

## Survey of Users on the

# NORWOTTUCK RAIL TRAIL

Prepared by the Pioneer Valley Planning Commission

June, 2003



Conducted with funds provided by the Federal Highway Administration and the Massachusetts Highway Department  
The cooperation of the Massachusetts Department of Environmental Management was appreciated.  
In-kind contributions provided by Laurel Pure Water Distributors.



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## Abstract

The report summarizes the findings of a user survey conducted in 2002 on the Norwottuck Rail Trail, a popular bikepath in located in the Connecticut River Valley of Western Massachusetts. The purpose of the study is to define the rail trail by the characteristics of its users with the goal of providing project planners and trail managers with information most relevant to the decision making process. The study identifies individuals using the facility, the activities they participate in, and travel behavior related to the facility. The report also identifies significant trends with comparisons to earlier surveys.

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## Introduction

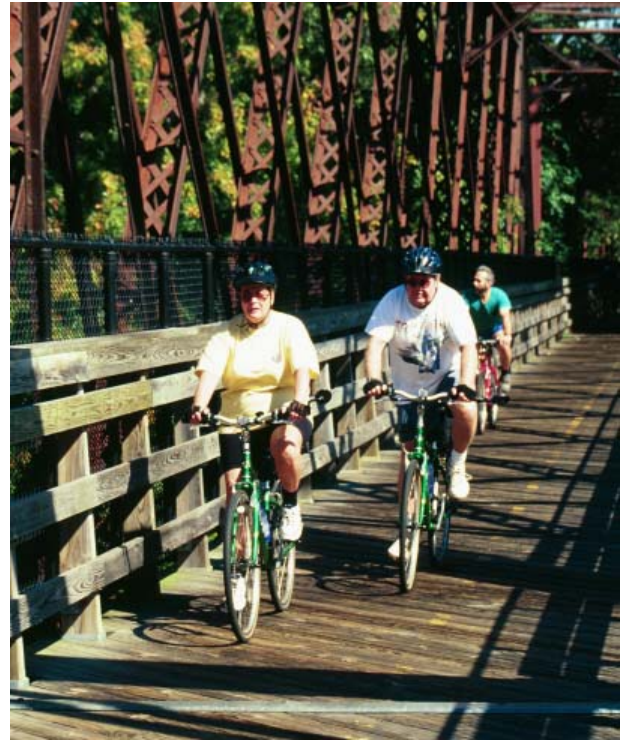
Trails and greenways contribute to the quality of life in our communities. They foster economic growth, reduce congestion, improve the environment, contribute to personal health, and provide community identity. Yet most trails don't reach their full potential in all of these areas. To make the most of this resource trail stewards need to understand their audience. A "user survey" is a valuable tool toward accomplishing this goal. By understanding the user, why they are there and how they are changing, we can better manage today and better anticipate the needs for the future. The 2002 study was designed to provide planners and trail managers with a new perspective on the Norwottuck Rail Trail's user base.

The Norwottuck survey identified trip generation characteristics for more than 900 trail users. Using zip code and street address information, planners can identify where people are coming from and prioritize development of new trails and extensions to existing ones. Travel distance information also sheds light on future parking needs and the potential for improved connections to other modes such as transit.

The survey identifies information useful to businesses located along the trail corridor. Armed with data from the survey, prospective business owners know their potential customer base before they open their doors. Data from the survey can tell them how late to stay open, identify peak periods of use, and help allocated staff effectively. The survey also identifies shifts in recreational activities, showing declines of inline-skating and increases in bicycling that directly impact retail activities associated with the trail.

The Norwottuck survey measures the trail's contribution to vehicle trip reduction. Bikepaths are asked to contribute more than recreation to justify the use of federal transportation funds and Norwottuck has continued to grow in this role. Data from the survey shows that 31% of the trail's weekday trips were not for recreation. And while recreational use dominates on weekends, the survey showed that the trail remains a viable alternative to driving along the heavily congested Route 9 corridor, providing an alternative for people with no access to a car.

The Norwottuck Rail Trail survey provides a valuable resource for planning and management decisions. Trail managers and the trail's advisory board can make decisions and establish priorities with a complete profile of the age, trip purpose, mode, frequency of use, destination, travel mode to the trail, peak periods of use, and parking needs of their facility.



## Background

The Norwottuck opened in 1993 as the 495<sup>th</sup> rail trail in the United States. There are currently 1,203 rail trails covering more than 12,328 miles nationwide. Locally, 15 of 43 communities in the Pioneer Valley Region are actively planning or designing a total of 19 bikepath projects. Many communities have universally adopted bicycling and walking as a key element in achieving the goals of sustainable development, smart growth, and livability. The Centers for Disease Control and Prevention reports that Americans grow heavier and unhealthier each year making bikepaths an important community resource for physical fitness. As more communities expressed interest in developing trail and greenway projects, PVPC recognized the importance of quantifying usage of the Norwottuck Rail Trail. In 1995 the first survey of trail users provided communities with information to identify needs in the development of other bikepath projects. Since that time, information collected from the 1995 study has proven invaluable as a planning tool. Data from the study has been used in bikepath parking studies, for estimating demand for planned bikepath projects, signal timing at several bikepath intersections, and as a basis for comparison to this study.

## Trail Description

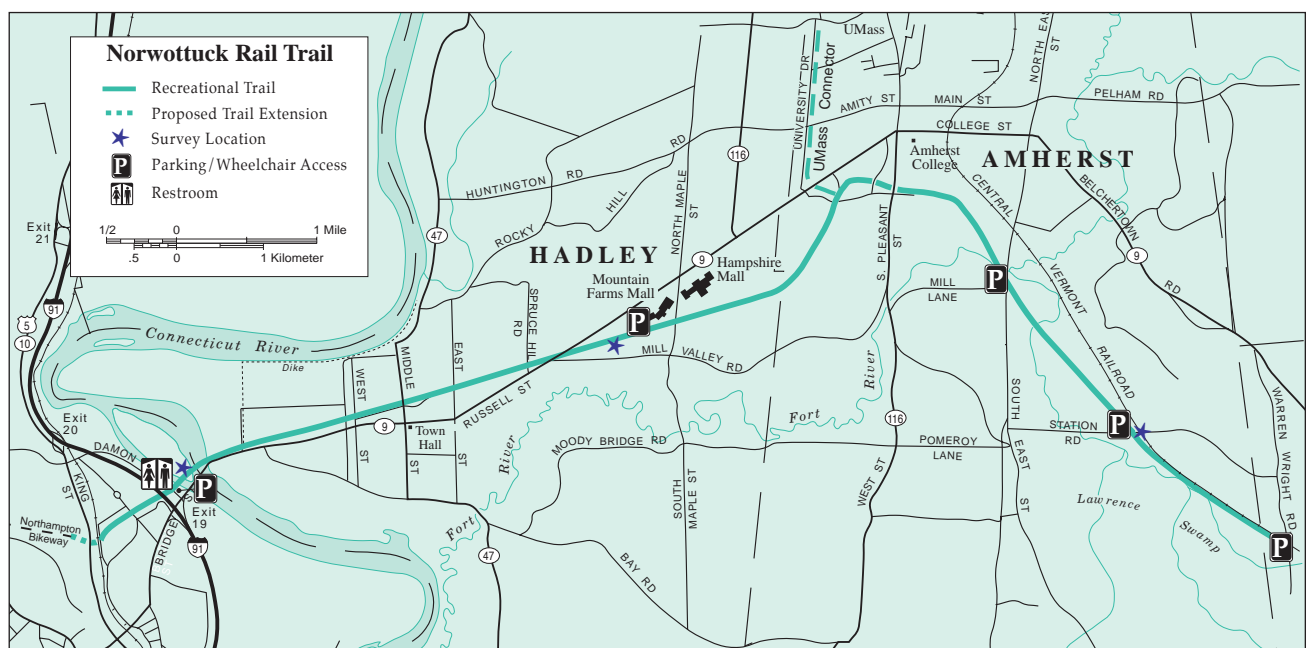
The Norwottuck (Nor wah' tuk) Rail Trail is constructed along an abandoned rail corridor in the communities of Amherst, Hadley, and Northampton. Once owned by the Boston & Maine Railroad, this multi-use path consists of an 8-foot wide asphalt pavement extending 10.2 miles from the west bank of the Connecticut River in Northampton, eastward through Hadley and Amherst, to Warren Wright Road in Belchertown. The area is home to five colleges, including the University of Massachusetts at Amherst, with a combined enrollment of 30,000 students and a relatively large population of bicyclists and pedestrians. The Norwottuck has four primary access points, called "trail heads". Elwell State Park is the westernmost trail head and is located on Damon Road in Northampton. Elwell offers limited parking, public restrooms, the Norwottuck maintenance facility, and serves as the access point to the Connecticut River for local rowing teams. Parking is also offered at the easternmost trail head on Warren Wright Road in Belchertown. The three intermediate access points are located behind Bread and Circus in Hadley, Mill Lane, Route 116 and Station Road in Amherst. In the summer of 2002 a new bikepath was constructed in Amherst that provides a direct connection from the Norwottuck to the University of Massachusetts.

## Methodology

Norwottuck Rail Trail users were surveyed on a Thursday and a Saturday in September of 2002. A total of 892 individuals (response rate approximately 54%, with percent error  $\pm 1.4\%$ ) were stopped and interviewed at locations in Northampton, Hadley and Amherst from 7:00 AM to 7:00 PM. A total of ten survey questions were asked during each interview. A survey form is shown in page 12. Survey questions focused on transportation related issues of origin, travel mode, trip purpose, and frequency of use. Data was also collected during both days by visually observing and recording information on the age, gender, travel mode, and time of use for every user at each of the three locations. This "observational" data was used to measure information on the volume of users and to assess the quality of the sample group interviewed.

A considerable effort was made to minimize extraneous influences on the data collected. The survey question regarding the origin of users was phrased to rule out inappropriate responses by adding a second question to clarify the true origin of the trip to the trail. (If for example, the response was "Seattle" the respondent was asked if they traveled directly from "Seattle" to the trail. Local users were asked for a street name, but no number, to protect confidentiality. Participants were selected on a first come basis and were asked to volunteer the informa-

Figure 1: Norwottuck Rail Trail Map



Prepared by the Pioneer Valley Planning Commission, 2003.

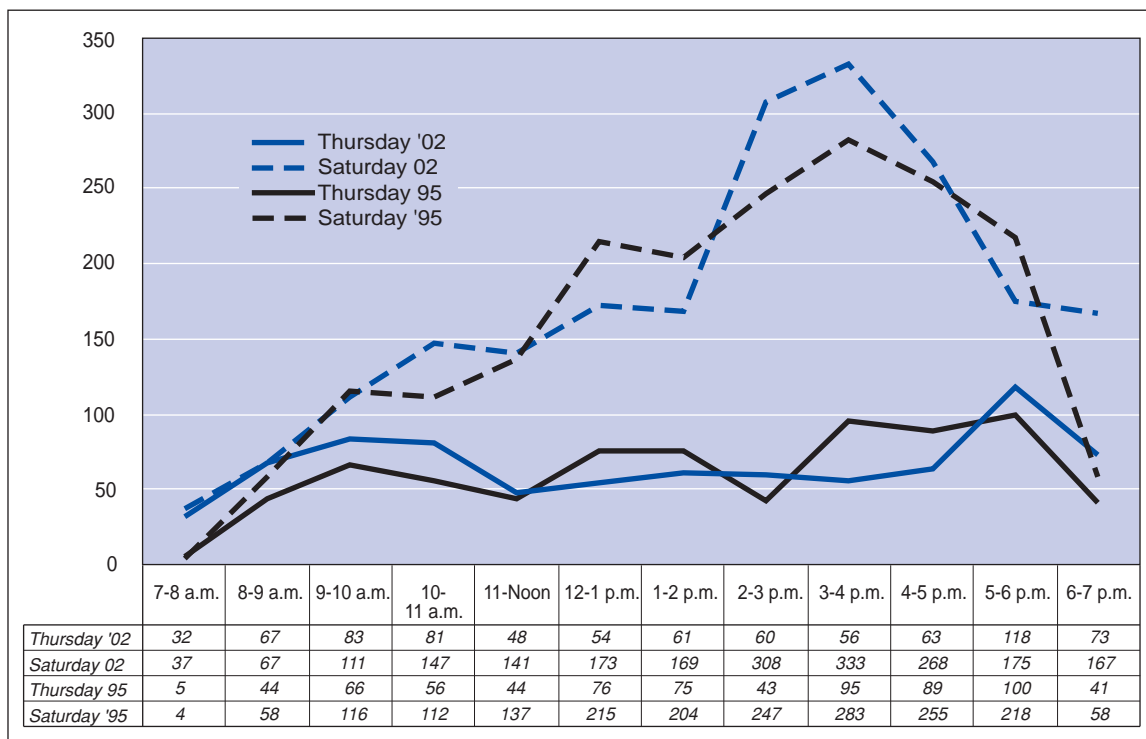
tion. As a result of this sampling technique the responses are not completely random. Users commuting to and from work or school by bicycle were the most difficult individuals to stop and consequently, they are under represented in the survey data. Pedestrians are the other extreme. They were the most cooperative and the most over sampled group. Another sampling problem occurred as a result of back to back survey dates. Trail users that answered survey questions on Thursday were reluctant to respond again on Saturday believing they had already participated. The weather on both days was intermittently overcast and mild. To encourage participation, survey locations provided trail users with water and PVPC water bottles were offered to all survey respondents. None of these factors is expected to have a significant impact on the findings of the survey.

## Survey Findings

### Number of Users Observed

The total number of Norwottuck Trail users during the Thursday survey was approximately 791 individuals, while usage on Saturday increased significantly to a combined volume of 2094 at the three locations. Usage on Thursday (denoted by the solid line in Figure 2) remained relatively steady with minor peaks between 9 and 10 A.M. and 5 to 6 P.M. suggesting that the trail is being used for non-recreational purposes such as commuting to school. Saturday usage continually increased as the day progressed and peaked between 3 and 4 P.M. All of these patterns closely matched the peak periods observed during the 1995 survey.

Figure 2 Number of Users Observed



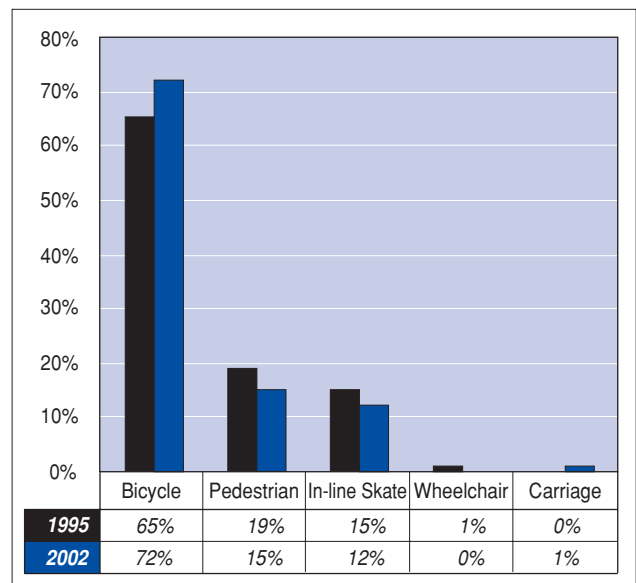
**Table 1: Previous Norwottuck Rail Trail Volume Counts (in Hadley only)**

Day of the Week	Date	Volume
Saturday	7/27/96	1202
Sunday	7/28/96	1704
Friday	8/02/96	722
Saturday	8/03/96	1018
Sunday	8/04/96	1058
Friday	8/09/96	306
Saturday	8/10/96	745
Sunday	8/11/96	1024
Monday	8/12/96	360
Friday	8/16/96	606
Saturday	8/17/96	1234
Sunday	8/18/96	1600
Monday	8/19/96	970
Wednesday	7/23/97	1062
Thursday	7/24/97	406
Friday	7/25/97	610
Saturday	7/26/97	1324
Sunday	7/27/97	1154
Monday	7/28/97	622
Tuesday	7/29/97	964
Saturday	8/02/97	1096
Sunday	8/03/97	1183
Monday	8/04/97	604
Tuesday	8/05/97	562
Wednesday	8/06/97	1002
Thursday	8/07/97	1018
Friday	8/08/97	742
Saturday	8/09/97	1052
Sunday	8/10/97	1390
Monday	8/11/97	718
Tuesday	8/12/97	870
Wednesday	8/13/97	154
Thursday	8/14/97	628
Wednesday	9/10/97	434
Thursday	9/11/97	206
Friday	9/12/97	508
Saturday	9/13/97	1214
Sunday	9/14/97	1718
Monday	9/15/97	574
Thursday	9/18/97	628
Friday	9/19/97	602
Monday	9/22/97	426
Wednesday	10/29/97	256
Thursday	10/30/97	310
Monday	11/03/97	252
Tuesday	11/04/97	122
Wednesday	11/05/97	218
Thursday	11/06/97	178
Friday	11/07/97	126
Monday	11/10/97	122
Tuesday	11/11/97	280
Wednesday	11/12/97	82
Thursday	11/13/97	58
Tuesday	09/14/99	495
Wednesday	09/15/97	446
Thursday	09/16/97	163
Friday	09/18/97	449
Monday	09/20/99	591
Thursday	09/19/02	295
Saturday	09/21/02	879

## Travel Mode of Users on the Trail

Bicycling is the dominant travel mode on the Norwottuck accounting for 72 percent of all uses. Pedestrian transportation on the trail, which includes walking and jogging, was followed in popularity by in-line skating and wheelchair users. Pedestrian activity was the greatest at trail entrances and parking areas where access to the trail makes short excursions possible. Trail traffic at these locations is also more congested, because of a greater variation in the travel speeds of users as slower moving pedestrians mix with bicyclists and in-line skaters.

**Figure 3 Travel Mode of Norwottuck Users**



## Distribution of Users by Age and Gender

Despite a large population of college age students in the area there is strong representation from users over the age of 25 for both Saturday and Thursday. The average age for all users was 36 with those 40 and over accounting for 38 percent of trail users. The ratio of male to female users was consistent for Thursday and Saturday. (52% male / 48% female) The increase in use of the trail by children under the age of 18 from Thursday to Saturday indicates that the Norwottuck is frequently visited by families for recreational purposes.

Figure 4 Distribution of Norwottuck Users by Age

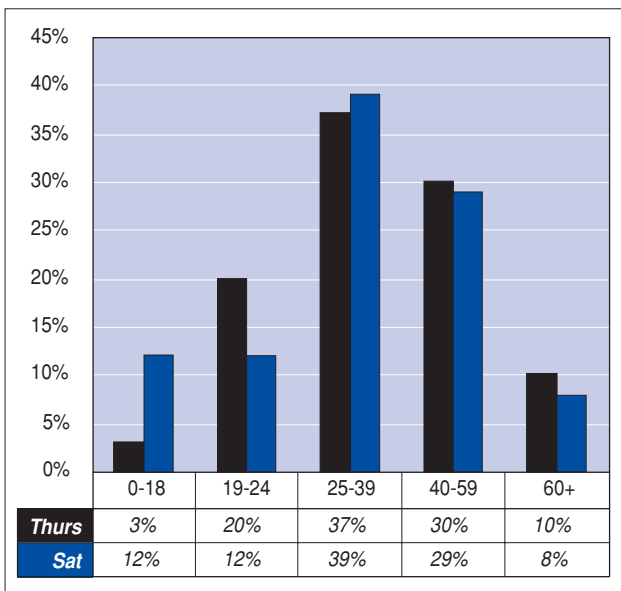
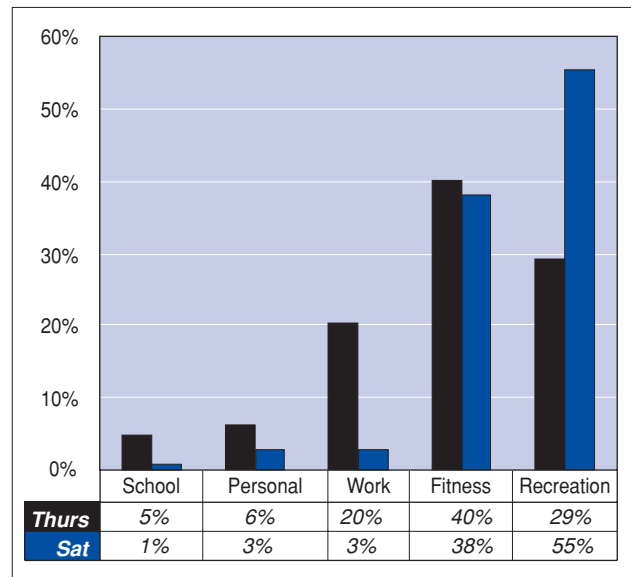


Figure 5 Trip Purpose



## Purpose of Trip

Not surprisingly, the primary purpose for using the Norwottuck Rail Trail is recreation. During the Saturday survey 55% of those surveyed responded in this manner. The majority of users originating from outside of the local communities of Northampton, Hadley, Amherst and Belchertown listed recreation as their primary purpose for being on the trail.

It was important to derive the number of non-recreational users on the Norwottuck. The trail connects several major activity centers including, the Hadley shopping areas, UMass and Amherst College. The most significant change from the 1995 data and the 2002 survey was the increase in weekday trips for work (from 14% to 20%). The non-recreational/fitness trips account for 31 percent of weekday usage and the data suggests a trend toward greater use of the trail for non-recreational purposes and supports efforts to provide direct connections from the trail to employment centers and downtown business districts.

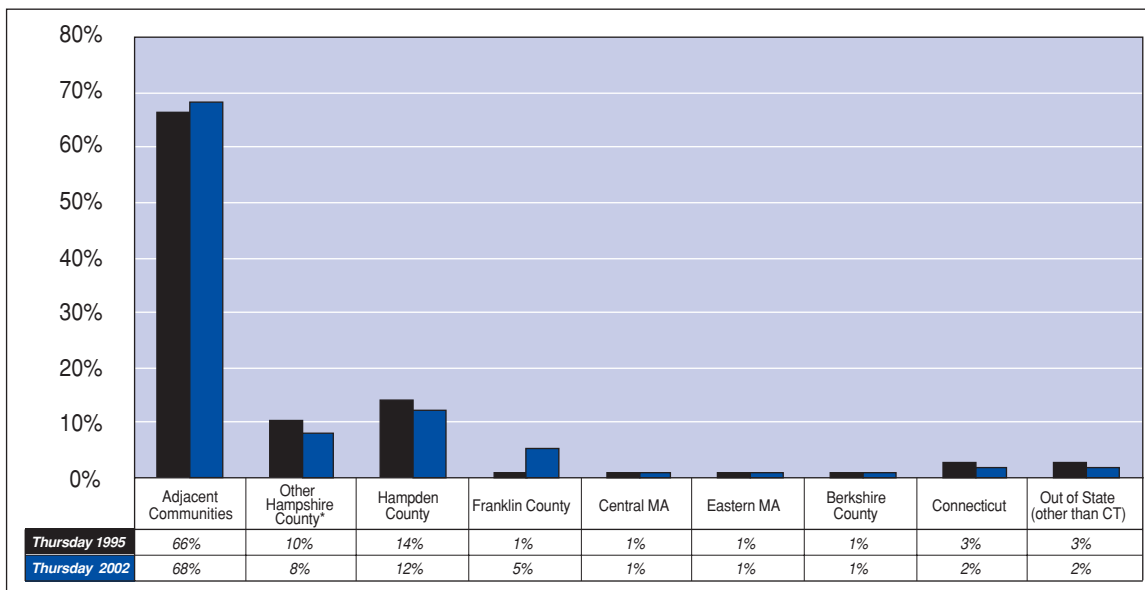
The 2002 survey included an additional trip purpose category for “fitness.” During the 1995 survey many respondents using the trail for fitness took offense to being combined within a category for recreation. Recreational trips are perceived as a luxury whereas trips made for the purpose of personal health are necessities. Fitness trips outnumbered all other trip types during the midweek survey accounting for 40% of users.

## Origin of Norwottuck Users on the Trail

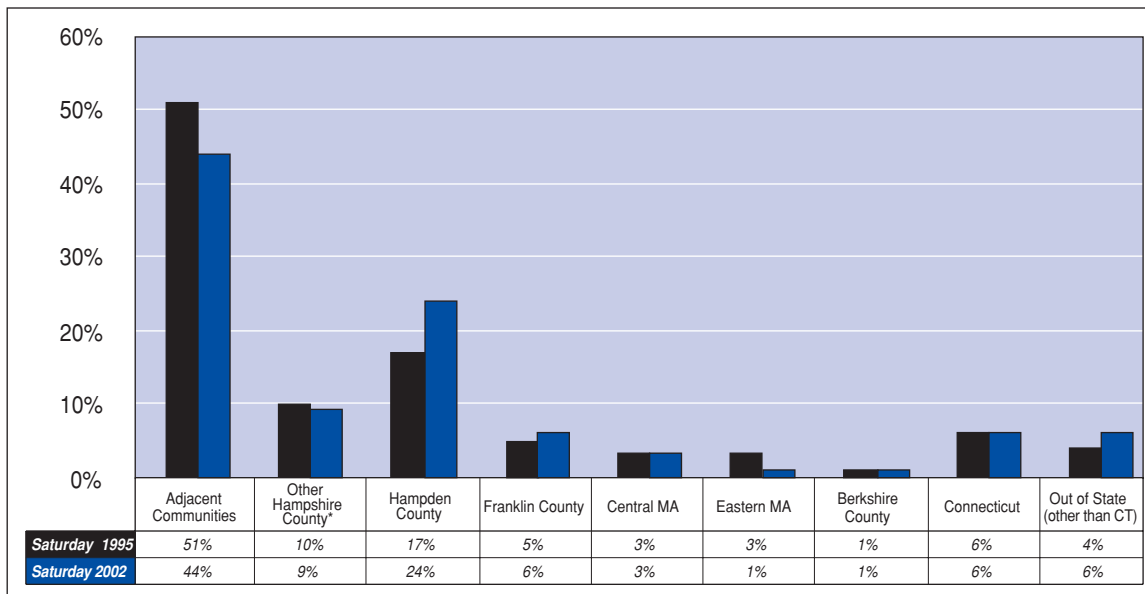
The majority of users are residents of the local communities of Amherst, Belchertown, Hadley, and Northampton. The proportion of residents from outside of these local communities increased from 33 percent on Thursday to 54 percent on Saturday (both numbers changed little from the 1995 survey). Survey results indicated that users traveled from all across New England to reach the

Norwottuck Rail Trail. Six percent of Saturday users were residents of Connecticut with an average travel distance of 45 miles. Visitors and tourists from Boston, New York, Maine, and Maryland participated in the survey. Forty-seven percent of out-of-state respondents were on the trail for the first time. The geographic regions of users surveyed during the two days are included in Figure 6 and 7.

**Figure 6 Regional Distribution of Trail Users (Weekday)**



**Figure 7 Regional Distribution of Trail Users (Weekend)**



\* Adjacent communities include Northampton, Hadley, Amherst, and Belchertown.

## Travel Distance to Trail

**Table 2: Travel Distance to the Trail by Mode (miles)**

	Bicycling	Walking	Driving	All
Thursday	3.1	0.8	12.5	7.4
Saturday	5.5	0.6	13	10.0

The average travel distance to the trail for all users was 9.5 miles. Distances for those bicycling to the trail was slightly higher on Saturday (5.5vs. 3.1 miles) due to an increase in the percentage of touring cyclists using the Norwottuck as either a destination or as a link on a longer journey. Automobile trips averaged 13 miles. Saturday distances increased due to the longer travel associated with trips made for recreational purposes. Pedestrian travel distances varied little averaging 0.8 miles. This walking distance is largely attributable to the proximity of the Norwottuck to downtown Northampton (distance of one mile).

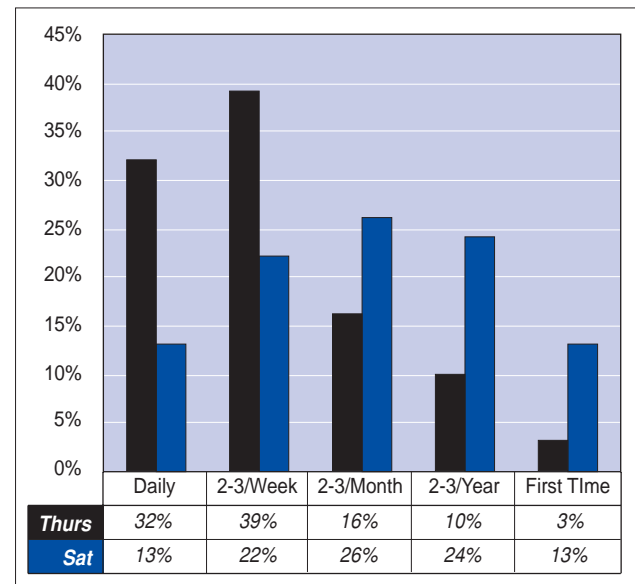
## About the Commuters

The vast majority of Norwottuck commuters use the trail daily. An individual living in downtown Northampton commuting by bicycle on the Norwottuck Rail Trail will reach the University of Massachusetts in Amherst in approximately 40 minutes (a distance of 8 miles). The demographic information on commuters suggests that the majority is male, over the age of 30, ride a bicycle, and live in Northampton.

## Frequency of Use

Weekday users were consistently the most frequent users and 32% of them use the trail every day. The decrease in first-time users was the only significant change from 1995. First-time users decreased from 20% on Saturday (1995) to just 13% in 2002. There was a similar drop in first time users (8% to 3%) on Thursday. First time users are still significant to the characteristics of trial use. New to the bikepath, they need more in the way of resources than those more familiar with the trail. First-time users are unfamiliar with rules and operation of the trail, location of restrooms, and benefit the most through interaction with DEM Park Interpreters that routinely interact with patrons.

**Figure 8 Frequency of Use**



**Table 3: Profile of Commuters**

Origin		Mode		Frequency		Age		Gender	
Northampton	61%	Bicycle	95%	Daily	45%	0-18	4%	Male	59%
Hadley	8%	Walk	3%	2-3/week	35%	19-24	32%	Female	41%
Amherst	21%	Skate	2%	1/week	10%	25-39	37%		
Belchertown	2%			2-3/month	5%	39-49	10%		
Other	8%			First time	3%	49-59	14%		
						60 +	3%		

## Travel Mode to the Trail

Cars were the single most popular form of transportation used to reach the trail, although the majority of local users (Amherst, Northampton, Belchertown & Hadley residents) used a bicycle to get to the trail. The high percentage of users traveling to the trail in cars on Saturday (66%) is largely attributable to the greater number of users traveling longer distances to get to the trail. People that use the trail frequently (5-6 times a week or more) tended to walk or bicycle to the trail, only one in four drove a car. 85% of users traveling more than five miles to the trail on Saturday used a car for transportation while 45% of users traveling less than five miles road a bicycle.

The Norwottuck's parking lot at Elwell State Park off Damon Road was filled to capacity by 10 a.m. on Saturday. A recent parking study conducted for the Norwottuck found that most parking areas were seldom used to capacity with parking concentrated in the Damon Road location. Elwell State Park (at Damon Road) continues to be the most popular access point to the trail for all modes of travel. New parking restrictions have been instituted to discourage cars from parking on adjacent streets during peak periods.

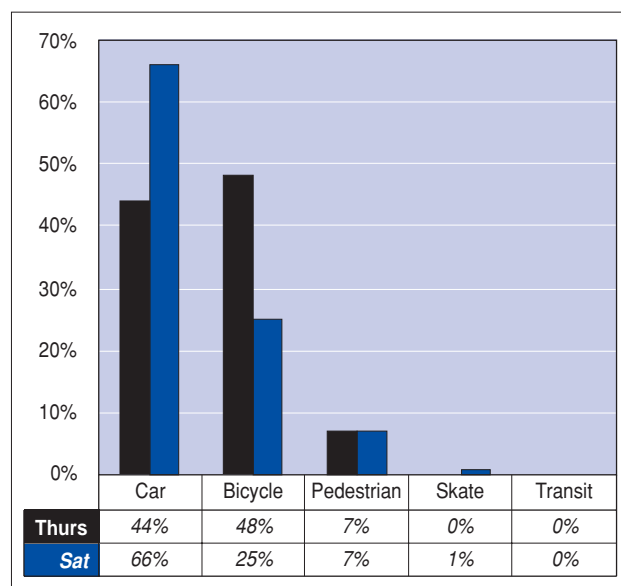
Table 4: Travel Mode to the Trail 1995/2002

Mode to trail	Thursday		Saturday	
	1995	2002	1995	2002
Drove	46%	44%	63%	66%
Bike	42%	48%	29%	25%
Walk	10%	7%	7%	7%
Skate	2%	0%	1%	1%
Transit	0%	0%	0%	0%

## Vehicle Occupancy Rates

Most users did not travel to the trail by themselves. Occupancy rates for trips generated by the Norwottuck Trail were between 1.5 persons per vehicle on Thursday and 2.0 on Saturday. Higher occupancy rates on Saturday are indicative of the social nature and longer travel distances of recreational trips. Vehicle occupancy rates in 2002 averaged twenty percent lower than vehicle occupancy rates in 1995. This change may reflect the increase in the rate of vehicle ownership in recent years. The number of vehicles per person in the Pioneer Valley increased from .64 vehicles per person in 1990 to .81 vehicles per person in 2000 (a 26.4 % increase).

Figure 9 Travel Mode to the Trail



## UMass Connector Bikepath Usage

In late summer of 2002 the Town of Amherst and the University of Massachusetts officially opened a new bikepath connection from the Norwottuck onto the UMass Campus. The new trail provides students and commuters with direct access to the trail. Trail users were asked if they used the new bikepath. 20% of Thursday users and 10% of Saturday users said that they used the new UMass Bikeway Connector.

## Other Bikepath Use

Trail users were also surveyed about their familiarity with other bikepaths and recreational trails in the region. In recent years new bicycle facilities have been opened in Connecticut, Rhode Island, and Vermont. Still 51% of those surveyed were not familiar with any other bikepaths.

## Do Norwottuck Trail Users Ride Exclusively on Bikepaths?

Bicyclists on the trail were asked if they ride on the road in addition to the bikepath. The question was designed to determine if people that frequented the bikepath were also building the skill necessary to feel comfortable riding on local roadways. 60% of Saturday riders said they also ride on-road and 70% of Thursday cyclists said they were not exclusive to bikepath. Those that did not ride on roadways cited "safety" as a primary concern.

## Trail Width and Public Opinion

Trail users were asked their opinion on the existing width of the trail. This question was the only public opinion question of the survey. The question was included to allow planners and engineers time to consider re-paving options in the future. The bikepath is scheduled for repaving sometime under the next federal transportation legislation (a 6 year period) at a cost of \$1 million. When the trail is being prepared for resurfacing a decision will be made on the trail's width. The Norwottuck is currently 8 feet wide from Northampton to Station Road in Amherst, and 10 feet wide from Station Road to Warren Wright Road in Belchertown. Eight (8) feet is the AASHTO minimum standard, however the preferred width is ten (10) feet. Widening the trail would have the benefit of easing congestion on the heavily traveled portions of the trail. If the trail were widened, the tunnels and bridges would remain 8 feet in width and selective clearing would be required to retain the four (4) foot "clear zone" from existing vegetation. The majority of those surveyed did not want to see the trail widened (60%). However most did express a desire to see the trail resurfaced and expressed a concern about glass used in the pavement and the condition of the pavement where tree roots have caused bumps and cracks. These two comments (roots and glass) were by far the most frequent of the comments received during the two-day survey. The Department of Environmental Management is working to address these issues and plans to resurface the trail when funding becomes available. Future pavement materials will not include the use of recycled glass products.

**Table 5: Public Opinion Survey  
"Would you like to see the trail widened?"**

Would you like to see the trail widened?			
Location	NO	YES	Total
Amherst	60%	40%	239
Hadley	59%	40%	214
Northampton	63%	37%	438
Average	61%	39%	892

## Conclusion

This survey provides some general information on the characteristics of users of a very popular facility. The trail's ability to provide a high-quality experience for a multitude of users accounts for much of its popularity. These experiences range from family and social interaction, to physical challenge, to solitude and encounters with nature. The design of a successful multi-use trail involves balancing the desire for these experiences with the limited resources for construction and management.

Multi-use trails of the future can learn important lessons on trail design and management by focusing on their intended user group. The Norwottuck Rail Trail provides a connection between two of the most bicycle and pedestrian friendly communities in the Northeast: Northampton and Amherst. Not surprisingly, the survey found that most users within a reasonable distance were willing to walk or bicycle to the trail and to their destination when provided with the opportunity. In addition, the safe, secure and scenic environment provided by the trail encourages many first time users and many repeat visitors.

In addition to functioning as a linear park or greenway, separate pathways for bicycling and walking can serve a transportation function. The survey found that the Norwottuck is a pathway linking homes to schools, stores, and places of employment while providing safe routes for children and the elderly. Trails like the Norwottuck can increase the percentage of bicycling and walking commute trips and discourage the use of automobiles. This will improve safety on our roadways, increase access to major destinations, and reduce vehicle emissions.

The Department of Environmental Management currently has plans to extend the Norwottuck Rail Trail from its current terminus on the outskirts of Northampton into the heart of the city's residential and business district. This downtown area currently generates the largest proportion of trips to the trail despite the lack of convenient access. Construction of this connection could dramatically improve the accessibility of the trail for a large pool of users and significantly effect the population of users on the trail.

The University of Massachusetts and the Town of Amherst completed construction of the UMass Bikeway Connector creating greater access for University users. As the Region's largest employer, the University of Massachusetts has the potential to generate a signifi-



cantly larger portion of the work and school related trips on the trail. Results from the survey show that similar efforts to provide bike path connections to the university should be studied.

In the fall of 1996 the Pioneer Valley Transit Authority equipped buses in the Amherst/Northampton area with bicycle racks (during non-winter months) providing increased access to the trail. While the Rack and Roll program has been popular, there were no trail users surveyed that listed Transit as travel mode to reach the trail. This low use statistic may need to be addressed in future marketing and promotion efforts.

The Pioneer Valley Planning Commission is in the process of developing strategies to measure the level and seasonal variation of use on the Norwottuck Rail Trail. Future studies of users on other bicycle and pedestrian facilities in the region may also provide valuable information on the economic impact and tourism benefits to the region. For more information, please call the PVPC at 413-781-6045.

# Survey Form

- Thursday
- Saturday

## Norwottuck Rail Trail Survey

Location:  Northampton  Hadley  Amherst Time: \_\_\_\_\_

Mode:  Bike  Carriage  Pedestrian  Wheelchair  Skate  Other \_\_\_\_\_

Age:  0-18  19-24  25-39  39-49  49-59  60 +

Gender:  Male  Female

1. Have you been surveyed today?  Yes  No

2. How did you get to the bike trail today?

- Drove  Bus
- Bike  Wheel Chair
- Walk  Other \_\_\_\_\_
- Skate

3. If you drove to the trail, how many people traveled with you?

- 0  1  2  3  4  5 or more

4. What town do you live in?

- Northampton (Street) \_\_\_\_\_
- Amherst (Street) \_\_\_\_\_
- Hadley (Street) \_\_\_\_\_
- Other \_\_\_\_\_

5. For what purpose are you using the trail today?

- Work  Fitness
- School  Recreation
- Shopping  Other \_\_\_\_\_

6. How often do you use the trail?

- Every day  2-3 times per month  Other \_\_\_\_\_
- 2-3 times per week  Once a month or less
- Once a week  This is my first time

7. If cyclist: do you bicycle on the road?  Yes  No – If no, why not?  
\_\_\_\_\_  
\_\_\_\_\_

8. Are you aware of other bike trails?  Yes \_\_\_\_\_  No

9. Would like to see the trail widened when it is re-surfaced?  Yes  No

10. Did you or do you plan to use the UMASS Connector Bikepath today?  Yes  No

Comments: \_\_\_\_\_

Thursday

# Norwottuck Rail Trail Survey

Pioneer Valley Planning Commission

Surveyor Name: \_\_\_\_\_

Location:  Northampton  Hadley  Amherst

Page \_\_\_\_ of \_\_\_\_

Time	Mode						Age					Gender		Direction		Surveyed	Not Surveyed
	B	P	S	C	W	O	0-18	19-24	25-39	40-59	60+	M	F	EB	WB		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Time	Mode						Age					Gender		Direction		Surveyed	Not Surveyed
	B	P	S	C	W	O	0-18	19-24	25-39	40-59	60+	M	F	EB	WB		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Time	Mode						Age					Gender		Direction		Surveyed	Not Surveyed
	B	P	S	C	W	O	0-18	19-24	25-39	40-59	60+	M	F	EB	WB		
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