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The Road Less Traveled

A Study of the Bicycle Transportation Network on the Island of Martha's Vineyard

An Interactive Qualifying Project Report

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by

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1. bicycles
2. transportation
3. Martha's Vineyard

Abstract

Problems associated with bicycling and other non-motorized forms of transportation on the paths and roadways of Martha's Vineyard are investigated. Usage data is characterized through traffic counts, physical observation, and interviews with DPW officials, community members, and bike shop owners. This research is intended to serve as a resource for future improvements and policy decisions by the Martha's Vineyard Commission and the communities of Martha's Vineyard.

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Acknowledgments

This project would not have been a successful learning experience if not for the assistance of the staff of the Martha's Vineyard Commission, the team's project advisor, and the Bicycle Path Committee. The students would like to convey their appreciation to all those who provided information, advice, or opinions over the course of the project. Special thanks go to our advisor Professor Wesley T. Mott, as well as Bill Veno and Mark London of the MVC, who were involved collectively in every aspect of the project.

The team appreciates the time spent of all those interviewed, including school principals, bicycle rental employees/owners, committee members, and Department of Public Works officials. Long-time Vineyard residents know more about the situation here than anyone could hope to learn in a few short months. These insights added greatly to our understanding of the unique situation on Martha's Vineyard.

Student Contributions

All three students were involved in the data collection phase of the multi-user path project. This includes bicycle counts at schools, principal interviews, background literature review, bicycle traffic counts, and other forms of research. Each student's primary contributions are as follows:

Matt

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1 Overview

This report seeks to frame and present the results of a 2005 non-motorized transportation study performed on the island of Martha's Vineyard. During the early phases of planning, we identified the goal of "documentation and evaluation of the existing infrastructure serving cyclists and pedestrians, and the identification and initial evaluation of measures to improve these infrastructures" (See Appendix 1: "Project Outline for WPI Students' Evaluation of Martha's Vineyard's Bicycling and Pedestrian Infrastructure"). The broad task of providing a resource for transportation improvement for cyclists and pedestrians on Martha's Vineyard requires:

- Quantifying user characteristics and facility usage
- Identify existing as well as necessary facilities (including paths, signage, bicycle racks, and shoulders)
- Explore various improvements for each deficient area
- The following steps are necessary to ensure that sufficient information is incorporated into the analysis:
- Background research (Martha's Vineyard specific and universal)
- User counts and observation
- Survey various authorities involved in non-motorized traffic

What follows is a characterization of the needs of the users of multi-user paths followed by user centered recommendations for improvement. First in "Non-Motorized Transportation in Martha's Vineyard," the users and planners are identified. The methods of research follow in "Information Collection and Analysis." These sections are

the basis for recommendations that are made systematically and specifically in the final two sections of the report, "Opportunities for Improvement" and "Site Specific Concerns/Opportunities."

2 Non-Motorized Transportation in Martha's Vineyard

2.1 Users of Bicyclist Infrastructure

Cycling, rollerblading, walking and other pedestrian modes of transportation are supported on Martha's Vineyard by a transportation network consisting of signed routes, paths and trails. This network is exceptional in both the level of its development and the extent of its use. Multi-user paths (referred to hereafter as bike paths or multi-user paths interchangeably) can be used to travel to and from the three main centers of population, (Oak Bluffs, Vineyard Haven, and Edgartown), nearly seamlessly. It is important that the bulk of potential users are able to commute safely and efficiently, whether they are traveling to work, making other common trips, or traveling for leisure purposes. Numerous summer visitors, weekly renters, and permanent residents rely on the bike paths as a vital transportation conduit.

This transportation study serves to improve the quality and efficiency of the process of movement on Martha's Vineyard, specifically the multi-user paths that exist across the major population centers. The reasons for transportation need to be the basis for determining how this improvement is realized. People participate in transportation for two basic reasons: utilitarian needs such as traveling to work, and recreation. Keeping in mind the different intentions people have when using a transportation network, the goal is to identify problems and approaches to address these problems. Doing this aids future policy decisions in creating a system that is as efficient as possible for daily commuters, is easy to use, and contains sufficient aesthetic quality for

recreational users as well as utilitarian users. Transportation networks should have the proper balance of ease to use, safety, and attractive qualities.

Professional transportation planners study multi-user paths in order to improve their use, level of safety, and appearance. Improvement in these areas serves the best interests of the motoring and non-motoring community alike by increasing safety and convenience of transportation. The pertinent users to study are pedestrians, bicyclists, and other non-motorized travelers. Despite seeking to meet the needs of these specific user groups, all groups affected by changes in the multi-user paths or roadways must also be taken into consideration.

The first stage of non-motorized transportation analysis is first to understand the needs of the users. Then it is necessary to identify existing conflicts with these needs in the existing transportation network. Once the conflicts were identified, numerous solutions or improvements were explored which take into account the balance of needs of the different potential users and interest groups present in the community. It is only possible to reach a mutually beneficial conclusion upon completion of this identification and consideration of the major groups in the community.

The system of multi-user paths on Martha's Vineyard serves the dual purpose of transportation conduit and recreational attraction. The paths were constructed with the intent of serving both types of users, despite the existence of contradictory needs within the two groups. These conflicting needs often necessitate compromise. For example, how is it possible to satisfy both an expert traveling consistently at 25 MPH and a family of four on two person bikes on the same path? The needs of users must be explored to

determine how compromises affect the usability of the paths in regards to non-motorized traffic.

2.2 Role of the Martha's Vineyard Commission (MVC)

The Martha's Vineyard Commission (hereafter referred to as the MVC) is the regional planning agency for the towns of Martha's Vineyard and the town of Gosnold on the Elizabeth Islands (<www.mvcommission.org>). The MVC serves as a regulatory body that can halt construction of new projects as well as initiate construction in publicly owned areas. The MVC takes action when necessary in order to preserve the aesthetic quality and unique nature of Martha's Vineyard. The MVC was created in 1974 by Massachusetts administration to prevent uncontrolled development in Martha's Vineyard. The MVC is interested in exploring the shortcomings as well as the successes of the multi-user paths as they exist on the island and seeks to create a foundation for short-term and long-term planning involving the path system.

The MVC initiated its multi-user path research in the 1970s with numerous volumes of background information. This research exists today in the form of travel surveys and reports generated by the MVC. Also included in the files of the MVC were guides for bicycle path creation and planning as well as state guidelines for classification of multi-user and bicycle paths. Perhaps the most significant volume obtained through the MVC was Great Expectations: the Island Bike Plan (1993). This report is the product of a "Bicycle Facilities Committee" and was created with the intention of tweaking the existing bicycle facilities in order to improve the experience of bicycling on Martha's Vineyard.

Portions of the available information that deal specifically with Martha's Vineyard are outdated in terms of the infrastructure, but the resources pertinent to planning remain useful. The general resources obtained from the highway department describe problems and shortcomings associated with different types of paths, including multi-user paths as well as bicycle only paths.

The goals of the MVC are to realize an increase in non-motorized transportation as well as improve the safety and usability of the paths. These goals possess a cause and effect relationship, in which increased safety and usability will in theory bring about an increase in usage. If the routes of travel do not meet the needs of the commuter, they will simply not be used (Rooney p. 6). The primary goal of the MVC (in regards to dealings with multi-user paths) is to develop their usability.

2.3 Is there a problem?

Early inspection of the bicycling network yields a few immediate systematic problems. The following comprise a few examples of the issues present on Martha's Vineyard.

- Separated paths encourage novice and intermediate users, but are not present in all necessary areas
- More accidents than expected have occurred
- Different groups want different things from the paths
- Physical problems are present on the paths (e.g. trees growing into travel area)

The ability of users to travel effectively on the paths is highly dependent on their level of safety. Cyclists of all ages, skill levels, and abilities need to be able to use the paths with minimal probability of injury if usage increases. As indicated in a 1991 Harris Poll, 53% of adults that had ridden a bicycle within a year would ride their bicycle to work if "they had safe, separate designated paths on which to ride," (Massachusetts Statewide Bicycle Plan p. 13). Although this may be an inflated number, it still reflects the willingness of the public to explore methods of transportation as an alternative to the automobile.

The Martha's Vineyard paths, although largely separated from the roadway, have proven to be less safe than anticipated prior to their construction. Public records indicate that injuries occur at rates higher than expected for the roads and paths on Martha's Vineyard (Hirshberg). On a handful of roads the number of accidents more than triples the number that is expected. (The number of anticipated accidents is based on a calculation involving the number of users, width of paths, frequency of traffic and other traits, as stated in the "Bikability Index" pamphlet.) These accidents occurred with motorists, other bicyclists, and unmoving objects.

Another issue related to accommodating many interest groups lies in appearing desirable to the users. Policies that seek to improve the system of paths may seem relatively simple but in fact may complicate traffic patterns. An example of such a policy is construction of new paths with the sole intent of removing bicycle traffic from the roadway. New construction may appeal to planners as it presents a tangible course of action; however in many areas new paths would confuse occasional users and fail to serve utilitarian riders. Whether intentional or not, this type of policy is lopsided to

support the interests of motorists, and does not properly address present problems. It is therefore important to first analyze each potential action site and determine the problems and opportunities for improvement on a site by site basis before conceptualizing a solution (Smith p. 4).

Research must also take into consideration all major interest groups in order to ensure that their needs are not overlooked. These groups include motorists, novice/recreational riders, expert/utilitarian riders, and property owners whose land abuts the multi-user paths. It is important to find a policy compromise that will best suit the needs of the community without catering to any single group of users.

Motorists on Martha's Vineyard have to contend with narrow two-lane roads, ever-increasing traffic, and the large number of cyclists in the roadway. Although it may seem that removing cyclists from the road will decrease the probability of accidents, this is not necessarily true. Cyclists traveling along the multi-user paths still encounter cars that are entering driveways or turning onto roads. The potential for collisions exists when the motorists neglect to examine the intersection (or curb cut) for cyclists and travel along the area where the path and road meet. The safety needs of motorists require them to be aware of cyclists. This is especially at intersections where cyclists may have difficulty crossing the street (Smith p. 11).

The final interest group is the property owners that abut the multi-user paths and roads designated as bicycle routes. Aligned with this group are individuals who are particularly interested in preserving the visual characteristics of Martha's Vineyard. This group holds the highest potential for conflicting opinions with the other groups. Homeowners often find construction in the area of their property objectionable even if

the land on which the construction occurs is in the public right of way. Although they may feel particularly strongly about potential construction in their area, their concerns about preserving the character of the paths and roadways are often shared by other groups. It is important that these concerns are taken into consideration whenever construction proposal occurs.

Other possible areas of improvement arise from the physical characteristics of the trails themselves. These problems are revealed by physical observation and inventory. Shortcomings of the pedestrian trails such as poor road treatments and lack of connecting routes cause travelers to opt to travel in the roadway or in an automobile. Both actions serve to worsen the congestion in the roadway. The roadways on Martha's Vineyard are mostly two-lane roads that are considerably difficult to travel when there are bicyclists as well as other motorists present. This is particularly frustrating to motorists traveling on a road on which a bicycle path exists.

Problems that users of the paths encounter may not directly inhibit their travel, but they nonetheless degrade the overall experience. It is undesirable for users of the paths to leave feeling that they had a negative experience cycling. Creating a research backbone intended for future referral is useful for future policy development and will ensure that the steps taken to improve the system of paths serve the cyclist as well as the motorist. It also takes into consideration the other users of the island roadways and byways. This research is an important part of creating an objective methodology for the analysis of cycling conditions. It is also significant to analyze potential solutions to the transportation complications of cycling on Martha's Vineyard in the future.

3 Information Collection and Analysis

3.1 Weighing Information

In order to provide the Martha's Vineyard Commission with information to make positive decisions regarding the island wide bicycle infrastructure, both objective and subjective data were collected and analyzed. Background research which included accident reports, previous bicycle counts, and previous reports as provided by the Martha's Vineyard Commission were analyzed. Bicycle usage was quantified by performing physical counts of bicycle and pedestrian traffic on various routes across the island as well as performing counts of students who rode bicycles to school. Bicycle paths and connecting roads were physically inventoried. Objective data was collected by surveying principals of the seven schools across the island, surveying owners of several bike shops, and most importantly interviewing members of the Martha's Vineyard Bicycle Committee.

Surveys and interviews were an integral part of the research because they provided subjective ideas toward the current status of the bike trails as well as areas needing improvement. Bicycle store are reluctant to provide numbers of how many bicycles are rented out to tourists during the summer, however they believe that the present bike path network on Martha's Vineyard is sufficient for tourists who simply wish to get from one major town center to another. The principals of the seven Martha's Vineyard schools were another group to be interviewed. Five surveys were returned completed and the responses were mixed. Only one principal surveyed said that she would like to see more students ride bikes to school, while three out of four principals felt

the bike paths in the vicinity of school were adequate and safe. Individual interviews of the bicycle committee were the most productive source of information regarding positive and negative aspects of the island wide bicycle infrastructure. The majority of the members of this committee are frequent cyclists that include both experienced recreational cyclists and utilitarian cyclists. The committee consists of year round residents who combined have traveled nearly every road on the island whether there is a bike path or not. General concerns regarding bicycle and pedestrian usage on the island were also documented at bi-weekly meetings of the bicycle committee.

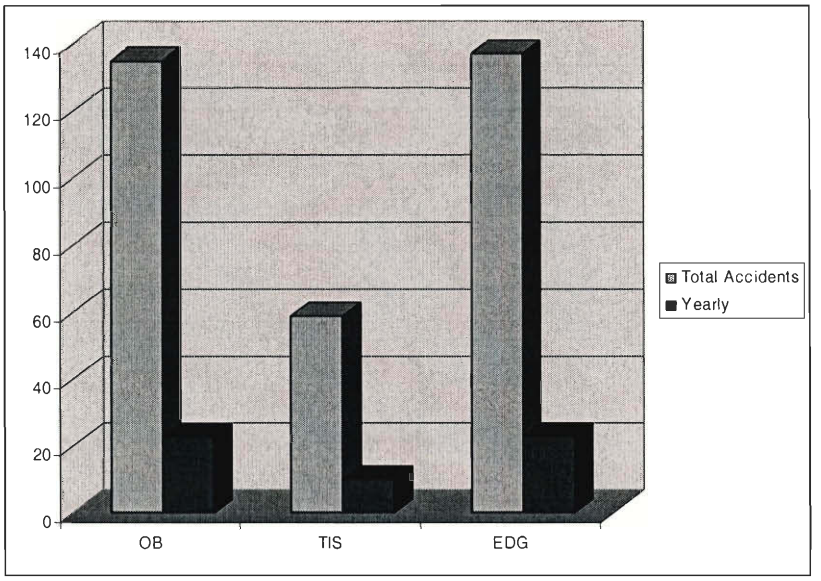
The bike trails of Martha's Vineyard were physically inventoried to determine their current status. This provided objective insight into the hazardous areas of the trails. Areas of particular concern to the members of the bicycle committee were examined and documented. Some areas of the bike paths for example are covered with sand or have overhanging branches that can lead to accidents on the path or reduce the usable portion of the path. This physical inventory also included gathering accident reports to gain insight into how dangerous bicycling on Martha's Vineyard really is.

At various points throughout the summer, we took counts of how many bicycles travel on major roads. Counts were performed on Beach Road (near the Edgartown – Oak Bluffs town line), Edgartown – West Tisbury Road, County Road, Barnes Road, Vineyard Haven – Edgartown Road, and Beach Road. (near the drawbridge in Tisbury). These counts were performed to determine which areas of the island are more heavily trafficked by both bicyclists and pedestrians. These different sources provided a varied and diverse information base. The information collected did not, however, always point in the same direction.

Given that information was gathered from a wide variety of sources, discrepancies are unavoidable. Bicycle rental shops, primary education schools, and public works officials all have very different motivation in providing information. Schools provide bicycle information to address concerns for student safety whereas bicycle shops are concerned about their clientele. Weighing these different types of information was one of the principle challenges for the team.

Different sources cited different areas as the most important area to improve. This made prioritizing areas more difficult. An example of the difficulty of analyzing data occurs in determining the most dangerous area for cyclists. Great Expectations clearly states in its ninth recommendation (p. 50) that Tisbury is the most dangerous area for bicyclists, specifically the state highway. They utilize the 1990-1995 Accident Analysis to support this conclusion, along with "personal observations and survey results." Another accident report from 1991 obtained from the MVC indicates that Tisbury experienced the lowest yearly reported bicycle accident rate of the three population centers.

Figure 1: 1991 Accidents by town from the MVC (1990-1995)[1]



1976's Cyclateral Thinking indicates Beach Road is the most dangerous section for cyclists on Martha's Vineyard. Some of the concerns for this stretch of road are still present nearly thirty years later (see corridor 3). These problems are:

- Congested Bike Path
- Inadequate maintenance (e.g. sand removal)
- Lack of marked bike crossing areas
- Substantial motorist traffic

(Smith p. 63)

Issues such as sand removal clearly contribute to hazardous conditions, but partially addressed items such as crossing areas serve to improve the condition of the stretch of road since the publication of this volume.

[1] Data for Tisbury was only present for the last two years of a six year analysis. The total accidents in this figure represent the amount of total accidents that would occur in this six year period if the yearly rate remained accurate

Once this information has been reviewed, the answer to the question is still not evident. The study then relies more heavily on weighing of different information.

These various sources of information raise the question: which provide the most useful or relevant information? Of particular interest in answering this question was the counsel of Simon Shapiro (7/7/05). Mr. Shapiro was a committee member for the Cambridge, Massachusetts Bike Path Committee. The basis of Mr. Shapiro's advice was to cater the transportation system to the needs of the users. He stated that it was important to determine the percentage of recreational users of the paths before other planning action is determined. This provides a straightforward method to prioritizing gathered information based on the characteristics of the users.

The information that follows was used to determine which areas of the cycling network require attention. At Mr. Shapiro's counsel, the users provide the weight necessary to balance the recommendations. The needs of the users provide means to evaluate conflicting information.

3.2 School Counts and Surveys

An interesting source of data was the schools of Martha's Vineyard. All seven schools were probed for bicycle use with bicycle counts and questionnaires. The surveys indicated that the schools felt confident in the safety of the paths when they existed. Many schools did not, however, wish to increase the number of students that used bicycles to travel to school. This was indicated strongly by the Chilmark School, which lacks the infrastructure to support young cyclists. Interestingly, the only school that expressed interest in increasing bicycle use was Oak Bluffs, which experienced the most existing traffic.

Table 1: School Bicycle Count

School	Pedestrians	Cyclists w/ helmets	Cyclists w/out helmets
Edgartown	14	9	2
W. Tisbury	8	1	3
Tisbury	25	4	2
Charter	0	2	0
High School	Negligible Bike use		
Chilmark	3	0	0
Oak Bluffs	23	16	6

School	Total Cyclists	Bike Racks	Total Bike Rack Capacity	Crossing Guards
Edgartown	11	4	36	5
W. Tisbury	4			1
Tisbury	6	2	16	5
Charter	2	1	9	0
High School				
Chilmark	0	0	0	0

The counts were performed during the first two weeks of June (6-01-05 to 6-10-05). Observation began before the arrival of the students and concluded approximately

ten minutes after the start of school. The weather was clear each day and temperatures ranged from the high 50's to middle 60's at 8 am.

The coldest weather was experienced during the Oak Bluff's school count. The weather is not anticipated be a factor in the result of this count as the principal indicated that the number of student cyclists was normal. The high school was not counted as an inquiry to the administration revealed that three cyclists traveled to the school.

The counts indicate that the number of pedestrians is almost always larger than the number of cyclists. The schools that accommodate the most cyclists are also in the main centers of population. Table 2: Potential student cyclists shows the number of students that do not qualify for bus service. These data were obtained through bicycle use surveys that were sent to the schools.

Table 2: Potential student cyclists

School	Students	% Students within 1.5 miles	# Students
Tisbury	310	35	108
Edgartown	356	25	89
Oak Bluffs	430	20	86

3.3 Accident Analysis

Bicycle accidents on Martha's Vineyard are caused at least partially by the unique traffic situation. Features such as the separated paths and lack of traffic signals may serve to confuse those unfamiliar to the island. The vast majority of cyclist accidents occur in the summer (1990-1995 Bike Accident Reports). A summary of the different bicycle accident reports obtained from the MVC can be found in Appendix A.

Figure 2: Yearly Accidents from 1990-1995 and Figure 3: Yearly Accidents from 2000-2003 below display the accident data from two recent time periods. The first plot represents the accident summaries from Tisbury and Oak Bluffs between the years 1990 and 1995. The second illustrates accidents that occurred between 2000 and 2003 island-wide. Quantitative comparison between these two time periods is not useful as the populations that were analyzed were different.

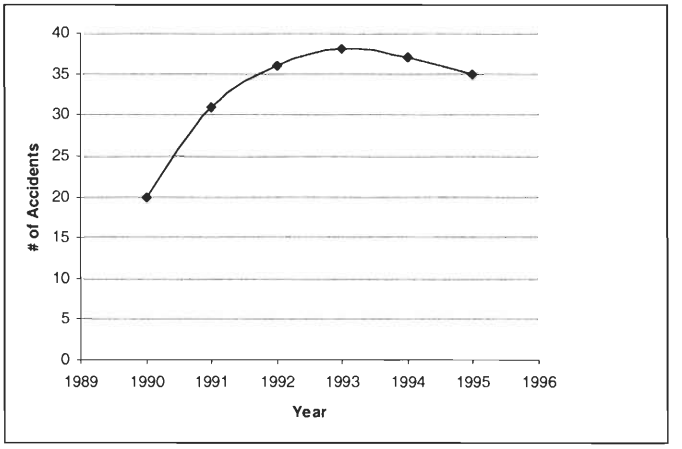


Figure 2: Yearly Accidents from 1990-1995

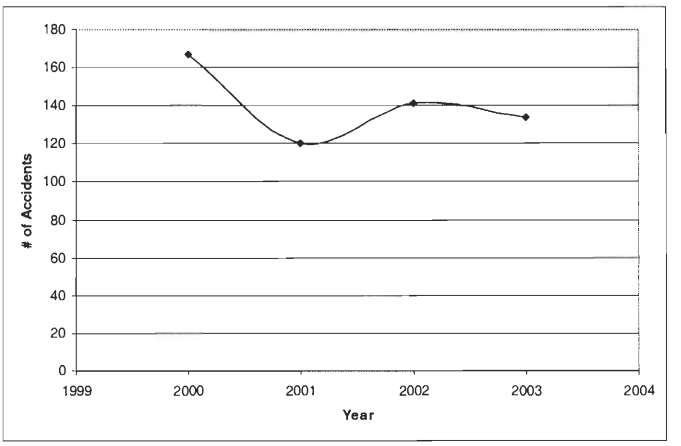


Figure 3: Yearly Accidents from 2000-2003

Comparing the data from accident reports with regional averages reveals other trends. It is estimated that there were 1,000 serious injuries a year across the state of Massachusetts from 1986 to 1995 (Environmental Working Group). Comparing this number to the accident data from 1993, just over 3.5% of these Massachusetts bicycle accidents occurred in the towns of Tisbury and Edgartown alone. Nationally, bicycle accidents have significantly decreased in the past three decades[2] (Insurance Institute for Highway Safety). This trend is also limitedly present in the hospital records. Although both periods show regions of increasing accidents, they show fluctuation that may indicate long-term decreases are taking place.

It is also important to realize that bicycle accidents are subject to systematic underreporting. The accident data from the state and the Martha's Vineyard information only represent the most serious bicycle accidents. Small abrasions, falls, and scrapes still affect the users experience but are not called to the attention of planning agencies that work to prevent these accidents. The "Accident Report Summary" compiled by the team allows for easy comparison of accident data specific for Martha's Vineyard.

[2] As determined from mortality rates

3.4 Bicycle Counts and Observations

One of the most important and useful sources of information that was obtained is the bicycle count and observation data. This information provides a fundamental basis for a comparison of bicycle usage in different parts of Martha's Vineyard. Bicycle counts were performed at key locations such as busy intersections and main connecting corridors. The dates and times of the counts were set up so that they would allow comparison between different locations for the same conditions. The results of the bicycle counts can be seen in the Appendix. The counts incorporated physical observation counts, automatic strip counters, and infrared counters. Turning movement counts were also performed in order to determine which routes cyclists were taking at busy intersections. As seen in the figure below, turning count movement observations offer detailed information regarding the directions that cyclists enter and exit the intersection.

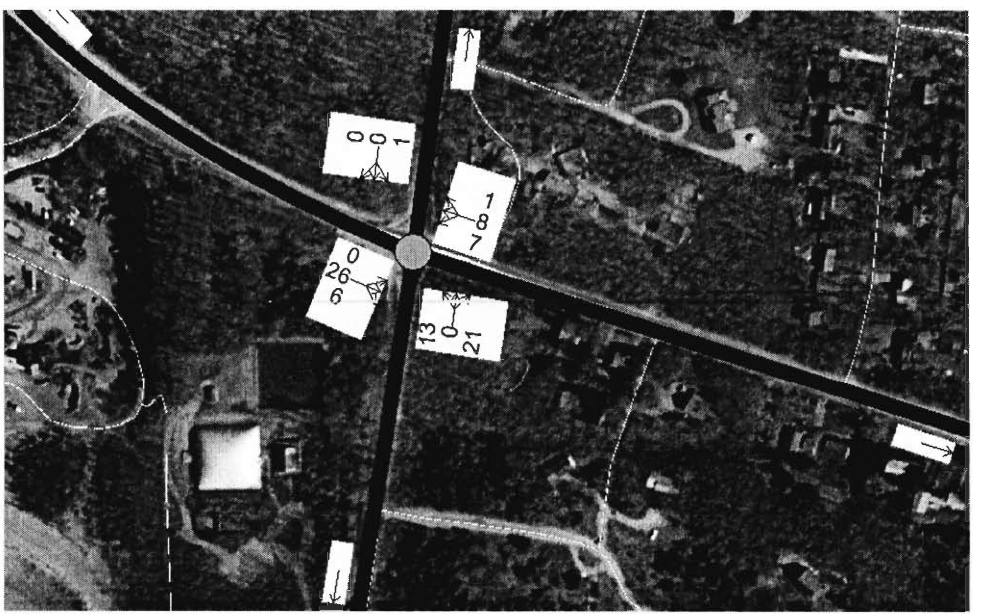


Figure 4: Turning Movement Observations for Blinker Intersection

3.5 Bike Shop Questionnaires

A useful source of information and feedback on the bicycling network of Martha's Vineyard was through bike shop questionnaires. The attempted task was to conduct a survey of the bicycle rental agencies on the island of Martha's Vineyard. A questionnaire was created with the intent to gain further knowledge of the extent of bicycling on the island. It consisted of a series of questions regarding the numbers and types of cycles that are rented as well as questions related to cycling hazards and problems. The questionnaire was submitted to the owners of the following bicycle rental agencies:

Anderson's Bike Rentals
Craig's Bicycles
Cycle Works
DeBettencourt's Bike Shop
Edgartown Bicycles
Edgartown Bike Rentals
Martha's Bike Rentals
Wheel Happy

The surveys were initially hand delivered to each of the rental agencies during the second week in July of 2005. One week's time was given to the owners/operators of the shops to review and respond to the questionnaires. At least one follow-up visit was made to each of the shops, in many cases two or more visits were met with no adequate response. Three bike shops were kind enough to spend the time with us to answer some of the survey questions. Although the response was not as large as was desired, the results of the bike shop questionnaire's still proved to be useful as yet another valid source of information on the key areas for needed improvements in bicycling on Martha's Vineyard.

4 Opportunities for Improvement

The unique character of Martha's Vineyard presents many opportunities for people to travel by bicycle. During the peak of the summer season, the population of the island increases from 15,000 during the off season to 100,000 (County of Dukes County). On most days of July and August, traffic is heavy and parking is sparse in and around all of the island's tourist destinations. This is a major factor in people's decisions to travel by using alternate forms of transportation such as bicycling.

4.1 User Categorization

The tourism based nature of the island has resulted in two primary types of bicycle users: utilitarian and recreational (Rooney p. 26). Utilitarian cyclists traverse the island's roadways and bike paths as a means of transportation. These users are most often seasonal or year round residents who are familiar with the area and use bicycles in place of motor vehicles to get to their places of work and other destinations. Utilitarian riders commonly choose to travel on the shortest and most efficient route to their destination and often travel at higher speeds for long distances. They are experienced riders who are often familiar with the routes of travel and know how to safely interact with motor vehicles.

Recreational riders often use the island's roads and bike paths to explore the island. Many of these riders are tourists who are on the island for a short period of time and are unfamiliar with its roads. Recreational riders are more likely to travel in groups at slower speeds and make more frequent stops to rest and get directions. As novice riders,

they often choose to travel on roads and paths that are safe and have less need to interact with fast moving traffic. Other users such as roller-bladders, runners, and walkers will be considered recreational users in this study.

In order to determine the best way to accommodate bicyclists on a certain segment of road, the types of users must first be determined. Utilitarian and recreational cyclists and the type of motor vehicle traffic that is present must all be taken into consideration.

4.2 Physical Issues

In order to promote bicycle usage on the island of Martha's Vineyard, the roads and off-road paths must be safe and easy to use. When traveling on Martha's Vineyard, cyclists traveling on any road or path may encounter many situations that could be potentially dangerous. There are three main types of bicycling environments that currently exist on Martha's Vineyard: Multi User Paths, roads with marked shoulders, and roads with no shoulders. There are individual issues and hazards present in each of these of these areas. The physical issues that are present will be discussed for each of the three types of bikeways.

4.2.1 Multi User Paths

The first type of bikeway is the separated Multi User Path (we will call them bike paths for the sake of simplicity). This is a path that is separated from the road and bicycles travel in both directions on it. The six main corridors of Multi User Paths on Martha's Vineyard are: Edgartown Vineyard Haven Road, Edgartown W Tisbury Road, Beach Road (Oak Bluffs-Edgartown), Katama Road, County Road, and the State Forest. A width of at least 10 feet is recommended for separated bike paths, although an 8 foot width can be acceptable in some instances (Massachusetts Statewide Bicycle Transportation Plan p. 28). The Plan also recommends that a two foot wide cleared shoulder should exist on each side of the path and that the path should be separated from the road by at least 5 feet. However, during the inventory of the bike paths of Martha's Vineyard, it was found that many were deficient in this set of criteria. Some paths, especially the ones along Beach Road between Oak Bluffs and Edgartown and the path

along Edgartown-West Tisbury Road had sections where the path narrowed to 5 feet (Minschke, Seward, Williams). This was apparently caused by the lack of proper maintenance, which will be discussed in a separate section.

One of the largest concerns with the bike paths is the number of driveways that intersect the paths. These "curb cuts" can result in a bicycle coming head on with a motor vehicle due to the lack of visibility caused by the path's separation from the road. (Bicycle Plan Public Advisory Committee). They pose a serious danger to cyclists on the path if they are not fully aware of their surroundings. If a cyclist is traveling at a fast pace on the path, it can be difficult for a vehicle to see the oncoming rider, especially if there are trees and brush between the road and path. There have been many reported incidents of vehicles crossing the bike path and cyclists almost colliding with the moving vehicle. In one incident, a man was traveling on a 3-person bike with his two children when a pickup truck cut across the bike path, nearly colliding with the trio (Whitmon). This almost fatal incident is an example of the dangers that exist where motorists and bicyclists interface.

One attempted solution to these curb-cuts that was implemented by the local municipal transportation divisions was the installation of bicycle stop signs at intersections with the bike paths. However, this attempt has caused great concern with many cyclists. At the July 12, 2005 Bicycle Plan Advisory Committee meeting, the multi user path issue was discussed and members concluded that the large number of these stop signs poses as an obstacle to cyclists. The members agreed that many of the signs were placed improperly, and in locations where private landowners requested them. They felt that motor vehicles should be stopping at curb cuts instead of bicycles (Bicycle Plan

Public Advisory Committee). The State of Massachusetts considers bicycles as vehicles except when the bike is being walked. Therefore, they "shall be subject to the traffic laws and regulations of the commonwealth" (MGL 85 11.b). This can be interpreted to mean that bicycles have the responsibility to yield to vehicles that are already in the intersection. Although a specific regulation regarding the responsibilities of bicyclists encountering bike path intersections could not be located for the State of Massachusetts, a law in the State of Oregon enforces that, while traveling on a sidewalk or bike path, a cyclist commits an offense if the cyclist:

> Operates the bicycle at a speed greater than an ordinary walk when approaching or entering a crosswalk, approaching or crossing a driveway or crossing a curb cut or pedestrian ramp and a motor vehicle is approaching the crosswalk, driveway, curb cut or pedestrian ramp. (ORS 814.410)

Essentially, this requires that bicyclists significantly reduce their speed or stop at a curb cut. If a similar statute were put into effect and enforced in the State of Massachusetts the risk of accidents between motor vehicles and bicyclists at curb cuts could be significantly reduced.

The 1993 bicycle plan compiled by the Martha's Vineyard Commission titled Great Expectations states that "separated sidewalk/bikepaths along the roadside are dangerous and should be avoided" (Rooney 28). This comment may seem unrealistic at first, but the dangers come to light when cyclists travel down the paths at high speeds and are not constantly aware of their surroundings. On several occasions, close encounters between oncoming cyclists were witnessed. One incident involved two cyclists traveling in opposite directions on the Beach Rd bike path in Oak Bluffs. One cyclist pedaling at a

slow but steady speed was enjoying the beach scenery when the cyclist nearly collided head-on into an oncoming cyclist. This type of encounter has been seen numerous times, and has the potential to be fatal. There were six recorded hospitalizations in 2002 due to head-on collisions on the bike paths of Martha's Vineyard (Hershberg). This number represents only the most severe cases of actual head on bicycle collisions. It can be reasonably assumed that there are a significant number of unreported cases in which the cyclist(s) were forced off the path. One possible solution to this problem would be increasing bicycle education. These accidents might be reduced by educating cyclists to stay on the right side of the bike path at all times, and especially when there is low visibility or oncoming cyclists. However, education the bicycling public on Martha's Vineyard could be seen as a rather large endeavor due to the large number of short-term users.

A more effective method to keep cyclists on the right side of the bike path could be to paint centerlines down the middle of all of the island's bike paths. This idea already has support from members of the Vineyard Bicycle Plan Public Advisory Committee as well as local bike shop operators. According to The Manual on Uniform Traffic Control Devices published by the US DOT Federal Highway Administration:

> Where shared-use paths are of sufficient width to designate two minimum width lanes, a solid yellow line may be used to separate the two directions of travel where passing is not permitted, and a broken yellow line may be used where passing is permitted. Broken lines used on shared-use paths should have the usual 1-to-3 segment-to-gap ratio. A nominal 0.9 m (3 ft) segment with a 2.7 m (9 ft) gap should be used. (MUTCD Sec 9C.02)

4.2.2 Roads with Marked Shoulders

The second major type of bicycling environment present on Martha's Vineyard is roads that have marked shoulders. In this type of situation, bicyclists are placed on the road with motor vehicles, but are separated by the white shoulder line. Designated shoulders can be found in many areas of the island. One important travel route that includes roads with marked shoulders is the route from Vineyard Haven to Oak Bluffs via Beach Road. These roads are primarily suited to utilitarian cyclists, but when the shoulder is wide enough, such as between Vineyard Haven and Oak Bluffs, less experienced recreational cyclists have been seen using them.

Although these roads offer more room for cyclists than roads without shoulders, there are still many hazards that are present. One bike shop owner commented that the since the shoulders are separated from the road, they are more likely to be littered with sand and debris (Hockmeyer). One specific location where this is a major problem is the Tisbury section of State Road. In this location, cyclists are faced with sand, glass, sewer grates, and other debris. Due to the fact that the shoulder is clearly painted on the road, automobiles rarely cross into it. On a road with no shoulders, automobiles will traverse the entire width of pavement, clearing away sand and debris from the edges of the road. This type of cycling environment also places bicyclists on the road with motorists and mopeds. However, in areas where there is no room for a separated bike path it is recommended that the shoulders be widened as much as possible to accommodate cyclists (Massachusetts Statewide Bicycle Transportation Plan 27).

4.2.3 Roads without Marked Shoulders

The third type of facility for bicyclists that is present on Martha's Vineyard is a road that has no shoulder. Here, cyclists are required to get up close and personal with motor vehicle traffic. As with the roads with shoulders, this type of road is mainly traversed by utilitarian riders. Very rarely will a less experienced rider try to travel in a situation like this. For example, when traveling from Vineyard Haven to Gay Head or Menemsha, cyclists must travel on narrow roads without shoulders. Due to the scenic nature of many of the Up Island locations, the roads in these areas could be very appealing to recreational riders. However, because there is no shoulder and the roads are narrow, very few novice cyclists take the trip Up Island.

One benefit of having a road with no shoulders is that automobiles can traverse the entire width of pavement, clearing away sand and debris from the edges of the road (Hockmeyer). Another location where there is a lack of a wide shoulder is the section of Barnes Road in Oak Bluffs between the blinking light and the fire station. Mainly used by utilitarian riders, this section of road has very narrow shoulders and fast moving traffic. The construction of the bike path on County Road has reduced the necessity for improving the cycling environment on Barnes Road, but improvements should still be considered for the benefit of utilitarian riders.

Forcing cyclists to ride on the road with fast moving traffic can result in a dangerous scenario. It reduces people's interest in cycling those roads and also creates unhappiness in automobile drivers who are hindered by bicycles on the road.

4.3 Management

A critical area of concern regarding the bicycling network of Martha's Vineyard is the management of bicycling facilities. Management includes maintenance of bike paths and bicycling areas, installation and upkeep of signage and navigation aides, as well as the enforcement of cycling and motor vehicle laws.

4.3.1 Maintenance

The first area of concern within the topic of management is the maintenance of bicycling facilities. Because each separate town on the island manages its own bicycling facilities, there is a lack of consistency in maintenance. When the departments of public works were contacted for the towns of Martha's Vineyard, there was a consensus regarding bike path maintenance. Due to the heavy schedule of road maintenance, there was no set schedule for work on the upkeep of bicycling facilities. This conclusion may often be witnessed if one were to travel down the bike paths of the island.

There are many areas where a lack of maintenance may pose a major hazard to cyclists. The State Forest has a large number of overhanging branches and undergrowth that covers the shoulders and narrows the paths. The asphalt paths in this area are also in poor condition and require attention. The largest maintenance issue on beachfront paths is the presence of sand. This is especially true on the beach path between Edgartown and Oak Bluffs, as well as on the segment of bike path before the drawbridge in Vineyard Haven. The Beach Road path in Oak Bluffs has been encroached by dirt and undergrowth near the golf course. This poses a serious hazard for cyclists because the path narrows forcing oncoming cyclists to come dangerously close to each other. It is of great importance to determine a solution to this lack of maintenance in these areas. One

possible solution to this problem might include the maintenance schedules being set by the Department of Public Works for each of the Vineyard towns. In some areas this may be of no avail due to the fact that budgetary limitations often prevent maintenance work from being completed. This is especially true in the State Forest bike paths, as there is only one person responsible for maintenance of the entire State Forest (LaPiana).

4.3.2 Signage & Navigation

Signage and aides to navigation are an extremely important part of bicycling on Martha's Vineyard. When bicycle user observations were completed, there were certain locations on the island that were determined to be lacking the proper navigation signage. One such location is the Blinking Light intersection in Oak Bluffs. Here, cyclists are faced with four roads, three of them having bike paths. It has been noticed that a large number of users stop at this intersection to look at their maps, confused as to where they are or where they are going (Williams). It is often difficult for cyclists to navigate because intersections are missing the proper signage to direct them towards their destinations.

One solution to this navigation problem that was discussed with the Bicycle Advisory Committee would be the construction of a navigation kiosk. One of these already exists in Tisbury at the intersection of State Road and Old County Road. This kiosk would include a map of the island with a mark that says "You are here" as well as other useful cycling information such as safety advice and rules of the road. It was suggested that kiosks be constructed in areas where cyclists are most likely to be unsure of what direction they would like to go. Based on bicycle observations, and the number of cyclists

that stopped to check their maps, some possible locations for future navigational kiosks include:

Possible Locations for Navigational Kiosks

- Barnes Rd intersection with Edgartown Vineyard Haven Rd
- County Rd intersection with Edgartown Vineyard Haven Rd
- Near the Triangle in Edgartown

Other signage problems exist in many locations throughout the island such as the State Forest. Here, the series of interconnecting paths are unmarked, and require the user to be extremely familiar with the paths. By ensuring that all paths have some sort of navigation aid, cyclists would be more prone to traveling these areas.

4.3.3 Law Enforcement

The enforcement of bicycling and motor vehicle regulations is an important part of improving cyclist safety on the island of Martha's Vineyard. During interviews of the Bicycle Advisory Committee members one of the most mentioned issues is the fact that motorists are not obeying laws that affect cyclists. One issue is the fact that motorists are often seen traveling well above posted speed limits in areas where cyclists are on the road with automobiles. Motor vehicles were also seen traveling on the bike paths and sometimes using them as passing lanes. This is especially true in areas where there is no separation between the road and paths such as County Rd in Oak Bluffs and portions of the Vineyard Haven Edgartown Road. Members were also concerned with the fact that cars are sometimes parked on the bike path, posing a serious hazard to cyclists who are forced to navigate around the vehicle and risk colliding with other users or moving into

the road, possibly in the wrong direction of traffic. In order to make bicycling safer on Martha's Vineyard, the police departments of the individual towns need to step up their enforcement practices relating to bicyclists.

It is also important to enforce bicycling laws that apply to cyclists. The Massachusetts Laws that are most often broken by bicyclists include: failure to obey posted traffic signs, traveling in the wrong direction, and failure to use hand signals (Rooney 68). An example of possible actions would be to enforce helmet laws and right of ways for pedestrians, and issuing citations to cyclists who travel in the wrong direction on one way streets. This law is broken almost every day when bicyclists travel down Circuit Avenue in Oak Bluffs against traffic. All bicycle traffic is prohibited on this street, but there is a lack of enforcement here as in other locations.

In the State of Massachusetts, a few communities have taken important steps in increasing bicyclist safety. The police departments of Newton and Cambridge have both been active in training their officers to enforce bicycle traffic laws. These police officers have begun training through videos that encourage the enforcement of these laws. They have also begun issuing citations for lack of helmet use and traffic violations. Other police departments such as the Lexington Police Department have given out "citations" for obeying bicycle laws. "These "citations" contain coupons for free food items donated by local businesses" (Massachusetts Statewide Bicycle Transportation Plan 43). By enforcing motor vehicle and bicycle laws, Martha's Vineyard would be a safer place for people to travel by bike.

4.4 Education

Based on numerous individual interviews with members of the Martha's Vineyard Bicycle Committee it has been unanimously stated that one of the most important steps to making bicycling on the Vineyard safer, easier, and more popular is to increase education of both motorists and bicyclists. The subject was brought up in a full committee meeting that there are communities in Scandinavian countries as well as on the West coast that are extremely bicycle friendly. Motorists in these communities respect the bicyclists even if there is not a designated bicycle route and bicyclists are equally respectful of motorists. The proposed difference between the situation on Martha's Vineyard and more cyclist friendly communities was education.

This same level of respect between motorists and bicyclists is not seen on Martha's Vineyard. It is common to see motorists yell at bicyclists to get off the road when in fact bicyclists have just as much right to be using the road as a motorist. Even in areas where there are designated bike paths "experienced riders sometimes ride on the roadway, incurring the motorists' wrath (despite a Massachusetts law that guarantees the cyclist's right to the road, even if a separate path is provided)" (Smith). Conversely many bicyclists are unaware of their surroundings thereby placing themselves in unnecessary danger. During the summer months this is especially apparent when the majority of cyclists are tourists and would be considered recreational users. Nancy Weaver, as well as numerous committee members, brought up the point that cyclists must be educated as to rules of the road just as motorists need to be made aware that the roads are to be shared.

According to The Martha's Vineyard Byways Study (Spencer), the city of Cranford, New Jersey started a bicycle safety campaign in 1974 that lasted two months. The program was aimed at elementary and high school students and consisted of "banners, buttons, street signs, and talks by police and cyclists." This program resulted in 43 percent fewer cyclist related accidents in the first year. Craig Hockmeyer of Craig's Cycles proposed a similar island wide bicycle awareness campaign in an interview. This program could include such measures as:

- Public service announcements encouraging safe bicycle usage and respect between cyclists and motorists on local television and radio channels
- Increased signage across the island. Signs could include "Share the Road" or "Experienced Cyclists Only"
- Safety programs to increase helmet usage, inform cyclists as to the rules of the road, and teach general bicycle safety and maintenance
- Enforce bike equipment requirements such as lights and reflectors
- Development of maps that are more bicycle oriented and include designated safe bike routes that are not necessarily bike paths. This could include cut throughs and ancient ways
- Navigation kiosks at major intersections. These kiosks could also include rules of the road for cyclists
- Bumper stickers similar to the "Mopeds are Dangerous" and "Buckle Up" bumper stickers.

Figure 5: Sample Educational Bumper Sticker

Increasing education for cyclists and motorists is an objective that can be dealt with in the short term. It does not require any new construction and does not entail nearly as much planning as the creation of new bicycle routes. This plan of action can be implemented in stages over the course of the fall, winter, and spring months so that when the next summer season arrives there will be an increase in awareness for both cyclists and motorists and this will hopefully lead to safer cycling conditions across the island.

5 Site-Specific Concerns/Opportunities

Most users of transportation systems, including the multi-user paths, have a specific destination planned prior to departure. Travel analysis is performed to determine where the majority of problems occur in order to prioritize problem areas. This is necessary due to limitations imposed by limited resources. This analysis is therefore simplified by determining which areas of Martha's Vineyard experience the majority of traffic. Corridors of movement were chosen at the recommendation of the MVC. Each corridor includes a common origin/destination, often centers of population, and identifies the major routes taken by travelers to move between from each origin to the destination.

The information that was collected through previously mentioned methods was incorporated into a multi-faceted analysis. Each area is treated separately, but connections from one corridor to another are also taken into consideration. The corridors are arranged roughly from high to low use. Each area is briefly described with relevant quantitative research; problems are identified as collected from user advice and expert counsel. Before possible solutions are presented, the primary types of users for each corridor are considered. Finally, opportunities for improvement and their merits and disadvantages are presented.

5.1 Corridor 1: Vineyard Haven - Oak Bluffs

Issues and Opportunities for Improvement

- Possible connector paths (or recommended route) to link up OB to VH via drawbridge
- Possibility of path along drawbridge based on future construction plans
- Lack of painted lane at hospital
- Small section of path near Wind's Up that leaves users traveling to OB moving against traffic

The roads between Vineyard Haven (Tisbury) and Oak Bluffs experience a significant level of traffic, with frequent motorist backups in the summer at the Five Corners intersection. There is a single major route for travelers to use as Lagoon Pond separates these two population centers, stretching from Beach Road (also known as State Highway) in Tisbury to Towanticut Road and finally New York Ave. in Oak Bluffs. Use of Edgartown/Vineyard Haven Road to travel from Vineyard Haven to Oak Bluffs is unlikely, and this road is examined in corridor 2. Areas of interest to non-motorized travelers along this corridor include: Five Corners, the drawbridge, the cut-through at Martha's Vineyard Hospital, the roads that connect Beach Road to New York Ave, and the small bike path near Wind's Up.

Previous counts of bicycle usage show the typical rate of bicycles traveling along Beach Road to be less than 50 an hour (MVC Bike Counts 1990-1995). This level of usage is less than what is experienced by roads that are used to travel to beaches, but is still a significant amount of travel. A few of these users may stop at a few locations along Beach Road., but it is reasonable to assume that the majority are using Beach Road

as a mechanism to travel to the centers of either Vineyard Haven or Oak Bluffs. Many of these users therefore encounter the drawbridge, the Five Corners intersection, and the Martha's Vineyard Hospital (MVH) route.

The drawbridge is an area of difficulty for novice users as well as lightweight road bikes with narrow tires. The roadway is wide enough to accommodate a single bike moving with motorist traffic in each travel lane, but little more. There is also a sidewalk that could potentially be used for a single bicycle, but there are obstructions along it that limit its safety. The surface itself is grooved steel that is uncomfortable for riders and causes mild vibrations in the bicycle. Cyclists must use care to maintain control and travel in a predictable path to prevent confusion. Cyclists must also use care to maintain a safe distance from motorist traffic, which legally travels at speeds up to 40 MPH.

The drawbridge is a difficult location to alter due to the lack of possible courses of action available. The drawbridge cannot be realistically altered or circumvented in the near future. Fortunately there are plans for a future renovation of the drawbridge that include a widened lane in consideration of bicycle traffic. If this does not occur in a timely manner, signs warning bikes about changing road surfaces may allow cyclists to prepare and possibly slow if necessary.

The bend in the road by MVH is a blind corner with a signed speed of 25 MPH for motorists. Bicyclists use this stretch of road, as do motorists and mopeds. This is another narrow road that is strained with numerous different travel types occurring simultaneously. There is a signed cut-through using the parking lot of MVH that allows cyclists and other users to avoid the corner. The side of this path close to the state police barracks is sufficiently signed, but the end of the path leading to the state highway near

the drawbridge causes confusion. This area does not provide adequate direction for cyclists, and contains traffic for the emergency room of MVH. A painted lane would be useful in directing users to the MVH path and guiding them through the path without interfering with emergency room traffic.

The Beach Road area of Corridor 1 was analyzed in depth in Great Expectations: the Island Bicycle Plan. The authors of the report believe that this area was most important priority on Martha's Vineyard. The recommendations made were extremely specific, dealing with the road foot by foot. The report refers to specific locations using a system of numbered station. A map indicating which specific location was addressed by each station was not made available[3]. Among their recommendations were:

1. Three feet-wide painted bike lanes on both sides of the road starting at the drawbridge moving toward Vineyard Haven.
2. Shifting the center line in areas of narrow shoulders along the seawall to allow space for the painted bicycle lanes.
3. Relocation of various poles and walls to allow for safe cyclist movement and separation from motorist traffic.

The emphasis on this report was that "this stretch of road (the state highway) subjects pedestrians and cyclists to unnecessary hazards. We believe the cause of these hazards stem directly from the physical layout of the roadway and accompanying utilities." The concerns outlined in the report indicate that inconsistent shoulder widths

[3] Note: The only copy of Great Expectations available was a nearly finished draft. No final copy was available at the MVC despite efforts to produce a complete copy of Great Expectations (including contacting the original committee involved with its creation and the author). Despite this some of its recommendations have been realized since its publication.

threaten non-motorized traffic with narrow travel areas often crowded by utility poles and other obstructions. These obstructions cause cyclists to become nervous and possibly unpredictable.

The area of this corridor that includes Five Corners and State Road is particularly difficult for bicycles and pedestrians to navigate. A meeting with Fred Lapiano from the Tisbury Department of Public Works revealed a desire to construct a multi-user path/route to bypass this busy area. Such construction would seek to reconstruct Skiff Avenue and build a path on it that connects to the Wind's Up path. The users would ultimately reach the Vineyard Haven- Edgartown Road.

Although avoiding Five Corners and State Road in Vineyard Haven is desirable, there exist difficulties in the proposed connective paths. Skiff Avenue and other roads between State Road and Beach Road (a.k.a. State highway) are often narrow and have steep inclines that are not bicycle friendly. There is also a 90 degree turn in the projected course of the path. Finally, maintenance of this new path as well as the Wind's Up path could possibly become an issue as Tisbury does not perform maintenance on the paths.

5.2 Corridor 2: Vineyard Haven – Edgartown

Issues and Opportunities for Improvement

- Triangle is a major traffic area
- Numerous Curb Cuts
- Lack of navigation signage at Blinker, County Road
- Bicycle path ends near VH end of Edg VH Road
- Lack of path separation from Road: cars enter path (DPW stated that snow removal prevents installing barriers
- Edgartown/Vineyard Haven Road is one of the most consistently traveled multi-user paths

The Edgartown-Vineyard Haven road is the most heavily traveled route between the two towns of Edgartown and Vineyard Haven. The Edgartown-Vineyard Haven Road is traversed by a mix of recreational and utilitarian riders, and on a typical summer day, at least 83 bicyclists per hour can be seen traveling this road. Due to the fact that this road hosts the highest speed limits on the island, previous transportation planners developed a way to get cyclists away from the dangerous traffic. One of the key advantages of this connection between these two large population centers is the Multi User Path that runs along the south side of the seven mile stretch of road. The path lends itself to a greater number of recreational riders due to the safety buffer it offers in its separation from the road. Almost half of the users of the path were traveling in groups of three or more, a key signal that their travel is for recreational purposes.

Navigation is a large concern on this segment of the island's bicycling network. The two major intersections of the Edgartown Vineyard Haven Road at Barnes Road and County Road were determined to be spots where users who are unfamiliar with the bike

path network will stop to check their maps. This can pose a serious problem because when they stop, cyclists often stop in the middle of the bike path, blocking the way for other users possibly resulting in a collision. One meeting of the Bicycle Advisory Committee concluded that these two locations would be prime locations for navigation kiosks similar to the one that exists at the intersection of County Road and State Road in Tisbury (Meeting of the Bicycle Advisory Committee). Another location to be considered for a navigational kiosk is the Triangle Intersection in Edgartown. Here, cyclists are converging at the bike path crossing and although signage is clear for cyclists, it might be helpful to build a bicycle "rest-stop" with a navigational kiosk at the bike path crossing between Beach Road and Edgartown-Vineyard Haven Road.

Figure 6: Navigational Kiosk at Old County Rd., Tisbury

Users traveling on the bike path heading towards Vineyard Haven are forced to leave the bike path when it ends in front of the Edgartown National Bank. Here, the path ends and users are forced to cross the road. The lack of a designated crossing in this location results in many users traveling on the wrong side of the road. Just as with the Beach Road bike path in Oak Bluffs, a marked bicycle crossing and signage warning motorists of crossing bikes is needed.

The Edgartown-Vineyard Haven Road bike path is another example of a path with a very high number of curb cuts. Due to the fact that it would be unreasonable to reduce the number of driveways that cross the path, the most important thing that can be done is to educate motorists and bike path users of the dangers that are present. The level of separation between the path and the road is very small or nonexistent in many parts of this path. The possibility of installing a barrier between the road and the bike path is not practical due to the fact that in the winter, the DPW of Vineyard Haven plows snow from the roadways onto the separator (LaPiana). Therefore, it is critical for cyclists and motorists to be educated of the dangers and local police departments to punish illegal use of the bike paths by motor vehicles.

5.3 Corridor 3: Oak Bluffs – Edgartown

Issues and Opportunities for Improvement

- Beach Road from Ocean Park to Edgartown Triangle
  - Unsigned blind driveways at busy intersection (Island Inn)
  - Substantial brush growth
  - Sandiest paved path on island
  - Poor signage at end of bike path in Oak Bluffs
- County Road from Oak Bluffs Fire Department to Edgartown Vineyard Haven Road
  - No physical barrier between bike path and road
  - Numerous curb cuts

The corridor that travels from Oak Bluffs to Edgartown is one of the most heavily trafficked, both by motorists and bicyclists. Two possible routes to follow when traveling between these two population centers are along Beach Road. to the triangle intersection and down County Road to Edgartown Vineyard Haven Road. Typically the Beach Road. route sees more traffic as it has a view of the ocean for the majority of the trip, but both routes see significant amounts of bicycle usage in the peak summer months. Based on bicycle counts taken by the WPI students, the Beach Road bicycle path sees at least 150 bicycles per hour on a beach day, while County Road only sees about 50 bicycle users.

Beach Road Route

The Beach Road bicycle path is popular not only for its direct route into the town centers of Edgartown and Oak Bluffs, but also because it has a clear view of the ocean for 3 of its 6 miles. According to Cyclateral Thinking, however this is also "the most dangerous road on the Island, in terms of congestion and safety hazards" (Smith pp. 62-66). This road experiences more bicycle traffic than any other road on the island, and

two of the biggest hazards on the road involve cars parallel parked alongside almost the entire length of road and "cyclists pulling in and out of traffic everywhere along the three miles of open beach (Smith).

The proximity to the ocean is the cause of yet another major hazard present on the bicycle path. The original width of the bicycle paths on Martha's Vineyard was 8 ft. but due to the sand that blows across the Beach Road. path there are sections where users have only about 3 ft of hard surface to navigate. On a typical beach day this path is used to bicyclists as well as rollerbladers and joggers and these narrow sections present a significant obstacle to all users. This particular hazard was mentioned specifically in an interview with Cornelia Decker and was also observed by the WPI students. Cornelia Decker went on to explain how the guard rails on this section of path are normally meant to protect bicyclists from motorists, but when the path has been narrowed and there is heavy bicycle traffic, the guard rails present yet another obstacle. The path is cleaned periodically by the DPW, but there is no way to prevent the sand from blowing back across the path.

Another obstacle faced by users of the Beach Road path is the overgrowth of trees and shrubbery. In the two wooded areas near the centers of Oak Bluffs and Edgartown users have to navigate around low hanging branches which are especially dangerous when traveling at higher speeds on a bicycle. The low growth shrubbery inhibits travel by narrowing the path just as the sand does in the sections of path next to the beach. There are places on the bike path that are only 3 ft wide, reduced from the original 8 ft. According to Cyclateral Thinking, "When the bike path was proposed, the towns of Oak

Bluffs and Edgartown offered to maintain the path if the State paid for its construction – now neither town will budget funds for maintenance."

The wooded sections of path also contain numerous blind drives that are of concern to bicyclists and pedestrians alike. One such blind drive is at the busy drive of the Island Inn. "Not one of these crossings is marked and the entranceways are often obscured by large shrubs" (Smith). Blind drives and curb cuts are a hazard for bicyclists across the island, but especially so on the Beach Road path because of its extremely high usage. The majority of bicyclists on Beach Road are tourists and would be considered recreational users who are not quite as aware of motorists as more experienced users which makes these blind drives especially dangerous.

Less than one half mile from Ocean Park, the Beach Road bicycle path abruptly ends. For users traveling north into Oak Bluffs this is a major problem area because many users do not cross to the opposite side of the road to travel with traffic. Instead they ride against traffic which is considered illegal. Once the bicycle path ends there is a fairly wide shoulder and this may be the reason novice bicyclists feel it is safe to travel on the wrong side of the road, but the shoulder quickly narrows and as the road goes around the first turn the shoulder is reduced to less than 6 inches. In an interview with Craig Hockmeyer (owner of Craig's Cycles) he suggested that the bicycle path be extended to the first side street. This would require moving the traffic lanes, but on this section of road the right of way is wide enough to permit this move. Another suggestion was to simply paint a crosswalk on the road and provide signage so that cyclists would know they must cross the road at that point. Assuming the bicyclist does in fact cross the road at the end of the bike path there are still more hazards to be faced. Because

bicyclists are not allowed to use sidewalks in town centers, the only lane for travel is between the parked cars on Seaview Avenue and the moving traffic. Cars traveling next to the bikes have plenty of time to see the bicyclist and avoid them, but as expressed in Great Expectations: the Island Bicycle Plan, a door from any one of the parked cars can open at any time "presenting an immediate hazard to the bicyclists."

Once a bicyclist safely reaches the end of Ocean Park near the Steamship Authority, the hazards only increase. "Traffic is best described as chaotic; pedestrians, bicycles, mopeds, and vehicles simultaneously searching for a place to stop, pick-up, drop-off or otherwise, drive by (Rooney)." The Bicycle Facilities Committee observed that "the most orderly of all these activities are those which have been accommodated by designating spaces for them (Rooney)." Buses, taxis, and the vehicles being staged at the Steamship Authority all have designated areas in which to park and the vehicles being staged at the SSA are directed by attendants. There is however no area dedicated to pedestrians or bicyclists. This short stretch of road is nearly 30 ft wide and is heavily trafficked by both pedestrians and bicyclists.

Recommendations to improve the stretch of road from Oak Bluffs to Edgartown along Beach Road were provided by the Bicycle Facilities Committee as well as in interviews with members of the Martha's Vineyard Bicycle Committee.

1. Paint a center line down the bike path so that on the heavily trafficked sections users are not fighting for space.
2. Clear the sand off the bike path at more regular intervals.
3. Remove the brush from the edges of the bike path and trim back overhanging branches.

4. Make the transition off of the bike path at the Oak Bluffs end easier to understand for novice bicyclists. This could be done either by extending the bike path, or by improving signage.

5. Provide a designated area for bicyclists and pedestrians near the dangerous Steamship Authority intersection.

County Road to Edgartown Vineyard Haven Road Route

The other main route of travel from Oak Bluffs to Edgartown is by traveling south along County Road. to Edgartown Vineyard Haven Road, then continuing east into Edgartown. This section will focus on the roads leading up to County Road as well as County Road itself. The bike path along County Road is relatively new and was not even present when Great Expectations: The Island Wide Bike Plan was written. The authors of the report, in Recommendation 10, proposed that this bike path be built, however since its construction, David Whitmon and Ashley Hunter, have expressed concern that this path was poorly designed and planned.

Although not as heavily trafficked as Beach Road, (only 50 bicyclists per hour vs. 100+) the County Road route is another viable travel route. To get to the County Road bike path one must travel from less than a mile from the outskirts of Oak Bluffs center along Wing Road. This stretch of road does not have any designated bicycle path, but there are sidewalks for pedestrians to use. Motorists along this stretch of road have also been observed traveling at relatively slow speeds due to high congestion and the proximity to a town center as well as the Oak Bluffs School. Due to these low speeds, the lack of a bike path is not as dangerous as it is in other areas of the island where cars

are traveling up to and exceeding 40 MPH. Once a cyclist reaches County Road they can turn south and travel on a separated bike path. Although this bike path was designed to keep bicycles apart from motorists and therefore provide them safe passage, there are sections of the County Road bike path that have no physical barrier at all with the road. David Whitmon stated in an interview that he has observed on numerous occasions, motorists using the bike path as a turning or passing lane. Bicyclists who are unfamiliar with the island assume that they are safe on the bike path and do not realize that they are in danger of being run down by one of these irresponsible motorists. "Paths give tourists a false sense of security" (Whitmon) which can in turn make this particular path more dangerous than simply riding on the roadway. Other than being used as passing and turning lanes, David Whitmon has observed the bike path being used as a parking lane for contractors working along the road as well as motorists who stop to talk on the cell phone. An automobile parked in the bike path provides a huge obstacle for a bicyclist to navigate around, especially an inexperienced cyclist who would have to venture out into the road to get around the vehicle. This is particularly dangerous if the cyclist is forced into the road while traveling against traffic.

The WPI students also made observations about the terrain of this particular bike path. In some sections the bike path is actually hillier than the roadway it runs alongside. This is particularly dangerous because visibility is decreased for both the cyclist as well as any motorist who may be crossing the bike path at any number of curb cuts.

Recommendations to improve this stretch of bike path include:

1. Providing a barrier between the bike path and the roadway to prevent motorists from traveling on the path.

2. Improving visibility or increasing signage at curb cuts to reduce collisions between motorists and cyclists at intersections.

5.4 Corridor 4: Edgartown - W. Tisbury

Issues and Opportunities for Improvement

- Crosswalk moves bicycles across high-speed traffic
- Path does not continue to State Road
- Bridge has raised criticism from committee members
- Grates may affect rollerbladers or road bicycles

The Edgartown – W. Tisbury corridor consists primarily of Edgartown - W. Tisbury Road which connects Main St. in Edgartown to State Road. in W. Tisbury. Edgartown – W. Tisbury Road is one of the longest on Martha's Vineyard, over 7 miles in length. There is a multi-user path that stretches from the center of this a mile before the State Road intersection, where it turns right and begins to travel north.

The multi-user path along this corridor is mostly isolated from the road. The end of the path near Edgartown travels along the left side of the road facing west. As the path approaches W. Tisbury it crosses the street and separates further from the road. Safety considerations for this crosswalk include reduced speed limit, large "BIKE XING" painted in the roadway, and warning signs along the path precede the crosswalk.

On the Edgartown end of Edgartown – W. Tisbury Road the path remains separated from the road by about three feet. This separation increases greatly for users traveling to W. Tisbury or the State Highway. Once the path crosses the street, the separation increases to the point where the path is not always visible from the street. The

area of separation also experiences vast tree cover. The path along this section is approximately seven feet wide, which can comfortably accommodate two parallel users.

The area of the path between the street crossing and the turn near W. Tisbury is sufficient for the level of traffic achieved on this road. Despite the high number of trees, the path is mostly free of obstacles. Before the crosswalk on the Edgartown end of the corridor, the path experiences more shortcomings. There are intermittent areas of sand, drainage grates are placed in the center of the path, and there is no physical barrier between path users and the road. The users of the path traveling on the right side of the path move against traffic three feet to the right when traveling west.

An issue raised by members of the Bicycle/Pedestrian Plan Advisory Committee is the bridge intended for users of the path (shown in Figure 7: Bridge on Edgartown - W. Tisbury Road below). It is a recent construction that is raised at a level higher than the roadway. A few committee members expressed the view that this bridge detracts from the aesthetic quality of this path due to unnecessary height. Wooden board bridges such as these may cause difficulty for users traveling on road bikes, rollerblades, or skateboards. Although these issues serve to detract from the efficacy of the bridge, the cost associated with altering it outweighs its shortcomings.

Figure 7: Bridge on Edgartown - W. Tisbury Road

5.5 Corridor 5: W. Tisbury - Vineyard Haven

Issues and Opportunities for Improvement

- Difficult intersections exist at State Road and Vineyard Haven/Edgartown Road
- State Road is a common concern area
- Hills challenging to recreational rider
- Roads are narrow

The route from Vineyard Haven to West Tisbury along State Road is roughly six miles long and does not include any designated bike trails. Although this is a very scenic road it is not very heavily trafficked. During a one hour period in the peak hours less than ten bicyclists and only one pedestrian were observed. This observation took place at the intersection of State Road. and Old County Road where there is an information kiosk with a map of the island. Only one of the few bicyclists stopped to make use of the kiosk, which is pictured below in Figure 8.

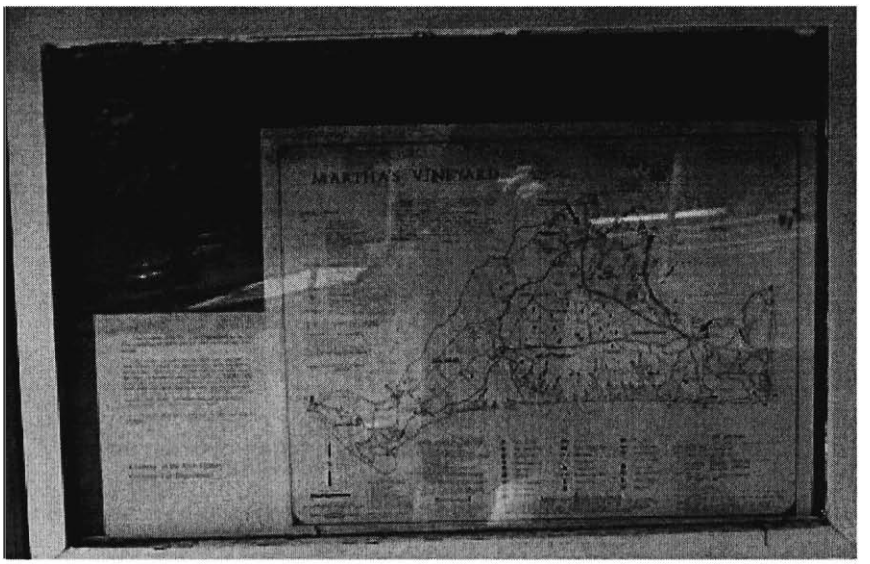


Figure 8: Information Kiosk

The intersection of State Road with Edgartown Vineyard Haven Road is typically backed up in all directions with motorists. Each motorist is fighting for a chance to turn and often times do not pay attention to cyclists who are also trying to cross the road. Visibility for motorists is poor due to the congestion which creates additional hazards for cyclists who have no safe path to travel on. There are sidewalks along State Road in the center of town in both Vineyard Haven and West Tisbury, but these are not sufficient paths for bicyclists due to pedestrian traffic and the narrow width of the sidewalks. Nancy Weaver stated in an interview that the section of State Road from the intersection of Lambert's Cove Road to the intersection of North Road is especially dangerous due to the narrow shoulders. In the 1977 map produced by the Martha's Vineyard Commission, State Road is described as a "narrow roadway with some paved shoulders; gently rolling to level terrain; share roadway with car/ buses/ trucks; rural setting." The main danger for bicyclists traveling through this corridor is the width of the road. According to Craig Hockmeyer of Craig's Cycles, parts of this road were actually narrowed and the

shoulders were not repaved which makes is especially difficult for cyclists on a road with many turns and hills. Nearing the Polly Hill Arboretum there is a bridge with no shoulder at all that motorists and cyclists must both cross. There are warning signs on each side however to prepare motorists and cyclists for the approaching bridge.

Based on traffic counts, it would not be necessary to construct a designated bike path along State Road. Simply widening the road by one to two feet on either side would be sufficient in providing safer travel for cyclists. One of the most common objections to the creation of new bike paths is that they take away from the scenic beauty of rural settings. A wider road, however, would not impinge nearly as much on the scenery of this section of Martha's Vineyard. Other suggested improvements would be to increase "Share the Road" signage as well as add signs that warn inexperienced cyclists about the dangers of this route. The kiosk at the intersection of State Road and Old County Road could also be made more visible to passing cyclists and would benefit from an updated map with detailed information about cycling on the Vineyard.

5.6 State Forest 'Hub'

The State Forest serves as a connecting route for a number of different previously mentioned corridors. Multi-user paths exist along the periphery of the forest, along sections of Barnes Road, Edgartown – W. Tisbury Road, and Old County Road. There are also a number of "ancient ways" or unpaved routes that allow users to travel through the State Forest without trekking around it. These trails can be traveled by hybrids and mountain bikes, but are largely inaccessible to road bikes that cannot travel off-road. The State Forest was referred to at Bike Path Committee meetings as a wheel with spokes (routes or unpaved trails) that connect other paths efficiently. Great Expectations also contains a number of recommendations concerning the State Forest, some of which were constructed in 1997.

These paths appeal to the recreational user for a number of reasons. They are often barely visible from the road, and have access points where users and drive and park their car. There are bicycle racks available at these parking lots. Finally, these paths are attractive to users who wish to enter the State Forest and hike or sightsee. These paths should not be paved for the sake of cyclists using them as shortcuts, as that would affect the appearance of the forest. This prevents the travel of road bikes through these sections. State forest fire paths or cut-throughs are effectively mountain bike domain.

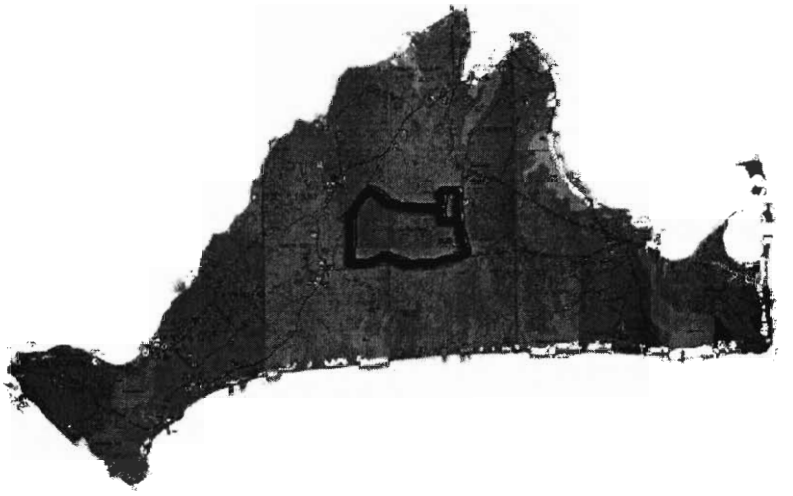


Figure 9: Paved Paths Surrounding State Forest

There are shortcomings of the State Forest paths despite its usefulness as a connective structure. There is a single person responsible for the maintenance of the State Forest. There is a void in necessary manpower to reduce the level of growth. The paths are typically wide enough for two cyclists, but many areas are limited by the brush. The trees block the view of the road and provide a substantial physical barrier, but often grow into the path (This can be observed in Figure 10 below).

Figure 10: Brush on Airport Road Section of State Forest Path

Possible improvements to the State Forest bicycle path include:

1. Clear markings indicating intersections with roads or driveways
2. Publication of unpaved trails
3. Support for brush control and other maintenance
4. Bases for vehicle deterrent posts removed or connected to post

5.7 Barnes Road

Issues and Opportunities for Improvement

- Narrow lanes between blinker and fire station
- Stop signs on some driveways
- Use of Barnes vs. County for travelers to/from OB based on traffic counts

The section of Barnes Road between the blinker and the fire station has been identified in interviews and committee meetings as a problem area for cycling. This route is used by cyclists leaving Oak Bluffs and continuing on to the State Forest or to Edgartown Vineyard Haven Road where they may travel to either town. Barnes Road and County Road intersect at the Oak Bluffs Fire Department and run parallel to each other to Edgartown Vineyard Haven Road. County Road however has a designated bicycle path, while Barnes Road does not. Cyclists traveling on Barnes Road do so because it is a shorter distance to Edgartown Vineyard Haven Road, depending on where their final destination is. However, Barnes Road is very narrow road, with many turns and a hilly terrain. The shoulder on the side of the road is also very narrow and poses a serious problem for cyclists traveling on this route.

Several committee members expressed that the creation of a new bike path along this route would not be in the best interests of the community. There is already the bike

path on County Road for cyclists wishing to take a safer route and it would be difficult to convince the towns that a similar path is necessary on a parallel road. Ashley Hunter proposed the idea that Barnes Road simply be widened if possible and the painted lines on the side of the road to designate the shoulder be removed. Without these painted lines, cars would be able to use the entire width of the road which would in turn clear any sand or debris off of the roadway free of charge. The lack of a shoulder would also force motorists to be more aware of cyclists traveling on this route and give them more passing room.

5.8 Katama

Issues and Opportunities for Improvement

- Wide paths with excellent visibility near beach

The Katama bike path begins near the center of Edgartown and continues south to South Beach. This path is used almost exclusively by recreational users wishing to travel to the beach for the day. There are no turns on this section of path and the terrain is very level. This was one of the few sections of bike path that was not a major area of concern in any interviews or committee meetings. Kathy Donegan stated that the South Beach bike path is very good and is a safe route of travel for cyclists.

Few improvements are necessary for this bike path, but as always maintenance to the path is important. As is the case on many bike paths across the island, the clearing of sand and debris from the path is essential to safe usage. Also a painted center line as proposed by numerous committee members would serve to improve the ease of use especially as this particular bike path is heavily trafficked by recreational users.

5.9 Chilmark/Up-Island

Issues and Opportunities for Improvement

- Narrow roads and no shoulders
- Fast moving traffic
- Blind Curves

The locations Up-Island are a major center of controversy regarding bicycling on Martha's Vineyard. The scenic areas and tourist attractions that exist in the towns of Chilmark and Aquinnah would be great places to travel by bicycle if there were better travel routes for bicyclists. The most appealing characteristics of the Up-Island roads are the scenic overlooks, stone walls and overhanging trees. This is great for motorists, however, when the road narrows and there is no shoulder, cyclists are faced with dangerous conditions. Cyclists traveling on South Road in Chilmark encounter fast moving traffic on roads that are often just wide enough to fit two cars. The biggest problem with these roads is the lack of a designated shoulder. Placing cyclists on the road without a shoulder separating them from fast moving traffic is dangerous. This is especially true on blind curves such as the one heading down to Menemsha Harbor. Accident data from the Martha's Vineyard Hospital indicates that in the two year period of 2002-2003 seven bicyclists were hospitalized due to accidents up island (2002-2003 MVH Accident Data). Three of the accidents took place on North Road, South Road and Moshup Trail and were caused by motorists that ran the cyclists off the road. Another two accidents took place on South Road and were caused by cyclists slipping on the shoulder of the road. This data presents a clear case that numerous injuries have occurred due to the narrow roads. There could have been countless other accidents that were not as serious and were not reported.

One possible solution to this issue is to widen the roads by one or two feet on each side of the road and to paint a shoulder line. It was mentioned during an interview with a bike shop owner that South Road in Chilmark had a wider shoulder, but when the DPW repaved the road, they did not pave the entire shoulder (Hockmeyer). It was assumed that this was done in order to reduce the speed of motor vehicle traffic. However, the actual reason still remains unknown.

6 Summary

Table 3: Improvement Matrix shows a summary of suggestions that have been mentioned previously. The table lists the important issues as well as their location, severity, difficulty to complete, timeline for completion, and the current level of attention of the issue.

Table 3: Improvement Matrix

Issue	Location	Severity	Difficulty	Timeline	Level of Attention
Painted lanes along Beach Rd after drawbridge	Vineyard Haven	Moderate	Minimal	Middle	Low, but other improvements are under consideration
Narrow drawbridge area for pedestrians/cyclists	Vineyard Haven	Moderate	Very High	Long-term	High, bicycle considerations are included in renovation plans
Wind's Up path signage/crosswalk to direct cyclists to travel with street	Vineyard Haven	Low	Low	Short-term	Committee-mentioned
Wind's Up connection to Edgartown - W. Tisbury Rd	Vineyard Haven	High	High	Long-term	Investigated by Tisbury DPW
Hospital parking lot route indications/painting	Oak Bluffs	Low	Minimal	Short-term	None encountered
Beach Rd sand removal	Oak Bluffs/Edgartown	High	Moderate	Middle	Awareness is high, but party responsible for maintenance is unknown
Paint a center line down the heavily traveled bike route along Beach Rd. from Oak Bluffs to Edgartown	Oak Bluffs/ Edgartown	Moderate	Minimal	Middle	Low, but other improvements are under consideration
Brush removal along Beach Rd path	Oak Bluffs/ Edgartown	Moderate	Minimal	Middle	Neither Oak Bluffs or Edgartown is willing to pay for regular maintenance of path
Improve transition for cyclists at Oak Bluffs end of bike path.	Oak Bluffs	High	Minimal	Short - term	None, but it would not be difficult to either increase signage at this problem area or to paint a crosswalk at the end of the path.
Create a substantial barrier between bike path and roadway on County Rd.	Oak Bluffs	High	Moderate	Long - term	Awareness among cyclists is high, but no attention has been observed by any official party.
Improve visibility or increase signage at curb cuts along County Rd.	Oak Bluffs	Moderate	Moderate	Middle	None observed
Increase signage on Barnes Rd. urging motorists to "Share the Road" and warn cyclists of the narrow shoulders.	Oak Bluffs	High	Moderate	Middle	Common cause for concern among committee members.
Widen shoulders along entire stretch of State Rd. from Vineyard Haven to West Tisbury	Vineyard Haven/ West Tisbury	High	High	Long - Term	Common cause for concern among committee members and cyclists.
Improve education for cyclists as to rules of the road and the importance of helmets.	Island Wide	Very High	Moderate	Short-term	N/A

Improve education for motorists especially as relates to sharing the road with cyclists even if there is a designated bike path.	Island Wide	Very High	Moderate	Short-term	N/A
Mark crossing for cyclists entering/leaving the path at Edgartown National Bank on Edg-VH Rd.	Vineyard Haven	High	Minimal	Short-Term	Physical Inventory,
Install navigational kiosk at blinking light intersection.	Oak Bluffs	Low	Moderate	Short-Term	Common cause for concern among committee members, cyclists and shop owners.
Install navigational kiosk at County Rd/Edg-VH Rd intersection.	Oak Bluffs	Low	Moderate	Short-Term	Common cause for concern among committee members, cyclists and shop owners.
Install "rest stop" and navigational kiosk at Triangle Intersection.	Oak Bluffs	Low	Moderate	Short-Term	Common cause for concern among committee members, cyclists and shop owners
Improve education for cyclists and motorists regarding the dangers of curb cuts.	Island Wide	Very High	Moderate	Short-term	Identified by committee members, observations and shop owners
Ensure that a 2ft wide shoulder is cleared on both sides of all bike paths	Island Wide	Moderate	Moderate	Short-Term	Identified by committee members and physical inventory
Paint center lines on all bike paths on the island, especially at blind corners and intersections.	Island Wide	High	Moderate	Short-Term	Common cause for concern among committee members, cyclists, shop owners, and federal guidelines
Install signage on South Rd and North Rd urging motorists to "Share the Road"	Chilmark/Aquinnah	Moderate	Minimal	Short-Term	Concerned bike shop owners
Widen paved shoulders on South Rd and North Rd by 2 feet and paint shoulder lines	Chilmark/Aquinnah	High	High	Long-Term	Common cause for concern among committee members
Educate police departments to enforce bicycle related laws	Island Wide	Moderate	Minimal	Short-Term	Cause for concern among committee members, shop owners, national gudelines

Due to the large number of concerns that are present in Table 3: Improvement Matrix, and the fact that some issues need to be addressed sooner than others, a brief list of the improvements that can be achieved in the short term is important. The following eight suggestions provide more a detailed examination of what we feel are the most important, yet attainable short term improvements.

6.1 Wind's Up path signage/crosswalk to direct cyclists to travel with street.

This issue was mentioned numerous times during meetings with the Bicycle Plan Public Advisory Committee. There are no indications to cyclists that they must cross the street. This creates a difficult situation for novice or intermediate cyclists as they are

typically obliged to travel with traffic. Although rarely enforced, the Massachusetts state law is that "You (cyclists) must obey all traffic laws and regulations of the Commonwealth," (Massachusetts Bicycle Coalition).

Intersections such as this require attention due to their increased danger to cyclists. In Vineyard Haven, 8.33% of serious accidents occurred on the paths. This leaves over 90% for public roadways, private property, and rural routes. Over 85% of these accidents involved motor vehicles (Hirshberg). National studies have also found overwhelmingly that most bicycle accidents occur at intersections, particularly during turning movements. As many as 76.9% of accidents occur when the cyclist is either turning or crossing the road (Schimek). Crosswalks and signs are inexpensive ways to facilitate this intersection.

6.2 Beach Road sand removal

The issue of sand was investigated by the group following recommendations from committee members, and observations during counts. An interview with Stuart Fuller (Edgartown Highway Department, 7/11/05) indicated the need for sand removal on this section. Student observations noticed a sweeping of this path occurred prior to the rise is tourism that occurs near the fourth of July. Students and committee members also noted that sand remains on this segment of the path for days to weeks between sweeping.

Mr. Fuller also indicated that this stretch of land is owned by Mass Highway, and that restructuring maintenance may proceed through them. The difficulty with this is that the towns are responsible for maintenance. This situation creates ambiguity in where culpability lies for ensuring the path remains clear and safe.

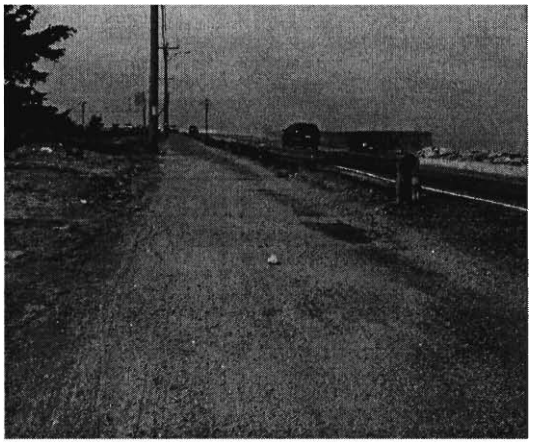


Figure 11: Sand on Beach Road Bike Path

Another major difficulty associated with achieving a more active sweeping schedule is the proximity of beach sand and dunes to the path as seen in Figure 10. Strong wind gusts and storms have the ability force sand onto the paths over a few hours. Perhaps allocations for particularly strong weather events can be made with Mass Highway.

6.3 Painting a center line down the heavily traveled bike route along Beach Road from Oak Bluffs to Edgartown

The same path mentioned in point 6.2 above may benefit from the painting of center lines. This would create a visual aid that would regulate the flow of traffic in the path similar to the way centerlines regulate motorist traffic. Studies have found that cycling the wrong way on a sidewalk increases risk by 430% (Schimek). Narrow paths share many characteristics with multi-user paths, particularly the Beach Road path where there is no separate sidewalk. Figure 12 shows an application of painted center lines.

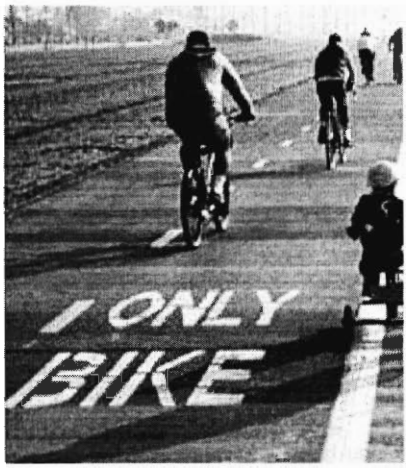


Figure 12: Shared use Path with Painted Lanes (http://www.pedibikeimages.org/imageDetail.cfm)

These painted lanes illustrate how potentially dangerous encounters can be reduced through the use of painting. The situation on Beach Road does not require the extent of painting shown. This extent of painting is also unreasonable due to the width of the path on Beach Road (8 ft. at times but limited to approximately 6 ft. when brush is present). Limited painting may still aid the numerous users of this path. Counts of users have illustrated that the path experiences more than one user per minute (counts performed 7/9/05 and 7/23/05). Multiple users are better organized through the use of centerlines. A final aid of painted lines applies specifically to the numerous different types of traffic on the paths. The Beach Road path contains both pedestrians walking between the beach and parked vehicles and cyclists traveling as described in corridor 3. The different speeds of these users may lead to dangerous passing movements[4] that may be prevented by adding centerlines.

[4] One of the authors' vehicle was almost struck by a cyclist hastily exiting this path to pass other cyclists

6.4 Brush and overhanging branch removal.

This is an area of particular concern along Beach Road from Oak Bluffs to Edgartown. Although bicycle paths were originally designed to be eight feet wide, brush and overhanging branches often decrease this width by as much as four feet in some sections. This leaves passing cyclists only four feet within which to maneuver which is hardly substantial. The party responsible for maintenance of this path however is not known and therefore it is presently difficult to make any improvements in this area.

6.5 Bicyclist education and motorist awareness.

Bicyclists on the island need to be educated as to safe bicycling guidelines which would include helmet usage, proper side of the road to ride on, using headlights after dark, etc. These education programs could be held at the island schools and sponsored by the MVC or local police stations. Free helmets could be given away to encourage cyclists, especially children, to use them. Motorist awareness for cyclists could be increased through the addition of more "Share the Road" signs, even on roads where there are designated bike paths. Pamphlets emphasizing the need to respect bicyclists could be given out to motorists by the Steamship Authority to ensure that no motorist is unaware of the situation.

6.6 Creating a legitimate barrier between the road and bike path on County Road

The bike path on County Road has been used by motorists as a passing and turning lane because there is no barrier or even a painted line to separate the path and the road. Metal guard rails would not go along with the scenic roadside character of Martha's Vineyard and the wooden barriers used along Beach Road are relatively

expensive. No compromise for a suitable barrier has been suggested, however this section of path is a serious cause for concern especially for unsuspecting riders who have a false sense of security when traveling on this path.

6.7 Bicycle Crossing at Edgartown National Bank (Tisbury)

The marking of a crosswalk at the end of the bike path on the Vineyard Haven end of the Edgartown Vineyard Haven Road is a short term improvement that could be accomplished with minimal cost and effort. As you can see in Figure 13: Bike Path Ends at Edgartown National Bank (Tisbury) below, the abrupt end of the bike path gives cyclists three options to choose from: continue ahead and ride on the sidewalk, ride on the same side of the road against traffic, or cross the road and ride with traffic.

Figure 13: Bike Path Ends at Edgartown National Bank (Tisbury)

It would be very easy for a bicyclist to want to continue riding towards Vineyard Haven on the left side of the main road due to the wide shoulder. However, the laws governing bicycle transportation require bicycles to operate on the right side of the road.

According to the Massachusetts Statewide Bicycle Transportation Plan, "the pavement markings and signing must provide advanced warning of the approaching intersection as well as how to respond to the changes ahead" (Massachusetts Statewide Bicycle Transportation Plan pp. 31-32). Therefore, in addition to a painted crossing, signage must be put up to warn both motor vehicles and cyclists of the upcoming transition zone.

6.8 Blinker Intersection Information Kiosk

Ensuring that cyclists can properly navigate the roads and paths of Martha's Vineyard is of great importance. Installing navigational kiosks such as the one shown previously in Figure 6: Navigational Kiosk at Old County Rd., Tisbury would help cyclists in many locations. However, the one location that has seen the greatest number of disoriented cyclists is the blinker intersection. Installing a navigational kiosk here would be inexpensive, and very useful. It has been stated that approval has been given to use the large piece of open land on the Southwest corner of the intersection (Whitmon). By also adding a "cyclist rest area" on that corner, cyclists who are looking at their maps would not be blocking the bike paths. This could include a set of bike racks, picnic tables, and even a small parking area.

Figure 14: Possible Future Location for Navigational Kiosk and "Cyclist Rest Area"

Bicycling on the Island of Martha's Vineyard is an important part of the unique way of life for year round residents as well as weekend visitors. The recommendations within this report were created with the intention of helping to improve the overall experience of all cyclists. Through this study, many physical as well as systematic problems were unearthed. There are many areas of the bicycling network where simple modifications can improve the safety and attractiveness to a great extent. In order to increase the number of people traveling the island by bicycle, the bike paths, routes and other facilities should be safe and easy to use. We feel that these recommendations should be taken into consideration during future planning improvements made by the Martha's Vineyard Commission as well as any other organization interested in the well-being of the bicycling community.

Appendix 1: Commission Documentation

The data presented in this section is either an actual MVC document, or summary of information presented in MVC documents.

1990-1995 Bike Accident Reports (Obtained from the MVC's files)

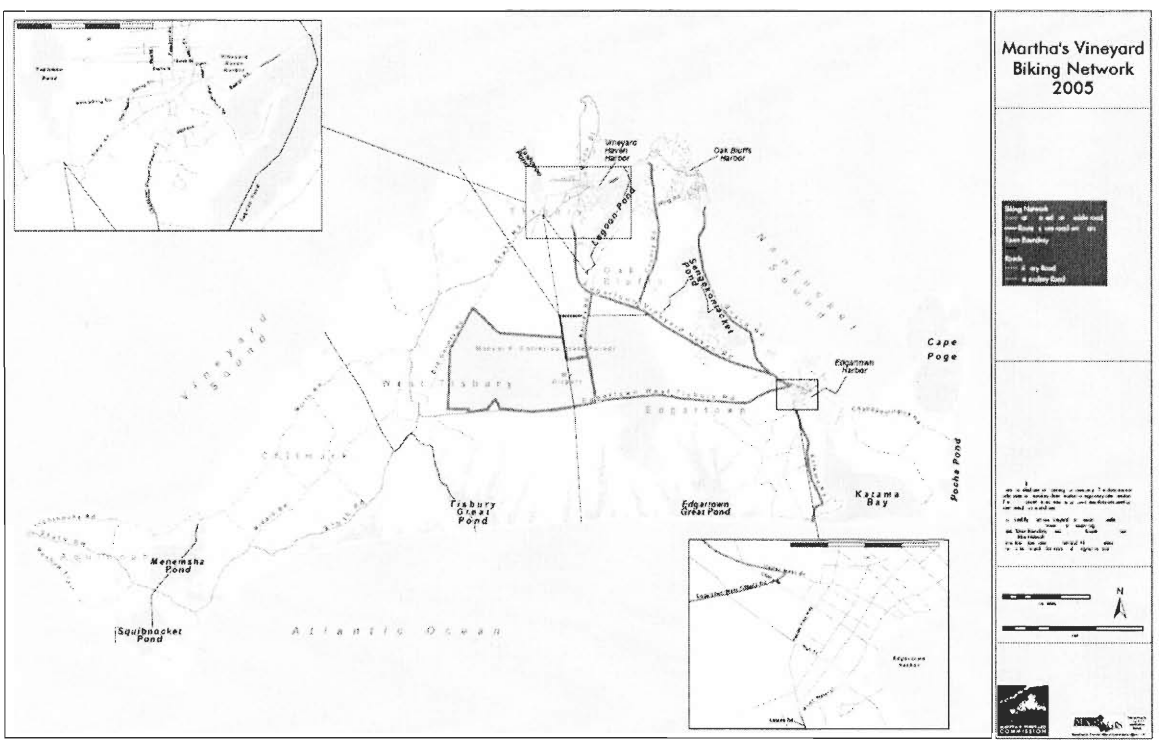
OB	1990	1991	1992	1993	1994	1995
Total Reported					23	22
Bike Path					2	3
Car Involved					3	8
Rural/Residential					9	7
Edg –VH/State Rd Intersection					11	7
In town					2	4
Injury					10	9
MVH Transport					7	8
Air Evac					1	
Summer					21	20
TIS						
Total Reported	8	9	10	13	7	12
Bike Path	1	1	1	2	1	0
Car Involved	8	5	10	9	7	12
Rural/Residential	1	0	3	3	2	4
Edg –VH/State Rd Intersection	7	8	5	7	6	7
In town		1	2	2	0	1
Bike Fault	2	2	2	4	2	3
Vehicle Fault	5	3	5	3	4	5
Injury	6	8	8	12	6	8
MVH Transport	5	4	6	8	4	7
Summer	7	8	8	13	6	10
EDG						
Total Reported	12	21	26	25	30	23
Bike Path	4	7	12	12	13	13
Car Involved	4	11	8	4	6	2
Rural/Residential	3	10	7	7	11	6
Edg –VH/State Rd Intersection	6	7	16	14	15	13
In town	3	4	3	4	4	4
Injury	9	12	21	20	21	17
MVH Transport	8	6	12	17	19	14
Air Evac	1	0	0	0	0	0
Summer	11	19	18	20	26	19
Death	0	1	0	0	0	0
Pedestrian	0	0	0	2	0	1

"A Comparison of Moped, Bicycle, and Motorcycle Injuries on the Island of Martha's Vineyard." Alan Hirshberg

Data Table Year 2000

Data Item		Bicycles	Mopeds		Motorcycles
Number Persons Treated		167	66		12
Percent Female		43	63.6		8.3
Average Age (years)		27.4	33.4		29.7
Number of Passengers injured (all were female)		1	4		0
Percent Islander		26.4	3		100
Percent Helmet Use		45	98.5		100
Percent Hospitalized, Died, or Transferred		10.8	18.2		16.7
Percent EMS Involvement		29	75.8		33.3
Average Hospital Charges (Dollars)		1412.45	2292.53		1694.57
Median Hospital Charges (Dollars)		512	689		739
Percent Hospital Charges paid (as of 1/1/01)		73	64.6		63.5
Average Balance of Outstanding Charges (Dollars)		298.33	933.31		557.85
Median Balance of Outstanding Charges (Dollars)		0	50		86
Average # Days on Island if Nonresident		12.5	2.2		N/A

Martha's Vineyard Biking Network 2005



Accident Report Summary

From 1990-1995	**Based on 241 Persons**				
*Normalized for 6 years (2 for VH)					
	Total Accidents	% on Path	% Cars Involved		
Edgartown	18.5	43	26		
Oak Bluffs	8.2	11.1	24		
Vineyard Haven	22.5	8.33	86		
% Summer	85				
Deaths	1				
From 2000	**Based on 167 Persons**				
% Non-Resident	% Resident	Mean Age	% Using Helmet		
26.4	73.6	27.4	45		
From 2001	**Based on 120 Persons**				
% Non-resident	% Resident	Mean Age	Median Age	Total Reported	
76	24	34	35	120	
Edgartown	Oak Bluffs	Vineyard Haven	Katama	Other location	Unreported Location
13	10	9	3	1	84
From 2002	**Based on 141 Persons**				
% Non-resident	% Resident	Mean Age	Median Age	Total Reported	
		37	41	141	
Edgartown	Oak Bluffs	Vineyard Haven	Katama	Other location	Unreported Location
16	18	5	3	6	84
From 2003	**Based on 134 Persons**				
% Non-resident	% Resident	Mean Age	Median Age	Total Reported	
		29	21	134	
Edgartown	Oak Bluffs	Vineyard Haven	Katama	Other location	Unreported Location
13	10	9	3	1	84

Project Outline for WPI Students'
Evaluation of Martha's Vineyard's
Bicycling and Pedestrian Infrastructure

By: Bill Veno: 6/12/05

Overview

The Martha's Vineyard Commission and Joint Transportation Committee have decided to produce an Island-wide plan for the bicycle and pedestrian networks. Martha's Vineyard's networks of bicycle paths/routessidewalks and trails serve particularly important roles in supporting and promoting tourism and recreational activities that are so vital to the local economy. Use of these non-motorized modes of transportation also reduces motor vehicle congestion of the Island's limited and already strained road system. Refinement and further development of these networks should enhance users' – resident as well as visitor --convenience and interest in order to provide an appealing alternative to motor vehicle use. The WPI students will be responsible for completing the first step in the development of the bicycle/pedestrian plan, which is the documentation and evaluation of the existing infrastructure serving cyclists and pedestrians, and the identification and initial evaluation of measures to improve these infrastructures.

Objectives

1. Document the present status of facilities (including absence thereof) that support residents' and visitors' ability to walk and bicycle about Martha's Vineyard
2. Quantify and qualify the characteristics of people presently using these facilities
3. Identify opportunities for improving the pedestrian and bicycling infrastructure network and the relative costs -- social, ecological and economical – of the alternatives.

Methodology

Students will work under the supervision of Senior Planner Bill Veno. The students and supervisor will meet weekly to review progress, clarify upcoming tasks and troubleshoot as necessary. Transportation Planner Srinivas Sattoor will also attend these weekly meetings as a resource person. Progress will be measured by the completion of tasks. However, many of the identified tasks are interrelated or can most efficiently be completed by being pursued simultaneously.

Periodic feedback and suggestions will be sought from a plan steering committee – created by the MVC/JTC – whose purpose extends beyond this project and encompasses the entire bicycle and pedestrian plan.

Students will spend a significant amount of time outdoors – walking, bicycling or just standing – measuring, observing and recording. Significant time may also be spent at various town or other public offices retrieving data or interviewing resource people. While there is a very good public transit system on the Vineyard, students' work would probably be expedited if they have access to a vehicle.

Tasks

1. Review background materials – Extract pertinent materials from previous Vineyard and Massachusetts studies, surveys and plans of pedestrian and bicycling activities and facilities. (This information may result in refinement of this project's methodology)

2. Complete GPS inventory of trails and bike paths/routes – Use GPS unit to complete missing segments, or correct segments, of GIS trail and bike path data layers. This task may also include the GPSing of sidewalks.

3. Community Assessments – Conduct community assessments for pedestrian infrastructure and for bicycling infrastructure. Identify and assign attribute data such as surface width, material and condition, signage, visibility, availability of bike racks, etc. Students will first determine, with staff, whether the assessments should be, to divide the Island into sub-areas such as by town, by downtowns vs. rural areas, or by areas with existing infrastructure vs. areas without existing infrastructure. This task may be modeled on the Community Assessment Tool of the National Center for Bicycling and Walking or similar tool, and may also involve limited sample surveying of pedestrians and cyclists, either "on the street" or other survey method.

4. Quantify Activity – Use traffic counters quantify the number or cyclists or pedestrians using different network segments; use turning movement counters at selected locations to quantify patterns of use. Repeat counts may be required at the same sites over different days of the week or different times of day. This task will include the calibration and quality control of the traffic counters. Students will also investigate police accident data involving pedestrians and cyclists.

5. Observe Activity – Observe pedestrian and cyclist movement at strategic locations to identify user activities related to the existing or absence of facilities (areas of congestion, points of confusion, etc.) and the characteristics of users (mix of pedestrian, cyclists, rollerbladers; people with strollers or bike trailers; age; percent of cyclists wearing helmets; etc.). Students should also postulate possible contributors to the activity, such as inadequate signage, absence of pulloffs or rest areas, and conflicting turning movements.

6. Identify Infrastructure Shortcomings and Opportunities for Improvement – Based on the previous tasks, compile a list and graphic portrayal of points of concern and possible remedial measures. Some effort should also be given to framing the likely costs of the remedial measures, such as the monetary cost for acquiring additional rights-of-way or social cost of the removal of large shade trees along the public right-of-way.

Resources

The commission has the following equipment the students may need in conducting this project (these are shared with others in the office):

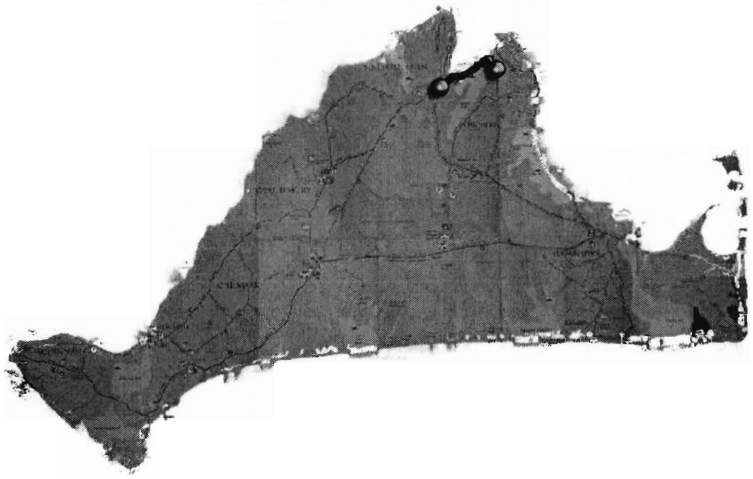
- a GPS handheld unit; two different types of passive
- 2 infrared beam activated counters of trail or bicycle users
- 3 traffic turning movement counters
- laptop computer for indoor and field use

MVC has obtained GPS data for nearly all of the Island's walking trails, which are being incorporated into the commission's GIS. Surveys were conducted in 2003 and 2004 that included people's use of and satisfaction with pedestrian and bicycling on the Vineyard. The commission also conducted a detailed infrastructure evaluation in 2000 of the harborfronts of the main town centers on the Island. A variety of other past studies exist.

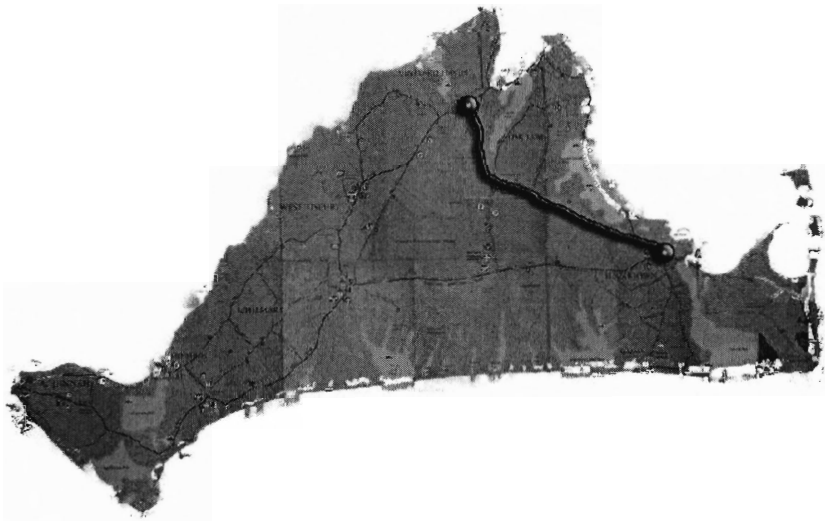
Appendix 2: WPI Student Generated Data

Corridor Illustrations

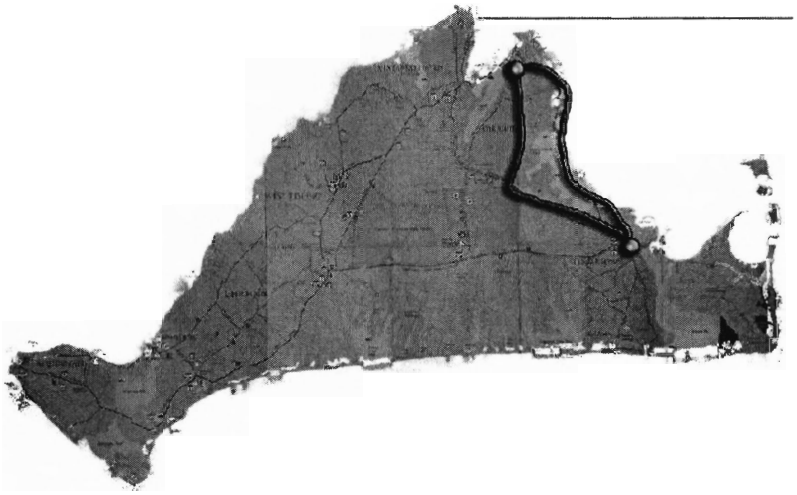
Corridor 1: Oak Bluffs to Vineyard Haven



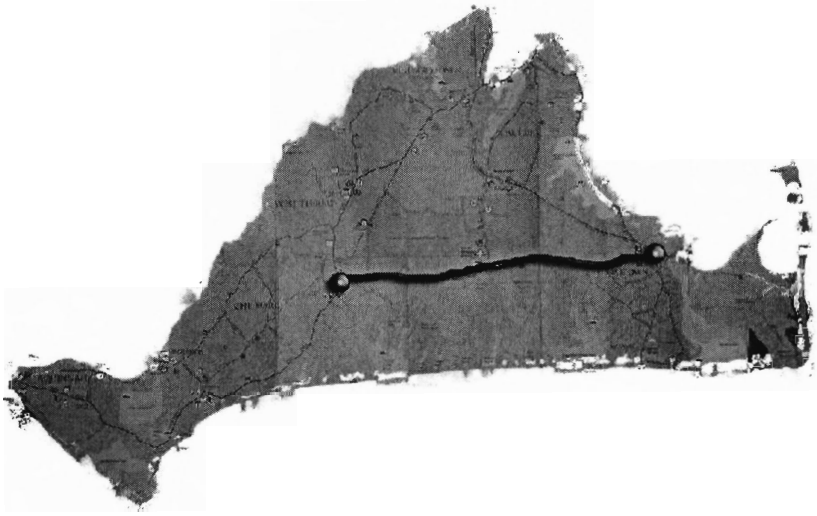
Corridor 2: Vineyard Haven to Edgartown



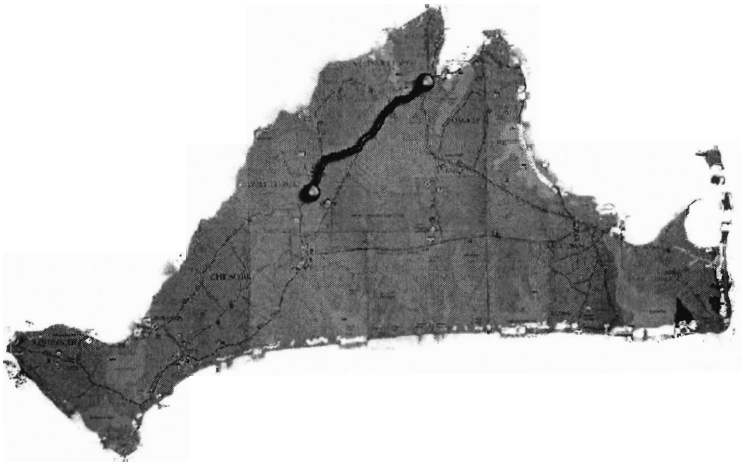
Corridor 3: Oak Bluffs to Edgartown



Corridor 4: Edgartown W. Tisbury



Corridor 5: Vineyard Haven to W. Tisbury



Bicycle Turning Movement Counts

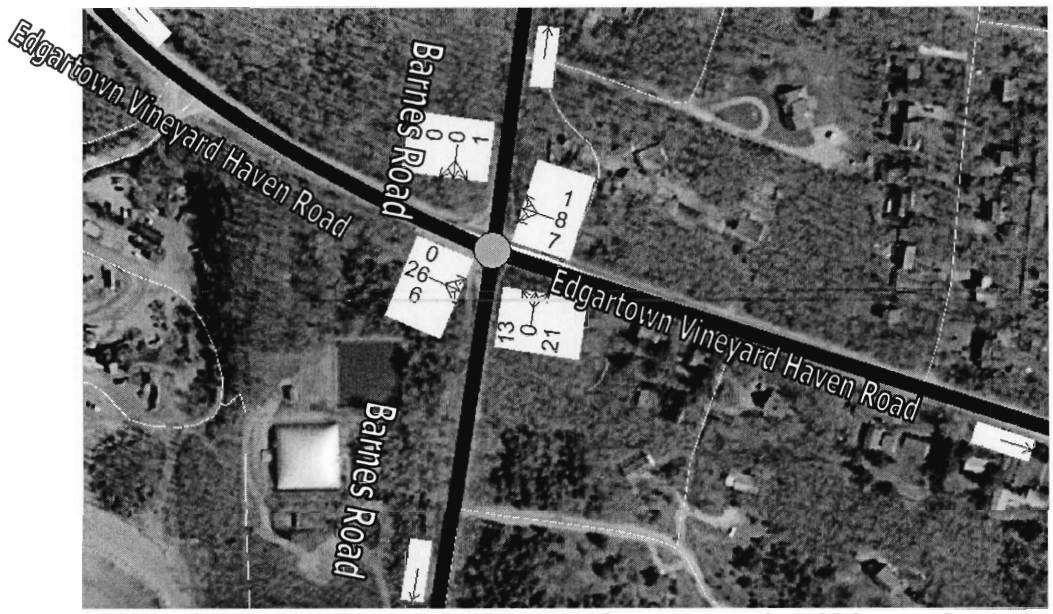


Fig 1: Turning Movement Counts at the Blinker on Thursday July 28, 2005 from 1.30pm to 2.30pm

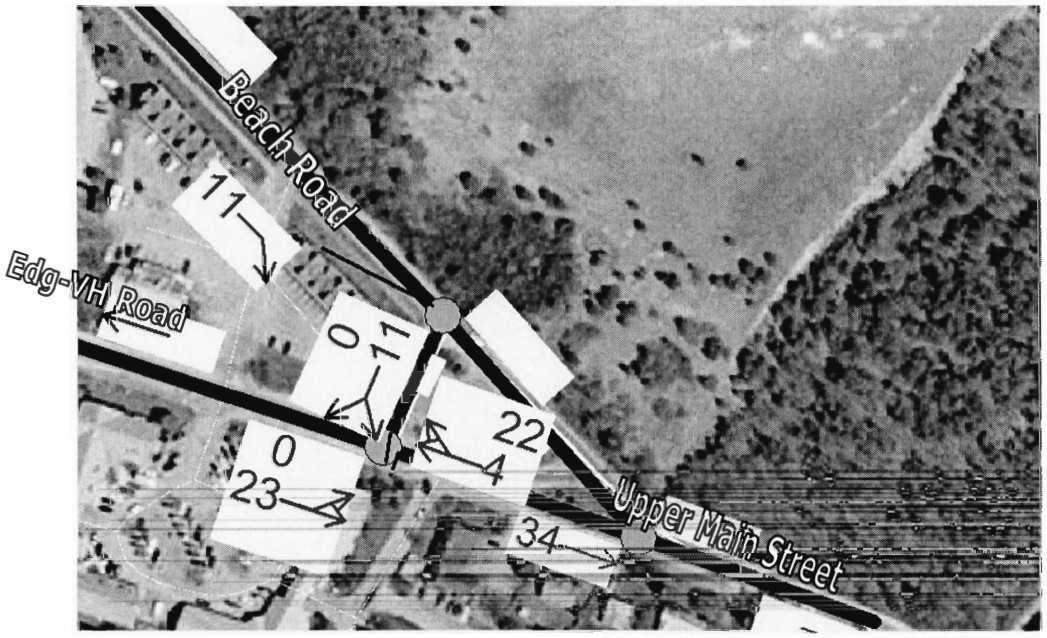
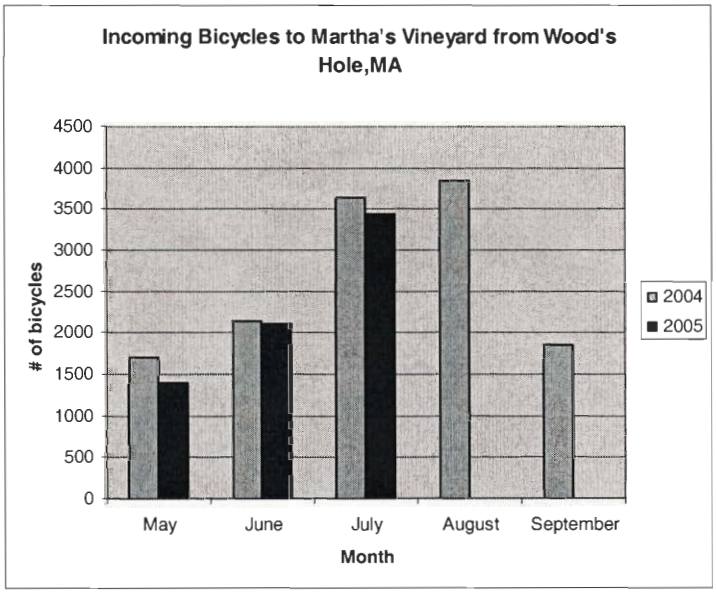


Fig 2: Turning Movement Counts at the triangle intersection on Sunday, August 14, 2005 from 12.45pm to 1.15pm

Steamship Authority Bicycle Counts from Wood's Hole to MV

Month	2004	2005
May	1707	1397
June	2141	2107
July	3638	3443
August	3847	
September	1859	



School Bike Counts

School	Pedestrians	Cyclists w/ helmets	Cyclists w/out helmets
Edgartown	14	9	2
W. Tisbury	8	1	3
Tisbury			
Charter	0	2	0
High School	Negligible Bike use		
Chilmark	3	0	0
Oak Bluffs	23	16	6

School	Total Cyclists	Bike Racks	Total Bike Rack Capacity	Crossing Guards
Edgartown	11	4	36	2
W. Tisbury	4			1
Tisbury				
Charter	2	1	9	0
High School				
Chilmark	0	0	0	0
Oak Bluffs	22	4	56	1

Martha's Vineyard School Surveys

The Tisbury School
Contact: Richie Smith

- 310 students attend the school
- 35 percent of these students live within 1.5 miles of the school
- Safety precautions
    - There are five crossing guards at crosswalks and intersections surrounding the school.
    - Students must walk bikes when on school property.
    - Students must heed the crossing guards.
    - School suggests children use routes with adequate sidewalks.
- School feels that bike paths in vicinity of school are adequate and safe.
- No improvements suggested.
- No other concerns.

Edgartown School
Contact: Principal Jerome

- 356 students attend the school.
- 25 percent of these students live within 1.5 miles of the school.
- Safety precautions
    - Five crossing guards at Main St, Cooke St, Robinson Rd. (2), School Property.
    - Safety instruction is provided by Edgartown Police.
    - Recommended travel routes are along bike paths closest to students home.
- Would not like to see increase in students that ride bikes/ walk to school.
- School feels that bike paths in vicinity of school are adequate and safe.
- Bike paths on Robinson Rd. to W. Tisbury Rd. from the Fire Station might be safer for bikes, but there is limited space.
- No other concerns.

Oak Bluffs School.
Contact: Principal Laury Binney

- 430 students attend the school.
- Roughly 20 percent of these students live within 1.5 miles of the school.
- Safety precautions
    - Three crossing guards
    - A course on bicycle safety is often given on Saturdays by Police Department.
    - Recommended travel routes are along bike path and through the back entrance.
- Would like to see an increase in students that ride/ walk to school.
- School feels that bike paths in vicinity of school are adequate and safe.

- No improvements suggested.
- No other concerns.

Chilmark School
Contact: Diane Gundy

- 52 students attend the school.
- 1 percent of these students live within 1.5 miles of the school.
- Safety precautions
    - No crossing guards
    - Instruction on helmet use, traffic flow, and reflectors is given.
    - Suggested safe travel is the bus or parent pick up.
- Would not like to see an increase in students that ride/ walk to school.
- Bike paths and sidewalks are not adequate enough due to the rural setting.
- No suggested improvements.
- No other concerns.

Comments and Concerns from Interviews with Members of Martha's Vineyard Bicycling Committee

Phone Interview with Kathy Donegan- July 12, 2005

Concerns

- At Franklin St and Main St. intersection in Vineyard Haven there is only a 3 inch shoulder and this road is heavily trafficked by children.
- Land Bank beach and Vineyard Haven beach are inaccessible to bicyclists.
- Bicycles should have a speed limit as well as automobiles.
- Motorists need to be informed from ferry that roads are to be shared.

Positive

- South Beach bike trail is good.

Improvements

- Not necessarily more bike trails, but safer bike lanes on roadways.

Personal Use

- Everyday bicyclist from Tisbury into Oak Bluffs.

Interview with Mimi Davisson at MVC- July 14, 2005

Concerns

- All bicycle routes down island (e.g. Barnes Rd, State Rd, New York Ave.) are not safe enough.
- Not enough education for cyclists and motorists.
- Bike racks should be more visible and convenient in towns.

Positive

- Martha's Vineyard has more bike trails than most communities.
- Bike trails are well trafficked by tourists and locals.
- Oak Bluffs had safety program and gave out free helmets.
- Because there are bike trails and so many bicyclists on the island, motorists are forced to be aware of them even on roads without designated trails.

Improvements

- Parents must educate children as to safe bicycling techniques.

- Maps for tourists that show shortcuts or safer bicycle routes that are not necessarily trails.

Specific Hazard Areas

- Barnes Rd. needs sign to inform cyclists that it is dangerous.
- Vineyard Haven to Oak Bluffs is fairly dangerous.
- Path through hospital is not well marked.
- Turn after State Police station on the way into Oak Bluffs is dangerous as well.

Interview with Nancy Weaver at Polly Hill Arboretum- July 15, 2005

Concerns

- Education for motorists on rules of the road.
- Education for bicyclists on safe bike routes.
- Not enough helmet use (especially among immigrant population).

Positive

- Year round motorists are courteous of bicyclists.

Improvements

- Sponsor island wide bicycle rides.
- Create a map with not only road names, but landmarks that will be easily used by bicyclists.
- Inform bicyclists about cut- throughs not necessarily on roads. (e.g. VH-ET Rd. to State Rd there is a cut- through at Sanborn Way) Ashley Hunter and Dave Whitman could help greatly in this area.
- No cars allowed on certain roads for a day.

Hazard Areas

- Middle Rd. has more blind turns than North Rd.
- State Rd between Lamberts Cove Rd. and North Rd is very dangerous.

Personal Use

- Everyday rider. Both utilitarian and recreational. Only drives car about 25 miles a week.

Interview with David Whitmon at his home

Concerns

-Driveways crossing bike paths (curb cuts)
-Motorists use bike paths as passing/turning lanes
-Contractors park on paths
-Motorists park on paths to use cell phones
-Paths give tourists a false sense of security
-Paths designed for the convenience of motorists

Improvements

-Need education for motorists and cyclists in school
-Need to enforce existing laws and speed limits
-Paths need to be easier and safer to use
-Paint White line down middle of bike paths
-Widen bike paths
-Create barriers to keep motorists off bike paths
-Consistent 3-4 ft shoulders on both sides of the road would make bicycling much easier
-Navigational Aides: map kiosks at blinker and vh-edg/county rd

Safety Precautions

-cyclists must always be vigilant of oncoming cyclists as well as curb cuts and surface changes
-cyclists should always use reflective clothing and bike lights at night

Personal Use

-Utilitarian and recreational rider. Rides everyday with his children, and has a large amount of cycling hours

Interview with Craig Hockmeyer at Craig's Cycles

Concerns

-Narrow shoulders or no shoulders on many heavily cycled roads
-VH to OB has a wide shoulder, making it easier for cyclists, a separated bike path is not necessary here
-Hospital bike path is not a success
-Poor maintenance of bike paths: sand, branches (customer shattered arm after avoiding a branch)
-Separated paths that are parallel to the main road are bad
-Speed limits are not enforced on the island
-Although a cycle is traveling at or above the speed limit, motorists still feel the urge or need to pass the cyclist

Improvements

-Extend OB beach bike path to the first side street, or paint line for cyclists to cross
-Pave shoulders from Chilmark to gay head and other areas, shoulders are self maintaining
-Paint centerlines on all bike paths
-Reduce speed limits or enforce existing ones.
-Start public service announcements that speeding on the island will not be tolerated, and watch out for bikers
-Start a 2-3 year campaign of public service announcements and pamphlets to spread the word that Martha's Vineyard is a cyclist friendly island, to change the mindset and opinions of the public on cycling "Bike Awareness Campaign"

Hazard Areas

-OB end of the OB/Edg beach bike path. Path ends abruptly in OB leaving cyclists in the road
-No shoulder on seaview ave where the path ends, cobblestone curb projects onto the road endangering cyclists and motorists
-Chilmark => Gay Head: shoulders are not paved, road was narrowed and shoulders were not repaved

Education

-Tourist cyclists need to know dangers of the roads
-Increase signage: Share the road
-Recommended bike travel routes: Menemsha/gay head – middle rd/N road
-More suggested bike routes
-Bike routes should take cyclists through town so they can see the island and contribute to island businesses

Phone Interview with Cornelia Decker- July 26, 2005

Personal Use

- Everyday user in summer, one or two times a week in spring and fall.
- Both utilitarian and recreational.

Specific Hazard Areas

- Guard rails along bike paths are dangerous especially when paths have been narrowed due to sand or brush.
- Too much sand on paths, specifically on Edgartown- West Tisbury Rd. and along State Beach.

General Concerns

- Future bike paths should not be along roadways, but along ancient ways or cut throughs to make them safer and more visually appealing.

Improvements

- Widen paths wherever possible.

Positive

- On State Rd. the shoulder is a good width.

Phone Interview with Margaret Curtin – July 27, 2005

Personal Use

- Rides about 4 days a week recreationally.

General Concerns

- Improve maintenance of existing paths.

Improvements

- Widen paths where possible.
- Maintain paths.
- Paint a white center line on paths where it is wide enough to make it feasible.
- Remove sand more frequently from Beach Rd.

Positive

- Having bike paths.

Chris Fried General Questionnaire
7-11-2005

Type of user: Regular user of paths, trails roads, etc.; utilitarian

Specific Concerns

- There are general issues on the paths that could be improved to make them what they should be.
- Mailboxes in or near the paths or in the sidewalk
- Sand on the paths (Beach Road path by Wind's up specifically has a lot of sand typically)
- Irregular paving
- State road near Cronig's close to VH is dangerous for cyclists
- Police enforcement of the rules for cyclists and motorists

Suggestions

- Take pictures of problems
- Multi-user path from Vineyard Haven to Oak Bluffs
- Discussions should address Multi-user path problems and the challenge of pedestrians
- Sidewalks can be improved for the purpose of redisignating them as multi-user paths
- Utilitarian users that go on the road have different design needs than families that use the paths

General Concerns

- Riders should always wear helmets
- Avoid night biking
- Bike defensively
- Obey stop signs on the path
- Right of way should go from pedestrians → cyclists → mopeds → cars

Education

- Rental places should give out more instruction
- Pamphlets or maps are helpful and a minimum of 5 minutes of training like mopeds should help
- Ferries could carry maps/pamphlets for bicyclists
- Rules for passing a bike with a moped should be established

Stuart Fuller – Edgartown Highway Department
7-11-2005

Type of user: Works at the highway department; bikes frequently.

Specific Concerns

- DEM owns the state forest, Beach Road is owned by mass highway. Oak bluffs is the only town that does its own maintenance
- He plans on building a path on Herring Creek Road

Suggestions

- Mile markers or signs targeted specifically to bicyclists
-

General Concerns

- Street sweepers needed to remove sand
- Links between paths are necessary
- Police need to enforce parking on paths
- Guardrails are helpful, but expensive (modeled after the one on the last block of W. Tisbury road path near Edgartown)
- Brush needs to be kept back
- Painted paths may also be possible

Education

- Stay to the right of the road and remain in single file when traveling in the roadway
- Be aware of motor vehicles

Bike Shop Questionnaire/Interview Results

Business Name: Edgartown Bicycles
Respondent's Name: Brad
Date of Questionnaire: August 2005

Martha's Vineyard Bike Shop Questionnaire

Users

How many bicycles do you have available for rent?
-No Answer
What is the typical number of bicycles that you rent daily/weekly?
-No Answer

What types of bikes are rented (including tandem and trailer bikes)?
-No Answer
How often are bicycles rented to large groups (10+)?
-No Answer
What is the average skill level of renters? (beginner, average, professional)
-No Answer
What are the most common destinations?
-Short single day rentals: Katama, Oak Bluffs, State Forest
-Week long rentals: Map routes and trips to above destinations
Do you offer any special instructions or safety precautions to bicyclists?
-No Answer

Hazards

What are the most dangerous/inconvenient locations for cyclists? Why?
Oak Bluffs to Vineyard Haven: State Rd, New York Ave; Families cannot safely ride between these two points.
Are there any areas that lack signs or navigation aides?
Airport: No signs when leaving airport towards Barnes rd or County Rd.
Five Corners: No available detailed bicycling map of area. Cyclists don't know where to go.

Areas for Expansion

Are there any areas that lack a designated bike path or route?
Aquinnah and Chilmark
What is the best way to accommodate bikes?(bike lane, bike path wide shoulders)
Increase bike path toward Chilmark or Aquinnah
Remove cars from roads
What other changes/improvements would you like to see with biking on Martha's Vineyard?
Educating motorists about cyclist rights

Business Name: Wheel Happy
Respondent's Name: Employee
Date of Questionnaire: August 2005

Martha's Vineyard Bike Shop Questionnaire

Users

How many bicycles do you have available for rent?
-No Answer
What is the typical number of bicycles that you rent daily/weekly?
-No Answer
What types of bikes are rented (including tandem and trailer bikes)?
-Mountain bikes, road bikes, 2 person tandem, tagalongs
How often are bicycles rented to large groups (10+)?
-rarely
What is the average skill level of renters? (beginner, average, professional)
-Kids-Adults: Novices to Expert Cyclists
What are the most common destinations?
-Chappaquiddick, Oak Bluffs, Vineyard Haven, Katama, Gay Head (Very Rare)
Do you offer any special instructions or safety precautions to bicyclists?
-Stay on bike paths, wear helmets, act like a vehicle when on the road

Hazards

What are the most dangerous/inconvenient locations for cyclists? Why?
Downtown Edgartown: Main Street
Crosswalks: Cars do not stop
Off the bike paths, Oak Bluffs where the bike path ends abruptly
Are there any areas that lack signs or navigation aides?
Sufficient

Areas for Expansion

Are there any areas that lack a designated bike path or route?
Gay Head, Aquinnah, Menemsha
What is the best way to accommodate bikes?(bike lane, bike path wide shoulders)
Bike Paths (shoulders are too narrow)
What other changes/improvements would you like to see with biking on Martha's Vineyard?
-No Answer

2005 Bicycle Counts

Location	*Time*	*Date*	*Helmet*	*Non-Helmet*	*Groups > 4*	*Bike Total*	*User Total*	*Day Type*
Beach Rd 2nd Bridge	1:00-2:00	9-Jul	49	92	10	141		Sunny/80s
County Rd (OB)	1:30-2:30	29-Jul	18	38	1	43	47	Sunny/70s
Edg-W. Tis Rd - 2 mi E of Airport Rd	3:00-4:00	29-Jul	23	10	0	33	39	
Old County Rd	2:00-3:00	19-Aug	7	5		12	13	Sunny/Warm
Drawbridge	10:15-11:15	6-Aug	23	34	2	57	62	Cloudy/70s
Beach Rd N of Trader Fred's	5:00-5:45	13-Jul	39	27	0	66	71	Sunny/Cool
Beach Rd N of Trader Fred's	1:00-1:45	13-Jul	14	8	0	22	24	Cloudy/Cool
Beach Rd N of Trader Fred's	3:00-3:45	13-Jul	22	69	0	91	93	Cloudy/Cool
Katama Rd	4:00-4:45	14-Jul	28	25	1	53	70	Cloudy/70s
Katama Rd	6:00-6:45	14-Jul	13	22	0	35	43	Cloudy/70s
Katama Rd	2:00-2:45	14-Jul	22	18	1	40	10	Cloudy/70s
VH-Edg Rd	3:00-3:45	23-Jul	9	29	0	38	43	Sunny/80s
Beach Rd	2:05-2:45	23-Jul	43	51	0	94	96	Sunny/80s
Edg-WT Rd	5:00-5:45	14-Jul	6	4	0	10	16	Sunny/70s
Triangle Intersection (Edg) (Turning Movements)	12:45-1:15	14-Aug				131		Overcast/70s
Blinking Light Intersection (OB) (Turning Movements)	1:30-2:30	28-Jul				83		Sunny/70s
Airport Rd-State Forest Path IR	1:00-2:00	28-Jun					14	70s/Rain
Airport Rd-State Forest Path IR	1:00-2:00	29-Jun					5	60s/Humid
Airport Rd-State Forest Path IR	1:00-2:00	6-Jul					13	70s/Humid
Airport Rd-State Forest Path IR	4:00-5:00	28-Jun					21	70s/Rain
Airport Rd-State Forest Path IR	4:00-5:00	29-Jun					9	60s/Humid
Airport Rd-State Forest Path IR	4:00-5:00	6-Jul					15	70s/Humid

Location	Time	Date	Helmet	Non-Helmet	Groups > 4	Bike Total	User Total	Day Type
Beach Rd Bike Path Before Triangle Intersection	1:00-2:00	9-Jul				84		Sunny/80s
Beach Rd Bike Path Before Triangle Intersection	5:00-5:45	13-Jul				52		Sunny/Cool
Beach Rd Bike Path Before Triangle Intersection	1:00-1:45	13-Jul				75		Cloudy/Cool
Beach Rd Bike Path Before Triangle Intersection	3:00-3:45	13-Jul				92		Cloudy/Cool
Beach Rd Bike Path Before Triangle Intersection	4:00-4:45	14-Jul				40		Cloudy/70s
Beach Rd Bike Path Before Triangle Intersection	6:00-6:45	14-Jul				17		Cloudy/70s
Beach Rd Bike Path Before Triangle Intersection	2:00-2:45	14-Jul				73		Cloudy/70s
Beach Rd Bike Path Before Triangle Intersection	5:00-5:45	14-Jul				46		Sunny/70s
Beach Rd Bike Path Before Triangle Intersection	3:00-3:45	23-Jul				134		Sunny/80s
Beach Rd Bike Path Before Triangle Intersection	2:05-2:45	23-Jul				135		Sunny/80s
Beach Rd Bike Path Before Triangle Intersection	1:30-2:30	28-Jul				122		Sunny/70s
Beach Rd Bike Path Before Triangle Intersection	1:30-2:30	29-Jul				101		Sunny/70s
Beach Rd Bike Path Before Triangle Intersection	3:00-4:00	29-Jul				183		Sunny/70s

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