The **National Complete Streets Coalition**, a program of Smart Growth America, seeks to fundamentally transform the look, feel and function of the roads and streets in our communities, by changing the way most roads are planned, designed and constructed. Complete Streets policies direct transportation planners and engineers to consistently plan and design streets with all users in mind.

**Smart Growth America** is the only national organization dedicated to researching, advocating for and leading coalitions to bring better development to more communities nationwide. From providing more sidewalks to ensuring more homes are built near public transportation or that productive farms remain a part of our communities, smart growth helps make sure people across the nation can live in great neighborhoods.

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### Acknowledgements

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Introduction

Complete Streets policies and practices—planning and designing streets to balance the safety, comfort and convenience of people of all ages and abilities who are walking, bicycling, taking transit or driving a vehicle—are in demand nationwide. Doctors support them to promote active lifestyles. Older adults see the value of being within walking distance of shops, restaurants and health care. Parents support them to give their kids a safe way to get to school.

The diverse and growing demand for Complete Streets has spurred the adoption of more than 600 policies nationwide. These policies formalize the intent to incrementally transform their transportation networks into ones that provide multimodal options. The boom in the concept’s popularity over the last decade has resulted in many new or redesigned street projects, in communities large and small, that aim to balance the needs of people of all ages and abilities who are walking, bicycling, riding public transportation or driving.

Transportation professionals recognize Complete Streets projects as basic, smart transportation investments that serve core transportation purposes and create real economic outcomes. Previously, professionals, among other Complete Streets supporters, relied on anecdotal evidence to demonstrate these benefits.

Now we can begin to ask systematically across the country, “How do Complete Streets perform on the ground?” In 2014, the National Complete Streets Coalition began contacting communities of all sizes to ask that question and methodically assess the answers. This study aims to test the following basic ideas:

1) Investments in Complete Streets achieve traditional transportation goals. They improve safety, ease congestion and their costs are competitive with or cheaper than other transportation investments.
2) Investments in Complete Streets create economic value and support local economic development goals.

This report shares some of the results we have gathered and analyzed so far: 28 projects in 24 communities in 18 states. We include a preliminary analysis of transportation performance measures on page 2. We present six projects in detail starting on page 4, including project goals, design approach and transportation and economic results. Recommendations for federal policymakers as they consider the next transportation bill conclude this paper on page 16.
Findings

Working under the guidance of a diverse project advisory team and with the assistance of transportation professionals, we identified a number of projects planned, designed and constructed with specific Complete Streets goals. We developed a comprehensive survey to gather qualitative and quantitative data about operations and safety at each site, such as frequency and type of crashes and mode counts. To gather this information, researchers interviewed transportation agency professionals and consultants who worked on or had other first-hand knowledge of the project. Local agencies, including departments of transportation, planning and public works, provided almost all of the data in this report.

Our early findings include data from 28 specific infrastructure projects in 24 communities. These project costs range from $60,000 to $200 million. Sixteen of these projects cost less than $5 million—with seven costing less than $1 million. Excluding a major reconstruction project with a price tag of $200 million, the average project cost is $4.2 million.

Our analytic method for this phase of research was a straightforward before-and-after analysis, which calculates the percentage difference between the relevant measures before and after project completion. While the timing of these assessments varies by project and is dependent on when individual agencies collected data, in most cases “before” represents at least one year before the project was built, and “after” represents at least one full year after its completion.

Safety

Across the 28 sites, 27 had crash data for drivers and passengers of vehicles, people on foot and people riding bicycles; 23 had data for total crashes that resulted in injuries; and 17 had data for total crashes that resulted in fatalities. Crash and injury data should be interpreted in the context of the total number of people traveling by each mode—driving, bicycling and walking—providing a rate in addition to a count.

Nineteen of the 27 sites with complete crash data saw the number of crashes decrease, with an average decrease of 28 percent. Of the eight remaining sites, the crash rate decreased in at least four instances. To see if this trend holds true across more projects, we calculated crash rate for the seven projects with full mode data and find that in six of these seven projects, both crash and injury rates decreased.

Seventeen of the 23 sites with available injury data saw injury counts decrease, with an average decrease of 37 percent. Of the six remaining sites, injury rate decreased in at least three instances. In all cases, fatalities were rare before the street redesign, so no significant change was found.

Overall, these communities experienced fewer crashes and injuries on their roadways after Complete Streets interventions.

Mode share

Across 28 projects, 27 collected auto counts; 17 had bike counts; and 8 had pedestrian counts. After project completion, more people walked and bicycled. Of these 27 projects, in 17 cases, the number of people driving on a street after its redesign fluctuated slightly or remained stable. The remaining projects saw more significant increases or decreases.
In the eight projects for which pedestrian counts were collected, seven communities experienced an increase in people walking, with an average increase of 32 percent. Seventeen projects included bicycle count information; all indicated increased levels of bicycling, with an average increase of 90 percent.

**Throughput**

More transportation agencies are beginning to evaluate the number of people who travel on a corridor, sometimes called person throughput, rather than the number of vehicles, or vehicular throughput. In this study, we use person throughput to evaluate the change in the total number of trips among all modes along a project corridor. We consider every automobile as one trip, and do the same with individuals walking or bicycling.

Of the 28 projects, seven had mode counts that included automobiles, bicycles and people walking. In six of the sites with full mode counts, the number of people traveling along a street increased by an average of 6 percent. In the one remaining case, total trips increased 375 percent after the project’s completion; including this outlier significantly increases, and thus misrepresents, the overall trends observed among the other sites, so it was not included in the average.
Lancaster, California

The BLVD, a nine-block stretch of West Lancaster Boulevard in this northern Los Angeles County suburb, used to be like many others in southern California: four lanes wide, built for moving cars at high speeds, with minimal facilities for people on foot or bicycle.

A major reconstruction project transformed it into a two-lane street inviting people to walk and gather for community events. The new design narrowed lanes, removed unneeded traffic signals and created a central “rambla” patterned after one in Barcelona, Spain. In some areas along The BLVD, existing sidewalks were widened to provide additional space for walking and outside dining. The BLVD also has new lighting, landscaping and a significant number of street trees.

By 2013, three years after project completion, total collisions fell by nearly one-third, and injuries among all users decreased by 67 percent.

The BLVD is now a retail and entertainment destination and a hub for community events. The City of Lancaster estimates the $11.6 million public investment in the project spurred $125 million in private investment and more than $273 million in total economic output. Forty businesses now line the street, and more than 1,900 new jobs were created. The city’s tax base benefited, too: In 2012, sales tax revenue was 96 percent greater than 2007 pre-construction revenue.
Goals

• Elevate the image of Lancaster as a destination
• Provide space for community events
• Attract and support new businesses
• Create new jobs
• Enhance the streetscape

Design approach

• Narrowed 9 blocks of West Lancaster Boulevard from four travel lanes to two travel lanes
• Installed a “rambla”—a tree-lined median for walking, sitting and gathering
• Eliminated six unnecessary traffic signals
• Expanded pedestrian and café space along key areas of existing sidewalks
• Added landscaping and street trees to new and existing public spaces

Results

• 31% decrease in automobile traffic (pedestrian and bicycle data unavailable)
• 29% reduction in crashes for all users within three years
• 67% fewer injuries along the corridor
• 1,902 jobs created, including 802 permanent jobs and 1,100 construction jobs
• Sales tax revenue increased 96% by 2012 vs. pre-construction 2007 revenue
• Attracted the development of 800 new or rehabbed residential units to the area, including workforce and senior housing

“It’s wonderful to see all these businesses flocking to The BLVD. Our city has been named the ‘most business-friendly in LA County’ and we want to always keep it that way.”
—R. Rex Parris, Mayor, City of Lancaster, CA
Dubuque, Iowa

The **Millwork District** is an area of several blocks adjacent to downtown Dubuque, home to former warehouses and industrial buildings that are being redeveloped as part of a reinvigoration of the downtown economy.

City leaders put walkability and bicycle-friendliness at the center of their vision for the district, aiming to attract new permanent residents who value transportation choice and the convenience of living near their daily needs.

The redevelopment included extensive reconstruction, streetscaping and reconfiguration of several streets; sidewalk replacement; curb extensions at all intersections; mid-block crossings at several locations; new pedestrian lighting fixtures; and narrower travel lanes painted for sharing with bicycles. Century-old water mains and storm and sanitary sewers throughout the district were replaced concurrently.

The project was awarded a $5.6 million grant from USDOT in 2010, funding most of the streetscape work. With the redevelopment came a major influx of travel by all modes: a 375 percent increase across the district. Despite the huge jump in the number of people driving, walking and bicycling in the neighborhood, no fatal crashes have been recorded.

More than $34 million in new private investment has been made, with another $150 million in real estate investment in the pipeline. The first warehouse to be redeveloped now is leasing 72 residential units; 39,000 square feet of retail and commercial space; and 20,000 square feet for an incubator for arts and nonprofit organizations.
Goals

- Enhance pedestrian environment
- Improve bicycle facilities
- Reduce commute times
- Encourage economic development and business activity
- Reinvigorate an under-utilized neighborhood while embracing the city’s history

Approach

- Narrowed travel lanes to maintain safe speeds
- Replaced sidewalks
- Installed curb extensions at all intersections
- Added mid-block crossings
- Maintained on-street parking
- Painted shared-lane markings for bicycles
- Enhanced streetscape with new lighting

Results

- 375% more people traveling in the district, including a 273% increase in bicycle ridership and 1416% increase in automobile traffic
- 23% drop in pedestrians
- Shorter pedestrian crossing distances
- More than $34 million in new private investment
- More than 75% drop in crash rate for all modes
- More than 80% drop in injury rate for all modes

“The vibrancy of the Complete Streets neighborhood will also encourage economic development and business activity in the downtown area.”
—Dubuque federal grant award announcement
Cambridge, Massachusetts

Porter Square, a multimodal hub located above a Massachusetts Bay Transportation Authority (MBTA) subway station (“the T”), was reconstructed in 2007 to improve the safety and function of the area for all users.

In 1997 and 1998, a Citizen Advisory Committee developed the goals of a redesigned Porter Square, one that would serve the needs of the many people walking to the T and reduce the impact of vehicular travel on residential streets. The City of Cambridge finalized design goals with the committee in 2002 and appropriated $2.3 million for the project.

The city reconfigured the main intersection of Massachusetts and Somerville avenues; rebuilt sidewalks; added seven new pedestrian crossings; installed new bicycle facilities (including an innovative crossing for left-turning cyclists); and created a larger central plaza that gave the area a unique sense of place. In doing so, it also improved access to the T and made it simpler for drivers to get around without diverting onto nearby residential streets. Traffic signal coordination reduced congestion.

Following the reconstruction, bicycling jumped by over 900 percent, a number partially attributable to more favorable weather conditions but in line with citywide increases in cycling. Fewer people drove along the corridor, and more people boarded the T at this station. Crashes and injuries for all modes decreased by more than 10 percent.
Goals

- Improve conditions for pedestrians, bicyclists and transit users
- Provide better pedestrian crossings to and from MBTA stop
- Reduce cut-through car traffic on residential streets
- Enhance streetscape and sense of place
- Improve traffic safety

Design approach

- Added seven marked crosswalks and improved crosswalk markings
- Reconfigured travel lanes to simplify crossings and turns
- Combined multiple pedestrian refuge islands to create central plaza
- Added bicycle lanes and signalized “jug-handle” bicycle crossing
- Coordinated traffic signalization for drivers, bicyclists and pedestrians
- Widened portions of sidewalks

Results

- 11% decrease in automobile traffic (pedestrian data unavailable)
- 929% increase in bicycle ridership
- 12% drop in crashes and 13% drop in injuries across all modes

“Better walkability and access to transit has created valuable commercial and residential real estate. The whole area has blossomed, and business has never been better.”

— Simon Shapiro, President of TAGS Hardware. At its current location since 1972, TAGS Hardware opened in Porter Square Shopping Center in 1957.
Hamburg, New York

The transformation of U.S. Route 62 through Hamburg, a village of nearly 10,000 people located 20 minutes south of Buffalo, has become a national example for collaboration between a state department of transportation and local community members.

The 1.9-mile long, $23 million reconstruction of Main and Buffalo streets was the result of a resident-led effort to retain the character of the historic downtown, support local businesses that line the street, and create a safe and welcoming place for people walking as well as driving. Working with the New York State Department of Transportation and walkability consultant Dan Burden, the village replaced four signalized intersections with modern roundabouts; added mid-block pedestrian crossings in three locations; extended sidewalks; and maintained parallel parking.

After the redesign, Main Street carried 3,000 more automobiles per day while also reducing crashes by 66 percent and injuries by 60 percent. An additional $7 million of private funds were invested into the buildings lining the streets. Downtown Hamburg now boasts a low vacancy rate of 3 percent, compared to 10 percent across the village. Residents participate in civic activities along the street, including a soapbox derby and street-music festival.

“If you build a place for cars, it will be a gathering place for cars,” said Laura Hackathorn, a village trustee. “If it’s built for people, it will be a gathering place for people.”
Goals
• Improve safety for pedestrians and drivers
• Improve traffic operations
• Promote local businesses
• Support community development and historic character

Design approach
• Replaced four signalized intersections with modern roundabouts
• Narrowed travel lanes
• Marked parking lanes and adjacent “safety lane” for opening doors
• Added center left-turn lane on Buffalo Street
• Installed high-visibility crosswalks at intersections
• Added three mid-block crossings
• Coordinated with economic development grant

Results
• 24% increase in automobile traffic (pedestrian and bicycle data unavailable)
• 66% reduction in crashes
• 60% reduction in injuries
• 3% vacancy rate, compared to village average rate of 10%
• $7 million additional investment in 33 buildings along Route 62
• Doubled property values
• Named one of the top 10 transportation projects of 2010 in America’s Transportation Awards, decided by AASHTO, AAA and U.S. Chamber of Commerce

“The Village of Hamburg is experiencing a revitalization as businesses and homeowners continue to invest in the community. The village has become a walkable place with a ‘can-do’ attitude.”
—Thomas Moses, Village Mayor, Hamburg, NY
West Jefferson, North Carolina

Jefferson Avenue in West Jefferson, a mountain town of 1,300 in northwestern North Carolina, displays the transformative impact that Complete Streets principles can make on small towns.

Once a rail hub and center of regional industry, West Jefferson’s main roads once accommodated tractor-trailers and the shift-work traffic from local textile factories. As the domestic textile industry disappeared and commercial transportation moved to other modes, West Jefferson had more road capacity than it needed, and its historic main street was losing customers to big-box stores on the edge of town.

Realizing the town was at a crossroads, local leaders engaged a landscape architect to design a streetscape plan for the main street. In cooperation with the North Carolina Department of Transportation, the town used a resurfacing project to modify the traffic pattern on Jefferson Avenue, extending curbs and replacing two traffic signals with four-way stops.

The $300,000 reconfiguration dramatically changed the feeling of downtown. No crashes have occurred at intersections in this area—once considered among the state’s most dangerous. Local leaders specifically credit the slower traffic and improved pedestrian environment with bringing 10 new businesses, 55 new jobs and $500,000 worth of investment to Jefferson Avenue.
Goals
- Improve traffic operations
- Reduce speeding
- Improve pedestrian and driver safety
- Promote local businesses
- Enhance the streetscape

Approach
- Replaced traffic signals
- Installed curb extensions
- Maintained on-street parking
- Added pedestrian lighting and benches
- Planted attractive streetscape

Results
- 1% increase in automobile traffic (pedestrian and bicycle data unavailable)
- Zero crashes at intersections that previously were among the state’s high-frequency crash locations, contributing to a 24% reduction in crashes and 53% reduction in injuries district-wide
- $500,000 in private renovations and investment
- 10 new businesses
- 55 new jobs

“They ask, ‘How are tractor trailers going to make these turns?’ I ask them, ‘Is the future more dependent on pedestrians or on tractor trailers?’ Depending on the answer, that’s who we build for.”

—Dean Ledbetter, traffic engineer, North Carolina Department of Transportation
Cleveland, Ohio

Cleveland transformed seven miles of **Euclid Avenue** from an uninviting street to a thriving cultural and employment center. A bus rapid transit project, christened the HealthLine, takes people from Public Square to University Circle in 20 minutes.

Using more than $200 million in public funds, including an $82.2 million federal grant, Cleveland reconstructed Euclid Avenue to provide a fast, convenient transit connection from downtown to East Cleveland. It serves more than 200,000 employees and 58,000 households within a half-mile of the street.

Since the project’s completion in 2008, riders reported higher overall satisfaction with Cleveland’s bus service along Euclid Avenue, and fewer collisions occurred. The Urban Land Institute recognized the new Euclid Avenue with an Award for Excellence in 2011.

Anticipating the reconstruction of the corridor, several institutions expanded or added new facilities along Euclid Avenue, including new University Hospital facilities ($329 million); Cleveland Clinic Heart Center ($300 million); Cleveland Art Institute ($53 million); and MidTown Tech Park ($28 million).

Reconstruction of the street and investment in transit improved access to two employment hubs that together are home to more than 170,000 jobs.
Goals
- Improve bus speeds and reliability
- Expand bicycle network
- Enhance pedestrian experience
- Connect two major employment centers

Approach
- Built dedicated lanes for bus rapid transit service
- Repaired sidewalks
- Installed streetlights and bus shelters
- Striped the city’s first bike lane
- Planted 1,500 trees

Results
- 9% decrease in automobiles
- 90% increase in people riding bicycles (pedestrian data unavailable)
- 61% increase in transit ridership compared to previous service
- 24% reduction in crashes and 25% reduction in injuries for all users
- Attracted more than $5.8 billion in investment through more than 110 projects: $3.3 billion for new construction and $2.5 billion for rehab of existing buildings
- 22% increase in retail land value, outpacing retail values in the City of Cleveland and Cuyahoga County

“My dream was, ‘We’ll merge downtown with University Circle, our cultural gem, and people living downtown, their front yard would be the culture.’ And it’s happening! It really is happening, which is just fantastic.”
—George Voinovich, former mayor of Cleveland and retired U.S. Senator
Recommendations for federal policymakers

In terms of safety, throughput, economic development and jobs, Complete Streets is an approach that works. Yet, when local leaders and decision-makers try to follow it, they are challenged by narrow formulaic funding allocations and face obstacles when pursuing innovative, context-sensitive designs for their streets. They need a partner in the federal government. The following recommendations will help ensure federal aid is spent wisely, supporting communities where businesses and people thrive.

**Adopt a national Complete Streets policy.** With strong evidence that Complete Streets result in improved safety and throughput, Congress should require all federally funded road projects to consider the needs, comfort and convenience of all travelers, regardless of travel mode, age or ability. Doing so fulfills our national responsibility to make roads safe and to invest in projects that best-achieve our goals for transportation investments. A national Complete Streets policy will provide flexibility in project development processes and street design criteria. Applied to new construction and when making significant improvements to existing streets, this approach is a proactive strategy to incrementally apply cost-effective best practices and proven safety measures.

**Support a national merit-based grant program.** Many of the projects highlighted in this report benefitted from competitive federal grant programs. These competitive grant programs encourage innovative, community-driven solutions to transportation challenges. The federal government should create a national program of merit-based, multimodal grants to state and local applicants to create critical infrastructure links for moving people and freight. This program will ensure continued investment in Complete Street projects and other innovations that create observed transportation, safety and economic benefits.

**Give local communities increased access to funds through state-administered competitive grant programs and suballocations.** Complete Streets tend to be inexpensive compared with other transportation investments and provide high returns in terms of moving traffic, improving safety and generating economic results. While local leaders understand firsthand which transportation investments would benefit their communities, local and regional entities are provided less than 15 percent of all authorized federal transportation funding, largely ignoring their needs.

To address this shortcoming in the next transportation bill, Congress should establish a competitive grant program run by state departments of transportation and metropolitan planning organizations, using a portion of the state’s federal formula funds. Local communities would be able to compete with their peers to fund innovative transportation solutions and ensure federal aid funds projects that provide the highest return on investment and enhance their local and regional economies.

**Improve performance measures for transportation investments, specifically as they relate to safety for all users.** MAP-21 created the framework for a performance-based transportation program that addresses safety, infrastructure conditions, congestion reduction, system reliability, freight movement, economic vitality, environmental sustainability and reduced project delivery delays. USDOT’s current safety proposal would implement MAP-21’s safety performance measure without separately accounting for pedestrians and bicyclists and assurances that states would make progress on these measures. Congress should require states to develop
separate safety performance measures for motorized and non-motorized transportation users and real progress in reducing injuries and deaths.

**Reinforce pedestrian safety as a fundamental goal of federal aid.** Congress can direct states to emphasize pedestrian safety as part of their already required comprehensive safety plans, especially if the number of pedestrian fatalities and injuries is increasing in the state. It also can expand the number of pedestrian-safety road design improvements available for federal aid, including providing a higher cost share for safety countermeasures.

**Strengthen the Transportation Alternatives Program.** Since 1991, federal surface transportation laws have included funds specific to biking and walking projects, including the current Transportation Alternatives program (TAP). Investment of these dollars has helped cities and states build Complete Streets projects, in turn improving safety, transportation and the vitality of local economies. MAP-21 combined the popular Safe Routes to School, Transportation Enhancement, and Recreational Trails programs to create TAP. Funding for the combined program is $808 million annually, much lower than the dedicated funding under previous law of $1.12 billion annually for the three programs. Congress should retain the program in future bills and ensure that local communities have greater control over funding decisions by increasing sub-allocation of funding and extending funding eligibilities to nonprofits.

**Endorse the use of design criteria that recognize the unique needs of streets in cities, suburban town centers and small towns.** Complete Streets represent cost-effective transportation investments, improving travel, safety and economic performance. However current transportation agency design standards often make Complete Streets difficult to implement. Transportation agencies must to be able to respond with better design solutions that keep everyone safe and support economically vibrant communities. The official endorsement by the Federal Highway Administration (FHWA) of the *Walkable Urban Thoroughfares: A Context-Sensitive Approach: An ITE Recommended Practice* and the *Urban Bikeway Design Guide* from the National Association of City Transportation Officials (NACTO) helps provide some necessary tools. FHWA should next endorse the use of NACTO’s *Urban Street Design Guide* as integral to designing safe, multimodal streets.
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Smart Growth America is the only national organization dedicated to researching, advocating for and leading coalitions to bring smart growth practices to more communities nationwide. Visit us online at www.smartgrowthamerica.org.

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