 25: Crossing Islands. <http://safety.fhwa.dot.gov/saferjourney/library/countermeasures/25.htm>
5. Federal Highway Administration Office of Safety. Pedestrian Countermeasure Policy Best Practice Report. http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas11017/
6. Federal Highway Administration Office of Safety. Proven Safety Countermeasures. Medians and Pedestrian Crossing Islands in Urban and Suburban Areas. http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.htm
7. Federal Highway Administration Office of Safety. Memorandum: Promoting the Implementation of Proven Safety Countermeasures. January 12, 2012 http://safety.fhwa.dot.gov/provencountermeasures/pc_memo.htm
8. Federal Highway Administration Office of Safety. Pedestrian Countermeasure Policy Best Practice Report. http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas11017/

Offset Crosswalks

Definition An offset crosswalk is one with a center median that acts as both a pedestrian safety island and means of directing pedestrians to look toward oncoming traffic before crossing the second half of the street.

Benefits

- Orients pedestrians toward oncoming traffic so they are more likely to notice it
- Reduces unprotected pedestrians trapped in the middle of the street
- Improves driver yield-to-pedestrian compliance

Considerations

- Pedestrians might resist following the slightly longer path across the street
- Additional installation costs for longer crossing route
- Accommodating offset crosswalks within limited roadway width

Appropriate Contexts

- Signalized and unsignalized crossings on multilane roadways
- Mid-block and intersection crossings

Guidance

- The crosswalk offset can be a right angle or skewed depending on site conditions
- Design islands with level cut-through foot paths for better ADA accessibility
- Provide detectable warnings (truncated domes) at the each edge of the island cut-through area for better ADA accessibility
- Include a section of parallel curbing that is aligned with the direction of the crosswalk to redirect a blind or visually impaired pedestrian⁴

Professional Consensus

- Recommended within the [February 2010 International Technology Scanning Program](#), sponsored by the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and the National Cooperative Highway Research Program¹
- Endorsed within FHWA's [Pedestrian Safety Countermeasure Deployment Project](#) when used with high-visibility crosswalks and yield to pedestrian signs²
- While MUTCD does not specifically recommend offset crosswalks, it does provide guidance for pedestrian barriers at offset crosswalks that act "as passive devices that force users to face approaching [trains] before entering the trackway."³ The MUTCD also includes offset pedestrian crosswalks in its recommended roundabout configurations⁴

Examples

- [Las Vegas, NV](#)



Offset crosswalk with high visibility crosswalk markings in Las Vegas, NV. Source: Federal Highway Administration, United States Department of Transportation



Offset crosswalk in Bethesda, MD. Source: Gerard Soffian

1. Fischer, Edward L.; Rousseau, Gabe K.; Turner, Shawn M.; Blais, Ernest (Ernie) J.; Engelhart, Cindy L.; Henderson, David R.; Kaplan, Jonathan (Jon) A.; Keller, Vivian M. (Kit); Mackay, James D.; Tobias, Priscilla A.; Wigle, Diane E.; Zegeer, Charlie V. Pedestrian and Bicyclist Safety and Mobility in Europe. 2010. <http://www.international.fhwa.dot.gov/pubs/pl10010/pl10010.pdf>
2. Federal Highway Administration. Pedestrian Safety Countermeasure Deployment Project. 2002–2012. http://safety.fhwa.dot.gov/ped_bike/tools_solve/ped_scdproj/index.cfm
3. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. December 2009. 780. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
4. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. December 2009. 399–413. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>

High-Visibility Crosswalks

Definition Crosswalk markings provide guidance for pedestrians crossing roadways by defining the appropriate paths for them. While basic crosswalk markings consist of two transverse lines, an FHWA study found that continental markings were detected at about twice the distance upstream as the transverse markings during daytime conditions. In the study, this increased distance meant that drivers traveling at 30 mph had eight additional seconds of awareness of crossing pedestrians.¹

Benefits

- Increases visibility of pedestrian crossing paths
- Discourages drivers from encroaching into crosswalks

Considerations

- Funding for markings
- Funding for ongoing maintenance

Appropriate Contexts

- Intersections with conflicts between vehicular and pedestrian movements
- Areas with lots of foot traffic, such as loading islands, midblock pedestrian islands
- Commercial business districts

Guidance

- For continental, or ladder markings, stripe the longitudinal lines within between 12" to 24" in width and separated by gaps of 12" to 60"²
- For bar pair markings, stripe two 8" stripes separated by 8" to form a 24" wide bar pair. Separate pairs by gaps of 24" to 60"³
- Some pedestrians with low vision prefer ladder markings, which help them follow the crosswalk better, particularly where bar pairs are widely separated
- Place markings to avoid the wheel paths of cars
- Extend crosswalks to the edges of the roadway or intersecting crosswalk
- Stripe crosswalks to encompass curb ramps
- Use inlay tape and thermoplastic tape rather than paint: Inlay tape works for new and resurfaced pavement; thermoplastic works for rougher surfaces⁴

- Avoid using contrasting materials like brick to create higher visibility. These materials cost much more to maintain, but are not highly visible—particularly at night, in the rain, and over time as they lose contrast with the surrounding street

Professional Consensus

- An FHWA-sponsored Crosswalk Marking Field Visibility Study recommended including bar pairs in the MUTCD and making bar pairs or continental the default crosswalk markings for all crosswalks across roadways not controlled by signals or stop signs. The MUTCD adopted these recommendations in January 2011⁵

Examples

Many cities are expanding the use and variety of high-visibility crosswalk markings, including:

- [Boston, MA](#)
- [Charlottesville, VA](#)
- [Salt Lake City, UT](#)



Bar-pair high-visibility crosswalk markings across International Boulevard in SeaTac, WA. Source: Oran Viriyincy, Flickr

1. Federal Highway Administration. Crosswalk Marking Field Visibility Study (FHWA-HRT-10-068). October 2010. <http://www.fhwa.dot.gov/publications/research/safety/pedbike/10067/index.cfm>
2. National Committee on Uniform Traffic Control Devices on Streets and Highways. Markings No. 1. January 2011. https://ceprofs.civil.tamu.edu/ghawkins/MTC-Files/2011-06_Meeting/Marking_No.1.pdf
3. Ibid.
4. Pedestrian and Bicycle Information Center. Crosswalks. n.d. <http://www.walkinginfo.org/engineering/crossings-crosswalks.cfm>
5. National Committee on Uniform Traffic Control Devices on Streets and Highways. Markings No. 1. January 2011. https://ceprofs.civil.tamu.edu/ghawkins/MTC-Files/2011-06_Meeting/Marking_No.1.pdf

Advance Stop Lines

Definition Stop lines are used to indicate the point behind which vehicles should stop for a Stop sign, a Stop Here for Pedestrians sign, or some other traffic-control device that requires vehicles to stop.

Benefits

- Improves safety and visibility of crossing pedestrians
- A Canadian Research on Pedestrian Safety [report](#) found that a “Stop Here for Pedestrians” sign reduces conflicts between drivers and pedestrians by 67%. Adding an advanced stop line reduces conflicts by 90% compared with baseline levels¹

Considerations

- Not appropriate at crosswalks approaching or departing roundabouts²
- When drivers stop too close to crosswalks that cross uncontrolled multilane approaches, they might block other drivers' views of pedestrians and pedestrians' views of vehicles³
- Drivers may ignore the line if it's placed too far in advance of the crosswalk

Appropriate Contexts

- In front of all stop-controlled crosswalks

Guidance

- Stop lines should not be used where drivers are supposed to yield
- Lines should be solid white lines extending across approach lanes
- Stop lines should be 12"–24" wide⁴
- Stop lines should be placed a minimum of 4' before the crosswalk at controlled intersections—ideally 10' before the crosswalk⁵
- In the absence of a marked crosswalk, the stop line should be placed at the desired stopping point, 4'–30' from the nearest edge of the intersecting road⁶
- On multilane approaches, stop lines may be staggered longitudinally on a lane-by-lane basis to improve the driver's view of pedestrians, provide better sight distance for turning vehicles, and increase the turning radius for left-turning vehicles

Professional Consensus

- Standard in Section 3B.16 2009 MUTCD

Examples

- Widespread in U.S. cities



Advance stop line in Brooklyn, NY. Source: Gerard Soffian

1. Van Houten, Ron and Malenfant, J.E. Louis. Canadian Research on Pedestrian Safety, Report No. FHWA/RD-99/090, Federal Highway Administration, Washington, DC, 1999. http://www.walkinginfo.org/pedsafe/pedsafe_curb1.cfm?CM_NUM=42
2. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. Section 3B.16. December 2009. 381. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
3. Ibid.
4. Ibid.
5. Ibid.
6. Ibid.

In-Road Pedestrian Signs

Definition These are flexible signs placed in the median or centerline at unsignalized crossings announcing that drivers must yield or stop for crossing pedestrians.

Benefits

- Reminds drivers that pedestrians have the right-of-way in unsignalized crosswalks
- Increases driver yield-to-pedestrian rates¹

Considerations

- States or municipalities might be liable for property damage resulting from the presence of these signs in the roadway

Appropriate Contexts

- Unsignalized pedestrian crossings with a marked crosswalk
- Most effective on narrow or two-lane roads
- Not permitted at signalized intersections²
- Village centers or retail areas along two-lane (often rural) roads

Guidance

- Install in a location where it does not conflict with traffic patterns or encroach into a travel lane: at the crosswalk on the centerline, on a lane line, or on a median island, but not post-mounted on the left-hand or right-hand side of the roadway
- Install in a location where it does not block pedestrian traffic in the crosswalk
- Install in areas with low volumes of turning-truck traffic or in medians
- Install in narrower roadways to maximize visibility of the signs
- Design the sign support to bend over and then bounce back to its normal vertical position when struck by a vehicle
- Be consistent with state regulations, whether drivers must yield or stop to pedestrians in unsignalized crossings
- Make the sign reflective if it's left in place 24 hours a day

Professional Consensus

- Allowed within MUTCD³

Examples

- Widespread across the U.S. including:
 - » New York
 - » Massachusetts
 - » Maine



A Stop for Pedestrians in-road sign in Georgia. Source: PEDS.org, Flickr



A Stop for Pedestrians in-road sign in Georgia. Source: PEDS.org, Flickr



A Yield to Pedestrians in-road sign in California. Source: Russell James Smith, Flickr

1. Redmon, Tamara. Evaluating Pedestrian Safety Countermeasures. Public Roads. March/April 2011. <http://www.fhwa.dot.gov/publications/publicroads/11marapr/03.cfm>
2. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. Section 2B.12. December 2009. 55. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
3. Ibid.

Leading Pedestrian Interval

Definition A leading pedestrian interval (LPI) is a 3- to 10-second pedestrian-only phase within a signalized intersection timing schedule that gives pedestrians a “head start” over cars going in the same direction or turning across the pedestrians’ paths. It is displayed by an advance walk indication for the crosswalk during which parallel and turning traffic continue to face a red signal.

Benefits

- Allows pedestrians to establish themselves in the crosswalk before right-turning traffic can begin moving¹

Considerations

- Reduces the time allotted to vehicles in the signal cycle, potentially reducing vehicular flow
- Could slow down transit-bus running times

Appropriate Contexts

- Intersections with combinations of heavy pedestrian traffic and significant right- and left-turning vehicles crossing the crosswalk

Guidance

- The LPI should be at least 3 seconds long (NYC standard is 6 seconds) and timed to allow pedestrians to cross at least one lane of traffic before turning traffic is given the green signal²
- Prohibit turns across the crosswalk during the leading pedestrian interval
- Install accessible pedestrian signals³

Professional Consensus

- Specifically allowed by Section 4E.06 of the 2009 MUTCD
- Endorsed by a TRB report that found a decrease in pedestrian/vehicle conflicts and an increase in the percentage of drivers who yielded to pedestrians⁴

Examples

- [New York, NY](#)
- [Toronto, ON](#)
- Washington, DC



A leading pedestrian interval allows pedestrians to get a head start crossing the street before cars are permitted to go. *Source: Federal Highway Administration, United States Department of Transportation*

1. Federal Highway Administration. Pedestrian Safety – Report to Congress. August 2008. http://safety.fhwa.dot.gov/ped_bike/legis_guide/rpts_cnsgs/pedrpt_0808/chap_3.cfm#s41
2. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. Section 4E.06. December 2009. 499 <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
3. Ibid.
4. Van Houten, R., Retting, R.A., Farmer, C.M., Van Houten, R. & Malenfant, J.E.L. Field evaluation of a leading pedestrian interval signal phase at three suburban intersections. Transportation Research Record. No 1734. 2000. 86–91.

Accessible Pedestrian Signals

Definition Accessible pedestrian signals (APS) and detectors are designed to accommodate the needs of all pedestrians, including those with vision and mobility impairments. They provide information in nonvisual formats such as audible tones, speech messages, and vibrating surfaces to indicate the appropriate time for pedestrians to cross the street.

Benefits

- Makes it easier for visually impaired pedestrians to cross the street
- Reduces crossings during the don't-walk phase
- Allows more crossings in each signal interval
- Improves crossing speeds for sighted pedestrians¹

Considerations

- Noise pollution
- Potential pedestrian confusion of the audible locator tone and the walk indication

Appropriate Contexts

- The proposed draft guidelines for the design, construction, and alteration of pedestrian facilities in the public right-of-way (PROWAG) require accessible pedestrian signals and push buttons whenever pedestrian signals are installed or replaced at signalized intersections

Guidance

- Integrate the addition or upgrades of accessible pedestrian signals into routine signal maintenance and streetscape projects
- At locations with lots of foot traffic, time pedestrian phases to come up automatically and keep signal cycles short (ideally 90 seconds maximum)
- Follow the location, design, and maintenance requirements of accessible pedestrian signals as detailed in the proposed [PROWAG guidelines](#) and [APS Guide to Best Practices](#), which include some of the following:
 - » Accessible pedestrian signal shall provide both audible and vibrotactile indications of the walk interval
 - » Preferred locations are on two separated poles located within 5' of the crosswalk line farthest from the center of the intersection

- » Preferred audible walk indication is a rapid ticking sound
- » If two accessible pedestrian push buttons are placed less than 10' apart or on the same pole, accessible pedestrian push button shall be provided with the following
 - A push button locator tone
 - A tactile arrow
 - A speech walk message for the walk indication
 - A speech push button information message
- » The accessible walk indication shall have the same duration as the pedestrian walk signal except if the pedestrian signal rests in walk
- » In areas with large numbers of senior citizens, post a high-contrast raised-print or large-print sign of the street name that the push button controls
- » Push buttons should confirm that a pressed button/request for crossing has been received with a "wait" message and a light

Professional Consensus

- Section 4E.09 - 4E.13 of the 2009 MUTCD details APS guidance
- Proposed PROWAG requires accessible pedestrian signals and push buttons when pedestrian signals are installed or replaced at signalized intersections (R209); these guidelines are typically adopted by MUTCD once they become final

Examples

The Accessible Pedestrian Signals: A Guide to Best Practices (<http://www.apsguide.org>) provides case studies for 12 U.S. cities and jurisdictions that have implemented APS as of 2007, including:

- [Newton, MA](#)
- [Atlanta, GA](#)
- [Ann Arbor, MI](#)
- [Waukesha, WI](#)
- [Dunedin, FL](#)



An accessible pedestrian signal with audible tones in Roseville, MN. Source: David R. Gonzalez, MnDOT

1. Accessible Pedestrian Signals: A Guide to Best Practices. Optimal APS Locations. http://www.apsguide.org/chapter6_location.cfm
2. Accessible Pedestrian Signals: A Guide to Best Practices. Features of APS. <http://www.apsguide.org/chapter4.cfm>

Ban Right Turns on Red

Definition Right turn on red (RTOR) is a policy that permits drivers to turn right during a red light after coming to a complete stop, except where specifically prohibited by a posted sign. This nationwide policy (with the exception of New York City) was adopted by the Federal Highway Administration and Department of Energy in the 1970s. Research summarizing multiple studies concludes that the number of pedestrian and bicycle crashes at signalized intersections increased after adoption of the RTOR policy, mainly because a right-turning driver would look left for a gap in traffic and not see pedestrians or cyclists approaching from his or her right side.¹ A no-right-turn-on-red (NRTOR) policy reverses that policy, prohibiting RTOR unless otherwise permitted at specific locations by posted signs. NRTOR policies could ban right turns in urban or high-pedestrian-density areas at all times or only during daytime hours, which is the time most pedestrian crashes occur.²

Benefits

- Reduces conflicts between drivers and pedestrians
- A citywide or neighborhood NRTOR policy eliminates the cost of creating, installing, maintaining, and replacing RTOR prohibition signs at each intersection

Considerations

- Needs regular enforcement
- Motorists will need to be consistently alerted to RTOR policy changes when entering and leaving NRTOR areas
- Prohibiting RTOR may lead to higher right-turn-on-green conflicts
- Prohibiting RTOR may cause congestion with high volumes of right turns
- RTOR policies provide small fuel and time savings

Appropriate Contexts

- Central business districts and dense urban areas where there are significant variation in traffic volumes and pedestrian activity
- Intersections:
 - » With inadequate sight distance
 - » With unusual geometry
 - » With high traffic speeds on the intersecting street
 - » Where there are high volumes of seniors
 - » Where there are heavy volumes of pedestrian crossings
 - » Where disabled pedestrians request it
 - » Adjacent to parks and hospitals
 - » At school crossings
 - » At railroad crossings
 - » At traffic signals with three or more phases³

Guidance

- Reach out to community stakeholders to discuss pedestrian-safety concerns and potential ways to address them, including NRTOR
- With the community's support, clearly sign the entrance and exits to NRTOR zones to clarify expected behaviors of drivers and pedestrians

Professional Consensus

- Not included in MUTCD or AASHTO
- In the absence of national guidance, cities are turning to best practices employed by other municipalities
- A [1980 study](#) sponsored by the Insurance Institute for Highway Safety found that, once right turns on red were permitted, the number of crashes involving right turns at traffic signals increased by 20% and pedestrian crashes resulting from right-turn maneuvers at traffic signals increased by 57%⁴

Examples

- Two cities in North America have citywide NRTOR policies:
 - » New York, NY
 - » [Montreal, QC](#)



Road signs alert drivers approaching the Island of Montreal that they are entering a zone where no right turns on red are permitted. Source: Vincent Paul Escanlar, betterfredericton.org

1. Retting, Richard A., Nitzburg, Marsha S., Farmer, Charles M., Knoblauch, Richard L. Field Evaluation of Two Methods for Restricting Right Turn on Red to Promote Pedestrian Safety. *ITE Journal*. January 2002, 32.

2. Ibid. 35.

3. San Francisco Planning Department. The Better Streets Plan. December 2010. 5–11. http://www.sf-planning.org/ftp/BetterStreets/docs/FINAL_5_Street_Designs.pdf

4. Insurance Institute for Highway Safety. Right-Turn-On-Red Laws Raise Intersection Toll. *The Highway Loss Reduction Status Report*. Vol. 15, No. 18. December 9, 1980. <http://www.iihs.org/externaldata/srdata/docs/sr1518.pdf>

Split Phasing

Definition Split phasing divides the green light of a traffic signal into separate phases: one for turning vehicles and another for through-traffic and pedestrians.

Benefits

- Allows pedestrians to cross the street free of conflicts with turning vehicles

Considerations

- Potentially increases wait times for pedestrians and the possibility of pedestrians crossing against the signal
- Split phasing may not extend to vision-impaired pedestrians unless an accessible pedestrian signal is installed

Appropriate Contexts

- Intersections with dedicated turning lanes where heavy pedestrian volumes and turning vehicles conflict, resulting in crashes or congestion

Guidance

- Use a five-section signal head with a combination of circular and arrow indications¹
- For permissive-only right-turn modes (where pedestrians continue to cross while cars are permitted to turn), program the turn arrow to flash yellow to indicate to drivers that they must yield to pedestrians in the crosswalk²
- For protected-only right-turn modes (where pedestrians and turning cars have separate signal phases), program the turn arrow to a steady green arrow

Professional Consensus

- Sections 4D.21 - 4D.24 in the [Manual on Uniform Traffic Control Devices](#) contain specific engineering guidance

Examples

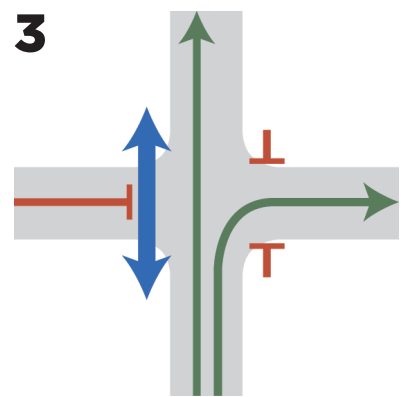
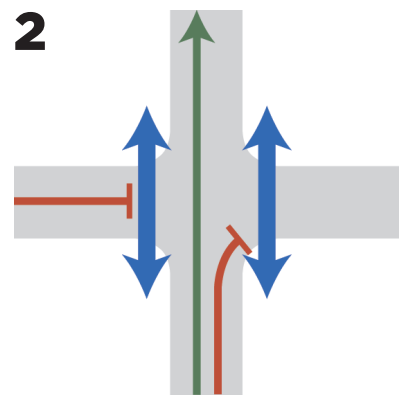
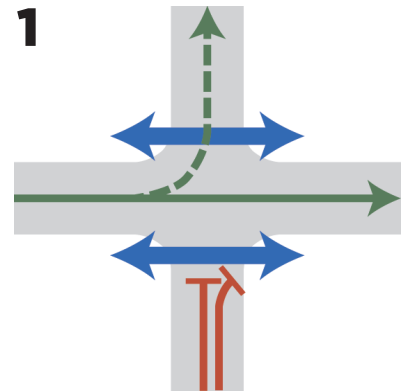
- Widespread in U.S. cities



Split-phase signal timing in New York, NY. In this phase, pedestrians cross the street free of conflicts with turning vehicles. Source: Sam Schwartz Engineering



Split-phase signal timing in New York, NY. In this phase, drivers turn right free of conflicts with crossing pedestrians. Source: Sam Schwartz Engineering



In this split-phase signal-phase diagram, pedestrians wait to cross during phase 1, cross free of conflicts during phase two, and wait on one side of the street to allow cars to turn during phase 3. Source: Zeke Mermell, Sam Schwartz Engineering

1. Federal Highway Administration. Signalized Intersections. 2004. 67. <http://www.fhwa.dot.gov/publications/research/safety/04091/04.cfm#chp424>
 2. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. Section 4D.04. December 2009. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>

Pedestrian Scramble or Barnes Dance

Definition A pedestrian scramble, or Barnes Dance, is an exclusive pedestrian interval that stops all vehicular movement to allow pedestrians access to cross in any direction at the intersection, including diagonally. During a Barnes Dance, pedestrians can cross at all four crosswalks; during a pedestrian or signal scramble, pedestrians are encouraged to cross the intersections diagonally as well.

Benefits

- Improves pedestrian safety by removing conflicting traffic from the pedestrian crossing phase
- Provides better separation between cars and pedestrians¹

Considerations

- Potentially increases wait times for pedestrians and the possibility of pedestrians crossing against the signal
- Potentially confuses visually impaired pedestrians who rely on traffic sounds to decide when and where to cross²
- Potentially hampers ability to synchronize timing at adjacent traffic signals³

Appropriate Contexts

- Areas with high pedestrian volumes (e.g., more than 1,200 pedestrian crossings per day)⁴
- Areas with high-volume and high-speed turning vehicles that threaten pedestrians⁵
- Areas with heavy conflicts between crossing pedestrians and turning vehicles

Guidance

- Install accessible pedestrian signals

Professional Consensus

- Recognized as a pedestrian-signal-timing option in the 2009 MUTCD

Examples

- Newark, DE
- New York, NY
- Pasadena, CA
- Toronto, ON



People crossing Battery Place during a pedestrian-exclusive crossing phase, New York, NY. Source: Sam Schwartz Engineering



People crossing Yonge and Dundas streets during the pedestrian scramble phase, Toronto, ON. Note the diagonal crosswalk in the left corner of the image. Source: Neal Jennings, Flickr

1. Pedestrian and Bicycle Information Center. Signals and Signs. <http://www.walkinginfo.org/engineering/crossings-signals.cfm#traffic-signal-enhancements>
2. Federal Highway Administration. Pedestrian Safety – Report to Congress. August 2008. http://safety.fhwa.dot.gov/ped_bike/legis_guide/rpts_cnrgs/pedrpt_0808/chap_3.cfm#s41
3. Federal Highway Administration. Pedestrian Signal Timing. PEDSAFE Pedestrian Safety Guide and Countermeasure Selection System. n.d. http://www.walkinginfo.org/pedsafe/pedsafe_curb1.cfm?CM_NUM=39
4. Federal Highway Administration. A Review of Pedestrian Safety Research in the United States and Abroad. 2003. <http://www.fhwa.dot.gov/publications/research/safety/pedbike/03042/part3.cfm>
5. Federal Highway Administration. Pedestrian Signal Timing. PedSafe. n.d. http://www.walkinginfo.org/pedsafe/pedsafe_curb1.cfm?CM_NUM=39#casestudy

Pedestrian-Detecting Traffic Signals

Definition Pedestrian detectors can activate a pedestrian traffic control device, extend the crossing time for pedestrians already in the crosswalk, and shorten the crossing time if pedestrians have already cleared the crosswalk. Detectors can be pressure mats at the waiting area, infrared or microwave detectors mounted on the signal pole, or video cameras using remote sensor software at the waiting and crosswalk areas.¹

Benefits

- Increases pedestrian visibility at night through automatically activated lighting
- Stops vehicles only when pedestrians approach the crosswalk
- Activates the pedestrian phase with the presence of every pedestrian
- Extends the clearance interval to give pedestrians already crossing the street more time to get to the other side

Considerations

- Funding for pedestrian-passive sensors systems
- Experts don't know the comparative safety effectiveness of passive pedestrian systems versus manual push button systems²
- Pedestrians may not wait for the signal to change before crossing
- Pedestrians who are blind may not stand or walk in the necessary location to trigger the walk signal or extend the crossing interval

Appropriate Contexts

- Signalized intersections in areas with seniors, children, or pedestrians with mobility challenges
- Unsignalized intersections with light pedestrian volumes
- Mid-block crossings

Guidance

- Use Livewire or Bluetooth technology to set up and adjust the detection area without having to physically create or adjust zone boundaries³
- Integrate ADA/PROWAG requirements into design elements, including ramp grades
- Provide adequate passing space around the waiting detection area on the sidewalk
- Clearly indicate the waiting and crossing detection zones for pedestrians
- Install accessible pedestrian signals to provide the signal information to pedestrians who are blind or visually impaired
- Provide nighttime lighting to increase pedestrian visibility and detector accuracy
- Encourage pedestrian compliance through signals that respond within a matter of seconds to a pressed button or detected pedestrian, especially in school zones⁴

Professional Consensus

- Passive detection devices are allowed in Section 4E.08 of the 2009 MUTCD⁵

Examples

- The Puffin crossing system, which includes passive pedestrian detection in waiting and crossing zones, is now the U.K. standard for intersections and mid-block crossings⁶
- Puffin facilities incorporating passive pedestrian detection in waiting areas and crossings are in trial in Australia and New Zealand⁷



Automated pedestrian sensors for adapting signal timing for pedestrians, Bristol, U.K. Source: Federal Highway Administration, United States Department of Transportation

Case Study: United Kingdom

The United Kingdom had two main types of pedestrian signal treatments: Puffin signals and Pelican signals. A Pelican signal treatment consisted of a nearside push button to trigger the walk phase, a standard timed walk phase based on the street length and average walking pace, and a farside pedestrian signal that beamed a green light for pedestrians to cross and flashed orange when it was no longer safe for pedestrians to start crossing. Puffin signals consisted of nearside pedestrian signals, crosswalk pedestrian detectors to extend the crossing period if pedestrians are still on the crosswalk, and curbside detectors to cancel the pedestrian phase if there are no waiting pedestrians. The nearside signal also included sound and tactile indicators for pedestrians with disabilities.⁸

The U.K. Department for Transport compared accident frequencies at intersections with Puffin signals with those using Pelican signals. The study reviewed 40 mid-block crossing and 10 intersection crossings where no other significant changes were made except for converting the crossing facility to Puffin signal treatment. The study found that injury-causing accident rates fell by 17% at mid-block sites and by 19% at all studied sites. It also found that pedestrian accidents fell by 24% and vehicle accidents fell by 16% at those locations.⁹ The U.K. Department for Transport has since made the Puffin signal treatment standard for intersections and mid-block crossings.¹⁰

1. Harkey, David L.; Carter, Daniel; Bentzen, Billie L.; Barlow, Janet M. Accessible Pedestrian Signals: A Guide to Best Practices. NCHRP. 2010. 76. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w150.pdf
2. Federal Highway Administration Office of Safety. Pedestrian Safety – A Report to Congress. August 2008. http://safety.fhwa.dot.gov/ped_bike/legis_guide/rpts_cnrgs/pedprpt_0808/chap_3.cfm
3. Traffic Technology International. August/September 2011. 94.
4. Federal Highway Administration Office of Safety. Safer Journey: Interactive Pedestrian Safety Awareness Library. 1998. <http://safety.fhwa.dot.gov/saferjourney/library/countermeasures/41.htm>
5. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. Section 4E.08. December 2009. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
6. Department for Transport. Puffin Crossings Good Practice Guide – Release 1. July 2006. 2. <http://assets.dft.gov.uk/publications/puffin-good-practice/puffin-good-practice-guide.pdf>
7. Traffic Technology International August/September 2011. 94.
8. Routledge, Ian; Knight, Philip; Kennedy, Janet. Road Safety Benefits of Puffin Facilities. 2011 http://www.ukroads.org/ukroadsignals/articlespapers/20090923_Ian_Routledge-Road_safety_benefits_of_Puffin_facilities.pdf
9. Ibid.
10. Department for Transport. Puffin Crossings Good Practice Guide – Release 1. July 2006. 2. <http://assets.dft.gov.uk/publications/puffin-good-practice/puffin-good-practice-guide.pdf>

Rectangular Rapid-Flashing Beacons

Definition Rectangular rapid-flashing beacons typically consists of two light-emitting-diode (LED) beacons on either side of a roadside pedestrian-warning sign that flash in a left-to-right pattern when pedestrians cross the street. The flashers, which use an irregular pattern like those on police vehicles, are turned on either when a pedestrian pushes a manual push button or when a pedestrian automatically triggers a pedestrian-detection system. Rectangular rapid-flashing beacons can also be called Rapid-Flash System, Stutter Flash, or LED Beacons.

Benefits

- Provides a less expensive alternative to traffic signals
- Increases driver yield-to-pedestrian rates at crosswalks compared with standard pedestrian-crossing warning signs and markings
- Increases driver yield-to-pedestrian rates at crosswalks compared with traditional overhead beacons

Considerations

- May need a public-outreach campaign to educate drivers unfamiliar with the concept

Appropriate Contexts

- Mid-block crosswalks on two-lane or multilane roadways
- A pedestrian or school crossing
- Crosswalks not controlled by a yield sign, stop sign, or traffic-control signal on two-lane or multilane roadways
- A crosswalk at a roundabout

Guidance

- Install RRFBs in conjunction with regulatory/warning signs and markers except for Stop, Do Not Enter, Wrong Way, and Speed Limit signs¹
- Keep RRFBs unlit when there are no pedestrians present
- Install an accompanying regulatory sign that says “when flashing”
- Activate RRFBs by manual push buttons or automated passive-pedestrian detection
- Use solar panel units to power RRFBs
- Install devices with push button locator tones and an audible message that states “yellow lights are flashing” to meet ADA / PROWAG guidelines
- Install RRFBs at medians as well as roadside locations for increased driver visibility and yielding

Professional Consensus

- [MUTCD](#)² permits and provides guidance on warning beacons
- FHWA Safety program publishes [guidance](#)³ and [reports](#)⁴ on RRFB
- FHWA gave [Interim Approval](#) to allow RRFBs as warning beacons to supplement standard pedestrian crossing and school crossing warning signs at crossings across uncontrolled approaches⁵

Examples

- [Miami Beach, FL](#)
- [St. Petersburg, FL](#)
- [Washington DC](#)



Rectangular rapid flashing beacons. Source:
*Federal Highway Administration, United States
Department of Transportation*

1. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. December 2009. 523.
<http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
2. Ibid.
3. Federal Highway Administration. Office of Safety. Rectangular Rapid Flashing Beacon. 2009. <http://safety.fhwa.dot.gov/intersection/resources/techsum/fhwasa09009/>
4. Furst, Tony. Federal Highway Administration. Memorandum: Promoting the Implementation of Proven Safety Countermeasures. January 12, 2012.
http://safety.fhwa.dot.gov/provencountermeasures/pc_memo.htm
5. Federal Highway Administration. Memorandum: Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11). July 16, 2008.
http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/fhwamemo.htm

Pedestrian Hybrid or HAWK Beacon

Definition The pedestrian hybrid beacon, or High intensity Activated crosswalk, (HAWK), is a pedestrian-activated warning device for mid-block pedestrian crossings. The beacon, mounted above or beside the road, consists of two red lenses above a single yellow lens. The beacon head is unlit until a pedestrian pushes a button, which causes the beacon to illuminate a brief flashing and steady yellow interval, then a steady red indication to drivers. A pedestrian signal then indicates it is safe for pedestrians to cross while traffic is stopped. When the pedestrian signal starts flashing at the end of the crossing interval, the beacon displays alternating flashing red lights to drivers, letting them know their red light is about to end.

Benefits

- Provides stop control at crossings that typically don't meet signal-warrant requirements
- Improves vehicle traffic flow through the alternating red signal heads, which signals vehicles to proceed once the pedestrian has cleared the travel lane
- Reduces pedestrian crashes by up to 69%¹
- Reduces total roadway crashes up to 29%

Considerations

- Drivers may be unfamiliar with the new signal treatment

Appropriate Contexts

- Marked crosswalks at mid-block locations where:
 - » Gaps in traffic are not adequate to permit pedestrians to cross
 - » Vehicle speeds are too high to permit pedestrians to safely cross
 - » Pedestrian wait times are excessive
 - » There are nearby transit stops or schools

Guidance

- Conduct public-outreach campaigns to teach pedestrians and drivers how to use and react to the signal
- Install accessible pedestrian signals so the crossing is accessible to pedestrians who are blind or visually impaired

Professional Consensus

- Listed as one of the Federal Highway Administration's Office of Safety [Proven Safety Countermeasures](#)²
- Included in the MUTCD³

Examples

The FHWA is promoting widespread integration of median and pedestrian crossing islands into state practices. States that have adopted the countermeasure include:⁴

- [Juneau, AK](#)
- [Tucson, AZ](#)
- [Washington DC](#)



HAWK beacon on Third Street Bicycle Boulevard at Swan Road, Tucson, AZ.
Source: Tucson Bicycle & Pedestrian Program, City of Tucson



HAWK beacon along Fontana Bike Boulevard at Fort Lowell Road, Tucson, AZ.
Source: Tucson Bicycle & Pedestrian Program, City of Tucson

1. Federal Highway Administration. Proven Safety Countermeasures. Pedestrian Hybrid Beacon. 2012. http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.htm
2. Federal Highway Administration Office of Safety. Memorandum: Promoting the Implementation of Proven Safety Countermeasures. January 12, 2012. http://safety.fhwa.dot.gov/provencountermeasures/pc_memo.htm
3. Federal Highway Administration. Manual on Uniform Traffic Control Devices on Streets and Highways. December 2009. <http://mutcd.fhwa.dot.gov/pdfs/2009/mutcd2009edition.pdf>
4. Federal Highway Administration Office of Safety. Pedestrian Countermeasure Policy Best Practice Report. http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwas11017/

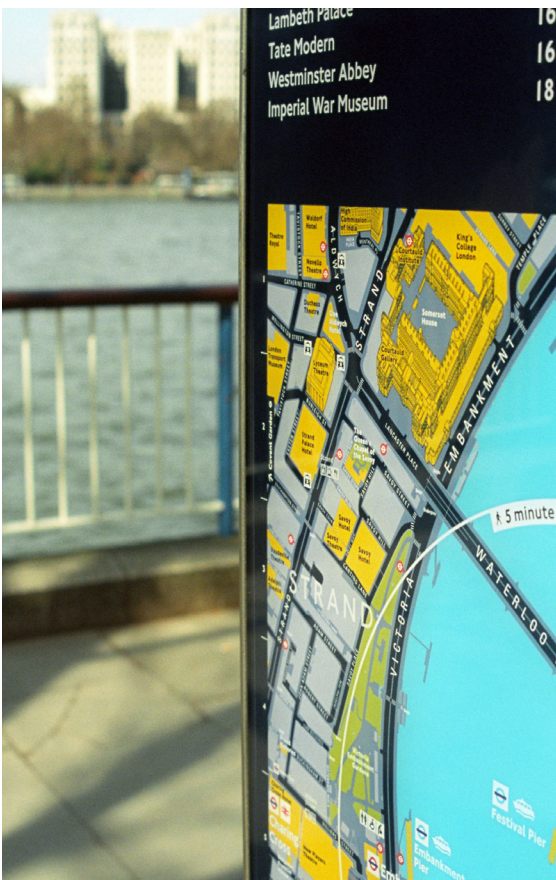
Encouragement & Education Tactics

Introduction

Walking is more than a mode of transportation—it can also be a form of recreation, exercise, or exploration; a habit; or simply a pleasure. These tactics are for use by government agencies, walking advocates, and regular citizens who all contribute toward making walking a feasible, safe, and fun option in our communities.

This chapter contains large-scale projects, such as mobility education and pedestrian wayfinding systems, as well as small-scale initiatives that individuals could undertake, such as incorporating walking in the workplace, or leading a public group walk through a neighborhood.

These are certainly not the only encouragement and education tactics, but they are some of the most dynamic and successful in changing community attitudes and increasing people's inclination to walk.



Wayfinding signage. Source: Rob Brewer, Flickr



Open Streets. Source: Bradley P Johnson, Flickr

Create a **SmartTrips** Program

Definition A SmartTrips program is a direct, individualized marketing program that encourages neighborhood residents to switch from car-based transportation to transit, biking, and walking. Programs use various approaches, such as direct mailings, email and website outreach, text messages, blogs, social media, bike delivery of materials, and free events to educate and encourage residents to change their travel behavior.

Benefits

- Encourages walking and an active lifestyle
- Reduces car dependency

Considerations

- Program funding (In [Portland, OR](#), a typical 20,000-household program costs \$570,000.)¹
- Obtaining or outsourcing needed technical skills and software tools

Appropriate Contexts

- Neighborhoods with amenities and demographics that suggest the potential for behavior change, such as areas with street connectivity, sidewalks, bike-friendly streets, good bus service, trails, shops, and parks as well as high car ownership²
- Neighborhoods with interested and motivated community organizations

Guidance

- Use an established planning process to create the SmartTrips outreach program. Social marketing [guidance](#)³ created by the Centers for Disease Control and Prevention recommends that a program include:⁴
 - » Problem description
 - » Formative research
 - » Strategy development
 - » Intervention design
 - » Evaluation
 - » Implementation
- Schedule at least six months to plan the program and five months to run it. St. Paul's Smart Trips Neighborhoods recommends planning in the fall for a May–November program⁵; a five-month program better engages residents through more events, newsletters, and emails, and encourages them to walk and cycle in cold weather

- Use software tools to help track and organize program elements, such as ConstantContact, MailChimp, EventBrite, Woofoo, Qualtrics, and SurveyMonkey
- Partner with:
 - » Advocacy organizations for in-kind support
 - » Public-health agencies for program planning and evaluation
 - » Community groups for outreach assistance
 - » Businesses in planning events and activities
- Allow participants to customize their information packets and travel-behavior goals within trackable parameters (e.g., which mode and how many trips per week)
- Make program events and materials accessible, including providing materials to those who use screen-reading or screen-enlargement software
- Create a neighborhood-wide goal with a reward to encourage peer pressure to meet it
- Document the program:
 - » Encourage staff to photograph outreach efforts and events
 - » Encourage participants to contribute their perspectives
- Evaluate the program, including effectiveness of outreach materials. [Portland](#)⁶ and [St. Paul](#)⁷ have published reports detailing survey methodology and results

Professional Consensus

- The Psychology of Sustainable Behavior provides guidance for sustainable-behavior campaigns based on studies from academic, peer-reviewed journals

Examples

- [Northern Colorado](#)
- [Portland, OR](#)
- [St. Paul, MN](#)
- [Whatcom County, WA](#)

Case Study: Portland

In 2002, the Portland Bureau of Transportation (PBOT) created an individualized marketing program to reduce drive-alone trips and increase walking, bicycling, transit, and carpool trips in targeted areas. Portland modeled its program after those found in Australia and Europe. After two pilot programs in 2003 and 2004, Portland added activities and extended its outreach to eight months. Every year, the Transportation Options Division of the PBOT selects an area with about 20,000 households. Areas are chosen based on land use patterns, transit availability, bike and walking infrastructure, and investments, such as light rail service. In late March, each household in a SmartTrips area receives a newsletter with a calendar of organized walks, bike clinics, and bicycle rides. The newsletter highlights SmartTrips programs, including the Ten Toe Express Walking Campaign, Portland By Cycle Campaign, Senior Strolls, and Women on Bikes. The newsletter also includes a notice about the SmartTrips Order Form that residents will soon receive to order maps, brochures, tips, and event schedules for walking, bicycling, transit, carpool, car sharing, and driving.

Order forms are sent in weekly waves of 2,500 households. Employees typically deliver the materials and incentives within a week of receiving an order. Three weeks after receiving the first order form, employees send households a reminder postcard with the order-form website and a phone number to request an order form by mail. Residents receive their requested materials in a tote bag with a personalized luggage tag. Every delivery includes a thank-you letter, SmartTrips events calendar, and a walking map. Residents can order walking materials such as a free pedometer donated by Kaiser Permanente and a schedule of walking tours; bicycling materials such as a bike map, guides with tips and rules of the road, and a personalized bicycle-trip-planning request postcard; and transit materials, such as a transit guide for seniors and the disabled, and a personalized transit tracker card with ID numbers of two nearby bus stops so the resident can get real-time bus-arrival data. Brochures about car sharing, carpooling, and safety guidelines for older drivers are also available for order. Every package comes with an incentive, either a SmartTrips umbrella, bandana, bike map, or T-shirt.

On May 1, residents receive a second newsletter reminding them to order materials and listing events and activities. Everyone who orders materials or attends an event gets newsletters in July, September, and November. All SmartTrips area residents receive SmartTrips messages at least seven times through mailers, media coverage, and outreach events.⁸

Residents in the 2010 SmartTrips Green Line program reduced drive-alone trips by 18% and increased environmentally friendly modes by 30%. Approximately 25% of those in the target area, or 8,200 SmartTrips Green Line households, ordered materials or participated in at least one of 95 Transportation Options events. As with past programs, Portland evaluated its success using survey data collected before and after the SmartTrips program. A data-collection firm conducted panel-style, pre- and post-program phone surveys of six hundred residents living in the SmartTrips Green Line target area.⁹

1. Pedestrian and Bicycle Information Center. Portland SmartTrips. <http://www.walkinginfo.org/library/details.cfm?id=3961>

2. Smart Trips Highland Park Final Report. St. Paul Smart Trips. 2010. http://www.smart-trips.org/downloads/Highland_Final_Report.pdf

3. The Centers for Disease Control and Prevention. Social Marketing: Nutrition and Physical Activity. <http://www.cdc.gov/nccdphp/dnpa/socialmarketing/training/index.htm>

4. Smart Trips Neighborhoods: Lessons Learned. St. Paul Smart Trips. October 2011.

5. Smart Trips Neighborhoods: Lessons Learned. St. Paul Smart Trips. October 2011.

6. City of Portland Bureau of Transportation. SmartTrips Green Line Final Report. December 2010. <http://www.portlandonline.com/transportation/index.cfm?c=52160&a=331242>

7. Smart Trips Highland Park Final Report. St. Paul Smart Trips. 2010. http://www.smart-trips.org/downloads/Highland_Final_Report.pdf

8. Pedestrian and Bicycle Information Center. Portland SmartTrips. <http://www.walkinginfo.org/library/details.cfm?id=3961>

9. City of Portland Bureau of Transportation. SmartTrips Green Line Final Report. December 2010. <http://www.portlandonline.com/transportation/index.cfm?c=52160&a=331242>

Seek Recognition

Definition Applying for a Walk Friendly Communities (WFC) designation, managed by the Pedestrian and Bicycle Information Center, provides national recognition for your city's efforts to encourage and improve walking.

Benefits

- Provides suggestions and resources to improve pedestrian safety
- Helps identify areas of needed improvements
- Helps create a framework for future pedestrian improvements
- Allows cities to share successful tactics and programs
- Provides competition and inspiration for walking improvements
- Gives cities a marketing advantage over other tourist destinations
- Potentially supports further municipal and private investment in walking improvements
- To find information requested by the application, reach out to and coordinate among municipal, county, and school district agencies and departments including the police, planning, public works, and engineering departments, and local transit. Other information may come from local nonprofits, advocacy groups, or elected officials
- Mention any state or national programs that have had a positive impact in your community, or any programs from local departments, private organizations, or advocacy groups that have improved the walking environment—also include any specific efforts to create a culture of walking¹

Considerations

- Investing time and staff in the 20- to 60-hour application process

Appropriate Contexts

- Individual cities and towns, or counties where the county and city government are the same entity, as per WFC application requirements

Guidance

- Create an application committee with members from multiple agencies and backgrounds, including planners, engineers, law-enforcement officials, and advocates

Professional Consensus

- The *Walk Friendly Communities* program is sponsored by FedEx and the Federal Highway Administration. It is maintained by the UNC Highway Safety Research Center's Pedestrian and Bicycle Information Center with support from national partners, including: Association of Pedestrian and Bicycle Professionals, League of American Bicyclists, National Highway Transportation Safety Administration, U.S. Environmental Protection Agency, National Center for Bicycling & Walking, Centers for Disease Control and Prevention, America Walk, The Walkable and Livable Communities Institute, Institute of Transportation Engineers, Accessible Design for the Blind, National Center for Safe Routes to School, Access Board, and AARP²



From top to bottom:

The Walk Friendly Communities of Ann Arbor, MI; Charlottesville, VA; and New Orleans, LA.

Sources: Michigan Municipal League, Flickr; Mr. T, Flickr; and Linda Rae Duchaine, Flickr



Examples

More than 38 cities and towns have received Walk Friendly Communities designations, including:

- [Seattle, WA](#)
- [Ann Arbor, MI](#)
- [Hoboken, NJ](#)
- [Arlington, VA](#)
- [Santa Barbara, CA](#)
- [Decatur, GA](#)
- [Flagstaff, AZ](#)
- [Cedarburg, WI](#)
- [Oxford, MS](#)
- [Sparks, NV](#)
- [Franklin, TN](#)
- [Dayton, OH³](#)

1. Walk Friendly Communities Assessment Tool. <http://www.walkfriendly.org/WalkFriendlyCommunitiesAssessmentTool.pdf>
 2. Walk Friendly Communities. <http://www.walkfriendly.org/sponsors.cfm>
 3. Walk Friendly Communities. <http://www.walkfriendly.org/communities/list.cfm>

Create a Pedestrian Wayfinding System

Definition Pedestrian wayfinding systems are navigational systems that help pedestrians determine where they are and where they need to go to reach a destination. Traditionally consisting of signs, wayfinding systems can now also involve GPS systems, web connectivity, and mobile technology. Wayfinding systems can be designed and implemented formally by municipalities and business improvement districts, or informally by walking advocates.

Benefits

- Helps pedestrians overcome the hurdle of distance perception
- Increases foot traffic
- Increases tourism
- Increases commerce
- Helps encourage different transportation choices

Considerations

- Potential to create visual clutter for pedestrians and/or drivers
- Significant investment of resources and time

Appropriate Contexts

- Central business districts
- Tourist districts
- Office and academic campuses
- Retail districts and shopping malls
- In-between areas outside defined districts

Guidance

- Create distinct, visible, consistent design for wayfinding signage
- Post signs on both sides of the street or trail along major walking routes
- Orient maps so that whatever direction the pedestrian is facing is at the top; indicate the orientation with the underlined phrase “You Are Here” where the pedestrian is within the map, and place an upward arrow under it
- Define distances by the time needed to reach them (e.g., “It’s a 15-minute walk away” or circles encompassing destinations within a 5-, 10-, or 15-minute walk)
- On signs with maps, create a standard prioritization system to limit the number of landmarks identified

- Illustrate the facades of important landmarks on maps to help orient pedestrians
- Include indexes of major landmarks¹
- Make public data available to private organizations to develop smartphone applications (“apps”) at no cost to governmental agencies. QR codes can be incorporated to improve information delivery and reduce visual clutter

Professional Consensus

- 2009 MUTCD Section 2D.50 contains specific provisions about Community Wayfinding guide signs
- Multiple states have created community wayfinding guidelines and standards, including:
 - » Florida
 - » California
 - » North Carolina

Examples

- [Charlotte, NC](#)
- [London, UK](#)
- New York, NY



Legible London wayfinding signage in South Bank, London, U.K. Source: Rob Brewer, Flickr

Case Study: London

In 2006, Transport for London, the integrated organization responsible for London's transport system, launched the Legible London wayfinding program. Legible London's goal was to increase walking trips and help relieve congestion on the city's transit system and roads. Legible London found that residents relied too much on the London Tube map to navigate through the city. This proved to be a problem because the Tube map unintentionally makes walking distances between downtown stations appear greater than they are: Of surveyed passengers exiting Leicester Square station, 5% had started from a station less than a half-mile away.²

Legible London aimed to create a coherent pedestrian navigational system to help pedestrians navigate the city at street level as well as provide a common and constantly updated central information system for maps, signs, and websites.³ An evaluation of Legible London's pilot programs found that the number of surveyed pedestrians getting lost decreased by 65%, more than three-quarters felt more confident exploring an area on foot, and those who had used the system felt it encouraged them to walk more often, walk farther, and walk rather than use other means of transport.⁴

By February 2012, Legible London had completed the base maps of the whole of Greater London. The collaborative project included input from London Boroughs, landowners, and business improvement districts. The completed base map is now on sidewalk kiosks, in London Underground stations and bus shelters, at bike share stations, and along bike paths. The wayfinding system is expanding to walking and cycling routes for Olympics events and town centers across London.

1. Turner, Julia. Legible London: Can better signs help people understand an extremely disorienting city? Slate. March 4, 2010. http://www.slate.com/articles/life/signs/2010/03/legible_london.html

2. Legible London: A Wayfinding Study. AIG and Central London Partnership. March 2006. 6.

3. Ibid. 30.

4. Transport for London. About Legible London. Research. Pilot evaluation results. http://www.tfl.gov.uk/microsites/legible-london/12.aspx#Pilot_evaluation_results

Demonstrate Street Improvements

Definition Spearheaded by the Better Block Project, this strategy is a collaborative effort to design and install a one-day demonstration of pedestrian-oriented streetscape improvements along an urban block. Typical demonstrations set up temporary pedestrian plazas, pop-up businesses in vacant storefronts, street trees and greenery in planters, bike lanes, additional street lighting, and (rented) sidewalk benches, tables, and chairs.¹

Benefits

- Builds community consensus around proposed streetscape improvements
- Gives residents and city officials a preview of the benefits of streetscape improvements
- Illustrates how relatively small investments in urban spaces can revitalize a community and make it more appealing for walking and cycling
- Highlights outdated and overly restrictive existing city ordinances that might ordinarily prohibit such streetscape improvements

Considerations

- Funding for event needs, including organizers, amenities, permit fees, volunteer coordinators, event insurance, and marketing expenses
- Allotting enough time for permitting processes
- Allotting enough time for community involvement and marketing outreach
- Ensuring that adequate litter/trash-removal services exist

Appropriate Contexts

- A block with a cluster of buildings along an automobile-oriented street
- Former streetcar intersections
- Locations with strong community partners
- Blocks in close proximity to a residential neighborhood

Guidance

- Address safety when planning the demonstration:
 - » Does it feel safe to cross the street, walk on the sidewalk, or linger in the area?
 - » Does the area have obstacles that reduce sight lines?

- » Is the area filled with debris, graffiti, overgrown landscaping, etc.?
- » Do businesses have window bars or opaque windows?
- Address accessibility when planning the demonstration:
 - » Do pedestrians have easy and clear access to the area?
 - » Do bicycles feel welcome in the area?
 - » Is the area easily accessible from neighborhoods?
 - » Is the area inviting to children, seniors, those with mobility impairments, and dog owners?
- What would make the block attractive?
 - » Are there wayfinding signs?
 - » Are there amenities that encourage people to linger, such as seating and tables?
 - » Are there food options and/or places to eat outdoors?
 - » Are there maps, bulletin boards, or games that encourage people to linger?
- Create a broad-based implementation team including community activists, nonprofits, artists, businesses, students, and planning/architect associations
- Coordinate the demonstration with an existing event, such as an art crawl or fun run, to raise awareness of the upcoming demonstration
- Work with property owners to allow access to vacant spaces
- Develop pop-up stores in vacant spaces and reach out to existing businesses for retail ideas and/or products
- Apply for a street-closure permit that still allows one lane of vehicle traffic. This helps residents see that a street design that better accommodates cyclists and walkers is a feasible everyday option



A temporary buffered bike lane next to pop up retail at the first Better Block demonstration in Dallas, TX.
Source: Jason Roberts, Better Block

Case Study: Dallas

In April 2010, a group of community organizers, neighbors, and property owners gathered together to revitalize a single commercial block in the Dallas neighborhood of Oak Cliff. The area had many vacant properties and wide streets, and few amenities for residents who lived within a walking distance of the commercial corridor. The Better Block coalition created an “urban intervention,” using temporary tools—bike lanes, cafe seating, trees, plants, pop-up businesses, and lighting—to transform the block into a walkable, bikeable neighborhood destination for people of all ages.

The coalition built upon that April urban intervention in September, 2010, when it collaborated with the landscape architects SWA Group and Methany Landscaping to build a temporary green median and place (potted) street trees along the same block. Volunteers painted cross walks, striped bike lanes, and installed (temporary) bike parking, and food-stall vendors set up shop in vacant lots between buildings. The installation took one day to set up on site, lasted one day, attracted hundreds of visitors. Based on the enthusiastic public response to the two one-day temporary demonstration projects, the City of Dallas funded \$500,000 worth of improvements in the area.

- Provide insurance. One option is to take out “block party” event policy and add property owners as “additional insured” for the demonstration
- Install welcoming streetscape amenities. Techniques include:
 - » Renting movable seats and tables
 - » Renting planters and plants from local prop houses or nurseries
 - » Installing temporary street lighting
 - » Stringing bailing wire across the street (15’ or higher for truck clearance) and attaching holiday lights
 - » Booking street musicians
 - » Providing things to read, like maps, on kiosk
 - » Providing food/drink, whether through existing businesses or food cart vendors
 - » Providing activities like chess or hopscotch
- Stripe a bike lane, either instead of or next to the curbside parking lane. Lanes are ideally at least 5’ wide; white duct tape is a good substitute for paint. To paint the lane green, make washable paint by adding food coloring to equal parts flour, cornstarch, and water
- Promote the event by sending fliers to local businesses, universities, and schools; sending press releases to local TV, newspapers, and blogs; and announcing the event through partner organizations and social networks
- Invite the people who influence long-term city policies, such as the mayor, council members, city staff, and the media

Professional Consensus

- National Society of Landscape Architects 2011 Communications Honor award for September 2010 Oak Cliff Better Block project
- North Central Texas Council of Governments 2011 Celebrating Leadership in Development Excellence award

Examples

As mapped on betterblock.org, more than 23 communities have installed demonstrations, including:

- [Dallas, TX](#)
- [Cleveland, OH](#)
- [Memphis, TN](#)
- [Tulsa, OK](#)
- [Waco, TX](#)
- [Mt. Rainer, MD](#)
- [Denver, CO](#)
- [McComb, MS](#)
- [Oyster Bay, NY](#)
- [Wichita, KS](#)
- [Las Vegas, NV](#)

1. Better Block Project. <http://betterblock.org/>

Create Open Streets

Definition Temporarily closing streets to automobiles and organizing public activities to encourage healthier transportation and living habits.

Benefits

- Increases walking and cycling
- Promotes physical activity
- Supports local businesses
- Creates a tourist attraction
- Creates momentum for improvements in walking and cycling infrastructure

Considerations

- Funding event needs, including activity organizers, traffic managers/police, street closure permits, volunteer coordinators, event insurance, marketing and outreach
- Mitigating impacts of rerouted traffic, if any
- Ensuring emergency access
- Ensuring public safety of participants

Appropriate Contexts

- Central thoroughfare
- Existing walking and biking routes
- Corridors near tourist, cultural, recreational, or commercial destinations

Guidance

- Build political, financial, and community support early on. Chicago's Active Transportation Alliance used foundation funding to take local officials to cities with Open Streets initiatives. Once they experienced the event firsthand, Chicago officials started championing a car-free event of their own
- Create a coalition of stakeholders and coordinate regularly with city, community, and law-enforcement partners
- Identify a lead project manager
- Allow enough time for the permitting process (deadlines vary by jurisdiction)
- Frame open streets as an economic engine, cultural event, and means to promote healthy lifestyles

- Brand and promote the program. Market it as a continuous program rather than a one-off event¹
- Partner with local groups to establish uniquely local events and bring in attendees
- Seek nontraditional partners, such as medical foundations, in addition to transportation organizations
- Hold a follow-up meeting to debrief after each event

Professional Consensus

- The Pedestrian and Bicycle Information Center lists Car Free Days and provides guidance
- Open Streets Project lists reports and evaluations of programs, including studies from:
 - » Portland, OR: Sunday Parkways
 - » Missoula, MT
 - » Los Angeles, CA

Examples

More than 70 cities in North and Central America organize versions of Open Streets, including:

- [Atlanta, GA](#)
- [Durham, NC](#)
- Fargo, ND
- Lincoln, NE
- [Los Angeles, CA](#)
- [Minneapolis, MN](#)
- [New York, NY](#)
- Pensacola, FL
- [San Antonio, TX](#)



Top left: A free yoga class during Open Streets Minneapolis. Source: Bradley P Johnson, Flickr

Top right: An overview of Open Streets Minneapolis. Source: Rachel Jackson, Flickr

Bottom left: Summer Streets, New York, NY. Source: istoletv, Flickr

Bottom right: Summer Streets on Vanderbilt Avenue, Brooklyn, NY. Source: New York City Department of Transportation

1. Pedestrian and Bicycle Information Center. <http://www.walkinginfo.org/promote/car-free-days.cfm>

Create Play Streets

Definition Play Streets programs temporarily close a section of a street off to cars, typically for a morning or a day on a regular, but seasonal, basis, for use as a public playground. Activities are often organized and supervised by volunteers or city workers.

Benefits

- Quickly and cheaply expands the amount of recreation space in an area
- Creates a local walking destination
- Reduces potential pedestrian-vehicle conflicts

Considerations

- Temporarily reduces available curbside car parking

Appropriate Contexts

- Locations with strong community partners
- Areas in close proximity to a residential neighborhood
- Discrete road sections or blocks with detour routes available for local vehicular traffic
- Underused roadways adjacent to schools or parks
- Areas underserved by parks and open space

Guidance

- Plan ahead: Contact potential partners and brainstorm activities in winter or early spring
- Reach out to community partners early and often, from the permit application process onward
- Organize community-outreach meetings, recruit volunteers, and brainstorm ideas and partnerships
- Recruit supervisors and activity coordinators from community groups, local police athletic leagues, municipal parks department employees, or summer youth-employment programs
- Schedule regular, consistent activities
- Publicize your play street: Create an activity schedule and share it with local blogs, newsletters, community meetings; post it in grocery stores, community centers, and other activity hubs; spread the word through social media!

Professional Consensus

- In the absence of endorsements or guidance from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

- [New York, NY](#)
- [London, UK](#)



78th Street Play Street, Queens, NY. Source: *The Jackson Heights Green Alliance, jhgreen.org*

Case Study: New York

In 2008, neighbors in the Jackson Heights neighborhood in Queens, New York City, wanted to turn a wide, underused street next to Travers Park into a weekend play street. Ron Hayduk, a member of the Jackson Heights Green Alliance, reached out to the NYC Department of Transportation (DOT) and discovered that the original play-street applications, dating back to 1910, were obsolete. With the support of the Community Board and the local advocacy organization, Transportation Alternatives, community groups and the city developed an agreement to resolve liability and insurance concerns: DOT would be liable for safety and maintenance while the neighbors would be responsible for opening and closing the street and maintaining a volunteer presence throughout the closure.²

This pilot program was such a resounding success that the City simplified its Play Streets permitting process to make it easier for more neighborhoods to do the same. The New York City Department of Health and Mental Hygiene (DOHMH) now administers the program. The permitting process consists of the following: If 51% of residents living on a one-way residential block sign a petition, they can submit the petition to local police and transportation officials, who submit it to the local community board for review. If approved, the City parks department provides youth workers to organize the seasonal program.

Transportation Alternatives, alongside the NYC Strategic Alliance for Health and DOHMH documented play streets best practices and recommendations for existing and future community organizers.³

1. Transportation Alternatives. Play Streets Program Partner Resource Guide. 2011. http://transalt.org/files/campaigns/pedestrian/playstreets/PlayStreets_ProgramResourceGuide.pdf

2. Play Matters: A Study of Best Practices to Inform Local Policy and Process in Support of Children's Play. Kaboom. 2009. http://kaboom.org/docs/documents/pdf/playmatters/Play_Matters_New_York.pdf

3. Transportation Alternatives. Play Streets Program Partner Resource Guide. 2011. http://transalt.org/files/campaigns/pedestrian/playstreets/PlayStreets_ProgramResourceGuide.pdf

Activate Streetscapes through **Temporary Uses** of Vacant Buildings and Sites

Definition Organizing temporary uses of vacant buildings or land for socially beneficial purposes, which helps create safe dynamic streetscapes and walking destinations.

Benefits

- Creates a dynamic and safer street space for pedestrians
- Maintains street activity, including the number of pedestrians, which benefits nearby shops and offices
- Creates new economic development and cultural opportunities
- Temporary installations can provide an opportunity to build communities and establish a community hub
- Helps business owners try out retail concepts and transition to permanent spaces
- Discourages vandalism and illegal occupation of a vacant space
- Improves appearance of the formerly vacant space, improving the quality of life for local residents
- Potentially attracts new visitors and investors to the site and general area
- Creates a potential business incubator for start-up businesses or new community organizations and nonprofit groups
- Potentially provides accessible community services to a neighborhood. Temporary tenants can be groups providing services such as business start-up support within the communities that need it most, allowing more residents to learn about and take advantage of the opportunity

Considerations

- Allotting adequate time for the permitting process
- May need exemptions from outdated building codes
- May need to develop appropriate language in landlord-tenant leases for flexible circumstances
- Renovation costs and potential safety concerns of the site

- Funding insurance, possibly offset by groups' existing umbrella coverage
- Logistics and costs of utilities

Appropriate Contexts

- Vacant retail space
- Empty lots
- Unrented office space
- Abandoned warehouses or factories
- Sites with transit access

Guidance

- Collaborate with local organizations to determine the temporary use
- The following elements are suggested for a community garden or urban farm:
 - » Water source
 - » Covered area
 - » Seating
 - » Bathroom
 - » Compost or worm bins
 - » Art installations¹
- Organize regular and frequent programming at the space
- Co-produce temporary programming with local groups to reflect the local context and widen community outreach
- Require written proposals from programming partners articulating exactly when and what will be occurring at the space
- Collaborate with local organizations and municipalities to procure general liability insurance for the temporary use
- Approach potential property owners with a proposal of what would take place, general liability insurance, and a contract template

Case Study: New York

- Build relationships with local businesses for mutual support strategies, such as distributing neighborhood maps with local discounts, and distributing materials about the temporary use in nearby stores
- Reach out to neighborhood associations to inform them of the temporary programming and gain their approval
- Create a multifaceted marketing strategy to let the public know where and when the temporary installation will be open. The strategy should reach out to local organizations and their memberships, as well as traditional and social media outlets, and include wayfinding signage
- Track how many people visit the site during its temporary use for property owners and use in future proposals

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

- [Boston, MA](#)
- [Cleveland, OH](#)
- [New York, NY](#)
- Omaha, NE
- Philadelphia, PA
- [Portland, OR](#)
- Washington DC

Founded in 2009, the nonprofit group [No Longer Empty](#) produces curatorial-driven, site-specific temporary art installations and programming in vacant sites around New York City. The installations serve as a catalyst for community building and economic development. While No Longer Empty has canvassed neighborhoods looking for suitable vacant spaces, thanks to its growing reputation, property owners now approach the organization with potential sites for consideration. No Longer Empty looks for sites that are close to transit and provide a neighborhood narrative to inspire art exhibitions and community programming. The nonprofit works on the timeline of its available real estate: Three to four months for the preparation of the installation and its associated programming, and one to three months for the exhibition itself.

No Longer Empty's current exhibition at the Andrew Freeman mansion in the Bronx has single-handedly created a cultural hub out of a former void: More than 2,500 visitors appeared for its opening, and, thanks to ongoing programming, the project averages about 200 visitors a day. Pedestrians who used to have to walk down a long, grim stretch of the mansion's perimeter fencing now have more company on the sidewalk—and a friendly art installation of flowers woven into the iron fences poles—to make the walk more appealing.



Sidewalk art from *This Side of Paradise*, a 2012 temporary exhibition in the Grand Concourse, the Bronx, New York, NY. Source: [No Longer Empty](#)

Promote Park(ing) Day

Definition Popularized by the San Francisco–based design group, Rebar, Park(ing) Day is an annual event on the third Friday of September during which activists and community groups legally take over a curbside parking spot and reinvent the space for pedestrian purposes. Groups have created public parks, public reading rooms, curbside cafes, bocci courts, and mini beaches within parking spots. By 2011, 35 countries have hosted nearly 1,000 Park(ing) Day events.

Benefits

- Temporarily transforms storage space for a private vehicle into dynamic, pedestrian-oriented public space
- Activates the streetscapes
- Sparks public debate about the use of public rights-of-way
- Encourages community-driven streetscape improvements to better accommodate all street users, not just cars
- Provides a fun opportunity for encouraging pedestrian advocacy

Considerations

- Local regulations may not permit curbside parking uses other than parking
- Allotting time and funding for permits
- Ensuring adequate litter and trash removal
- Potential pushback from local businesses due to loss of parking

Appropriate Contexts

- Curbside locations with regulated parking for two or more hours

Guidance

- The goal of Park(ing) Day is to experiment with new forms of public space. Avoid exploiting the premise with commercial or promotional activities

- Consider your audience when choosing a location: If creating a park, consider a spot in an area underserved by public parks; if advocating for a public-policy change, choose a spot near that public agency
- Provide seating and shade
- Install a ground cover for better visual impact
- Set up plastic bollards or cones to buffer your space from cars
- Prepare to pay: Scope out the payment system of your parking spot, and have quarters or a credit card handy
- Create a team of collaborators to share planning, transportation, and implementation responsibilities
- Install signs to inform the public about Park(ing) Day and your event
- Research local parking laws and public-space ordinances to address any concerns of residents or police officers
- Promote your event: Alert the media, post information on community listserves and blogs, and post wayfinding signs
- Prepare talking points about the goals of your Park(ing) Day event
- Document the event with photos and/or video
- Recycle project materials wherever possible
- Clean up your park(ing) spot thoroughly afterward to avoid fines or tickets

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

In 2011 alone, community groups implemented 965 Park(ing) Day events in 162 cities and 35 countries, including:

- Salt Lake City, UT
- Spartanburg, SC
- [Springfield, MO](#)
- [New Orleans, LA](#)
- Syracuse, NY
- Omaha, NE
- [Raleigh, NC](#)
- [Toledo, OH](#)



Park(ing) Day in San Francisco, CA. Source: Rebar Art & Design Studio



Park(ing) Day in Santa Rosa, CA. Source: Greenbelt Alliance, Flickr

Start Up Jane's Walks

Definition Jane Jacobs Walk is a series of neighborhood walking tours (and/or bike rides, transit rides, or wheelchair rides) that helps community members learn and respond to the complexities of their city through personal and shared observation. All tours are given and taken for free and coordinated through the Center for the Living City, a nonprofit organization created by supporters of Jane Jacobs. The event takes place annually on the first weekend of May.¹

Benefits

- Provokes community discussions about streetscapes and street life
- Creates new social-walking opportunities
- Encourages walking and cycling
- Helps build community
- Offers community members a new perspective of city streets

Considerations

- Develop relationships with community members to clarify the program and its goals, and to encourage participation

Appropriate Contexts

- Locations with collective histories and connections to tour members, such as residential neighborhoods, downtowns, or parks
- Rapidly changing neighborhoods, waterfronts, or manufacturing districts that are home to multiple histories and cultures
- Bicycle trails and mixed-use trails through recreational areas

Guidance

- Reach out to a broad base of potential walkers, including neighborhood associations, business improvement districts, community groups, youth organizations, and school associations for tour themes and to recruit tour-takers
- Schedule your tour for the first weekend in May to build on the legacy of Jane Jacobs and highlight walking advocacy

- Make sure locations and routes are accessible
- Go on a trial run of your tour before the event to time the route and ensure locations haven't been blocked by unforeseen circumstances
- Read up on Jane Jacob's theories and highlight them during the tour
- Create a listserve, website, Facebook page, or some way to update participants about tour themes, locations, and logistical details
- Encourage participants to ask questions and offer insights. The tours work best as a collective conversation about everyone's shared surroundings
- Share the experience afterward: Upload pictures to your website, Facebook page, or shared online photo account. Write blog posts or send out a follow-up email about the event²

Professional Consensus

- The Department of City and Metropolitan Planning at the University of Utah hosts the Center for the Living City and the Jane Jacob Walk program

Examples

Jane Jacobs Walks took place in more than 30 U.S. cities, including:

- [Carthage, MS](#)
- [Detroit, MI](#)
- [Nashville, TN](#)
- [Provo, UT](#)
- [Tampa, FL](#)



A Jane's Walk threading through Kensington Market in Toronto, ON. Source: BriYYZ, Flickr

1. Jane Jacobs Walk. What is Jane Jacobs Walk? About Jane Jacobs Walk. n.d. <http://www.janejacobswalk.org/about-jane-jacobs-walk/what-is-jane-jacobs-walk/>
2. Municipal Arts Society. Jane's Walk NYC. 2012. <http://mas.org/programs/janeswalknyc/>

Use **Apps** to Encourage Walking

Definition Using open-source data, geographic information systems, and mobile technology, software developers can create phone and online applications to tell people when the next train, taxi, or bus is coming, that there's a fun landmark or park around the corner, or how to use a myriad of transportation systems effectively to get from point A to point B without using a car.

Benefits

- Allows people to make better-informed decisions about transportation options
- Manages passengers' transportation expectations
- Demystifies non-car transportation options
- Reduces dependence on the private automobile for transportation needs
- Better integrates walking into transportation options

Considerations

- Not everyone has access to mobile technology
- Source data isn't always reliable
- Updating the technology with new information

Appropriate Contexts

- Countries, states, counties, cities, towns

Guidance

- Encourage transit and transportation agencies to publicly release relevant data
- Encourage mobile-technology application innovation through app competitions
- Use satellite and GPS technology to track uses, taxis, and trains in real time

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

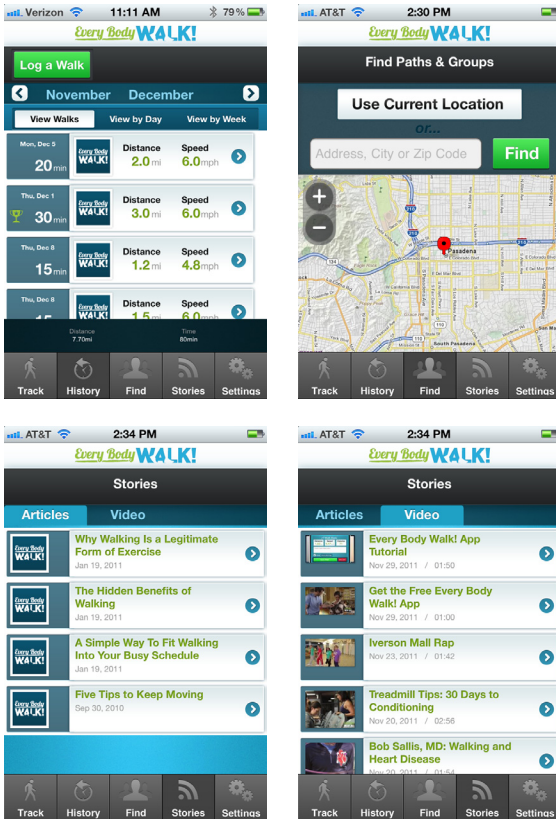
Examples

- [HopStop](#) (79 cities and counting)
- [NextBus](#) (91 transit systems and counting)
- [Taxi Magic](#) (40 cities and counting)
- [Adventure Walks](#) (San Francisco; Washington, DC; and counting)
- [Every Body Walk!](#)
- American Heart Association's [Walking Paths app](#)

Case Study: United States

In January 2011, Kaiser Permanente and about 50 other organizations partnered to launch the national campaign Every Body Walk! The online campaign, produced by media team GerberRigler, encourages Americans to walk 30 minutes a day, five days a week. One of the centerpieces of the campaign is the free Every Body Walk app. The app, which is compatible with iPhones and Androids, logs individual walks, counts calories burned, and maps your routes for future reference. Users can share walks and their walking progress with friends on Facebook and find new routes by using an interactive map to look for nearby walking clubs and paths. The app also has a video section where users can get tips from health experts and watch films about walk-friendly communities.¹

The free Every Body Walk! app came in second in About.com's Best Walking App—Readers' Choice Awards 2012, outperforming most other for-profit apps.² While the Every Body Walk app is only one element of the walking campaign—recent highlights include a Funny or Die video featuring the cast of the TV show *West Wing* promoting walking³—the app is the means by which the campaign guides and supports individuals striving to incorporate more walking into their daily routines.



Program elements of the Every Body Walk! app.
Source: Every Body Walk!

1. Every Body Walk! Every Body Walk! App. Kaiser Permanente. <http://everybodywalk.org/app.html>
2. Gerber, Brian; Rigler, Thomas. Personal correspondence. May 18, 2012.
3. Bumgardner, Wendy. Best Walking App—Readers' Choice Awards 2012 March 29, 2012. About.com. <http://walking.about.com/od/maps/tp/Best-Walking-App-Readers-Choice-Awards-2012.htm>

Expand **Driver's Education** into **Mobility Education**

Definition Mobility education supplements traditional driver's education to teach multimodal and trip-planning skills in addition to driving techniques. Mobility education informs students how to do the following: ride a bike, judge the walkability of streets and neighborhoods from a pedestrian's perspective, take and plan transit trips, account for the financial responsibility of car ownership, compare the health impacts of transportation behaviors, and consider the mobility possibilities of new technologies such as Skype and car-sharing.

Benefits

- Teaches all new drivers the financial, health, and environmental impacts of transportation behaviors
- Increases familiarity with multiple modes of transportation
- Gives drivers the perspectives of cyclists, pedestrians, and transit users with whom they share the road

Considerations

- Reach out to law enforcement when crafting the mobility-education curriculum
- Run mobility-education workshops and informational sessions about updated traffic laws for local law enforcement

Appropriate Contexts

- Private driver-training schools
- Grant-funded programs
- Traffic-safety education
- Weekend workshop offerings
- State policy initiative
- Federal policy initiative

Guidance

- To better integrate mobility education into existing driver-education methods, craft mobility education into supplementary modules that can be taught either by specialized instructors or by instructional DVDs with accompanying pre-made tests
- Build mobility education into state and national campaigns against distracted driving
- Frame mobility choices in terms of financial responsibility: the difference between an annual \$8,000 outlay for car ownership and the savings of reducing or investing that amount¹
- Incorporate parental involvement into curriculum, use crash statistics involving teenaged drivers, and create a parent-student driver contract based on safety and mobility choices
- Familiarize drivers with traffic-control devices used for traffic calming and bicycle routes

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, states are turning to best practices employed by other jurisdictions

Examples

While no state has fully adopted mobility education into its driver's education curriculum to date, many states have made incremental steps toward that goal. They include:

- **Washington:** The state legislature passed House Bill 2564 in 2008, which mandated the inclusion of pedestrian and bicycle safety education in the Driver's Education curriculum, but did not fund it
- **New Jersey:** As part of the Governor's five-year \$74-million pedestrian safety initiative, the state's Motor Vehicle Commission, Attorney General's Office, and the Department of Education edited the NJ Driver Manual to emphasize pedestrian safety and the responsibilities of both motorists and pedestrians, and added test questions about pedestrian-safety laws into the NJ driver examination
- **Georgia:** The Georgia Department of Drivers Services rewrote and expanded the pedestrian-related content of the Georgia Drivers Manual in 2007
- **Wisconsin:** The state DMV added pedestrian-safety component to its Driver's Handbook in 2010. The Madison DOT distributed pedestrian- and bicycle-safety instructional DVDs to driver's-ed instructors and distributed premade tests on the subject matter so that it could be easily integrated into the established curriculum. The pedestrian-safety DVD had been made by the traffic-enforcement safety department of the Madison Police Department. The Madison DOT then obtained the bicycle-focused training video from the Illinois DOT

Case Study: Federal Way

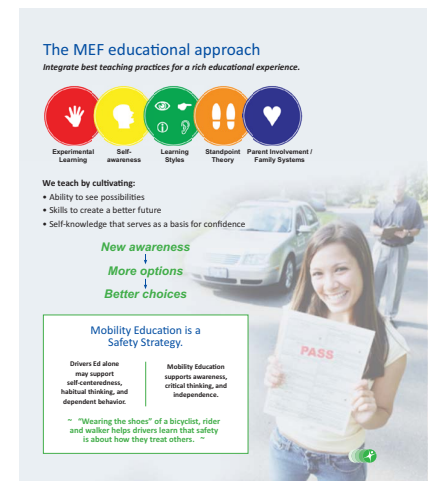
The Mobility Education Foundation ran a mobility-education pilot course in Federal Way, Washington, in 2007. The Federal Way Public Schools Traffic Safety Education program typically offers two sections of driver education at Todd Beamer High School. The foundation offered one of the two sections an expanded "Driver Education PLUS" course with supplemental training run by Mobility Education instructors.²

While Washington State required only 30 hours of instruction spanning a minimum of 35 days, the standard Federal Way Public Schools Traffic Safety Education "Driver Education" course included 34 hours of classroom and 6 hours of behind the wheel (BTW) instruction. Classroom lessons were taught in 17 after-school meetings over two months, and BTW instruction was held during six drives meeting the state requirement of 6 hours.³ The "Driver Education PLUS" curriculum supplement involved 12 hours of additional instruction:⁴

- 6 hours of training on bicycles
- 2 hours of transit training
- 2 hours of walkable communities training
- 2 hours of technologies training

Mobility Education Foundation representatives taught the supplemental instruction and attended the 17 other classes to participate in class discussions. Students of both driver education sections took a 20-question quiz on the first and last day of class.⁵

Quiz questions assessed student knowledge regarding safety, health, environment, cost, and operations of the multimodal transportation system. Students in the PLUS pilot were more knowledgeable with respect to the true costs of transportation and had transit and cycling skills that were superior to their peers who attended the standard Driver Education course.⁶



Excerpt of a Mobility Education Foundation promotional brochure. Source: Mobility Education Foundation

1. Mobility Education Foundation. New Transportation Thinking for a 21st Century World Brochure.
2. Mobility Education Foundation. Federal Way, WA Driver Education PLUS Pilot Report. 2008.
3. Levinger, David. Mobility Education Foundation. Personal correspondence. October 2011.
4. Mobility Education Foundation. Federal Way, WA Driver Education PLUS Pilot Report. 2008.
5. Mobility Education Foundation. Mob Squad One Day Course. 2008.
6. Mobility Education Foundation. Federal Way, WA Driver Education PLUS Pilot Report. 2008.

Create a Safe Routes to Schools Program

Definition Safe Routes to School programs make it safe, convenient, and fun for children to be able to walk to and from schools. The program targets pedestrian and bicycle improvements around schools and is based on evaluation, education, encouragement, enforcement, and engineering.

Benefits

- Creates a safer walking environment for everyone using the streets
- Induces drivers to slow down
- Encourages walking as a transportation option
- Increases physical activity
- Interests policy makers in other walking strategies

Considerations

- Limited federal funding
- Negotiating neighborhood desires when implementing infrastructure improvements
- Parents will like solutions that involve parental supervision

Appropriate Contexts

- Federal funds must be spent within 2 miles of schools on infrastructure improvements
- Drop-off zones where parents and buses can drop off children who live farther away to walk the rest of the way to school

Guidance

- Form a Safe Routes team at the school including parents, school officials, and city officials
- Form a task force at the city or school-district level to encourage collaboration between the city and schools to improve traffic safety and promote the program
- Prioritize schools based on traffic-safety needs
- Use the 5E's:
 - » Evaluation: Start with an evaluation of existing conditions at the school or school district. Use [standardized data-collection forms](#) for student tallies and parent surveys

- » Engineering: Begin with a community walking audit of barriers for children walking and bicycling to school. Request signal timing based on the slower walking speeds of children (3' per second)
- » Education: Teach children bicycle and pedestrian traffic-safety skills in the classroom. Educating parents to drive safely also improves traffic safety
- » Encouragement: Organize walk- and bike-to-school days, contests, and other promotions to encourage walking. Also set up walking school buses and bike trains (parent-led programs where neighbors to walk with children)
- » Enforcement: Partner with law enforcement to station crossing guards at street corners
- Implement improvements: Use regular maintenance funds for short-term improvements such as striping and signage. Apply to departments of transportation for longer-term infrastructure needs, or find additional funding
- Use the Safe Routes to School to School National Partnership's [Local Policy Guide](#) to support the program

Professional Consensus

- The [Safe Routes to School \(SRTS\) Program](#) is administered by the Federal Highway Administration's Office of Safety¹
- Endorsed by AASHTO, the Governors Highway Safety Administration, FHWA, and the National Center for Safe Routes to School in the report: [Safe Routes to School Noteworthy Practices Guide: A Compendium of State Safe Routes to School Program Practices](#)
- The Safe Routes to School National Partnership published case studies and benefits in their Congressional report: [Safe Routes to School: Helping Communities Save Lives and Dollars](#)
- The Safe Routes to School National Partnership lists benefits in its [referenced fact sheet](#)



The Safe Routes to School program at Red Pine Elementary School in Eagan, MN, also encouraged cycling to school. *Source: National Center for Bicycling and Walking*



A walking-school-bus initiative in Chicago, IL. *Source: Chicago Department of Transportation*

Case Study: Eagan

Eagan, MN, is a suburb from Minneapolis–Saint Paul and its Red Pine Elementary serves 950 children from the town and several surrounding farming communities. Eagan has a network of sidewalks and crosswalks in the neighborhoods around school, providing safe infrastructure for walking and bicycling.

In spite of these safe facilities, many parents were in the habit of driving their children to school—resulting in significant traffic backups that often extended a quarter-mile from the school and onto a nearby highway. Red Pine Elementary principal realized that Safe Routes to School education and encouragement activities were necessary to shift some of these car trips to walking and bicycling.

With a small \$10,000 Safe Routes to School non-infrastructure award, the school implemented a comprehensive encouragement and education strategy. The school first produced a Safe Routes to School map to identify sidewalks, crosswalks, school patrols, and safer walking routes. Children in adjacent neighborhoods were invited to join walking school buses. Drop-off zones were added at the beginning of the walking-school-bus routes to allow children from farther away to join the walking school bus and reduce traffic at the school. The school implemented these provisions as one of their initiatives to increase health and physical activity—in addition to incentives to walk and run at recess, fitness fairs on the weekends, and bicycle donations to low-income children.

With this comprehensive approach, Red Pine Elementary more than doubled the number of children regularly walking and bicycling to school—from 75 to 200 children. The number of cars dropping children off at school declined from 100 cars to about 40 cars—nearly eliminating traffic backups around the school.²

Examples

- The Federal government mandates a full-time Safe Routes to School program coordinator within the departments of transportation of all 50 states
- As of December 2011, more than 12,300 schools in 50 states received federal funding for Safe Routes to School programs

1. Federal Highway Administration. Office of Safety. Safe Routes to School. <http://safety.fhwa.dot.gov/saferoutes/>

2. Hubsmith, Deb. Director of Safe Routes to School National Partnership. Personal correspondence. July 2012.

Create a Safe Routes to Transit Program

Definition A Safer Route to Transit program targets pedestrian improvements around transit stops and the walking or cycling routes used to reach them.

Benefits

- Tailors responses to the needs and concerns of specific walking populations
- Creates a safer walking environment for everyone using the streets
- Induces drivers to slow down
- Encourages transit use
- Encourages walking as a transportation option
- Reduces automobile dependency

Considerations

- Coordinating traffic-calming plans with the needs of emergency responders
- Funding traffic-calming and/or infrastructure improvements
- Coordinating infrastructure improvements to optimize costs and benefits

Appropriate Contexts

- Vicinity of bus stops and subway stations
- The major foot and cycling routes to reach transit stops

Guidance

- Demonstrate the need. Collect:
 - » Baseline data, such as the number, attributes, and circumstances of pedestrian crash injuries and fatalities
 - » Traffic volumes and speeds
 - » Ridership attributes (who arrives to stations and how)
 - » Population statistics by geographical distribution (e.g., area densities of senior populations or youth populations)
 - » Adequacy of existing infrastructure (sidewalk gaps, crosswalks, etc.)
- Also survey residents about mobility concerns and priorities
- Publicize the demonstrated need for targeted infrastructure improvements:
 - » Set up meetings with local representatives, advocacy groups, community organizations, and city agencies
 - » Write press releases and invite mainstream and social media representatives to cover the story
- Collaborate with departments of transportation, city planning, transit providers, local residents, and advocates to systematically address safety concerns and improvements

Professional Consensus

- Targeted pedestrian safety improvements around transit stops are endorsed by the Federal Highway Administration in its [Pedestrian Safety Guide for Transit Agencies](#) guidebook

Examples

- [New York, NY](#)
- Atlanta, GA: [Safe Routes to Transit Task Force](#)



Before: 86th Street and 20th Avenue, Brooklyn, NY.
Source: New York City Department of Transportation



After: 86th Street and Bay Parkway, Brooklyn, NY.
Source: New York City Department of Transportation

Case Study: New York

Created through New York City Mayor Michael Bloomberg's 2007 PlaNYC strategic plan, the Safe Routes to Transit program within the New York City Department of Transportation (NYCDOT) aims to improve pedestrian conditions in and around transit stops throughout the city. The Safe Routes to Transit program addresses three main transit conditions: unsafe bus stops under elevated subway structures, congested sidewalks next to subway entrances, and incomplete pedestrian infrastructure at bus stops.

The Bus Stops under the Els initiative identified 42 locations in the Bronx, Brooklyn, and Queens in need of safety improvements, such as changing the shape of the roadway and constructing raised bus stops to provide people a safer place to stand while waiting for the bus.

In its Subway/Sidewalk Interface initiative, the agency uses data collected in a joint-survey with the Department of City Planning to prioritize pedestrian-safety improvements at 23 subway stops. Improvements at those locations include widening narrow sidewalks, extending crossing intervals, and reducing traffic congestion near station entrances and exits.

In its third initiative, Sidewalks to Buses, NYCDOT is installing new sidewalks, crosswalks, and waiting areas at bus stops where that infrastructure currently doesn't exist. The agency has pledged to install up to a quarter-mile of new sidewalk and pedestrian improvements at up to 15 bus stops per year through 2030.¹

1. New York City Department of Transportation. Safe Routes to Transit. Pedestrians & Sidewalks. n.d. <http://www.nyc.gov/html/dot/html/sidewalks/safertstransit.shtml>

Create a Safe Routes for Seniors Program

Definition A Safe Routes for Seniors program targets pedestrian improvements in areas with senior centers, hospitals, and large numbers of senior residents.

Benefits

- Tailors responses to the needs and concerns of seniors
- Creates a safer walking environment for everyone using the streets
- Induces drivers to slow down
- Encourages walking as a transportation option

Considerations

- Coordinating traffic-calming plans with the needs of emergency responders
- Funding traffic-calming and/or infrastructure improvements
- Coordinating infrastructure improvements to optimize costs and benefits

Appropriate Contexts

- Vicinities or senior centers and hospitals
- Districts with high densities of senior residents

Guidance

- Demonstrate the need. Collect:
 - » Baseline data, such as the number, attributes, and circumstances of pedestrian crash injuries and fatalities
 - » Traffic volumes and speeds
 - » Population statistics by geographical distribution (e.g. area densities of senior populations)¹
 - » Adequacy of existing infrastructure (sidewalk gaps, crosswalks, etc.)
- Also survey residents about mobility concerns and priorities
- Publicize the demonstrated need for targeted infrastructure improvements:
 - » Set up meetings with local representatives, advocacy groups, community organizations, and city agencies
 - » Write press releases and invite mainstream and social media representatives to cover the story
- Collaborate with departments of transportation and health, transit providers, senior center staff, seniors, health-care providers, and advocates to systematically address safety concerns and improvements
- Request signal timing based on the slower walking speeds of seniors (3 feet per second) to give pedestrians enough time to safely cross

Professional Consensus

- Endorsed by Transportation for America in its June 2011 report [Aging in Place, Stuck without Options](#)

Examples

- Chicago, IL
- [New York, NY](#)
- San Francisco, CA



Crossing 72nd Street, New York, NY. Source: Ed Yourdon, Flickr

Case Study: New York

As more people live longer and age in place, creating communities that are easy, enjoyable, and safe for older adults to walk through is crucial for both transportation and public-health considerations. So, in 2003, Transportation Alternatives (TA), a New York City–based transportation advocacy organization, created a Safe Routes to Seniors program. With funding from the New York State Department of Health's Healthy Heart program, TA partnered with community groups in eight neighborhoods that had large senior populations to better understand obstacles to walking. Senior residents documented dangerous walking conditions using maps, measuring wheels, stop watches, and disposable cameras. TA also hosted four workshops to give seniors a chance to generate design solutions. TA's work helped construct 65 pedestrian safety improvements to improve walking conditions for over 26,000 seniors in two New York City neighborhoods.¹

The TA program also inspired the New York City Department of Transportation (NYCDOT) to create its own Safe Routes for Seniors program.² NYCDOT's program examined accident histories across the city to identify 25 neighborhoods that have both a high density of senior citizens and a high number of pedestrian accidents or injuries—including the TA-identified neighborhoods of Flushing, the Lower East Side, and Brighton Beach. The agency's engineers assess pedestrian conditions in those neighborhoods from a senior's perspective to implement improvements, such as extending pedestrian crossing times at crosswalks, shortening crossing distances, altering curbs and sidewalks, restricting vehicle turns, and narrowing roadways.³

1. Transportation Alternatives. Safe Routes for Seniors Final Report. June 2009. http://www.transalt.org/files/newsroom/reports/2009/Safe_Routes_for_Seniors.pdf

2. Ibid.

3. New York City Department of Transportation. Safe Routes for Seniors. Pedestrians & Sidewalks. n.d. <http://www.nyc.gov/html/dot/html/sidewalks/safeseniors.shtml>

Establish Walking Meetings at Work

Definition Walking meetings are small-group business discussions that take place while walking, usually outdoors, instead of around a conference table.

Benefits

- Energizes people and makes them more alert
- Helps people stay fit
- Breaks up a workday
- Stimulates oxygen flow in the body and brain to increase creativity and the ability to solve problems faster
- Reduces office energy demands

Considerations

- External distraction, such as ambient noise or cell phone use
- Route restrictions, such as narrow sidewalks or corridors, can hinder group conversations
- Accommodating diverse walking paces¹

Appropriate Contexts

- Parks, trails, or greenways
- Urban areas with adequate walking infrastructure like sidewalks and crosswalks
- Indoors areas like convention centers or malls

Guidance

- Determine the meeting agenda beforehand
- Determine the route and length of the walking meeting beforehand, taking into consideration the fitness and mobility levels of attendees
- Inform everyone they should wear comfortable shoes
- Schedule the walking meeting early to set the tone for the day; or late in the afternoon to reenergize attendees
- Check the weather and prepare accordingly
- Avoid noisy roads and those that are distracting and/or dangerous²
- Give employees individual pedometers to track and encourage walking

Professional Consensus

- Encouraged by the American Heart Association

Examples

- Rockland, MA: EMD Serono
- Minneapolis, MN: Salo
- Orlando, FL: Florida Hospital



A walking meeting at the Kaiser Permanente Executive Leadership Summit in Ellwood, CA. Source: Dr. Ted Eytan, Flickr

Case Study: Washington, DC

Dr. Ted Eytan, a Permanente Federation director at Kaiser Permanente, has been a big proponent of walking meetings for years. Dr. Eytan has not only integrated them into his office operations, but has also published instructions on his blog, tedeytan.com, on how others can do the same. The inspiration came from an office walking challenge where employees were handed free pedometers.³ Coworkers decided to rack up steps on their pedometers by walking during company meetings instead of sitting around a table.⁴

Dr. Eytan continued the practice long after the end of that original walking challenge. When he began a new position at Kaiser Permanente in Washington, DC, he instituted walking meetings there as well. Dr. Eytan's support of walking meetings is not an exception within Kaiser Permanente, but an example of a sea change both within the institution and the country as a whole. Kaiser Permanente now endorses walking meetings as a standard business practice⁵ and even funds a national education campaign, called Every Body Walk!, to promote walking in and outside the work place.⁶

1. Feet First. Guide to Walking Meetings. <http://feetfirst.org/walks/walking-meetings>

2. Ibid.

3. Eytan, Ted. The Art of the Walking Meeting. TedEytan.com. January 10, 2008. <http://www.tedeytan.com/2008/01/10/148>

4. Willians, David K. Dr. Ted Eytan of Kaiser on health IT, walking meetings, innovation (transcript) Health Business Blog. January 4, 2011. <http://www.healthbusinessblog.com/2011/01/dr-ted-eytan-of-kaiser-on-health-it-walking-meetings-innovation-transcript/>

5. Aubrey, Allison. Is It Possible to Walk and Work at the Same Time? NPR. May 7, 2012. <http://www.npr.org/blogs/health/2012/05/07/152157560/is-it-possible-to-walk-and-work-at-the-same-time>

6. Eytan, Ted. Walking Meetings Featured on ABC News, Washington, DC. TedEytan.com. May 3, 2012. <http://www.tedeytan.com/2012/05/03/10626>

Use **Walk Score** to Your Advantage

Definition The web-based real estate assessment tool Walk Score allows users, whether they are city-planning departments or individuals, to see and assess the walk-, bike-, and transit-friendliness of addresses and neighborhoods.

Benefits

- Allows users to quickly assess walking, biking, and transit conditions in different neighborhoods
- Allows users to make livability comparisons between different locations
- Helps integrate land use into transportation and development-planning decisions
- Quantifies the value of walkability, transit access, and bikeability within real estate evaluations
- Allows resource-strapped cities and communities to perform low-cost walkability assessments
- Helps communicate planning goals for neighborhoods and transit hubs¹

Considerations

- Currently measures distance as the crow flies rather than along existing street and sidewalk networks, though a "StreetSmart" version is available in beta form
- Walk Score algorithm doesn't customize how individuals might value nearby destinations differently²
- Walk Score doesn't account for the width of streets, traffic, or other obstacles to walking, though the company has plans to integrate that type of data into walking evaluations
- Walk Score's accuracy depends on the database of destinations used by Google Maps

Appropriate Contexts

- Any of the 2,500 cities currently assessed by Walk Score
- Transit (bus, train, ferry, light-rail) corridors and transit-oriented developments

Guidance

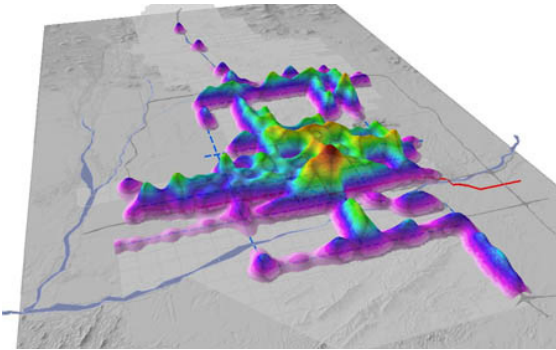
- Incorporate Walk Score into real estate evaluations to encourage development toward more walkable goals
- Incorporate Walk Score data into planning analyses for transit-oriented developments
- Incorporate Walk Score data when evaluating the walkability of sidewalk and street networks and prioritizing improvement projects

Professional Consensus

- Supported by grants from the [Rockefeller Foundation](#)
- Supported by grants from the [Robert Wood Johnson Foundation](#)
- Endorsed by Harriet Tregoning, Director, Washington DC Office of Planning

Examples

- Walk Score's walkability index has been incorporated into 15,000 websites³
- Multiple U.S. cities have incorporated Walk Score into planning analyses, including:⁴
 - » [Phoenix, AZ](#)
 - » [Washington, DC](#)

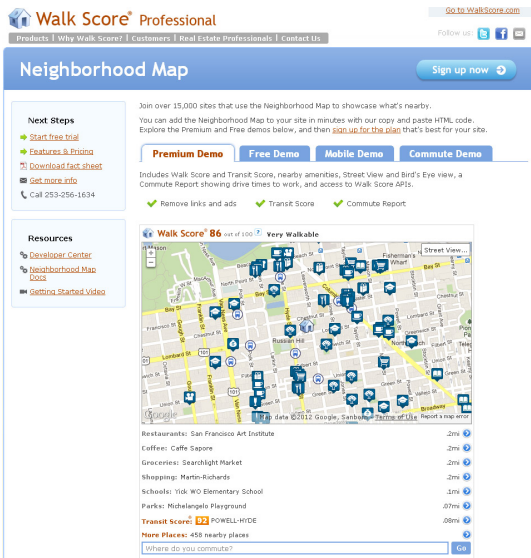


Phoenix, AZ, used Walk Score data to analyze existing rail stations and model the performance of proposed stations. Source: Walk Score, <http://www.walkscore.com/pdf/WS-Phoenix-TOD.pdf>

Case Study: Phoenix

The Phoenix Planning Department used Walk Score data to analyze the performance of existing light rail stations and to look at how proposed stations might perform if they were within a walking network connecting passengers to desired amenities.³

Walk Score data helped planners clarify which corridors and station locations performed best from a land use perspective. Phoenix plans to use Walk Score data in a similar fashion to evaluate the performance of the city's canal corridors.⁴



Walk Score assesses neighborhoods in terms of amenities within walking, cycling, and transit distances. Source: Walk Score, [walkscore.com](http://www.walkscore.com)

- Langdon, Philip. Walk Score could lead to better-planned transit networks. *New Urban News*. Vol. 16. No. 6.
- Cortright, Joe. Walking the Walk: How Walkability Raises Home Values in U.S. Cities. *CEOs for Cities*. August 2009. http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf
- Walk Score: Year in Review. January 12, 2012. <http://www.walkscore.com/professional/neighborhood-map.php>
- Cortright, Joe. Walking the Walk: How Walkability Raises Home Values in U.S. Cities. *CEOs for Cities*. August 2009. http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf
- Langdon, Philip. Walk Score could lead to better-planned transit networks. *New Urban News*. Vol. 16. No. 6.
- Walk Score Data for Planning & Research. Case Study: Analyzing Light Rail Station Area Performance in Phoenix. <http://www2.walkscore.com/pdf/WS-Phoenix-TOD.pdf>

Enforcement Tactics

Introduction

This chapter consists of tactics that can either be adopted by law-enforcement agencies or used to supplement those agencies. A few of these enforcement tactics are legislative amendments aimed to increase drivers' responsiveness and responsibility toward more vulnerable road users.

These tactics rely on successful communication and coordination between multiple agencies and audiences, including law-enforcement officers themselves.



Pedestrian-traffic managers, New York, NY. Source: Sam Schwartz Engineering

Train Law-Enforcement Officers in Pedestrian Laws and Safety

Definition Provide an education course on pedestrian and bicycle safety geared toward and taught to law-enforcement officers to help them create safer walking and bicycling communities. The training curriculum typically covers state laws and statutes relating to pedestrian and bicycle safety, the causes of common crashes involving pedestrians and bicyclists, how to investigate and report those crashes, and sample enforcement guidelines.

Benefits

- Fills a frequent gap in formal law-enforcement officer education
 - Teaches officers the leading causes of pedestrian crashes
 - Clarifies which laws to enforce for the safety of walkers and cyclists
 - Educates all those who are pulled over about the law and proper interactions between walkers, cyclists, and drivers
 - Helps prevent dangerous behaviors on the road
- Frame the training as a means of improving overall community safety
 - Recruit police training staff for training sessions
 - Make the training as easy as possible to attend:
 - » Divide training sessions into short modules to be taught separately
 - » Hold training sessions within precincts
 - » Fit in trainings during roll call
 - » Create and distribute DVDs of training materials
 - Survey participants before and after trainings to gauge their knowledge of pedestrian laws and crash-prevention measures

Considerations

- Institutional resistance from the perception that pedestrian and bicycle behavior is outside the scope of police concern
 - Financial and time constraints: Who pays for the trainings? How long can departments spare officers to attend training sessions?
 - Bureaucratic hurdles: Who creates and vets the curriculum? Who runs the course?
- Distribute detailed training manuals to participants
 - Consider using the free NHTSA-produced, "Pedestrian Safety Training for Law Enforcement" video¹

Appropriate Contexts

- Local
- State

Guidance

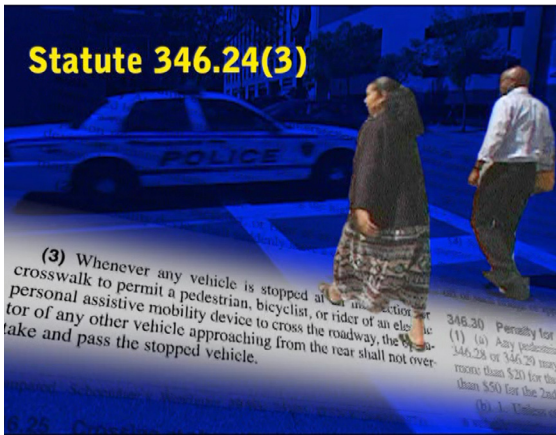
- Identify a champion in law enforcement to help plan and implement the training
- Partner with law enforcement in creating the curriculum
- Seek funding from state highway safety agencies who can also provide state peace-officer standards and training certification so officers receive training credit for course attendance; federal safety agencies may vet curriculums

Professional Consensus

- Listed by the National Pedestrian and Bicycle Information Center²
- Endorsed by the Federal Highway Administration: "It is an essential component of bicycle and pedestrian programs that seek to enable all users to share roadways safely"³
- National Highway Traffic Safety Administration endorses and develops law-enforcement curricula regarding pedestrian and bicycle safety

Examples

- Louisiana⁴
- [Wisconsin](#)
- [Portland, OR](#)
- Chicago, IL



Wisconsin DOT and the Bicycle Federation of Wisconsin created 10-minute training sessions about pedestrian and bicycle laws and crash-prevention tactics for law-enforcement officers. Source: *Pedestrian Safety for Law Enforcement, WisDOT*

Case Study: Wisconsin

In 2007, the Wisconsin Department of Transportation updated its bicycle-training program for law-enforcement officers, which had been created in 1995 through a National Highway Traffic Safety Administration (NHTSA) grant, to include pedestrian statutes and crash-prevention techniques. The course is designed to give law-enforcement officers the basic knowledge, tools, and resources to create safe walking and bicycling environments in their districts. The two-day course includes classroom, walking, and on-bike components, and is taught by staff of the transportation-consulting firm WE BIKE. Topics covered include definitions, state laws and statutes relating to pedestrian and bicycle safety, the causes of common crashes involving pedestrians and bicyclists, how to investigate and report those crashes, sample enforcement guidelines and actions, as well as relevant organizations and contacts. All training participants also receive a manual summarizing the course materials. Training costs are currently covered by an NHTSA grant, but the program hopes to be self-sustaining through course fees.

A challenge of the program, however, is finding police departments with enough staff and resources to be able to spare officers for two days in order to attend these trainings. As a result, WisDOT and the Bicycle Federation of Wisconsin created 10-minute training sessions for law-enforcement officers as part of their recent "Share & Be Aware" Campaign for road safety (which was funded by the federal Transportation Enhancements program). These 10-minute trainings will be given during police precinct roll calls either by Share & Be Aware bicycle ambassadors or through DVD presentations.⁵

1. National Highway Traffic Safety Administration. NHTSA Pedestrian Safety for Law Enforcement. October 2011. http://mcs.nhtsa.gov/index.cfm?fuseaction=product.display&product_ID=786
2. Pedestrian and Bicycle Information Center. Training Law Enforcers. <http://www.bicyclinginfo.org/enforcement/training.cfm>
3. Federal Highway Administration. Bicycle and Pedestrian Program. The Nonmotorized Transportation Pilot Program. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/index.cfm
4. Greater New Orleans Pedestrian & Bicycle Program. Enforcement for Pedestrian and Bicycle Safety. Regional Planning Commission and Louisiana Department of Transportation and Development. Spring 2010. http://www.planning.uno.edu/BikePed/PDFs/bike-ped_enfrc-manual_2010.pdf
5. Corsi, Larry. Pedestrian and Bicycle Safety Program Manager, WisDOT. Personal correspondence. October 4, 2011.

Pass a Vulnerable-Users Statute

Definition This is a legislative statute that requires higher penalties for drivers who harm more vulnerable roadway users, such as pedestrians and cyclists. The statute should include a “due care” provision, if one is not already enacted in state law, requiring drivers to look out for and avoid striking vulnerable persons in the roadway.

Benefits

- Better balances punishment to the consequences of negligent driving
- Encourages cautious driving
- Provides legal support to injury claims caused by unsafe motorists

Considerations

- A vulnerable-user bill should not contradict existing statutes and liability arguments
- Legislation that requires jail time or trial proceedings may overburden a constrained court system
- Providing professional legal assistance to draft the legislation and committed, multiyear legislative efforts and advocacy to build the political support to pass the bill

Appropriate Contexts

- Local
- State

Guidance

- Create a campaign to move the statute through the legislative process: Define the problem; develop a statewide coalition; prepare fact sheets; organize news stories, letters, and phone calls to legislators to gather support and sponsors for the proposed legislation; and maintain the political momentum to move the bill through committee, past floor votes in both state houses; and obtain the governor's signature
- Seek assistance: State highway safety agencies may provide help and leadership; the National Highway Traffic Safety Administration can identify best practices
- Use testimony of families and victims to build legislative support

- Build support from diverse stakeholders, e.g., farmers can help if tractor drivers are included as a class of vulnerable roadway users
- Survey and amend existing statutes, including:
 - » Penalties for careless driving
 - » Department procedures regarding length of driver's-license suspensions
 - » Trial entry proceedings in non-default cases
 - » Provisions of judgment
 - » Criteria requiring a defendant appear in court
 - » Admissibility of traffic-offense procedures in subsequent civil actions
- Consult police officers to insure law is practically enforceable
- Define and assign new responsibilities like monitoring careless drivers, supervising community service, and tracking fines or license suspensions to agencies, including court systems and district attorney offices
- Encourage legislative support and agency cooperation by highlighting the law's safety benefits for children and highway workers

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities
- Vulnerable User Statutes have passed several state legislatures, though they have faced political resistance in California¹ and Texas²

Examples

Vulnerable Roadway User laws have been passed by the following state legislatures:

- Delaware³
- New York⁴
- Oregon⁵



Cycling between vehicular travel lanes on an Oregon road. Source: Oregon DOT

Case Study: Oregon

In 2007, the Oregon Legislature passed the Vulnerable Roadway User statute (ORS 811.135). The act created a higher penalty for careless driving if it contributed to serious physical injury or death to a "vulnerable user of a public way." If that occurred, the act mandated either community service and driver-improvement education, or a substantial fine and a mandatory one-year license suspension. The law went into effect January 1, 2008.

The Bicycle Transportation Alliance (BTA) Legislative Committee advocated that the concept of a Vulnerable Roadway User could be a legal term to provide stronger protection of vulnerable user groups, such as pedestrians, cyclists, and rollerbladers. The term forged a new way for law enforcement and the court system to address pedestrian and cyclist injuries caused by careless drivers. Previously, Oregon law simply mandated a fine in response to a careless driving incident.

Before the Vulnerable Roadway User statute, the state did not suspend

the licenses of convicted drivers or require that they make a court appearance. The new bill included a noncriminal alternative of a \$12,500 fine (up from \$750) and a one-year license suspension. A traffic-safety course and one to two hundred hours of community service were included as an alternative to the fine and suspension. If the program is successfully completed, the suspension and fine would be suspended.

Creating a new legal concept required amending a considerable number of other statutes. The responsibility for administering the program monitoring careless drivers and supervising community service and any fines or license suspensions also had to be assigned to various agencies.

In 2011, Oregon amended its Vulnerable Roadway User statute to give police officers the discretion to note that an offense "appears to have" contributed to the serious physical injury or death of a vulnerable user, rather than requiring them to conclude that it was the exact cause of the serious physical injury or death. The change aimed to improve law enforcement's ability to enforce the law. As a result, the Portland Police Department lowered the severity of crash that would trigger a full police investigation for a vulnerable roadway user. A full police investigation is now triggered when a vulnerable roadway user is taken away by an ambulance, instead when a victim is entered in the trauma system.

1. Roth, Matthew; Rhodes, Michael. California Assembly Hits, Kills Traffic Justice Bill. April 20, 2010. <http://sf.streetsblog.org/2010/04/20/california-assembly-hits-kills-traffic-justice-bill/>
2. Perry, Rick. Gov. Perry Vetoes SB 488. June 19, 2009. <http://www.stc-law.com/pdf/Texas%20VRU%20Bill.pdf>
3. State of Delaware. Governor Signs "Vulnerable Users" Law. August 12, 2010. <http://governor.delaware.gov/news/2010/1008august/20100812-law.shtml>
4. New York State Vehicle and Traffic Law. Section 1146. [http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=\\$%VAT1146\\$@\\$TXVAT01146+&LIST=SEA4+&BROWSER=BROWSER+&TOKEN=45956353+&TARGET=VIEW](http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=$%VAT1146$@$TXVAT01146+&LIST=SEA4+&BROWSER=BROWSER+&TOKEN=45956353+&TARGET=VIEW)
5. Oregon Department of Transportation. Bicycle and Pedestrian Program. Laws and Regulations. http://www.oregon.gov/ODOT/HWY/BIKEPED/laws_regs.shtml

Provide **Training** Instead of **Fines**

Definition Training instead of fines gives first-time traffic offenders of certain violations—whether they are drivers, pedestrians, or bicyclists—the option of taking a safety class instead of paying a fine. Citation receivers who successfully complete the class receive an automatic or discretionary dismissal (no conviction) or a sentence of discharge (conviction entered but no fine), depending on the traffic violation.

Benefits

- Increases knowledge of and compliance with traffic regulations
- Reduces preventable crashes
- Provides eligible first-time offenders with incentives to take a safety class
- Improves awareness of the social and economic impacts of traffic-law violations and the benefits of walking, cycling, and using transit

Considerations

- Loss of fine revenue from dismissed or discharged citations
- Time and resource commitment from safety-class staff
- Resource and financial requirements for a tracking system to coordinate class participants and court records
- Translation services or multilingual instructors to reach non-English-speakers

Appropriate Contexts

- Local
- State—dependent upon programs working with circuit and municipal courts and statewide statutes to authorize court and police referrals to traffic-education classes as well as indemnify traffic-education classes from litigation

Guidance

- Collaborate with all program partners from the start, including: police, courts, local and state departments of transportation, health sector, and advocates
- Create the means of tracking class participants within traffic-court records
- Instruct law-enforcement officers and court staff on eligibility requirements and procedures for class admission, court procedure, and case disposition.
- Distribute and encourage law-enforcement officers and court staff to provide referral slips to eligible defendants when the defendant is cited for the violation and at his or her arraignment in court
- Instruct the citing officer to note on the citation a recommendation to either dismiss or discharge the fine upon successful completion of the safety course
- Require advance registration (or assign course dates) to give safety-class staff enough time to confirm eligibility of attendees
- Set class fees low enough to encourage attendance, but high enough to fund the program

Professional Consensus

- A comparative study about seat belt education programs is endorsed by the National Highway Traffic Safety Administration. The study is relevant to Share the Road Safety Class (SRSC) because both use "highly visible enforcement" with education to change driving behavior and attitudes¹

Examples

- Despite more than 300 requests nationwide for program materials, only [Portland, OR](#), runs a training-instead-of-fines program²



Mike Morrison from Trauma Nurses Talk Tough, in Portland, OR. Source: Jonathan Maus, Bike Portland

Case Study: Portland

Trauma Nurses Talk Tough, a program of the Portland-based Legacy Health System, collaborated with the City of Portland, Multnomah County courts, Portland Bureau of Transportation, Portland Police Bureau, the Bicycle Transportation Alliance, and Willamette Pedestrian Coalition to offer eligible first-time traffic offenders—drivers, pedestrians, and bicyclists—the option of taking a Share the Road safety class instead of paying a fine.

Ticketed violators who provide the court with their class-completion certificate can have their citation dismissed or discharged. Eligible traffic violations fall within three general categories:

- Being in the wrong place on the road (such as a car in a bike lane)
- Failure to yield the right of way
- The non-use of safety equipment

Law-enforcement officers writing the citation or court staff at the arraignment process refer ticketed violators to the Share the Road class. In nearly four years of providing the class, TNTT has seen 14,000 participants. Citation receivers are eligible for a dismissal or discharge only if they haven't taken the safety class before. Share the Road instructors maintain a database of class attendees and check that registered students haven't already participated in the program. The database includes the citation receiver's name, date of birth, court case number, type of traffic violation, source of the class referral, and date of class completion. That information is then entered into the court's computer records system within five days after each class.

The two-hour discussion is taught twice a month at the 125-seat Legacy Emmanuel hospital auditorium by a judge, a police officer, a trauma nurse, and either a bicycle or pedestrian advocate. The class explains Oregon law as it relates to drivers, pedestrians, and bicycles; presents videos, photos, and scenarios where people risk being hurt as a result of unsafe bicycling, walking, and driving behavior; and explains the physical, emotional, and legal consequences of traffic violations and crashes involving pedestrians, cyclists, and drivers. At the end of the class, each participant receives a certificate of completion, which he or she then files with the court for an automatic or discretionary dismissal or sentence of discharge (depending on the traffic violation).³

1. Increasing Seat belt use rates in rural communities. National Highway Traffic Safety Administration. <http://www.nhtsa.gov/people/injury/airbags/RuralCrashes/pages/IncreaseSBUse.htm>

2. Morrison, Mike. Trauma Nurses Talk Tough. Personal correspondence. October 2011.

3. Legacy Health System. Trauma Nurses Talk Tough. Court-ordered classes. Share the Road Safety Class. <http://www.legacyhealth.org/body.cfm?id=981>

Install Red-Light Cameras and Speed Cameras

Definition Red-light cameras and speed cameras are automated traffic-enforcement systems that photograph vehicles whose drivers run red lights or drive faster than the posted speed limit. Cameras typically record the date, time of day, time elapsed since the beginning of the red signal (where applicable), vehicle speed, and license plate. Tickets or citations are then mailed to the vehicle owners, based on a review of photographic evidence. Localities typically approach red-light- and speed-camera programs by holding either the driver or the registered owner responsible for the infraction.

Benefits

- Deters would-be violators¹
 - Red-light cameras significantly decrease² right-angle crashes (red-light-running crashes)³
 - Red-light cameras reduce fatal red-light-running crashes in cities where they are installed⁴
 - Speed cameras reduce all crashes up to 49%, reduce injury crashes up to 50%, and reduce crashes involving fatalities and serious injuries up to 44% in the vicinity of camera sites
 - Over wider areas, speed cameras reduce all crashes up to 35% and reduce crashes involving fatalities and serious injuries up to 58%. These trends were either maintained or improved with time⁵
- » Intersections where an engineering study concluded that engineering improvements, driver-education initiatives, or other countermeasures would not be effective in reducing crashes from red-light running⁷
- Speed cameras:
 - » School zones
 - » Construction zones
 - » Residential areas
 - » Areas near parks
 - » Areas with many seniors
 - » Areas with high levels of pedestrian and bicycle activity

Considerations

- Red-light cameras may increase the number of rear-end crashes at signalized intersections with cameras. (Weighed by the economic impact and severity of injuries, the study found the overall effect of cameras positive)⁶
- Safeguarding legal due process in automated enforcement and penalization

Appropriate Contexts

- Implementable on a city- or countywide basis with state authorization
- Locations where red-light running and speeding impair walkability
- Red-light cameras:
 - » High-risk intersections, determined by the number of crashes or an analysis of the number of crashes attributable to red-light running; citation data; or complaints

Guidance

- Involve stakeholders, including state department of motor vehicles, state and local police, traffic engineering department, public attorney's office, public information office, the judiciary, community representatives, advocates, and the photo-enforcement services contractor
- Avoid the appearance of conflict of interest: Verify and oversee the contractor and compensate the contractor solely on the value of the equipment or services provided
- Avoid appearance of a money grab: Emphasize deterrence through signage and public outreach, avoid excessive penalties and late fees, oversee site selection, adequately fund camera equipment and operations to avoid dependence on fine revenue, install supplemental speed-limit signs along enforced routes, and conduct audits
- Run the program past a legal review
- Run an awareness campaign before implementation and on an ongoing basis
- Evaluate program performance and results

Professional Consensus

- Red-light cameras are endorsed by Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA) within a comprehensive approach to intersection safety⁸
- Speed cameras are endorsed by the FHWA and NHTSA within a comprehensive approach to speed management⁹
- FHWA published guidance on red-light-camera systems¹⁰
- FHWA published guidance on speed-camera systems¹¹



Automated enforcement in Chicago, IL. Source: Tripp, Flickr.

Examples

More than 550 U.S. localities run red-light-camera programs, including¹²:

- Charlotte, NC
- [Chicago, IL](#)
- [New York, NY](#)
- [Sacramento, CA](#)
- [San Diego, CA](#)

More than 111 jurisdictions installed speed cameras, including¹³:

- [Arizona](#)
- Colorado
- Maryland
- Oregon
- [Washington](#)



A red-light camera installed in Manchester, CT. Source: Mira Hartford, Flickr

1. Insurance Institute for Highway Safety News Release: Camera enforcement in 14 large cities reduces rate of fatal red light running crashes by 24 percent. February 1, 2011. <http://www.iihs.org/news/rss/pr020111.html>
2. Safety Evaluation of Red-Light Cameras. April 2005. <http://www.fhwa.dot.gov/publications/research/safety/05048/12.cfm>
3. Hu, Wen; McCartt, Anne T., Teoh; Eric R. Effects of Red Light Camera Enforcement on Fatal Crashes in Large US Cities. Insurance Institute for Highway Safety. February 2011.
4. Insurance Institute for Highway Safety News Release: Camera enforcement in 14 large cities reduces rate of fatal red light running crashes by 24 percent. February 1, 2011. <http://www.iihs.org/news/rss/pr020111.html>
5. Wilson, C.; Willis, C.; Hendrikz, J.K.; Le Brocq, R.; Bellamy, N. 2010. Speed cameras for the prevention of road traffic injuries and deaths. The Cochrane Library 2010, Issue 10. Oxfordshire, England. As reported by the Insurance Institute for Highway Safety. http://www.iihs.org/research/qanda/speed_lawenf.aspx#cite11
6. Safety Evaluation of Red-Light Cameras. April 2005. <http://www.fhwa.dot.gov/publications/research/safety/05048/12.cfm>
7. Federal Highway Administration National Highway Traffic Safety Administration. Guidance for using red light cameras. March 2003. http://www.google.com/url?sa=t&rct=j&q=red%20light%20cameras%20where%20location%20appropriate&source=web&cd=4&ved=0CF0QFjAD&url=http%3A%2F%2Fwww.nhtsa.gov%2Fpeople%2Fjury%2Fenforce%2Fguidance03%2Fguidancereport.pdf&ei=9W6T-LuGvHG6AHgwbTpCg&usq=AFQjCNHoxs8Q_Erupdra_jbFAEygQyxM1A
8. Federal Highway Administration. Office of Safety. Red-Light Camera Q & As. <http://safety.fhwa.dot.gov/intersection/redlight/cameras/qas.cfm#q3>
9. Federal Highway Administration. Executive Summary. Speed Enforcement Camera Systems Operational Guidelines. March 2008. http://safety.fhwa.dot.gov/speedmgmt/ref_mats/fhwasa09028/5.htm
10. Federal Highway Administration. Red Light Camera Systems. <http://safety.fhwa.dot.gov/intersection/redlight/cameras/fhwasa05002/fhwasa05002.pdf>
11. Federal Highway Administration. Speed Enforcement Camera Systems Operational Guidelines. March 2008. <http://www.google.com/url?sa=t&rct=j&q=speed%20enforcement%20camera%20systems%20operational%20guidelines&source=web&cd=1&ved=0CFMQFjAA&url=http%3A%2F%2Fwww.nhtsa.gov%2Fdot%2FNHTSA%2FTraffic%2F520Injury%2520Control%2FArticles%2FAssociated%2520Files%2F810916.pdf&ei=4Ni6T93yNs-d6AHrpZjmCg&usq=AFQjCNEHvEA8gKO2BF3Q5IKhNmGQJcnaQ>
12. Insurance Institute for Highway Safety. Communities using red light and/or speed cameras. May 2012. <http://www.iihs.org/laws/cameramap.aspx>
13. Ibid.

Strengthen Street-Crossing Ordinances

Definition This tactic entails amending existing state vehicle and traffic statutes to give pedestrians a way to signal to oncoming traffic that they intend to cross before having to step into the roadway.

Benefits

- Allows pedestrians to exercise their right-of-way without putting themselves in the path of oncoming vehicles
- Teaches safe pedestrian practices to children and seniors
- Clarifies the law for police officers

Considerations

- Legal fees to create the statute amendment
- Resource requirements to advocate for the amendment and build legislative support

Appropriate Contexts

- Local legislature or ordinance
- State legislature

Guidance

- Retain all pedestrian right-of-way statute language
- Add a definition of "crossing the roadway" to the definitions section of vehicle and traffic laws
- Clarify and expand the definition of "crossing the roadway" to mean when any part or extension of a pedestrian—eg., foot, cane tip, wheelchair, leashed animal, or crutch—moves into the roadway and the pedestrian intends to cross
- Create a strategic coalition with nontraditional partners, including the disabled community, seniors, advocates for the blind, and dogwalkers

Professional Consensus

- In the absence of endorsements from national associations or governmental departments, cities are turning to best practices employed by other municipalities

Examples

- Portland, OR



Governor John Kitzhaber of Oregon signing the street-crossing bill into law August 24, 2011.
Source: Ray Thomas, Swanson, Thomas & Coon

Case Study: Oregon

Ray Thomas, an Oregon bicycle and pedestrian lawyer, and the Willamette Pedestrian Coalition had been trying for years to induce drivers to yield more consistently to pedestrians in crosswalks. Oregon's existing statute specified that a driver shall stop and remain stopped for a pedestrian when he or she is crossing the road in a crosswalk.

But how could pedestrians "trigger" this statute to get drivers to yield to them—without putting themselves into the path of an approaching car? So Thomas and the Willamette Pedestrian Coalition tried to clarify the existing statute language regarding pedestrian rights-of-way in crosswalks to make it easier for drivers to understand and the police to enforce. The team considered the phrase "crossing the roadway" and

proposed adding the term to the statute's definitions section. The proposed definition listed descriptive scenarios that would indicate to drivers when pedestrians were "crossing the roadway."

ORS 801. "Crossing" or "Cross" the Roadway in a Crosswalk.

Crossing or Cross the Roadway in a Crosswalk occurs when any part or extension of a pedestrian, including but not limited to a foot, wheelchair wheel, cane, crutch, bicycle tire, or leashed animal, moves into the roadway and the pedestrian intends to cross the roadway.

Each scenario was designed to correspond to a supporting constituency, e.g., "foot" for slow-walking seniors, "bicycle wheel" for cyclists, "wheelchair" for the disabled constituency, "cane" for the blind community, and "leashed animal" for dog walkers. Thomas added the last phrase "and the pedestrian intends to cross the roadway" in response to political concerns that pedestrians might try to mislead drivers contrary to the bill's intention.

Thomas and the Willamette Coalition then created a coalition based on these constituencies and hired a lobbyist, whose salary was paid for by the Willamette Pedestrian Coalition and Bicycle Transportation Alliance. While this bill was making its way through the legislative process, Oregon experienced a political backlash against the cyclist community. As a result, Thomas highlighted the elderly, disabled, and blind advocates within the coalition. He wrote a public letter of support and attached it to the cover of the bill draft, which proved instrumental in contextualizing legislation for politicians. Once the bill made it to the legislative council, its language was adopted wholesale. Thomas also prepared testimonials for the public hearing about the bill, many of which came from former clients he'd represented over the years. The bill passed both houses, and Governor Kitzhaber signed it into law August 24, 2011.¹

1. Thomas, Ray. Personal correspondence. January 24, 2012.

Install Pedestrian-Traffic Managers at Problematic Intersections

Definition Pedestrian-traffic managers (PTMs) are trained, uniformed individuals that direct pedestrians across intersections or along crowded, mixed-use paths where conflicts between pedestrians, cars, and/or bicycles are frequent. While they are not authorized to direct vehicle traffic, pedestrian managers can use their arms, voices, whistles, or physical barriers to establish boundaries between modes of transportation.

Benefits

- Reduces pedestrian-vehicle conflicts
- Improves quality of life for residents by decreasing honking and blocked intersections
- Clarifies and reinforces safe road behavior

Considerations

- Potential difficulty in establishing authority with pedestrians and drivers
- Manpower and supervision costs

Appropriate Contexts

- Intersections with high rates of collisions between pedestrians, vehicles, and/or bicycles
- Congested intersections where vehicles frequently block crosswalks
- Any intersection with high volumes of pedestrian and/or vehicle traffic, including construction sites, shopping malls, special-event venues, schools, hospitals, and religious institutions

Guidance

- Create a committee of traffic engineers, law enforcement offices and members of the community to identify problem locations and oversee pedestrian-traffic management in those areas
- Consider the following when assigning PTMs:
 - » Vulnerable pedestrians
 - » Width of the street and/or number of lanes
 - » Length of sight distance
 - » Vehicle speeds
 - » Presence of traffic signals, signals, and pavement markings
 - » The number of safe gaps in traffic
 - » Volume of traffic and pedestrians

- Hire pedestrian managers with experience in managing people and vehicles, such as retired traffic-enforcement agents or police officers
- Train employees using nationally recognized traffic safety standards
- Train employees using classroom and field exercises covering:
 - » Basic traffic laws including pavement markings and signage
 - » Work-zone safety elements
 - » Proper use of traffic signs and signals
 - » Methods of signaling drivers and taking advantage of gaps in traffic
 - » Crossing procedures and way to teach them to pedestrians
 - » Site-specific traffic factors and potential traffic hazards
 - » Professional work responsibilities
 - » Proper use of safety equipment
 - » Procedures for crashes
- Design mandatory pedestrian-manager uniforms to be clearly visible and identifiable to both drivers and pedestrians
- Differentiate the mandatory pedestrian-manager uniforms from those of regular law-enforcement officers!

Professional Consensus

- The 2009 Manual on Uniform Traffic Control Devices (MUTCD) provides guidance on school crossing guards but doesn't address pedestrian management

Examples

- [New York, NY](#)



Pedestrian-traffic managers on the streets of New York, NY. Source: Sam Schwartz Engineering

Case Study: New York

The streets leading up to the Holland Tunnel in Manhattan experience daily traffic congestion: Cars routinely block intersections and crosswalks, forcing pedestrians to weave in between trucks and vans to cross the road. These traffic problems are especially acute along the six lanes of Varick Street, where blocked intersections prevent cross-street traffic from getting through, leading to excessive horn honking.

The Hudson Square Connection, which is the affected neighborhood's Business Improvement District (BID), hired Sam Schwartz Engineering (SSE) pedestrian-traffic managers (PTMs) at select locations along Varick Street to keep intersections and crosswalks clear to improve pedestrian safety and keep cross-street traffic moving. SSE then compared traffic and quality-of-life conditions with and without PTMs on Varick Street. Its study showed that PTMs helped reduce crosswalk blockages by up to 43%, intersections blockages by up to 61%, and horn honks by up to 53%. In addition to the measured benefits, field observations showed reduced jaywalking and generally safer pedestrian behavior at the locations with PTMs.²



Pedestrian-traffic managers on the streets of New York, NY. Source: Sam Schwartz Engineering

1. Sam Schwartz Engineering. Pedestrian & Traffic Management: Program Guidelines.
2. Sam Schwartz Engineering. Pedestrian & Traffic Management on Varick Street: Pilot Program Evaluation Study. January 24, 2012. I.

Organize **Pedestrian Safety-Enforcement** Operations

Definition Pedestrian safety-enforcement operations are police-run public-education and enforcement efforts to improve driver compliance to pedestrian yield laws. During an operation, one police officer or community volunteer acts as a pedestrian while being monitored by another officer who then pulls over non-yielding drivers to give warnings or citations.

Benefits

- Raises driver awareness of pedestrian right-of-way
- Raises public awareness of pedestrian right-of-way
- Reduces number of pedestrian complaints at intersections
- Reduces collisions, injuries, and economic losses associated with crashes

Considerations

- Providing adequate staffing and funding
- Potential negative public reaction to enforcement operation
- Long-term impacts of operation on pedestrian safety

Appropriate Contexts

- Local
- State

Guidance

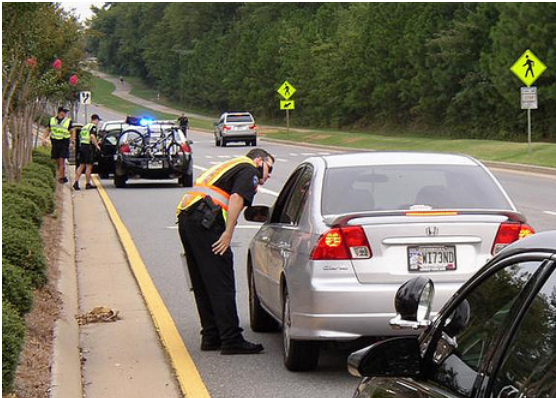
- Seek funding sources such as National Highway Traffic Safety Administration grants, which are administered by a state highway-safety agency
- Schedule operations in the daytime in clear weather
- Select locations where pedestrian accidents have occurred and/or where pedestrians report difficulty getting across the street
- Measure and calculate braking and sight-line distance for each operation in advance to ensure accurate citations
- Notify the public in advance of the time, location, and purpose of the planned pedestrian safety-enforcement operation through press releases, news articles, and TV reports to avoid charges of entrapment and to promote awareness of pedestrians

- Notify elected officials and invite them to witness the operation
- Invite local departments of transportation or pedestrian-advocacy groups to provide educational and safety materials at the operation
- Reach out to pedestrian advocates, police agencies, and local government
- Alert approaching drivers of the operation to emphasize the educational aspect of event
- Assign a minimum of five officers to the operation location:
 - » One to two plainclothes officers or community volunteers (pedestrian decoys)
 - » One spotter
 - » Two or more uniformed officers in chase vehicles
- Provide radios to all officers in the operation for better coordination
- Clothe decoy pedestrians in highly visible clothing. Effectiveness does not depend on whether the officer is in uniform or plainclothes
- Station another officer nearby to pull over and issue warnings or citations (possibly with training programs instead of fines) to any violators
- Record the operation to show in court, if needed
- Inform drivers of their right to contest the citation in court
- Document and publicize the operation and its results to the public and media before, during, and afterward'

Professional Consensus

- Pedestrian enforcement operations are eligible for federal, state, and local transportation-safety grants

Case Study: Las Vegas



Las Vegas, NV, has tried to address its high rates of pedestrian fatalities through targeted enforcement operations to reinforce safe driver and pedestrian behaviors. Nevada funds these enforcement operations by making pedestrian safety eligible for targeted-enforcement federal highway safety grants. Staffing limitations are addressed through the Joining Forces program, which is a multi-jurisdictional law-enforcement program created by a statewide memorandum of understanding that allows law-enforcement officers in one state jurisdiction to issue tickets in another for targeted-enforcement operations concerning driving under the influence, speed, seat belts, and pedestrian safety.

Law-enforcement officers work with UNVL Safe Community Partnership (SCP) program, a local transportation-safety-advocacy organization, to plan pedestrian safety-enforcement operations. Officers select the location of the operation in high risk areas (based on ongoing data collection) and run the operation based on a two-day training provided by SCP.

Before and after each event, SCP performs media outreach, which is a key component of the operation's success: The goal of an individual operation isn't so much to ticket offending drivers, but to publicize the need to yield to crossing pedestrians. The more media attention a pedestrian safety-enforcement operation receives, the more that safety message is reinforced to the general public. The most recent operation consisted of an officer in a leprechaun costume (courtesy of SCP) walking in Las Vegas crosswalks before St. Patrick's Day. The media picked up the story and ran with it: More than 80 articles were published nationwide and 175 million viewers were estimated to have seen it on the evening news.²

Top: Police in Alpharetta, GA, conducting a pedestrian safety-enforcement operation. Source: PEDS.org, Flickr

Center: Georgia State University Police conducting a pedestrian safety-enforcement operation, Atlanta, GA. Source: PEDS.org, Flickr

Bottom: Georgia State University Police conducting a pedestrian safety-enforcement operation, Atlanta, GA. Source: PEDS.org, Flickr

Examples

- [Chicago, IL](#)
- [Madison, WI](#)
- [Oregon](#)
- Utah
- [Washington, DC](#)

1. Oregon Department of Transportation. Targeted Pedestrian Enforcement Operations Guidebook. April 25, 2001.

2. Erin Breen. UNLV Safe Community Partnership. Personal correspondence. May 8, 2012.



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