SC Livable Communities Alliance Brief, Part 1

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Executive Summary

There is an urgent need to implement a comprehensive, statewide Multimodal streets policy in South Carolina (SC). SC had the #1 highest traffic fatality rate in the continental US in 2016 [1], and over 18% of SC's traffic fatalities are non-motorized road users (people walking and bicycling) [2]. Over the last decade, this proportion rose linearly. SCDOT passed a multimodal "complete streets" resolution in 2003 that is, effectively, ignored. At the same time, SC existing state law currently mandates for the safe "**movement of people** and goods". Multimodal streets are safer and more family friendly, and a policy would save lives.

Unsafe conditions for people walking and bicycling in SC additionally contribute to statewide challenges for public health, economics, and equity. Adopting policies for multimodal streets creates communities that are more family friendly, equitable, sustainable, healthy and safe, resulting in better local control, improved quality of life, and enhanced economic development.

SC needs to incorporate a *Safe Systems* approach to engineering for all modes of transportation, by implementing a combined *Hotspot and Systemic* approach, similar to the Rural Roads safety program. A statewide multimodal policy for the South Carolina Department of Transportation (SCDOT) would reflect that combined approach to reduce non-motorized fatalities, injuries, and crashes.

The Federal Highway Administration (FHWA) has an extensive list of evidence-based interventions that fit every agency budget. Multimodal streets add little to no cost to transportation budgets, often saving money, and they benefit the interests of cities, suburbs, and rural areas.

This strong need for a statewide, comprehensive multimodal policy must include a clear implementation plan in South Carolina. Needed within that policy are improvements to Process, Design, and Planning: 1) improved processes for better local control, 2) improved design considerations for more flexible approaches for local design needs, and 3) improved planning for fair, data-driven, systemic, and equitable safety improvements for non-motorized users.

Such a Policy Would Do the Following

- Seamlessly integrate our state and local street systems,
- Coordinate more tightly between state, regional and local planning and elected bodies,
- Integrate with national multimodal standards and best practices,
- Honor rural and urban interests,
- Ensure each mode of transportation is just as safe as all the others,
- Support people of all abilities with full access to their chosen mode of transportation,
- Invest in long-term state priorities,
- Enable a higher quality of life,

[1] National Highway Traffic Safety Administration (NHTSA). (2018). *Fatalities and Fatality Rates by State, 1975-2016, Table 125.* Retrieved from: https://cdan.nhtsa.gov/tsftables/tsfar.htm#

[2] Merging data from the following NHTSA studies
NHTSA (2019) *Pedestrians: Traffic Safety Facts: 2017 Data*
NHTSA (2018). *Bicyclists and Other Cyclists: Traffic Safety Facts: 2016 Data*

- More easily meet Federal Highway Administration (FHWA) required safety performance measures,
- Improve SCDOT processes and street designs,
- Restore trust and transparency, and
- Build on SCDOT's ongoing efforts to reduce fatalities and improve mobility.

What Are Multimodal "Complete" Streets, and Why a Policy?

Multimodal streets, also known as complete streets, make streets safer, which makes neighborhoods and communities more livable. These streets ensure road users of all ages and abilities —people walking, bicycling, driving, and catching a bus – can travel safely. Multimodal infrastructure includes any of the following: crosswalks, sidewalks, pedestrian crossings islands, and traffic calming features like narrowed intersections (reduced turn radii), and site-specific bicycle and transit accommodations. Elements of multimodal streets can reduce non-motorized and motorized fatalities by 15-85%.[3]

Multimodal streets are context-sensitive in that design depends on the various modes needed by the people on that street, speed, and number of motor vehicles. Some streets have a transit route with high vehicular traffic; this means safe pedestrian routes are needed to and from those bus stops. Other streets are designated for a bike route, which might be part of a matrix of low stress, low traffic routes around town. When there are more origins and destinations (points of interest) located along a route, there is a greater need for safe, multimodal access to and from these points of interest. This may include reducing speeds through traffic calming measures or adding separate facilities for vulnerable road users.

When streets are designed from a Safe Systems approach, human error is accommodated so, "errors can be made without catastrophic consequences" [4].

There is an urgent need to incorporate a combined Hotspot and Systemic Approach to safety engineering solutions. SCDOT currently only employs a Hotspot approach, which means Highway Safety investments are targeted at dense clusters of crashes[5], favoring areas with high populations. A Systemic Approach stands to benefit the entire state, including urban and rural, low-volume local roadways where crash densities are lower [6]. The Systemic approach acknowledges crashes alone are not sufficient to

[3] FHWA. (2018). Proven Safety Countermeasures. Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/

[4] League of American Bicyclists. (2018). Section II: Safe Transportation. *Bicycling & Walking in the United States 2018 Benchmarking Report* (pp. 53.). Washington, DC: League of American Bicyclists.

[5] Federal Highway Administration (FHWA). (2018). *Pedestrian and Bicycle Safety Research Program. Guidebook on Identification of High Pedestrian Crash Locations.* Retrieved from: https://www.fhwa.dot.gov/publications/research/safety/17106/17106.pdf

[6] FHWA. (2019). *A Systemic Approach to Safety – Using Risk to Drive Action*. Federal Highway Administration, Office of Safety. Retrieved from: https://safety.fhwa.dot.gov/systemic/why.cfm

determine what countermeasures to implement. Rather, an intense, data-driven analysis is conducted of which roads and streets are likely to benefit from certain interventions. A combination approach uses both traditional and proactive measures. For example, engineers and planners can use a composite score that includes crash frequency along with predictions from a safety performance function.[7]

Multimodal, or Complete Streets, Policies are recommended by the Governor's Highway Safety Association (GHSA) to make roads safer for pedestrians. The GHSA recommends a combined approach of engineering, education, and enforcement solutions to comprehensively improve pedestrian safety and reduce those injuries and fatalities.[8] Education and enforcement mitigations typically occur within each states' Department of Public Safety, while DOT's across the country are taking notice and implementing policy-driven engineering solutions with Multimodal policies. The latter are comprehensive and standardized changes to help the DOT's reduce non-motorized injuries & fatalities. Over 30 states have Multimodal, or Complete Streets, policies[9] that extend beyond a Resolution of words on paper, with steps for real implementation.

Multimodal streets provide a modern transportation network that improves citizens' quality of life. Well-connected infrastructure is also good for public investments and personal economics. According to the Federal Highway Administration (FHWA), "A number of surveys confirm that bicycling and walking are activities enjoyed by increasing numbers of Americans of all ages [10]". We see the same increase in demand in South Carolina.

Key Elements of Multimodal Streets

Improved Safety

The primary benefit of multimodal streets is safe streets. Multimodal streets reduce both the number and severity of crashes, which benefits both motorists and vulnerable road users. Improved street design reduces dangerous behavior and decreases the number of conflicts between road users by making road user behavior more visible and predictable.[11] Florida's Complete Streets policy from 1984 was studied comparatively to every other state, and researchers determined "pedestrian fatality rates decreased significantly—by at least 0.500% more each quarter—after Statute 335.065 was adopted, resulting in more than 3500 lives saved across 29 years".[12]

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[7] FHWA. (2018). *Pedestrian and Bicycle Safety Research Program. Guidebook on Identification of High Pedestrian Crash Locations*. Retrieved from: https://www.fhwa.dot.gov/publications/research/safety/17106/17106.pdf

[8] Governor's Highway Safety Association (SHSA), 2018, Pedestrian Traffic Fatalities by State, 2018 Preliminary Data. Retrieved from: https://www.ghsa.org/resources/Pedestrians19

[9] Smart Growth America, National Complete Streets Coalition (SGA, NCSC) Complete Streets Policies Nationwide, Policy Inventory. https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/policy-development/policy-atlas/

[10] FHWA. (2018). *FHWA Course on Bicycle and Pedestrian Transportation*. Retrieved from: https://safety.fhwa.dot.gov/ped_bike/univcourse/pdf/swless124.pdf.

[11] SGA, NCSC, 2015. Safer Streets, Stronger Economies: Complete Streets Project Outcomes from Across the Country. Retrieved from: https://smartgrowthamerica.org/app/uploads/2016/08/safer-streets-stronger-economies.pdf

[12] Porter, et al. 2017. Law Accommodating Non-motorized Road Users and Pedestrian Fatalities in Florida, 1975 to 2013. Journal of Public Health.

South Carolina needs safer streets. South Carolina (SC) had the #1 highest traffic fatality rate in the continental US in 2016 [13]. Currently, over 18.1% of SC's traffic fatalities are people walking and bicycling [14],[15]. In 2016, South Carolina's pedestrian fatality rate (pedestrians killed per 100,000 population) stood at 2.90, which is more than 50% higher than the average for the USA, as the average is 1.85 deaths per 100,000 population for the entire United States [16]. South Carolina's bicycle fatality rate is also well above the national norm.

Our state's non-motorized safety problem occurs in both rural and urban areas, contrary to a common misconception that it is merely a city problem.

The significant safety problem is something we can improve by applying engineering improvements to streets, as they age. Many such facilities already exist across our state. The following pedestrian facility types are so well studied, they are part of the Federal Highway Administration's 20 "Proven Safety Countermeasures" [17]. These facilities have proven to significantly improve safety when applied to the right locations.

Leading Pedestrian Intervals [18]

Safety Benefits: 60% reduction in pedestrian-vehicle crashes**.** Increased visibility of crossing pedestrians, reduced conflicts between pedestrians and vehicles, increased likelihood of motorists yielding, enhanced safety for pedestrians who may be slower to start into the intersection.

Context: intersections, especially with high left-turning volumes

Cost: Essentially no cost, as they are programmed into existing or new signals.[19]

[13] National Highway Traffic Safety Administration (NHTSA). (2018). *Fatalities and Fatality Rates by State, 1975-2016, Table 125.* Retrieved from: https://cdan.nhtsa.gov/tsftables/tsfar.htm#

[14] NHTSA (2019) Pedestrians: Traffic Safety Facts: 2017 Data

[15] NHTSA (2018). Bicyclists and Other Cyclists: Traffic Safety Facts: 2016 Data

[16] National Highway Traffic Safety Administration (NHTSA). (2018). *Fatalities and Fatality Rates by State, 1975-2016* (Table 125).

[17] FHWA. (2017). *Proven Safety Countermeasures. Safe Roads for a Safer Future*. Office of Safety, Federal Highway Administration, USDOT. Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/.

[18] FHWA. (2017). *Proven Safety Countermeasures: Leading Pedestrian Intervals.* Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/lead_ped_int/.

[19] Atlanta Regional Commission. (2019). Safe Streets for Walking & Bicycling: A regional action plan for reducing traffic fatalities in metropolitan Atlanta. P.40. Retrieved from

Walkways - Paved Shoulders [20]

Safety Benefit: Yield a **71%** reduction in crashes involving pedestrians walking along roadways[21]

Context: There will be times in rural areas where the placement of sidewalks is not affordable or feasible. Wide paved shoulders on both sides of the roadway will be an appropriate substitute in some cases.

Cost: The median cost for an asphalt paved shoulder is $5.81 per square foot [22], or $2,324 for a 4 foot shoulder over 100 feet.

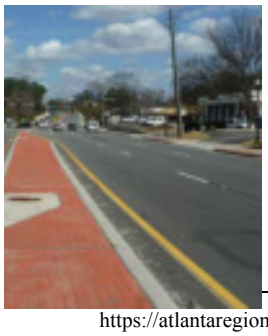
Walkways - Sidewalks

Safety Benefit: a **65-89%** reduction in crashes involving pedestrians walking along roadways [23]

Context: Areas of known pedestrian activity. Road separation preferred [24].

Cost: on average $2 per square foot. Therefore, a 5-foot wide, 100-foot long sidewalk will cost approximately $1,000 [25]. This cost assumes no drainage impacts and no earthwork. According to the City of Charlotte DOT, adding sidewalks only slightly increases the cost of a project, "by little more than 3%" [26]

Raised Medians as Pedestrian Crossings:



Safety Benefits: 46% reduction in pedestrian crashes [27]

Context: area between opposing lanes of traffic, excluding turn lanes. Typically installed along the length of a multi-lane suburban or urban streets. Medians can reduce head-on motor vehicle collisions and can provide a valuable refuge for pedestrians crossing a road in multiple stages.

Cost: Median cost is $10,460 each, or $9.80 per square foot [28]

https://atlantaregional.org/resources/safe-streets-for-walking-bicycling-a-regional-action-plan-for-reducing-traffic-fatalities-in-metropolitan-atlanta/arc-safe-streets-webview-revmar19-1/

[20] Paved Shoulder Photo: PEDSafe. (2013). *Pedestrian Safety Guide and Countermeasure Selection System*. Retrieved from : http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=1

[21] (FHWA, 2017, ...*Walkways*)

[22] Bushell, M., Poole, B., Zegeer, C., Rodriguez, D., UNC Highway Safety Research Center (2013).. *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public.* p.45

[23] FHWA. (2017). *Proven Safety Countermeasures: Walkways.* Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/walkways/.

[24] Redmon, T., FHWA. (Last Modified 2019). *Safety Benefits of Walkways, Sidewalks, and Paved Shoulders.* Retrieved from: https://safety.fhwa.dot.gov/ped_bike/tools_solve/walkways_trifold/

[25] (ARC, 2019). P.38

[26] Moore, T. & Taylor, P., ECONorthwest. (2013) *Economic Impacts of Complete Streets.* p.13. Retrieved from: https://sccrtc.org/wp-content/uploads/2013/08/2013-complete-streets-whitepaper.pdf

[27] FHWA. (2017). *Proven Safety Countermeasures: Medians and Pedestrian Crossing Islands in Urban and Suburban Areas.* Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/ped_medians/.

[28]. Bushell, M., Poole, B., Zegeer, C., Rodriguez, D., UNC Highway Safety Research Center. *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public.* P.15

Pedestrian Crossing Islands (or Refuge Areas)

Safety Benefits: 56% reduction in pedestrian crashes [29]
Context: curbed sections of urban and suburban multi-lane roadways, areas with a significant mix of pedestrian and vehicle traffic and intermediate or high travel speeds, mid-block areas, approaches to multi-lane intersections, areas near transit stops or other pedestrian-focused sites. They reduce crossing distances and provide a protected refuge and waiting area at intersections or midblock crossings. Pedestrian crossing islands should be at least 6' wide and are often accentuated with high visibility signs, crosswalk markings, and signals.[30]
Cost: Average $15,000 depending on the size and construction materials [31].

Pedestrian Hybrid Beacons

Example of PHBs mounted on a mast arm.

Safety Benefits: 69% reduction in pedestrian crashes[32]; **29%** reduction in total crashes[33]; **15%** reduction in serious injury and fatal crashes [34]
Context: Used where traditional traffic signals may not be needed, but pedestrians need to cross where vehicle speeds or volumes are high. This is especially for schools, shared-use paths, parks and other areas with a large number of pedestrians [35].
Cost: On average, $60,000 per crossing [36]

[29] FHWA. (2017). *Proven Safety Countermeasures: Medians and Pedestrian Crossing Islands in Urban and Suburban Areas.* Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/ped_medians/.
[30] (ARC, 2019), P.35.
[31] (ARC, 2019). P.35.
[32] FHWA. (2017). *Proven Safety Countermeasures: Pedestrian Hybrid Beacons.* Retrieved from: https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/
[33] (FHWA, 2017,...*Pedestrian Hybrid Beacons)*
[34] (FHWA, 2017, ...*Pedestrian Hybrid Beacons)*
[35] (ARC, 2019). P. 36
[36] (ARC, 2019). P.36

The following pedestrian safety countermeasures are also well-researched and recommended by the FHWA:

High-Visibility Crosswalks

The "ladder" pattern shown above is more visible to motorists and requires less maintenance if painted to allow the tires of motor vehicles

Safety Benefits: Crashes reduced by the following percentages:

- Vehicle/pedestrian: **40%**[37]
- Speed-related: **45%-74%**[38]
- All crash types: **18%-19%**[39]

Context: Especially helpful in areas with: low-lighting conditions, obstructions (such as parked cars), horizontal or vertical roadway curvature, or other conditions that reduce the visibility of a pedestrian crossing [40].

Estimated costs: Approximately

- $100 for a regular striped crosswalk,
- **$300 for a ladder crosswalk, and**
- $3,000 for patterned concrete crosswalk [41]

Street Lighting

Safety Benefits: 3 out of 4 pedestrian fatalities in the US happen at night [42]. Improved lighting reduces nighttime pedestrian fatalities at crossings by **78%** [43], and it can reduce late-night/early-morning vehicular crashes at intersections by a weighted average of **35%** [44].
Context: In advance of midblock and intersection crosswalks on both approaches [45].

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[37] Chen, L., Chen, C., & Ewing, R. (2012). *The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections – Lessons from a New York City Experience*. Retrieved from: www.cmfclearinghouse.org.

[38] iTrans Consulting, Ltd and Vanasse Hangan Brustlin, Inc. for FHWA. (Sept. 2008). *Desk Reference for Crash Reduction Factors* https://safety.fhwa.dot.gov.

[39] (Chen, L., Chen, C., & Ewing, R., 2012) & (iTrans Consulting Ltd & Vanasse Hangan Brustlin, 2008)

[40] STEP. (n.d.). *Crosswalk Visibility Enhancements: Countermeasure Tech Sheet.* Retrieved from: https://safety.fhwa.dot.gov/ped_bike/step/docs/TechSheet_VizEnhancemt_508compliant.pdf

[41] (STEP, 2019, *The Walking Environment...*).

[42] Ferrier, K., Vision Zero Network. (2018). *Webinar Recap: Lighting Can Provide for Safety AND Data in Vision Zero.* Retrieved from: https://visionzeronetwork.org/focus-on-lighting/

[43] FHWA (Last Modified April 2019). *Pedestrian Countermeasure Policy Best Practice Report.* Retrieved from: https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa11017/

[44](*FHWA-SA-09-017)*

[45]PEDSAFE. (n.d.). *Pedestrian Safety Guide and Countermeasure Selection System: Lighting and Illumination.* Retrieved from: http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=8

Street Lighting (cont'd)

Estimated Cost: Upgrades of higher wattage bulbs are typically up to $1,500-2,500 including labor and equipment per intersection [46]. The installation of a new pole can vary from $3,000 to $12,000 [47].

Raised Crosswalks

A raised pedestrian crossing provides a continuous route for the pedestrian at the same level as the sidewalk. Pavement markings on the slope (inlay

Safety Benefits: Reduced vehicle speeds and improve motorist yielding, leading to a **45%** general pedestrian crash reduction [48].

Context: Local and collector roads with a speed limit of 30 mph or less and annual average daily traffic <9,000 [49]. Also appropriate for campus settings, shopping centers, and drop-off zones, (i.e.: schools, transit centers, and airports) [50]. These make pedestrians more prominent in the driver's field of vision, and they allow pedestrians to cross at grade with the sidewalk.

Estimated Cost: Approximately $5,000 - $7,000[51] for one. An entire raised intersection is dependent on the road size, from $25-70,000 [52].

Rectangular Rapid Flash Beacon

Safety Benefit: Increased yielding from **18% to 81%**, when going from a no-beacon arrangement to a two-beacon system, mounted on the supplementary warning sign on the right side of the crossing[53].

Context: adjacent to uncontrolled, marked crosswalks.

Cost: On average, $22,000 per crossing location [54]**.**

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[46] *...09-017)*

[47] *...09-017)*

[48] Pedsafe, 2013. FHWA. *Pedestrian Safety Guide and Countermeasure Selection System. Raised Pedestrian Crossings.* Retrieved from: http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=7

[49] (Pedsafe, 2013, ...*Raised Pedestrian Crossings*)

[50] STEP. (June 2018). Raised Crosswalks: *Safe Transportation for Every Pedestrian Countermeasure Tech Sheet.*

[51] STEP. (2019). *Traffic Calming: 29. Raised Intersection; 30. Raised Pedestrian Crossing.* Retrieved from: https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/29-30.htm.

[52] (STEP, 2019, *Traffic Calming...*).

[53] FHWA (2009). *Rectangular Rapid Flash Beacons.* Retrieved from:https://safety.fhwa.dot.gov/intersection/conventional/unsignalized/tech_sum/fhwasa09009/.

[54] (ARC, 2019). P.41

Several national organizations that oversee professional development of planners and engineers support multimodal streets.

American Planning Association (APA): "The American Planning Association, its Chapters and Divisions, and planners support a policy of Complete Corridors, ensuring that transportation corridors can accommodate all modes for people of all ages and abilities to provide access to destinations along the corridor. Ensuring that every mode provides access throughout a corridor allows opportunities to tailor land uses and streets to different configurations and efficiencies, while enabling a choice of travel options between logical origins and destinations throughout corridors. Network continuity, connectivity, and safety for all users are essential principles for making this policy effective. APA supports planning and design policies that ensure the nation's streets and roadways are designed and operated with all users in mind — including bicyclists, public transportation vehicles and riders, and pedestrians of all ages & abilities" [55].

American Public Works Association (APWA): "Complete Streets is a concept that recognizes the importance of meeting the needs of all transportation system users and APWA recommends its implementation on all appropriate public works projects." [56]

American Society of Civil Engineers (ASCE): "The American Society of Civil Engineers (ASCE) supports Complete Streets policies that require that the safety, interests, and convenience of all users — drivers, bicyclists, transit users and pedestrians of all ages and abilities — be considered in the design, construction, operations, and management of transportation projects. ASCE believes that America's transportation system should be designed, built, operated, and managed for safe travel by everyone" [57].

Economics

Economic Benefits

A well implemented multimodal streets policy will enhance South Carolina's economic development, both for cities and rural areas. Multimodalism decreases personal transportation costs, reduces vehicular congestion, increases property values, and increases access to economic opportunities. Adopting this policy also saves millions of taxpayer dollars in cost associated with crashes and collisions.

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[55] American Planning Association (APA). (2010). American Planning Association Policy Guide on Surface Transportation, Adopted by National Delegate Assembly and Board, April 10, 2010.
Retrieved from: http://www.planning.org/policy/guides/adopted/surfacetransportation.htm

[56] American Public Works Association (APWA). (2010). *American Public Works Association, Advocacy Position Statement, 2010.*
Retrieved from: http://www2.apwa.net//Documents/Advocacy/Complete%20Streets%202010.pdf

[57] American Society of Civil Engineers, 2017. A*merican Society of Civil Engineers, Policy Statement 537 - Complete Streets.*
Adopted by the Board of Direction on July 29, 2017

Economic Benefits for Cities	Economic Benefits for Rural Areas
• Multimodal streets reduce congestion by taking cars off the street when a walk or bike trip is preferred by the user, thereby making streets more efficient [58]. 47.1% of all trips in the US are shorter than 3 miles [59], and personal vehicles are used for 45.1% of all trips that are 3 miles or less [60]. • Once a city has about 100,000 residents or 30,000 jobs, it is unrealistic for most trips to be made by car [61]. • "There will never be enough road or parking space, and the heavy traffic increases infrastructure costs, accidents, pollution and ugliness" [62]. • Multimodalism allows cities to save money on expensive parking facilities [63].	• Most rural towns were established before car-ownership was common [64]. Due to their small size, they are inherently walkable. • On average, rural households earn 32% less in yearly income than urban households [65]. Given car ownership and maintenance is costly, multimodal streets allow mobility choices for people of all income levels, while living in rural areas for some nearby trips. • Multimodalism increases access to economic opportunities and decreases isolation from being unable to independently transport oneself. • Out of the top 10 SC counties with the highest pedestrian crash rate, 6 are very rural counties (< 90,000 people) [66]. This shows an unmet need for multimodal accommodations.

Multimodal streets save South Carolinians in personal transportation costs.
The average cost of maintaining a car for basic needs in South Carolina is 14% to 21% of annual income [67]. This figure only includes the cost of one daily commute to work and daycare and one weekly grocery and errand trip. If one includes the initial purchase of the car and the cost of making any additional trips, the actual estimated cost of owning and maintaining a vehicle in South Carolina is much higher [68].

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[58] (VTPI, 2015)

[59] League of American Bicyclists. (2018). Section IV: Connected Routes. *Bicycling & Walking in the United States 2018 Benchmarking Report* (pp. 82.). Washington, DC: League of American Bicyclists.

[60] Federal Highway Administration. (2017). *2017 National Household Travel Survey data.* Retrieved from: https://nhts.ornl.gov/vehicle-trips

[61] Victoria Transport Policy Institute (VTPI). (2015).*Evaluating Complete Streets The Value of Designing Roads For Diverse Modes, Users and Activities*. Retrieved from: http://www.vtpi.org/compstr.pdf

[62] (VTPI, 2015).

[63] (VTPI, 2015)

[64] FHWA, et. al. (2016). *Small Town and Rural Multimodal Networks.* p. 8

[65] FHWA, et. al. (2016). *Small Town and Rural Multimodal Networks.* p. 6

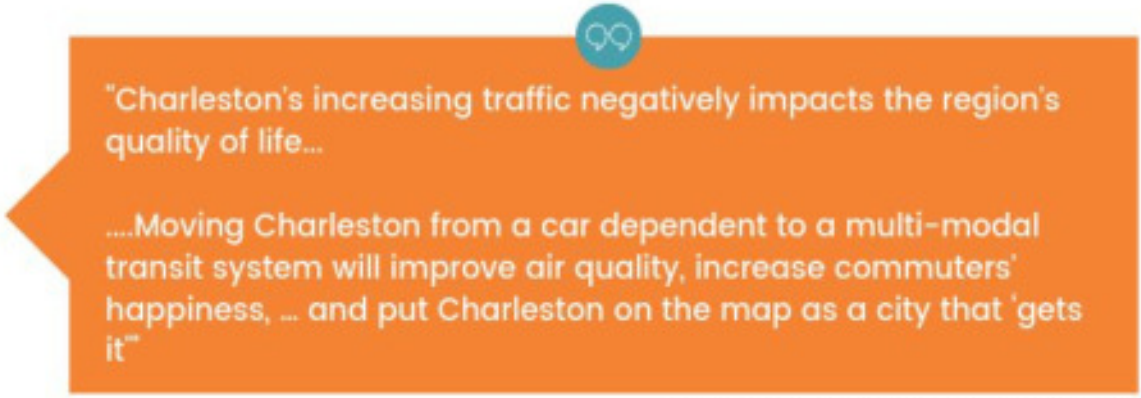
[66] (Equitable Cities, LLC, 2018)

[67] United Way Association of South Carolina (UWASC) & University of Washington - Center for Women's Welfare. (2016) *Self-Sufficiency 2016. Advancing the Common Good: Financial Stability for Working Families. The Self-Sufficiency Standard for South Carolina.*

[68] (UWASC & University of Washington, 2016)

Multimodal street improvements are associated with fewer collisions and injuries between cars, bicyclists, and pedestrians, in one study of 37 projects averting over $18 Million in costs from collision and injury over the course of one year.[69].

Multimodal streets add lasting value. A 2009 study by CEOs for Cities found that houses located in areas with above average walkability or bikeability are worth up to $34,000 more than similar houses in areas with average walkability levels [70].



Key Finding #1 from Next Generation Consulting:
Prepared for Charleston Metro Chamber of Commerce. (2013). Charleston Handprint.

Economic Cost

Conducting a Systemic Pedestrian Safety Analysis (SPSA) helps agencies broaden their traffic safety efforts at little extra cost [71]. FWHA states an SPSA is effective, because it "involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types. After a statewide SPSA is complete, SCDOT can be proactive in their road design and avoid costly retrofits later when pedestrian safety problems emerge [72].

Adding multimodal features during the road repaving process saves money, because it is more cost-effective than implementing multiple, separate projects. Georgia, Tennessee, and North Carolina all provide a 3 year repaving list to their local municipalities, with the express purpose of providing information to enable local governments opportunities to collaborate [73]. Coordinating more tightly between state, regional and local planning and elected bodies allows local governments to have more local design control and better represent their constituents.

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[69] Smart Growth America (SGA) & National Complete Streets Coalition (NCSC). (2015). *Safer streets, stronger economies: Complete Streets project outcomes from across the country* (p. 4). Retrieved from: https://www.smartgrowthamerica.org/app/legacy/documents/safer-streets-stronger-economies.pdf.

[70] Cortright, J. (2009). *Walking the Walk: How Walkability Raises Home Values in U.S. Cities.* Retrieved from: http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf

[71] FHWA. (2017). *A Systemic Approach to Safety - Using Risk to Drive Action*. FHWA, Office of Highway Safety. Retrieved from: https://safety.fhwa.dot.gov/systemic/

[72] (Smart Growth America, *Complete Streets: Guide…,* p. 13)

[73] FHWA. (2016). *Incorporating On-Road Bicycle Networks into Resurfacing Projects*. USDOT, FHWA. Retrieved from:https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf

However, SCDOT provides less than one year notice, for repaving opportunities, presenting planning and scheduling challenges to local governments willingly matching local dollars to state repaving projects [74].

Additionally, some multimodal projects can save money, **especially when reducing lane widths is appropriate**. In Charlotte, NC, the Charlotte Department of Transportation found that routinely narrowing travel lanes when appropriate from 12 feet to 11 feet can save about 2% of project costs [75]. In addition, when a section of roadway is replaced by a bike lane, it can be built to carry the weight of people biking and walking, rather than automobiles [76]. This also reduces the cost of materials and labor.

Multimodal streets can be achieved within existing budgets. Multimodal modifications are extremely cheap compared to creating a new road, or even to a single resurfacing project. They can include restriping to narrow travel lanes and provide more room for bicycles and/or pedestrians; changing signal timing; installing refuge islands, medians, and curb extensions; restriping crosswalks to be more visible; installing temporary curbside plazas; adding pedestrian countdown signals; and using on-street head-out angled parking, instead of parallel parking, to narrow wide, dangerous roadways.

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[74] SCDOT. (2019). *SCDOT TENTATIVE LETTINGS Rehab & Resurfacing April 2019 - March 2020*. Retrieved from: https://www.scdot.org/business/pdf/tentativeLetting/Rehab_Resurface.pdf.

[75] Smart Growth America. *Complete Streets: Guide To Answering the Cost Question* (p. 10). Retrieved from: https://www.smartgrowthamerica.org/app/legacy/documents/cs/resources/cs-answering-the-costs-question.pdf.

[76] Baltimore Complete Streets. *A Complete Streets Law for Baltimore: A Design Solution to a Transportation Crisis (n.d.). Retrieved from https://www.baltimorecompletestreets.com/justification.*

Improved Health

Centers for Disease Control and Prevention (CDC) & Mission Readiness, n.d.

Significant health benefits are occur from better access to safe walking and bicycling facilities, and these also have economic benefits. South Carolina ranks 12th for adult obesity and 8th for obesity among high school students in the nation [77]. Obesity is often correlated with health problems, including several chronic diseases. The mere existence of sidewalks and bike paths has positive effects on health and physical activity levels [78]. Compared to inactive adults, "the most-active adults had approximately a 30% lower risk of premature death from all causes" [79].

[77] Robert Wood Johnson Foundation (RWJF). (2012). *Bending the Obesity Curve in SC*. Retrieved from: http://healthyamericans.org/assets/files/obesity2012/TFAHSept2012_SC_ObesityBrief02.pdf

[78] (Sallis J.F., et al., 2012).

[79] U.S. Department of Health and Human Services. (2018). *Physical Activity Guidelines for Americans, 2nd edition* (p. 34). Washington, DC: U.S. Department of Health and Human Services.

According to Mission Readiness, **obesity is a costly national security issue**. 27% of Americans 17 to 24-years old are too overweight to qualify for military service in the National Guard [80], especially in 10 states including South Carolina, where recruits were significantly less fit [81] .

Equity

SCDOT has a mandate to "provide adequate, safe, and efficient transportation services for the movement of people and goods" [82]. While SCDOT's mandate is to provide safe transportation services for people and goods, there is a gap in their ability to meet that mandate for people. Currently, SCDOT is focusing almost exclusively on vehicular mobility. By doing so, they exclude a sizable number of South Carolina citizens.

Low-wealth communities are disproportionately impacted by transportation choices available to them in South Carolina. This is due to the lack of access to personal transportation. Car ownership is expensive, so many individuals choose to walk and bike their communities. In every state, people who walk are more likely to have incomes of 150% of the federal poverty level or less than the general population [83].

7% of all South Carolina households do not have access to a car [84]. 14.8% of all South Carolina's African American households do not have access to a car [85]. Therefore, the exclusion of 7% of South Carolina's citizens who do not own a car presents a gap in SCDOT's ability to meet their existing legal mandate.

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[80] Boivin, et al, 2016. Boivin MR, Cowan DN, Packnett ER, et al. A*ccession Medical Standards Analysis & Research Activity 2016 Annual Report.* Silver Spring, MD: Walter Reed Army Institute of Research.

[81] Bornstein, et al. (2018). *Which US States Pose the Greatest Threats to Military Readiness and Public Health*. Journal of Public Health Management and Practice. Journal of Public Health Management and Practice: January/February 2019 - Volume 25 - Issue 1 - p 36–44. Retrieved from: https://journals.lww.com/jphmp/Fulltext/2019/01000/Which_US_States_Pose_the_Greatest_Threats_to.15.aspx

[82] Title 57 - *Highways, Bridges and Ferries, Chapter 1: General Provisions: Article 1: Department of Transportation*. SC state code 57-1-30 (eff June 7, 2010).

[83] U.S. Department of Health and Human Services. (2018). *Physical Activity Guidelines for Americans, 2nd edition.* (p. 34). Washington, DC: U.S. Department of Health and Human Services;.

[84] PolicyLink, 2015. National Equity Atlas, Indicators, Car Access, South Carolina. Retrieved from: https://nationalequityatlas.org/indicators/Car_access/By_race~ethnicity:49791/United_States/South_Carolina/

[85] (PolicyLink, 2015)

The infrastructure in many low-wealth communities is less conducive for safe routes on foot to and from their neighborhoods compared to communities of greater wealth. This occurs, in part, because risk and exposure to fast moving traffic is greater in urbanized areas. Additionally, research indicates protected spaces for walking and bicycling are less common in low-wealth communities [86]. The impact of these studied phenomena are evident in South Carolina, where we found 44% of our pedestrian and bicycle fatalities and injuries are African American, while only 28% of our population is African American [87].

Best Practices in Multimodal Street Policies

The National Complete Streets Coalition maintains a scoring system for policies which assigns points based on ten ideal elements that policies should have. To achieve 100 points, the scoring methodology requires jurisdictions to go beyond street design and engineering to consider the people impacted.

10 Elements of a Successful Complete Streets Policy [88]

1. **Vision –** The policy should contain a clear statement why are we doing this. Include "shall" and "must" and contain no equivocating language.
2. **All Users and Modes –** The policy should specify that the goal is to accommodate all road users and transportation modes. It should also explain it will benefit users equitably, particularly vulnerable users in the most underinvested communities.
3. **All Projects and Phases –** The policy affects all projects and all phases of project: new, retrofit/reconstruction, maintenance, and ongoing projects.
4. **Clear, Accountable Exceptions –** Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.
5. **Jurisdiction -** Requires interagency coordination between government departments and partner agencies on Complete Streets.
6. **Design -** Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.
7. **Land use and context sensitivity** - Considers the surrounding community's current and expected land use and transportation needs.
8. **Performance measures -** Establishes performance standards that are specific, equitable, and available to the public.
9. **Project selection criteria -** Provides specific criteria to encourage funding prioritization for Complete Streets implementation.

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[86] Bridging the Gap 2012. *Income Disparities in Street Features that Encourage Walking – A BTG Research Brief.* Chicago, IL: Bridging the Gap Program, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, 2012. Retrieved from: http://www.bridgingthegapresearch.org /_asset/02fpi3/btg_street_walkability_FINAL_03-09-12.pdf

[87] Equitable Cities, 2018. *South Carolina Pedestrian and Bicycle Crash Analysis, 2009-2017.* Submitted to Palmetto Cycling Coalition and the South Carolina Livable Communities Alliance, by Equitable Cities, LLC.

[88] Smart Growth America. (2019). *The Ten Elements of A Successful Complete Streets Policy.* Retrieved from: https://smartgrowthamerica.org/resources/the-ten-elements-of-a-complete-streets-policy/

10. **Implementation steps -** Includes specific next steps for implementation of the policy.

Additionally, the FHWA recommends any state safety program should employ a combined targeted and systemic approach to meeting the safe transportation needs of non-motorized users. This combined approach is a recommended strategy for state DOT and city safety programming, in order to reduce fatalities and injuries of non-motorized road users. Initially, it is important to target mitigating those areas with the highest "hot spots" of injuries and fatalities, based on crash density. However, the most cost effective method is not simply to respond to incidents, but to also prevent more from occurring in the future [89]. In this FHWA identified best practice, DOT shall first identify and target those road characteristics most commonly causing existing pedestrian crashes in SC, and then additionally apply a systemic approach statewide to mitigate that suite of risks causing the most exposure to the most number of non-motorized road users [90]

That approach may likely reveal the following common characteristics cause the most risk and exposure: people-centered factors, such as: proximity to schools, proximity to transit stops, US census tracts with a high number of households without access to a car, etc., and engineering-centered factors, such as: mid-block crash occurrence, intersection crash occurrence, etc. Because every state has a different suite of common characteristics causing the most exposure, every state is expected to study it independently [91].

Finally, FHWA recommends a 3 year repaving list, in order to allow for better state and local coordination specifically for projects that will require design alterations [92].

Existing Multimodal Street Laws & Policies

Federal Level

Most federal transportation funding pots have full eligibility to be used for facilities for vulnerable road users. Since 2010, federal law mandates that the needs for people walking and bicycling and accessing transit should be considered in all federally funded transportation projects. **In 2013, FHWA issued guidance explaining DOT's should use flexibility in design guides, explicitly in order to accommodate the needs of people walking and bicycling [93].**

[89] FHWA. (2019). Federal Highway Administration, Office of Safety. *A Systemic Approach to Safety – Using Risk to Drive Action*. Retrieved from: https://safety.fhwa.dot.gov/systemic/why.cfm

[90] (FHWA, 2019, *A Systemic Approach to Safety*)

[91] Atlanta Regional Commission (ARC). (2019). *Safe Streets for Walking & Bicycling. A regional action plan for reducing traffic fatalities in metropolitan Atlanta.* Adopted August 2018; revised March 2019.

[92] FHWA. (2016). *Incorporating On-Road Bicycle Networks into Resurfacing Projects*. USDOT, FHWA. Retrieved from:https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf

[93] FHWA. (2013). *Memorandum: Guidance: Bicycle and Pedestrian Facility Design Flexibility.* Federal Highway Administration. Retrieved from: https://www.fhwa.dot.gov/environment/bicycle_pedestrian /guidance/design_flexibility.pdf

As recently as 2015, the FAST Act (the surface transportation bill) contained formal language on complete streets [94], and it mandated that federal transportation funds should be utilized for pedestrian and bicycle needs, which should be given "due consideration" under Federal surface transportation law [95], and that accommodations should be included as a matter of routine, and the decision to not accommodate them should be the exception rather than the rule.

State Level

The SCDOT Strategic Plan (2018-2020) and its 5 goals[96] align with a multimodal, complete streets policy, that improves safety of non-motorized users in areas of greatest need:

> GOAL 1: Improve safety programs and outcomes in our high-risk areas.
> GOAL 2: Maintain and preserve our existing transportation infrastructure.
> GOAL 3: Improve SCDOT program delivery to increase the efficiency and reliability of our road and bridge network.
> GOAL 4: Provide a safe and productive work environment for SCDOT employees.
> GOAL 5: Earn public trust through transparency, improved communications and audit compliance.

South Carolina's state code, Section 57-1-30, Section B, aligns with the need to enact a policy for multimodal streets, as it states:"The goal of the department is to provide adequate, safe, and efficient transportation services for the **movement of people** and goods."[97]

SCDOT passed a resolution for Bicycle and Pedestrian Accommodations in 2003 [98] However, the resolution does not have a clear implementation plan and is, effectively, ignored. The resolution was partially implemented with respect to bicycles. However, there is still no evidence of a minimum standard of accommodations for pedestrians, which constitute the largest proportion of non-motorized fatalities.

SC's resolution is included in the National Complete Streets Coalition's (NCSC's) list of 33 statewide complete streets policies. However, a resolution is the weakest policy category recognized by the NCSC. There is still a strong need for a statewide, comprehensive policy with a clear implementation plan.

South Carolina needs a Multimodal Policy. We need this more than most, because our state has the 3rd highest state to local road ownership ratio in the USA [99]. SCDOT practices have disproportionate and adverse impact on our municipal areas. These practices contribute to SCDOT-owned roads being home to 95% of all pedestrian and bike fatalities statewide [100]. Conversely, locally owned streets are

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[94] Fixing America's Surface Transportation Act or "FAST Act". PUBLIC LAW 114–94—DEC. 4, 2015
[95] 23 U.S. Code § 217.*Bicycle transportation and pedestrian walkways.* Last modified Dec 4, 2015.
[96] SCDOT Strategic Plan, 2018-2020, *Rebuilding Our Roads, Executive Summary.* Retrieved from: https://www.scdot.org/performance/strategic-plan.aspx
[97] SC State Code of Laws, Unannotated, *Section 57-1-30*. Retrieved from: https://www.scstatehouse.gov/code/t57c001.php
[98] SCDOT (2003). *Complete Streets Resolution.*
[99] Bureau of Transportation Statistics (BTS). (2013). *State of Transportation Statistics.* Retrieved from: https://www.bts.gov/explore-topics-and-geography/topics/state-transportation-statistics.
Calculated from Summary Stats of Public Road Length: Ownership, 2013. SCLCA reviewed each state and divided the number of roads in state ownership by the total number of miles. SC's 44,396 miles of state-owned roads, divided by 66,232 total miles of road equals 63% of SC's roads being under state ownership
[100](Equitable Cities, 2018)

home to only 5% of all pedestrian and bike fatalities in SC [101]. SCDOT must take responsibility for these fatalities.

For example, Florida's legislative Statute for Bicycle and Pedestrian Ways (1984) saved thousands of lives. This multimodal policy states that "routes for biking and walking must be considered in road construction projects, with a few limited exceptions. It also charged the state with developing a statewide 'integrated system of bicycle and pedestrian ways'" [102].

Florida's per capita pedestrian fatality rate fell 60 percent, from 6.36 fatalities per 100,000 people to 2.56 [103]. **The difference added up to more than 3,500 lives saved over a 29-year period** [104]. A University of Georgia research team, led by Jamila Porter, found that pedestrian fatalities fell faster in Florida after the multimodal streets policy was adopted than they would have otherwise [105].

State DOT's passed Complete (Multimodal) Streets policies in the following southeastern states:

- Louisiana DOTD Complete Streets Policy & Revised Version (2010 & 2016),
- North Carolina DOT Complete Streets Policy (2009),
- Georgia DOT Complete Streets Design Policy (2012),
- Tennessee DOT Bicycle and Pedestrian Policy & Multimodal Access Policies (2010 & 2015),
- Virginia DOT Policy for Integrating Bicycle and Pedestrian Accommodations (2004),
- Florida DOT Complete Streets Policy (2014)
- Mississippi DOT Bicycle and Pedestrian Policy (2010)

South Carolina might consider taking this guidance, while looking to national best guidance from the National Complete Streets Coalition, Vision Zero Network, and the Association of Pedestrian and Bicycle Professionals, and further defining its own priorities and approach. Given our especially limited resources and high number of state owned roads, our state would benefit from an Equity-centric approach that first reveals areas of greatest need, then identifies the most cost effective solutions and countermeasures for the greatest impact. That approach can be complemented by process improvements enabling better local control.

Regional & Local Level

16 communities across South Carolina have Complete Streets Resolutions, Policies, or Ordinances. 22 Mayors have signed the Policy Letter of Support for an SCDOT multimodal streets policy, as of March 2019, as part of the SCLCA campaign. Most large Metropolitan Planning Organizations (MPOs) in

[101](Equitable Cities, 2018)
[102] FL 335.065. *Bicycle and pedestrian ways along state roads and transportation facilities*.
[103] Porter, J., et al. (2017). *Law Accommodating Non-motorized Road Users and Pedestrian Fatalities in Florida, 1975 to 2013.* (p. 6). American Journal of Public Health 108, no. 4 DOI: 10.2105/AJPH.2017.304259
[104](Porter, J., et al. 2017, Discussion, p. 6)
[105](Porter, J., et al. 2017, Discussion, p. 6).

South Carolina, including CHATS [106], GPATS [107], and Waccamaw COG [108], have planned for approximately 10% of their federal Surface Transportation funds to be used for non-motorized users.

It is time for SCDOT to pass a state policy.

The SCLCA's Policy Recommendation

Specifically, the South Carolina Livable Communities Alliance supports a multimodal policy that:

- Seamlessly integrates state roads with local streets, with national multimodal design standards,
- Coordinates tightly between state, regional and local planning and elected bodies,
- Ensures each mode of transportation is just as safe as all the others,
- Honors rural and urban interests,
- Invests in long-term state priorities
- Moves our state towards a higher quality of life,
- Integrates with FHWA required safety performance measures,
- Improves SCDOT processes and street designs, and restores trust and transparency,
- Supports people of all abilities having full access to their chosen mode of transportation

The policy needs to address each of the following three key areas: Planning, Process, and Design.

1. Planning

This should be a combined targeted and safe systems approach, integrating with federal best practices out of FHWA, combined with a Planning approach that is both equity-focused and better enables local control of non-motorized needs through Master Plans. .

2. Process

Improved processes lead to better local control. This involves planning for these facilities before budgeting, providing an open and transparent process for local governments to access more information and coordinate more closely with SCDOT, and enabling more opportunities for local/state cost sharing by providing at least three years notice of repaving opportunities.

3. Design

This involves utilizing and adopting all of the most well researched national design guides, for all context classifications along the urban to rural spectrum.

Details of the draft policy can be found at www.sclivablecommunities.org/policy.

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[106] Charleston Area Transportation Study (CHATS). (January 2019*). CHATS, Long Range Transportation Plan, Executive Summary, Draft.* Retrieved from: https://bcdcog.com/long-range-transportation-plan/

[107] GPATS, 2018. *Greenville Pickens Area Transportation Study, Long Range Transportation Plan, Executive Summary.* Adopted November 2017; Finalized July 2018. Retrieved from: http://www.gpats.org/plans/lrtp

[108] GSATS. (2017). *Grand Strand Area Transportation Study. 2040 Metropolitan Transportation Plan Update. November 2017.* Retrieved from:http://gsats.org/2040-mtp/