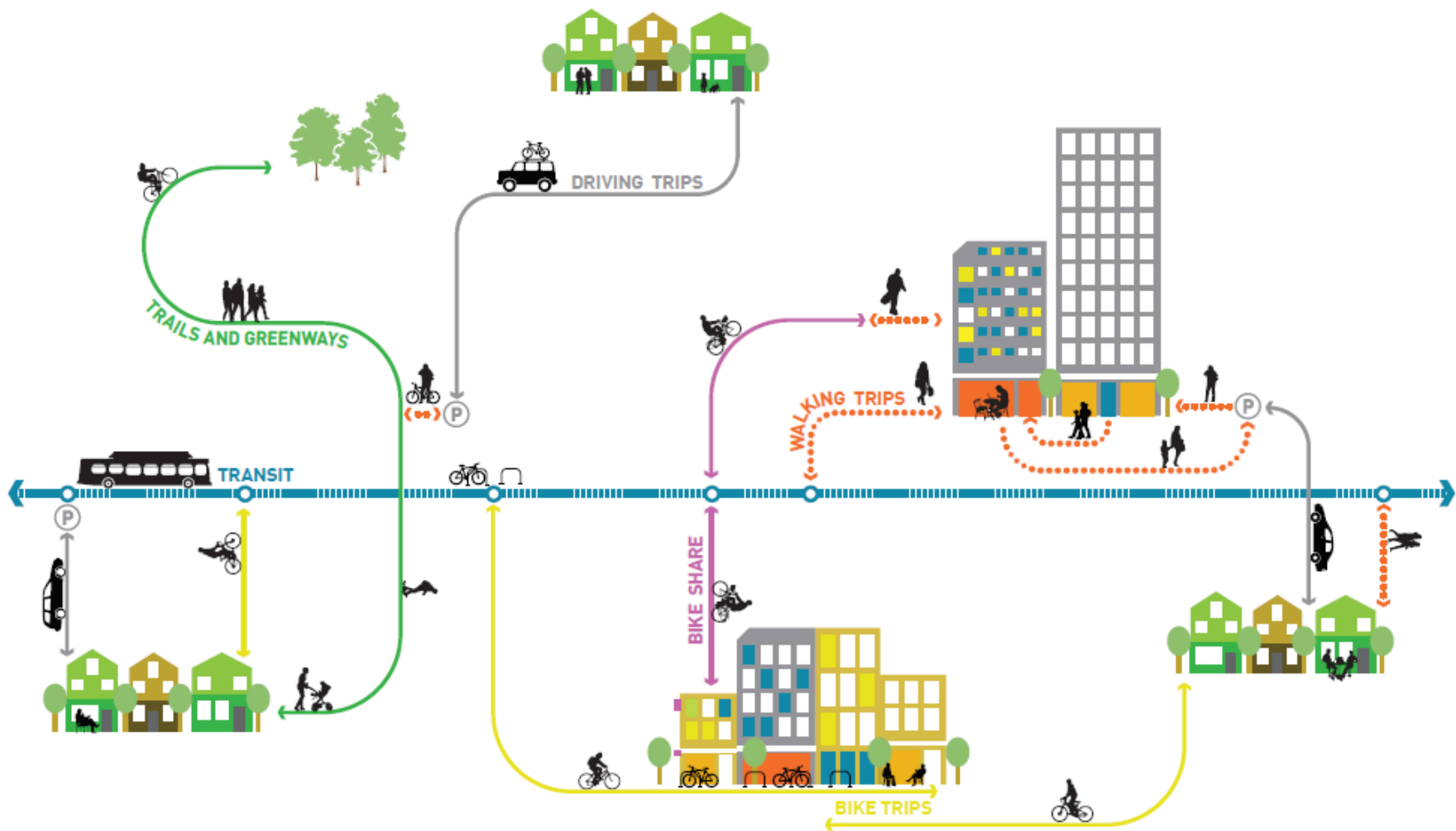


REGIONAL WORKBOOK FOR COMPLETE STREETS



HOW DO WE BUILD A REGION WHERE IT IS EASIER & SAFER FOR EVERYONE TO WALK OR BIKE?



Most Americans today do not live in towns or cities in the traditional sense that we think of those terms.

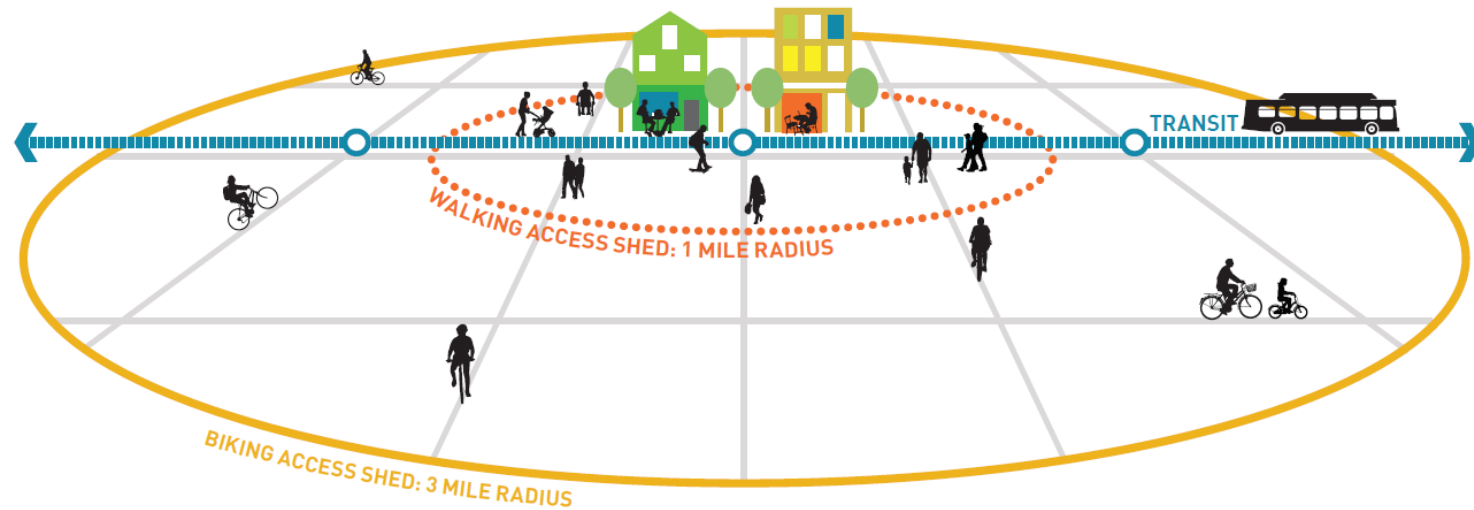
Instead most of us are citizens of the region: a large and multi-faceted metropolitan area encompassing hundreds of places that we would traditionally think of as distinct and separate communities.

— *Peter Calthorpe*

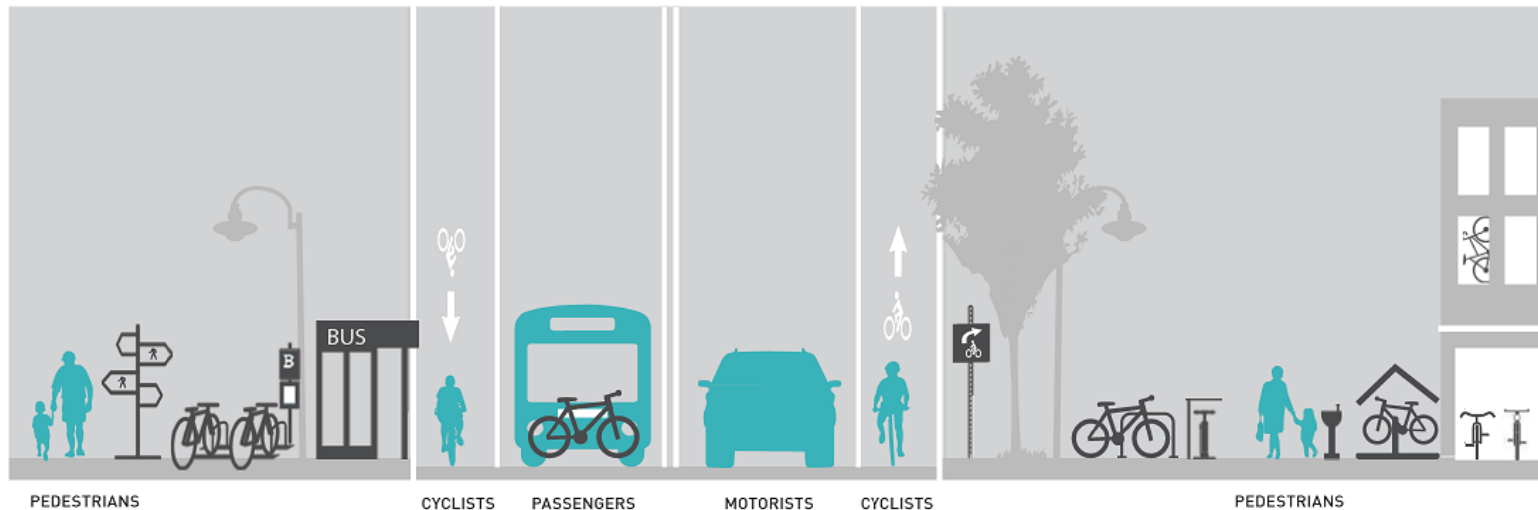
ORGANIZING PRINCIPLES

BUILDING BLOCKS OF ACTIVE COMMUNITIES

TRAVEL SHEDS:
AN ORGANIZING PRINCIPLE



COMPLETE STREETS:
OPPORTUNITIES TO REDUCE TRAVEL BARRIERS



Focus investments to support walkable communities

A metropolitan area is boosted by having more walkable and bikeable communities. The region uses transportation and development tools to support active trips along connected street grids with access to parks, schools, commercial areas, transit service, and a mix of housing types.

Address safety and equity issues

The region uses every investment to help decrease pedestrian and bicyclist fatalities and serious injuries as well as providing sidewalks and bikeways for populations that rely on walking and biking out of necessity.

A MORE WALKABLE & BIKABLE METRO ATLANTA



Connect regional trail system

Multi-use paths and trails serve as comfortable “walking and bicycling superhighways” at a regional scale. The region develops partnerships between state, local, and non-profit organizations to make critical regional trail connections.

Improve access to transit

Longer regional trips are best served by walking and bicycling combined with transit. The region works to improve walking and biking access to transit stops and improve the quality and quantity of regional transit service.

Build complete streets

Walkable communities are best supported by complete streets. Suburban arterial roads need to be multi-modal thoroughfares. The region identifies barriers to walking and biking and relentlessly works to address them as opportunities arise.

REGIONAL WORKBOOK FOR COMPLETE STREETS

A SUPPLEMENT TO *WALK.BIKE.THRIVE!*



ATLANTA REGIONAL COMMISSION

SECTION 1.

UNDERSTANDING COMPLETE STREETS



What are Streets?

We have come to think of streets as infrastructure for moving cars. But traditionally streets allowed access and provided public space in cities. Roads and highways provided travel between cities. This distinction has blurred in recent times but intentional design of streets and roads is vital to providing safe transportation for all street users and supporting great communities.

Purposes of Streets

Streets and roads perform several fundamental roles in communities:

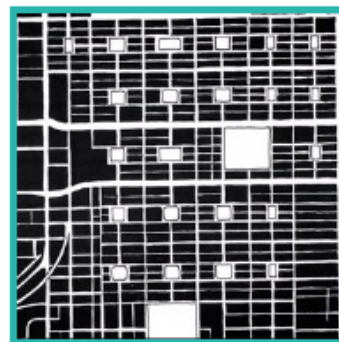
- **Form:** Streets patterns determine community form. Street networks shape how development is distributed and reinforce patterns of travel. A connected grid of smaller streets makes active transportation easier by providing walkable blocks, shortening travel distances, reducing congestion, and increasing the choice of available routes. Long corridors and dendritic road patterns support long automobile trips, are susceptible to congestion, and create barriers.
- **Function:** The design of a street dictates how people can travel. Comfortable facilities for walking, bicycling, and transit access encourage those modes. Automobile-oriented designs discourage walking and bicycling by increasing risk, decreasing comfort, and creating barriers. Elements of street design are guided by regulations but should also be determined by community vision, data analysis, long-range planning, and politics.

Conventional transportation planning places roadways within a hierarchy that determines their transportation function. While functional classification is useful for managing road networks, it is inadequate for design as it does not indicate needs for context-sensitive designs and fails to recognize access needs for the myriad of destinations typically found along streets and arterial roads.

Streets in a Network

Network connectivity determines the utility of the transportation system. Connected streets distribute traffic and reduce congestion. Connected walkways and bikeways increase active transportation. In urban areas, intersections should be frequent and walkways and bikeways should form complete networks.

Modal plans are useful for determining design priorities, but every major roadway should provide multimodal options to meet travel needs and provide safety and dignity for people on foot, on bikes, using assistive devices, and in cars.



A traditional connected street grid (left) compared to a modern, conventional road hierarchy (right).

"The street is the primary structural unit of the city. Streets allow us to communicate and to move about. They constitute the order within the collective whole. Streets are complex institutions with great social, political, and economic depth. Giving them over to the single function of traffic movement, as we have done over the last 100 years, depletes them of their historical depth and role."

— Doug Allen

Transportation and Land Use Connections

Transportation facilities and adjacent land uses interact in constant feedback loops. Compact development patterns support walkable streets, bicycling facilities, and more transportation choices. Widening roads provides an incentive for dispersed commercial and residential development which strains the road network and spurs continual investment in a few major corridors. These feedback loops foster political and socioeconomic systems invested in their continued success.

Complete Street decisions should consider communities and transportation as a whole and challenge established political, economic, and cultural expectations. To support more walkable places we must build new systems.

Streets make communities. Street networks should provide connectivity and be planned as a multi-century investment. Street elements should provide comfort and safety for everyone, or be made multimodal at every opportunity.

? What Are Complete Streets?

Complete Streets are multimodal roadways designed and operated to provide safe and comfortable access for all roadway users regardless of their age, ability, or choice of transportation mode. People on foot or bike, motorists, and transit users should be able to safely use every street and roadway, even if one mode has priority over another on a particular corridor or stretch of road (e.g. a bus priority lane; bike route; or high occupancy vehicle lane). Complete Streets may be local streets or regional thoroughfares, but each features context-sensitive designs, is rooted in community vision and values, and enables communities and the region to thrive.

United States Department of Transportation

The U.S. Department of Transportation states that **“every transportation agency ... has the responsibility to improve conditions and opportunities for walking and bicycling”** and recognizes Complete Streets as a context-sensitive approach to building an accessible transportation system for all.¹

USDOT defines Complete Streets as **“... streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient.”**

Sources: 1. USDOT (2010); 2. Georgia DOT (2019); 3. ARC (2015);
4. U.S.C. § 450.306. Scope of the metropolitan transportation planning process.

Regional strategies should encourage context-sensitive roadway designs that enable safe access for all users, including people of all ages and abilities walking, bicycling, driving, and riding transit.

Georgia Department of Transportation

The Georgia Department of Transportation (GDOT) policy is to **“routinely incorporate bicycle, pedestrian, and transit accommodations into transportation infrastructure projects as a means for improving mobility, access, and safety for the traveling public.”**

“GDOT coordinates with local governments and planning organizations to ensure that bicycle, pedestrian, and transit needs are addressed beginning with system planning and continuing through design, construction, maintenance and operations.”²

GDOT’s policies for Complete Streets are detailed in Chapter 9 of the *Design Policy Manual* and supports complete streets in urbanized areas statewide. Projects and design elements are informed by a range of safety, context, and demand warrants and community input.

Atlanta Regional Commission

ARC’s uses Complete Streets to relentlessly and incrementally address uncomfortable conditions for walking and biking wherever the opportunity arises. **ARC supports the implementation of Complete Street principles on every roadway and with any project receiving federal funds.**³

As a metropolitan transportation planning agency, ARC must “provide for consideration of projects and strategies that will ... increase the safety of the transportation system for motorized and nonmotorized users.”⁴

ARC’s uses a strategic approach for context-sensitive Complete Street investments on the existing roadway network. ARC utilizes or re-orientes existing funding and programs to support communities and create a safer, more equitable transportation system for all.

For several decades now, movement has taken precedence over place. The form and content of urban development is now shaped largely by transportation policies. These policies can regain proper civic purpose and meaning only when they are subordinated to a larger ecological and communal project.

— Leon Krier



Why are Complete Streets Regionally Important?

Complete Streets support (and are supported by) walkable communities and contribute to a more walkable region. Walkable communities are small in land area, but cumulatively help shape regional growth and achieve regional goals:

- **Sustainable Environment:** Large cities often support multimodal transportation and lower per capita carbon emissions, but above densities that support shorter trips and increased travel by low-emission transportation modes.¹ For many large urban areas, metropolitan-wide travel patterns and suburban commute trips significantly outweigh center-city efficiencies.²

Reducing emissions requires investment in existing urban areas, but also regional changes in transportation and development patterns: more walkable urban centers; denser, mixed-use suburbs; and more regional transit and active transportation options.

- **Social Equity:** Commuting times are the best predictor of economic opportunities and are strongly influenced by regional growth patterns. The impact of transportation on the ability of low-income families to escape poverty is most striking in areas with high degrees of segregation, income inequality, and sprawling development.³

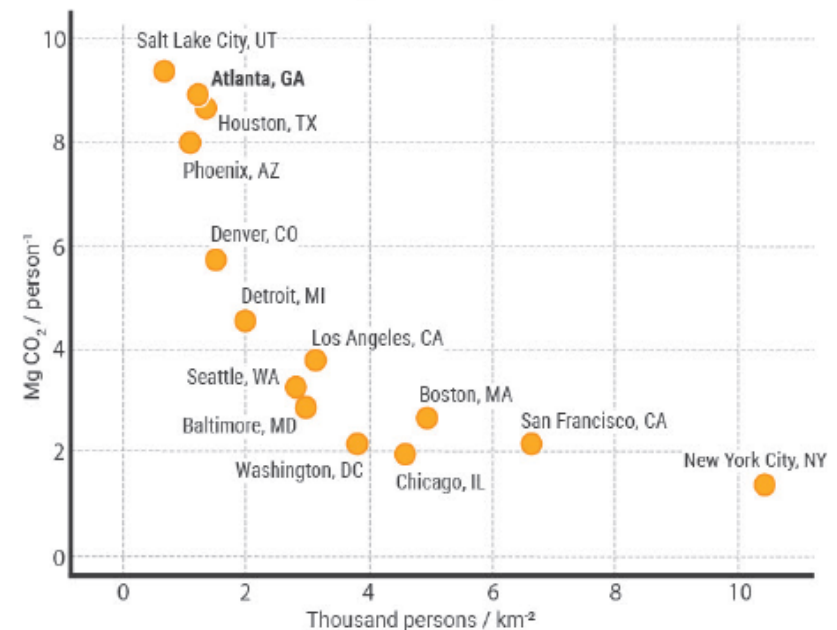
Equity solutions are complex, but intentional strategies must: create affordable and workforce housing; provide transportation options; improve education; and increase regional accessibility via increased transit, increased last-mile connectivity, and increased affordable housing within walkable communities.

- **Competitive Economy:** Walkable urban places occupy less than 1% of the Atlanta region's land area, but contain nearly 20% of the region's jobs. They generate higher values with lower long-term costs than driving-only areas.⁴

Building walkable centers (along with improving education) is the most effective economic development strategy that the region can pursue.

Regional strategies should encourage compact, walkable, and transit-accessible communities. Compact communities provide the proper context for Complete Streets, while safe and multimodal streets better support community-scale travel.

Correlation of per capita automobile carbon emissions rates and urban density in 14 metropolitan center-cities



Urban densities correlate with per capita emissions, especially at densities that support lower-emission travel modes. But large city emissions are heavily influenced by regional commuting patterns that outweigh urban efficiencies.

Adapted from: Gately, Conor, K. et al. (2015) "Cities, traffic, and CO₂: A multi-decadal assessment of trends, drivers, and scaling relationships"

INDICATORS OF LOWER CO₂ EMISSIONS (IN RANKED ORDER):

Residential:	Transportation:
More presence of multifamily housing	More multimodal accessibility
Decreased size of residences	Increased transit share
Increased density of housing	Shorter distance to regional activity centers
Increased number of people per household	Higher population density
	More neighborhood walkability

Source: Atlanta Regional Commission. (2014) "Impact of Community Design on Greenhouse Gas Emissions".

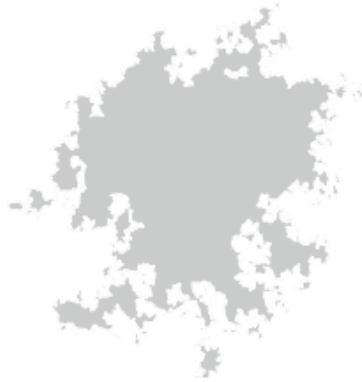
Sources: 1. Gately (2015); 2. Jones (2014); 3. Chetty (2015); 4. Leinberger (2013).

SECTION 2.

MAKING DECISIONS ABOUT COMPLETE STREETS

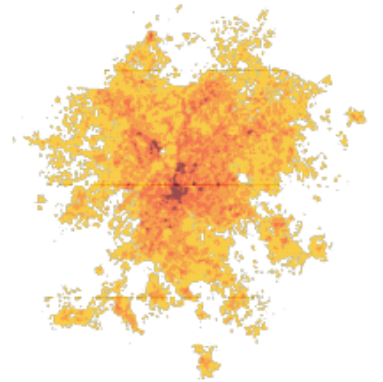


How Can Data and Policy Inform Complete Streets?



Regional Scale & Urbanized Areas

Urbanized areas are the scale at which modern communities function. Census-designated urban areas (including the majority of the Atlanta MPO area) represent relatively dense developed territories and determine regional travel patterns. Complete Streets should be considered anywhere within an urbanized area, though specific elements should be context-sensitive and assessed at the corridor or local level.



Walking and Bicycling Demand & Propensity

Propensity for walking and biking in the region is not evenly distributed. Density, proximity to certain destinations (such as schools or stores), and other place-based factors contribute to areas with higher opportunities for walking and biking. This data can help determine destination density along a corridor, anticipated demand for roadway facilities, and help prioritize walking and bicycling infrastructure.



Regional Corridors: Multimodal Thoroughfares

Thoroughfares are locations where many regional demands converge. Major roads support a range of communities, transit service, and both local and regional trips. Many thoroughfares in metro Atlanta are high risk for people on foot and bike; building multi-modal corridors is important for regional travel or local access in challenging locations. ARC's designated Strategic Regional Thoroughfare Network and other arterials provide regional mobility and connect major activity centers.



Regional Development: Centers & Places

Regional centers and places are compact areas that are naturally (or aspirationally) appropriate for walking and bicycling. These areas encompass a wide range of contexts and densities, but within each center planning for pedestrians and bicyclists is of equal importance to the automobile. ARC's Regional Development Guide and Unified Growth Policy Map identify centers in neighborhoods, business districts, and small towns across the region.



What is the Regional Strategy for Complete Streets?

Use Regional Policies to Prioritize Complete Streets

Complete Streets should be considered everywhere in the metro Atlanta region. Incremental investments help build a safe transportation network, support walkable communities, and accommodate walking, bicycling, and transit access along suburban arterials and to high-priority destinations.¹

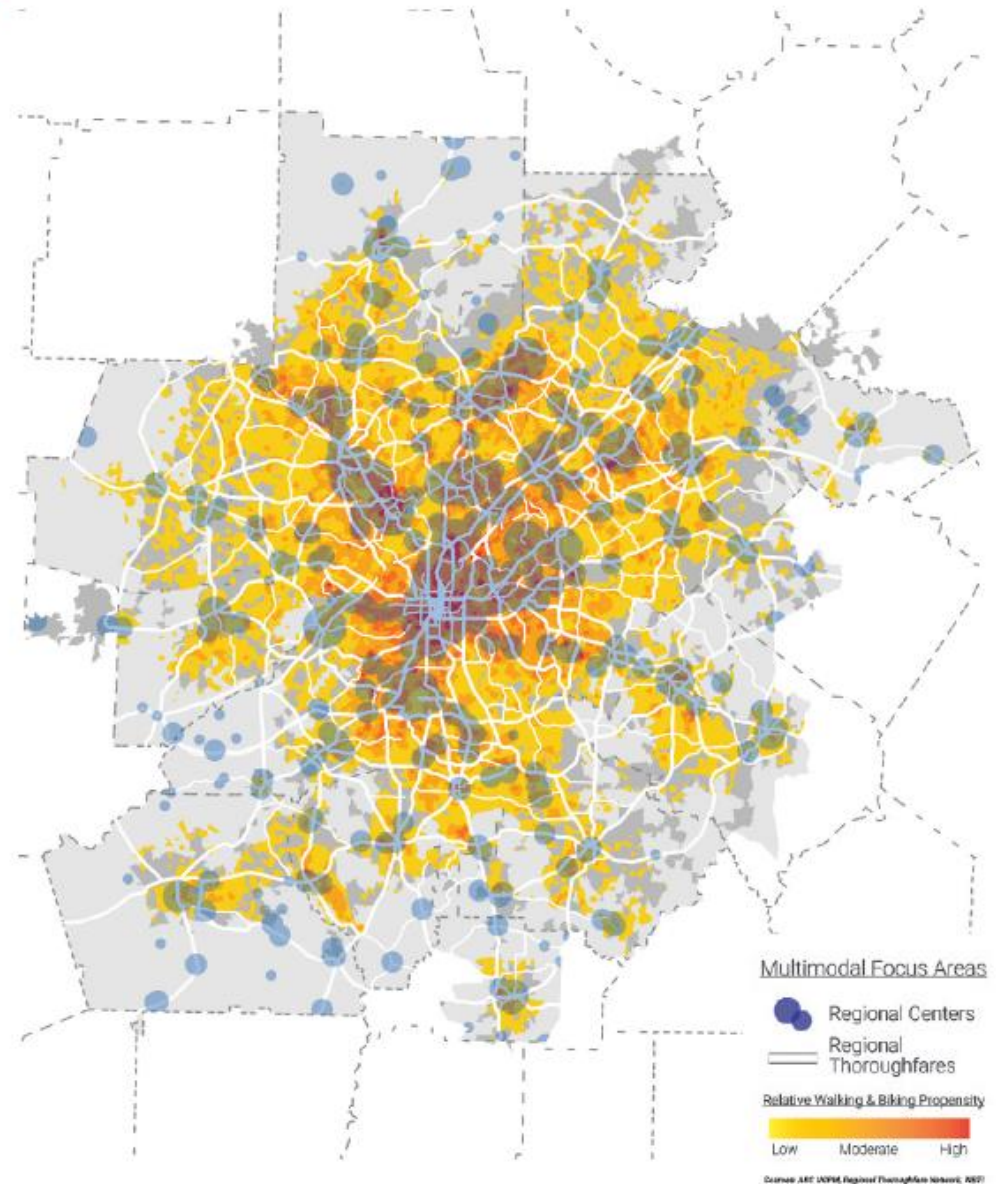
Walkable Communities: Complete Streets help make regional centers and towns walkable and bikeable communities. Investments in regional centers support walking, bicycling, transit, and better long-term growth for the region. These areas should be the primary focus of transportation and development:

- Existing urban & town centers – use Complete Streets to increase travel options, meet demand, and support existing multimodal character.
- Aspirational centers – use Complete Streets and dense street networks to support multimodal options and short trips in new developments.

Multi-Modal Thoroughfares: Complete Street elements should be used strategically on regional corridors where many priorities converge – businesses, services, residences, transit routes, and traffic – in order to:

- Reduce risk and improve safety for people walking and bicycling.
- Provide access to high-priority destinations, including: schools, parks, commercial areas, residential neighborhoods, grocery stores, or community activities.
- Support existing or latent demand, especially along corridors with evidence of people walking or bicycling (i.e. a worn path along the roadside).
- Support regional transit routes.
- Connect neighborhoods and cities via walkways, bikeways, and paths.

Regional strategies should support context-sensitive Complete Streets throughout metropolitan Atlanta. Urban centers should feature Complete Streets. Regional thoroughfares should be multimodal. Complete Streets within communities are complimented by thoroughfares as well as regional transit and greenway trails for longer connections.



Source: 1. adapted from ITE (2010).



What is the Regional Strategy for Complete Streets?

Use Complete Streets to Reduce Risk

Complete Street elements should be considered on every roadway in the metro Atlanta region. Incremental investments help build a safe transportation network, increase connections within and between communities, and accommodate walking, bicycling, and transit access to high-priority destinations.

Safety can be determined by crash rates or the risks that people are exposed to when walking and bicycling. Assessing risk can help communities be more proactive in preventing crashes and eliminating serious injuries and fatalities.

Factors that contribute to risk along a corridor include:

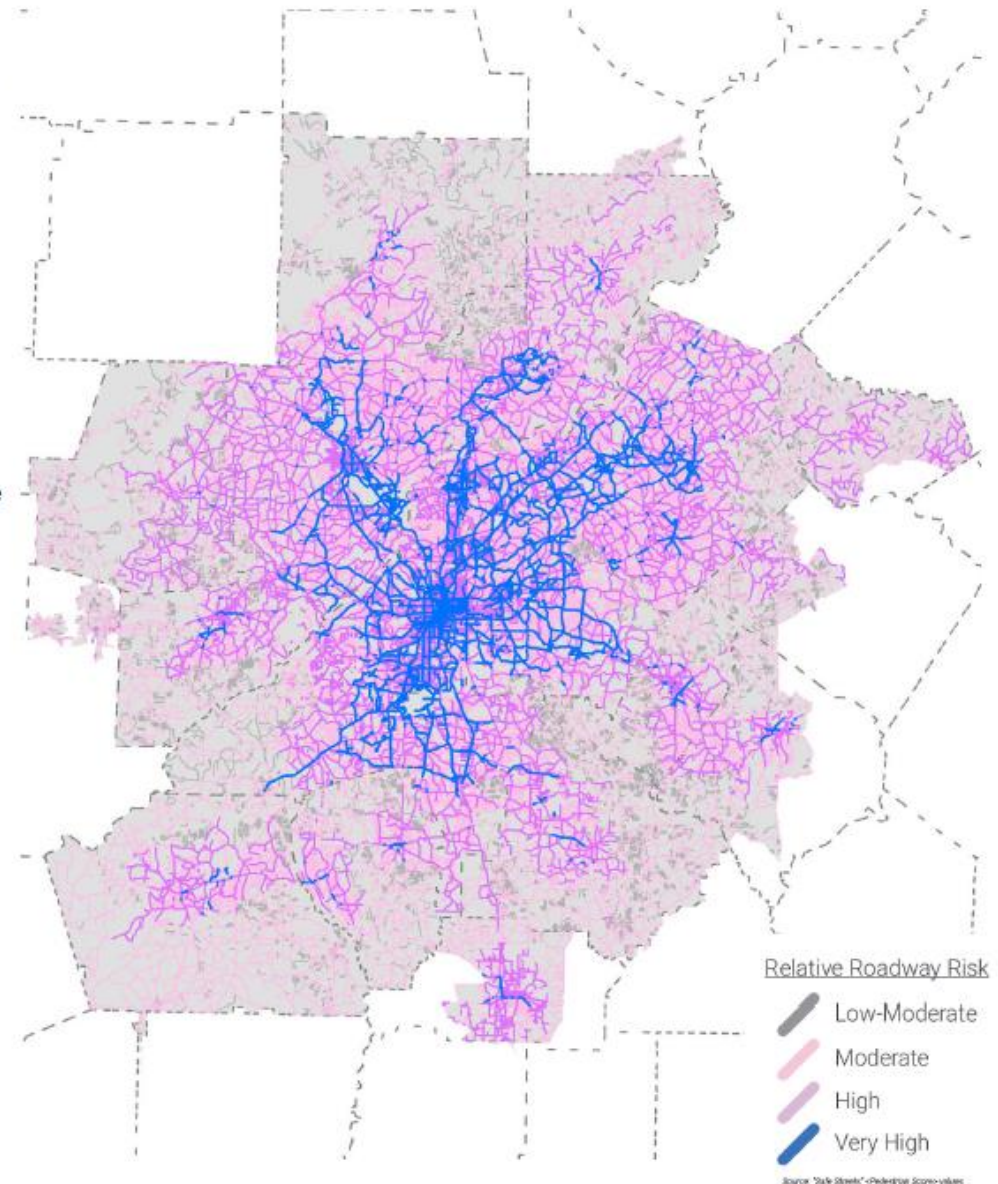
- **Roadway Characteristics:** Some roadway features are associated with higher risks for serious crashes, including: vehicle speeds, lighting, presence of crosswalks, number of lanes, and roadway classifications.
- **Travel Demand:** Walking and bicycling trip estimates and transit service indicate relative levels of travel, exposure, and risk.

Roadway design is the foundation of traffic safety, but safer elements are unevenly distributed in the region – especially for vulnerable populations and underserved communities. Community-wide exposure to risk must be assessed to determine Complete Street needs:

- **Equity & Policy Priorities:** Regional distribution of risk factors can indicate disproportionate exposure for specific geographies or populations.

Every transportation investment should incorporate proven safety measures to address risk factors. The map at right illustrates regional risk factors and travel demand for walking and bicycling. This data can help identify priority needs for Complete Streets.

Regional strategies should support safer roadway designs throughout metropolitan Atlanta. Every transportation investment should reduce risks for people walking, bicycling, and driving. Complete Street elements and facilities should be considered intrinsic and immutable in every project.



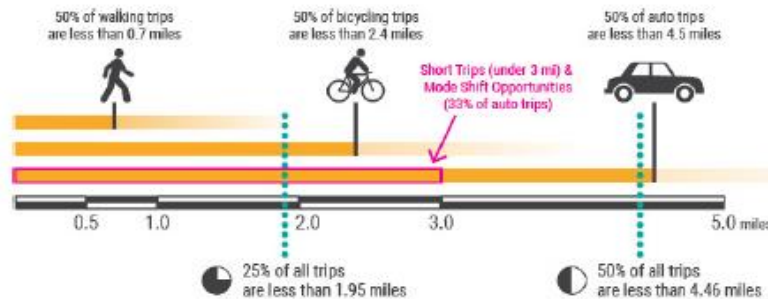
For more information, see ARC's "Safe Streets for Walking & Bicycling" (2018) report.



What is the Regional Strategy for Complete Streets?

Use Complete Streets to Support Short Trips

Metro Atlanta's development patterns often require long trips. Reliance on cars for long trips increases congestion, limits economic mobility, and creates stress and poor health outcomes. Walking and bicycling are well suited for short trips, but too many short trips still require driving due to lack of comfortable walkways or bikeways. Reducing trip distances and shifting modes requires combining compact development practices and Complete Streets.

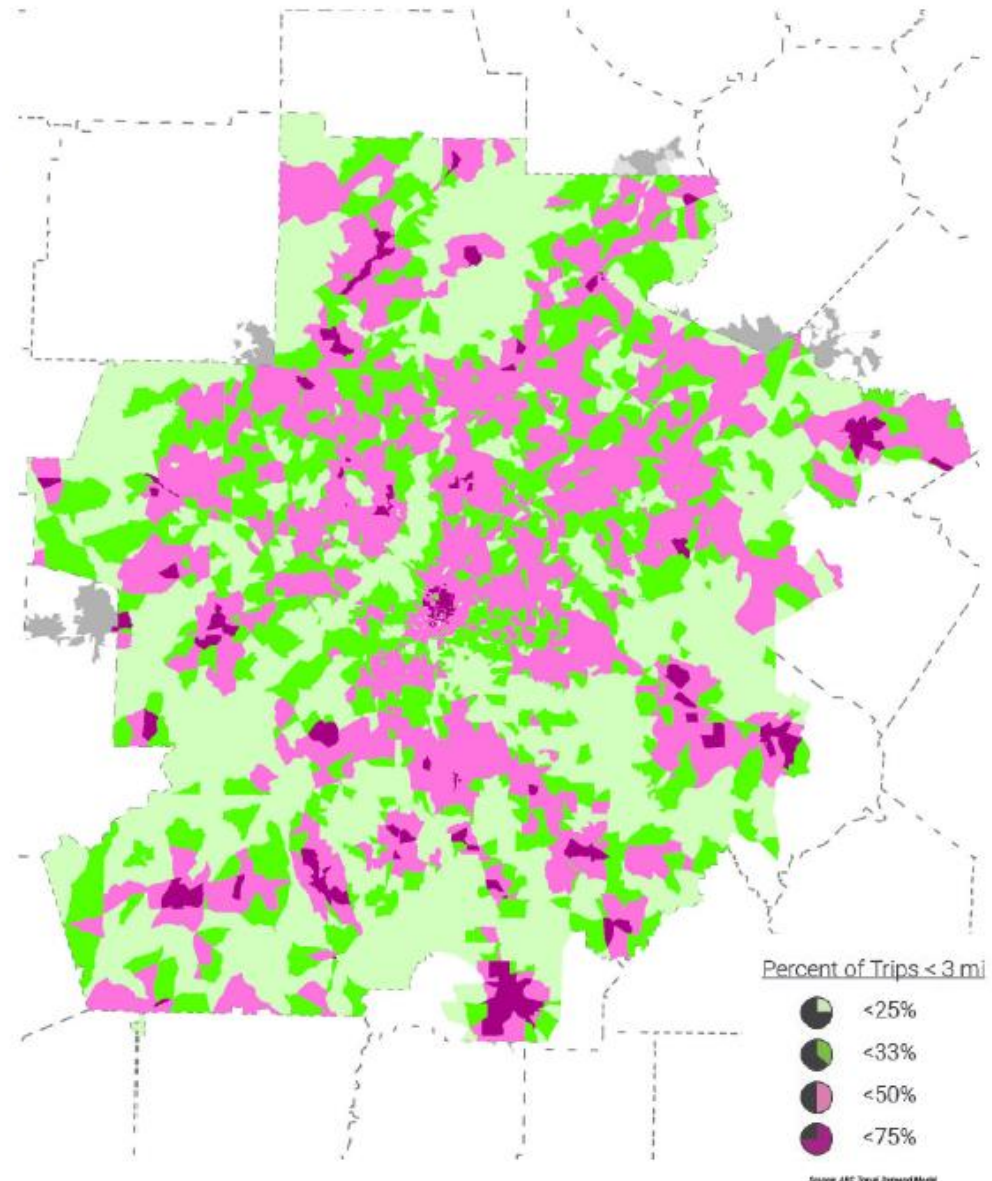


Regional travel is complex, but areas with shorter trips often have:¹

- **Higher Street Connectivity:** A grid of smaller streets shortens travel distances and increases route choices.
- **Higher Density:** Concentrations of residential and commercial uses enable more proximity, more walking and cycling, higher economic activity, lower infrastructure costs, lower cost of living, and environmental conservation.
- **Mixed Zoning:** Increased mixed-use zoning enables trips to be shorter and increases the number of destinations that can be accessed without driving.
- **Less Parking:** Reduced parking minimums plus market-based price strategies incentivize different travel decisions and reduce public costs of parking.

Regional strategies should prioritize short trips. Community development efforts should create compact communities and concentrate destinations. Transportation investments should support Complete Streets to provide comfortable facilities that increase walking, biking, and transit access.

Source: 1. Georgia Tech CQGRD (2012).



Source: ABC Travel Demand Model

SECTION 3.

CRITICAL QUESTIONS ABOUT WALKING & BICYCLING ON SUBURBAN ROADS



Critical Questions About Walking and Biking on Suburban Roads

There are design solutions to make suburban roads better for walking and bicycling, including the safety measure and components of a Complete Street shown earlier (see pages 10-11). However, even these designs can sometimes seem insignificant against the overwhelming backdrop of an extensive suburban roadway network that routinely includes design features known to increase risk. Over time, these risks must be systematically eliminated through better design.

In the pages that follow, the Complete Streets Workbook demonstrates the value of incremental change to bringing basic dignity and inclusiveness to the harshest road environments while beginning a successful transformation to more complete streets and walkable communities in the medium- and long-term. The Workbook also tackles several critical questions that are frequently raised by planners and designers faced with making suburban roadways more hospitable and safe for people on foot and bike.



1. How To Make 4- and 5-lane Suburban Roads More Complete?

Four- and five-lane arterials are pervasive across the entire region and feature many or all of the most dangerous design elements identified in **Safe Streets**. They also provide the backbone of regional transit services, connect communities across major barriers (e.g. railways, rivers, and highways), and provide access to the majority of the destinations for every aspect of our daily lives.



2. Bikes on Suburban Arterials: On-street or Off-street?

Selecting the appropriate facility to serve people on bikes is a particular challenge on suburban arterials. The workbook provides guidance on how to choose between on- and off-street options, and identifies several planning and design factors to address before making a decision.



3. Where To Put a Crosswalk?

Safe pedestrian crossings are an essential element of Complete Streets. The workbook reviews a wide variety of potential crosswalk locations and types to choose from, depending on context, demand, and risk.



4. How Do Complete Streets Support Regional Transit?

Transit trips typically start and finish on foot or bike and yet many suburban arterials, where transit services are located, have no sidewalks, bike facilities, or crosswalks to access the transit stops. The workbook highlights the problems this can cause, and identifies several solutions to increase safety around transit stops.

Four-Lane Existing Conditions



Four-Lane Mid-Term Solution: Safety, Comfort, and Access for All

Many four lane roads can be reduced to three lanes – with a center turn lane and bicycle lanes and/or wide sidewalks – without affecting motor vehicle capacity (Rule of thumb: 4 lane roads with 20,000 ADT or less can very often be reduced to 3 lanes). This change makes the street safer for all by reducing vehicle speeds and speed differentials; eliminating weaving and lane changing; protecting turning traffic from rear-end collisions; providing a crossing refuge for pedestrians; and adding bike infrastructure. Lighting and landscaping can also contribute to a more walkable environment.



SEPARATED BIKE LANES create a safer space for bicyclists of all ages and abilities. Implementation of a bicycle facility should be conducted as an overall bicycle master plan.



STREET LEVEL LIGHTING improves visibility for all users along a corridor, but is particularly effective in high-trafficked areas.



MEDIAN AND PEDESTRIAN CROSSING ISLANDS reduce head-on motor vehicle collisions and provide a protected refuge at intersections and midblock crossings for pedestrians. They narrow the motorist's field of vision and reduce vehicle speeds.

How are we to tame this force
unless we understand it and even
develop a kind of love for it?

— *J.B. Jackson*