

# Off-Road but On Track

## Using Bicycle and Pedestrian Trails for Transportation

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Conventional wisdom classifies off-road pedestrian and bicycle trails as recreational facilities. Yet commuters account for more than a third of weekday users of trails. New research documents that Americans will use alternatives to their single-occupant vehicles if given safe and convenient choices. Many trails offer both safety and convenience to travelers.

A well-planned facility in an urban area can help overcome cyclists' reluctance to use bicycling for transportation. A 1991 national Harris Poll survey revealed that 53 percent of adults who bicycled once or more during that year (46 percent of those surveyed) would begin bicycling to work occasionally or would commute by bicycle more often if there were separate designated bike paths to use (1). Of the 1,255 adults interviewed over the telephone by random selection, only 1 percent currently used a bike as their primary means of commuting or getting around. These statistics indicate a large, unserved market for bicycle commuting. The provision of safer and more convenient trails could substantially increase the already high rate of commuting on trails. The three trails profiled in this article demonstrate commuting patterns and characteristics of two common types of off-road trail: the converted rail corridor, or "rail-trail," and the greenway.



Many parents teach their children to bicycle on off-road trails. Adults can also master basic skills and conditioning before commuting in mixed traffic.

### Incentive for Bicycling

Trails across the country, particularly those along abandoned rail corridors, serve the transportation needs of bicyclists. For example, a survey of users of the Pinellas Trail in Florida turned up

surprising results. This 76-km (47.2-mi) converted railbed, which runs from St. Petersburg to Tarpon Springs, Florida, is primarily considered a recreational park. Yet 35 percent of the users surveyed during a November 1993 weekday reported using the trail for transportation such as commuting to work, going to school, or shopping. In addition, 87 percent of those who used the trail to get to school or work did so at least twice a week, with 60 percent using it five days a week. The survey methodology for this and the following surveys are described later.

A survey of four trails along greenways in the Baltimore-Washington region revealed a similar trend (2). A greenway is a linear open space such as a stream valley, riverfront, railroad, utility right-of-way, or canal that connects recreational, cultural, historic, and natural resources with populated areas. Among respondents, 45 percent used the trails primarily for transportation. For this survey transportation use excluded recreation, fitness, training, and other nontraveling purposes. All but one of the respondents traveled by bicycle, with more than 85 percent of those users doing so at least three days a week.

A May 1990 survey on the Burke-Gilman trail in Seattle, Washington, demonstrated that about 37 percent of bicyclists and 7 percent of pedestrians surveyed were using the trail to go to work or school. The average bicycling or walking commuter uses the trail 4.8 times a week and travels 3.2 km (2 mi) on foot and 7.2 km (4.5 mi) by bicycle. The average user travels an additional 3 km (1.9

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Washington and Old Dominion Railroad trail is convenient to East Falls Church Metro transit station in suburban Virginia.

mi) to get to the trail. The bicycle trips are longer commutes from door to door than are typically recorded in personal trip surveys, which usually report trips under 8 km (5 mi).

A survey of trip purpose was taken at two sites on the Burke-Gilman trail—16 km (10 mi) from downtown and 8 km (5 mi) from a major employment site—in May 1994. During peak hours the average percentage of trail users commuting ranged from 25 to 44. The highest percentage was found during morning peak hours, with 67 percent of the trail users commuting. Again these figures indicate the willingness of bicycle/pedestrian commuters to travel longer distances than the normally assumed 8 km (5 mi).

Case studies in the Washington, D.C., region indicate the average distance traveled to a greenway was 2.8 km (1.7 mi), a finding similar to that on the Burke-Gilman trail. This indicates a great willingness for the bicyclist to travel extra distance to use a safe and aesthetically pleasing route. The Baltimore-Washington, D.C., surveys also illustrate the incentive trails provide to bicycle to work or school instead of drive. When asked what they would do if the facility did not exist, only 39 percent of the

transportation users said they would still bicycle by finding a different route.

## Trail Profiles

Each of the trails surveyed is profiled here along with specific survey methodologies. Different teams conducted surveys under slightly different conditions, but the results suggest similar trends.

### Pinellas Trail

The Pinellas Trail serves people of all ages and socioeconomic levels and is rapidly becoming a magnet for new economic development in the eight communities it connects. It passes several major employment sites, five schools, and numerous parks and natural areas. Many businesses, including a new McDonald's restaurant in the town of Largo, have opened back doors onto the trail. The city of Dunedin adopted "The Heart of the Trail" as its city slogan. Once-abandoned storefronts in downtown Dunedin now have a waiting list for new art galleries, antique shops, boutiques, and restaurants.

The trail's cross section averages 4.6 m (15 ft) of asphalt, with two-way travel.

Three m (10 ft) is for bicycles and 1.5 m (5 ft) is for pedestrians. In areas with adequate right-of-way, bicyclists and pedestrians are separated by a 1.5-m (5-ft) grass strip.

The Pinellas Trail survey was conducted on Tuesday, November 9, 1993, from 6:30 a.m. to 6:00 p.m. at eight locations along 37 km (23 mi) of the trail. Trail users were offered a free cup of lemonade as an incentive to fill out the survey, yielding 967 responses. The park department estimates 2,000 to 3,000 daily users at that time of year. The weather was fair, with temperatures in the mid-70s. Weather forecasts from the previous evening called for a 60 percent chance of rain, which may have deterred some users. Respondents were allowed to complete the survey only once.

### Burke-Gilman Trail

The Burke-Gilman trail in the Seattle region was constructed in 1978 and has an estimated three-quarters of a million users each year, double the use originally forecast. With 4,000 to 5,000 users on a busy day and an average width of 3 m (19 ft) along its 19-km (11.8-mi) length, the trail is a victim of its own popularity. Some sections are quite congested, particularly on weekends. The trail passes through residential neighborhoods, an industrial area, neighborhood commercial areas, the University of Washington campus, and six parks.

Surveys were distributed on Tuesday, May 22, 1990, between 7:00 a.m. and 7:00 p.m. and were returned by 1,286 trail users that day. Users could complete the survey on site or mail the postage-paid card. Volunteers from the Cascade Bicycle Club administered the effort with assistance from the Seattle Engineering Department. Bill Moritz of the University of Washington College of Engineering analyzed the data.

### Washington, D.C., Greenways

In his master's thesis for Towson State University, *Greenways as Alternative Transportation Routes: A Case Study of Selected Greenways in the Baltimore-Washington Area*, Darrell Sachs analyzed trails in four greenways with characteristics ranging from rural to urban. These



trails included the Washington and Old Dominion Railroad Regional Park (W&OD), Rock Creek Park, the Baltimore and Annapolis rail-trail, and the North Central rail-trail. The two Washington, D.C., area greenways surveyed in the region had most of the commuter use.

The Rock Creek Park trail is in a large stream valley park running from Montgomery County, Maryland, into the center of Washington, D.C. The park is managed by the National Park Service and connects with the Arlington Memorial Bridge to Arlington, Virginia. This greenway, which has been a bicycle/pedestrian route since the mid-1970s, is a heavily used commuter route running through many densely populated neighborhoods.

The W&OD in Northern Virginia runs 73 km (45.4 mi) from rural Purcellville through many Washington, D.C., suburbs to Shirlington. The Northern Virginia Regional Park Authority purchased the right-of-way from 1977 to 1982 and opened the trail in 1981. The Purcellville terminus is 14.5 km (9 mi) from the Appalachian Trail and 19 km (11.8 mi) from Harper's Ferry, West Virginia. The Shirlington terminus connects to a 3-km (1.9-mi) bikeway to the Potomac River, which in turn connects to the Mt. Vernon trail. The Mt. Vernon trail runs to the Arlington Memorial Bridge and Washington, D.C. The W&OD trail also connects with the East Falls Church Metrorail station, making it an important intermodal link in the region.

Questionnaires were distributed to greenway users between 7:00 and 10:00 a.m. and again between 3:30 and 6:30 p.m. during a four-day period in September 1993. The weather was fair with little or no actual or forecast precipitation. Sites were chosen at one point on each of the greenways, primarily on the recommendations of park managers. The survey was distributed to 385 users, and 255 responses were returned. Users could either complete the surveys on site or return them by mail. The two urban greenways, the Rock Creek trail and the W&OD trail, had 67 percent and 51 percent transportation use, respectively. The more rural greenways in the Baltimore region were used primarily for recreation and exercise.

## BUILDING TRAILS WITH TEAMWORK

How have bicycle/pedestrian facilities such as the Pinellas Trail been built? Through partnerships: the Pinellas Trail is the result of a collaboration among the Florida Department of Transportation, Pinellas County, and hundreds of volunteers.

In 1982 FDOT began purchasing segments of the railroad corridor for a future mass transit line. In 1984 Dan Burden, the state bicycle/pedestrian coordinator, suggested that a bicycle/pedestrian path be built in that corridor. The idea was embraced by local business organizations and the Citizens' Advisory and Bicycle Advisory Committees of the Pinellas County Metropolitan Planning Organization. Background reports were prepared and other pieces of abandoned rail corridors were acquired by FDOT and the city of Clearwater. While transit analyses were being prepared for the entire region and the corridor's fate was in limbo, grass-roots activity began to swell. In 1988 a new fundraising organization, Pinellas Trails Inc., evolved from the Bicycle Advisory Committee. This organization's primary purpose was to promote the trail throughout the community and to raise funds for trail support facilities.

County commissioners appropriated the first million dollars for the first 24-km (14.9-mi) segment of the trail in 1989. An aggressive marketing campaign that year convinced Pinellas County residents to adopt a referendum for a 10-year sales tax increase of one cent. This increase secured funds for the remaining phases of the project and unrelated infrastructure projects. The concept of a linear park appealed so much to the voters that it is believed to have been the catalyst for the referendum's success. Interestingly, a similar infrastructure referendum brought up in neighboring Hillsborough County lacked the linear park component and was defeated. With Intermodal Surface Transportation Efficiency Act of 1991 enhancement funds, pedestrian overpasses and spurs are being planned and constructed to connect communities along the trail, creating 76 continuous km (47.2 mi) of serenity in a crowded, highly populated region.

## Factors Affecting Trail Use for Commuting Purposes

Connections between residential areas and common destinations—particularly professional destinations and schools—are important factors in the use of trails for transportation. In Seattle, 49 percent of the commuters surveyed indicated that their occupation was professional and 39 percent of the commuters were students. Although the surveys in Pinellas County and the Washington, D.C., region included no data to identify occupation, the pattern of trails linking residential areas, schools, and professional employment sites is repeated along those routes.

The potential for high commuting rates is strong on urban trails along rail-trails. Rail lines often dictated the original development of communities extending from a city. Smaller communities grew at each rail stop. As trails replace these now-abandoned rail lines, these communities are once again directly linked, often from downtown to downtown. The successful redevelopment of the downtowns in Dunedin, Largo, and Tarpon Springs along the Pinellas Trail is evidence of this trend. The potential exists to recreate such success in other communities.

The quality of bicycle/pedestrian facilities at the commuter's origin and final destination affects whether a person will



choose a nonmotorized commute option. Sidewalks and safe bicycling routes should connect a trail to major employment centers and schools. Secure bicycle parking and dressing facilities are also necessary. In the study of greenways in the Baltimore-Washington region, 75 percent of the bicycle commuters indicated that they had access to showers or bike racks at their destination. Only 16.5 percent reported no incentives from their employers to bicycle or walk. In analyzing this data, Sachs found that employer incentives for not driving are an influential stimulus for people to commute to work via a greenway (2).

Design considerations to make trails more attractive for transportation include a minimum width of 3 m (10 ft) and an optimum width of 4.6 m (15 ft), with separate lanes or paths in the right-of-way for bicyclists and pedestrians; consistent surface material or pavement to suit a variety of wheel types; and design for speeds of 32 km/hr (20 mph). The trails profiled in this article each have some or all of these characteristics.

## Funding for Trail Projects

The enactment of the Intermodal Surface Transportation Efficiency Act of 1991 has drastically changed funding patterns for multi-use trails. Figures compiled by the Rails-to-Trails Conservancy indicate that off-road trails and other multi-use pathway projects received more than \$180 million in federal transportation enhancement funds during the first three years of ISTEA, 1992–1994 (3). Only \$8 million was used for independent bicycle/pedestrian facility projects in the three years before ISTEA, according to figures released by the Federal Highway Administration in September 1991. An additional \$141.8 million in enhancement funds has gone to on-road and nontrail bicycle/pedestrian facilities since ISTEA was enacted.

The 20-fold upsurge in trail and pathway funding is even more astounding given that it represents funding from only one ISTEA program. Nonmotorized facilities are also being funded from the Surface Transportation Program, Congestion



Older citizens and others who cannot—or choose not to—drive can use trails to remain active and mobile.

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Mitigation and Air Quality Program, and other transportation and safety programs in ISTEA.

FHWA's recently released *National Bicycling and Walking Study* established new national goals for nonmotorized transportation. It calls for a doubling of the mode share of all trips by bicycling and walking and a 10 percent decrease in the accidental death and injury rates among cyclists and pedestrians. It is critical for transportation officials and others to assess the potential of the new ISTEA trail funding to meet these goals. In addition, now that enhancement funding has brought trails into the circle of legitimate transportation facilities, trail designers should increase their attention to designing transportation value into new trail projects.

## Conclusion

The transportation value of off-road bicycle and pedestrian routes is only now

being established. The combination of new public awareness of trails, increased professional attention to their utilitarian value, and greater funding opportunities for their construction can lead to nationally significant impacts on daily travel choices. However, several barriers exist to the successful use of trails for transportation purposes. These include ongoing controversy about the use of transportation funds for trails; the frequent absence of showers, changing facilities, and bicycle parking at destinations; and the lack of priority given to creating comprehensive trail and bicycle/pedestrian transport systems.

Nonetheless the survey results examined here dispel several myths about bicycling for transportation. In each case, surveys have demonstrated that bicyclists who commute on trails travel farther than was previously suspected and are willing to travel as much as 3 km (1.9 mi) out of their way for a safe and pleasant route to school or work. The national Harris Poll also demonstrated that the casual weekend cyclist is as much a potential bicycling commuter as the stereotypically avid cyclist.

When communities provide well-planned and designed bicycle/pedestrian facilities, it is possible to shift motor vehicle trips from the road system. This can help ease congestion and parking problems and improve air quality. In addition to their obvious usefulness as an alternative to the automobile, trails also allow many elderly and young people who cannot drive to become independent travelers, eliminating the need for additional motorized trips solely to transport them.

Given the results of studies examined here, it appears to be time to stop asking whether the demand exists for transportation trails. As the planners of the Burke-Gilman trail in Seattle and others have discovered, the real question is how to accommodate that demand.

## Acknowledgments

The author would like to thank Kay Medwick, Bicycle/Pedestrian Coordinator, Pinellas County; Bill Moritz, College



of Engineering, University of Washington; Peter Lagerwey, city of Seattle Bicycle/Pedestrian Coordinator; and Darrell Sachs, graduate of the Towson State University master's program in Transportation Planning.

## References

1. *Pathways for People*. Louis Harris and Associates, Rodale Press Survey, Emmaus, Pa., Dec. 1991.
2. Sachs, D.W., *Greenways as Alternative Transportation Routes: A Case Study of Selected Greenways in the Baltimore-Washington Area*. Master's thesis. Towson State University, Towson, Md., 1994.
3. Patten, R. Enhancements Monitoring Project (ongoing). Rails-to-Trails Conservancy, Washington, D.C., Nov. 1994.

## MORE ON TRAILS

Several sources give information on standards, design criteria, and transportation programs for trails:

### Publications

- *The 1991 AASHTO Guide for the Development of Bicycle Facilities* includes design standards and illustrations. Write to the American Association of State Highway and Transportation Officials, 444 North Capitol Street, N.W., Suite 225, Washington, D.C. 20001 (telephone 202-624-5800).
- The Rails-to-Trails Conservancy publication, *Trails for the Twenty-First Century*, provides planning and design information for multiuse trails. RTC also has other documents about rail-trail conversions. Write to the Rails-to-Trails Conservancy, 1400 16th Street N.W., Suite 300, Washington, D.C. 20036 (telephone 202-797-5400).
- The National Bicycle/Pedestrian Clearinghouse provides access to all federal publications on trails and bicycle/pedestrian facilities. Contact the National Bicycle/Pedestrian Clearinghouse at 800-760-NBPC, e-mail: bfa@igc.org; or write to the Bicycle Federation of America, 1506 21st Street, N.W., Washington, D.C. 20036 (telephone 202-463-6622).
- The Florida Department of Transportation is revising its *Bicycle Facilities Planning and Design Guidelines*. This document will expand on the principles in the AASHTO guide. Write to the Florida Bicycle/Pedestrian Program, Florida DOT, 605 Suwannee Street, M.S. 82, Tallahassee, Florida 32399-0450 (telephone 904-487-1200).
- The Florida Bicycle/Pedestrian Commuter Center distributes a handbook for employers and government agencies on developing successful bicycle/pedestrian programs and publications detailing bicycle parking and shower/locker facilities. Contact the Florida Bicycle/Pedestrian Commuter Center at e-mail: mgutten@postoffice.cob.fsu.edu; or write to the Florida Institute for Marketing Alternative Transportation, College of Business, Florida State University, Tallahassee, Florida 32306-3037 (telephone 904-644-2925).

### Training

- The Federal Highway Administration offers training courses to most states on designing bicycle/pedestrian facilities. Contact the appropriate division or regional office of FHWA or write to the bicycle program at FHWA headquarters, 400 7th Street, S.W., HEP-12, Washington, D.C. 20590 (telephone 202-366-5007).
- The Fifth National Rails-to-Trails Conference will feature a bicycle/pedestrian facilities design track in November 1995 in Clearwater, Florida, home of the Pinellas Trail (telephone 202-797-5430).
- The Florida Bicycle/Pedestrian Commuter Center also offers the Commute Smart course for employers, government agencies, transportation management associations, and others on how to develop successful bicycle/pedestrian commuter programs.