

Non-motorized Transportation

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Introduction

Enabling safe, convenient, and comfortable non-motorized transportation options for all of our region’s residents will help to create vibrant communities, improve equity and public health, and support local economies. For the purpose of this report, non-motorized transportation refers to two modes—walking and bicycling—which form key elements of the regional transportation system. Since GO TO 2040’s adoption in 2010, interest in walking and biking has grown among commuters, residents, and municipal governments. This report highlights the major findings of CMAP’s analysis of non-motorized transportation infrastructure, mode share, and policy in the region. It is divided into four sections: safety for pedestrians and bicyclists, trends in bicycling, trends in walking and the pedestrian environment, and an estimate of the walkability of different parts of the region.

As more pedestrians and bicyclists take to the streets, sidewalks, and trails, data reveals how several important factors affect their safety. Analysis shows how infrastructure, demographics, and other factors correlate with the locations and timing of crashes. For example, pedestrians are more than twice as likely to be hit by cars in places without sidewalks. Areas with concentrations of low-income minority populations and limited English speaking populations have higher serious and fatal crash rates than communities without such concentrations. Understanding where crashes are happening, at what times of day, and on what types of roadways can provide insight into needed improvements.

Many of our current transportation challenges are a result of past policies that have prioritized quick access by motor vehicles over other modes. Walkable communities and safe, connected networks for bicycling can reduce the number of automobile trips, ease congestion, and improve the overall performance of the transportation system. Knowing what steps local communities have successfully taken to improve conditions for walking and bicycling will provide insight for other communities working to encourage non-motorized travel.

Safety for pedestrians and bicyclists

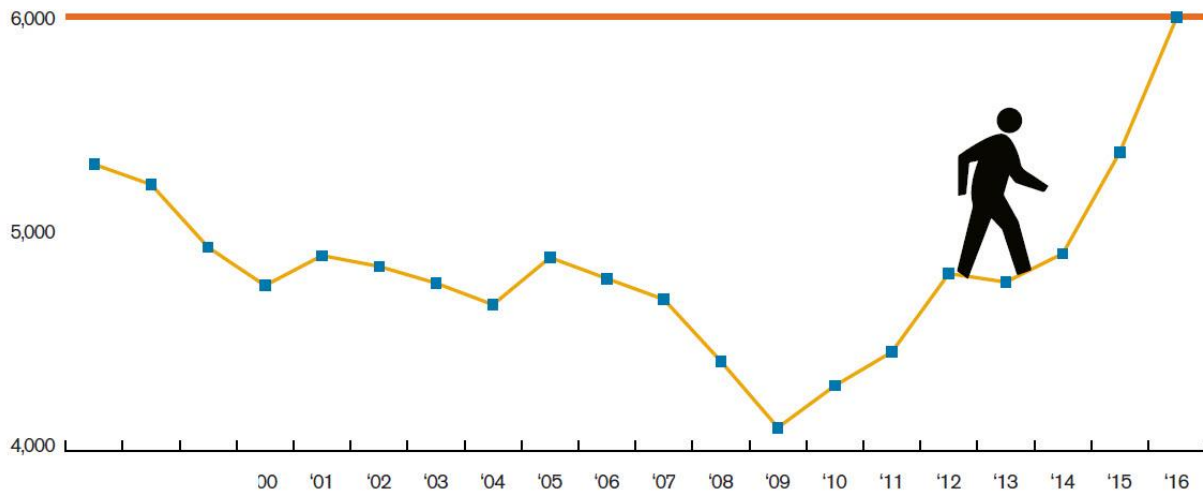
Many factors influence the safety of road users, including street design, traffic enforcement, behavior, and policies. According to the National Highway Traffic Safety Administration¹, of the total number of traffic fatalities, the proportion of people killed “inside the vehicle” (passenger car, light truck, large truck, bus, and other vehicle occupants) has declined from a high of 80 percent (1996 – 2000) to 68 percent (2012-15). At the same time, the proportion of people killed “outside the vehicle” (motorcyclists, pedestrians, bicyclists, and other non-occupants) has increased from a low of 20 percent (1996 – 2000) to a high of 32 percent (2012 – 15). Specifically related to pedestrian safety, the number of pedestrian deaths rose by an unprecedented 25 percent between 2010 and 2015, despite an overall 6 percent increase in total

¹ National Highway Traffic Safety Administration, “2015 Motor Vehicle Crashes: Overview,” (2016). <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812318>.



traffic fatalities in the U.S.² The steepest increases nationally occurred in 2015 and 2016, a period for which we do not yet have regional data (Figure 1). The latest trends point toward cell phone distraction^{3 4 5} as a probable cause of the sharp rise in fatalities. However, without regular review of cell phone usage after a crash, it is impossible to confirm.

Figure 1. Annual U.S. Pedestrian Fatalities (1997-2016)



*2016 estimate based on preliminary data

Source: Governors Highway Safety Association, 2017.

A number of factors limit the analysis of pedestrian and bicyclist safety data. Most significantly, there is no comprehensive data showing how many people are walking and riding bicycles for transportation. Crash data shows the number of people affected by crashes, but not the total number of people walking or biking; the lack of “exposure” data means researchers cannot determine the percentage of total pedestrians and bicyclists affected by crashes. Some researchers suggest that as more people travel by bicycle or on foot, there is a safety benefit: “safety in numbers.” Unfortunately, this is hard to verify when the only available data is for crashes; safer areas can appear as unsafe. For instance, while the Loop may be one of the safer places to walk, it appears as a high crash location due to the sheer numbers of people walking.

² Governors Highway Safety Association, “Pedestrian Traffic Fatalities by State.” *Spotlight on Highway Safety* (2016). www.ghsa.org/resources/spotlight-peds17.

³ National Safety Council. “Understanding the Distracted Brain: Why Driving While Using Hands-free Cell Phones is Risky Behavior.” April 2012. <http://www.nsc.org/DistractedDrivingDocuments/Cognitive-Distraction-White-Paper.pdf>.

⁴ Cambridge Mobile Telematics, “New data from Cambridge Mobile Telematics show distracted driving dangers,” (2017). <https://www.cmt telematics.com/press/new-data-cambridge-mobile-telematics-shows-distracted-driving-dangers/>.

⁵ National Highway Traffic Safety Administration. “Traffic Safety Facts: Distracted Driving 2015.” <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812381>.

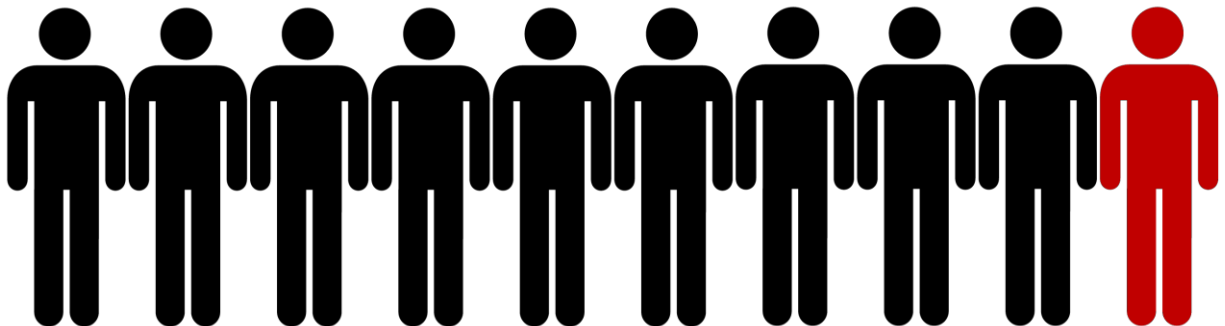
The percentage of pedestrians hit by automobiles may be low, but the crash rate cannot be determined without knowing how many people are walking.

Lacking data on levels of exposure, this section analyzes crash data to make general conclusions based on plausible assumptions. This section also describes the many initiatives and policies aimed at improving safety and promoting health that have emerged nationwide in response to the growing interest and safety concerns related to non-motorized transportation.

Crashes

Between 2010 and 2014, the Chicago region saw an average of twenty crashes involving pedestrians or bicyclists every day, resulting in three people per day killed or seriously injured while walking or riding bicycles (Figure 2). During this time, the annual number of fatal and serious crashes in the region declined slightly from 1,201 to 1,142, while the number of people who walk and ride bikes to work increased slightly. National numbers show increasing pedestrian fatalities in 2015 and 2016, but this data is not yet available for the CMAP region. Analysis of crash data, particularly of serious or fatal crashes involving pedestrians and bicyclists, sheds light on the temporal and spatial patterns of traffic crashes in the region.⁶

Figure 2. Number of bicyclists and pedestrians killed or seriously injured every 3 days



Every 3 days, an average of 10 people in our region suffered an incapacitating injury or were killed while walking or biking, between 2010 and 2014.

Source: IDOT Crash data for CMAP region, 2010-2014.

Cost of crashes

While the ultimate cost in a roadway crashes is paid with the loss of life, many other factors contribute to a high societal cost burden of crashes. Lost productivity, medical costs, property damage, congestion, emergency services, and legal costs are some of the ways that crashes

⁶ In this section, excepting discussion of costs associated with crashes, reference to crashes refers specifically to automobile crashes involving a pedestrian or a person riding a bicycle, with data from 2010 to 2014.

impact our communities. In 2010, the National Highway and Traffic Safety Association (NHTSA) reported that motor vehicle crashes imposed “\$277 billion in economic costs... and \$594 billion in harm from the loss of life and the pain and decreased quality of life due to injuries.” Our nation lost \$871 billion in 2010 due to roadway crashes. Preventing crashes and reducing crash severity on our roadways, especially through design treatments to protect vulnerable users, offer significant potential cost savings.

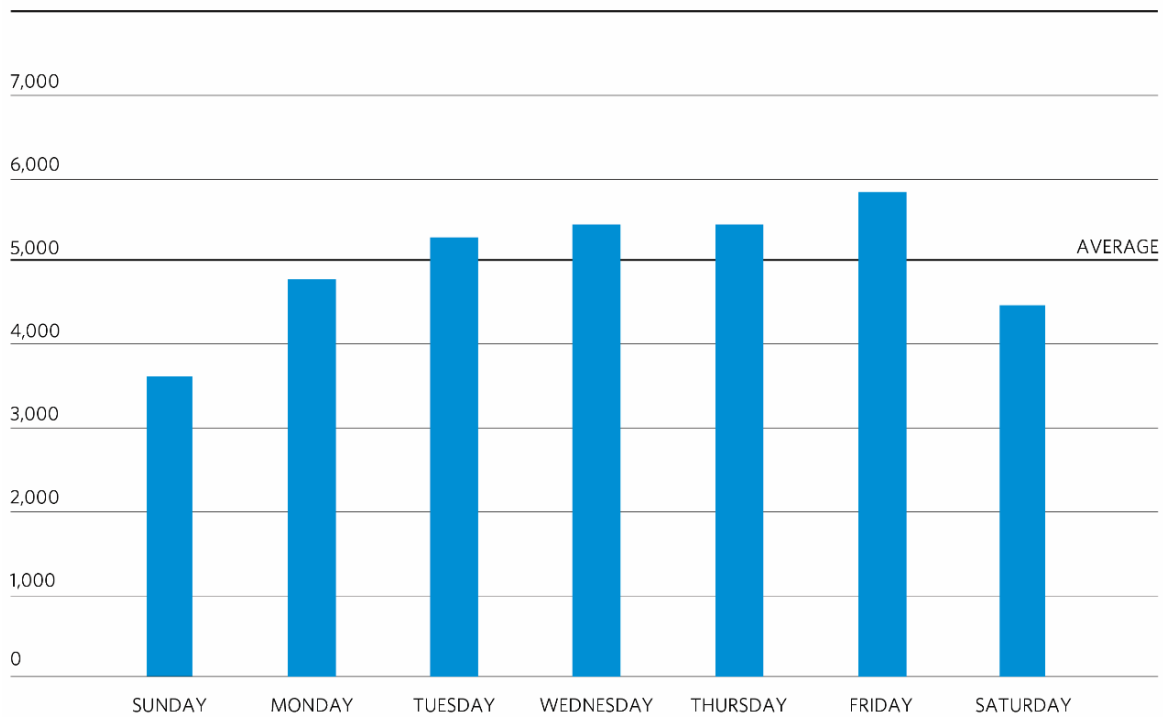
When do crashes happen?

Bicycle and pedestrian crashes are strongly correlated with weather, time of day, and how much people are driving (or vehicle miles traveled). When there are more drivers on the road, more crashes occur (Figure 3), and when there are fewer drivers, crashes are more likely to be fatal as cars tend to drive faster when there is little traffic. Fatal crashes are more common at night and on the weekends, but the greatest number of crashes take place during the evening weekday rush hour (Figure 4). At this time of day, there are many people commuting and visibility is low. Winter months, with fewer hours of daylight, see higher numbers of serious and fatal pedestrian crashes. This seasonal pattern does not hold true for crashes involving bicyclists, as the total number of cyclists drops significantly during colder weather (Figure 5).



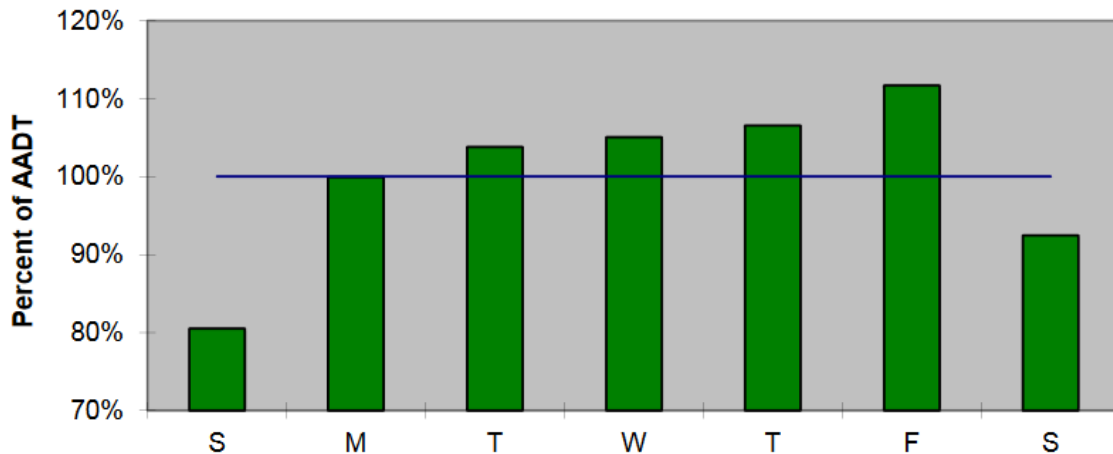
Figure 3. Comparison of bicyclist and pedestrian injuries to IDOT’s Traffic, by day of week

3a. Bicycle and Pedestrian Injuries by Day of Week (2010 – 2014)



Source: IDOT crash data, 2010-14.

3b. Traffic patterns on non-Interstate roadways, annual average daily traffic (AADT) estimates from locations counts between 2012-2015

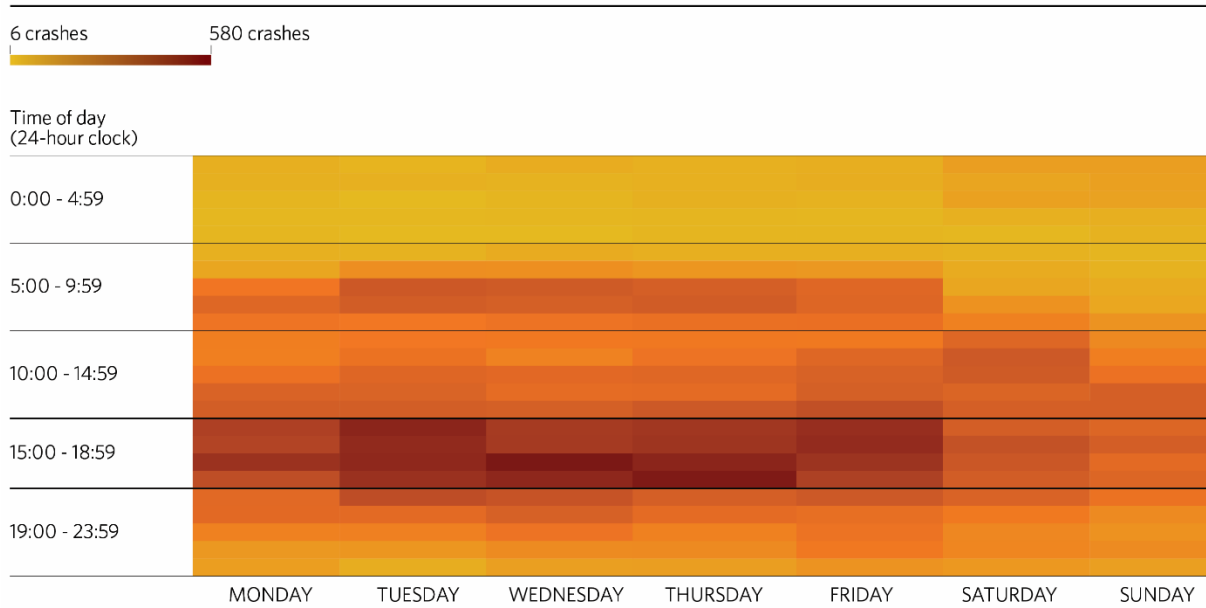


Source: IDOT 2015 Illinois travel statistics.

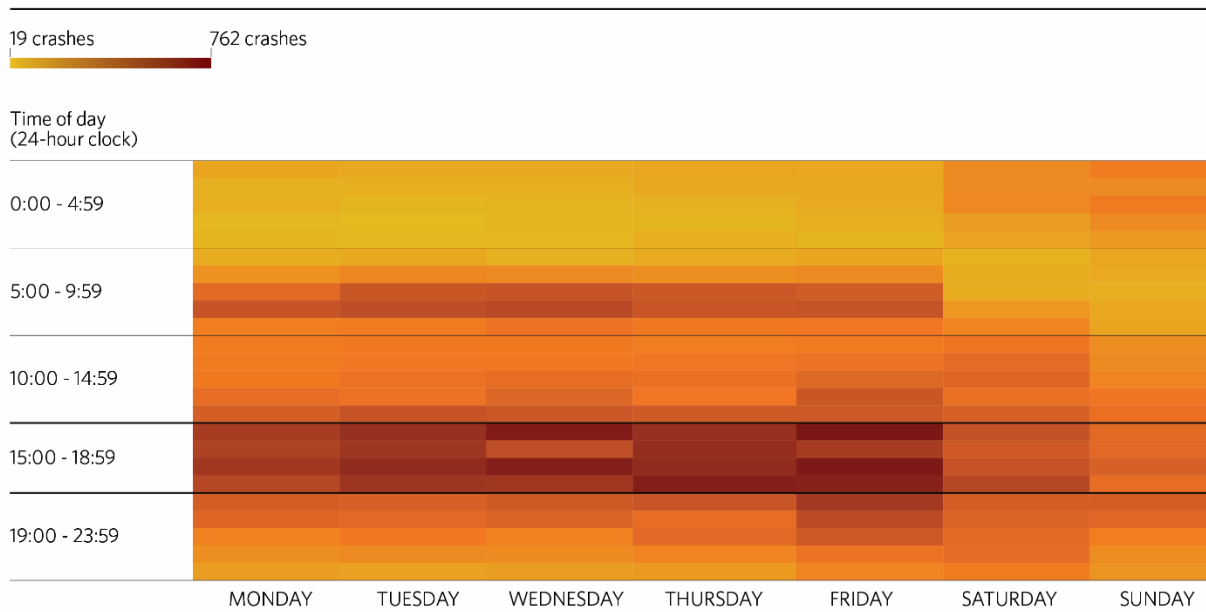


Figure 4. All crashes by time of day and day of week

Bicyclists

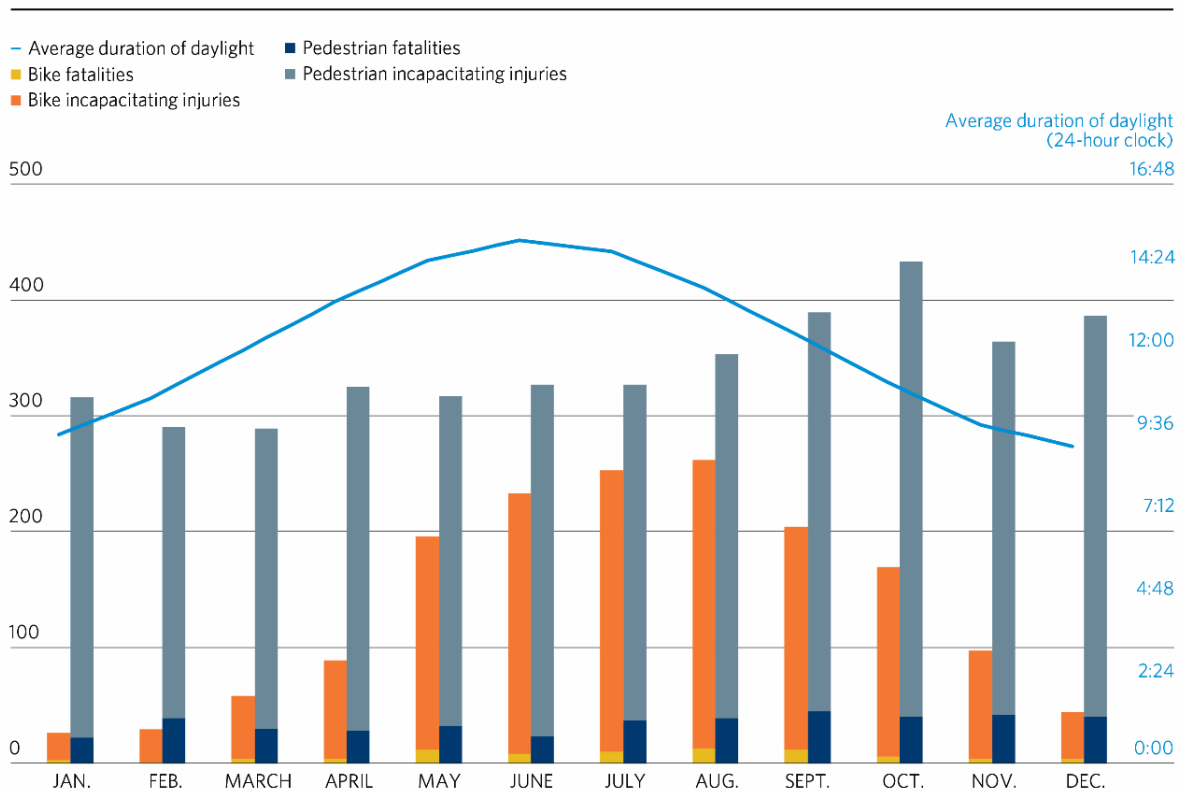


Pedestrians



Source: IDOT Crash data, 2010 – 2014

Figure 5. Incapacitating crashes, fatalities, and daylight (2010-2014)

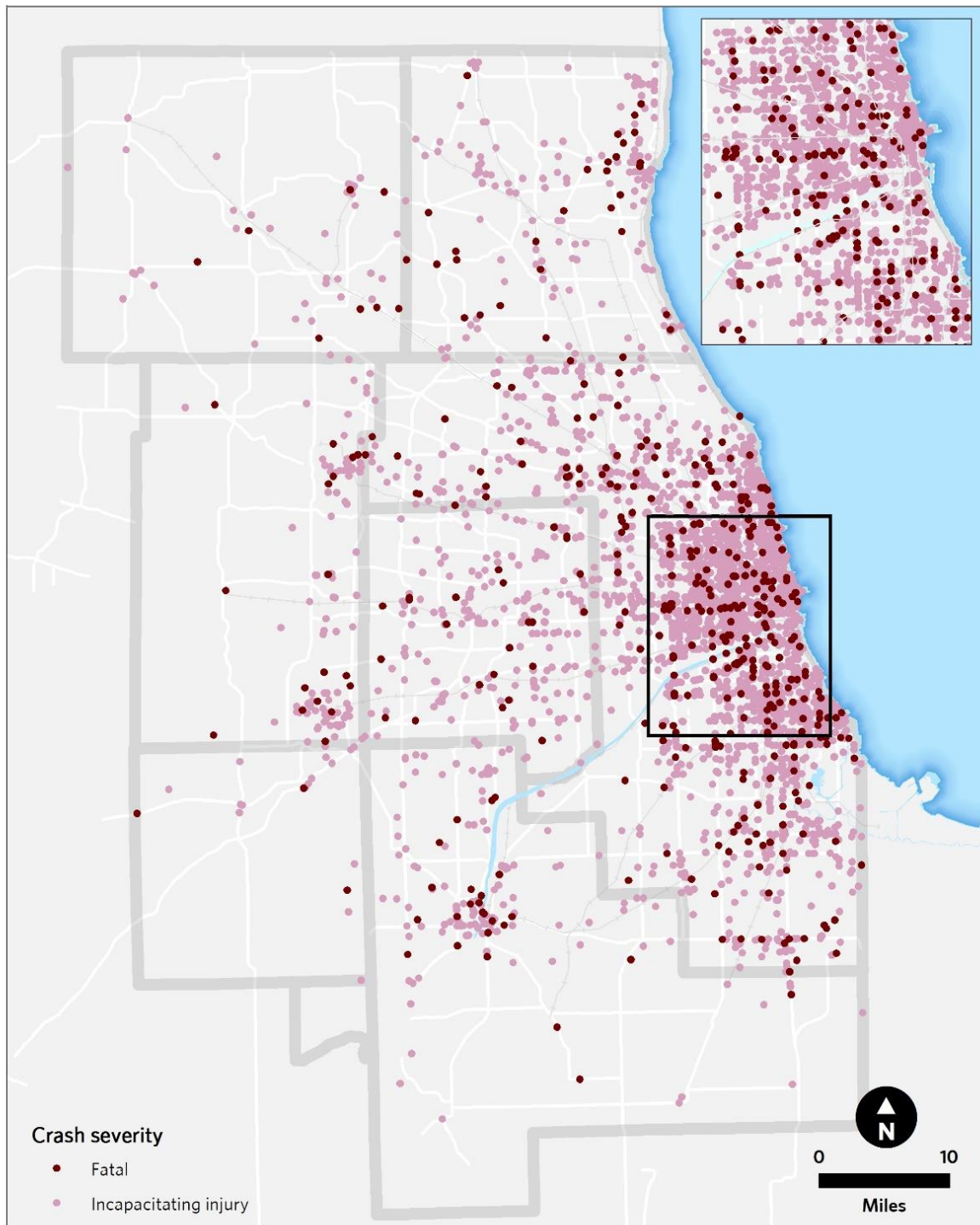


Source: IDOT Crash data for CMAP region, 2010-2014, average of sunrise/sunset times by month.

Where do crashes happen?

Our region sees more total crashes in denser parts of the region – where there are likely to be more people walking and riding bicycles. An analysis of all crashes would highlight areas with more people, but an analysis focused on incapacitating and fatal crashes presents better insight into safety conditions (Figure 6 and Figure 7). Illinois Department of Transportation (IDOT) classifies a serious crash as a crash resulting in an incapacitating injury, which prevents the injured person from walking, driving, or normally continuing the activities she or he was capable of performing prior to the injury.

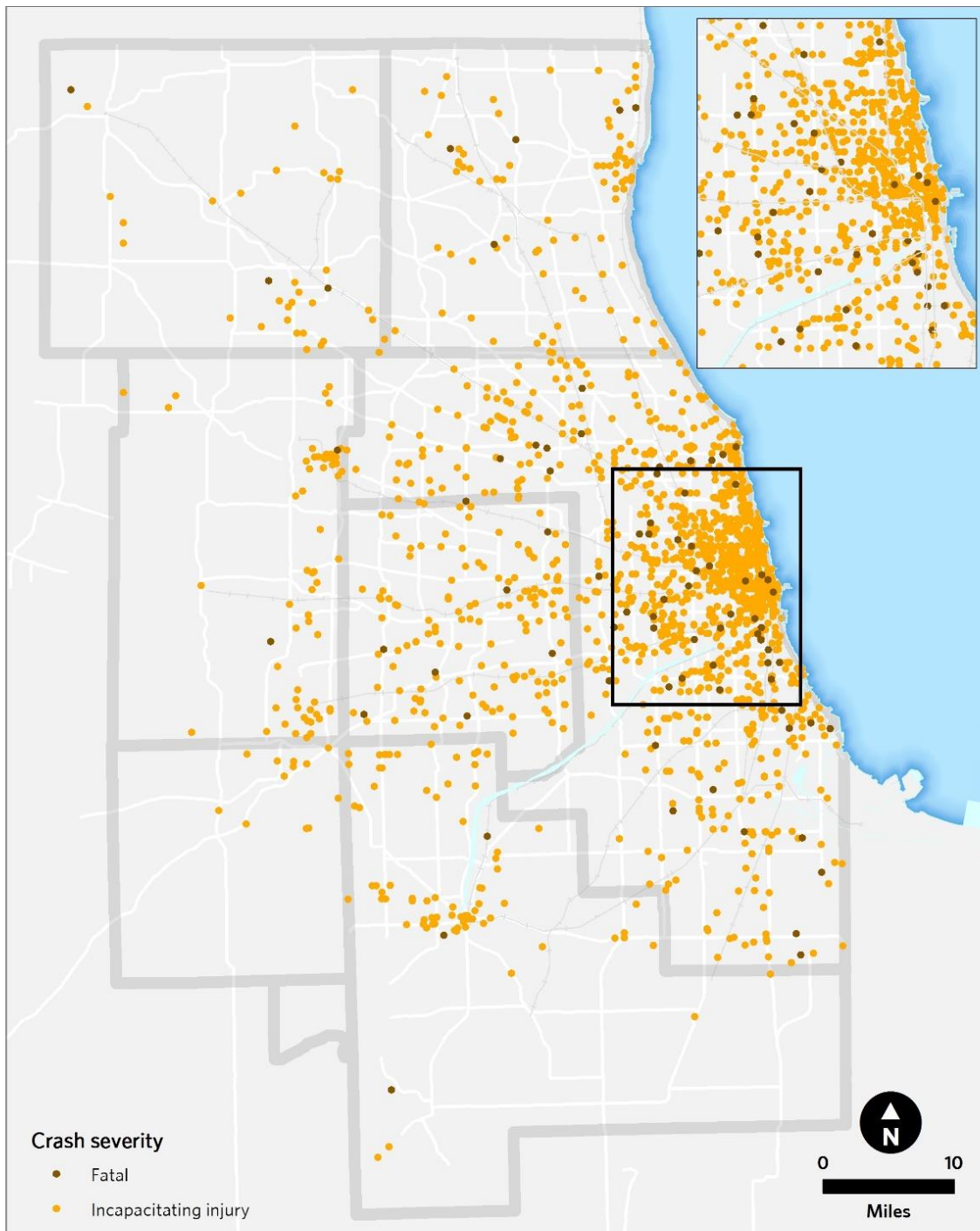
Figure 6. Serious and Fatal Pedestrian Crashes (2010-2014)



Source: CMAP analysis of IDOT crash data, 2010-2014



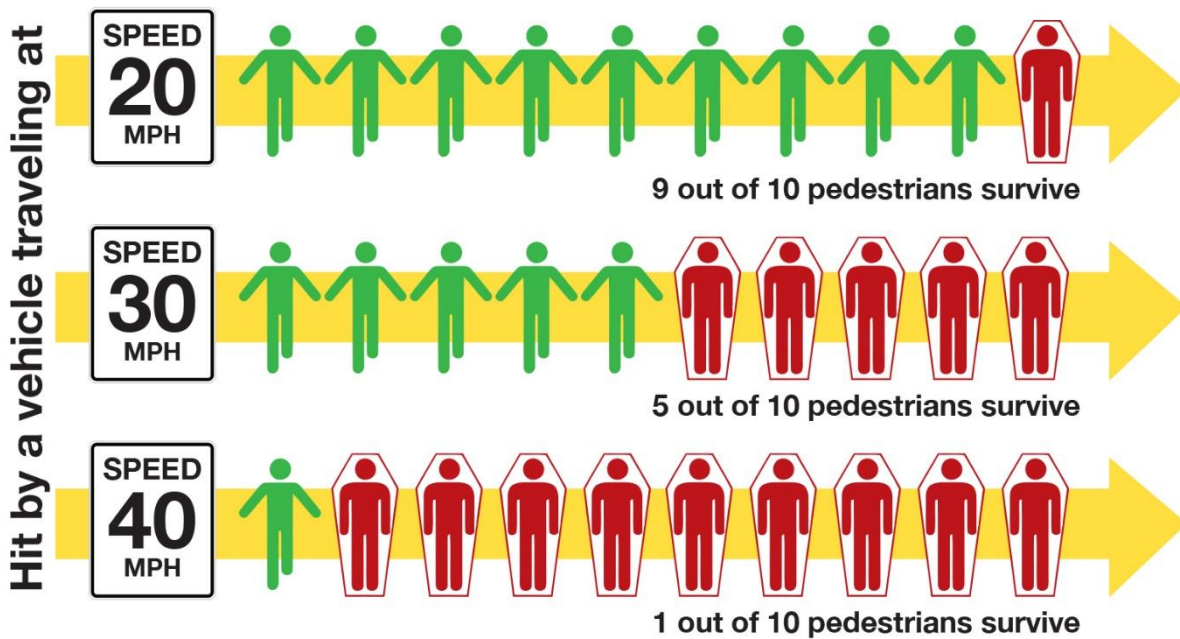
Figure 7. Serious and Fatal Bike Crashes (2010-2014)



Source: CMAP analysis of IDOT crash data, 2010-2014



Figure 8. Likelihood of survival when hit at different speeds.

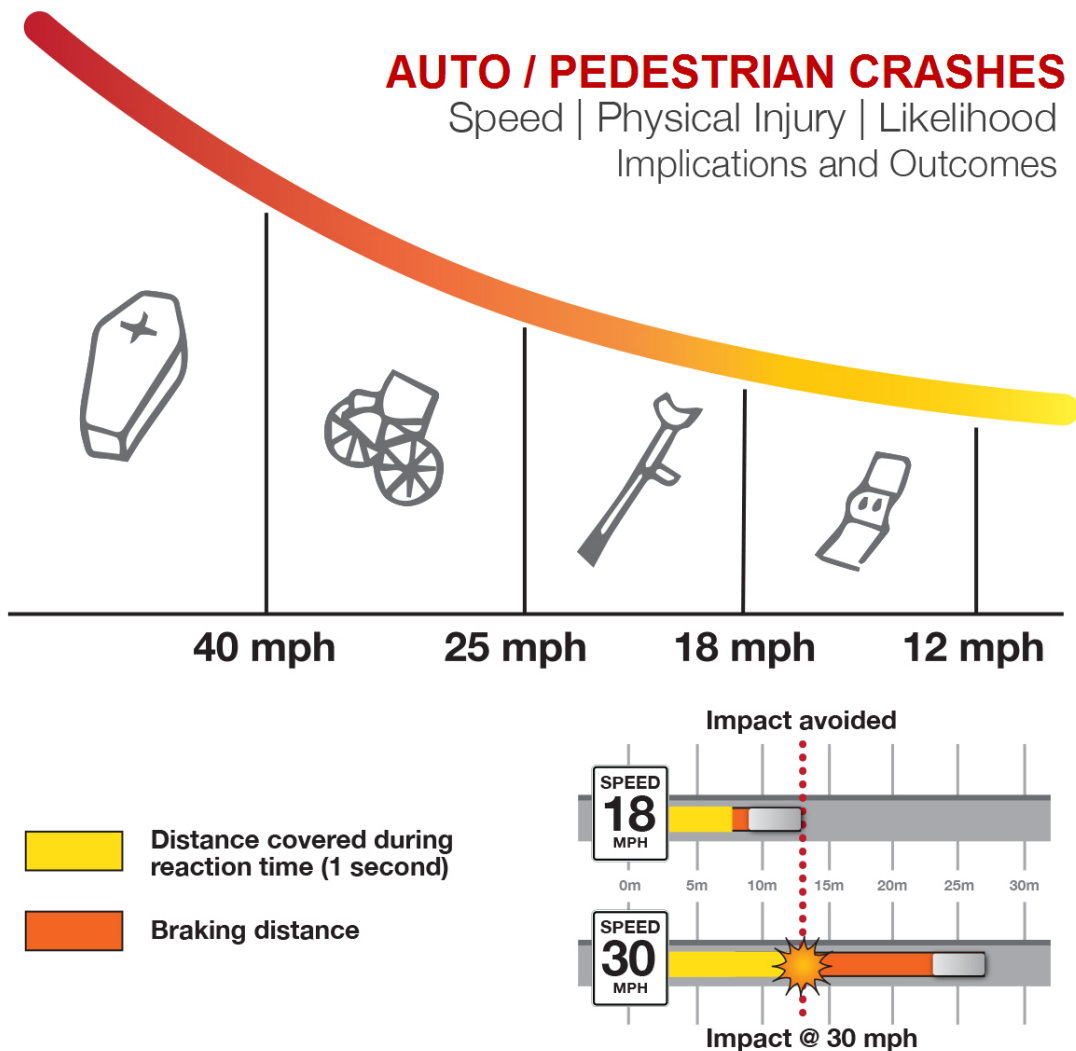


Source: Graphic designed by [Placemakers](#), used with permission.

In general, high-speed and high-volume arterials with poor pedestrian and bicycle infrastructure tend to have more serious and fatal crashes. Higher speeds increase the likelihood of serious injuries or death, especially in the case of pedestrian and bicycle crashes (Figure 8 and Figure 9).



Figure 9. Speed and crash outcomes

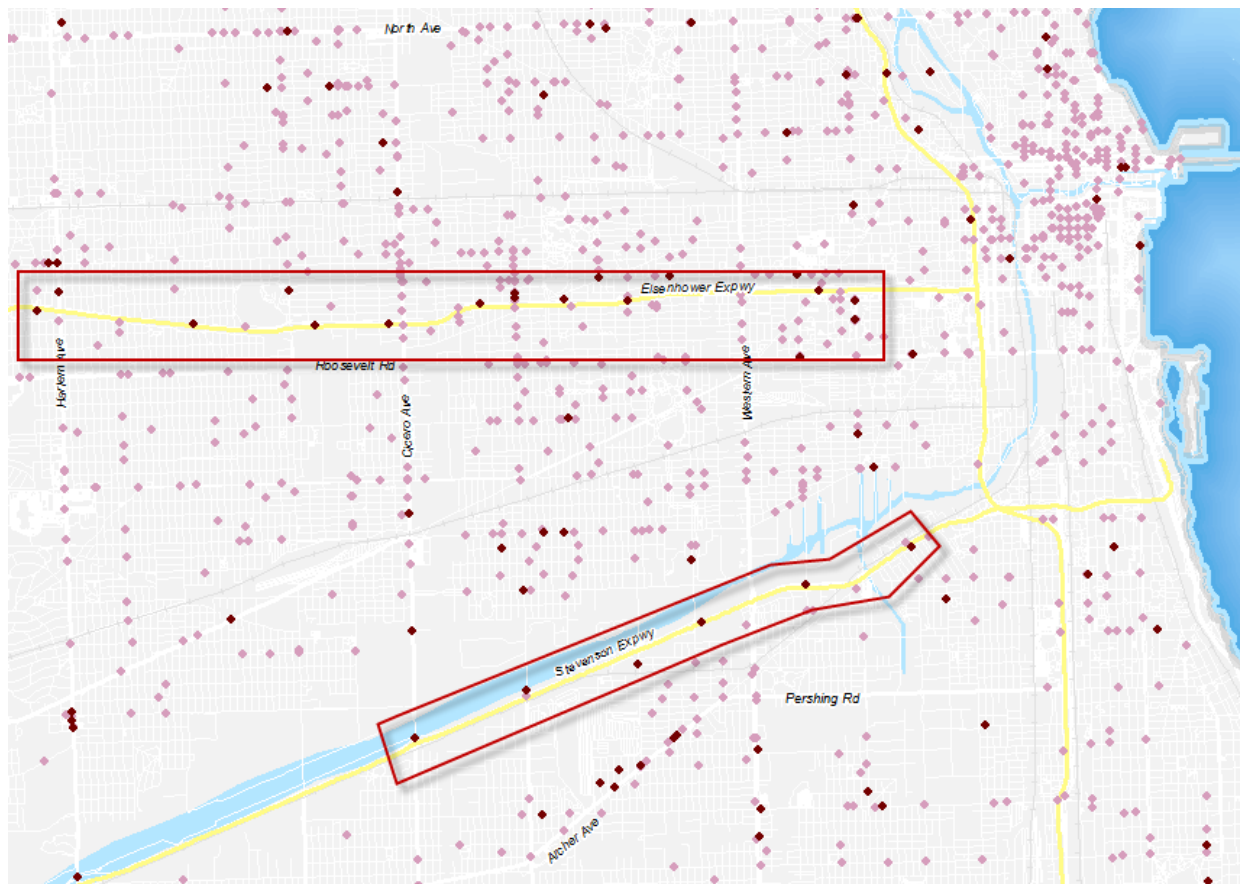


Adapted from a graphic by Complete Mobility (twitter.com/dewanmkarim)

Source: Data from Dewan Karim, City of Toronto. Graphic created by [Placemakers](#), used with permission.

Corridors with concentrations of fatal pedestrian⁷ crashes are of particular concern. Two corridors identified near the Loop appear to follow Interstate highways I-290 and I-55, at highway entrance or exit locations (Figure 10), with many fatal crashes. While there is not a strong pattern of *incapacitating* crashes at these locations, there is a pattern of *fatal* crashes. Along these corridors, cars exiting the highway may be traveling at speeds higher than the posted speed limit. Drivers exiting a high-speed road are likely to maintain high speeds upon reaching lower-speed zones, creating a safety hazard.⁸ The pattern of fatalities along I-290 and, to a lesser degree, I-55, is consistent with this traffic behavior. There may be fewer crashes along the I-55 corridor because the area is more industrial and would have fewer people walking, while the I-290 corridor has more people living on both sides of the highway.

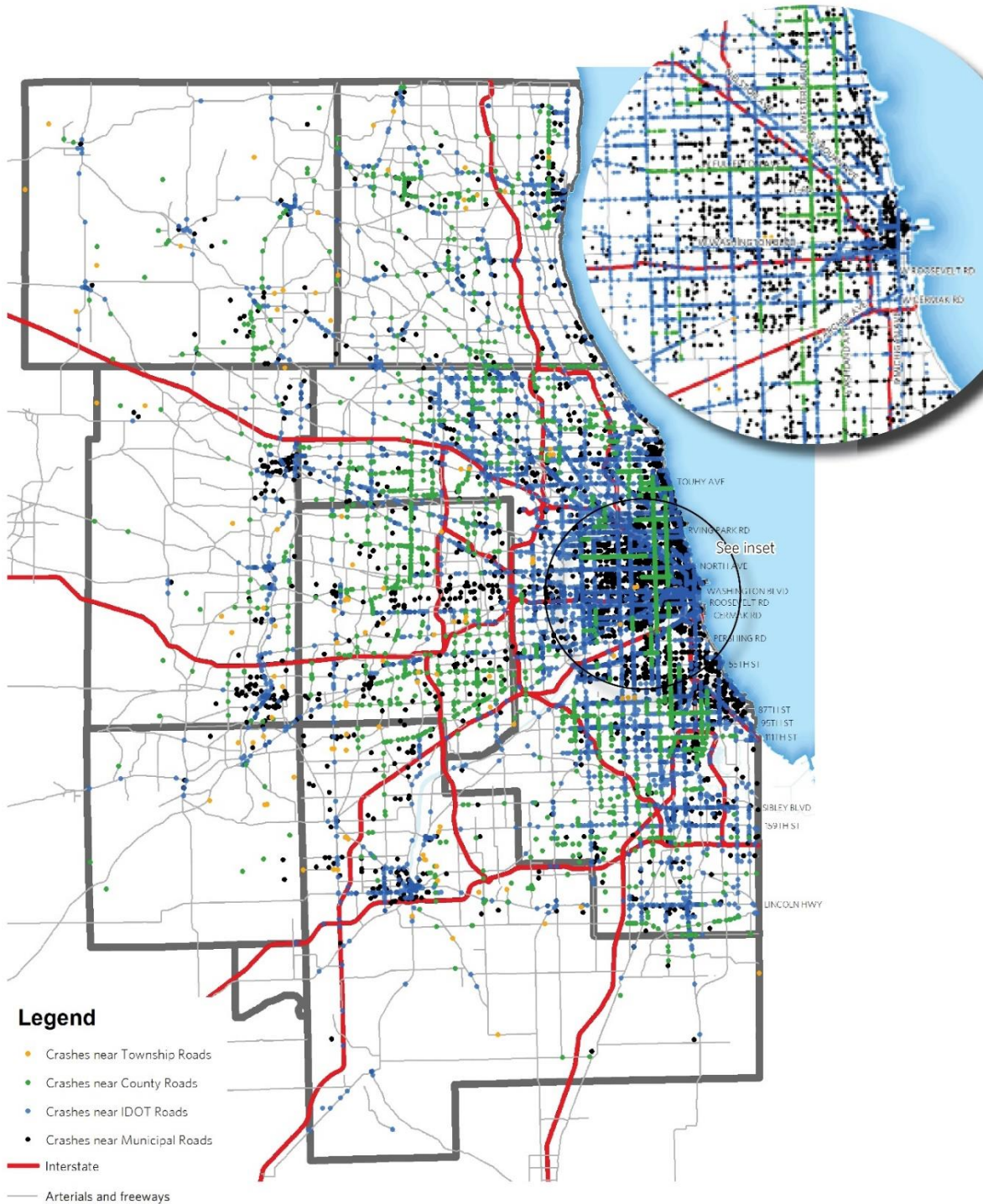
Figure 10. Select Fatal Corridors for Pedestrians



⁷ A review of all bike crashes and collisions tends to show where more people are biking, whereas fatalities are more useful for identifying patterns of dangerous conditions.

⁸ According to the author of *Traffic: Why We Drive the Way We Do (and What It Says About Us)*, “studies have shown that drivers who drove for at least a few minutes at 70 miles per hour drove up to 15 miles per hour faster when they hit a 30-miles-per-hour zone than drivers who had not been previously traveling at the higher speed.”

Figure 11. Fatal and incapacitating bicycle and pedestrian crashes by jurisdiction



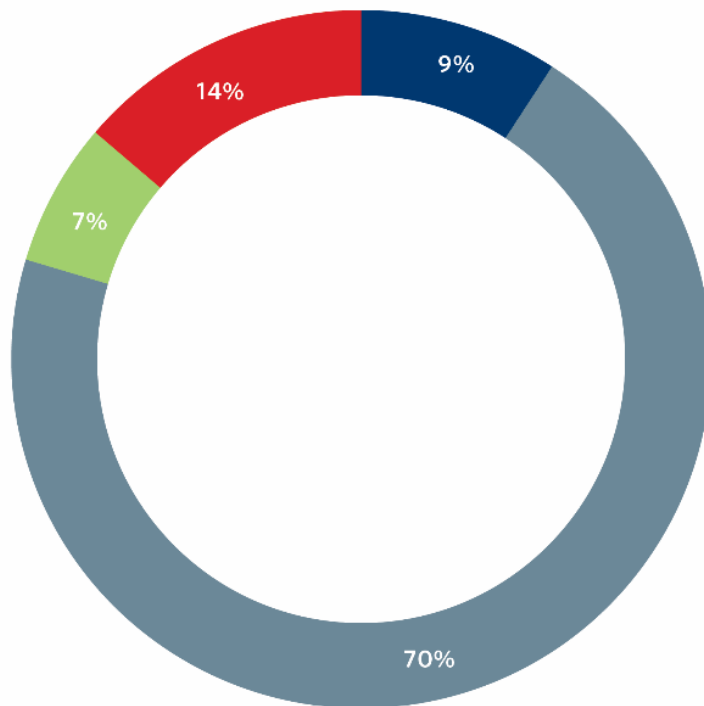
Source: IDOT Crash Data (2010-2014) and IRIS, 2012.



In the CMAP region, roads under the jurisdiction of IDOT appear to have high rates of fatal and incapacitating pedestrian and bicycle crashes per mile of roadway, as compared to local, county and township roads. IDOT roads, which are typically designed to serve through-region travel, often carry more traffic than local roads, have higher speed limits, more lanes, and wider lanes than local roads. These are all contributing factors to the occurrence of crashes and crash severity. CMAP counted all crashes that occurred within 20 feet of roadways, divided by jurisdiction – and double-counting crashes that occurred at intersections of different jurisdictions (Figure 11).

Figure 12. Regional Roadway Jurisdiction (excluding highways)

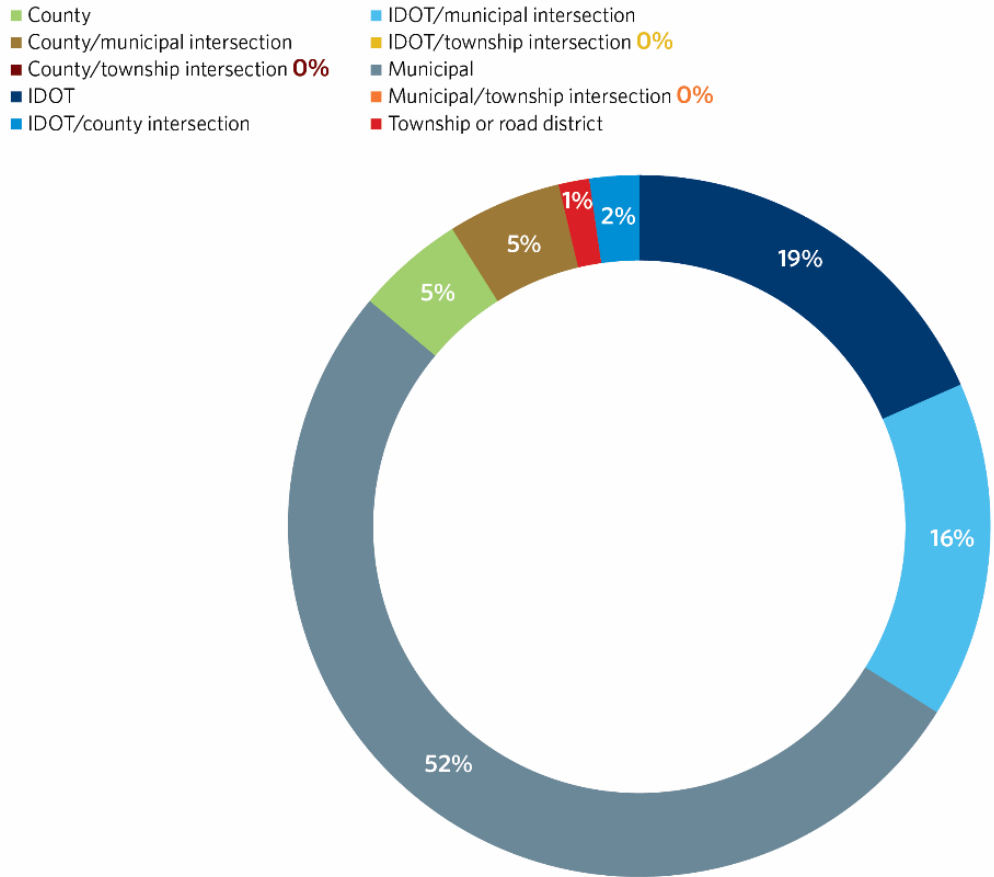
- County roads
- IDOT
- Municipal roads
- Township and road district



Source: CMAP analysis of Illinois Roadway Information System (IRIS), 2012.

While only nine percent of roadways in the region are under IDOT’s jurisdiction (Figure 12), 36 percent of fatal and serious pedestrian and bicycle crashes occur on or near IDOT roadways (Figure 13). Nineteen percent of all fatal and serious crashes in the region occur on IDOT roadways, another 16 percent occur at intersections between IDOT and local roads, and an additional two percent occur at intersections of IDOT roads and county roads.

Figure 13. Fatal and Serious bike and pedestrian crashes by roadway jurisdiction (2010-2014)



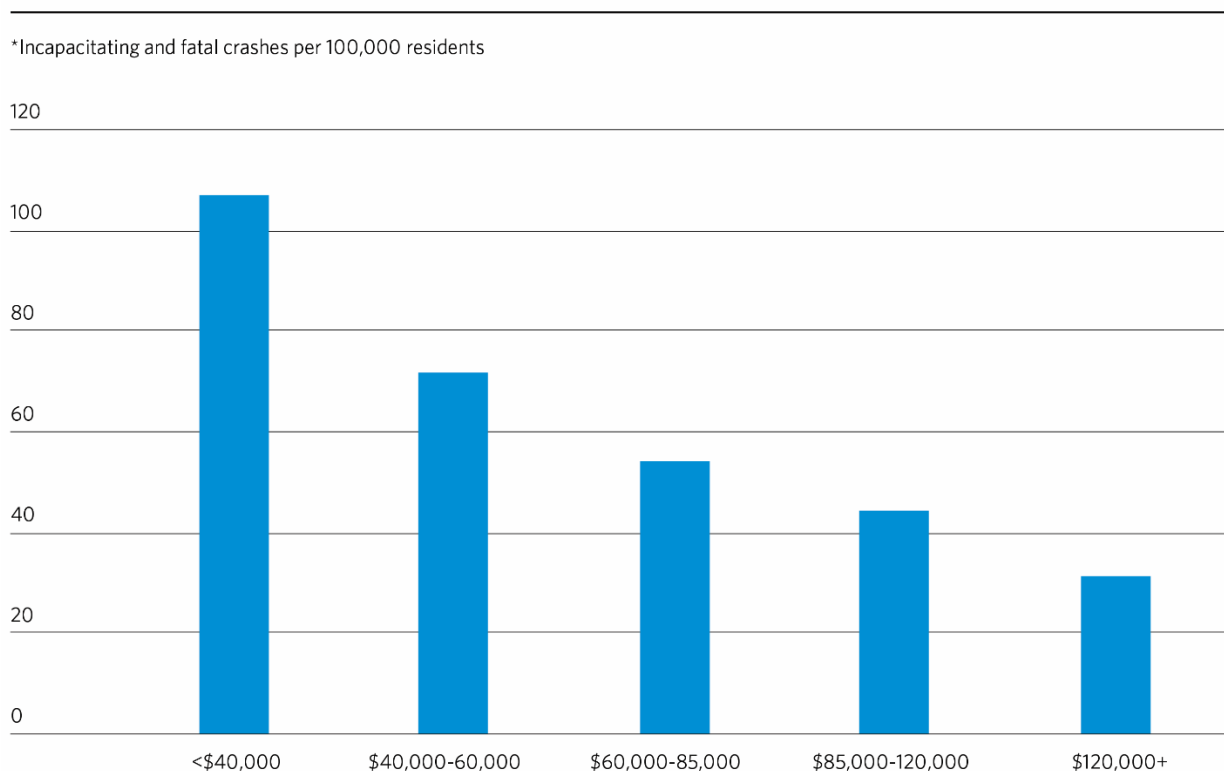
Source: CMAP Analysis of IDOT Crash data (2010-2014).

In some cases, IDOT roadways are moving more vehicles through the area, increasing the likelihood of crashes (Figure 14). In other cases, the roads were designed for higher traffic volumes than ever materialized (or have since declined), which can exacerbate speeding and other unsafe driving behaviors. Wide lanes encourage higher-than-posted travel speeds, regardless of context. In locations without safe accommodations for bicyclists and pedestrians, this can be dangerous when people do attempt to walk or bike.

Equity

While IDOT’s crash data does not specify race or ethnicity, national and statewide analyses indicate that areas with higher concentrations of people of color, low income, and senior populations have higher serious and fatal crash rates than other areas. According to the National Complete Streets Coalition and Smart Growth America, African-Americans in Illinois constitute 14.2 percent of the population and 24.1 percent of pedestrian deaths.⁹ Nationally, and in our region, higher numbers of pedestrian and bicycle crashes occur in low-income, minority communities.¹⁰

Figure 15. Serious and fatal crash rate by median household income



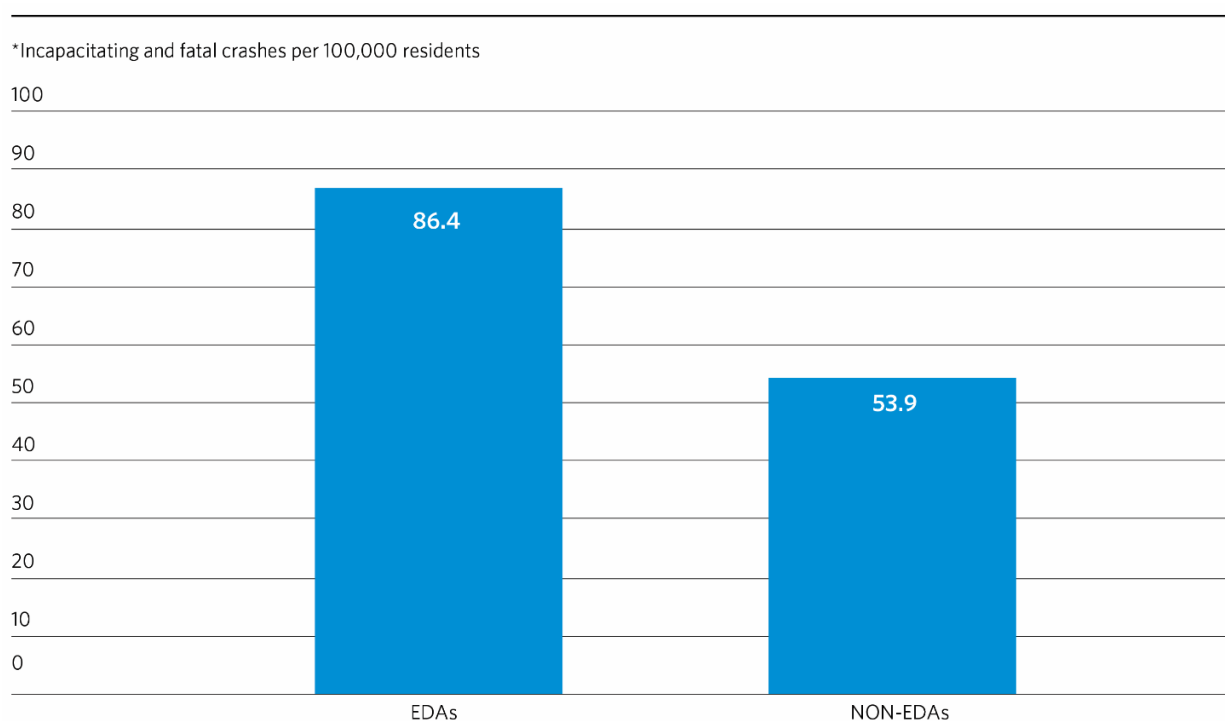
Source: CMAP Analysis of IDOT Crash Data and U.S. American Community Survey 5-year data, 2010-2014.

⁹ National Complete Streets Coalition and Smart Growth America, *Dangerous by Design*. January 2017. <https://smartgrowthamerica.org/dangerous-by-design/>.

¹⁰ “America’s Poor Neighborhoods Plagued by Pedestrian Deaths”, *Governing*, (August, 2014). <http://www.governing.com/gov-data/pedestrian-deaths-poor-neighborhoods-report.html>.



Figure 16. Serious and fatal crash rate for economically disconnected areas (EDAs)



Source: CMAP Analysis of IDOT Crash Data, 2010-2014.

Communities with low median household income appear to experience higher numbers of pedestrian and bicycle crashes, including fatal and serious crashes (Figure 15). While it is impossible to determine from the data available, many potential factors could contribute to the disparity of outcomes for low-income communities and communities of color. First, low-income households own fewer vehicles and may rely on walking and biking more frequently as a mode of transportation. In the Chicago region, 20.4 percent of housing units within Economically Disconnected Areas, which are concentrations of low-income residents who are also persons of color or have limited English proficiency, do not have access to a vehicle, and have a higher crash rate than the region as a whole (Figure 16). This is compared to just 12.8 percent of units in the CMAP area that do not have access to a vehicle.¹¹ Second, communities of limited resources may not be able to spare the funds to invest in safe streets. IDOT has a Complete Streets program and will match 80 percent of funding for bike lanes and off-street side paths, but if the community cannot provide the needed 20 percent match, the safety accommodations will not be made. Finally, parts of the region that have seen population and jobs decline, may have roads that are wide enough to carry a much higher volume of cars. Because of the decline in activity, these wide-open lanes with little traffic can become speedways, which result in worse crash outcomes.

¹¹ CMAP Analysis of U.S. American Community Survey 5-year data, 2010-14.

Initiatives and policies

Safety initiatives

Trips of three miles or less compose approximately 40 percent of all trips.¹² The large number of short trips suggests the potential for more trips to be shifted to biking and walking. A community with more use of active, non-motorized transportation can enjoy health benefits including reduced likelihood of obesity and chronic disease, and the ability to better support an aging population that will not always be able to drive. In addition to health benefits, communities may retain significant money to spend locally when people drive less and own fewer cars, as nearly 85 percent of car and fuel expenses leave the local economy. Seeking to capitalize on the economic and health benefits from non-motorized transportation, several trends and initiatives have emerged in recent years.

Vision Zero

Vision Zero is a safety initiative that seeks to reduce all roadway fatalities to zero. The program began two decades ago in Sweden and is gaining traction in cities across the United States. The City of Chicago first committed to Vision Zero in 2012, and has developed an action plan to achieve that target by 2026. Vision Zero addresses traffic crashes as preventable incidents that can be reduced and eliminated with systemic changes, and avoids using the word “accident.” Some of the strategies in Vision Zero programs include speed reduction, commercial vehicle regulations, infrastructure and street design, and education and enforcement.

Commercial vehicle interaction

In an aberration from typical years, all but one of the 2016 bicyclist fatalities in Chicago involved a commercial vehicle or truck. While the conditions for each crash are unknown, and data from a single year do not indicate trends, many crashes involved a truck making a right turn. Commercial vehicles have very large blind spots, and many people riding bikes are unaware that they may not be visible to the driver. This has brought attention to truck side panels as a potential safety measure to prevent cyclists and pedestrians from falling between the wheels in a collision. In 2017, following Vision Zero recommendations, the City of Chicago passed an ordinance that would require privately-owned trucks that do business with the city (projects over \$2 million using large trucks) to install side guards, to prevent cyclists from falling under the truck wheels, as well as convex mirrors to improve visibility. Chicago also plans to upgrade all city-owned trucks by 2026. Other communities have expressed interest in side guard requirements to improve pedestrian and bicyclist safety. The Volpe Center of the U.S. Department of Transportation is conducting a nationwide research project on truck and freight safety approaches.

Complete Streets

Complete Streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel

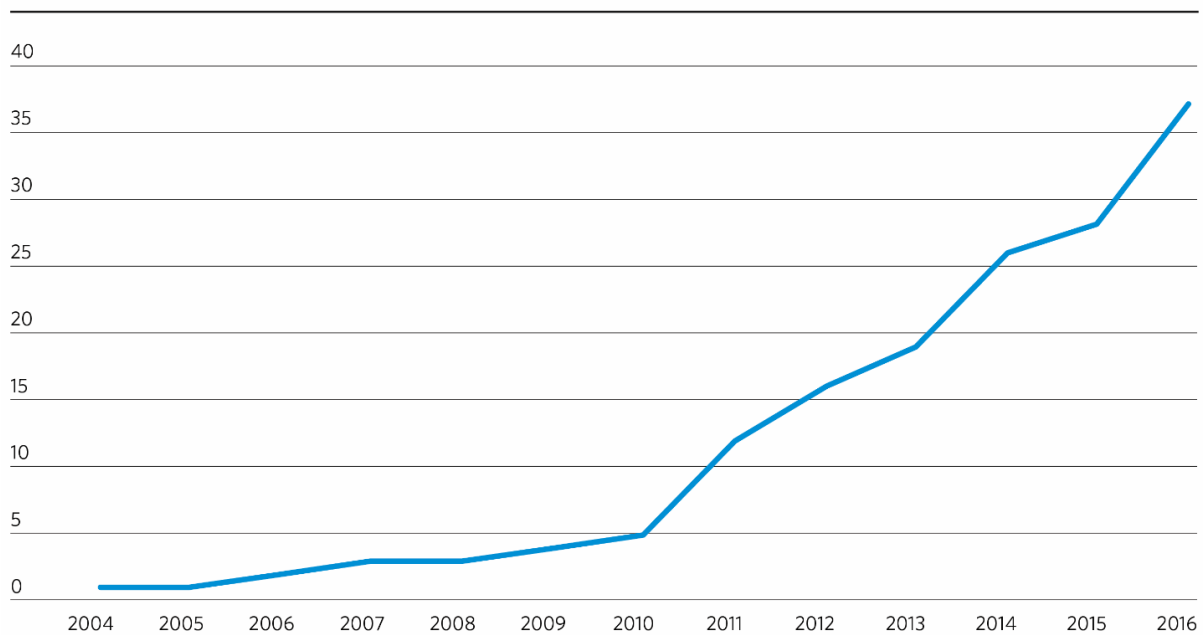
¹² According to the 2009 National Household Travel Survey, approximately 53 percent of all trips made in urban areas are 3 miles or less; in non-urban areas, 37 percent are 3 miles or shorter. <http://nhts.ornl.gov/2009/pub/stt.pdf>.



and access for all anticipated roadway users, regardless of their age, abilities, or mode of travel. This multimodal approach grew out of a movement that spread across the U.S. from the 1970s through the late 1990s for “routine accommodation” of bicyclists and pedestrians in roadway design. The movement gained support and a legal basis with federal laws such as Americans with Disabilities Act (ADA) and Intermodal Surface Transportation Efficiency Act.

The State of Illinois was one of the first states to adopt a Complete Streets policy in 2007. According to the National Complete Streets Coalition Policy Inventory and Atlas,¹³ 37 governments and agencies in our region have adopted some kind of Complete Streets policy (Figure 17). Of the 37 policies, nearly half were adopted in 2014 or later. Thirty-two policies date from 2011 or later, indicating increasing awareness of and interest in Complete Streets policies.

Figure 17. CMAP-region adopted Complete Streets policies, (2004-2016)



Source: National Complete Streets Coalition, 2016.

Other initiatives and planning efforts

Planning and policy activity in the region reflects a growing interest in programs aimed at encouraging walking and bicycling as transportation. Many communities conduct pedestrian planning through larger non-motorized transportation planning efforts, particularly Complete Streets policies, and ADA Transition Plans. For bicycling, there has been growth in the number

¹³ Smart Growth America, Complete Streets Policy Atlas, Accessed February 2017, <https://smartgrowthamerica.org/program/national-complete-streets-coalition/policy-development/policy-atlas/>.



of communities who have sought recognition in the League of American Bicyclists' Bicycle Friendly Communities program, developed and adopted Complete Streets policies, and adopted or approved bicycle plans. Development and adoption of bicycle plans has intensified over the last six years; out of 162 total plans in CMAP's inventory, 107 date from 2010 or later. Only 25 plans were adopted earlier than 2006.¹⁴

Improving health with non-motorized transportation

With increasing understanding of the linkages between our travel choices and health outcomes, many health professionals are turning to non-motorized transportation to reduce air pollution, prevent traffic injuries and deaths, and lower obesity, cardiovascular disease, diabetes, and cancer rates. The Centers for Disease Control has created a Transportation Health Impact Assessment Toolkit for planning and health professionals¹⁵. Strategies proposed for promoting positive health outcomes include: reducing VMT, expanding public transportation, promoting active transportation, incorporating health community design features, improving safety for all users, and ensuring equitable access to transportation networks. AARP, formerly the American Association of Retired Persons, has also shown a commitment to livable communities and complete streets, to help senior populations "age in place."

Bicycle Friendly Communities

The Bicycle Friendly Communities (BFC) program,¹⁶ created and administered by the League of American Bicyclists (LAB), is designed to encourage communities to improve conditions for bicycling and provide guidance for doing so.¹⁷ The program recognizes communities at the platinum, gold, silver, and bronze levels that provide safe accommodations for bicycling and encourage people to bicycle for transportation and recreation, with goals of improving public health, reducing traffic congestion, and improving air quality and overall quality of life. The first community in our region to achieve BFC status, in 2003, was the Village of Schaumburg.

¹⁴ The inventory may not include all bikeway plans in the region. Additionally, when a jurisdiction updates a bikeway plan, the earlier plan is removed from the inventory. For this reason, the analysis presented here should be understood as indicating a general trend rather than precise numbers.

¹⁵ Center for Disease Control and Prevention, "Transportation Health Impact Assessment Toolkit," Healthy Places: https://www.cdc.gov/healthyplaces/transportation/hia_toolkit.htm

¹⁶ The League of American Bicyclists, <http://www.bikeleague.org/community>.

¹⁷ The "Quick Guide to the Bicycle Friendly Community Report Card" outlines the "10 building blocks" of a bicycle friendly community, and provides information on program scoring, desired outcomes, and key community actions. See <https://drive.google.com/file/d/0B4qePqCkzyhaRVdnX2MyTEstR3M/view>.



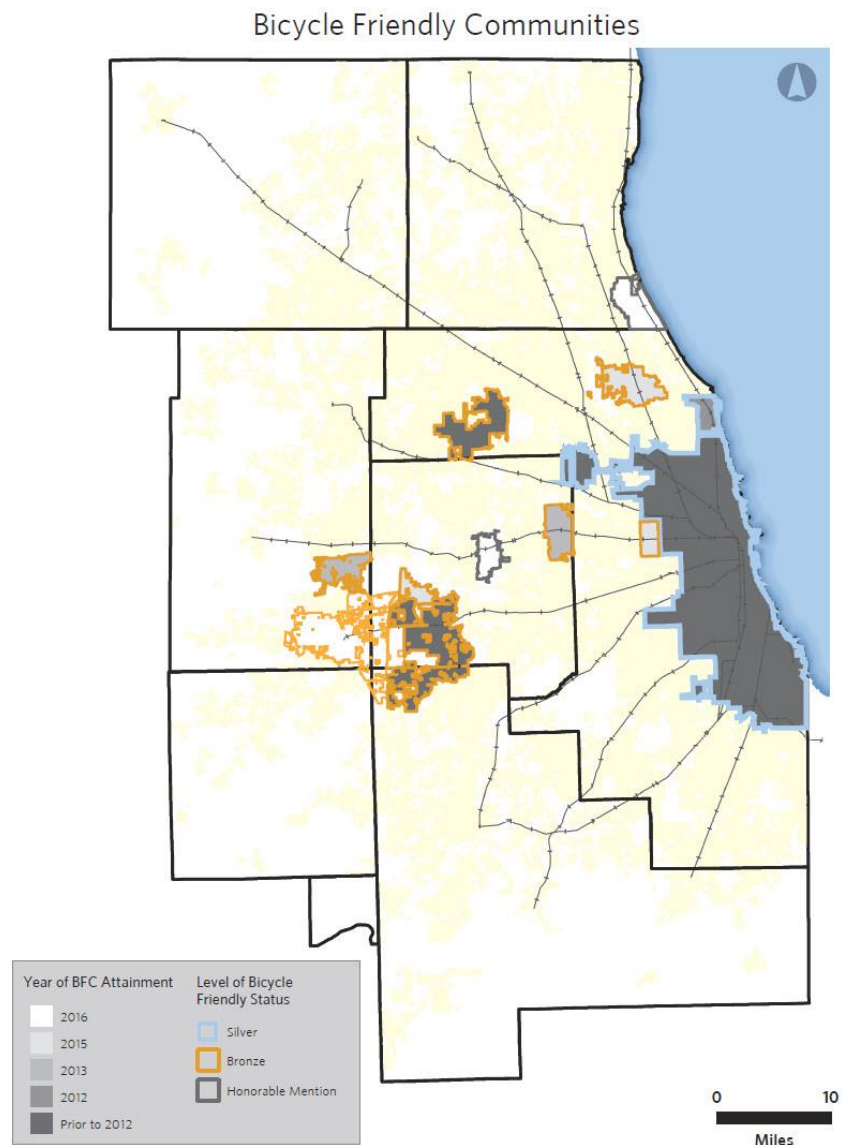
Figure 18. Bicycle Friendly Communities in northeastern Illinois

Prior to 2012	2012	2013	2014	2015	2016
Chicago	Evanston	Batavia		<i>Chicago</i>	<i>Evanston</i>
Schaumburg		Elmhurst		Glenview	<i>Schaumburg</i>
Naperville		<i>Naperville</i>		Oak Park	Aurora
				Warrenville	Highland Park
					Glen Ellyn

Silver	Bronze
Honorable mention	<i>Renewed</i>

Source: League of American Bicyclists, 2016.

Interest and participation in the program among communities in our region has increased over time (Figure 18). This likely reflects both a growing interest in promoting and improving conditions for bicycling in communities in northeastern Illinois, as well as higher visibility and greater awareness of the BFC program. Eleven businesses in our region have achieved Bicycle Friendly Business status and four universities have won Bicycle Friendly University standing, three in the last round of awards (2016).



Bicycle planning efforts and interest

The increase in interest in bicycle planning efforts that CMAP's Bikeway Inventory System reflects is also evident in responses to CMAP's Municipal Survey, which asked municipalities to indicate what planning topics they would be most interested in learning more about. In the most recent survey, to which 231 municipalities responded, interest in bicycle and pedestrian infrastructure ranked second after transportation asset management, out of 22 topics listed. This fact highlights a growing interest in non-motorized transportation across the region at the local level. The Local Technical Assistance (LTA) program, which CMAP initiated in 2010, provides planning assistance to communities across the region on a wide range of topics, including comprehensive planning, land use planning, zoning, transportation, economic development, conservation, and local area plans. Applications submitted to the LTA program constitute a barometer of local agency interests and perceived needs for planning assistance and efforts. The LTA program shows a steadily growing interest in bicycle planning and local agency desires to develop safe and connected bicycle networks. In fact, analysis of completed LTA plans shows that more plans address bicycle and pedestrian improvements than any other single topic.

Performance Measurement

Transportation agencies use performance measures to monitor how effectively they plan, program, construct, and operate transportation systems. One common performance measure for evaluating surface (roadway) transportation system performance is level of service (LOS), which categorizes roadways in terms of automobile throughput, evaluating roadway performance based on automobile speeds, travel time, congestion, and other factors. To better integrate bicycle and pedestrian modes into overall performance evaluation, some agencies within the region have incorporated measures that better account for non-motorized transportation. The City of Chicago's "Complete Streets Design Guidelines" shifts its measure away from vehicular LOS, recommending no minimum vehicle LOS, and prioritizing pedestrians by requiring that delays for pedestrians at signalized intersections do not exceed 60 seconds.¹⁸

Trends in bicycling

Policies, programs, and infrastructure to promote bicycling as transportation have evolved and expanded significantly over the last 10 to 15 years. In the Chicago region, transportation stakeholders and advocates believe that more people are riding bicycles. Some local traffic counts support this notion. Unfortunately, there is limited data to quantify the precise extent of this interest and expansion. Four areas that offer evidence of change, trends, new ideas and new practices are: (1) infrastructure, (2) bicycle ridership levels, (3) programs, policies, and plans, and (4) funding sources and amounts.

¹⁸ City of Chicago Department of Transportation, "Complete Streets Chicago Design Guidelines," p. 111.
<https://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf>.



Infrastructure

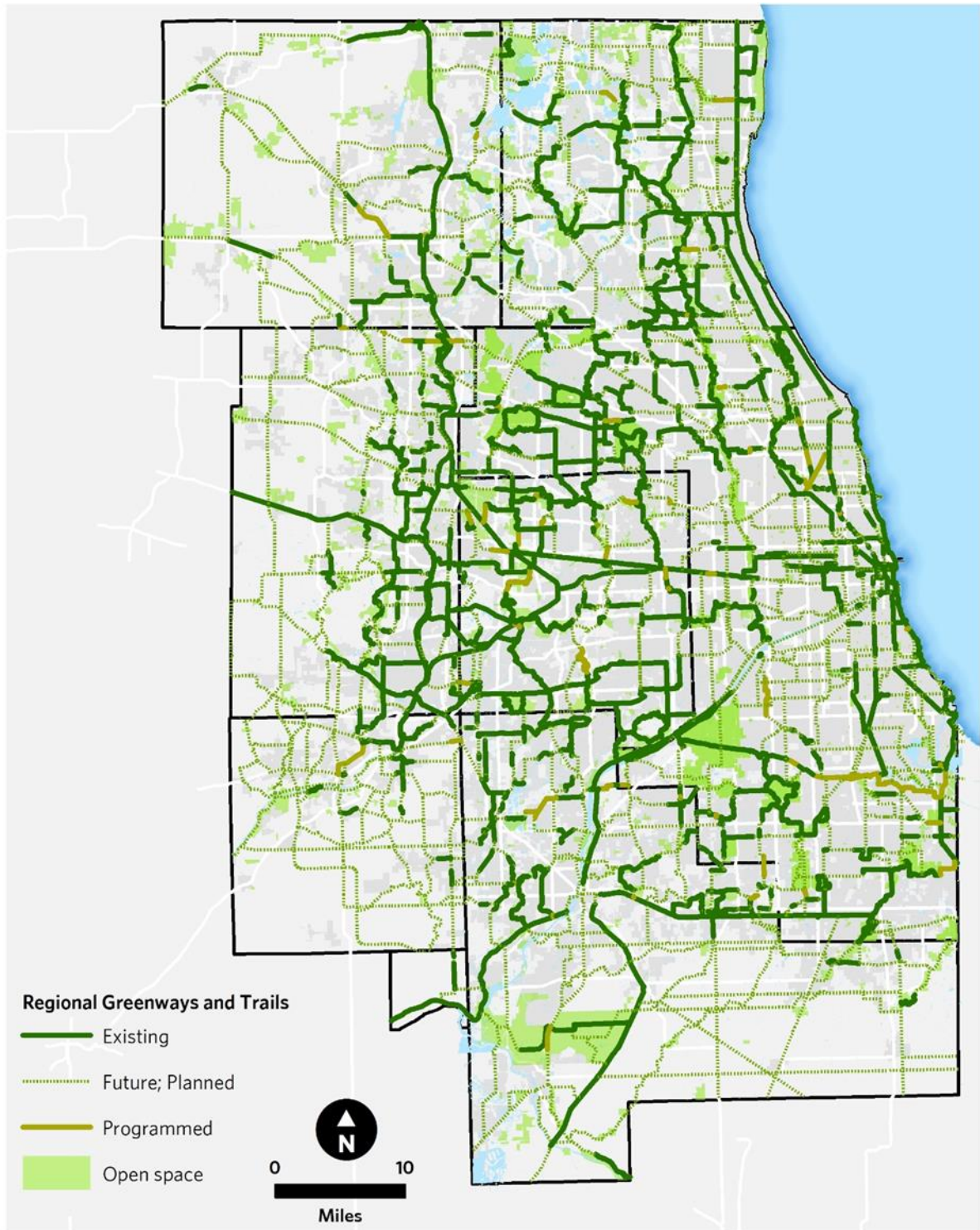
Bicycle infrastructure is planned, implemented, and maintained by local, county, and state agencies, including municipalities, park and forest preserve districts, and county and state Departments of Transportation. Collecting regional data about on-street and off-street infrastructure can be challenging. One source of reliable data for quantifying progress is from CMAP's work on the Regional Greenways and Trails Plan (RGTP), which shows that planned and completed greenways and trails in the region have increased more than 16 percent since 2009.

Regional Greenways and Trails Plan

The RGTP is a long-range, multi-jurisdictional plan that envisions a network of continuous greenway and trail corridors, linked across jurisdictions, providing scenic beauty, natural habitat, and recreational and transportation opportunities (Figure 20). The plan has conceptual alignments for the planned trail and greenway network, prioritizing off-street trails where feasible. The RGTP was created in 1996 and updated in 2009 and again in 2016. The 2016 RGTP includes approximately 3,160 miles of existing and planned trails in the seven-county region. Between 2009 and 2015, an additional 160 miles of regional trails were completed (Figure 21) -- more than 100 miles in Cook and Will Counties alone -- and plans for an additional 442 miles were also added (Figure 22). Approximately \$73 million in funding from Transportation Enhancements and Alternatives (TE/TAP) and Congestion Mitigation and Air Quality has gone to RGTP projects between 2009 and 2015 (federal amounts, excluding local match contributions).



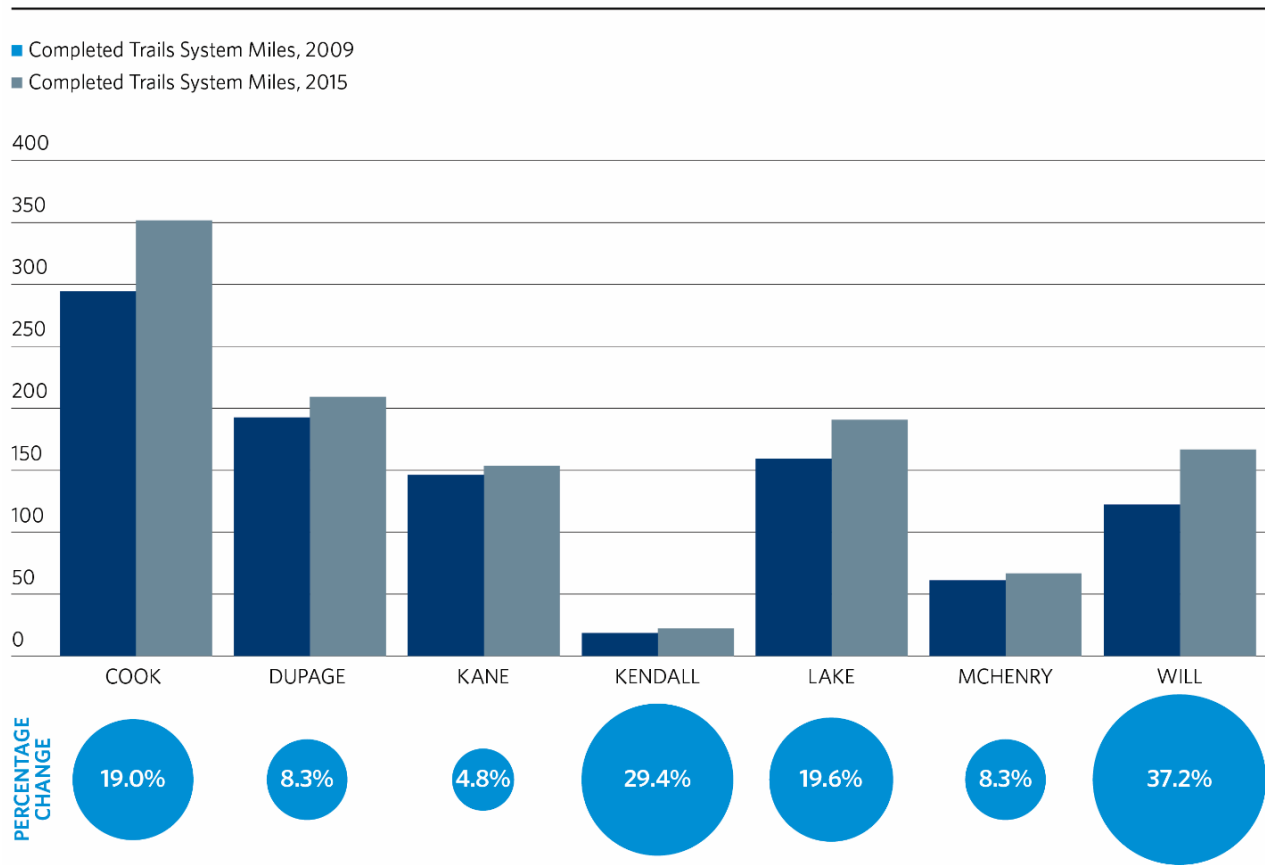
Figure 20. Existing and planned Regional Greenways and Trails Plan, 2016



Source: CMAP, 2016.



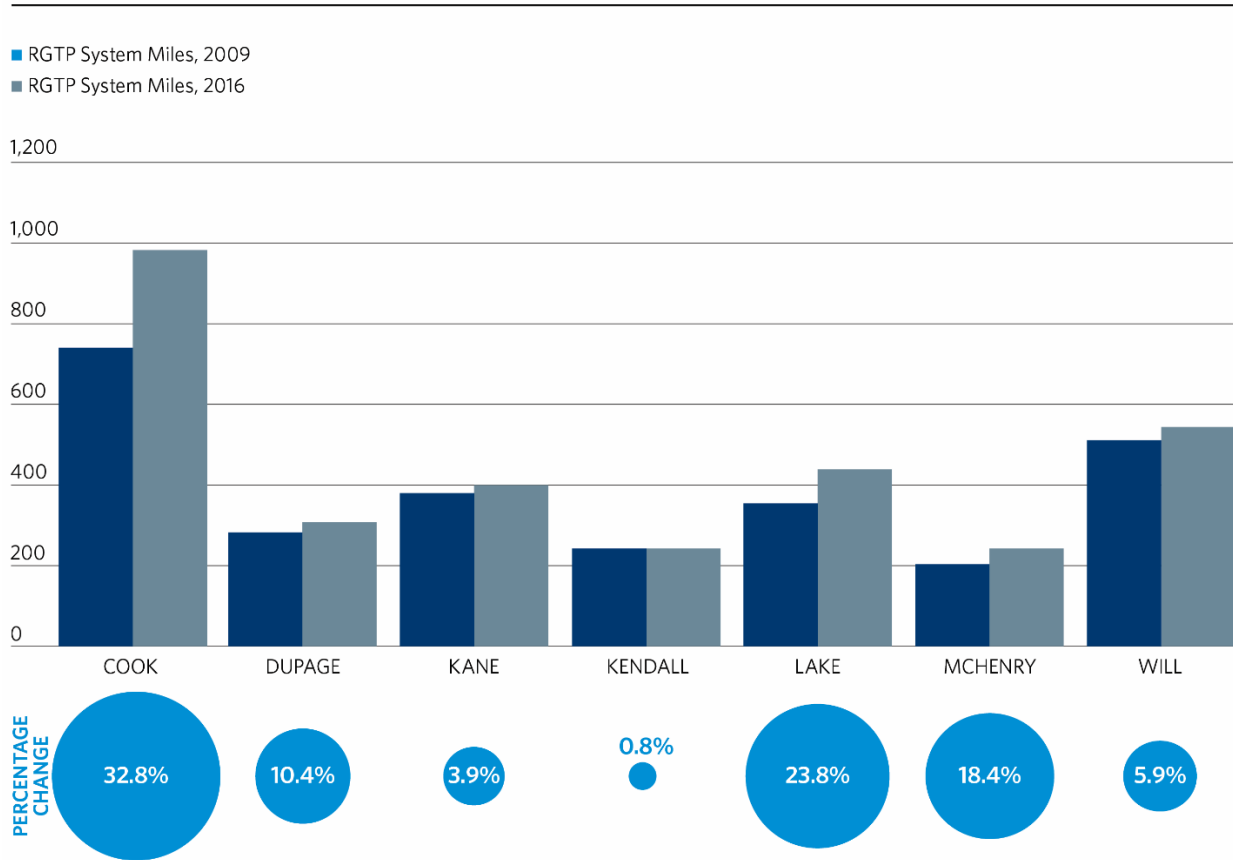
Figure 21. Completed Trails System, miles and percent change, 2009 and 2015



Source: CMAP Analysis, 2009 and 2016.



Figure 22. Regional Greenways and Trails Plan, planned system miles by county and percent change, 2009 and 2015



Source: CMAP Analysis, 2009 and 2016.



On-street bikeways

Significant progress has occurred in our region over the last five to ten years in the design and provision of on-street bicycle facilities, including new intersection designs and treatments aimed at increasing the safety and comfort of cyclists. Regional changes reflect larger national trends showing increased interest, innovation, and investment in on-street bicycle facilities and, more broadly, in bicycling as transportation. These trends are strongest in larger cities and university towns, and are promoted by a broad range of professionals who see increased bicycling as an effective way to improve health, reduce environmental impacts, and improve equity. In our region, the cities of Chicago, Evanston, and Aurora reflect this trend. All three have installed separated bike lanes that include the use of green pavement to highlight the facility or conflict points.¹⁹

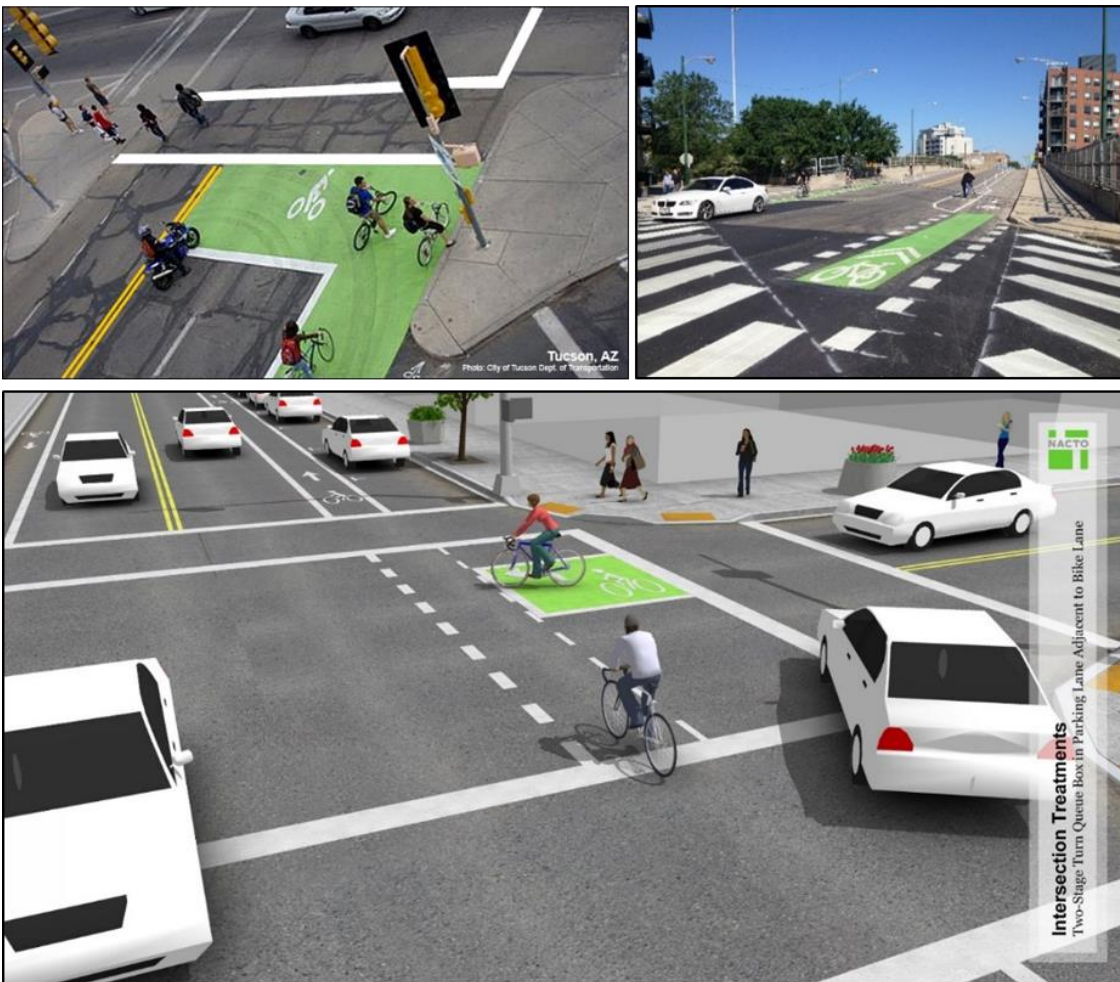
<p>Evanston: Protected Bikeway</p>	<p>Aurora: Protected Bikeway</p>	<p>Chicago: Protected Bikeway</p>
		
<p>Credit: David Wilson, Flickr Creative Commons</p>	<p>Credit: CMAP staff</p>	<p>Credit: CDOT</p>
<p>Chicago: Buffered Bicycle Lane</p>	<p>Chicago: Protected Intersection</p>	<p>Chicago: Through-lane marking</p>
		
<p>Credit: Active Transportation Alliance</p>	<p>Credit: John Greenfield (Streetsblog)</p>	<p>Credit: DNAinfo/Tanveer Ali</p>

¹⁹ Originally known as cycle tracks or protected bike lanes, this type of facility can be one- or two-way and take a variety of forms. See the Federal Highway Administration *Separated Bike Lane Planning and Design Guide* (May 2015), https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm.

The last five to ten years have seen the development and increased use of several intersection treatments²⁰ intended to improve the safety, comfort, and convenience of bicyclists (Figure 23). These include the following:

- Bike boxes
- Through-intersection bikeway markings
- Two-stage-turn queuing boxes
- Bicycle-specific median refuge islands
- Various designs to accommodate bicycle lanes (conventional, buffered, and separated) at intersections
- Bicycle signal heads

Figure 23. Sample intersection treatment for bikeway



Clockwise from top left: bike box, through-intersection marking, two-stage-turn queuing box

²⁰ More information on Intersection treatments and facility design is available in CMAP's Complete Streets Toolkit: <http://www.cmap.illinois.gov/programs-and-resources/local-ordinances-toolkits/complete-streets>.

Bike share

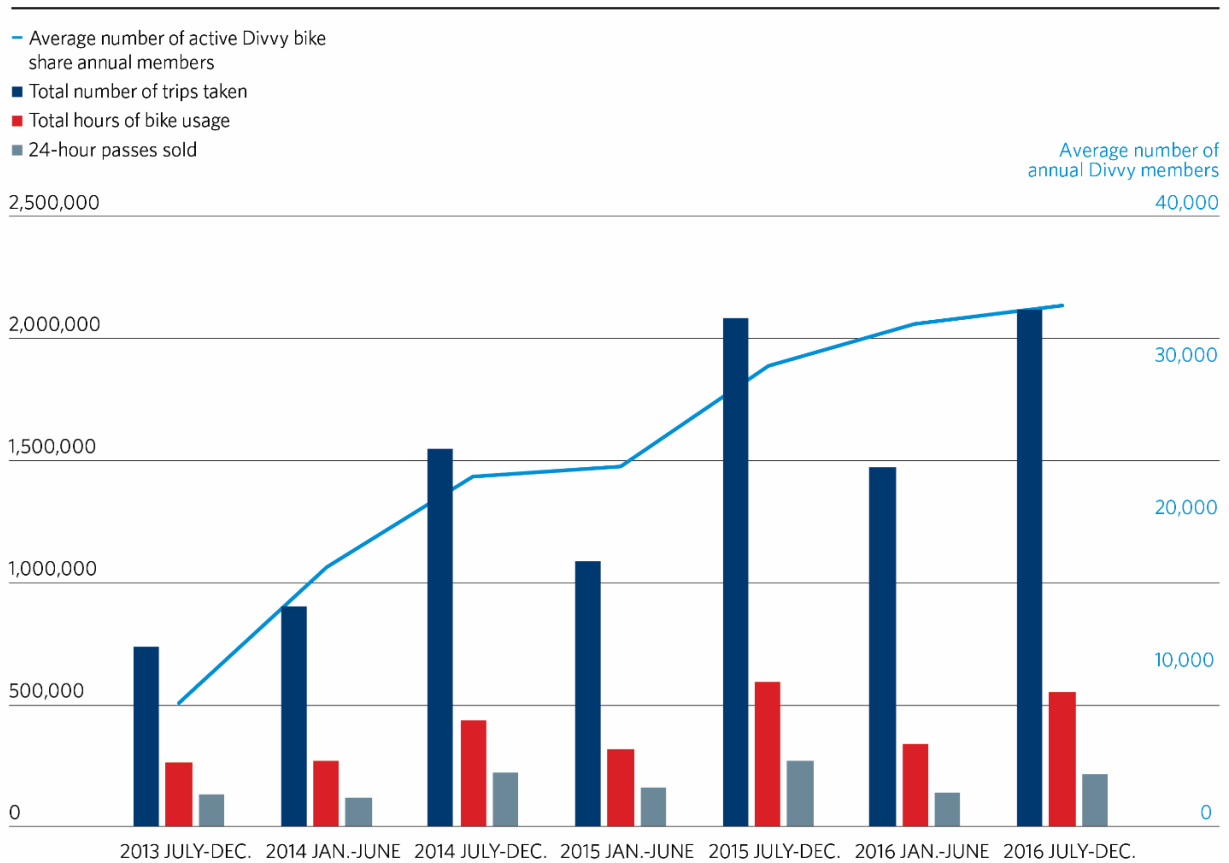
In addition to new, innovative designs for bikeways and intersection treatments, bike share systems have emerged over the last several years as a major form of bicycle infrastructure, with a significant impact on travel options and behaviors. Bike share systems have grown rapidly since first launched in Europe in 2005-07. In the CMAP region, Divvy Bike Share launched in 2014. Significant expansions to the system and service areas occurred in late 2015 and in summer 2016, including expansion to the City of Evanston and Village of Oak Park. The City of Aurora launched a small bike share system, focused on the City's downtown area, in 2015. The Forest Preserve District of Cook County has a seasonal system that functions more like an automated bike rental service than a typical bike share program.

Divvy data sets apply only to the service area of the Divvy system whose coverage expanded from just 25 percent of Chicago, to over 50 percent of Chicago, and into Evanston and Oak Park over two years. By a number of different metrics, it is clear that Divvy use and ridership has steadily increased, most notably in the total number of trips and in the average number of trips per day (Figure 24).²¹ The average number of active Divvy annual members has grown to nearly 35,000 and the total number of trips has surpassed two million.

²¹ The rise and fall in adjacent semesters reflects lower use/ridership in winter months.



Figure 24. Divvy Bike Share -- System use, ridership, size by semester



Source: CDOT and Motivate.

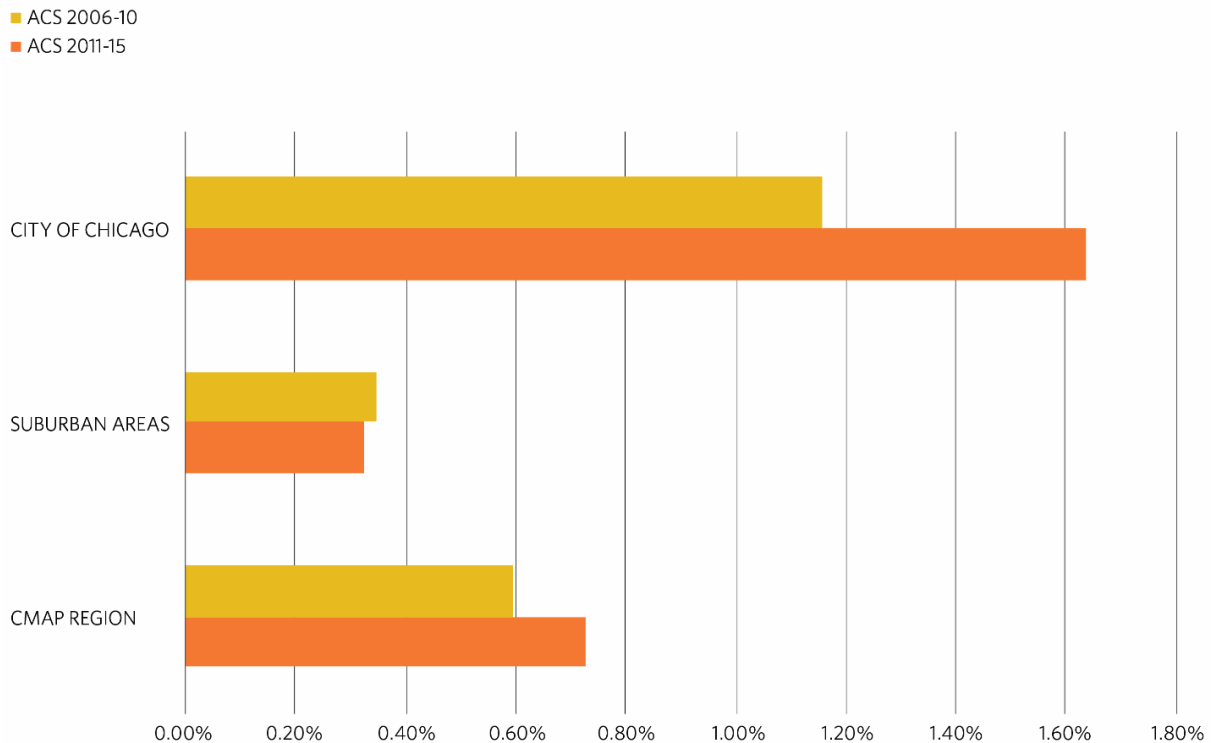
Ridership

Bicycle ridership levels or rates, and how they may have changed over time in our region, are difficult to determine. Ongoing, systematic, and comprehensive counts of bicyclists and bicycle trips are lacking for communities and the region as a whole. Surveys that include detailed information on travel behavior are not administered on a regular basis and are not reliable or accurate enough for estimating the total number of bicycling trips in our region. Even U.S. Census data has several limitations. The American Community Survey (ACS) data from the U.S. Census only reflects work commute trips, which make up a small fraction of all trips—perhaps as little as 15 percent. Second, the total number of people who commute by bicycle or walk to work is too small to be statistically significant for most geographies. Finally, U.S. Census surveys typically ask respondents only about their “primary” mode of travel to work, so secondary modes or links are not recorded. Through the travel tracker survey, CMAP collects data on travel mode, including walking and biking trips, but recent data will not be available until 2018.



Despite the data limitations, ACS data for two five-year periods, 2006-10 and 2011-15, indicate that, between these two time periods, there has been a substantial increase in the numbers and percentages of bicycling commuters in the City of Chicago (Figure 25). Suburban areas of the region appear to have stagnated in total numbers and in percentage. The region-wide increase can be attributed entirely to the increase within the City of Chicago.

Figure 25. Bicycle commute modeshare (2006-10 compared to 2011-15)



Source: U.S. Census Bureau, American Community Survey.

CDOT Bicycle Counts

The City of Chicago’s Department of Transportation conducts a Monthly Bike Count and a Quarterly Downtown Cordon Bike Count. The Monthly Bike Count has been conducted one day per month at six locations during weekday morning and evening peak travel hours, 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. The Quarterly Downtown Cordon Bike Count is conducted seasonally, in the spring, summer, and fall, at 20 locations during morning and evening peak travel hours, 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m., on a weekday and at 25 locations on a



Saturday from noon to 2:00 p.m. While bicycle count results are difficult to compare, summary data from these counts show a slight overall increase in bicycle ridership from 2012 to 2014.²²

Funding sources and amounts

While it is difficult to track all funding spent on bicycle projects in the region, federally funded bicycle projects are tracked at the regional level through the Transportation Improvement Program (TIP). The TIP lists all federally funded and regionally significant, non-federally funded transportation projects programmed for implementation in the next four years. A summary of obligated funds programmed in the TIP is released annually. When analyzed and averaged for two five-year periods, 2006-10 and 2011-15, the trend shows an overall increase in spending on bicycle projects. Figure 26 shows average yearly amounts of obligated and awarded funds, as well as the average number of projects per year, for stand-alone bicycle projects. The data shows an increase in funding for both construction and non-construction project phases and an increase in the average number of projects per year.

While the data indicate an overall increase in funding, it should be noted that dollar amounts are not adjusted for inflation, data do not include bicycle projects that were completed as part of larger roadway projects (which may represent a significant number of projects and dollar amount), and (as mentioned above) local, non-federally funded projects are not included.

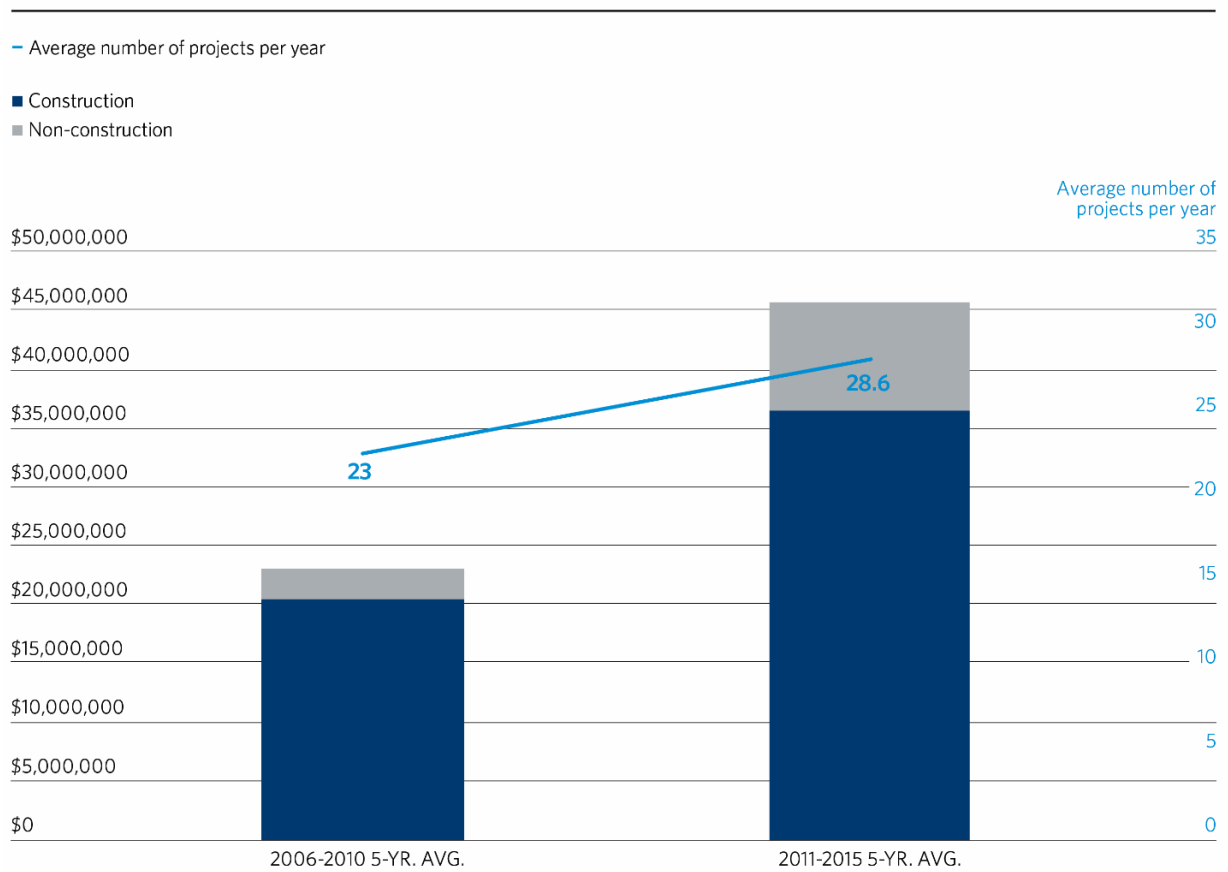
There are 11 subregional Councils of Mayors (COMs), which program Surface Transportation Program (STP) funds. A number of these COMs have shown their commitment to advancing and financing infrastructure projects that create safe, convenient, and comfortable conditions for bicycling through recent changes in prioritization methods for local project funding. They have revised their methods for evaluating STP project applications to include criteria intended to reward and advance bicycle projects and, more broadly, a Complete Streets or multimodal approach to transportation. Other councils are in the process of making similar revisions. DuPage, Lake, North Shore, Northwest, and Kane/Kendall councils have all relatively recently amended their programming methods to more effectively encourage and promote bicycle, pedestrian, and multimodal projects. Those COMs represent 139 of the 284 municipalities in the region.

Figure 27 presents total spending, as reported by the State of Illinois, on pedestrian and bicycle facilities and programs during federal fiscal years 1999 to 2016. While some year-to-year variation may be due to inflation, fluctuations in material and labor costs, or large project expenditures, increased spending is apparent.

²² Summary data from these counts, for the years 2012-2014, are available online: <https://www.scribd.com/collections/4289227/CDOT-Bike-Counts>.



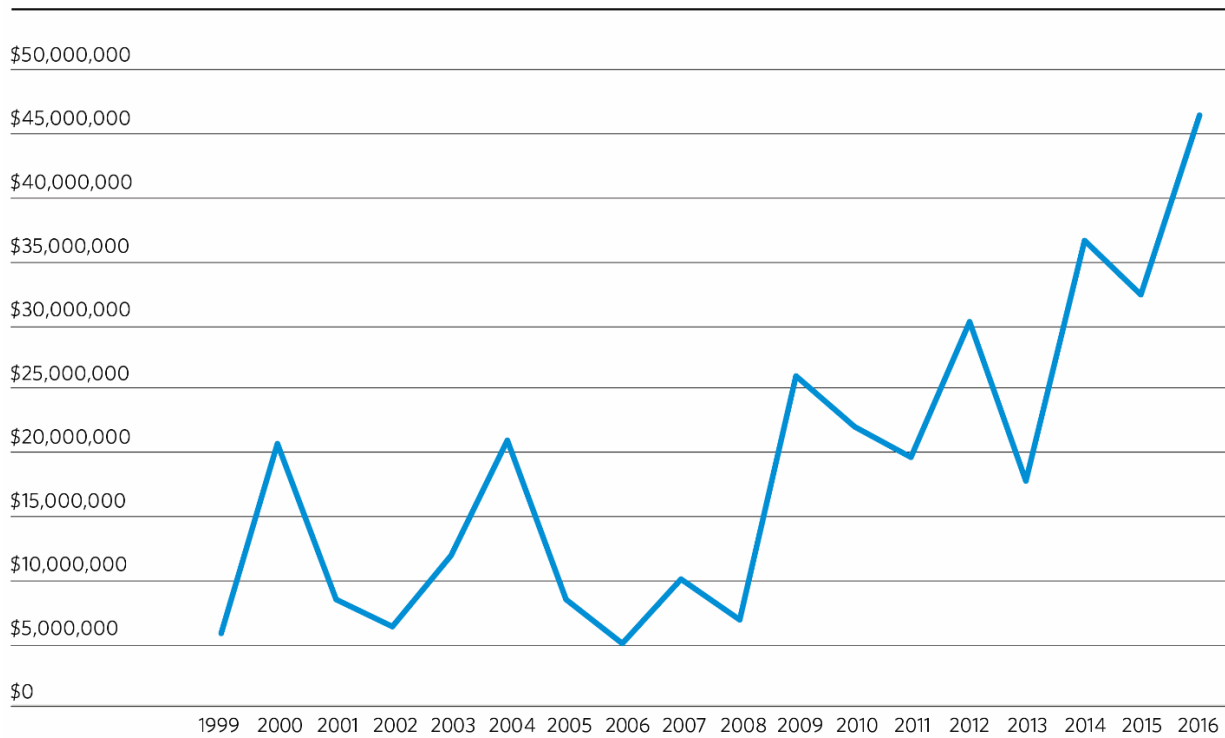
Figure 26. Changes in average funding amounts and projects for bicycle projects²³



Source: CMAP, 2017.

²³ Amount shown in 2015 dollars. Yearly amounts vary significantly due to, (1) the multi-year nature of the projects/programming, and (2) the fact that, in any given year, 1 or 2 high-cost projects or project phases may advance (i.e. obligate or spend project funds). In addition, other project types not counted here may include bikeways or bicycle elements.

Figure 27. FFY 1999-2016 Federal-Aid Highway Program Funding, Bicycles and pedestrian projects and programs



Source: FHWA, 2016: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/bipedfund.cfm.

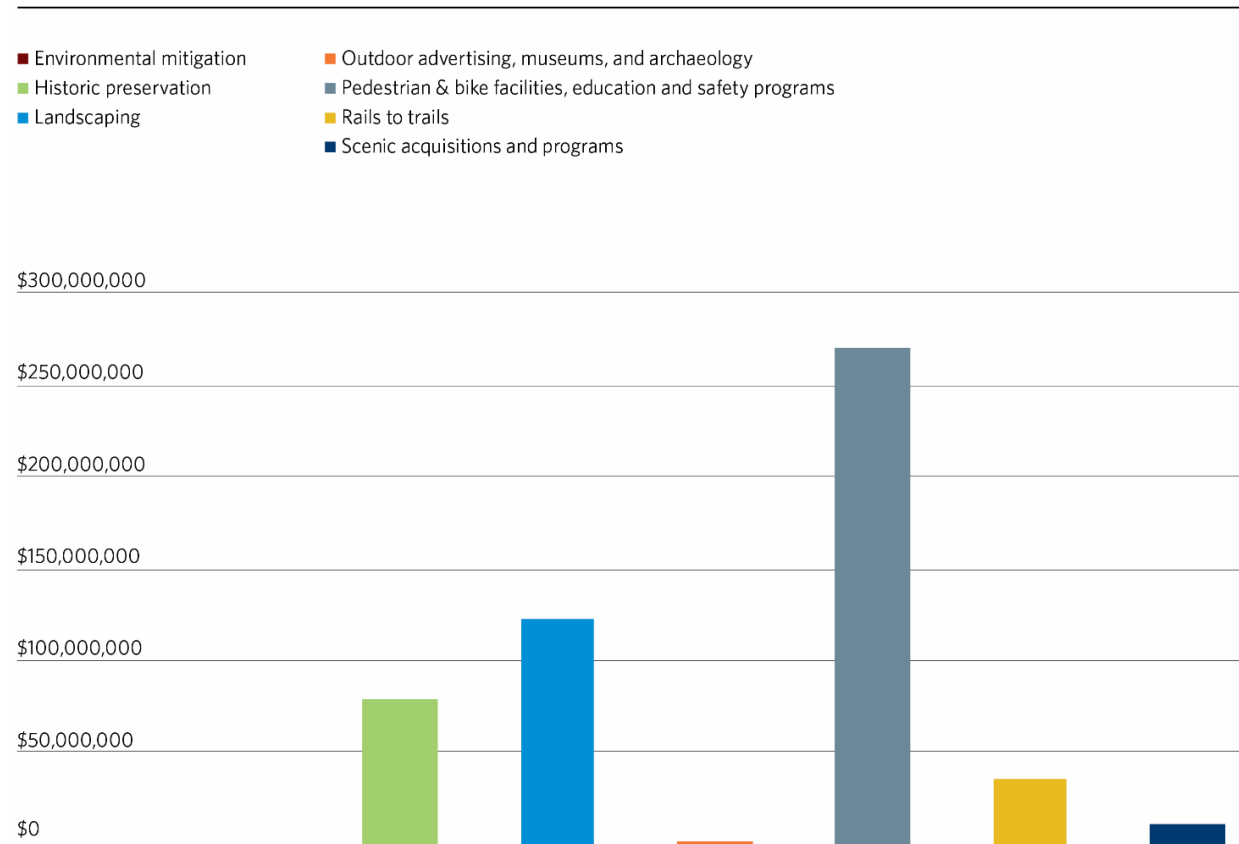
The Rails to Trails Conservancy, as part of its Transportation Alternatives Data Exchange initiative, publishes the Transportation Enhancements and Alternatives (TE/TAP) Spending Report.²⁴ The report breaks out the percentage of TE/TAP dollars firmly committed to specified projects by state, and analyzes what types of projects received funding. The latest report covers FFY 1992-2015. While not available at the regional level, the report’s profile for the State of Illinois²⁵ indicates that just over half (51.7 percent) of the TE/TAP funds have been programmed for bicycle and pedestrian projects (Figure 28). Other eligible project categories include things like streetscaping, historic preservation, Rails-to-Trails, and Environmental Mitigation.

²⁴ Leeann Sinpatanasakul, “Tracking Federal Bike/Ped Spending in 2015: RTC Releases TrADE Report,” (2016), Rails to Trails Conservancy. <http://www.railstotrails.org/trailblog/2016/july/26/tracking-federal-bikeped-spending-in-2015-rtc-releases-trade-report/>.

²⁵ Transportation Alternatives Program Profile, Illinois. http://trade.railstotrails.org/state_profile?state_id=16.



Figure 28. Statewide distribution of Transportation Enhancement and Transportation Alternatives Program funds



Source: Rails to Trails, 2015. http://trade.railstotrails.org/state_profile?state_id=16.

Trends in walking and the pedestrian environment

Walking is a crucial mode of transportation for the residents of the Chicago region and is a part of almost every trip, whether it is the sole mode of travel or the first stage in a trip that includes a bus, train, automobile, or bicycle. The safety, accessibility, and design of pedestrian facilities are core components of the region’s transportation network. Beyond providing a simple and free mode of travel for residents and visitors, walking and pedestrian facilities are also a growing part of how communities make themselves livable, accessible, healthy, and prosperous.



Four areas within which evidence of change, trends, new ideas, and new practices in pedestrian design may be found are:

- Infrastructure
- Pedestrian activity
- ADA Accommodations
- Programs, policies, and plans

Infrastructure

The lack of data on pedestrian infrastructure complicates efforts to track trends in the region. There is no consistent, region-wide data available on the location and quality of sidewalks and other pedestrian accommodations. Because much of the region’s pedestrian network consists of sidewalks along local roads, centrally collected data is lacking. Some efforts have been made to inventory ADA pedestrian infrastructure at the county and state level, but they remain incomplete.

Numerous examples of innovative pedestrian infrastructure and design treatments reflect the growth of best practices within the region. These forms of infrastructure can improve safety for pedestrians, as well as cyclists and motorists. Communities in the Chicago region have implemented a wide range of innovative pedestrian facilities and treatments in recent years.

<p>Chicago: Raised crosswalks</p> 	<p>Batavia: Shared street</p> 	<p>Chicago: Pedestrian Scramble</p> 
<p>Credit: Chicago Streetsblog</p>	<p>Credit: Active Trans / CNU Illinois</p>	<p>Credit: Chicago Streetsblog</p>
<p>Chicago: People Street</p> 	<p>Aurora: Curb extension</p> 	
<p>Credit: Lakeview Chamber of Commerce.</p>	<p>Credit: Google Streetview</p>	

Raised crosswalks and intersections

Raised pedestrian crossings place crosswalks – or entire intersections – on a plateau that is level with surrounding sidewalks, with ramps on all vehicular approaches to increase visibility to motorists. They also serve as traffic calming measures, by functioning as a speed hump and highlighting the presence and priority of pedestrians.

Shared streets

A shared street removes raised physical separators such as curbs and sidewalks, along with markings that define lanes, and instead places all transportation modes in a shared space where pedestrians and cyclists have the right-of-way, though motor vehicles have access as well. They typically feature design elements such as brick surfaces, planters, and street furniture to define spaces and slow automobile traffic. The City of Batavia has successfully implemented a shared street (also known by the Dutch name “woonerf”) in its downtown, and the area has since attracted new businesses and the relocation of the Batavia Farmers Market. The City of Chicago has also implemented a shared street on Argyle Street in the city’s Uptown neighborhood.

Curb extensions

Curb extensions, also known as bulb-outs, narrow the roadway at pedestrian crossing locations, slowing automobile traffic and reducing the distance pedestrians must cross. They also provide extra sidewalk space that can be used for streetscaping, signage, or other elements. Curb extensions have been widely implemented in the region, both in urban and suburban contexts.

“People streets”

Through its “Make Way for People” program, the Chicago Department of Transportation has worked with community organizations to reclaim “excess” roadway areas and transform them into plazas and parklets, and to achieve placemaking and traffic calming goals. Similar in concept to curb extensions, these plazas recapture areas of the road that are not needed for the passage of vehicles and convert them into practical pedestrian spaces. One example, the “Lincoln Hub” in Chicago’s Lakeview neighborhood, uses the reclaimed areas at a three-way intersection for traffic calming, public art, and streetscaping. The design also significantly reduces the crossing distances for pedestrians.

Pedestrian “scramble” crossings

At a scramble intersection, signals include a phase in which all vehicular traffic is stopped, allowing pedestrians to cross in any direction, including diagonally. The City of Chicago implemented a scramble intersection in the Loop, at the intersection of Jackson Boulevard and State Street.



Pedestrian activity

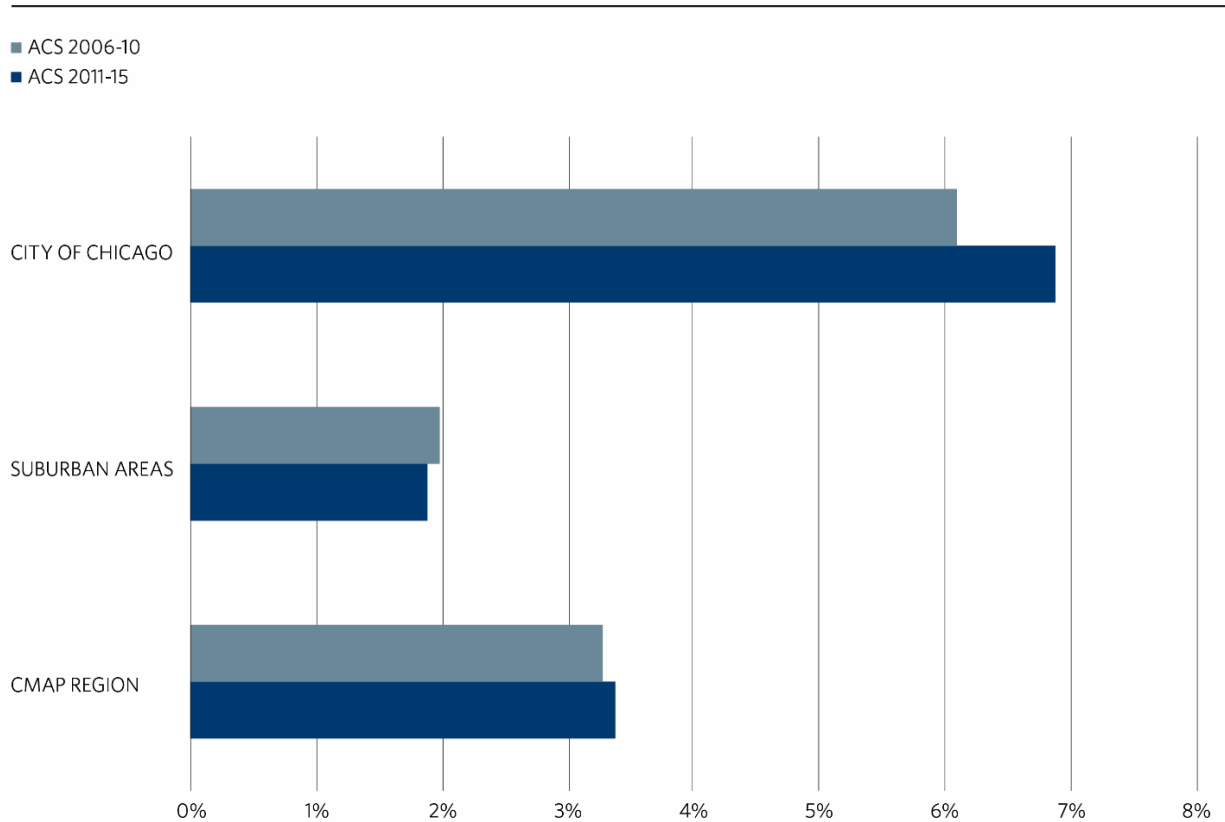
Pedestrian commuting levels

The prevalence of walking among the region's residents is difficult to capture with data. As with bicycling, U.S. Census (ACS) data represents estimates of work commute trips only, which make up a small fraction of all trips. Clearly, the majority of the region's residents travel by walking to some degree, even if it is not their main mode for commuting. In addition, as with bicycling, the sample size of persons who indicate in U.S. Census surveys that they regularly walk to work is often such a small number that statistical significance is lacking. Finally, because the data capture the primary mode of commuting, they do not account for the subsidiary walking that is part of almost any commute and trip, whether from one's origin to a transit station, from a parking lot to one's office, or some other segment.

ACS data for two five-year periods, 2006-10 and 2011-15, indicate that, between these two time periods, there has been a substantial increase in the number and percentage of persons walking to work in the City of Chicago (Figure 29). Suburban areas of the region appear to have stagnated in total numbers and in percentage. The region-wide increase can therefore be attributed entirely to the increase within the City of Chicago.



Figure 29. Pedestrian commute modeshare (2006-10 and 2011-15)



Source: U.S. Census Bureau, American Community Survey.

Americans with Disabilities Act (ADA) accommodations

The ADA, enacted by the U.S. Congress in 1990, requires that transportation facilities accommodate and provide access for persons with disabilities. In the years since ADA was passed, numerous treatments and design elements to aid disabled persons have been integrated into sidewalks, crossings, shared-use paths, and other pedestrian facilities. Many design elements and treatments developed and implemented to achieve ADA goals and meet legal requirements for safety, access, and mobility benefits for all pedestrians, whether they have a permanent or temporary disability or not.

In 2015, in conjunction with celebrations of the 25th anniversary of the ADA's signing, the Metropolitan Mayors Caucus conducted a survey of ADA adoption practices in the Chicago region. The survey, "Best Practices in Community Inclusion for Persons with Disabilities," considered staffing and general practices beyond the transportation sector, but did report

results relevant to pedestrians²⁶ Only five communities reported that they have created ADA-specific citizen commissions, with six others reporting broader commissions that work on ADA-related issues. Several municipalities and park districts also completed accessibility audits and/or ADA transition plans. Most communities rely on state ADA codes and requirements to inform their ADA policies and procedures. The Bureau of Design and Environment Manual, the Local Roads and Streets Manual, the Standard Specifications for Road and Bridge Construction in Illinois, and the Illinois Accessibility Code govern design and engineering – including ADA – improvements in public rights-of-way in Illinois.²⁷

Respondents to the Metropolitan Mayors Caucus ADA survey identified several areas of need related to ADA accommodations for pedestrians. Communities highlighted the need for technical assistance for planning and designing crosswalks and for technologies to accommodate the visually impaired, especially near senior centers and downtowns. They also listed the need for technical assistance in complying with ADA requirements for more general urban planning and park planning.

Village of Huntley ADA Transition Plan

The ADA requires larger public agencies to self-evaluate their transportation facilities to determine compliance with the ADA’s accessibility requirements and to establish a plan to correct any deficiencies. One regional example is the Village of Huntley’s 2015 “Public Right-of-Way Accessibility Transition Plan.” The plan focuses mostly on curb ramps and detectable warning tiles, and assesses each pedestrian ramp as compliant, potentially compliant, or non-compliant based on ramp presence, color, design, width, slope, and other factors (Figure 30).

²⁶ “Best Practices in Community Inclusion for Persons with Disabilities,” Metropolitan Mayors Caucus, 2015. http://mayorscaucus.org/wp-content/uploads/2015/08/ADA-Survey-Final-Findings_final.pdf.

²⁷ See IDOT’s “Accessibility in the Public Right-of-Way website, at <http://www.idot.illinois.gov/about-idot/civil-rights/ADA-and-Accessibility>.



Figure 30. Curb ramps



These ADA-compliant curb ramps consist of a textured panel that warns pedestrians that they have reached an intersection, as well as a gentle slope from the sidewalk height to the roadway.

Source: Village of Huntley Public Right-of-Way Accessibility Transition Plan.

City of Chicago pedestrian bridges

The City of Chicago has invested in replacing and retrofitting bridges and other infrastructure that function as pedestrian ways that were not compliant with the ADA. One notable example is the 35th Street pedestrian bridge that connects the Chicago’s Bronzeville neighborhood to the Lake Michigan waterfront, the lakefront trail and parklands. The recently-completed 20-foot wide bridge, funded by a combination of local, state, and federal funds, replaced a non-compliant bridge dating from the 1930s.



Walkability estimate

CMAP conducted an analysis to estimate the walkability of the region based on current infrastructural conditions and access to destinations. While several measures of walkability exist, this report borrows the principles promoted by Jeff Speck,²⁸ that walkability is achieved when four conditions are met simultaneously: the walk is useful (there is a proper reason for walking), the walk is safe and feels safe, the walk is comfortable, and the walk is interesting. Many factors, such as street network design, land development patterns, and streetscaping can be utilized to achieve walkability in these four fields. Moreover, the four criteria are closely interconnected and not mutually exclusive, as they can share similar strategies that contribute to achieving the goals of multiple categories.

The useful walk

To be truly walkable, beyond sidewalks and infrastructure, a community must have destinations to which people want to walk. When a large number of destinations are close to one another and arranged so that residents and visitors can comfortably and conveniently access them on foot, walking becomes a desirable mode of transportation. Some of the destinations that pedestrians should be able to comfortably access on foot include grocery stores, schools, parks and places where people gather, restaurants and retail shopping, civic buildings and places of worship. When these destinations are close to where people live, it becomes convenient to walk to perform basic errands, access everyday goods and services, and engage in community life. These concentrations of destinations typically occur in urban neighborhoods and suburban downtowns.

A combination of housing, public transit and transportation options, as well as employment opportunities are other key components of walkable neighborhoods. The concentration of people – residents, visitors, employees – provides local businesses with regular customers. When a large number of potential customers either live within walking distance, work nearby, or can easily access the area by bus or train, there is less need for parking. Large surface parking lots increase the distance between businesses and destinations. Areas or communities with large amounts of land dedicated to surface parking will usually fail to achieve real walkability.

The safe walk

On the most fundamental level, people must be safe and feel safe, for an area to be considered truly walkable. With regards to walking, safety generally falls into the two categories of traffic safety, and safety from crime. Pedestrians are physically and psychologically vulnerable in ways that drivers may not be, and lack of safety is consistently cited as a key barrier to walking.

The design of roadways and adjacent rights-of-way can have a significant impact on the real and perceived safety of pedestrians – sidewalks and crossings in particular. Sidewalks constitute the most basic pedestrian accommodation, providing a “pedestrian lane” separated

²⁸ Speck, Jeff. *Walkable City: How Downtown Can Save America, One Step at a Time*. North Point Press: New York, 2012.



from roadway vehicles. Sidewalks are associated with significant reductions in pedestrian collisions and are an essential element of walkable communities. To be effective, continuous sidewalks must be part of a connected network that provides access to goods, services, transit, homes, and other destinations and locations. Sidewalk design aimed at promoting walking and walkability should comply with all ADA and Public Right-of-Way Accessibility Guidelines (PROWAG) requirements and guidance. Including a buffer area between the sidewalk and travel lanes, which may consist of a landscaped strip, parked cars, or bicycle lanes, improves the safety and comfort of pedestrians.

All pedestrian crossing locations are potential conflict points. Safe crossings increase visibility, raise awareness, and minimize the exposure of pedestrians, as well as simplify and clarify right-of-way and the movement and routing of roadway users. Safe crossings should be provided wherever pedestrians are present and at convenient intervals along a corridor, which can be more easily achieved by a gridded street pattern with small block sizes. Especially at intersections with more than two lanes in one direction, elements such as pedestrian safety islands and coordinated signal timing can also help pedestrians feel more protected and confident when crossing²⁹.

Managing traffic speed is an important aspect of walkability and safety. Pedestrians typically feel safer and more comfortable on streets with lower travel speeds – even when there are high traffic volumes – than they do on streets with higher speeds. In addition, pedestrian injuries are less frequent and less severe on roadways with lower speeds. Traffic calming and speed management measures can be used to enhance walkability and safety. Reducing vehicle speeds typically includes an approach that considers enforcement and education measures, in addition to engineering and design. The safety benefits of reduced speeds extend to motorists and cyclists, although the advantage to pedestrians is the most substantial from an injury and fatality point of view.

Crime is always a concern for pedestrians, and safety is enhanced when there are “eyes on the street,” a phrase coined by Jane Jacobs to indicate the crucial importance of vibrant street life to neighborhood safety and community life. High-quality, human-scaled public spaces where people are present increase the sense of safety and security among pedestrians. Primary elements of such places include: ample space for walking, “contact” between buildings and the street, attractive spaces with pedestrian amenities, and enhanced, pedestrian-scaled lighting.

The comfortable walk

Pedestrian infrastructure, natural features, and physical design can enhance walkability by making pedestrians more comfortable as they move through a community. Wide sidewalks should comfortably accommodate two-way traffic with people carrying bags, pushing strollers, using wheelchairs and walking side-by-side. The added space invites people to walk at a relaxed pace and to interact with friends and neighbors. Landscaping between the road and the

²⁹ NACTO (2013). *Urban Street Design Guide*. <https://nacto.org/publication/urban-street-design-guide/>.



sidewalk – from a simple grass strip or planters to street trees – adds an element of physical protection, as does on-street parking. Sidewalks that are buffered from traffic provide a more comfortable and less stressful pedestrian experience. Physical separation from traffic is more important as traffic speeds and volumes are higher.

Benches, water fountains, pedestrian-scaled lighting, and covered or protected areas are additional amenities that can make pedestrians feel more comfortable. In addition to buffering the sidewalk, street trees can add to pedestrian comfort by providing shade during summer months and some amount of protection from precipitation. Enhanced lighting and areas for sitting and resting can also contribute to feelings of comfort and ease.

The layout and design of streets and sidewalks is critical to creating a comfortable walking environment. Gridded street blocks make it easy for pedestrians to navigate even unfamiliar areas. Shorter blocks with more intersections increase the number of places where people can cross to the other side of the street, and reduce the need to “double back.” Additionally, streets with a continuous building line and a sensible building height to street width ratio can feel more personable—at “human scale.”

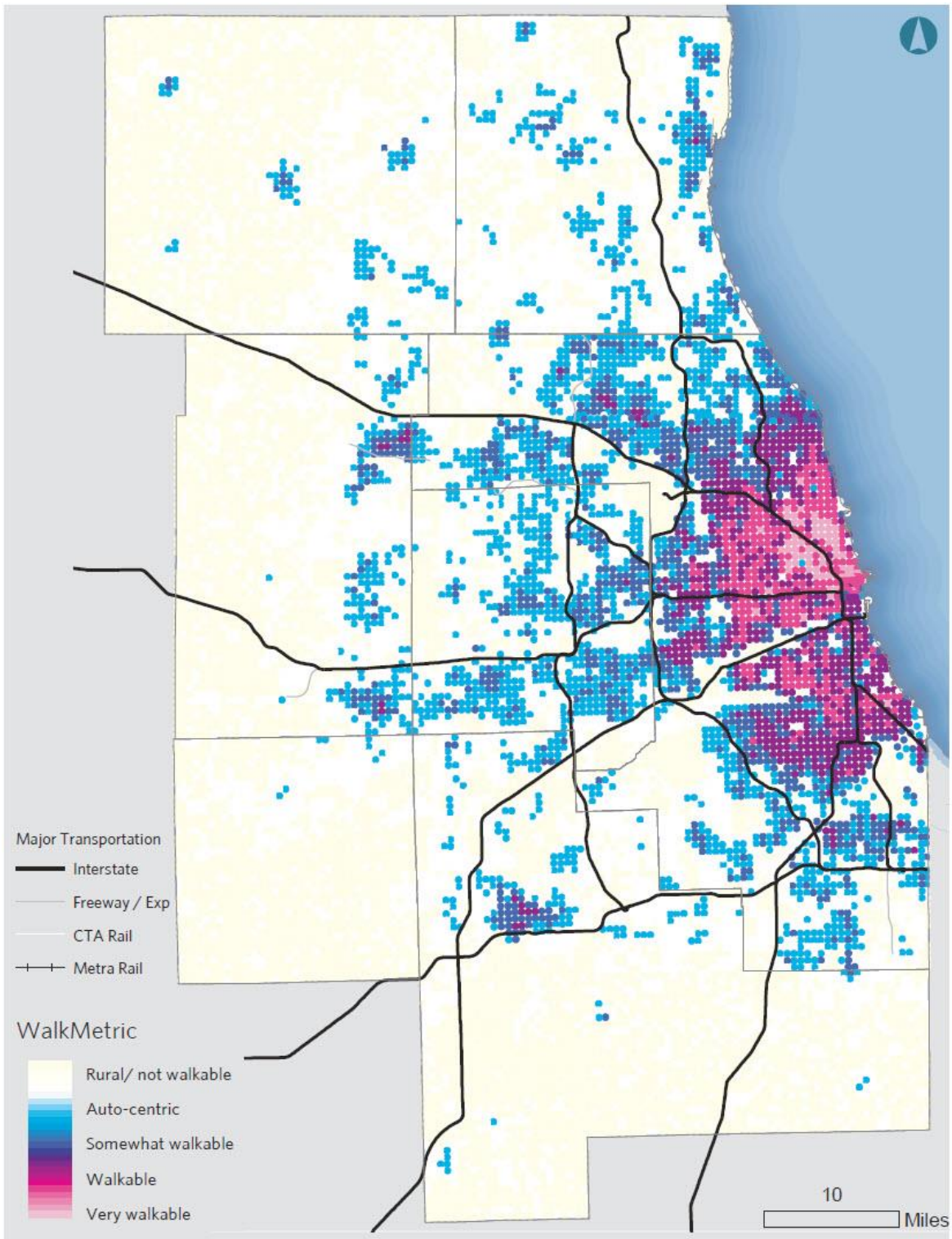
The interesting walk

The final key to creating a neighborhood or area where walking is a preferred way to get around, is to make the walk interesting. A safe, comfortable, and useful walk is buoyed by signs of humanity and interesting “findings” along the way. Cultural amenities such as public art, water features, landscaping and flowers, window displays, and public events help to draw people out. Land-use patterns like ground-level retail and sidewalk cafes attract foot traffic and make streets more vibrant. More people “out and about” normalizes the act of walking. A coherent and simple signage and wayfinding system to help guide pedestrians to destinations can also give people more confidence to walk.

Street design that enhances comfort and safety can also make a walk more interesting. Shorter blocks provide more variety and change in environment, which helps to overcome boredom when experiencing the surrounding environment at the scale of a pedestrian. A long block with a blank wall will harm the potential walkability of the area. In contrast, a short block with smaller parcels will offer visual variety.



Figure 31. Walkability map



Source: CMAP analysis, 2017.



Walkability map

Using the above four elements, the CMAP region was evaluated for walkability along the lines of safety, comfort, usefulness, and interest. A series of points throughout the region spaced at one-quarter mile were evaluated by the number of amenities accessible within a 30-minute walk, and by the geometric conditions in the surrounding roadway network and parcels, as well as the density of people and jobs. Each metric was given a score, and the total sum of scores was used to create a regional walkability map (Figure 31).

Walkability assessment

Within the constraints of available data sources, the following factors were considered in the walkability assessment: access to full-service supermarkets, libraries, schools, transit stations, and jobs; frequency of transit service; population density; parcel size; Dunn & Bradstreet business locations points; block length; block size; and intersection density. As a regional analysis, this provides a general estimate of walkability, but localized assessments require more in-depth analyses. Additional data that would help paint a more complete picture includes sidewalk coverage, quality of the walk, land use mix, number of lanes on roadways, traffic volumes and speeds, shade and shelter, air quality, noise levels, crime, etc.

Conclusion

Stakeholder input indicates a strong desire to increase levels of walking and biking as a form of transportation. While the data does not show similar progress throughout the region, communities that are investing in high-quality non-motorized transportation options are most likely to see increases in walking and biking. There is an opportunity for employers across the region to encourage and reward non-motorized commutes. Challenges remain to addressing inequity in safety outcomes and expanding infrastructure into neighborhoods throughout the region. Slowing traffic, reducing distractions, and re-designing our streets to make them safe for all users and enjoyable for walking and biking will be important to fulfill the region's desires for enhanced non-motorized transportation.



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www.cmap.illinois.gov

The Chicago Metropolitan Agency for Planning (CMAP) is our region's comprehensive planning organization. The agency and its partners are developing ON TO 2050, a new comprehensive regional plan to help the seven counties and 284 communities of northeastern Illinois implement strategies that address transportation, housing, economic development, open space, the environment, and other quality-of-life issues. See www.cmap.illinois.gov for more information.

ON TO 2050 reports will define further research needs as the plan is being developed prior to adoption in October 2018.