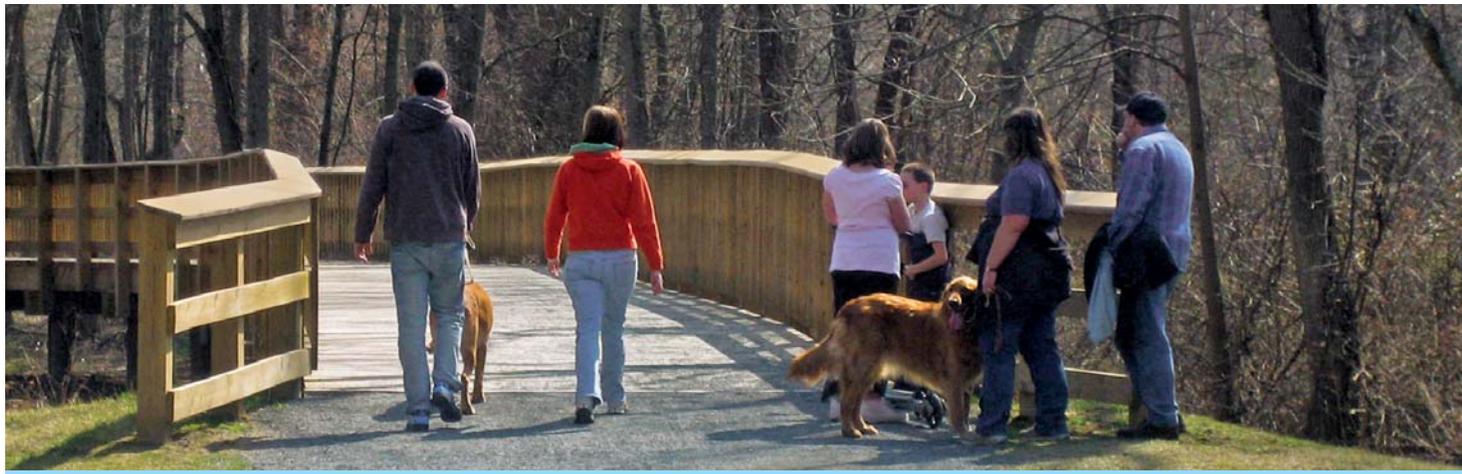


# The Regional Response to Federal Funding for Bicycle and Pedestrian Projects

EXECUTIVE SUMMARY

By Barbara McCann and Susan Handy



The Executive Summary is available electronically at the Institute of Transportation Studies, UC Davis: [http://pubs.its.ucdavis.edu/publication\\_detail.php?id=1311](http://pubs.its.ucdavis.edu/publication_detail.php?id=1311)  
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# Introduction

Since its initiation in the early 20th century, the federal transportation funding program has focused on highway construction for automobile travel. In the last few decades, public transportation has received 20% of federal resources, a significant share, but non-motorized modes such as bicycling and walking have historically received very limited funding. Over the past three decades, however, views of non-motorized modes and the federal interest in promoting them have changed dramatically. It is now widely recognized that a shift from motorized to non-motorized modes would produce abundant environmental benefits, including less air pollution, less water pollution, less noise, and lower greenhouse gas emissions. The low cost of non-motorized modes generates economic benefits from reduced household spending on transportation. Non-motorized modes could also improve equity of access to jobs, healthcare, services, and other activities, especially for youth, people with disabilities, and low-income households with more limited access to cars. The public health community has raised

Although Congress made it possible to spend federal funding on bicycle and pedestrian infrastructure, it did not mandate such spending. To what degree have states, MPOs and local governments taken advantage of this opportunity?

## Federal Bicycle/Pedestrian Spending

FY1992–FY2006

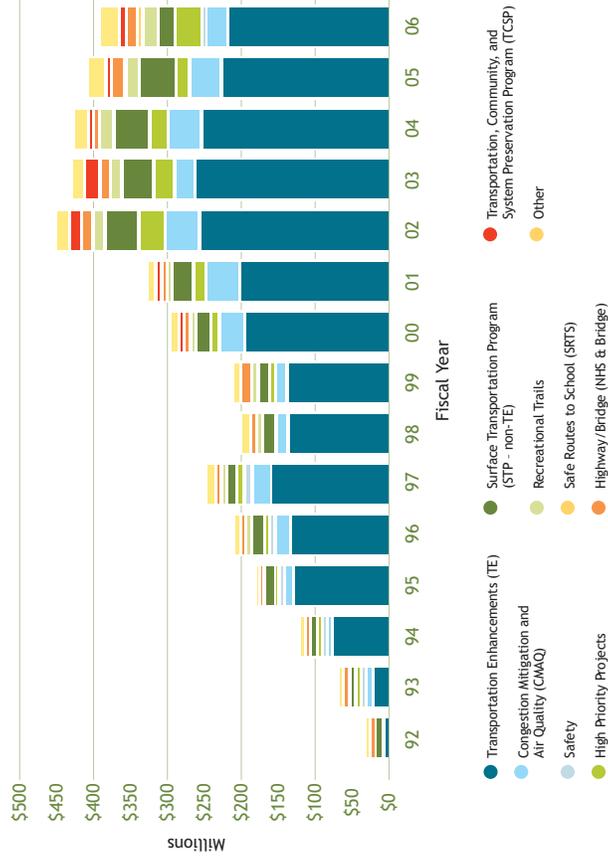


Figure 1. Federal bike/ped spending by program, 1992-2006.

awareness that “active travel” helps individuals meet recommended levels of physical activity, with significant benefits for health, as well as reductions in health care costs. Pedestrian and bicycle infrastructure is increasingly recognized as a critical component of a safe and efficient transportation system, and pedestrian infrastructure is an essential component of an effective public transportation network.

Such benefits justify a national interest in funding for bicycle and pedestrian (bike/ped) infrastructure such as sidewalks, safe pedestrian crossings, bike lanes, shared-use trails and bridges, and bicycle parking facilities. Provisions of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) led to a dramatic increase in federal funding available for pedestrian and bicycle facilities through the creation of new programs and broader eligibility for “highway” funding. Figure 1 shows that the Transportation Equity Act for the 21st Century (TEA-21), passed in 1998, continued this trend; over the six-year life of TEA-21, more than \$1.4 billion was spent on bicycle and pedestrian projects—double what was spent in the six previous years under ISTEA. The latest federal transportation bill, known as SAFETEA-LU and signed into law in August 2005, offered the potential for an even more dramatic increase in federal transportation spending on bicycling and walking—to more than \$4 billion over the six-year life of the bill.

### Study Purpose

Although Congress made it possible to spend federal funding on bicycle and pedestrian infrastructure, it did not mandate spending on these transportation modes. Instead, state departments of transportation (DOTs) and regional metropolitan planning organizations (MPOs) in metropolitan areas with populations over 50,000 choose how to spend this money. This flexibility raises several questions:

- **To what degree have states, MPOs, and local governments taken advantage of the opportunity to invest in non-motorized transportation infrastructure?**
- **What factors explain the variation in bike/ped investments across MPOs?**
- **Has federal support for bike/ped infrastructure led to increased attention to these modes throughout the transportation planning process?**
- **Have bike/ped investments stimulated by federal funding had a positive impact on walking and bicycling?**

With the next federal transportation authorization bill now under consideration, as well as tens of billions of dollars in transportation funding being distributed as part of the stimulus program, understanding the efficacy of federal funding for non-motorized modes is critical. This study explores these questions through an analysis of patterns of spending of federal funds across metropolitan regions, in-depth case studies of policies and projects in two metropolitan regions—Sacramento, California and Baltimore, Maryland—and an analysis of the impact of these investments on bicycling and walking behavior.



# Spending Overview

Our analysis of the federal database that tracks how states and MPOs have spent federal funds on bike/ped infrastructure since 1991 found wide variation in the amount spent. Table 1 shows that among the 50 largest metropolitan areas, the five top-spending regions invested almost seven times as much per capita as the five lowest-spending metro areas. High-spending regions invested an average of \$1.54 per resident per year, while low-spending regions spent an average of 21 cents or less per capita per year.

Programmatic funding sources also varied widely. One program, Transportation Enhancements (TE), has been used for the majority of federally funded bike/ped projects each year, initially funding 75% of projects, shrinking to about 60% by 2006. Many other programs can also be used for bike/ped projects. As Figure 1 shows, the variety of programs used increased from 1992 through 2006, but the pattern remained highly variable by region. Of the 50 largest regions, eight funded more than 90% of their bike/ped infrastructure out of the TE program, while others relied on the program for only about one-quarter of their bike/ped investments. The number of programs used beyond TE ranged from one to 14. There did not appear to be a strong relationship between variety of programs used and total amount spent.

## Spending of Federal Funds on Bike/Ped Projects

50 largest metro areas 1992-2006

Rank	Metropolitan area name	Population 2005	Bike/ped obligations (millions)	Bike/ped per capita, per year (ranked)	Percent of total from TE program	Count, non-TE programs used
1	Providence-New Bedford-Fall River, RI-WA	1,622,520	\$55.9	\$2.30	27%	11
2	Nashville-Davidson-Murfreesboro, TN	1,422,544	\$40.9	\$1.92	64%	7
3	Seattle-Tacoma-Bellevue, WA	3,203,314	\$78.2	\$1.63	28%	16
4	Atlanta-Sandy Springs-Marietta, GA	4,917,717	\$104.0	\$1.41	49%	6
5	Tampa-St. Petersburg-Clearwater, FL	2,647,658	\$54.5	\$1.37	47%	6
6	St. Louis, MO-IL	2,778,518	\$57.0	\$1.37	65%	9
7	Minneapolis-St. Paul-Bloomington, MN-WI	3,142,779	\$61.4	\$1.30	75%	9
8	Hartford-West Hartford-East Hartford, CT	1,188,241	\$22.1	\$1.24	75%	4
9	Portland-Vancouver-Beaverton, OR-WA	2,095,861	\$38.7	\$1.23	37%	11
10	Oklahoma City, OK	1,156,812	\$19.3	\$1.11	82%	2
11	Rochester, NY	1,039,028	\$16.6	\$1.07	66%	4
12	Orlando-Kissimmee, FL	1,933,255	\$30.4	\$1.05	60%	5
13	Cleveland-Elyria-Mentor, OH	2,126,318	\$33.3	\$1.05	88%	6
14	Jacksonville, FL	1,246,371	\$19.2	\$1.03	75%	4
15	Sacramento-Arden-Arcade-Roseville, CA	2,042,283	\$29.0	\$0.95	40%	9
16	New Orleans-Metairie-Kenner, LA	1,319,367	\$17.8	\$0.90	79%	2
17	San Francisco-Oakland-Fremont, CA	4,152,688	\$54.5	\$0.88	59%	5
18	Kansas City, MO-KS	1,947,694	\$25.1	\$0.86	82%	4
19	Birmingham-Hoover, AL	1,090,126	\$13.8	\$0.85	63%	4
20	Milwaukee-Waukesha-West Allis, WI	1,512,855	\$18.7	\$0.82	33%	5
21	San Jose-Sunnyvale-Santa Clara, CA	1,754,988	\$21.1	\$0.80	62%	4
22	Louisville-Jefferson County, KY-IN	1,208,452	\$14.2	\$0.78	48%	6
23	Salt Lake City, UT	1,034,484	\$11.8	\$0.76	94%	2

Table 1. Spending for 50 largest regions, 1992-2006.

Rank	Metropolitan area name	Population 2005	Bike/ped obligations (millions)	Bike/ped per capita, per year (ranked)	Percent of total from TE program	Count, non-TE programs used
24	San Antonio, TX	1,889,797	\$19.6	\$0.69	77%	6
25	Buffalo-Niagara Falls, NY	1,147,711	\$11.2	\$0.65	43%	6
26	Phoenix-Mesa-Scottsdale, AZ	3,865,077	\$35.1	\$0.61	41%	3
27	Baltimore-Towson, MD	2,655,675	\$23.5	\$0.59	81%	3
28	Cincinnati-Middletown, OH-KY-IN	2,070,441	\$17.9	\$0.58	96%	8
29	Detroit-Warren-Livonia, MI	4,488,335	\$38.4	\$0.57	51%	3
30	Indianapolis-Carmel, IN	1,640,591	\$13.7	\$0.56	94%	2
31	Denver-Aurora, CO	2,359,994	\$18.8	\$0.53	78%	5
32	Memphis, TN-MS-AR	1,260,905	\$10.0	\$0.53	99%	1
33	Washington-Arlington-Alexandria, DC-VA-MD-WV	5,214,666	\$39.8	\$0.51	54%	9
34	Chicago-Naperville-Joliet, IL-IN-WI	9,443,356	\$69.2	\$0.49	59%	8
35	Boston-Cambridge-Quincy, MA-NH	4,411,835	\$31.7	\$0.48	32%	4
36	Richmond, VA	1,175,654	\$8.4	\$0.48	19%	4
37	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,823,233	\$41.3	\$0.47	62%	9
38	New York-Northern New Jersey-Long Island, NY-NJ-PA	18,747,320	\$116.2	\$0.41	44%	12
39	Pittsburgh, PA	2,386,074	\$13.8	\$0.39	84%	2
40	Columbus, OH	1,708,625	\$9.6	\$0.38	95%	3
41	Austin-Round Rock, TX	1,452,529	\$7.5	\$0.34	70%	4
42	Riverside-San Bernardino-Ontario, CA	3,909,954	\$19.8	\$0.34	90%	4
43	Houston-Sugar Land-Baytown, TX	5,280,077	\$25.1	\$0.32	60%	4
44	Miami-Fort Lauderdale-Miami Beach, FL	5,422,200	\$25.0	\$0.31	74%	6
45	San Diego-Carlsbad-San Marcos, CA	2,933,462	\$12.7	\$0.29	47%	1
46	Dallas-Fort Worth-Arlington, TX	5,819,475	\$22.1	\$0.25	73%	4
47	Las Vegas-Paradise, NV	1,710,551	\$6.1	\$0.24	92%	3
48	Los Angeles-Long Beach-Santa Ana, CA	12,923,547	\$38.2	\$0.20	90%	8
49	Charlotte-Gastonia-Concord, NC-SC	1,521,278	\$4.3	\$0.19	51%	13
50	Virginia Beach-Norfolk-Newport News, VA-NC	1,647,346	\$4.5	\$0.18	78%	2

Table 1. Spending for 50 largest regions, 1992-2006 continued

### The Role of Sub-Allocation

While this analysis focuses on the regional level, it cannot ignore the role of the states, which are particularly influential in setting federal spending patterns. For most funding programs, states receive the majority of the money directly from the federal government and decide how to spend it. The federal government "sub-allocates" only a portion of one mainstream funding source, the Surface Transportation Program (STP), allowing MPOs in regions with a population over 200,000 to make their own spending decisions. The states set the rules for sub-allocating the other two major programs that fund bicycling and walking infrastructure, TE and Congestion Mitigation and Air Quality programs (CMAQ). Federal guidance recommends sub-allocation for these programs, but many states fail to do so. Since these programs are available for a variety of project types beyond bike/ped infrastructure, the question of who is deciding how to use this money is critical.

Among the 50 largest metropolitan areas, those in states with sub-allocation of the TE program spent a slightly higher portion of their overall federal highway dollars on bicycle and pedestrian infrastructure—about 1.3% compared to 0.9% in the cities located in states without sub-allocation policies.

The variation in spending demonstrated in this analysis shows that making it possible for state and local jurisdictions to invest in non-motorized infrastructure does not mean such investments automatically occur. Socio-demographic factors also play a role: In a study that looked at bike/ped projects at the county level, counties with persistently high poverty levels and low educational attainment were less likely to use federal funding to implement bike/ped projects. For this study, we focused on how and why decisions at the state and regional levels influence how much communities choose to invest in bike/ped infrastructure.



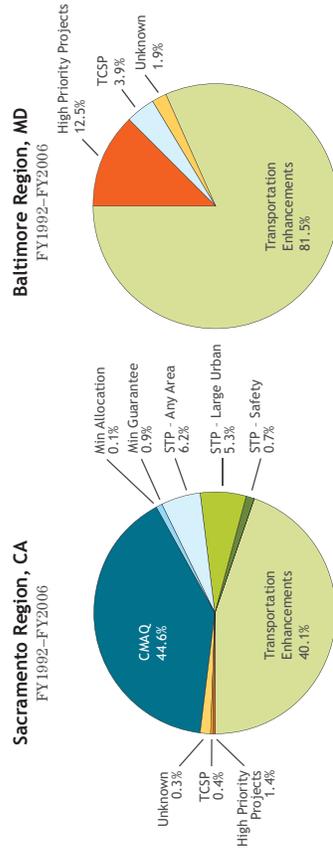
## Case Study Findings

In order to understand these differences, we conducted case studies in two metropolitan regions with significantly different spending patterns: Baltimore, Maryland, and Sacramento, California.

Sacramento's MPO, known as the Sacramento Area Council of Governments (SACOG), programs federal transportation money for six counties and 22 cities that are home to approximately 2.2 million people. Baltimore's MPO is the Baltimore Regional Transportation Board (BRTB). It programs federal transportation funds for five counties and two major cities: Baltimore and Annapolis. In addition to the divergence in their spending patterns, our choice of locations was also influenced by the availability of travel diary surveys, which were the basis for further analysis of impacts of investments on behavior.

Between 1991 and 2006, the Sacramento region used about \$5.5 million more of its federal dollars on bike/ped infrastructure

### Federal Programs Used to Fund Bike/Ped Projects



Figures 2 and 3. Program sources of non-motorized spending in Sacramento and Baltimore.

### Comparison of Spending Patterns

Item	Sacramento	Baltimore
Total spent 1991-2006	\$29 million	\$23.5 million
Per capita spending	\$0.95	\$0.59
Federal programs used	10	4
Portion from CMAQ	45%	0%
Portion from TE	40%	81%
Total federal allocation used for bike/ped	2.4%	1.0%
Project types	Bike lanes, trails, sidewalks	Streetscapes, trails, sidewalks

Table 2. Comparison of regional bike/ped funding characteristics, Sacramento and Baltimore.

than Baltimore, spending 95 cents per capita and using about 2.4% of its total federal transportation spending on bike/ped projects. During the same period, Baltimore spent 59 cents per capita and 1% of its total federal highway funds, as shown in Table 2. Figures 2 and 3 show that Sacramento also relied far less on funding from the TE program, using a total of 10 programs, compared to Baltimore's use of 4 programs, with 81% of funds coming from TE. Sacramento built bike lanes, trails, sidewalks, and made other improvements; Baltimore emphasized streetscape improvements, trails, and sidewalks.

The difference between these spending patterns is marked, but not extreme; both communities are in the middle of the range of spending seen across the top 50 metropolitan areas (Table 1). In order to determine which state and regional policies and conditions have influenced the amount of federal funds used for bicycling and walking infrastructure, we conducted interviews and read documents from each region. We identified policies that have influenced spending patterns, including goals related to pedestrians and bicycles in regional transportation plans, complete streets policies, stand-alone bicycle and pedestrian plans, TE project selection procedures, and innovative financing techniques. We talked to planners and advocates in each region, and investigated the state policy context—i.e., “top-down” effects—as well as the impact of local plans and programs—i.e., “bottom-up” effects. We analyzed the degree to which bike/ped concerns have been institutionalized in the regional planning process, through such mechanisms as performance measures, travel demand forecasting models, project selection criteria, and advisory committee structures.<sup>1</sup>

These case studies suggest five factors that play a role in the difference in spending patterns. In each case, the factors come not simply from actions at the MPO level, but also from the interplay between state policies and resources, regional factors, and local interest.

1. The full discussion of bike/ped planning in these regions, and the descriptions of the state and regional policies, resources, and funding patterns can be found in the full report and the two case study appendices: [http://pubs.its.ucdavis.edu/publication\\_detail.php?id=1304](http://pubs.its.ucdavis.edu/publication_detail.php?id=1304)

## Key Factors in Spending Differences

### **Institutionalization and Resources** More extensive

bike/ped planning and staffing at the state, regional, and local levels have positioned SACOG and the Sacramento region to better take advantage of available federal dollars.

First, Sacramento simply had a head start. Sacramento and the State of California have devoted funding to bicycle and pedestrian infrastructure since the 1970s, while the Baltimore region first mentions bike/ped planning in its 1993 plan. Local bike/ped plans in the Baltimore region tend to date from the 2000s, while many in Sacramento date back to the 70s, 80s, or 90s.

SACOG employs a dedicated bike/ped planner, and the region also accounts for bicycle and pedestrian travel in its travel demand forecasting model. These resources are supplemented by strong institutionalization at the state level. Caltrans, the California DOT, employs state and district bicycle coordinators, and administers long-standing state funding programs that give grants to local communities. The state-level Safe Routes to School Program is scheduled to deliver \$24 million this year, and the Bicycle Transportation Account, established in 1973, has provided approximately \$7 million in funds annually since 1997. This funding source requires that localities adopt a written bicycle plan before they can apply for funds. This requirement has helped spur



local institutionalization: Almost every county and city has a bike/ped plan, and several employ bike/ped coordinators. While the plans may have been developed to access state funds, they undoubtedly made it easier to identify projects for federal funding as well. State law also allows counties to directly raise funds through a local sales tax that can be used for such projects. In short, the Sacramento region has an overlapping web of people employed to work on planning bike/ped projects, guided by many planning documents, with a variety of financial resources at their disposal.

In contrast, the Baltimore region has very few people working full time on bicycle and pedestrian projects, with no designated bike/ped planner at BRTB, and only one in a local jurisdiction (in Baltimore City). The existence of regional and local planning documents is spotty, and financial resources are viewed as limited to a few narrowly defined programs, most of which are administered by the state, including state-funded Sidewalk, Bicycle, and ADA Retrofit Funds totaling around \$6.5 million annually. In fact, institutionalization in Maryland appears to be most advanced at the state level, with the existence of a state-complete streets law and some special funding categories. However, regional informants felt they had limited connection to the state bike/ped planners whom they believe focus primarily on state roads.



In addition to limited resources at the regional level, a lack of institutional support at the state level has hampered the Baltimore region's ability to use federal dollars on bicycle-pedestrian projects. The local match required for TE projects is 50%, the highest in the nation and considerably higher than Sacramento's 11.47%. Tools for estimating air quality impacts do not account for the potential benefits of bike/ped projects, a contrast to California's assistance in this area as described below. Despite these handicaps, the BRTB has funded a significant number of successful bicycle and pedestrian projects using federal funds.

**Regional Control** One of the most important differences between the regions is in who makes the decisions about how federal transportation dollars are spent. California's sub-allocation laws give MPOs an unusual degree of control and leverage over use of federal dollars. Since 1992, 100% of California's CMAQ dollars have been passed through for regional distribution, and a law passed in 1997 requires the sub-allocation of 75% of most other federal transportation funds, including the TE and Surface Transportation programs. Maryland administers both TE and CMAQ at the state level.

In Sacramento, full sub-allocation has allowed the region to combine funding from different programs and directly plan

and implement varied projects to create a comprehensive non-motorized network. Sacramento's more varied project list may also reflect this more localized approach. Sub-allocation may be helpful simply because MPOs and local governments are more focused on local roads, where much of bicycle and pedestrian travel takes place, than are state DOTs, which tend to have a narrower agenda focused on longer distance automobile travel. Sub-allocation may have also given California regions more leverage to insist that the state DOT pay attention to bicycle and pedestrian travel.

While Maryland's state program is quite supportive of bicycle and pedestrian travel, financial support for bicycle and pedestrian projects is achieved not through the regional planning process but primarily through individual project applications to the state-administered TE program. The MPO separately programs a small portion of its sub-allocated STP funds to bicycle and pedestrian projects.

**Plan-Oriented Programs** Local control helped create the conditions for the third factor influencing spending: plan-oriented programming can help bring federal funding streams in line with stated community goals to increase bicycling and walking infrastructure.

Sacramento redistributes about 13% of its federal funding, including funds from the TE and CMAQ programs, across its own outcome-oriented programs that align with the long-term transportation goals expressed in its plans. These programs include a bike/ped program, community design (which includes a complete streets sub-category), air quality, transportation demand management, and regional and local-scale improvements. Bicycle projects are funded through five of these six programs. Creating outcome-oriented spending categories has helped free the Sacramento-area program from a traditional mode-oriented approach to transportation spending that is more evident in the Baltimore region. For the most part, the Baltimore region's spending categories remain divided by mode, following federal categories and state programs closely, with highways, local roads, transit, and "other" project categories, including a bike/ped sub-category. The spending categories themselves tell applicants little about the region's intent in funding these transportation projects. Of the funds it controls, the region allocates 1 percent to bicycle-pedestrian programs through which almost all bicycle and pedestrian projects are funded.

The outcome-oriented funding programs created in Sacramento are set up to help prioritize bicycle and pedestrian infrastructure, compact community design, and other goals expressed in

Plan-oriented programming can help bring federal funding streams in line with stated community goals to increase bicycling and walking infrastructure.





Sacramento's extensive planning processes. While BRTB planning documents express ambitious bicycle and pedestrian goals, funding programs have not been adjusted to reflect this. As a result, funding tends to continue to flow toward traditional highway projects in Baltimore.

**Local Government Support** Local governments with a strong commitment to bicycling and walking in the Sacramento region have likely pushed SACOG to fund more non-motorized transportation projects. In the Sacramento region, the City of Davis made bicycle infrastructure a priority in the late 1960s, followed by several other cities in the region over time. The City of Sacramento has had an aggressive pedestrian program for some time. In contrast, in Baltimore, the BRTB staff indicated that such a limited number of bicycle and pedestrian projects are submitted for funding that they are able to include them all without using the criteria they have established for prioritizing projects—suggesting that local governments in this region give bike/ped needs relatively low priority, or find the federal funding process too onerous and seek local funds instead.

On a practical level, transportation projects are usually generated at the local level and passed up through the MPO process for federal funding—and in some cases, the priorities of the State DOT exert a strong influence. The strength of regional interests

in funding decisions depends on political dynamics on the MPO board. MPO boards are typically made up of officials from local governments, and their role is often defined in practice as one of facilitating the wishes of their own constituents rather than working together to create a regional vision. Although we did not examine the political give-and-take that is always present in decisions over spending allocations, it appears likely that local government support for bike/ped projects had a significant effect on the priority given to these modes by the MPO. The complex relationship between MPOs and their member cities and counties, and what that means for innovations in transportation planning, deserves closer examination.

**Advocates** Most of those interviewed cited the presence—or absence—and effectiveness of outside advocates as having a significant impact on bicycle and pedestrian spending. While advocates are active in both regions on formal advisory committees, officials in the Baltimore region report that advocates tended to work as individuals pushing individual projects. The region's organized group focusing on the “big picture” for non-motorized transportation, One Less Car, has focused more of its energy on state-level issues. Sacramento, on the other hand, has had a regional bicycle advocacy group, the Sacramento Area Bicycle Coalition, since the early days of ISTEAs and has had an

organized pedestrian group for 10 years. These groups form one leg of an “advocacy triangle,” pushing elected officials while also providing support for agency staff. Without such a triangle, staff with innovative ideas for bicycling and walking infrastructure might not be able to demonstrate community support, and elected officials might not be motivated to push less innovative staff.

### The CMAQ Story

In our case studies, the difference between the regions in how these five factors play out is most starkly illustrated in the way they spent air quality funds distributed under the CMAQ program. In order to qualify for these funds, applicants must demonstrate that projects will result in a measurable reduction of pollution emissions. In the Sacramento region, almost 45% of federal funds for non-motorized projects come from the CMAQ program. In the Baltimore region, no CMAQ dollars go to bicycle-pedestrian projects. In interviews, officials in Sacramento explained that the CMAQ program “in a way almost earmarks money for bike/pedestrian [projects],” because they are beneficial to air quality, inexpensive, and easy to implement. In Baltimore, officials said it is difficult to show air quality impacts with bicycle and pedestrian projects, making them less competitive.

These divergent attitudes are rooted in three of the factors discussed above: institutionalization, regional control, and plan-oriented spending programs.

The integration and institutionalization of bike/ped planning at the state level in California has helped create a critical aid for bike/ped eligibility for CMAQ spending. The California Air Resources Board designed California’s emissions calculation manual, cited by the Federal Highway Administration (FHWA) as a best practice, to help regions quantify the often difficult-to-calculate benefits of bicycle and pedestrian projects. It allows CMAQ applicants to input factors such as the average length of bicycle trips, the average daily traffic volume on the roadway parallel to the bicycle project, types of activity centers in the vicinity of the bicycle project, and days of use per year, and then use formulas to calculate annual emission reductions in kilograms per day. Default values or maximums are provided for most of the inputs and can be used when data is not available. Maryland provides no such tool, but requires documentation of air quality benefits using traditional models that often miss or underestimate bicycle-pedestrian travel. In addition, the Sacramento region emphasizes a cost-benefit analysis for CMAQ project selection—also a FHWA-recommended best practice—which means that generally inexpensive bicycle and pedestrian projects can compete even if they show small air quality benefits.



The Sacramento spending record suggests that sub-allocation increases the chances that funds will be used for bicycle and pedestrian projects.



State control and a lack of sub-allocation puts bicycle and pedestrian programs at a disadvantage in the CMAQ program. While about half of the states sub-allocate CMAQ funds, Maryland does not, leaving the program under the control of the state. Since bicycle and pedestrian projects tend to be small and highly localized, it is more difficult for them to compete in a state-administered program considering proposals for projects ranging from reduction of diesel emissions to traffic flow improvements to transit service. State agencies with a primary purpose of building and maintaining highways may favor emissions reduction projects aimed at improving automobile traffic flow; this has been the most common use of CMAQ funding nationally, capturing 42% of CMAQ funds from 2000 to 2007. The Sacramento spending record suggests that sub-allocation increases the chances that funds will be used for bicycle and pedestrian projects. Regional and local governments may be more interested in taking advantage of the potential air quality benefits of bicycling and walking modes due to direct experience, citizen advocacy, or both. Also, the level of detail required to effectively plan and institute non-motorized networks is something best accomplished at the regional and local level.

Finally, the redistribution of CMAQ money into plan-oriented programs by SACOG undoubtedly helps direct these funds to

bike/ped projects. While the federal TE and CMAQ programs already have an outcome orientation, they are quite broadly written to allow a wide variety of uses. The federal CMAQ program gives wide latitude in how communities tackle emissions reduction, making eligible everything from highway capacity expansion to transportation demand management. By creating six specific plan-oriented funding programs and using CMAQ funds to support them all, SACOG is able to reflect community intent, as expressed in community-planning documents, in its approach to congestion mitigation and air quality. The targeted programs ensure that SACOG's funding streams clearly express the region's philosophy and intent in each program area and, in this case, direct more CMAQ funds to bike/ped projects.





## Effect on Walking and Bicycling

The final piece of research for this project is what appears to be the first-ever attempt to relate bicycle and pedestrian infrastructure investments to changes in walking and bicycling across a metropolitan region. Previous studies on a project or neighborhood level have demonstrated a link between bicycling and walking infrastructure and bicycling and walking levels—but linking spending across a region is a new challenge. This research relies on regional travel diaries for Sacramento and Baltimore spanning from 1991 to 2001 to test whether walking or bicycling rates increased in the neighborhoods where improvements were made.

The analysis was limited by serious deficiencies in the available data on both infrastructure investments and walking and bicycling activity levels. Very few places have consistently taken accurate counts of non-motorized activity, making such longitudinal

research challenging. Bicycling and walking infrastructure has also flown beneath the radar and is not tracked; we compared several sources to pinpoint projects and locations. It was not always possible to determine when facilities were completed, and it is unclear how long it takes for a new facility to encourage additional use. Questions remain about important issues of geography, such as how close people need to live to a facility to be influenced to use it, and how several small improvements would influence use. Nevertheless, the results provide some support for the hypothesis that investments increase walking and bicycling.

The analysis looked at spending by facility type, and found that for walking trips in Baltimore, “streetscape” improvements were related to increased walking to reach destinations, but trail and sidewalk projects were not. For bicycle trips, both trails and streetscape projects were modestly related to an increase in bicycling. In Sacramento, the limited data did not show any association between trail or sidewalk improvements and walking for utilitarian purposes. Spending on trails was also not linked to utilitarian bicycle trips; however, spending on bike lanes was associated with an increase in such trips.

In order to test these relationships more conclusively, researchers need access to much better survey data on walking and bicycling behavior and on pedestrian and bicycle investments. This information is currently quite rare, though transportation infrastructure providers can take advantage of methodological and technological innovations to increase their tracking of non-motorized infrastructure and activity.



## Conclusion

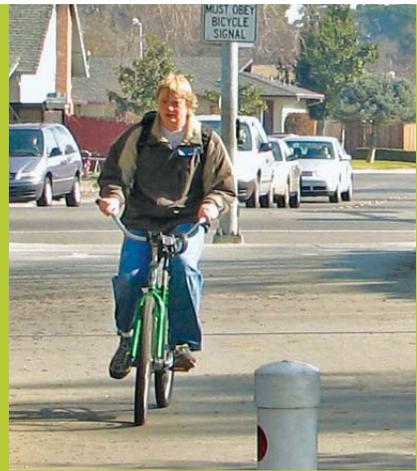
Absolute investments in bicycle and pedestrian funding, as well as the share of federal funding for these facilities, have increased significantly since the passage of ISTEA in 1991. Whether the additional investments in bike/ped infrastructure had a significant impact on walking and bicycling activity is less clear. In Sacramento and Baltimore, our analysis shows small though statistically significant positive effects on walking and bicycling. However, the analysis is hampered by significant limitations in the data on both investments and behavior; a lack of evidence of an impact is not the same as evidence of a lack of impact.

What is clear is that the share of federal funding going towards bike/ped projects varies considerably across metropolitan regions. The effectiveness of federal funding for bike/ped projects has so far depended in large part on state and regional policy. While the flexibility of this approach has fostered innovation, the national interest in promoting active living and non-motorized transportation modes requires federal policy makers to consider

ways to increase use of federal funds for these programs. This investigation suggests the following strategies:

- **Pass more funding directly to MPOs, rather than routing it through state DOTs, thereby reducing the effect of differences in sub-allocation.**
- **Design funding programs to achieve specific outcomes and develop outcome-oriented measures of success. Alternatively, encourage states and regions to create their own programs that tie funding more tightly to local planning goals.**
- **Provide more tools to state and local governments to help bike/ped projects meet eligibility requirements such as demonstrated emissions reductions.**
- **Prohibit states from requiring more than the federally specified local match.**
- **Introduce further requirements for institutionalizing non-motorized transportation planning in order to improve MPOs' ability to meet their goals for bike/ped modes.**
- **Continue to emphasize public involvement in the planning process in order to ensure opportunities for local advocates to shed light on bike/ped needs. Institutionalize the involvement of health departments and other public agencies that support biking and walking for non-transportation reasons.**

In recognition of the importance of non-motorized modes, the federal government could choose to follow the California model to assert stronger leadership in improving conditions for bicyclists and pedestrians. This state has passed significant funding control to regional and local governments, while simultaneously adopting policies that create a state-wide climate in which consideration of bicyclist and pedestrian needs is normative. Similarly, federal leadership may be necessary to induce state agencies to adopt the extensive changes necessary to plan and deliver transportation systems that serve people on foot or bicycle as well as those in automobiles. These changes are the next step toward the effective use of federal transportation funding to encourage a healthier, more accessible, and more affordable transportation system.



The Executive Summary is available electronically at the Institute of Transportation Studies, UC Davis:

[http://pubs.its.ucdavis.edu/publication\\_detail.php?id=1311](http://pubs.its.ucdavis.edu/publication_detail.php?id=1311).  
Reference Number: UCD-ITS-RR-09-22.

The full report is available at:

[http://pubs.its.ucdavis.edu/publication\\_detail.php?id=1304](http://pubs.its.ucdavis.edu/publication_detail.php?id=1304)  
Reference Number: UCD-ITS-RR-09-15

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