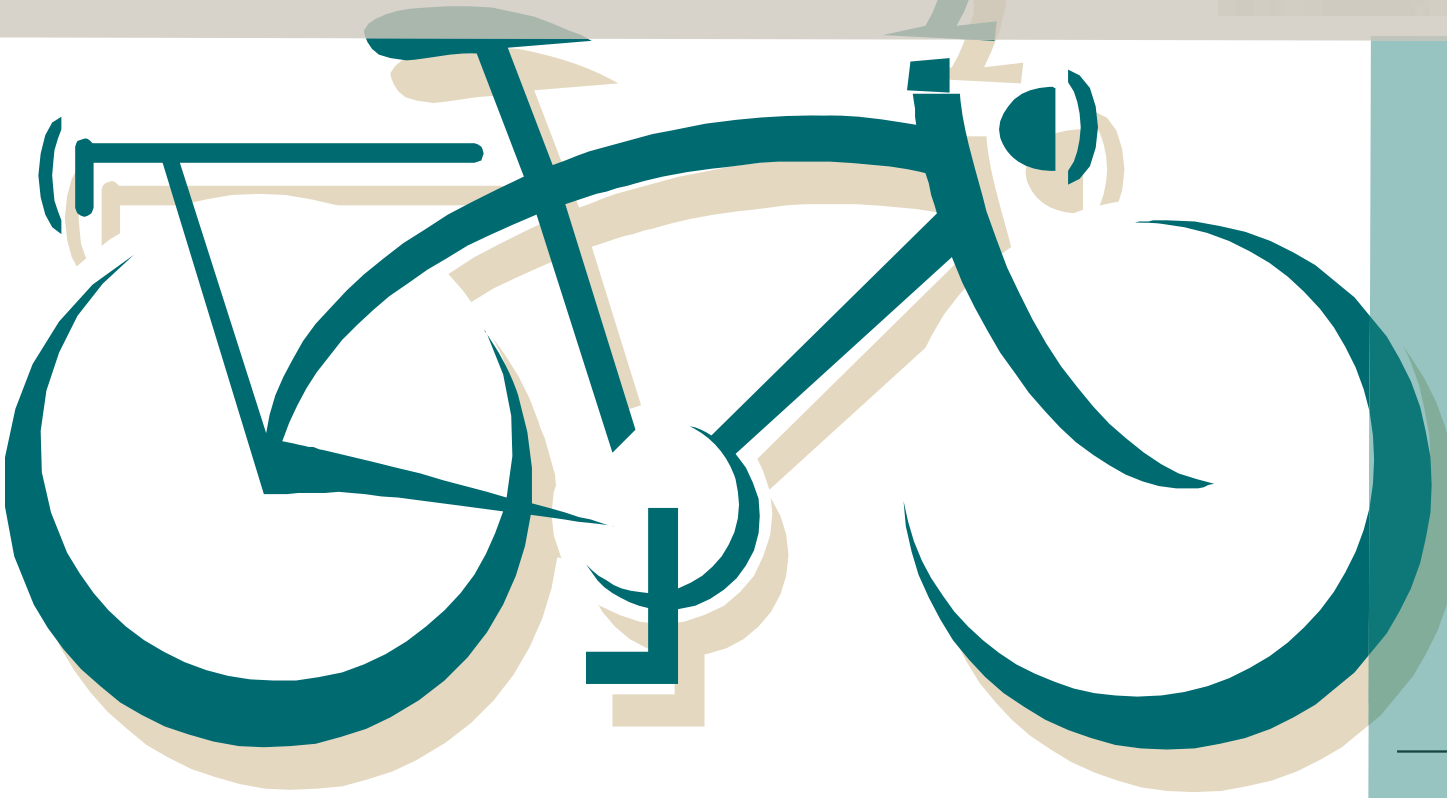
Draft

2005 New Orleans Metropolitan Bicycle and Pedestrian Plan



Regional Planning Commission

Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes

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2005

New Orleans Metropolitan Bicycle and Pedestrian Plan

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Work on the 2005 New Orleans Metropolitan Bicycle and Pedestrian Plan was wrapped up in the months preceding the devastating events of August 29, 2005. This document does not attempt to incorporate post-Katrina changes to the environment for bicycle and pedestrians. However, the volume of research reported here still stands. Overall, policy recommendations and route identification continue to be valid and applicable. We should build upon the findings in this document to direct specific attention where it is needed today.

The Regional Planning Commission wishes to acknowledge the importance of bicycle and pedestrian concerns in the aftermath of Hurricane Katrina. Now, perhaps more than ever in the history of New Orleans, we have an opportunity to institutionalize the framework for accommodating cyclists and pedestrians at the state and local levels and to implement real projects and programs within every jurisdiction in the metropolitan New Orleans area. The Regional Planning Commission is committed to this effort.

Karen Parsons, AICP
Bicycle and Pedestrian Coordinator
Regional Planning Commission

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Preface

This document represents a journey. The terrain grew difficult when multiple paths had to be explored and charted. We met many interesting people, asked scores of questions, discovered new tools, retraced our steps several times and learned a great deal along the way. The journey took five years.

In 2000, the Regional Planning Commission (RPC) recognized the general inadequacy of walking and bicycling conditions in the region. While the region had completed two previous master bicycle plan documents (1977 and 1993), on-street routes designated in those plans remained largely ignored and local cyclists in particular were frustrated by lack of attention to their transportation needs. Pedestrian issues, while considered, were historically "an accessory" to roadway design. No comprehensive pedestrian plan had ever been done.

Between 1991 and 2000, the New Orleans region successfully tackled a singular route type, the shared use path. These routes are located mainly on levees along the Mississippi River and Lake Pontchartrain lakefront and on rails to trails right-of-way. With some difficulty, we overcame jurisdictional and maintenance concerns about protecting the integrity of the levee and have happily constructed over 50 miles of paths in the intervening years.

While our region is blessed to have levee right-of-way that can host this type of facility (not many urban areas have this option), it is only one component of a comprehensive route system for bicycle and pedestrian transportation. In short, multi-use, separated paths do not fully met the mobility needs of the non-motorized community.

The need for an updated bicycle master plan and first-ever pedestrian plan for the New Orleans region was driven not only by local frustration but by relatively new federal transportation law. The Intermodal Surface Transportation Efficiency Act of 1991 or ISTEA, and the following 1998 Transportation Equity Act of the 21st Century or TEA-21, mandated that states and regions consider the needs of bicycles and pedestrians in all new construction and reconstruction projects. Further, law established a new federal funding source, transportation enhancements, that made bicycle and pedestrian facilities eligible items. Even so, adoption of comprehensive national standards to cover bicycling and walking design were slow. It was not until 1999 that the American Association of State Highway and Transportation Officials (AASHTO) published the first *Guide for the Development of Bicycle Facilities* manual.

Further, federal law does not mandate the construction of facilities or control the adequacy of local routes. Nor can it influence routes that do not use federal dollars, i.e., local streets. Paradoxically, local streets are the most heavily used cycling corridors and pedestrian areas in dense urban areas.

In addition, less tangible but more complicated and far more difficult obstructions surfaced in the course of our journey. They remain today and represent non-typical areas for engineers and planners, a programmatic challenge. These areas include education, encouragement and enforcement. There is a serious lack of education for motorists and cyclists on proper behavior in traffic and a lack of education for law enforcement officers and traffic court judges about bicycle and pedestrian related laws and the importance of each of their roles to carry out the law. In general, state and local laws are also not integrated or comprehensively addressing non-motorized challenges. Federal transportation legislation does not regulate or prioritize the educational or enforcement component.

Therefore, on-street bicycle and pedestrian inadequacies persisted even after nearly 10 years of "new" federal guidance. We discovered that systemic fallacies lay in multiple areas, many outside the control and jurisdiction of the Regional Planning Commission. Unfortunately, the combined issues have resulted in profound lack of safe conditions for cyclists and pedestrians in the New Orleans metropolitan area.

This plan is different from preceding bicycle and pedestrian planning efforts. It specifically directs analysis to the existing street network (not separate shared use paths) and dissects the number and location of crashes, regulatory, institutional, educational obstacles, as well as physical network issues, that have historically prevented the region from building and supporting a progressive non-motorized environment.

Some effort has been placed on identifying routes but only those that provide regional connections. The emphasis of this document is to support institutional change within each parish and municipality. Each jurisdiction has intimate knowledge of its streets and is better suited to identify routes within their boundaries. Our goal is to inform and guide local policy and provide insights from our unique regional perspective.

After collecting feedback from a variety of local riders, bicycling groups, and analyzing crash data, a series of problems with the local system began to crystallize. This input has been vitally important in guiding our research and shaping recommendations. Of special importance to the process was the recognition that the skill levels and therefore, needs of all bicyclists are not all alike. This is generally poorly understood by transportation officials and can have a large impact when assessing various locations for improvements or targeting education and marketing messages.

The master planning process has acted as a catalyst to help energize the broad set of bicycling and pedestrian stakeholders. The process of engagement has in turn helped us to understand complex issues surrounding bicycling and walking in our region. With each step, the project team discovered new insights that help to set the agenda for more and more tasks. It is sometimes difficult, therefore, to find the right place to "cut-off" the documentation as work is ramped up in a multitude of areas by the very process of performing the master planning effort. In short, it signals a successful process and is a great problem to have. We now better understand the individual and joint efforts needed among multiple agencies and private initiatives to make long-term cultural change.

We have been fortunate to galvanize opportunities for institutional change and seized those opportunities prior to the conclusion of this document. Some of the successes include:

- A partnership with Tulane University Center for Bioenvironmental Research, to develop a bicycle safety toolkit for colleges and universities, funded by a $50,000 grant from NHTSA.
- Language accepted and published (for the first time) in the State of Louisiana Department of Motor Vehicles Drivers Manual to address motorist behavior when driving near cyclists and also language advising cyclists on their proper behavior in traffic.
- Helping to influence inclusion of bicycle and pedestrian issues in the Transportation Element of the Master Plan for the city of New Orleans
- Application and approval for funding of 288 U- shaped bike racks in the New Orleans central business district
- Request and approval to track bicycle helmet usage in state crash reports.

The goal of this document is to provide an accurate description of all existing conditions that impact cyclists and pedestrians and ultimately effect change. While lengthy, this effort was an education and consensus building process to cultivate an environment that would accept change. We have come quite far from the institutional mindset of 2000, but it only completes the first stage of work, much like turning over the soil in preparation for planting.

True success will be a fundamental shift in our region whereby all jurisdictions, appropriate agencies, individuals and corporations internally amend their tasks and responsibilities within their power to provide a safe and secure environment for bicycles and pedestrians.

The Regional Planning Commission hopes that this document will be instructive and provide an informed picture of existing conditions that it will lead each jurisdiction to adopt a Bicycle and Pedestrian Plan with specified goals and objectives that are coordinated with their regional neighbors.

Acknowledgements

This document is truly the work of many dedicated and caring individuals with an interest in improving the conditions in our region for bicyclists and pedestrians. The Regional Planning Commission relied upon their expertise, fortitude, community service and advocacy to make this document a reality. The process of identifying and defining problems was an exploration that took us to a new understanding of real solutions for the bicycle and pedestrian environment. Without the work of any of these people, this document would be deficient. We are grateful for their personal and professional commitment to working toward safe and accommodating conditions and policies for bicycles and pedestrians.

I would like to thank Billy Fields, PhD for his thorough planning and exemplary research skills in writing and editing much of this document. His ability to work conceptually and analytically provided the needed balance between urban issues and data analysis. Billy took the disparate parts of this document and formed a whole. His knowledge and evaluation of regional demographics and urban form were invaluable in understanding the impediments of cycling in the region. He took analysis one-step further through his discovery of a new methodology to spatially analyze crash data so that we have a clear picture of where and why bicycle and pedestrian crashes occur. His spatial analysis expertise has opened the door to prioritizing corridors, areas and intersections that need special attention. Also, Billy created most of the route maps and geocoded figures included in this report.

We would like to thank Liz Davey, PhD for her strength of leadership on many fronts on bicycling issues. Thank you for your intelligent voice and the ability to get things done. She and her students at Tulane University, Department of Bio-environmental Affairs, accomplished key research and made thoughtful recommendations sensitive to the uniqueness of the region. To the students (with majors including political science, environmental sciences, architecture, public health, and history) who were guided by Liz, we are grateful for your desire to enlarge your educational experience by joining with this community initiative during your time at Tulane.

To Tulane University students, our thanks go to Adam Davidson with assistance from Dan Jatres and Liz Davey for their research on the Law Enforcement chapter. With the information gleaned from his effort, we now better understand how to create a program dedicated to working with law enforcement officers.

A great deal of hard work and analysis was done by Lexie Cervenka, Jeff Hammond, and Liz Davey with the assistance of Dan Jatres and Adam Davidson in their research and evaluation of Best Practices for the Bicycle. At the time they began this research, we were grasping for a logical strategy to tackle upgrading the street network for bicycles. We thank them for thinking through these issues for the first time and proposing solutions for uptown New Orleans.

We are appreciative of the work Lexie Cervenka, Alfred Wang and Dan Jatres with the research assistance of Jeff Hammond, Adam Davidson, and Liz Davey in writing the Education and Training chapter. They ferreted out existing programs and training guides that could be reused in our region. In addition to research, these students helped to implement fundamental policy change particularly by writing and submitting recommendations on proper driving and riding behavior in traffic, updating the State Department of Motor Vehicle Drivers Manual.Reg

We would like to thank the State Department of Transportation and Development, particularly Dan Magri and Mike Connors for their assistance in providing us with crash data. The collection of accurate and timely crash data is generally an unseen and thankless task. For their

commitment to doing this well and the Department of Highway Safety's ongoing support of safety initiatives in our region, we are immensely grateful.

Working with data is a specialty in its own right requiring great skill in filtering out appropriate information for use in spatial software programs. Many thanks go to Lynn Dupont and Xu Li at the Regional Planning Commission for detailed organizing and cleaning of data provided by the LaDOTD for advanced analysis.

Kerri Chausmer, State Department of Health and Hospitals, SafeKids program was an invaluable helpmate by producing a survey of bicycle parking concerns in the New Orleans central business district. This work helped validate a need for secure bicycle parking facilities.

Sharon Leader of Leader and Associates and Karleene Smith of GCR and Associates, were critical workers in surveying intersection conditions near transit stops in Orleans and Jefferson parishes. Over 150 intersections were reviewed and evaluated to provide us with a good picture of significant deficiencies including lighting, crosswalk visibility, signage, shelters and other amenities. Their work is extremely helpful in determining priorities for capital improvements and overall safety concerns at and near transit stops. In addition to these tasks, Sharon was instrumental in moving RTA toward purchasing Bike on Bus equipment for every bus in the fleet during the course of our study. Karleene captured and graciously shared Bike on Bus ridership data for the Jefferson Parish Transit Administration. For your hard work, sense of community and tireless dedication to transit riders in the greater New Orleans region we thank you.

Special thanks to Coan Bueche and Seema Alim at Krebs, LaSalle, LeMieux, Inc. Coan conducted research for the state law and local ordinances chapter and interviewed public officials to help us get a true picture of existing laws and public perceptions toward accommodating bicycles. Serna reviewed and summarized previous bicycle plans for the region.

Of course, no acknowledgement would be complete without thanking the advocates for change. The impetus for this report came from the concerns of local citizen advocates with an intense interest in redirecting public policy with the final product being improved infrastructure and attention to the safety of bicyclists and pedestrians. In addition, most of these individuals shared their preferred cycling routes, which was the foundation for the regional routes identified in this report.

Many, many thanks go to the following people for they are the backbone of this effort. Frank Douglass, President of New Orleans Regional Bicycle Awareness Committee (NORBAC), has been the fly in the "same old-same old" ointment for many years and never took no for an answer. Frank and Angie Laurieu provided detail on the route between the Lakefront and the Riverfront along the 17th Street canal.

Daniel Swords, Past President of the Crescent City Cyclists, quietly and effectively intervened on the status quo with vigorous letter writing campaigns and pure logic. He also identified key routes on the north shore and for New Orleans east.

Bill Keller, founder of the Mississippi River (bike) Trail initiative, epitomized the definition of a gentle but assiduous assault. He brought early attention to the need for key bicycle routes through the state and in our region and was not afraid of asking why not.

Musa Eubanks and Veda Manuel of Laid Back Tours identified the Esplanade corridor as a key regional route and have worked to elevate cycling as an enjoyable experience and economic stronghold for the region.

Raleigh Cooper for showing us how to negotiate the Jefferson Parish street system on a bicycle, a difficult task.

To Randy Legue, New Orleans Bicycle Club and Louis "Salty" Galvez, North Shore Cycling Club, for insights into the needs of the sport cycling culture and an expedient effort to quell bad bicycling law proposed during the coarse of this investigation.

Special thanks go to Brian Bowman, New Orleans City Planning Commission, for his work standardizing the write-ups done by advocates on the routes of regional significance when working for the Regional Planning Commission. Brian subsequently used his knowledge and experience to accomplish a phased bicycle route map for the city of New Orleans' Transportation Element of the Master Plan. For that, we are especially appreciative. Billy Fields, PhD also contributed by finalizing and mapping this chapter.

Many thanks to Audrey Warren for her work to establish and pilot the first Safe Routes to School program in the city of New Orleans and the state of Louisiana. Audrey contributed to the section reporting on Safe Routes to School programmatic advancements.

Finally, the staff of the Regional Planning Commission would like to thank the elected and citizen members of the Commission for allowing this study to proceed unhindered. Only fearless and resolute leadership looks deeply at their regional shortcomings so appropriate and equitable steps can be taken to improve the conditions for its citizens.

Karen Parsons, AICP
Regional Bicycle and Pedestrian Coordinator

Introduction

Introduction

Executive Summary

The New Orleans region is at the beginning stages of a much-needed transformation in its support for bicycling and walking. While the New Orleans region has a rich, historic fabric of communities that provide excellent conditions for bicycling and walking, it also, unfortunately, has a high rate of bicycle and pedestrian crashes and fatalities. Louisiana, as a state, ranks near the bottom in terms of safety of pedestrians and bicyclists, ranking 48th in terms of fatality rates for bicyclists in 2002 and 43rd for pedestrians. Within the state itself, the New Orleans region accounted for 49% of all bicycle crashes and 60% of all pedestrian crashes from 1999 to the beginning quarter of 2003. During the same period, the New Orleans metropolitan region accounted for 25% of pedestrian fatalities and 29% of bicyclist fatalities in the state.

In order to help improve walking and biking conditions in the New Orleans region, the Regional Planning Commission has undertaken this first-ever Regional Walking and Bicycling Master Plan. The Plan aims to accomplish several important tasks. First, the Plan surveys current, existing conditions for bicyclists and pedestrians. Both safety and convenience of the current network of pedestrian and bicycling routes are examined. Clear deficiencies are identified in the current system of non-motorized transportation in the region. In order to help address these weaknesses, an overview of the best practices in pedestrian and bicycling planning was conducted for the Plan. This second important task of the Master Plan provides a clear framework for evaluating future policies. The third task of the Master Plan is then to put this knowledge-base of appropriate policies to practical work in examining the existing policy programs in place to address bicycling and walking in the region. Finally, the Master Plan addresses the desired direction of future policy initiatives.

The Need for Change: Improving Safety for Pedestrians and Bicyclists

The New Orleans region's many historic communities provide the setting for some of the best walking and biking opportunities in the country. Our historic, urban form lays the basis for much of tourist industry and helps to create the foundation for much of our distinctive quality of life. Unfortunately, this quality of life is increasingly threatened by the poor safety conditions for pedestrians and cyclists moving through our communities.

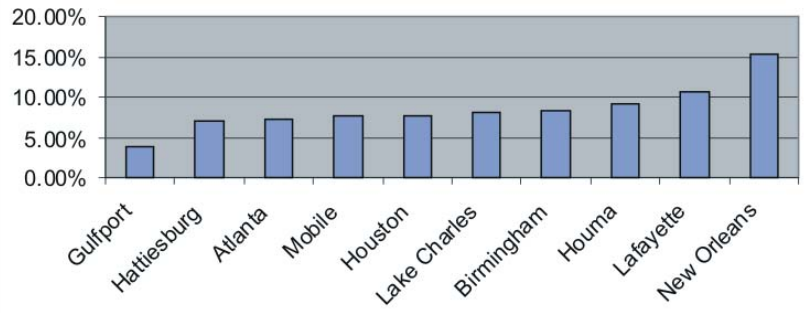
Louisiana, as a state, ranks near the bottom in terms of safety of pedestrians and bicyclists, ranking 48th in terms of fatality rates for bicyclists in 2002 and 43rd for pedestrians. Within the state itself, the New Orleans region accounted for 49% of all bicycle crashes and 60% of all pedestrian crashes from 1999 to the beginning quarter of 2003. During the same period, the New Orleans metropolitan region accounted for 25% of pedestrian fatalities and 29% of bicyclist fatalities in the state.

Another way to think about the extent of the problem is to examine the large number of residents that are impacted by the crash problem. During the full years 1999 to 2002, 1,806 bicycle crashes and 2,878 pedestrian crashes were reported to the police. That is 1.2 bicycle crashes and 1.9 pedestrian crashes per day for the period. When bicycle and pedestrian crashes are combined, cars hit a total of 4,684 people during the 4-year period. That is, 3.2 bicycle and pedestrian crashes per day for the entire 4-year period for metropolitan New Orleans.

This poor safety situation makes it difficult for many metro area residents to safely and efficiently move throughout the region. In the New Orleans region, 15.3% of households do not own vehicles. This places the New Orleans metropolitan area well above other regional cities (Figure 1). Because of the relatively lower rate of personal vehicle ownership, a fairly large portion of the metro area population is more reliant on walking, biking, and transit for movement around the region.

Unfortunately, this reliance places many of these residents at risk. A geographic analysis of crash patterns undertaken for this Master Plan found that a disproportionately high number of crashes are occurring in high poverty census block groups. For example, in Orleans Parish, 78% of crashes occurred in or within a quarter mile of high poverty (>40%) census block groups.

Figure 1
Gulf South Comparison: Percentage of MSA Households without Vehicles (2000)



In order to help ensure that pedestrian and bicycling improvements are incorporated in new designs, the Master Plan seeks to help build awareness about the important design issues that can help make the difference between unsafe and uninviting streets and well-used, safe corridors. The best practices in bicycling and pedestrian planning are identified and should form the basis for future design guidelines for work in the metro area.

Federal Guidance for Improving Walking and Biking Conditions

The work on this Master Plan has documented the need for improved planning for bicycling and walking for our region. In addition to the obvious need to improve safety conditions in our region, current federal transportation legislation makes it clear that the provision of safe and convenient walking and bicycling facilities are to be considered in all new transportation projects where cyclists and pedestrians are legally permitted. The Transportation Equity Act of the 21st Century, the main federal transportation bill, says that:

> Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation projects, except where bicycle and pedestrian use are not permitted
> TEA-21 Section 1202.

This direct federal guidance helps to set a constructive direction for local walking and biking policy initiatives. This policy direction provides the overarching guidance for the creation of this updated bicycle master plan and first-ever pedestrian plan for the New Orleans region.

Organization of the Master Plan

The Master Plan is designed to be used as a reference guide for both local government officials and the public at large. The Master Plan is divided into several sections. First, the basic governmental framework for addressing bicycling and walking issues in the region is established in Chapters 3 and 4. Second, the existing conditions for bicyclists and pedestrians are surveyed in Chapters 5 through 10. Finally, Chapters 11 through 17 cover implementation issues.

This Master Planning effort has acted as a catalyst to begin the comprehensive assessment of bicycling and walking issues in the New Orleans area. The Master Plan provides a strong foundation for understanding the current strengths and weaknesses of bicycling and walking in our region. With these current conditions clearly in mind, the Plan worked to set a series of benchmarks for improving conditions for bicycling and walking in our region. These goals provide a basic frame-

work for addressing how policy efforts are working to improve bicycling and walking.

This Master Plan provides a clear overall direction for policy decisions affecting bicycling and walking. It does not, however, lay out a fully formulated set of specific policies for achieving these goals. This Master Plan has been the first full-fledged effort to address bicycling and walking in the New Orleans region. As such, the first task in the process has been to build awareness and consensus about the importance of bicycling and walking to the region. Translating this awareness into a systematic set of policy actions is the next important step in the transformation process. While the region has seen a number of good ad-hoc projects, these efforts have traditionally not been tied to an overarching policy document setting out specific goals, policies, objectives, and action items. This should be the next step in working to improve bicycling and walking conditions in our region. This important step will require a concerted effort to coordinate regional policies for bicycling and walking.

The Regional Planning Commission is committed to expanding the constructive framework set out in this Master Plan to help improve bicycling and walking conditions in the New Orleans region. This Master Plan has begun to build a strong base of committed local officials who are working to improve conditions in our area. The RPC will work to keep this strong momentum going to help improve bicycling and walking conditions in the region.

Existing Studies

This chapter briefly summarizes the existing bicycle evaluations completed for the region within the last 30 years. Included you will find summaries of:

- Metropolitan Bicycle Path Plan (1977)
- New Orleans Bikeway Plan (1976/adopted by New Orleans City Planning Commission (CPC) in 1979)
- New Orleans Metro Bicycle Plan (1993-94)
- Mandeville Bicycle Route Master Plan (1993)
- Tammany Trace Master Plan (1993)
- New Orleans Rails to Trails Feasibility Study (1994)
- The Pontchartrain Trace – Master Plan (1997)
- Recreational Trail Corridor – Westwego to Harvey Canal Protection Levee by the National Park Service, Denver Service Center (1998)
- Gretna Bicycle Path (1999)
- Statewide Bicycle and Pedestrian Master Plan (1998)
- New Orleans Area Welfare to Work Job Access (2000)
- Plaquemines Parish Bike Path Plan (2001)
- Proposed Bicycle Plan for Slidell (2001)
- Proposed Bicycle Plan for St. Bernard (2001)

These planning documents were the precursors to building the Jefferson Davis bikeway over I-10, the St. Anthony median path, the St. Tammany Trace, the Jefferson Parish Linear bike paths on Lake Pontchartrain, and the Mississippi River levee trails. Most plans were prepared for the Regional Planning Commission for Jefferson, Orleans, Plaquemines, St. Bernard, and St. Tammany Parishes except as noted.

Metropolitan Bicycle Path Plan
(1977)

This study conducts a survey of 312 residents of St. Bernard Parish on perceived bicycle encouragement and discouragement factors and activity on a bike. It builds upon completed 1975 Orleans Parish and 1976 Jefferson Parish bicycle path plans, each summarized for inclusion in the 1977 report. The 1976 Jefferson plan was not found for inclusion in the 2005 review of plans.

Major factors resulting in identifying routes were safety, convenience, scenic/aesthetic, comfort/continuity and cost/staging of work. Routes were selected by the consultant and then reviewed by the public.

The 1977 plan explains that the St. Bernard analysis uses the same classification system as the 1975 Orleans and 1976 Jefferson plans described as:

Class 1
Exclusive rights-of-way for bicycles, separate and apart from motor vehicles. May be adjacent to existing roadway physically separated from vehicular traffic; or, may be located away from roadway, i.e., in neutral grounds, or alongside levees, open spaces, etc.

Class 2
Located in roadway right-of-way adjacent to but separated from vehicular traffic by a barrier curb; or may be located on a paved strip adjacent to an existing sidewalk.

Class 3
Located on existing roadways with no physical separation between vehicular and bicycle traffic. For the protection of the bicyclist, signing and striping of Class 3 bikeways also should be provided.

- The St. Bernard plan designates a network of 28 miles of routes in St. Bernard Parish and estimates the costs to implement the named streets and paths at a total of $1,171,605.

- The Orleans Parish plan designates a network of 76 miles of bikeways at a cost of $3,232,830.
- The Orleans Levee Board plan designates a network of 10 miles of bikeways at a cost of $73,038.
- The Jefferson East Bank plan designates a nework of 159.2 miles of bikeways at a cost of $5,468,396.
- The Jefferson West Bank plan designates a network of 114.9 miles at a cost of $9,529,393.

New Orleans Bikeway Plan

(1976 and adopted by the City Planning Commission in 1979)

This document notes that the first Orleans Parish bikeway plan was adopted by the City Planning Commission in 1972 which included 70 miles of bikeways. It states approximately 11 miles were implemented but does not note what work was done. The 1972 Orleans plan was not found for inclusion in the 2005 review of plans.

Class I bikeways are described as completely separate facilities from autos with a minimum of a 4 foot travel lane in each direction (8 feet total width). 14.2 miles of proposed Class I bikeways are located on medians, 22.3 miles are located on levee, and 8.5 miles are located on street right-of-way. One significant difference between the 1975 Orleans plan and the 1977 plan is the description of the Class II bikeway. The 1975 plan denotes that autos would be separated from bikeways by distinctive striping. The 1977 plan describes Class I bikeways are those where autos and bikes are separated by a barrier curb.

The Jefferson Davis Parkway median between Calliope Street and Orleans Avenue was constructed for $146,000 as a Class I bikeway by the publication of the document.

Additional typed footnote states that the St. Anthony Avenue median path between Mirabeau and Leon C. Simon avenues was constructed along with the re-construction of the roadway (5,500 ft.) at a cost of $208,737 in 1983.

Comments on the plan include many of the same concerns as we see today including:

- unsafe conditions created by median located paths
- establishment of regional routes
- more focus on work trips rather than recreation trips
- acknowledgement of the racing community needs
- negative public view of building facilities for bikes when the streets are in a state of disrepair.

State and city laws pertaining to the bicycle are appended.

New Orleans Metro Bicycle Plan

(1993-94)

The study covered Jefferson, Orleans, St. Bernard and Plaquemines parishes and proposed the alignment of bikeways for these parishes. The study also focused on the following:

Evaluation of Bikeways

Bike routes were evaluated with reference to:

- Potential Hazards
- Accessibility
- Directness
- Proximity to Commuter Destinations

Classification of Bikeways by Type

The study defined the following three types of bikeways:

- Bike Routes - Roadways shared with other vehicles.
- Bike Lanes - 5 foot lanes on each side of existing roadway plus space between lane and vehicular traffic, often developed by improvement of existing shoulders and requires signage.
- Bike Paths - Grade separated 12 foot wide spaces with 2 foot shoulders; most expensive.

The proposed alignment has not been classified on the basis of the above 'types'. The study categorized the proposed alignment into three Priority Categories (I, II and III). However, it was not clear what criteria were used to derive the prioritization.

An inventory of bike parking facilities is included in the study. Funding and Implementation Strategies are discussed in the study report. (See report for details.)

Funding sources such as the Transportation Enhancement funds and local Surface Transportation Programs (STP) enabled by the Intermodal Surface Transportation Efficiency Act (ISTEA) are discussed as options for funding.

Tammany Trace Master Plan (1993)

The Tammany Trace Master Plan was developed for St. Tammany Parish in 1993. The efforts to develop the Tammany Trace started with the ICG Railroad's decision in 1989 to abandon 31 miles of rail corridor between Slidell and Covington. In 1992, St. Tammany Parish was able to purchase this corridor which is known as Tammany Trace using Rails to Trails funding. The Tammany Trace Master Plan Study looked at the various improvements possible to maximize the potential for transportation, recreation, tourism and economic development opportunities of the Trace with due cognizance to the environmental, jurisdictional, public liability and safety issues. Development of bikeways, walking and jogging paths, and equestrian facilities were considered in this study.

The study contained a discussion of similar trails in other parts of the country with reference to available facilities, issues of management, jurisdiction, liability, safety, etc. The study developed recommendations for the facilities design criteria, safety and signage requirements, administrative and management structure.

The design criteria and standards proposed in this study include the *Architectural Graphic Standards Handbook* for walking and jogging path design, AASHTO 1991 *Standards for Bicycle Facilities, Manual of Uniform Traffic Control Devices* (MUTCD) for signage, and *Construction and Maintenance of Horse Trails* by the Arkansas State Parks for equestrian facilities. The study recommends that all facilities be in compliance with the American with Disabilities Act (ADA).

Mandeville Bicycle Route Master Plan (1993)

This plan was adopted by the Mandeville Planning Commission as part of the Comprehensive Land Use Plan on November 23, 1993 and by Mandeville City Council on December 9, 1993. Study objectives were to connect the Mandeville lakefront with the planned Rails to Trails corridor and to identify collector bicycle routes through residential sections of Mandeville to enable connections with principle bicycle routes.

Identified Principal Routes

East-West Routes - The eastern section of the rail corridor from the intersection of US 190 and the East Causeway Approach west to Florida Street to State Highway 22 to Madisonville.

North-South Routes - The rail corridor north to Abita Springs and Covington.

Lakefront Access - Separate path along the lakefront from Jackson Avenue to Sunset Park

tying into Massena Street. From the West - West Beach Parkway from Lakeshore Drive to Monroe Street, Monroe Street west to Massena Street. From the north - Gerard Street. From the east - Jackson Avenue from Lacombe.

Collector Routes

- LA 1088, Viola Street, Soult Street Corridor
- Sharp Road
- CLECO/Pipeline Corridor east of Bayou Castine to the rail corridor
- US 190/LA 22 beginning at the East Causeway Approach and continue through the Causeway intersection onto LA 22 to the intersection of the West Causeway Approach and LA 22.
- Fairway Drive Extension
- US 190 East Service Road between CLECO easement and Sharp Road

New Orleans Rails to Trails Feasibility Study (1994)

The New Orleans Rails to Trails Feasibility Study was completed by the RPC in 1994. The purpose of this study was to inventory the rights of way (ROW) within the New Orleans metro area, which have been identified for abandonment, with a view to developing these for alternative modes of transportation such as biking, pedestrian trails as well as extension of street cars and light rail transit. The main objective of this study was to:

- Develop an inventory of existing rail ROW within New Orleans and Slidell for purposes of landbanking.
- Establish procedures for landbanking that have statewide application.
- Develop a methodology to include information on length, costs/benefits of acquisition, etc.

Inventory of Existing Railroad Tracks

The research during this study indicated the following data about various railroads in the area:

Louisiana and Arkansas Railway (L & A)
This railroad company had abandoned 4,060 feet of line between mileposts 855.6 to 856.37 and 28,275 feet between mileposts 856.78 to 862.14 which is a total of 6.12 miles.

Illinois Central (IC) Railroad
It was noted that IC had abandoned 17.3 miles of tract between Slidell and Talisheek. The ROW from Covington to Slidell (31miles) had been acquired by St. Tammany Parish for the Tammany Trace.

Illinois Central (IC) Railroad, St. Charles Parish
Consolidation of 3 lines to one will result in abandonment of some tracks.

Southern Pacific Transportation Company
This railroad company abandoned rail ROW on the westbank in Gretna.

KCS Rail Spur
KCS Spur to be used for improving access to the Earhart Expressway.

New Orleans Public Belt Railroad (NOPB)
Part of this track has been considered by RPC for light rail development.

Legislation Relevant to Landbanking

The study lists the following legislation as mechanisms for landbanking for the specific purpose of converting abandoned rail tracks as bikeways and trails:

- LA Rails to Trails: Title 56, Part V, Chapter 6, Louisiana R.S. of 1950, R.S. 56:1780-1784, 1990
- The National Trail System Act (16 U.S.C. 1247)

- Symms National Recreational Trails Act 1991
- Intermodal Surface Transportation Efficiency Act (ISTEA) 1991

Procedures for Landbanking

The procedure for landbanking described in this study involves the following steps:

- Process may be initiated through a notice to the Interstate Commerce Commission (ICC)
- Obtain Certificate of Interim Trail Use (CITU)
- Obtain Notice of Interim Trail Use (NITU) This is issued when an exempt abandonment is involved.

The Pontchartrain Trace Master Plan
(1997)

This plan proposed connecting all parishes along the north and south shores of Lake Pontchartrain. Bikeway alignments are proposed for St. John, St. Charles, Tangipahoa and St. Tammany parishes that will connect with existing and proposed bikeways in Jefferson, Orleans, Plaquemines and St. Bernard parishes. This study researched the management methods and socio-economic impact of similar Rail-Trails in Wisconsin, California, Illinois, Tammany Trace in St. Tammany Parish, Louisiana, Iowa, Florida, Minnesota, Washington D.C. as well as studies by the National Park Service. The main topics discussed in the study include:

Tammany Trace

The study report contains a detailed description of the route alignment, management, and costs of the Tammany Trace project in St. Tammany Parish.

Proposed Route for Pontchartrain Trace

The proposed route of Pontchartrain Trace as it passes through individual parishes along with a description of each route is included in this report.

Design Criteria and Standards for On- and Off-Street Facilities for Bikeways

- AASHTO Standards are Recommended for Design of Bike Facilities
- MUTCD Standards for Traffic Control and Signage
- Requirements for Intersection Design, Lighting and Landscaping, provision of ramps for entry and exit are discussed.

Cost of Development

Typical unit costs for various types of bikeways and associated facilities have been developed as part of this study. The study also assigns cost to each segment of the proposed alignment based on type of improvements recommended.

Funding Strategies

- Funding under Federal ISTEA 1991 Sections 1007(a)(1)(b)(3), 1007(b)(2)(C)(c) and 1008.
- Department of Interior's River, Trails and Conservation Assistance program.
- Specific Congressional Appropriations
- LaDOTD
- Citizen's Initiatives
- Lottery Receipts
- Dedicated Sales Tax
- Dedicated Millage
- Parcel Fee
- Development Agreements

Management Approaches

The following approaches to management and their relative advantages and disadvantages are discussed in the study report:

- Cooperative Inter-governmental Authority

- Non-profit Organization
- Recreation District
- Special District
- Micro Management

Recreational Trail Corridor

Westwego to Harvey Canal Protection Levee (1998)

This study was conducted by the National Park Service, Denver Service Center for the U.S. Army Corps of Engineers (USCOE) in 1998. The study extends the concept of conversion of rail corridors to walking and bike paths and proposes a bike path along the 22 mile levee and floodwall, planned in the Westwego-Harvey Canal right of way. This corridor connects Bayou Segnette State Park with the Barataria Preserve Unit of Jean Lafitte Historical Park. The study identified and described the areas of interest in the vicinity of the proposed path such as Bayou Segnette State Park, Barataria Preserve, Bayou Aux Corps, Lake Cataouatche, towns of Westwego and Gretna, Crown Point, River Promenade in Gretna, ferry landing and Audubon Park. The study proposed that the interpretive opportunities and the historic stories related to the various landmarks along the route be made a feature of the route and presented to enhance the educational and recreational aspects of the bike route.

The study also reviewed related planning efforts such as:

- Federal planning for the Barataria Preserve and USCOE studies for levee walls in St. Charles Parish and Jefferson Parish.
- State and Local Planning: West Barataria Corridor Study by the University of New Orleans, RPC's Bike Path Master Plan, Jefferson 2000, Community Asset Development Plan, Bayou Segnette Corridor Study, Jefferson Parish Recreation Master Plan, Bayou Segnette State Park Master Plan Report and Jefferson Parish Bicycle Path Plan (1975).

A three-phase implementation plan was developed for the proposed alignment which was tied to the levee construction along this corridor. Trail design criteria for various sections of the alignment were presented. Finally, the study attempted to address associated issues of land ownership and liability.

Gretna Bicycle Path (1999)

This study proposed a loop alignment connecting the Gretna/Jackson Avenue ferry, Mississippi Levee, downtown Gretna, and the Westbank Expressway.

General design and signage, landscaping, lighting and intersection requirements for various types of bikeways are presented in the study. Besides cost estimates for typical improvements, the study indicates the cost of improvement of individual sections along the proposed alignment. Funding alternatives and an implementation strategy were also included in the study.

Statewide Bicycle and Pedestrian Master Plan (1998)

This study was completed in 1998 for the Louisiana Department of Transportation and Development. The study compiled the statewide data on bicycle usage and biking facilities. It presents information about the existing facilities in various parts of the state, statistics about bike related accidents and fatalities, and the type of improvements that would encourage greater use of bikes. The report presents detailed general design criteria researched by the Federal Highway Administration as well as design and drafting standards for bike and pedestrian facilities.

New Orleans Area Welfare to Work Job Access (2000)

The study was commissioned by the RPC to address the problem of transportation for people making the transition from welfare to work. The study was inspired by

the "Job Access and Reverse Commute Grant Program" under the 1998, Transportation Equity Act (TEA-21) which allowed states to develop flexible transportation programs to provide transportation services to connect welfare recipients and other low income area residents to employment centers. The study identified gaps and deficiencies in the existing transportation system that do not allow the system to meet the needs of welfare recipients and low-income area residents to access employment opportunities. The transportation deficiencies were looked at on a parish basis. This study represents one of the earliest efforts by RPC to combine Geographic Information Systems (GIS) techniques to analyze the transportation deficiencies. JAMS (Job Access Measurement System) a GIS tool designed to work in MAPINFO was used.

Plaquemines Parish Bike Path (2001)

This study is an expansion of the 1994 Master Plan for Plaquemines Parish in which bike paths had been identified along existing levees. The report describes and evaluates the proposed routes with reference to:

- Other existing bike and recreation paths in the area (Pontchartrain Trace, Woodlands Multi-use Trail, Mississippi River Trail, Great Louisiana Coastal Birding Trail).
- Potential points of interest within the project area
- Ownership of land
- Jurisdictional issues
- AASHTO *Guidelines for Bike Paths, Bike Lanes, Signed Shared Roadways*, LaDOTD Guidelines, Equestrian Guidelines, Guidelines for Construction & Maintenance of Horse Trails
- Permitting requirements
- Demand for bicycle facilities (population based and general demand)
- Criteria for selection of alignment, location of trailhead
- Proposed for alignment
- Design and Construction Criteria, Standards (AASHTO & ADA) and Cost Estimates
- Implementation phasing, funding, operations and maintenance and security

The report also focuses on issues and problems in adopting routes along the levees such as:

- Private ownership of land on which levees have been constructed
- USCOE has servitude for construction of levees while Plaquemines Parish is responsible for maintenance
- No levee district in this parish
- Levees are for flood protection and there is no requirement to use them for recreational purposes.
- Several physical obstacles extending across crown of levee
- Provision for coordination with a separate plan to develop an equestrian trail along the proposed bike path.

Proposed Bicycle Plan for Slidell (2001)

This study focused on the Slidell area and included:

- Proposed alternative bike route alignments for the Slidell area and existing streets
- Costs of the proposed alternatives and funding sources
- Implementation strategy

The proposed alignment options recommended in this study are:

- Proposed Pontchartrain Trace to railroad depot (8.3 miles)

- Main north-south route from Oak Harbor to the Interstate (6.4 miles)
- Interim links between Pontchartrain Trace and Tammany Trace (about 4 miles in length)
- Neighborhood routes (5 routes about 25 miles in length).

Other general topics covered included types of bikeways and bike path ratings based on safety and driver skill. (Major bicycle routes are classified as "A" while neighborhood routes are designated "C". When "C" routes are linked with "A" they are considered upgraded to "B").

Proposed Bicycle Plan for St. Bernard (2001)

The study focused on St. Bernard Parish and proposed that a 10-mile stretch of river levee in St. Bernard Parish be used for a bike path that would join the levees in Orleans and Jefferson parishes thus connecting the parish with other parts of the New Orleans metro area. This study proposed the following alignment for the bikeways in St. Bernard Parish:

Figure 2

Segment	Alignment
1	■ Orleans/St. Bernard Parish line to Center Street ■ Center Street to LA 47 (Paris Road)
2	■ LA 47 to Lake Borgne Levee Administration Building
3	■ Lake Borgne Levee District Administration building to Montenlongo Lane ■ Montelongo Lane to St. Bernard Parish/Plaquemines Parish line

Other issues discussed in the study included:

(a) Entities that can play a role in the St. Bernard Parish bike path development:
- American Heritage Rivers Initiative (AHRI)
- Mississippi River Trail (MRT)

(b) Legal issues related to use of levees and restrictions imposed by private landowners

(c) Operation and maintenance costs & responsibilities

(d) Funding Options
- TEA-21, reserve funds, revenue bonds, lease purchase, special assessments, state and ederal grants

(e) Phasing
- Proposed phasing priority was segment 2, 3 and finally 1.

Best Practices in Bicycle and Pedestrial Planning

Best Practices in Bicycle and Pedestrian Planning

Introduction

This chapter provides an overview of the best current practices in pedestrian and bicycle planning. This primer is designed to provide a straightforward introduction to citizens and policymakers who want to expand their knowledge of the basic elements of good pedestrian and bicycle planning. It utilizes specific, local examples to help articulate the context of pedestrian and bicycle planning in the New Orleans region.

At the heart of these best practices is the fundamental observation that the appropriate design of the built environment is crucial to increasing and improving the opportunities for citizens to walk and bike in our communities. For years the public streets around the country have been designed for the near-exclusive use of automobiles. The underlying assumption was that the only legitimate users of the streets were motorized vehicles. While this simple assumption helped to create a widespread network of automotive connections in our cities, it also resulted in the erection of significant barriers to other legitimate users of the transportation system. Increasingly, citizens, policymakers, engineers, and planners have begun to recognize that one important way to improve the quality of life and safety in our communities is to improve the connections for pedestrians and bicyclists.

While appropriate design for pedestrians and bicyclists can sometimes involve difficult policy decisions, the basic elements of good design are fairly straightforward and can be incorporated into routine transportation planning and design. The region should consistently employ good design guidelines when building new facilities or retrofitting existing roadways. Appropriate design, at its core, involves incorporating the particular design needs of pedestrians and bicyclists into the fabric of the transportation system.

This chapter examines the design needs of pedestrians and bicyclists in the diverse settings that make up the New Orleans region. The chapter begins by examining the best practices in pedestrian planning. This is followed by an examination of the best practices in bicycle planning.

Best Practices: Pedestrian Planning

Successful design of any project is based on satisfying the specific needs of the desired users of that design. The designer examines who will use the design, what the design will be used for, and how best to satisfy those needs and constraints. This rather simple equation, when applied to pedestrian planning, can provide a great deal of guidance for creating well-designed places. Successful planning for pedestrians requires that the designer address the unique movement needs of pedestrians.

In the past, engineers and planners designed roads based on the specific needs of automobiles. Roadway designs were based on calculations of vehicle speeds and turning radii. Traffic signals were timed for the efficient movement of these vehicles. The engineering equation that produced the contemporary road system simply assumed that the only design users of the system would be automobiles. Over the last ten years, this equation has changed as federal law and the engineering manuals have mandated that pedestrians and bicyclists be included into the design equation as legitimate users.

Pedestrians as Design Users

To help integrate pedestrians into this new equation as legitimate users of the transportation system, designers must understand the different types of pedestrians and understand how and why pedestrians use the transportation system. Pedestrians come in different shapes and sizes ranging from elderly pedestrians attempting to cross the road to disabled individuals utilizing wheel chairs along sidewalks to joggers running alongside the road.

An example of planning for pedestrians at stoplights can help to show how planning for pedestrians as design users works. Stoplight cycles have traditionally been timed to maximize the flow of auto traffic through

an intersection. As a concession to pedestrians, traffic engineers have begun to include the time it takes for an average pedestrian to cross the street into their equations. The average pedestrian's ability to cross the intersection has been improved by this new calculation. Not all pedestrians are "average," however. The emerging standard, especially in areas where large numbers of elderly pedestrians are present, involves utilizing a more universal design standard to calculate pedestrian crossing times. The National Center for Bicycling and Walking (2004) provides an excellent example of the changing timing standards. They point out, "The MUTCD (*Manual of Uniform Traffic Control Devices*) assumes normal walking speed to be 1.2 meters per second (4 feet per second). However, the use of 1.1 meters per second (3.5 feet per second) as a walking speed in calculations is becoming more common. Consider using 0.9 meters per second (3 feet per second) where there is a high frequency of older pedestrians. Some people with mobility impairments move as slow as 0.8 meters per second (2.5 feet per second)" (p. 3).

Incorporating universal design principles helps to create street environments that are easily accessible by people of multiple ability levels. The FHWA's (2003) booklet, *Accessible Sidewalks and Street Crossings*, is an informational guide which provides more information on these emerging principles.

Operationalizing Pedestrian Connectivity

The goal of pedestrians, just as with car drivers, is to move from point A to B with the least interruption and difficulty possible.[1] Because pedestrian speeds are relatively slow, their trip lengths are far shorter than automobiles. Because the average pedestrian trip is less than half a mile (Turner-Fairbank Highway Research Center 2002, p. 4), any interruption that causes the pedestrian to alter his or her course can play a significant role in decreasing the viability of walking. Conversely, a system with a high level of connectivity for pedestrians can significantly increase the viability of walking.

Understanding the key pedestrian planning concept of connectivity is vital to successfully increasing the viability of walking. The number and placement of interruptions in the system help to define the overall level of connectivity of the system. There are two basic types of interruptions that can decrease the connectivity of the pedestrian system. The first major and obvious interruption in the system for pedestrians is the lack of sidewalks or other designated places for pedestrians to travel. Without this most basic connectivity element, pedestrians are forced to walk in the street itself. When there are low-traffic volumes and slow speeds, the lack of sidewalks is often tolerated by pedestrians. When the traffic volumes increase and speeds become faster, the situation becomes both a serious obstacle to increased walking and a significant safety problem.

The second major element defining the level of connectivity is the type of street crossing provided. The types of street crossings can range from providing no special pedestrian facilities to the provision of crosswalks alone to providing crosswalks along with other pedestrian enhancements (Zeeger et al. 2002, p. 26 and 27). Depending again on the volume and speed of traffic, the type of crossing of the street that is provided can make a significant difference in a pedestrian's ability and comfort level in crossing a street. Zeeger et al. (2002) note that, "The level of connectivity between pedestrian facilities is directly related to the placement and consistency of street crossings" (p. 2).

Identifying Pedestrian Treatment Options

Numerous treatment options exist to help improve the safety of pedestrian street crossings. The Transportation Research Board's (TRB) *Guide for Reducing Pedestrian Col-*

[1]One significant factor that is implied in the above equation is that there is a destination, a point B, that the pedestrian wants to reach. Land use decisions and zoning play a large role in determining the extent to which the landscape has multiple destinations within a short distance that will help to encourage walking trips. Duany, Plater-Zyberk and Speck (2000) sum up the situation this way: "The first rule is that pedestrian life cannot exist in the absence of worthwhile destinations that are easily accessible on foot" (p. 64).

lisions (2004) provides an excellent summary listing of these various treatments. This comprehensive guide breaks down treatment options into four major goal areas that are most frequently used by planners and engineers around the country to improve pedestrian safety. The four major objectives that generally are used to improve pedestrian safety are:

1. Reduction of pedestrian exposure to vehicular traffic
2. Improvement of sight distance and visibility for motor vehicles and pedestrians
3. Reduction of the speed of motor vehicles
4. Improvement of pedestrian and motorist safety awareness and behavior (p. V-1).

To implement these four objective areas, there are a variety of specific treatments that can be used. Many of these treatments have a proven track record of success. These treatments have been studied extensively and have been shown to be successful. Other treatments have a more limited track record of success. These treatments may have been tried in just a few communities around the country, or they may be experimental treatments used in a small study area. The TRB guide provides an excellent list of both the types of treatments and their track record of success (Figure 3).

Deciding where and when to select one or more of these treatments, in many ways, helps to define the best practices for pedestrian planning. The next section helps to describe further the specific treatments through a discussion of how these treatments can be operationalized in the New Orleans area.

Best Pedestrian Planning Practices in Action

With the basic components of the concept of connectivity in mind, it is now possible to analyze the specific best practices for pedestrian planning. The best practices are defined for three different types of locations: dense, urban streets, suburban streets, and rural highways. These three types of locations are the predominant street types in the New Orleans metropolitan area. The best practices help to define how to create a highly connective pedestrian network that can help to increase levels of walking by creating a safer and more pleasant walking environment.

Figure 3
Transportation Research Board 2004, page V-2

Objectives	Strategies	Strategy Type
Reduce Pedestrian Exposure to Vehicles	Provide Sidewalks/Walkways and Curb Ramps	Proven
	Install or Upgrade Traffic and Pedestrian Signals	Proven, Tried, Experimental
	Construct Pedestrian Refuge Islands and Raised Medians	Proven
	Provide Vehicle Restriction/Diversion Measures	Proven, Tried
	Install Overpasses/Underpasses	Proven
Improve Sight Distance and/or Visibility between Motorists and Pedestrians	Provide Crosswalk Enhancements	Proven, Tried
	Implement Lighting/Crosswalk Illumination Measures	Proven
	Eliminate Screening by Physical Objects	Tried
	Signals to Alert Motorists that Pedestrians are Crossing	Tried, Experimental
	Improve Reflectorization/Conspicuity of Pedestrians	Tried
Reduce Vehicle Speed	Implement Road Narrowing Measures	Tried
	Install Traffic Calming-Road Sections	Proven, Tried
	Install Traffic Calming - Intersections	Proven, Tried
	Provide School Route Improvements	Tried
Improve Pedestrian and Motorist Safety Awareness and Behavior	Provide Education, Outreach and Training	Proven
	Implement Enforcement Campaigns	Tried

■ *Dense, Urban Streets*

Most of the core area of New Orleans is composed of a traditional grid street system that helps to create a fairly dense urban landscape. This framework creates some distinct benefits and constraints that should be addressed in pedestrian planning.

First, the close distances between destinations and the dense fabric of the city make the provision of sidewalks a crucial element in the pedestrian transportation system. People can and will walk to destinations. The provision of a continuous sidewalk system is a crucial first step in assuring that they can successfully move within the system.

While most streets in New Orleans have sidewalks, there are some conspicuous breakages in the system that should be addressed. Often, spotting desire lines, the worn paths created by pedestrians moving along a grassy area, can help identify these breakages. These desire lines can often be found in neutral grounds and along the edges of roads in the New Orleans area. The desire lines provide direct confirmation of both the current use of an area by pedestrians and the need for a formal connection.

In addition, the quality of the surface of the sidewalks and the placement of street furniture and light poles can also seriously affect mobility. This is especially true for the disabled population. Excellent, concise guidelines are available to help guide planners and designers in meeting ADA requirements for sidewalk accessibility. One of the best guides is found in the FHWA (2001) course book on bicycle and pedestrian transportation. Chapter 17 of this course book provides a focused discussion of the particular needs of different elements of the disabled population and provides detailed diagrams showing how best to meet these needs. (This guide is available at http://safety.fhwa.dot.gov/ped_bike/univcourse/swtoc.htm). In addition, the previously mentioned FHWA (2003) booklet, *Accessible Sidewalks and Street Crossings*, is an informational guide which provides a good overview of the design needs of the disabled population.

The process of crafting the planning and engineering guidelines to meet the ADA requirements provides an excellent opportunity to consider the overall quality and accessibility of the sidewalk system. The city of Portland's influential *Pedestrian Design Guide* (1998) provides a strong, usable framework for understanding the basic components that help to create well-designed sidewalk corridors. The guide identifies four basic zones of the sidewalk corridor area.

Stretching from the street to the property line, these zones are the curb zone, the furnishings zone, the through pedestrian zone, and the frontage zone. The curb zone helps to define the pedestrian space by preventing cars from entering the area and helps to provide clues to help disabled citizens locate the edge of the street. The furnishings zone helps to provide a buffer for pedestrians and should be the location for any utilities, signs, or street furniture. To help create an effective buffer for pedestrians, street trees should be installed where there is proper width. The through pedestrian zone is the place where pedestrians actually travel. If the furnishings zone was properly configured, there should be no obstructions in this zone. The Portland manual has several different width recommendations depending on the type of district containing the sidewalk. It, for example, recommends 8 feet widths for pedestrian districts with extra width provided for high intensity areas. Finally, the frontage zone defines the edge of the sidewalk with adjacent property. This area could have a variety of uses from a sidewalk café to a landscaped edge dividing a parking lot from the sidewalk to a place for utilities that cannot be placed in the furniture zone. While many different uses can be accommodated here, care should be taken to make sure that the through pedestrian zone is kept free of objects that can block the path.

This four-zone conception of the sidewalk area provides designers and planners with an excellent way to conceptualize this space. By placing utilities and street furniture in the proper place, a continuous area is provided for pedestrians that, if designed properly, should help to meet ADA requirements. At the same time, proper design using this four-zone conception can help to create an entire sidewalk system that encourages higher levels of walking, provides a much safer design layout, and helps to create aesthetically-pleasing, well-designed places within the city.

Importantly, it should be recognized that many of the suggested design changes do not necessarily require

spending more money. They do, however, require an attention to detail in the placement of many items along the street. While it is difficult to change the entire fabric of a community at once to conform to these design guidelines, communities are advised to identify priority areas such as high-use areas and areas around important community facilities for retrofitting projects (Turner-Fairbank Highway Research Center 2002, p. 10).

The more difficult issue in the core area of New Orleans involves providing the appropriate type of street crossing for pedestrians. There are two basic design components of a street crossing: the street corner area and the actual area of the street crossing itself. Before delving into the specific components of street crossing design, it is important to have a clear understanding of the basic elements that make up a good street corner. Once again, the city of Portland's *Pedestrian Design Guide* (1998) helps to provide guidance. The guide points out that there are five basic attributes that help to create a good street corner. These are: clear space, visibility, legibility of signs and instructions, accessibility, and separation from traffic. These almost intuitive elements of good street corners are, however, often lacking in the design of street corners around the country and in New Orleans.

One of the central ways to help improve the street corner environment for pedestrians is through the manipulation of curb radii. In the past, curbs were often designed to help increase the speed of turning vehicles. By providing wide, arcing, broad corners, vehicles could maintain speed in moving from one roadway to another. This design feature significantly compromised the safety of pedestrians as it decreased the time pedestrians have to avoid oncoming vehicles, decreased visibility of pedestrians, and actually increased the distance that must be covered to cross the street. In contrast, the Portland design guide points out that a tight curb radii provides "more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crosswalk, and requires vehicles to slow more as they turn the corner" (p. B-4). An additional step that can be taken to help decrease crossing distances and increase visibility is the provision of curb extensions or bump-outs. This type of design is currently planned for sections of Canal Street in New Orleans to help improve the pedestrian environment.

example of curb extension or bulb-out

The final major element in improving pedestrian connectivity is dealing with the significant issue of providing quality street crossings. Many different options are available to designers and planners that can help to create quality street crossings. The most common and widely used pedestrian facility for street crossings is the crosswalk. Crosswalks have been painted around New Orleans at innumerable locations both at signalized and unsignalized intersections and at mid-block crossings as well. The ubiquity of this facility type does not, however, necessarily translate into an improved or safer street crossing.

It is important to be able to tell the difference between good crosswalks and those that are in need of improvement. Turning again to the city of Portland's *Pedestrian Design Guide* (1998) can provide some help. The Guide identifies eight basic elements that help to create good crosswalks. These are: clarity, visibility, appropriately spaced intervals of crossings, a short wait time, adequate crossing time, limited exposure, a continuous path, and clear, obstacle free crossings (p. C-1).

In New Orleans, we have historically placed neutral grounds on many of our streets. In addition to helping to create an aesthetically pleasing landscape, New Orleans' neutral grounds provide an important function for pedestrians. Neutral grounds break the crossing of a roadway into two separate parts. A pedestrian need only find a single break in the flow of vehicles in one direction to begin to cross the street rather than looking for a break in the traffic from both directions on streets without neutral grounds. By breaking the crossing into two parts, pedestrian exposure to vehicles is decreased. This helps to improve safety and connectivity. New Orleans area planners and engineers should begin to capitalize on neutral grounds as a specific tool to help improve pedestrian safety.

While site-specific conditions will dictate the exact type of crosswalk treatment that should be utilized, several different crossing treatments appear to be particularly suited to the New Orleans area's needs. One previously mentioned treatment involves the use of curb extensions to lessen the distance of the crossing. With the many wide streets that cross the New Orleans area, this type of treatment could be utilized to help significantly improve the pedestrian's ability to cross roadways by decreasing the time a pedestrian is exposed to cross traffic.

Another suggested treatment that is common in the New Orleans area is the median or neutral ground. While the New Orleans area has a tradition of placing neutral grounds in the center of roadways, the decision to do so most often involved historical concerns such as drainage or parkway aesthetics. While these concerns will undoubtedly continue to be important, planners and engineers can begin to take advantage of the historical use of neutral grounds to specifically improve pedestrian crossing conditions. Several recent studies including Zeeger's (2002) work on the impact of crosswalk treatments show that medians can significantly reduce pedestrian crashes especially on multi-lane roads. The reason is simple: with the inclusion of neutral grounds, pedestrians need only cross half of the roadway at one time. This increases the number of "safe" crossing opportunities for pedestrians. Smaller refuge islands, or mini-neutral grounds, can also be used to provide safe spaces for pedestrians at particularly difficult crossing locations.

While many, if not most, intersections in the dense, built-up area of New Orleans have pavement treatments that indicate crosswalks, these pavement markings can be significantly improved to increase visibility and awareness of the crosswalk. Most crosswalks in New Orleans are composed of two white bars that are imposed across the intersection to connote the crosswalk. This standard crosswalk design, however, can be difficult to see from an approaching automobile. The visibility of the lines is decreased further when the surface treatment begins to be worn away. Other options, such as the zebra or ladder marking patterns, include wide bars patterned across the crosswalk area. These types of marking patterns significantly increase the visibility of the crosswalk area.

An important consideration in the decision to provide crosswalks at a particular location is the overall design characteristics of the intersection. Site-specific conditions that need to be addressed include consideration of crossing length times, possible use of pedestrian signal heads, and effective enforcement, especially at popular right on red locations.

The decision to include crosswalks at unsignalized locations can include even more variables. Zeeger's (2002) study of crosswalk effectiveness at unsignalized locations highlights the significant weaknesses of crosswalks alone in improving pedestrian safety. Zeeger argues that, "In most cases, marked crosswalks are best used in combination with other treatments (e.g., curb extensions, raised crossing islands, traffic signals, roadway narrowing, enhanced lighting, traffic calming measures etc.)" (p. 1). Marked crosswalks, he argues, are only "one option in a progression of design treatments" (p. 1). This does not mean that crosswalks are not a valuable element of a successful pedestrian system. Zeeger's study shows that, to be truly effective, crosswalks need to be part of a larger, comprehensive safety and design program.

While the myriad of possible design treatments may seem daunting at first, inspection of intersections around

the area will quickly show many common problems and many common solutions. The connectivity analysis used here provides a strong framework for helping to decide which treatments might work best in helping to create an integrated pedestrian system. Once again, pedestrian connectivity at its core is based on providing well-designed sidewalk corridors that link across intersections with appropriate crossing treatments. To create an integrated, connected pedestrian system, both elements must consistently be included.

Creating this type of system requires both a consistent and appropriate engineering framework and a planning process that effectively integrates the micro-level design considerations of pedestrians into the larger transportation funding and planning system. One effective way to help integrate these needs is to move towards a more neighborhood-focused planning process. Because walking distances are fairly short, a neighborhood-focused planning process that spotlights smaller design areas is a perfect way to help link residents' concerns about site-specific problems to the larger bureaucratic wheels that help fund and define the transportation system.

In addition, adequate enforcement of pedestrian safety is another crucial element in a successful program. While the design of appropriate crosswalk areas is a vital step in improving pedestrian safety, enforcement of traffic laws needs to be included in the broader pedestrian safety agenda. The design of a space can only go so far in managing the safety of the users. Enforcement that ensures that drivers are consistently yielding to pedestrians in crosswalks is a crucial factor in determining the safety of a space. While this chapter primarily focuses on design, key management and enforcement connections are vital to the success of any design program and need to be considered in the broader safety planning process.

■ *Suburban Streets*

Most of the same practices and principles that apply to making dense, urban streets pedestrian-friendly also apply to improving suburban streets. Pedestrians still need uninterrupted sidewalks with well-designed street crossings to effectively and safely move in suburban corridors. While many side streets in suburban areas have sidewalks with low-volume street crossings, these areas are often isolated from destination commercial areas by high-volume traffic arteries that lack the basic elements that would make them safe and effective pedestrian corridors.

Once again, the first element of connectivity in the pedestrian system, sidewalks, must be addressed. While most suburban streets on the south shore have sidewalks, many streets on the north shore and surrounding areas lack this basic element. Because sidewalks are such a crucial element in ensuring pedestrian connectivity, serious attention should be paid to mandating their inclusion in all new suburban developments. In addition, a priority list of existing neighborhoods most in need of retrofitting for sidewalk inclusion should be considered to help rectify existing connectivity problems.

The same systematic appraisal of sidewalk needs should be conducted for commercial corridors. In the past, many of these areas were developed without the provision of sidewalks. People can, will, and should be encouraged to walk to commercial destinations as well as within their neighborhoods. The provision of sidewalks in these commercial corridors is a crucial first step in making our communities truly accessible.

One of the additional problems associated with sidewalks on suburban arterial streets is the number of curb cuts that bring automobiles directly across the path of pedestrians. Vehicles turning out of or into parking areas often are moving at fairly high speeds. Vehicles making sharp turns into parking areas at speed pose a particular safety hazard to pedestrians. This situation poses some difficult planning challenges that may best be addressed through an access management plan. Access management planning integrates land use and transportation design decisions to direct and consolidate traffic in order to improve connectivity and safety for pedestrians and to control congestion for motorists.

The most obvious solution is to limit the number of curb cuts on a block. The provision of a common, shared

Neighborhood Planning and Connectivity

One effective way to help create a connected pedestrian system is to move towards a more neighborhood-focused planning process. Because walking distances are fairly short, a neighborhood-focused planning process that spotlights smaller design areas is a perfect way to help link residents' concerns about site-specific problems to the larger bureaucratic wheels that help fund and define the transportation system.

parking area for multiple businesses may be a way to both maximize parking within a limited space and help significantly improve pedestrian safety. While this solution should certainly be examined for new development projects along corridors, working to retrofit existing areas with common parking presents some significant challenges. In the long term, redevelopment plans should help to craft a comprehensive vision of how these areas can be retrofitted to improve pedestrian access. In the near-term, the provision of tighter curb radii (protruding curbs that slow turning vehicles) should be considered to help improve pedestrian safety at curb cuts.

The second phase in creating accessible suburban areas is providing appropriate street crossing facilities. Once again, on low-volume suburban side streets, crossing the street may not be particularly difficult. On the multilane, high-speed arterials, however, the situation can be both unpleasant and unsafe.

Site-specific evaluations should be undertaken to determine the appropriate type of crossing options for a particular location. The basic characteristics of good corners and street crossing areas that have been discussed in this chapter could form the basis for these evaluations. In general, the same three basic treatments suggested to improve dense, urban streets (curb extensions, median or neutral grounds, and highly visible crosswalks with effective additional elements) should also be considered here. Because of the generally higher speeds along these corridors and the additional width of the roadways in question, these treatments are probably even more important to help improve safety.

While the process of retrofitting suburban landscapes to improve pedestrian connectivity may seem like a difficult task, a methodical, focused approach can bring about significant improvements over a fairly short time. The benefits of improved quality of life for residents and increased safety make these changes both necessary and desirable.

■ *Rural Highways*

The final prevalent landscape type in southeast Louisiana is the rural highway corridor. While pedestrian travel is generally fairly light along the full length of these corridors, nodes of higher use will still exist. An important first step in improving pedestrian connectivity is to identify the nodes of higher density and pedestrian usage along these corridors. Once these nodes have been identified, the planning process for creating pedestrian-friendly areas is remarkably similar to that examined for suburban and city streets. The design needs of pedestrians do not change because they are walking along a rural road. They still need a well-defined space to walk and the provision of adequate crossing opportunities. Attention at the higher intensity nodes is an important step in improving conditions for pedestrians along these rural corridors.

A broader approach to the entire length of the corridor could also be considered. Where feasible, additional width in the form of wide emergency lane could serve as a linkage for pedestrians going short distances. While this may not be optimal or desirable as a pedestrian space on high-speed thoroughfares, it can be crucial on lower-volume roads where pedestrians are already more prevalent. The provision of extra width can also help to provide safe corridors for another non-motorized user of the transportation system, bicyclists. Bicycle planning best practices are covered in the next section.

Best Practices: Bicycle Planning

While the concept of connectivity needs to be applied slightly differently in bicycle planning to successfully create an integrated transportation system, the basic conceptual structure utilized in both pedestrian and bicycle planning is remarkably similar. Bicyclists, like pedestrians, have different skill levels and needs. They can be expected to travel on just about any street in the system. They desire the simplest, safest, and most direct route possible that gets them from point A to point B. For bicyclists and pedestrians, the number and placement of interruptions, once again, define the overall level of connectivity of the system.

The types of interruptions that disrupt the system are the main difference between the pedestrian and bicy-

clist connectivity. Interruptions in the pedestrian system occur because of the lack of adequate sidewalks and/or appropriate street crossings. In general, these interruptions are the result of a systematic failure to properly segregate and protect pedestrians from the much faster moving vehicle traffic.

Bicyclists, on the other hand, are classified as vehicles. They can be expected to move alongside vehicles on existing roadways to get to the majority of destinations. Safety and connectivity of the bicycling system is, therefore, defined by the effective integration of bicycles with motorized vehicles.

Not all roadways, however, provide the same level of safe integration between cyclists and auto traffic. For example, roadways with high volume, high speed, narrow lanes tend to make the coexistence of cyclists and automobiles difficult because of the different speeds and spatial demands of the two types of vehicles. The relatively slow moving cyclist must trust that the fast approaching automobile or truck will judge the distance and space effectively to make a pass. Many cyclists will choose not to utilize a section of roadway with these conditions because of perceived or actual safety problems. This section of roadway then becomes a breakage in the connectivity system for cyclists. In this conceptualization, interruptions in the bicycling transportation system occur when cyclists are not effectively integrated into the flow of traffic and decide that they are unable to successfully traverse a section of the roadway system.

The example highlights two components of the bicycle connectivity equation. First, the cyclist judges his or her own individual skill level and comfort in traffic to determine whether a roadway section is appropriate. Embedded in the cyclist's decision is the second element of the equation: the perceived quality, safety, and condition of the roadway section itself. The design, traffic volume, and speed of traffic are important elements in determining the quality of the roadway section.

These two overarching components of bicycling connectivity equation (street conditions and bicyclists' ability levels) need not be static, however. The cyclist's skills can be improved to help increase his or her ability to navigate a more complex road system. In addition, the complexity and difficulty of the roadway system itself can be altered with design modifications that help to create more appropriate integration of cyclists and automobiles. This section seeks to uncover the best practices in bicycle planning by examining the basic types of cyclists that can be expected to use the roadway system and the important design elements that can help to facilitate easy and safe movement of bicycles in the system.

Cyclist Types

Just as in successful pedestrian planning, planning for bicyclists involves understanding that different types of cyclists are likely to utilize the system. The skill levels and interests of bicyclists in our region are extremely diverse, ranging from athletes training for competitions to kids riding around their neighborhoods. The Louisiana Statewide Plan provides a basic classification of bicyclist skill levels that provides guidance for designating and designing bicycle routes. These skill levels match those created by the FHWA in their 1994 publication *Selecting Roadway Design Treatments to Accommodate Bicyclists*. Chapter 5 provides a more detailed breakdown of cyclist types by trip purpose and need and a review of the strengths, weaknesses, opportunities and threats of each category of rider. The three skill levels defined by AASHTO are described here:

Group A (Advanced Bicyclists)

The statewide plan defines this group as adults experienced in riding in urban traffic conditions and who favor the most direct routes to their destinations (Section 5 page 1). These cyclists are comfortable riding on arterial and collector roads. In our area, advanced cyclists include competitive sport cyclists, cyclists who ride for exercise and recreation, and a large share of bicycle commuters.

Group B (Basic or Less Experienced Bicyclists)

The statewide plan defines this group as adults and teenagers who have less-developed bicycling skills. The

statewide plan identifies them as "weekend or casual riders who are not as comfortable riding with traffic. These riders prefer low-volume or low-speed streets and additional maneuvering room on higher volume and speed roadways" (Section 5 page 1). In our region, this group also includes many bicycle commuters, especially low-income riders who use their bicycle as transportation.

Group C (Children)

Children riding their bikes to school, the playground, a friend's house, or other places in their neighborhoods are in this category (Section 5 page 1). Because children tend ride slower and not be as aware of traffic patterns and laws, they tend to gravitate towards low-intensity neighborhood streets and pathways.

This basic A, B, C classification of rider types highlights the divergent needs and skill levels of bicyclists. The different rider types have distinct preferences for specific bicycle facility types. The next section provides a more in depth discussion of these facility types and provides a framework for incorporating a variety of appropriate facility types into a larger systematic bicycle network that can help to encourage bicycle travel around the region.

Creating a Connected System: Bicycle-Friendly Designs

Two crucial factors help to determine the quality of roadways for cyclists: width of the roadway and the form of the intersection design. Bicyclists require adequate width to effectively move along with traffic on street corridors. Where insufficient width is provided, cyclists can be placed in awkward and compromising positions as they occupy travel lanes dominated by generally faster moving motorized traffic. Crossing lanes to turn or to move across intersections present the other dominant impediment to bicycle travel. When motorized vehicle speeds are high and/or volumes of traffic large, bicyclists can have a difficult time effectively integrating themselves into the traffic flow to complete safe turns.

A number of different types of bicycle-friendly facilities that can help to significantly improve the quality of connectivity within the system are, however, available. This section examines the basic elements that can help to create an integrated and safer bicycle network.

Bicycle Facility Types

Bicycle travel within the New Orleans region takes place on a wide variety of facilities ranging from dedicated non-motorized paths to ordinary city streets. While many people think of the bicycle path as the primary facility for bicyclists, the extent of paths is limited to well-defined corridors. For cyclists to reach many, if not most, destinations, they must interact with the basic grid of city streets. These streets form the most extensive and utilized bicycle "facility" type.

In the *Guide for the Development of Bicycle Facilities* (1999), AASHTO identifies four primary types of bicycle facilities. These are: the shared roadway, the signed shared roadway, the bike lane, and the shared use path. Because of the breadth of the discussion of the shared roadways, it is considered separately from the other three facility designs.

■ *Shared Roadways*

The shared roadway forms the backbone of the cycling system. The shared roadway system includes all roadways on which cyclists are legally permitted. The range of roadway types that fall into this category extends from quiet, wide suburban streets to high-volume traffic arteries.

While the shared roadway forms the backbone of the bicycling system, the conditions of the roads that fall into this category vary widely. While some streets in the system are fairly easy to traverse for a bicyclist, larger, high-volume streets without sufficient width pose significant problems for a cyclist.

As has been discussed previously, the particular needs of cyclists were not considered when planning streets in the past. The only assumed design users of the system were automobile drivers. Traffic engineers, thus, designed roadways to meet only the narrow concerns of

drivers. The result was a system that made non-motorized travel difficult if not dangerous.

The situation has, however, taken a significant turn for the better. National roadway design standards now call for the particular needs of cyclists to be included in the design of new streets. For example, AASHTO's widely disseminated and influential bicycle design guidelines now call for the needs of cyclists to be included in planning and construction of all roads on which cyclists are legal users. The guide (1999) states, "All highways, except those where cyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by cyclists. Therefore, bicycles should be considered in all phases of transportation planning, new roadway design, roadway reconstruction, and capacity improvement and transit projects" (p. 1).

In addition to the specific guidance of design manuals, federal law also mandates that bicycles now be included in the planning of federally funded street projects. The Transportation Equity Act (TEA-21) states that "Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation projects, except where bicycle and pedestrian use are not permitted" (TEA-21 Section 1202).

The design of the predominate type of bicycle facility, shared roadways, should be considered in this process. The essence of effective planning for bicycles on shared use roadways is the provision of extra width. This "most critical variable" (AASHTO 1999, p. 16) can be achieved through two design features: provision of wide outside lanes and/or paved shoulders. For paved shoulders, the provision of four feet is recommended, but "any additional shoulder width is better than none at all" (AASHTO 1999, p. 16). For wide outside lanes, 14 feet is generally recommended.

In addition, appropriately timed signals that provide enough time for cyclists to cross the roadway and other smaller design courtesies are important elements for creating roadways that can function for both automobiles and bicycles. Specific guidance for creating appropriately designed intersections is available in AASHTO's *Guide for the Development of Bicycle Facilities* (1999).

Bicycling-Specific Facility Designs

While the sea change has occurred in the official manuals of transportation engineers, much of the built environment still bears witness to the practices of the past. The challenge for bicycle planners is to attempt to cobble together the most direct and safe routes through a system that is only slowly changing to meet the needs of cyclists.

While the shared roadways form the backbone of the bicycling transportation system, they can be augmented through the wise use of more bicycling-specific design measures that can help to bridge significant weaknesses in the current system and help to create a more connected and usable bicycle system. The final three types of bicycle facilities (the signed shared roadway, the bike lane, and the shared use path) can be used to help create a more coherent system.

■ *Signed Shared Roadway*

The signed shared roadway is a roadway that has been signed to convey to cyclists that the route has some special characteristics that make it a preferred route. The signing also lets drivers know to expect bicycle traffic on this route. The AASHTO *Guide for the Development of Bicycle Facilities* (1999) suggests that planners of signed routes should seek routes that provide some "particular advantages" (p. 19). These include: connected, direct routes to desired locations, provision of traffic control devices adjusted for the particular needs of cyclists, provision of acceptable width, smooth surfaces for cyclists, and regularly scheduled maintenance of the route.

Safety Problems with Neutral Ground Bike Paths

The neutral ground bike path, while intuitively appealing, poses significant safety problems that should preclude its adoption in the New Orleans area. The neutral ground path is essentially a sidewalk placed in

the middle of the neutral ground that bisects numerous street crossings where turning vehicles are likely. Off-street paths are most appropriate when there is a continuous uninterrupted space with few street crossings. The neutral ground path, on the other hand, usually traverses dense, congested corridors with many street crossings. Intersection design for the bike crossing often places cyclists a distance from the signalized intersection allowing an unexpected "mid-block" crossing. This

is a dangerous location to cross the street as turning vehicles have limited time and space to see and avoid cyclists. This type of path system is seriously discouraged by bicycle professionals. In the FHWA *Course on Bicycle and Pedestrian Transportation* (2003), the authors clearly state that "sidewalks should not be signed for bicycle use" (p. 18-7).

The numerous intersections, crossing locations, and frequent turning vehicles make a neutral ground problematic for bicycle use. However, neutral grounds can be considered a refuge island for pedestrians crossing a busy street by providing a safety zone if the pedestrian can not traverse the entire street in the allotted time.

While signing helps to improve the awareness of motorists to cyclists' presence, cyclists' visibility on the route can be further enhanced through the use shared lane pavement markings. These markings, already in use in Chicago, San Francisco, Portland, Denver, and Gainesville, Florida, are placed in the outside travel just outside of the danger zone of opening car doors. By placing a marking on the pavement surface, motorists are given a clear signal that cyclists have a right to travel outside of the far right, gutter area of the roadway surface. By moving just out of reach of opening car doors, cyclists are able to avoid this all to common danger.

In a study of the effectiveness of shared lane pavement marking, the San Francisco Department of Parking and Traffic (2004) concluded that clear marking helped to improve cycling conditions by improving the distance that motorists afforded cyclists as they passed. In addition, wrong-way riding and riding on sidewalks were significantly reduced as cyclists felt more comfortable utilizing the roadway. In essence, the shared lane pavement marking helped to legitimize cyclists' presence on the roadway resulting in improved safety. The first shared lane pavement marking system was installed along Chartres Street in the Faubourg Marigny neighborhood in Orleans Parish and incorporates the words "shared lane" with a graphic of a cyclist. The second shared lane pavement marking in New Orleans uses the San Francisco model of two chevrons over a graphic of a cyclist. It will be installed on Marconi Drive between Lakeshore Drive and Robert E. Lee Boulevard in Orleans Parish. The chevron represents the newest safety research and reflects the quickly evolving knowledge base for roadway treatments specific to the bicycle.

■ *Bike Lanes*

Bike lanes are another form of bicycle facility that can be utilized to help extend the cycling network. A bike lane is a portion of a street that has been striped for use by bicyclists. The AASHTO *Guide for the Development of Bicycle Facilities* (1999) stipulates, "bike lanes should be one-way facilities and carry bike traffic in the same direction as adjacent motor vehicle traffic" (p. 22). The minimum width of bike lanes should be four feet with additional width added for special situations. The lane should be marked with a six-inch solid white line on the flowing

motor vehicle side. Where parking is permitted, the lane should not be placed on the curbside of the parked vehicles. In addition, an optional four-inch white line can be placed on the edge of the parking lane to further delineate the space dedicated to cyclists. Special attention should be given to the specifics of signing bike lanes at intersections. In general, bike lane markings should not be extended through intersections. Clear merging markings and signage should be provided per the guidelines provided in the AASHTO guide. In some communities, a bike lane in both directions is not a mandate. One-way street pairs can also be retrofitted with bike lanes providing a facility in each direction one or two blocks apart.

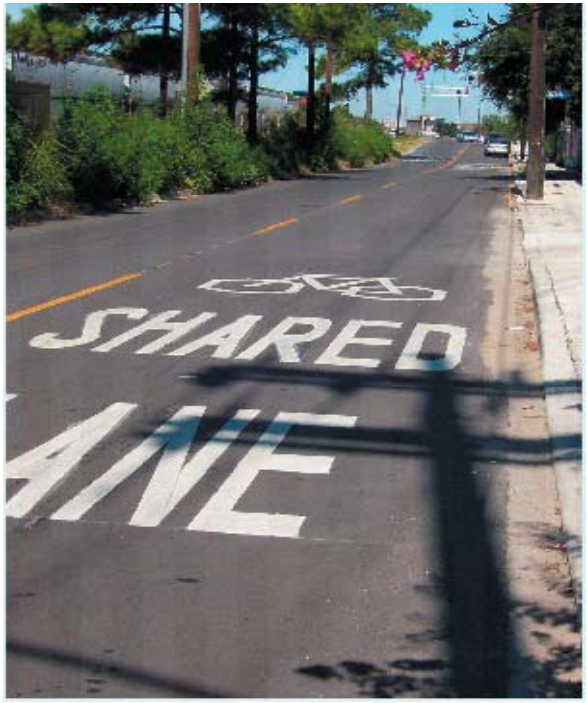
■ *Shared Use Path*

The final bicycle facility type is the shared use path. These paths are for the exclusive use of non-motorized users and should have a minimum of intersections. The shared use path should be designed with following user groups in mind: cyclists, in-line skaters, pedestrians and runners, and wheelchair users. The paths should be designed to supplement the existing bicycle network and not as a substitute for the on-road network. The recommended width for a two-direction path is ten feet with extra width incorporated when the volume of users is high.

Intersections and Innovative Treatments

Intersections with the path need to be given extra care. The AASHTO *Guide for the Development of Bicycle Facilities* (1999) identifies three types of intersection types. These are: midblock, adjacent path, and complex. The guide provides specific design treatments for each intersection type that should be incorporated into the path design. This section discusses some standard bike lane considerations at intersections and some innovative treatments that have been designed and used in progressive cities and are not yet officially approved by AASHTO.

There are a number of innovative treatments employed throughout the world that are not yet adopted in the United States. We encourage and recommend local officials, planners and traffic engineers investigate all possible treatments, to gain expertise and to adapt or innovate design solutions as needed to specific problem areas. Just as roadway designs have adapted over time, bicycle treatments should also strive to create a safe treatment in unique situations. It is a creative opportunity for local innovation and public discourse to resolve unique design constraints.



In general, it is best to provide a high amount of visibility for a cyclist at intersections. One of the most dangerous times when cycling is at the intersection, because it often requires the cyclist to slow down, stop and accelerate from a stopped position. Because it is a two-wheeled vehicle, stopping and starting require shifting from a balanced two wheel position to a balanced two

wheel and foot on the ground position when stopped. This requires more attention by the cyclist to operate the vehicle and often requires more time to come to rest and to emerge from a stopped position. Negotiating auto traffic at intersections is assisted by dedicated space for cyclists using bike lanes or bike boxes.

AASHTO design recommends a dedicated bike lane marked up to the intersection so that the cyclist has a recognized and designated place to be in an intersection. The bike lane marking is generally dropped at the intersection and then picked up again on the other side of the intersection unless it is a particularly complex intersection or roundabout. Then a dotted line is preferred through the intersection.
If bus stops are located at the near or far side of an intersection with a bike lane, the solid white line should be broken for a distance of at least 80 feet at the bus stop.

A parking lane may or may not be present on streets with bike lanes. Removal of parking spaces near an intersection when street width is limited will facilitate right or left turning auto movements to the right or the left of a bike lane. A dotted line or a break in the solid line and/or colored pavement should be used to designate the area where cars cross the bike lane to proceed to a dedicated right or left turn lane.

To improve safety at intersections, a bike box can be painted at the head of travel lanes. The bike box places the cyclists in front of traffic at an intersection to make them more visible to oncoming traffic and forces traffic behind them to acknowledge their lane position. The position at the front of the travel lane allows the cyclist time to turn left at the head of traffic and improves safety by allowing the cyclist to move into the right lane of the roadway or proceed on a bike lane on the street one is turning left onto, without traffic overtaking their position.

While lane changes for cars and bicycles are usually preferable prior to reaching the intersection, the bike box offers an alternative method for cyclists to move from the right lane to the left lane when making a left turn. Motorist education to raise awareness about stopping in front of a bike box is necessary, and law enforcement can be helpful to bring it to the full attention of the public. Bike boxes can be used with or without bike lanes in place.

Design Standards for Various Types of Bicycle and Pedestrian Facilities

This analysis only describes the fundamental criteria to be used for classifying different types of bicycle routes and possible treatments. A number of available documents provide design standards that should be reviewed as streets are improved to meet bicycle route criteria. These are readily available through the AASHTO and provide specific information on accepted striping, distances, signage and signalization. The National Center for Bicycling and Walking provides extensive information on typical crash situations and notable solutions.

An Integrated Bicycle Network

The four bicycle facility types just examined (shared roadways, signed shared roadways, bike lanes, and shared-use paths) each provide unique benefits for the creation of an integrated bicycle network. Shared roadways, especially when designed with additional width, provide the foundation for a functional bicycle network. These roadways provide access to all parts of the city and will act as the predominant facility type in the network. Signed shared roadways tell cyclists that some special benefits exist to utilizing these corridors. The added attention can help to improve bicycling conditions on these roadways. Bike lanes add another element to the network. These lanes designate a defined place for cyclists in the traffic flow and can help cyclists stake their claim to the roadway. The provision of a designated space, especially on lower volume streets, can also help to encourage level B and C cyclists to utilize their bicycles as a mode of transportation within the city. Finally, shared-use paths can be utilized to help link disparate areas by reclaiming lost corridors. The shared-use path should link to the other facility types to help create a fully functioning system of bicycle facilities that allows cyclists of all skill levels to move easily around the region.

Moving towards this vision of an integrated bicycle network for the New Orleans metropolitan region will take time, dedication, and renewed attention to the small details that help to create bicycle-friendly routes. AASHTO's *Guide for the Development of Bicycle Facilities* (1999) provides specific guidance on how to design effective bicycle facilities that will serve the needs of the multi-faceted bicycling community. Once again, effective enforcement and management have not been extensively addressed in this chapter on design. An overarching bicycling program that addresses design, management, and enforcement is necessary to maximize the potential of cycling as a clean, healthy, and safe mode of transportation.

Conclusions

Creating a connected, multi-modal transportation system will require designers and planners to effectively integrate the design needs of cyclists and pedestrians into the design equation. Not only is this required by changes in federal, state, and professional transportation guidelines, but effectively incorporating bicycling and walking into the transportation fabric can help to improve the health, safety, and quality of life of area residents.

The best practices examined in this chapter provide a strong conceptual framework for addressing the new mobility challenges posed by integrating pedestrians and cyclists. Many of the best practices outlined in this chapter do not necessarily require the expenditure of more money. They do, however, require a new conceptualization of planning that incorporates the unique needs of the non-motorized population in the construction of new facilities. While additional expenditures are required for full implementation of all of the best practices, the external benefits in terms of health, safety, and quality of life make them excellent investments in the future of our communities.

Detailed guidelines for implementing the best practices suggested in this chapter are now widely available. The bibliography at the end of this Master Plan provides an excellent sampling of some of the important sources for this information.

Rider Classification

Rider Classification

In an effort to understand the local context of New Orleans area cyclists, the basic categories of cyclists named by AASHTO were slightly modified and are more fully explored here. Traditionally there are three categories of cyclists based on skill level: advanced (A), basic (B) and children (C). While this categorization provides a nice breakdown of types of riders, it leaves out the important consideration of the purpose and need for specific trips. While some cyclists may be riding for a work out or casual recreation, another set of cyclists may be concerned primarily with moving to destinations within their neighborhood. In order to reflect the trip purpose, four categories of riders have been established to help conceptualize local user groups. These categories are the Sport Bicyclist, the Principal Commuter, the Casual Commuter, and Children. The following is a general description of each category of cyclist and an analysis of the strengths, weaknesses, opportunities and threats (SWOT) of each.

Sport Bicyclist

Typically the Sport Bicyclist are those riders who establish a club or organization to train and compete as athletes on twenty to one hundred mile rides at relatively high speeds of 18 to 30+ miles per hour. The New Orleans Bicycle Club (NOBC) represents this type of cyclist. NOBC is a member of the United States Cycling Federation. Riders have an expert skill level as reflected in skill level A. Although they may use a bicycle to commute to work as well, their longer distance rides reflect the more purely athletic side of cycling. NOBC group training rides are organized two times a week and group competitions are also held twice a week beginning on Lakeshore Drive. Often riders use the NOBC training rides as training for cycling portion of a triathlon event. Rides may consist of ten to fifty riders.

These athletes are highly motivated and require a route that will allow them to reach high speeds safely and to ride together as a large group. The group may at times be bunched together using most of a travel lane and at other points in a ride be in single file or two abreast. The configuration of the group changes throughout the ride as they rotate the lead position in order to employ drafting, a technique whereby the lead rider deflects the air for those behind.

The riders tend to train in packs on selected days of the week and at a time of the day that has less traffic (weekend mornings and post evening-peak hour) to reduce conflict with motorists and pedestrians. They choose routes that provide as few stops as possible with as little traffic volume and intersections as possible. This allows the group more latitude to compete with each other and compete with themselves for personal improvement at high speeds. To date, there is no preferential signing for these routes in the New Orleans region.

Strengths

Organizations such as NOBC exist to fill a need in the athletic community in the New Orleans region. They offer a venue for avid cyclists to exercise, enjoy the benefits of the outdoors, and congregate to share a special interest in cycling.

Weaknesses

Orleans Parish and other jurisdictions technically classify NOBC training or other competitive ride groups as special events more applicable to a parade or large scale running event. The city of New Orleans generally requires a permit for a group of this size to gather as an organized event. Inherent in the classification for parades or large-scale running events is the need for medical personnel to be placed along the route and police personnel to cordon off motorized traffic. Another requirement is a leading and trailing vehicle to mark the furthest forward and back positions of the group. Each of these requirements is costly and requires an enormous effort to organize. The cost in time and money to fulfill parade requirements in order to practice undermine the objectives of the organization and have had a tendency for the organized clubs to shy away from advocacy.

Opportunities

Races sponsored by organizations such as NOBC are attractive events growing in popularity nationwide. They

offer opportunities to leverage tourism based on marketing organized rides and competitions. While entirely different in scale, the Tour de France is the most widely known example of such an event. From a United States perspective, the Tour of Georgia (won by Lance Armstrong in 2004) is a good example of a successful multi-day event. Major cities in the U.S. also host similar one-day events. Philadelphia hosts the First Union Grand Prix which acts as the United States national championship. This thriving event, which attracts spectators from the whole country, turns a whole section of Philadelphia into a series of neighborhood block parties. The NOBC has an annual race event that has been hosted by the City of Covington for the last three years. By staging the event in Covington, the NOBC avoids the high cost of permits, police and medical personnel required by the city of New Orleans.

Threats

There is no preferential route signing for NOBC although the routes used are essentially unchanged over the last twenty years. The lack of information and education provided for pedestrians and motorists when intersecting the group's cycling route can lead to incidents. The cycling group relies on the decision-making skills of the pack leaders whether to slow down for an intersection, stop, or continue pedaling when a threatening situation occurs. Cyclists are in danger if a motorist makes incorrect assumptions about the size, speed and length of the group when passing. Because of their close proximity to one another, the entire group is at risk if any rider turns sharply or falls.

Recommendations

State and local jurisdictions have not adequately addressed the needs of this group of cyclists. The June 2002 deaths of two individuals from the Red Stick Racing group in Baton Rouge underscores the need for action to fully address the safety issues surrounding sport cycling. State and local government should enhance motorist awareness about common training routes by using innovative signage and permitting for this category of cyclist to best provide for the safety of cyclists, pedestrians, and motorists.

Principal Bicycle Commuter

A principal bicycle commuter is an individual who uses a bicycle as his or her predominate form of transportation. This may be for multiple reasons. Often this type of cyclist does not have access to a personal automobile because of the cost. Because over 28% of households in Orleans Parish and 15% of all households in the New Orleans metropolitan area are without an automobile, this type of rider represents a large share of New Orleans cyclists. Riders in this group may also use a bicycle as their principal form of transportation because the trip length to work is relatively short, but too far to walk. Some of these commuters do not have a driver's license. A Principal Bicycle Commuter also includes many college students. Most of these individuals use a bicycle to get to and from most their major activities. The cyclists range in proficiency from basic to expert skill levels.

Riders in this category use whatever route is available to get them between two points. They may also be frequent users of the Bike-on-Bus program of the Jefferson Parish Transit Administration. Although improved health may be a complementary benefit, their main motivation is lack of other notable transportation.

Strengths

The bicycle nicely meets the needs of individuals without adequate income to afford a car. It offers a low-cost means to reach employment and offers a necessary alternative when no other transportation options are available. The bicycle user can control his or her scheduled departure and arrival times.

Weaknesses

This group of cyclists primarily uses a bicycle because they have no other means of transportation. They are not part of an organized cycling group and often have had little exposure to bicycling protocol and safety guidelines. Because of the lack of formal training and group role models, this subset of cyclists is more prone to ignoring basic bicycling safety procedures such as wearing a helmet, following the rules of road, and equipping their bicycles with adequate lights for night riding.

The principal bicycle commuter in New Orleans is often at a higher risk of injury because of the preponderance of off-hour work schedules. With a large number of service industry jobs in restaurants and other night-oriented jobs, riders traveling home from work must travel in darkness.

Despite the fact that this type of cyclist is among the most common cyclist types in New Orleans, efforts to include them in advocacy work on cycling issues are often difficult. Because of the significance of this user group in New Orleans, efforts to improve conditions and provide outreach to improve skills should be explored.

Opportunities

Bicycling safety education should be strategically targeted at this type of cyclist for the best results. Because the low-income population of cyclists is generally different from the college cyclists in this group, two distinct message type may be required to effectively reach these groups. In addition, strategic corridors to serve these populations (whether on existing streets or new paths) should also be identified and improved.

Threats

It is more difficult to adopt safe riding skills and modify behaviors after childhood. While strategic efforts should be made to improve safety education for this group, it is also important to begin to reach children at an early age.

Recommendations

The state LaDOTD, local jurisdictions, local universities, and employers of low-wage workers should build programs and targeted delivery methods to provide bicycle safety education and training for adult Principal Bicycle Commuters. Assistance is needed to help bicycle commuters identify the safest routes from home to work. Provision of secure bicycle parking facilities at employment centers and shopping areas should be evaluated. Provision of showers, changing facilities, and lockers at employment sites would assist the Principal Bicycle Commuter. The public sector should work to train and encourage safe riding habits such as riding on the right side of the road, using a helmet, and making night lights available to reduce bicycle fatalities and incidents. Attention to training in the use of bike on bus equipment is also needed.

Casual Bicycle Commuter

The Casual Bicycle Commuter has a choice in transportation modes he or she uses. They generally own a car or have adequate access to transit service. They typically use a bicycle to enjoy its multiple health benefits or to be environmentally responsible. Benefits include regular or not so regular exercise, enjoyment of nature, reduced reliance on an automobile, reduced cost to operate and insure an automobile (some families own one car instead of two), and a general change from the grind of sitting in motorized traffic.

This cyclist includes ages from young adults to elderly. They may ride sporadically or regularly as the mood strikes and as weather permits. They also may use the bicycle for recreation purposes.

Strengths

This group is the most likely to be involved in local bicycle clubs with advocacy initiatives, route information, and bicycle safety training. In general they are more aware of bicycling hazards and proper riding behavior.

Weaknesses

Cyclists in this category vary widely in skill level. Infrequent and less experienced riders may use streets for an infrequent commute. However, they may not have adequate training and needed safety devices (helmets and lights).

Opportunities

The Casual Bicycle Commuter typically has more income than a Principal Bicycle Commuter. Because riding is an active choice, they may be more open to bike

safety education and have the time and motivation to learn. There is a desire for established commuter bicycle routes and easily accessible information. The Casual Bicycle Commuter will be most apt to increase his or her bicycle use as facilities become safer and aggressive driving is reduced.

Threats

Route information and safety training is not readily available. Adults are less motivated and less apt to modify learned or mistaken bicycle behavior such as riding on the wrong side of the road or not wearing a bicycle helmet.

Recommendations

Develop a Statewide Bicycle Training Manual for all bicycle users. Provide assistance in helping bicycle commuters identify the safest routes from home to work to encourage more cycling. Provide secure bicycle parking facilities at employment centers and shopping areas. Provide adequate shower and changing facilities for bicycle commuters. Promote long distance bicycle commute linkages such as bike on bus or on light rail.

Children

A child is naturally eager to own and use a bicycle. They are generally trained by a parent and learn their first skills at home. The gift of a bicycle traditionally signals a certain level of childhood development that allows the child limited independence for the first time.

Strengths

Use of a bicycle promotes a healthy activity that involves balance and strength. It builds confidence and provides an opportunity for kinetic learning. It can lead to a healthy lifelong lifestyle. Many teenagers (14 and 15 years old) use the bicycle as an independent form of transportation to first jobs.

Weaknesses

Frequently children are given a bicycle without proper training on how to ride in the street, i.e. to obey traffic laws, to use hand signals, or to wear a helmet. Parents do not always have the necessary skills to train their children yet they are the primary educators in bicycle use. Many adults were taught to ride facing traffic. This poor habit is then passed on to their children.

Opportunities

As a whole, children are more open to learning about bicycling safety. An enormous amount of bicycle safety information and child friendly curriculums have been developed to train various ages of children in how to use a bicycle safely.

Threats

Neighborhood streets are often not designed with the needs of young cyclists. Drivers are not always watching for children on a bicycle. The general demise of the neighborhood grocery, library, and other child friendly amenities has reduced the number of destinations a child can safely reach on bike. In addition, out-of-district schooling and the fear of crime affect the parent's decisions to allow their children to move freely about on a bicycle. Lack of regular exercise for children is leading to obesity in children, a serious health problem.

Recommendations

Begin to designate neighborhood safe routes specifically for children. Incorporate bicycle safety training in regular physical education activities or classroom programs at school. Provide bicycle safety training for parents. Develop a Statewide Bicycle Training Manual which can be used as a classroom text.

Overview of Existing Conditions

Introduction

This chapter surveys existing conditions of bicyclists and pedestrians in the New Orleans metropolitan region. This overview chapter provides baseline data that policymakers can utilize to help craft more efficient and safe routes for pedestrians and bicyclists.

The chapter is composed of two main elements. First, important demographic characteristics of the regional population of cyclists and pedestrians are examined. The chapter begins with an overview of how the regional transportation system is functioning for cyclists and pedestrians through an exploration of census and other important data sources. This is followed by a detailed examination of regional bicycle and pedestrian crash data. The second half of the chapter describes the basic characteristics of the current non-motorized transportation network in the congested areas of Jefferson and Orleans parishes. This examination broadly identifies some of the major advantages and constraints of the existing transportation system as it relates to pedestrians and bicyclists.

Demographic Profile of the Region

An important factor in effective planning for bicycling and walking is an understanding of the demographics of the region. The United States Census Bureau provides a broad portrait of some of these important characteristics. Louisiana has shown a slight increase in the number of bicycle commuters over the last 10 years. The share of bicyclists commuting to work increased from .37% in 1990 to .46% in 2000. While this change was very small, it still helped Louisiana to be ranked 20th in this category nationally.

While Louisiana was above average in number of bicycle commuters, it sadly is also above average in the number of pedestrian and bicycle fatalities.[2] Over the five-year reporting period from 1998 to 2003, 509 pedestrians lost their lives on Louisiana streets. The best ranking for Louisiana in terms of pedestrian fatalities in this period was a tie for 43rd nationally with 93 pedestrians losing their lives in 2002 (Table 1).

The situation for Louisiana bicyclists also reflects a low national ranking in terms of safety (Table 2). In the five-year reporting period from 1998 to 2003, 115 bicyclists

Table 1
Louisiana Pedestrian Fatalities

Year	LA Pedestrian Deaths	LA Rate per 100,000 Population	National Rate Per 100,000 Population	Louisiana Ranking
1998	112	2.6	1.9	45 (tied)
1999	106	2.4	1.8	43 (tied)
2000	100	2.3	1.7	45 (tied)
2001	98	2.2	1.7	45
2002	93	2.1	1.7	43 (tied)

Table 2
Louisiana Bicycle Fatalities

Year	LA Bicycle Deaths	LA Rate per Million Population	National Rate Per Million Population	Louisiana Ranking
1998	20	4.58	2.82	45
1999	29	6.63	2.75	50
2000	23	5.20	2.51	45
2001	23	5.15	2.56	46
2002	20	4.46	2.30	48

[2]Data comes from the National Center for Statistics and Analysis of the National Highway Traffic Safety Administration Yearly Traffic Safety Reports 1998 to 2003.

lost their lives on Louisiana roads. Louisiana was ranked no better than 45th nationally over the course of the last 5 years with 20 deaths in 1998 and 23 deaths in 2000.

Within the state itself, the New Orleans metropolitan region has accounted for 25% of pedestrian fatalities and 29% of bicyclist fatalities from 1999 to the beginning

Figure 4
Percentage of Pedestrian Crashes by Parish

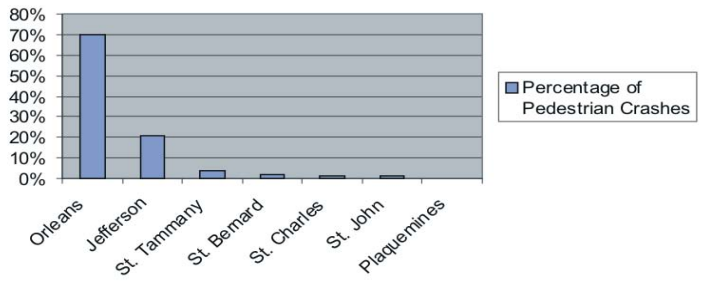
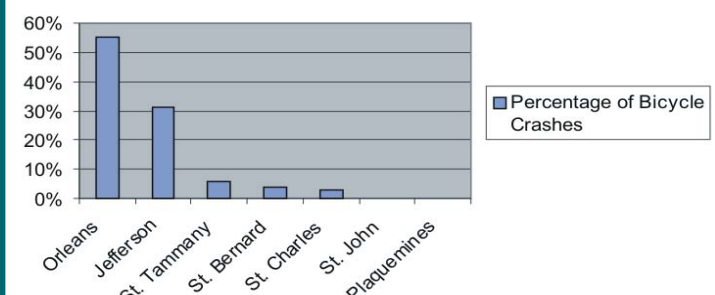


Figure 5
Percentage of Bicycle Crashes by Parish



quarter of 2003. Because the New Orleans MSA makes up 32% of the state's population, the New Orleans fatality rate is actually slightly lower than the Louisiana rate overall. While the fatality rate may be slightly lower, the number of incidents in the region is disproportionately high. During the same period, the region accounted for 49% of all bicycle incidents and 60% of all pedestrian incidents.

The lower fatality rate may result from the generally lower speeds of traffic in the congested part of the New Orleans region. Figure 4 highlights the extent of the pedestrian crash problem by parish. Figure 5 shows the bicycle crash percentages by parish. Both tables show that the great majority of incidents are occurring in the highly urbanized portions of the region, particularly in Orleans and Jefferson parishes.

The Importance of Poverty to Transportation Policy Planning

One of the region's most significant demographic characteristic, unfortunately, is the extent of poverty. Numerous epidemiological studies have focused on the link between poverty and a variety of negative public health outcomes. This work on poverty and public health has branched out to include studies on a connection between poverty rates and pedestrian and cyclist safety (National Safe Kids Campaign 2004, Pless, Verreault, Arsenault, Frappier, and Stulginskas 1987, Rivara 1990).

While the exact connection between poverty and pedestrian and bicycle safety involves a complex socio-economic interaction, one of the underlying components of this connection involves access to transportation. From a transportation planning standpoint, higher poverty rates generally translate into greater reliance on public transit, walking, and bicycling.

Pucher and Renne (2003) in their review of the socioeconomic implications of the National Household Transportation Survey of 2001 note several important findings on the connection between low-income households and transportation access and mode choice. First, Pucher and Renee point out the importance of auto availability to mode choice. They note, not surprisingly, that when a household has no car, they rely much more heavily on transit, walking, and bicycling than for those who own a car. The authors determined that for those with no car

19.1% of trips were made by transit, 41.1% of trips were made by walking, and 2.4% of trips were by bicycle. The surprising part of the findings was that 34.1% of trips continued to be made through a friend or relative's private automobile. Reliance on the personal automobile, even for low-income residents, was further highlighted by the fact that only 26.5% of low-income residents did not own an automobile. Pucher and Renee argue that, "Indeed it is probably unique to the United States that three-fourths of even the poorest households own a car. That reflects the extent to which the car has become a virtual necessity for even the most basic transportation needs in most American metropolitan areas" (p. 55).

While auto ownership and use is prevalent across all income classes in general, a quarter or more of the population of low-income residents rely on the public network of streets and public transportation for a significant portion of their trips. The reliance on the mode choice of walking, bicycling, or transit use exposes the user to the more intricate, micro-level urban design characteristics of the street environment. Whereas a driver is somewhat protected from the vagaries of weather and street conditions, pedestrians and cyclists are much more vulnerable. They must negotiate streets and intersections that were often designed specifically for cars. This design gap creates an important structural problem for low-income residents that do not own a car. As Pucher and Renee note, "Walking is probably the most ignored mode of transport, both in general as well as in reference to its importance among the disadvantaged" (p. 73).

Understanding the Extent of Poverty in the New Orleans Metropolitan Region

While understanding that a connection between poverty and transportation safety exists is an important first step in addressing the problem, operationalizing that knowledge requires a more intricate understanding of neighborhood poverty. Measuring the extent of poverty is an important component of understanding the particular social conditions of an area. In the influential book, *Poverty and Place*, Jargowsky (1997) surveys the extent of neighborhood poverty in the United States. Jargowsky utilizes census tract poverty figures as a neighborhood measurement of poverty. In his schema, census tracts with poverty rates above 40% are classified as high poverty areas. Research indicates that residents of these areas are particularly susceptible to negative neighborhood effects. These neighborhoods can be seen as "at risk" areas where a number of negative social and economic factors are accentuated.

While poverty affects the region as a whole, the central urbanized areas of Jefferson and Orleans parishes suffer the most concentrated poverty. The patterns of poverty in the two parishes are, however, very different. In Jefferson Parish, 14% of the population is identified as living in poverty (61,608) but only 3% of the population (14,153) lives in defined high poverty census block groups. Persons living in poverty in Jefferson are, thus, fairly well spread throughout the parish.[3] While the concentration of poverty affects a relatively small number of people, several significant clusters are still apparent. Figure 6 shows the census block groups (2000) in Jefferson Parish that are defined as high poverty.

In Orleans Parish, on the other hand, the concentration of poverty is a much more serious problem. In Orleans, 28% of the population (130,896) is identified as living in poverty and 28% of the population (132,879) lives in defined high poverty census block groups. Unlike in Jefferson where those living in poverty were fairly evenly distributed throughout the parish, the pattern in Orleans shows large sections of the city where poverty is a serious neighborhood factor. Figure 7 shows the census block groups in Orleans Parish (2000) that are defined as high poverty.

[3]High poverty in this study is defined as census block groups that have 40% or higher poverty rate. The block group delineation was used because it provides a finer-grained tool to look at poverty than the census tract delineation used by Jargowsky. This finer-gained delineation is important in New Orleans because of the close proximity of relatively high and low-income groups.

Figure 6
Jefferson Parish High Poverty Block Groups

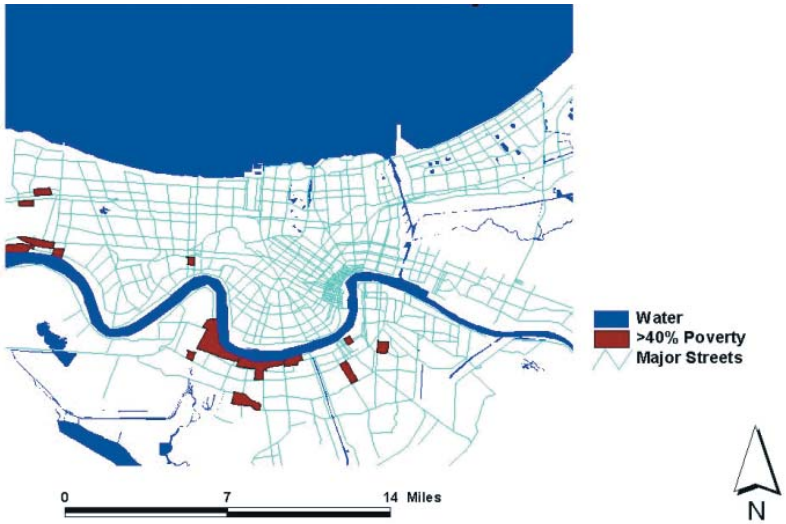
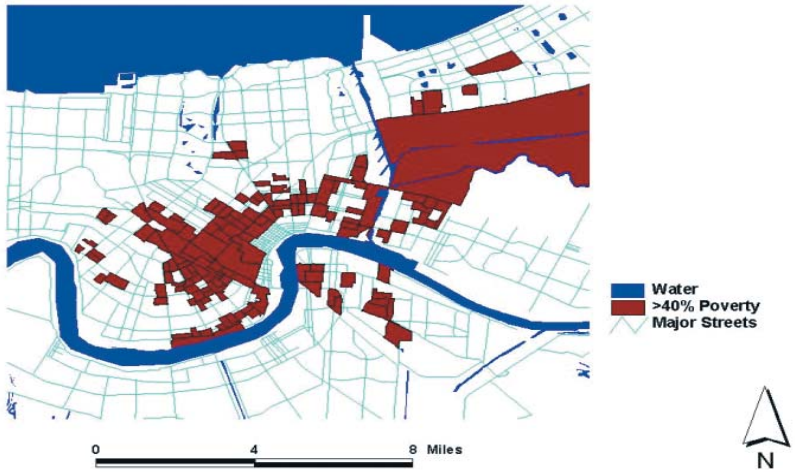


Figure 7
Orleans Parish High Poverty Block Groups



A closer look at the pattern of crashes in the New Orleans metropolitan region shows more clearly how the negative connection between poverty and pedestrian and cyclist safety functions. Tables 3 and 4 present the percentage of pedestrian crashes within and adjacent to high poverty block groups in Orleans and Jefferson parishes.

These data show that within high poverty block groups there is an over representation of pedestrian crashes compared to the population of these areas. For example, in 2002, 42% of pedestrian crashes occurred in high poverty block groups in Orleans and 10% of these same type of crashes occurred in Jefferson high poverty areas. (Remember that Orleans high poverty block groups contained 28% of the population and Jefferson's high poverty block groups contained 3% of the population).

When walking trips adjacent to the high poverty block groups are taken into account, the extent of the problem is further accentuated. It is important to include trips near or adjacent to high poverty areas because many stores and transit stops lie just beyond the edges of these areas. When ¼ mile and ½ mile delineations are used to analyze these data, the percentage of pedestrian crashes climbs dramatically. While it is difficult to untangle all of the demographic and spatial interactions that are helping to produce these results, the high percentage of pedestrian incidents occurring in and adjacent to high poverty areas should be seriously examined by those involved with safety and transportation policy.

The analysis of bicycle data in relation to poverty produced similar results to the pedestrian analysis. The disparity between Orleans and Jefferson, however, was even more pronounced. Within a ½ mile of high poverty block groups in Orleans, up to 91% of all bicycle crashes were recorded. In Jefferson, however, the percentage only ranged as high as 28% for recorded bicycle crashes within ½ a mile of high poverty block groups. Tables 5 and 6 show these results.

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Detailed Analysis of Crash Data

Focusing on the connection between poverty and pedestrian and bicycle incidents is only one way to understand the complex safety interrelationships. In order to provide a more nuanced portrait of the problem of pedestrian and bicycle safety, this section analyzes regional crash data from several different angles.

The data were provided by the Louisiana Department of Transportation and Development (LaDOTD). The LaDOTD compiled reported police crash reports from all parishes in Louisiana and provided the RPC with the data involving pedestrian and bicycle crashes for the metropolitan New Orleans area for the years 1999-2002[4].

[4]Partial data on 2003 was also provided.

Table 3
Orleans Parish Pedestrian Crashes and Poverty

Year of Pedestrian Incidents	% in High Poverty Block Groups	% within 1/4 mile of High Poverty Block Groups	% within 1/2 mile of High Poverty Block Groups
1999	34	67	75
2000	38	73	80
2001	38	75	84
2002	42	78	87

Table 4
Jefferson Parish Pedestrian Crashes and Poverty

Year of Pedestrian Incidents	% in High Poverty Block Groups	% within 1/4 mile of High Poverty Block Groups	% within 1/2 mile of High Poverty Block Groups
1999	7	27	33
2000	No Data*	No Data*	No Data*
2001	6	18	29
2002	10	21	36

*Jefferson Parish pedestrian data for this year appears to be incomplete. Only 41 pedestrian crashes were identified in the database for 2000. This compares with a low 121 in 2002 and a high of 162 in 1999 and 2001.

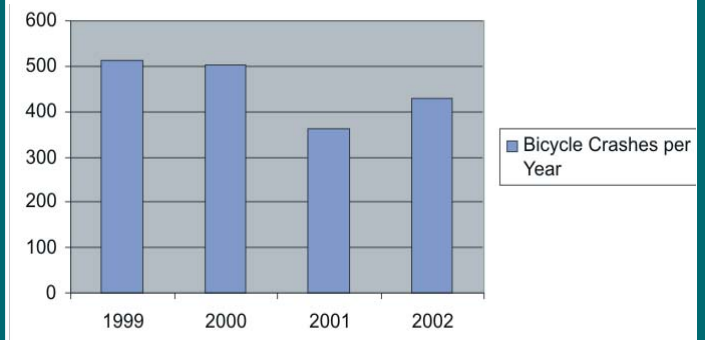
Table 5
Orleans Parish Bicycle Crashes and Poverty

Year of Bicycle Incidents	% in High Poverty Block Groups	% within 1/4 mile of High Poverty Block Groups	% within 1/2 mile of High Poverty Block Groups
1999	44	81	90
2000	35	75	80
2001	41	82	91
2002	36	72	87

Table 6 Jefferson Parish Bicycle Crashes and Poverty			
Year of Bicycle Incidents	% in High Poverty Block Groups	% within 1/4 mile of High Poverty Block Groups	% within 1/2 mile of High Poverty Block Groups
1999	3	13	22
2000	3	19	28
2001	No Data*	No Data*	No Data*
2002	3	16	23

*Jefferson Parish bicycle data for this year appears to be incomplete. Only 47 bicycle crashes were identified in the database for 2001. This compares with a low 133 in 2002 and a high of 166 in 1999 and 1999.

Figure 8
Bicycle Crashes per Year



While this examination helps to shed needed light on the demographic characteristics of pedestrians and bicyclist involved in crashes, it must be remembered that this analysis focuses on only half of the crash equation (pedestrians/cyclists). Crashes occur because of a complex interaction between the pedestrian/bicyclist, the driver, and the environmental characteristics of the surroundings. This chapter begins to explore this complex interaction through the demographic analysis. Chapter 6 provides further detail through a geographic analysis of where crashes are occurring.

The overall results of this examination show a large number of residents are impacted by the crash problem. During this period, 1,806 bicycle crashes and 2,878 pedestrian crashes were reported to the police. That is 1.2 bicycle crashes and 1.9 pedestrian crashes per day for the period. When bicycle and pedestrian crashes are combined, cars hit a total of 4,684 people during the 4-year period. That is 3.2 bicycle and pedestrian crashes per day for the entire 4-year period for metropolitan New Orleans.

Before beginning the detailed examination of these data, several limitations with these data need to be identified. First, despite the high number of crashes reported for the region, these data probably undercount the frequency of crashes because the police are not contacted in each incident, especially minor crashes (City of Toronto 2003). For example, records examined from Charity Hospital in downtown New Orleans show 2,561 people were treated for pedestrian and bicycle crashes between 1999 and 2002. While Charity treats probably the largest percentage of injuries associated with bicycle and pedestrian crashes, it is only one of many hospitals throughout the region. Second, as was discussed in the notes to tables 4 and 6, Jefferson Parish pedestrian data for the year 2000 and Jefferson bicycle data for 2002 appear to be incomplete. This results in a further undercount problem. Finally, while the police crash reports contain a great deal of information, they are generally geared more towards collisions involving motor vehicles. Some interesting data is, therefore, not available to pedestrian and bicycle crash research. The RPC has worked with the LaDOTD to help broaden the crash report so that future research can be more geared to the non-motorized population. Specifically, a new field for bicycle helmet usage has been included in the newest crash report.

Despite these limitations, the crash data provide a broad and accessible portrait of collision and frequencies that can be used to help explain current patterns of crashes. Summary statistics of the entire dataset were then created to describe the overall trends for the New Orleans metropolitan area as a whole.

Summary Statistics of Regional Bicycle and Pedestrian Crashes

Regional data for the New Orleans metropolitan area have been examined for both bicycle and pedestrian crashes. The data have been examined to determine how many people are involved in crashes, the severity of injuries sustained in those crashes, when these incidents are occurring, and who is involved in the collisions. The analysis in this chapter is descriptive, but it helps to shed light on some interesting patterns. The bicycle data is examined first.

The number of bicycle crashes in the New Orleans metropolitan area was examined for the 4 years of data from 1999 to 2002 (Figure 8). The highest number of crashes was recorded in 1999 (over 500). After a sharp drop to the mid-300s in 2001, the number shot up again to over 400 in 2002. The direction of the trend in these numbers is difficult to determine with the up and down yearly totals.

In order to make these data more meaningful, it would be useful to attach a rate of crashes per number of bicyclists in order to determine relative risk. This technique helps to show whether yearly crash total declines or increases are due to increases or decreases in ridership numbers. Future data collection efforts should be geared towards creating a baseline "exposure estimate" (City of Toronto 2003) of current riders to establish this meaningful rate. In addition, the analysis of these data should be undertaken yearly in order to determine both the direction of the trend in crashes as well as the extent of success in safety programs.

The severity of injuries sustained by cyclists is another important component of the dataset. Figure 9 shows the percentage of crashes for the different severity types listed in the crash reports. Figure 10 shows the percentages for each of these crash types by year. While the majority of cyclists sustained either minimal or no injury, the moderate, severe, and fatal categories still account for 30 to 40% of all crashes. The trend in these crashes

Figure 9
Percentage of Bicycle Crashes by Severity

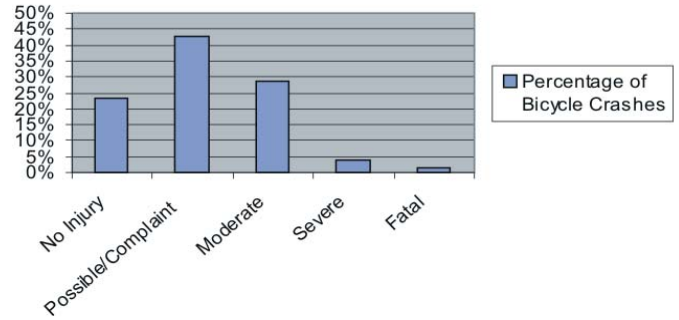


Figure 10
Percent of Severity of Bicycle Crashes By Year

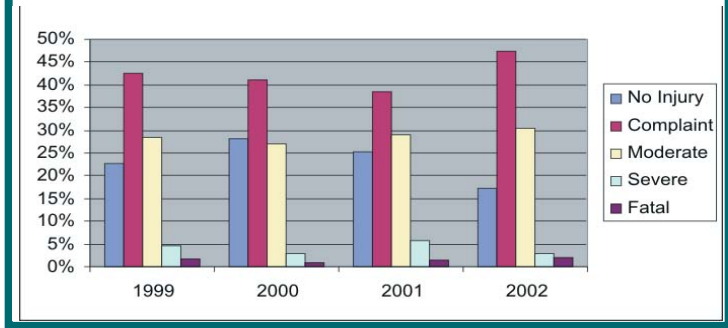


Figure 11
Percentage of Bicycle Crashes by Month

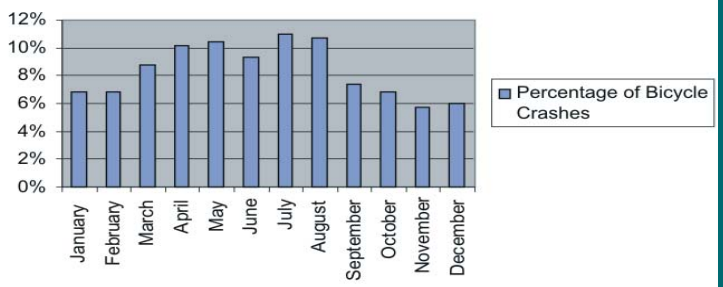


Figure 12
Percentage of Bicycle Crashes Per Day of the Week

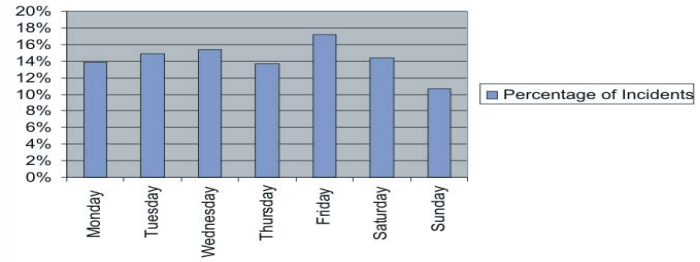


Figure 13
Number of Bicycle Crashes by Hour

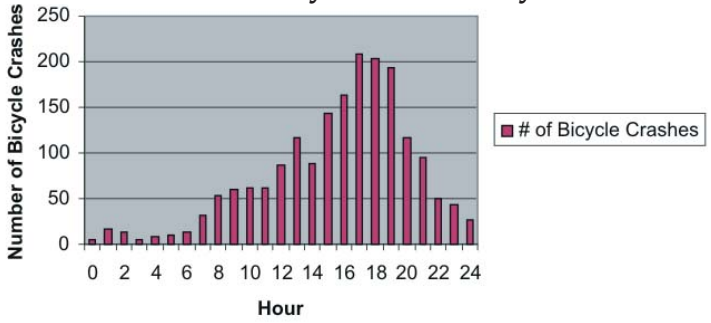
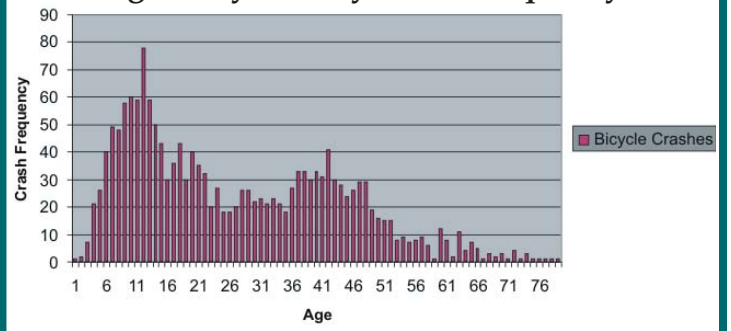


Figure 14
Age of Cyclists by Crash Frequency



appears to be fairly consistent from year to year.

Another way to look at these data is to compare month-to-month crash data. Figure 11 shows that the number of bicycle crashes peaks in July with over 10% and drops to under 6% in November. This pattern of a high number of summer crashes probably has to do with increased rider numbers during this period.

Figure 12 shows the distribution of crashes by day of the week. Aside from a small spike on Fridays, the data are fairly evenly distributed.

The crashes per hour of the day represented in Figure 13 show a spike in the afternoon hours between 4 and 7 PM. Again, this is probably due to the increased numbers of riders and increased congestion during this period. Detailed data on ridership patterns and volume would be extremely useful here to help create a more focused analysis of these data.

The age of cyclists involved in crashes (Figure 14) shows two peaks. The first and largest peak is for 13 year olds. The second peak is for 41 year olds. According to officials at Charity Hospital, the average age of emergency room admissions for bicycling crashes is 43. This second peak could relate to the higher number of older residents that do not own a car and rely on the bicycle to move around the community.

The age distribution of the New Orleans crashes is very different from the pattern seen in some other areas. In a comprehensive study of Toronto cyclists, the peak in incidents occurred for mid- to late-twenty year olds. Because of the higher levels of bicycle commuting and ridership in this age group, they were more likely to be involved in crashes. The relatively low number of mid-twenty year olds seen the New Orleans metropolitan dataset could be seen as an indication of a relatively low number of commuting and recreational cyclists in this age group. Again, a detailed analysis of the rate of injury would help to better understand the implications of these data.

Another way to slice these data is to look at the percentage of adults versus juveniles involved in bicycle crashes. Figure 15 shows that despite the large peak of young cyclists involved in crashes seen in Figure 11, the overwhelming majority of crashes actually occur with adults.

Another technique for analyzing the age of cyclists involved in crashes is by looking at life stages for those involved in crashes (Figure 16). This technique was used by Tan (1996) for use in the FHWA's crash type manual. This technique splits age data into groups according to established life stages. This approach can be used to help target safety messages to particular age groups within the population.

The data examined here, once again, show that the adult population is involved in the highest number of crashes, followed by youth and mature adults. It is interesting to note that this life stage histogram fails to pick up the spike of early-forty year olds and the relatively smaller number of mid-twenty year olds involved in bike crashes. Because of its large grouping of adults 25 to 44 in one group, the life stages histogram probably understates the significance of crashes to the older segment of the adult life stage and overstates the significance to the younger component of the adult category.

Finally, lighting conditions are another way to examine the temporal aspect of crashes (Figure 17). The overwhelming majority of crashes occurred during daylight hours. Again, the rate of crashes would be useful to examine here. The large number of crashes during daylight hours probably emphasizes the greater number of cyclists active during this period.

Pedestrian Regional Data

While there are several significant differences between the bicycling and pedestrian data, the basic trends of the two are remarkably similar. These similarities and differences are highlighted in this section.

Figure 15
Cyclist Crashes: Juvenile vs Adult

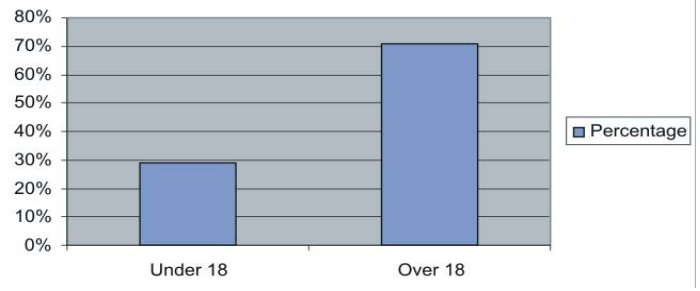


Figure 16
Percentage of Bicycle Crashes by Life Stage

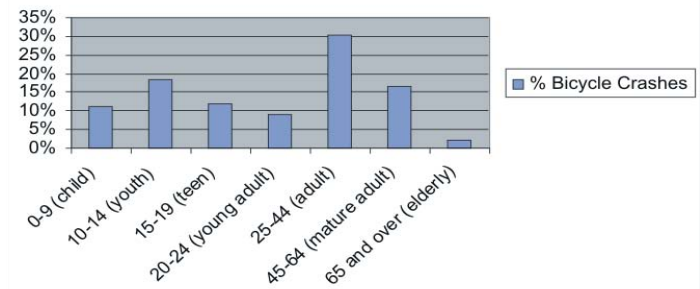


Figure 17
Percentage of Bicycle Crashes by Lighting Condition

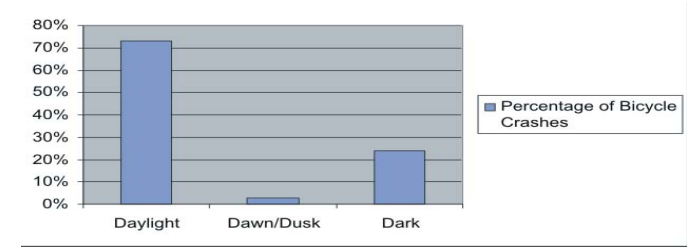


Figure 18
Number of Pedestrian Crashes Per Year

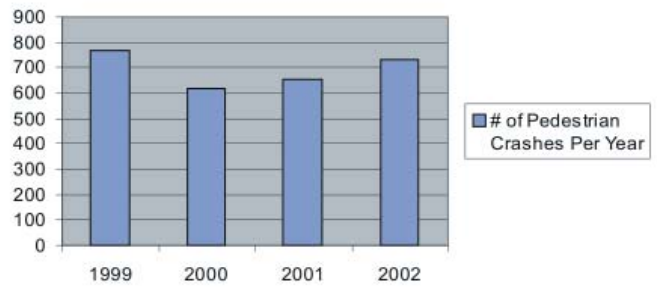


Figure 19
Percentage of Pedestrian Crashes by Severity

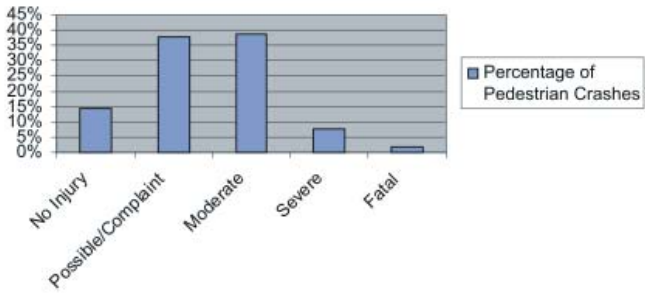


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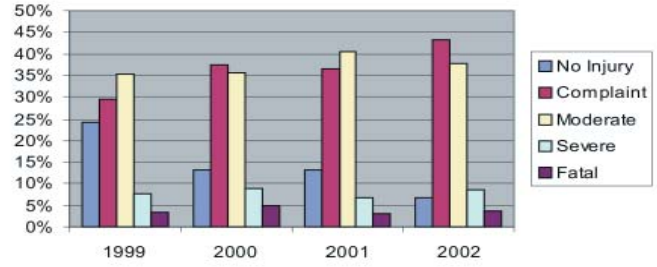
Figure 20
Percent of Severity of Pedestrian Crashes



A fairly stable trend in pedestrian crashes was observed from 1999 to 2002 (Figure 18). Despite a dip in 2000, pedestrian crashes have averaged around 650 to 750 crashes per year.

An examination of the severity in pedestrian crashes (Figure 19) shows a slightly lower percentage of crashes reported as "no injury" and a higher percentage of moderate and severe injuries compared to the bicycling data. The difference in the basic dynamics of the two types of crashes could result in these differences with pedestrians taking a much more direct impact from the collisions. Figure 20 shows the fairly stable pattern of the severity of crashes over the study period.

The percentage of pedestrian crashes by month (Figure 21) shows an interesting peak of crashes in March and April. The good weather of these months may result in higher pedestrian numbers. Because the rate of pedestrian crashes is unavailable, it is difficult to determine exactly what to make of these differences. Just as in the bicycling analysis, a study to determine the rate of pedestrian crashes by population would provide much needed insight into the dynamics of pedestrian crashes.

Figure 22 shows the percentage of pedestrian crashes by day of the week. Just as in the bicycling data, there is a small increase in crashes on Friday.

Figure 23 shows the number of pedestrian crashes by hour. Again, just as in the bicycling data, there is an afternoon peak between 3 and 7 P.M. with a small morning peak.

While much of the pedestrian and bicycling crash data appears to be a mirror image of one another, the age data shows some significant differences. The age of pedestrian crashes shows two juvenile peaks at around ages 6 and 13 (Figure 24). The highest peak is for the younger set of children. This large peak in the pedestrian data is much more pronounced than in the bicycling data.

Because younger children are still developing the cognitive skills necessary to safely move about their neigh-

borhoods, this younger age group is more likely to be involved in crashes. Rivara (1990) in his study of child pedestrian injuries in the United States found that this age group was particularly vulnerable. He says that, "The early school-age child appears to represent a 'window of vulnerability' in which expectations and demands of the child as a pedestrian exceed the skills he or she can bring to bear on the crossing task" (p. 693). This tendency of adults to overestimate the actual cognitive development of their children might be addressed through a focused safety education program aimed at educating adults.

While the largest spikes in pedestrian crashes appear in the juvenile age category, the largest percentage of pedestrian crashes occur with adults (Figure 25). This pattern again matches the one established in the bicycling crash analysis.

Figure 26 shows the life stages for pedestrians involved in crashes. The pattern is nearly identical to the bicycling data except for a reversal in the incidence of crashes between the child and youth categories. Rivara's analysis (1990) examined earlier helps to explain this difference.

One field of data that was available in the pedestrian data that was not available in the bicycling data is the gender of the pedestrian involved in the crash (Figure 27). Males accounted for about 60% of all those involved in crashes while females accounted for approximately 40%.

The final histogram displays the percentage of pedestrian crashes by lighting condition (Figure 28). Just as in the bicycling analysis, the majority of crashes occurred in daylight hours. Again, this could be caused by the higher number of pedestrians active during this period.

Implications of Summary Statistics

The analysis of pedestrian and bicycling crashes presented thus far is intended to provide a descriptive portrait of how many people are involved in

Figure 21
Percentage of Pedestrian Crashes by Month

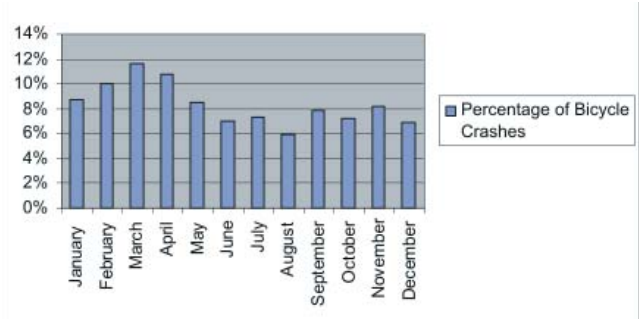


Figure 22
Pedestrian Crashes by Day of the Week

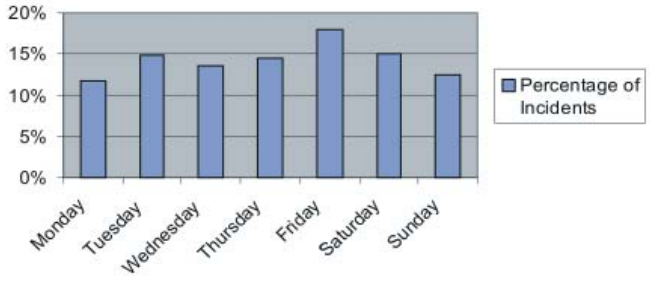


Figure 23
Number of Pedestrian Crashes by Hour

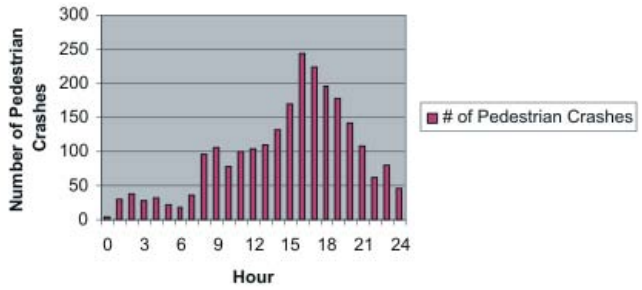


Figure 24
Age of Pedestrian By Crash Frequency

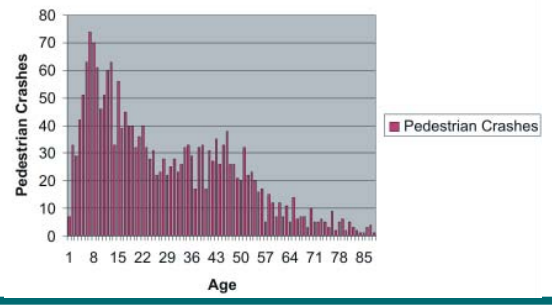


Figure 25
Percentage of Pedestrian Crashes by Age

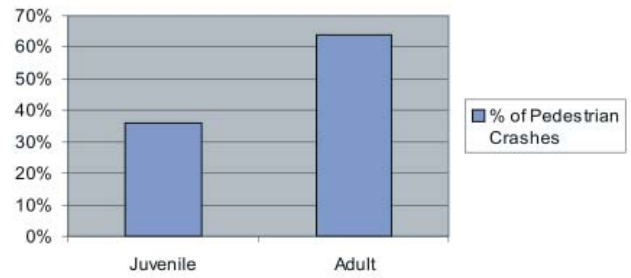
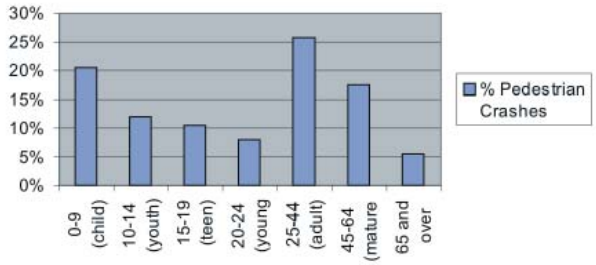


Figure 26
Percentage of Pedestrian Crashes by Life Stage



crashes, the severity of injuries sustained in those crashes, when these incidents are occurring, and who is involved in the collisions. This descriptive analysis provides simple baseline data on these important characteristics. The analysis to this point has only cursorily examined how and why these crash incidents have been occurring. While a full-blown crash frequency analysis of collision types is beyond the scope of this Master Plan, a more detailed geographic analysis of where collisions occur has been undertaken to help provide policy makers and the public with a more focused description of crash events. Chapter 6 presents this detailed geographic analysis. Before delving into this detailed geographic analysis, the important elements of the urban landscape must be examined. This analysis focuses on both the importance of climate on non-motorized transportation as well as the underlying pattern of the urban transportation system.

Description of the Advantages and Constraints of the Landscape of Southeast Louisiana

The New Orleans metropolitan region is made up of seven parishes around southeast Louisiana that stretch from the marshland of the Gulf of Mexico to the rolling pine forests of the northshore of Lake Pontchartrain. The diversity of landscapes is matched by a wide variety of townscape profiles that ranges from the dense, nineteenth century street networks of New Orleans to twentieth century suburban forms of many of the surrounding parishes to rural hamlets that dot the outskirts of the region. In order to effectively plan for pedestrian and bicycling in this region, the unique characteristics of these diverse landscapes must be addressed. This section provides an overview of some of the pertinent elements that help to create the planning environment of southeast Louisiana.

Climate

Walking and bicycle riding are activities that are highly dependent on the climate of a region. The New Orleans

metropolitan area lies in a semi-tropical belt characterized by short, mild winters and steamy, long summers. While the tropical rains and heat of the summer have become indelible hallmarks of the popular perception of the climate of the area, the bulk of the year (from October to May) has very moderate weather. This long moderate period provides an excellent setting for promoting increased bicycling and walking opportunities.

While the temperate time of year presents opportunities, the sustained heat and tropical rains of the summer present some important challenges to increased bicycling and walking. While planners certainly cannot change the weather, several small, but important steps can be introduced to help make bicycling and walking more attractive options during the summer months. These small courtesies include:

- shower facilities and protected bicycle parking
- canopied sidewalks for shade and protection from rain

These two small interventions could help to make bicycling and walking more viable transportation options during the summer months.

Street Network Description

The network of streets that crisscrosses the New Orleans metropolitan region provides more than a means for movement of cars. These same street corridors form the backbone of the bicycling and pedestrian network. The design and layout of the street networks in the region help to create distinct advantages and constraints for the pedestrian and cyclist.

At the heart of understanding the pedestrian and bicyclist network is the concept of connectivity. Connectivity defines the ease of movement of pedestrians and bicyclists in the transportation system. A highly connective system is built around the unique needs of the non-motorized population by including design features aimed at providing easy and safe access to and across the street network. Low connectivity implies that significant breakages or impediments exist within the system that make it difficult or potentially unsafe for the non-motorized population to cross the area.

Figure 27
Gender and Pedestrian Crashes

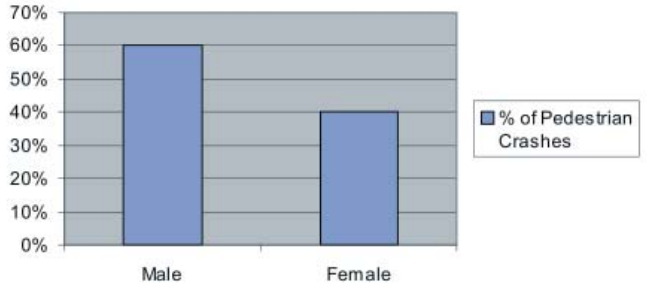
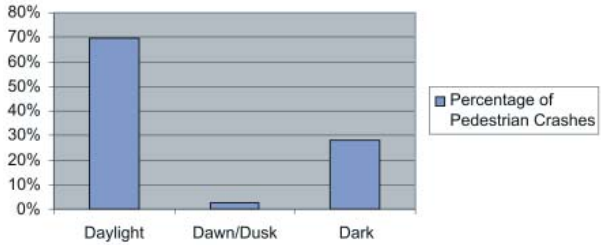


Figure 28
Percentage of Pedestrian Crashes by Lighting Condition



An example of how to determine connectivity is found in the "Walkability Checklist" of the Partnership for a Walkable America. The checklist helps to determine how conducive a neighborhood is for walking. Such questions as, "Did you have room to walk?", "Was it easy to cross the streets?", and "Was your walk pleasant?" help to provide a general picture of the connectivity of an area. These questions are deceptively simple, but the small, micro-scale implications on the urban design of an area that they imply can make the difference between a safe, pleasant walk and an arduous journey.

Figure 29
French Quarter Street Pattern

Source: The Regional Planning Commission and Louisiana Oil Spill Coordinator's Office (LOSCO), and United States Geological Survey (USGS), 1999, Color Infrared Orthophotography of Louisiana, LOSCO, USGS (1999). Actual Photography taken in 1998. Images mosaicked, and subset, by the Regional Planning Commission.

This section highlights connectivity patterns by focusing on the functional characteristics of the street network and on how well they function as multi-modal transportation corridors. The analysis focuses on the areas where the greatest percentage of crash incidents are taking place. In the New Orleans region, Orleans and Jefferson account for 86% of bicycle crashes and 91% of pedestrian crashes. These two parishes warrant a detailed analysis of their street systems.

Orleans Parish

The core of the New Orleans street system still adheres to the general pattern that was established in the city's early years of growth in the 19th century. The basic layout of streets is based on the grid pattern of carefully measured consistent street intersections. This pattern can clearly be seen in the checkerboard consistency of the French Quarter's street system (Figure 29).

As the city grew, new city streets were woven into this original system extending some streets and creating new ones where necessary (Lewis 2003, Fields 2004). Because of the curve of the river, a singular, extended square grid system for the entire Crescent City was not feasible. Instead, the city grew with a series of micro-level grids with streets connecting together to create a wagon-wheel profile with its hub focused on Mid-City (Figure 30).

This pattern helps to create a city street system that offers both great possibilities and unique challenges for bicycle and pedestrian planning. On the positive side of the equation, the dense, semi-circular street network helps to keep commuting distances short, helping to open up multiple neighborhoods within a short distance of one another. These short distances, along with the generally small scale of the streets themselves, help to offer tremendous opportunities for increasing bicycling and walking trips.

The street systems unique charms, however, were seen as a detriment to regulated growth during the modernist planning phase of the mid-20th century. Instead of seeing the unique fabric of the city as an asset, planners of this era sought to impose a regulated concentric growth pattern based around large-scale Interstate highways and a vastly widened street system. These large-scale interventions, while acting to open up the region as a whole to growth, have left numerous breakages in the network of the pedestrian and bicyclist transportation system. These connectivity problems, in the form of edges of Interstates, bridges, and wide, multi-lane traffic corridors, create significant barriers to bicycling and walking. Effective bicycle and pedestrian planning in New Orleans must deal with both this positive and negative legacy in order to help fashion a fully integrated, high-quality, muti-modal transportation system. The detailed geographic analysis in Chapter 6 further details the implications of these connectivity problems

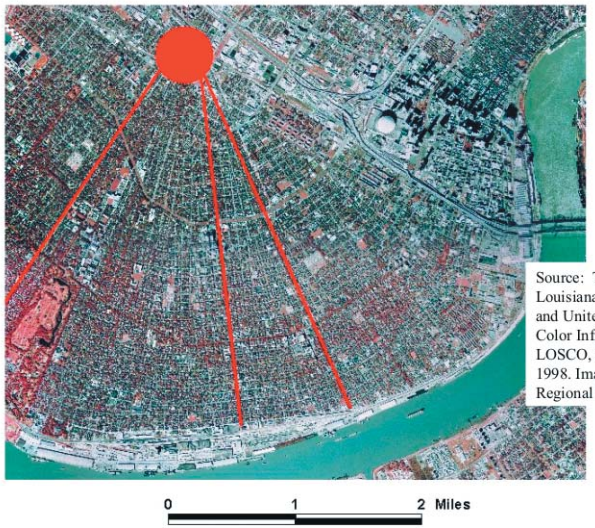
Jefferson Parish:

Unlike Orleans Parish, the bulk of Jefferson Parish's street system has been developed with an eye towards

large-scale movement of the automobile. This suburban pattern helps to create enclaves of low-intensity traffic linked to high-intensity commercial areas via large, single purpose automotive traffic arteries. This system creates significant connectivity problems for pedestrians and bicyclists that are characteristic of other suburban areas around the country.

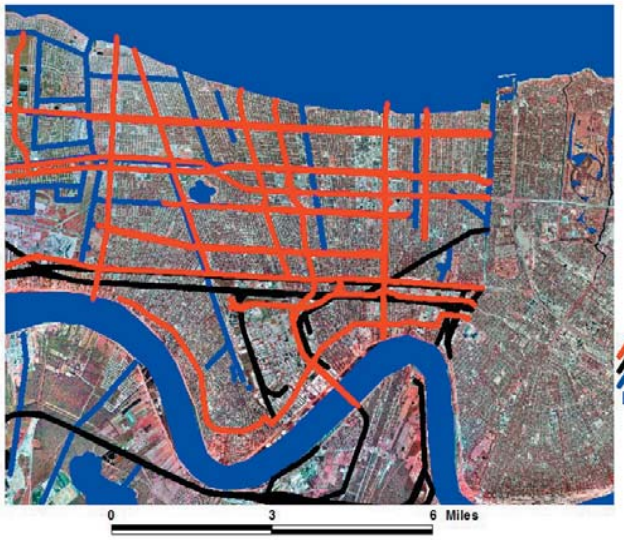
While this basic pattern has been repeated in countless communities around the country, Jefferson Parish's landscape constraints have helped to create several unique challenges. The East Bank of Jefferson is divided by a series of large-scale transportation corridors. The east-west dividers include Jefferson Highway, Earhart Expressway, Airline Drive, West Metairie, West Napoleon, Interstate-10, Veterans Boulevard, and West Esplanade. These major, multi-lane arteries create significant impediments to movement of bicycles and pedestrians in the parish. The situation is compounded by the relative scarcity of at-grade, north-south routes that breach the Interstate. The older urbanized portion of the parish from Bonnabel Boulevard to the parish line has several at-grade roads that create decent pedestrian and bicycling access to the lake side of the parish. The newer suburbanized portion of the parish moving towards Kenner, however, is connected to the lake side by elevated roadways at Causeway, Cleary, Clearview, and David Drive, with only the heavily trafficked Williams and Loyola crossings at grade. Only Transcontinental provides a decent connection for pedestrian and cyclists on this side of the parish. The numerous drainage canals and railroads that cross the area further accentuate the connectivity problems of the parish (Figure 31). Jefferson Parish's pattern of pedestrian and bicyclist crashes shows the impact of these connectivity barriers. Understanding the specific implications of these connectivity problems is the task of Chapter 7.

Figure 30
Wagon-Wheel Street Profile



Source: The Regional Planning Commission and Louisiana Oil Spill Coordinator's Office (LOSCO), and United States Geological Survey (USGS), 1999. Color Infrared Orthophotography of Louisiana, LOSCO, USGS (1999). Actual Photography taken in 1998. Images mosaicked, and subset, by the Regional Planning Commission.

Figure 31
Eastbank Jefferson Major Connectivity Barriers



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Identifying Statistical Hot Spots

Identifying Statistical Hot Spots

Crashes result from a complex interaction between bicyclists and pedestrians, drivers, and the built environment. Chapter 6 began the exploration of crashes in the New Orleans metropolitan area by examining the general characteristics of pedestrians and bicyclists involved in crashes and the basic patterns of the built environment that affect non-motorized transportation. This chapter attempts to provide a more complex portrait of the crash interaction phenomenon by specifically identifying where these crashes are occurring.

An important phase in a systematic approach to decreasing the incidence of pedestrian and bicycling crashes is the creation of meaningful spatial portraits of areas of high incidents. Identifying the areas of high incidents can be accomplished in several ways. First, the most direct approach is to map the locations of crash incidents. Through a visual inspection of the locations of these crashes, patterns can often be established that can help to focus attention on certain high-risk areas. Another more rigorous and focused technique for accomplishing this task is through the creation of hot spot maps that identify clusters of incidents. Cluster analysis is important because it helps identify the locations where a higher than average number of incidents are taking place. This hot spot mapping technique helps policy-makers make sense of the reams of incident data by producing a well-defined statistical hierarchy of point data[5]. Policy-makers can then focus scarce resources to the problem locations more effectively[6].

The Regional Planning Commission has acquired bicycle and pedestrian crash reports for the region for the years 1999 through 2002[7]. Chapter Five provided a basic descriptive breakdown of these data that defined the extent of the crash problem, the severity of those crashes, when those crashes were occurring, and who was involved in these crashes. While this descriptive analysis provides important background data, it does not specifically address where these incidents are occurring. This chapter presents a geographic analysis of pedestrian and bicycle crashes in the New Orleans metropolitan area. The analysis focuses on Jefferson and Orleans parishes where 91% of pedestrian crashes and 86% of bicycle crashes in the region are taking place[8].

The first half of the chapter explores the connection between important land uses, such as transit stops, public housing, and schools to crash locations. Because the density of crashes was highest in Orleans, this parish was the focus of this analysis. This proximity analysis helps to create an overall pattern of where crashes are occurring. The second half of the chapter explores the complex patterning of the crash point data through the use of a computerized hot spot or cluster analysis for Orleans and Jefferson parishes. Cluster analysis of the point data can help to provide a list of the most important locations where bicycle and pedestrian incidents take place. The two forms of geographic analysis undertaken in this chapter help to provide a strong conceptual foundation for understanding crashes that can be used to help set a policy agenda for future countermeasure policies.

[5]Point data in this case are simply the locations of crashes.

[6]Turner-Fairbank Highway Research Center (2002) notes that this quantitative spatial mapping of police crash data is only one of several important techniques for identifying areas in need of intervention. FHWA notes that "planners and engineers should consider problem-identification methods such as interactive public workshops, surveying pedestrians and drivers, and talking with police to identify safety problems in an area before crashes occur. This may help proactively identify locations for pedestrian safety improvements and will involve citizens in the process of improving safety and mobility in their own communities" (p. 6).

[7]Crash report data was also provided for the first quarter of 2003.

[8]Hot spot analysis was hampered for more rural areas of the region by an insufficient number of incidents and broad geographic descriptions of the location of crashes.

Where Do Crashes Happen: A Proximity Analysis

Examining the location of crashes can provide a great deal of insight into the specific landscape and social factors that may be driving the crash problem in particular areas. In Orleans Parish, the high poverty percentage of the parish's residents discussed in Chapter 6 places a higher burden on non-motorized forms of transportation. These modes expose the user more intimately to the micro-level design characteristics of his or her local environment. Several factors that may help to articulate the crash problem in Orleans Parish are examined in this section. Geocoded pedestrian crashes for the years 1999 to 2002 have been examined to determine their proximity to schools, transit routes, and housing developments. In addition, the pedestrian data have been examined to determine the percentage of crashes that are occurring in the congested Central Business District and French Quarter areas.

An obvious and important concern for local transportation planners is the safety of children. The pedestrian crash data were examined to determine the extent of crashes that are occurring to youth under 18 and the proximity of those crashes to schools. Table 7 shows the results of this analysis. While it is difficult to determine a clear trend in the number of youth involved in pedestrian crashes (percentages per year varied from 29 to 40%), the large percentages of youth crashes for these years clearly represents an important issue.

Examining the crashes that occur within a short distance of schools provides a way to shed more light on the issue of youth pedestrian safety. The last column of Table 7 shows the number of pedestrian crashes that occurred within a quarter mile of schools during the approximate school zone times. These numbers appear to be lower than what might have been expected representing six to seven percent of total crashes in the parish. While these numbers may be smaller than expected, they still represent a significant problem considering the attention of police and school crossing guards in helping to secure these areas.

The middle column in Table 7 shows the number of crashes occurring near schools but outside of school zone times. With percentages ranging from 17 to 27 percent of total crashes in the parish, these percentages appear to uncover a more significant problem of youth pedestrian safety around schools more generally. The higher percentages for non-school zone hours may result from a false assumption of safety. The bubble of safety that is extended to youth around schools during school zone

Table 7
Pedestrian Crashes Involving Youth under 18, Orleans

	% of Crashes		
Year of Pedestrian Incidents	Involving Youth under 18	Involving Youth under 18 within 1/4 mile of School	Involving Youth under 18 within 1/4 mile of School (during school zone times)
1999	35	17	7
2000	40	22	7
2001	40	27	7
2002	29	18	6

*School Zone Times and Dates are not exact. The times are defined as 7 to 9AM and 2 to 4 PM. The months excluded are June, July, and August.

times may provide a false assumption of safety that could result in these relatively higher percentages.

While concrete conclusions about the exact mechanisms of youth pedestrian crashes are beyond the scope of this overview, this basic geographic analysis of youth crashes has uncovered what appears to be a connection between proximity to schools and youth pedestrian crashes. Considering the importance of the safety of children, more detailed crash frequency analysis should be considered to help uncover the specific crash sequences that are occurring to this most delicate population group. Chapter 14 continues this evaluation with a detailed look at youth pedestrian crashes in the core area of Orleans and Jefferson parishes.

Another important area of concern for planners is the number of crashes occurring in the congested transit corridors of the city. The proximity of transit routes to pedestrian crashes was examined to determine the percentage of crashes occurring on and near (1/10 of a mile) transit routes. Table 8 shows the results of this analysis. With figures ranging from 77 to 85 percent of all crashes, pedestrian safety in transit corridors appears to be a significant issue.

Several caveats need to be established for interpreting these results, however. In Orleans Parish, transit routes are spread over nearly all major streets. Because of the large network of streets involved and the volume of traffic that these streets carry, it should not be surprising that pedestrian crashes occur much more frequently along these routes. In addition, this analysis was unable to distinguish between transit riders involved in crashes and other pedestrians involved in crashes. Because of this, singling out transit as the culprit in pedestrian crashes may oversimplify a more complex problem.

Table 8

Year of Pedestrian Incidents	% of Incidents within 1/10 Mile of Transit Route
1999	77
2000	76
2001	81
2002	85

Despite these caveats, the high percentage of incidents occurring along these corridors should be taken seriously. Whether the problem involves transit specifically or some combination of transit, higher traffic volumes, and/or higher pedestrian foot traffic, these corridors represent the predominant locations for pedestrian crashes in Orleans Parish. More detailed study is needed to determine the exact social and landscape characteristics that are leading to crashes in these zones.

One recommendation offered by the FHWA that can help reduce transit pedestrian crashes should be considered as these transit routes are analyzed. In *A Review of Pedestrian Safety Research in the United States and Abroad* (2004), the FHWA proposes moving transit stops to the opposite side of intersections to increase visibility of pedestrians crossing the street. This encourages "pedestrians to cross behind the bus instead of in front. This allows the pedestrian to be seen and to see oncoming traffic closest to the bus" (p. 90). This engineering countermeasure seems like a basic first step in addressing the high percentage of crashes that are occurring along transit routes in Orleans Parish.

Because poverty is such a large concern for the city, the proximity of crashes to housing developments was also examined (Table 9). While the percentage of crashes occurring immediately adjacent to the larger housing development complexes is relatively small (around seven or eight percent of crashes citywide), the percentages rise dramatically as small proximity rings are examined. When the proximity to housing developments is moved to a quarter of a mile, the percentage of crashes rises to a range of 16 to 19 percent. When the proximity ring is set at half a mile, the percentage range rises to between 30 and 34 percent of pedestrian crashes. Quarter mile and half mile proximity rings are within easy walking distance of these developments. Because of the higher

Table 9 Proximity of Crashes to Housing Developments			
	% of Crashes		
Year of Pedestrian Incidents	Within 1/10 Mile of Housing Development*	Within 1/4 Mile of Housing Development	Within 1/2 Mile of Housing Development
1999	7	16	31
2000	8	17	30
2001	8	19	34
2002	7	16	32
*This includes the larger multi-block developments in Orleans Parish.			

reliance on non-motorized trips for this population, the concentration of poverty could be seen as a factor in the high percentage of crashes within walking distance of these developments. Once again, this basic geographic analysis only suggests possible relationships. Further study could help to understand the relationships more clearly.

Another significant issue for transportation planners is the extent of crashes occurring in the CBD and French Quarter areas. Table 10 shows that the percentages of crashes in the core area of the city ranges from 17 to 21 percent of all crashes for the years 1999 to 2002. Considering that this zone of the city is only about a mile and a half square, these percentages are high. In addition to the human costs that these crashes cause, the economic cost may also be an important consideration. The CBD/French Quarter area represents the heart of the business/tourism sector of the economy. While keeping citizens safe in all parts of the city needs to be the predominant goal of transportation policy, the extra congestion of this area and the added economic significance of the zone may suggest that stronger countermeasures need to be taken to make this area safer for locals and tourists alike.

While more study should be undertaken to select the most appropriate engineering countermeasures in the congested heart of the city, a targeted public awareness campaign promoting pedestrian safety downtown could be utilized as an important first step. One suggestion that was raised by the Regional Planning Commission's Bicycle/Pedestrian Safety Advisory Group was to initiate a pavement marking alert system in the French Quarter that would be combined with a public safety campaign to help reduce pedestrian crashes. This type of system is similar to the one that has been used in London for years. In London, a simple stenciled painted reminder is placed at intersections reminding pedestrians to "Look Left" or "Look Right." The markings in the French Quarter could be done in a similar fashion, but possibly with a more New Orleans flair. A competition to create the design or some other type of publicity campaign could be created to help raise awareness about the importance of pedestrian safety.

Table 10	
Year of Pedestrian Incidents	% of Incidents within the French Quarter and CBD
1999	17
2000	18
2001	20
2002	21

Crosswalks in New Orleans

One of the things that strikes a traveler from Louisiana when visiting the West Coast is the fact that traffic will often stop for you as you cross the street in a crosswalk. Many (though not all) West Coast drivers are conditioned to actually yield to pedestrians. This legal and cultural acceptance of a pedestrian's right to cross the street has, unfortunately, not been accepted by a large portion of New Orleans area drivers. Attempts to cross the street in crosswalks in New Orleans are often met by a non-ending stream of automobile traffic that is oblivious to their obligation to yield.

While this can be a serious problem for anyone attempting to cross the street, it is particularly dangerous for tourists or children who expect that cars will yield. The picture at the right was taken the day after JazzFest on South Peters Street near the Tower Records store. During this time, many out-of-town tourists (and locals alike) walk back and forth between the live music events at Tower Records and the near-by Louisiana Music Factory in the French Quarter. Many of these tourists expect that the painted crosswalks will offer them some protection as they attempt to cross the street. Unfortunately, many New Orleans drivers are not accustomed to yielding to pedestrians in crosswalks. The gentleman in the picture entered the crosswalk when traffic was about a block away expecting that traffic would slow to allow him to cross. As the picture shows, this was a mistaken assumption. The car on the right is entering the crosswalk while a bus is bearing down on the man from the other lane. Just after this picture was taken, the man began running across the crosswalk as the bus continued on its path toward him. Luckily, he was not struck on his journey across the street in the crosswalk.

In the next picture, a couple is attempting to cross the same intersection a minute or two later. A car (shown in the bottom left of the frame) actually continues toward them while they are in the crosswalk. Again, the couple scurried away across the intersection.

In less than five minutes these and several other near misses were observed at this intersection (South Peters and Conti streets). This intersection is ranked number 7 in the region for pedestrian crashes with 7-recorded crashes from 1999 to 2002.

Overall, twelve of the top fifteen pedestrian crash locations are in the French Quarter and surrounding CBD area (See Table 11 later in this chapter). Because of the combination of a large amount of foot traffic in the Quarter, the large portion of tourists with different expectations about crosswalk protection, and a local population that ignores pedestrian's rights to crosswalks, the French Quarter and the surrounding CBD were the location of 21% of pedestrian crashes in the region in 2002. A more

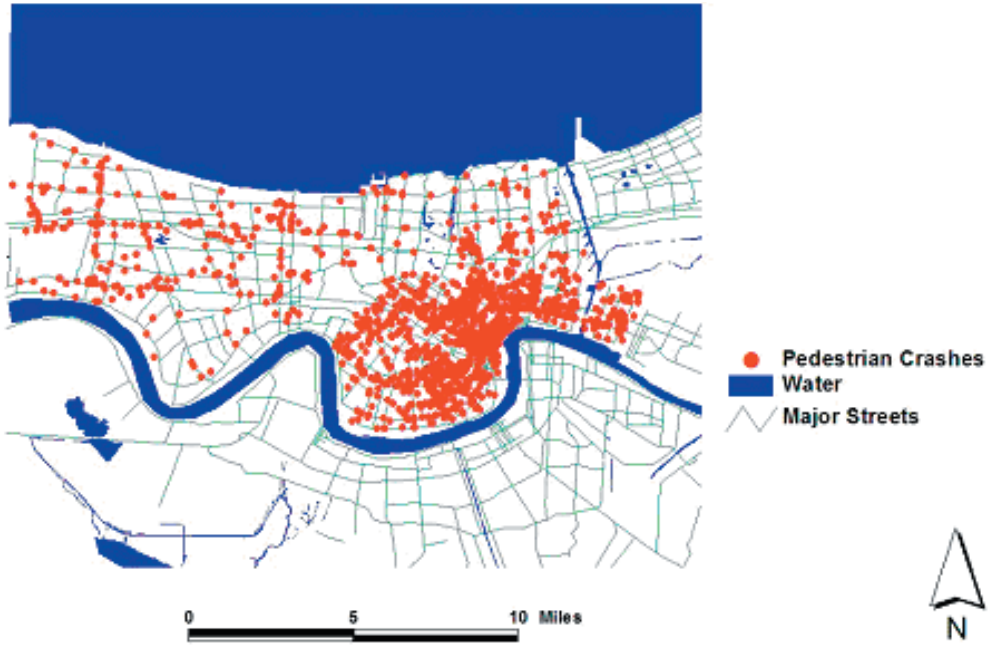
detailed study of this area should be considered to help unravel the combination of issues that is driving the pedestrian crash problem in this, the traditional heart, of the New Orleans area.

Hot Spot Analysis

The above geographic analysis helps to single out some of the general areas of the city in need of special attention. It provides important data on where crashes are occurring generally and on some of the likely causes of those crashes. While the analysis creates this generalized description of where crashes are occurring, this form of analysis is limited in its ability to pinpoint more specific areas in need of attention. For example, Figure 32 shows the base pedestrian data unfiltered by spatial statistics. This unfiltered graphic shows how difficult it is to determine exact patterns from a simple visual inspection of the data. While some apparent patterns can be seen, a distinct, specific set of hot spots is impossible to define from this visual inspection.

While the visual analysis to extract information from point data utilized in the above section is a crucial first step in analyzing data, it can be augmented by computerized hot spot analysis that can help to sort through these data much more systematically. This section provides a detailed examination of the specific mechanisms of hot spot analysis and applies this important technological tool to crash data in Orleans and Jefferson parishes. Sufficient data points were not available for Plaquemines, St. Bernard, St. Charles and St. Tammany parishes in order to conduct a statistical analysis of hot spots in those parishes.

Figure 32
Pedestrian Crashes 1999-2002 East Bank Core



Spatial Statistics Overview

While the actual steps used in the computer application of the hot spot techniques are not particularly complex, it is important to understand the basic concepts of how the spatial statistical program is operating to achieve the best and most appropriate results. To help provide this background, a brief and basic overview of spatial statistical techniques is presented first[9].

One of the central concepts in spatial statistics is the importance of proximity to understanding social phenomenon. In spatial statistics, events occurring close to one another are assumed to have some degree of dependence on one another. In traditional statistics, one of the basic premises is that each case is understood to be independent of other cases. The probability of an event occurring in traditional statistics is assumed to be determined by random chance. The location of an event or the degree of proximity among cases is not considered.

In most social relationships, however, the location of one event often has an effect on the location of other events. This condition is referred to as spatial autocorrelation. Levine (2002) argues that, "Many, if not most, social phenomena are spatially autocorrelated. In any large metropolitan area, most social characteristics and indicators, such as the number of persons, income levels, ethnicity, education, employment, and the location of facilities are not spatially independent, but tend to be concentrated" (p. 152).

Determining how events are geographically concentrated is a primary purpose of spatial statistics. There are two overarching forms of spatial statistics that help to determine this. Global spatial statistics help to provide a general spatial description of the distribution of events. Levine (2002) points out that these first order properties help to determine where a series of events "is centered, how far it spreads out, and whether there is any orientation or direction to its dispersion" (p. 171). Global spatial statistics return one value for the entire area of study. While global statistics may be useful in determining whether a spatial pattern exists within the data, they are less useful in determining the exact variations within a study area. A good way to understand the product of global spatial statistics is through an analogy proposed by Fotheringham and Brunsdon (1999). They point out that the results of a global model are "akin to being given the information that 'the average precipitation in the United States last year was 32 inches.'" (p. 341).

Local spatial statistics, or second order properties, attempt to capture the more micro, neighborhood patterns of distribution that can help to uncover specific mechanisms that could lead to the series of events. Local spatial statistics generally return a series of values for a number of smaller zones within the study area. Fotheringham and Brunsdon (1999) describe local spatial statistics as providing "the equivalent of a microscope or a telescope; they are tools with which we can see so much more detail" (p. 355).

What are Hot Spots?

Probably the most widely known form of spatial statistics, hot spot analysis, is a local spatial statistical technique. Hot spots are areas where a high concentration of a particular phenomenon is identified. Hot spot analysis was utilized in this master planning process to determine areas with a high concentration of crashes most in need of attention.

The results of hot spot analysis can be displayed visually in a map that is spatially linked to data called geographic information system or GIS. It provides analysts with a concrete way to "look" at the problem. These visual products can be shown to community leaders and design experts for further explanation as to why these patterns of crashes appear to be occurring. By allowing

[9]A more in depth guide to these statistics can be found in Levine's (2002) *Guide to the Crime Stat II Program*. This in-depth guide is an invaluable resource for understanding and utilizing Crime Stat II.

locals and experts alike to explore these data visually, hot spot analysis helps to provide a concrete tool for understanding and hopefully alleviating the crash problem for a particular area.

While it intuitively seems logical that certain phenomenon such as crime, disease, or even crashes would be clustered together, hot spots themselves are "perceptual constructs" (Levine 2002) that are identified through statistical techniques defined through the parameters set by an analyst. As Levine (2002) points out, computing the exact dimensions and location of a hot spot is a complicated endeavor where "literally dozens of different statistical techniques" (p. 202) can be utilized depending on the specific needs of the analyst. While the mathematical theories underpinning the various techniques are beyond the scope of this chapter, a brief overview of strengths and weaknesses of several of the important spatial statistical techniques can shed light on how to select the appropriate tool for different situations.

How are Hot Spots Defined?

Hot spots are defined through spatial statistical routines that are designed to identify areas of concentration of events. There are numerous different routines that identify slightly different size and shape geographic areas. While a variety of different hot spot tools are available to an analyst, four particular tools have been identified as the most promising for the pedestrian/bicycle crash analysis. These are: mode, fuzzy mode, kmeans, and STAC.

The most basic type of hot spot analysis is the mode routine. The mode counts the number of incidents occurring at each point location in the database and returns the number of incidents occurring for each point. The routine then sorts the data to provide a ranking of point locations from highest to lowest. It is an excellent tool for determining the specific locations with the highest number of incidents.

The fuzzy mode is a similar hot spot routine designed to identify clusters of incidents. Unlike the mode routine that identifies a cluster based on the number incidents occurring at a single coordinate, the fuzzy mode routine allows the user to search a small area for a cluster of incidents. It returns a ranking for each point that rates it in terms of the number of incidents occurring within the specified proximity.

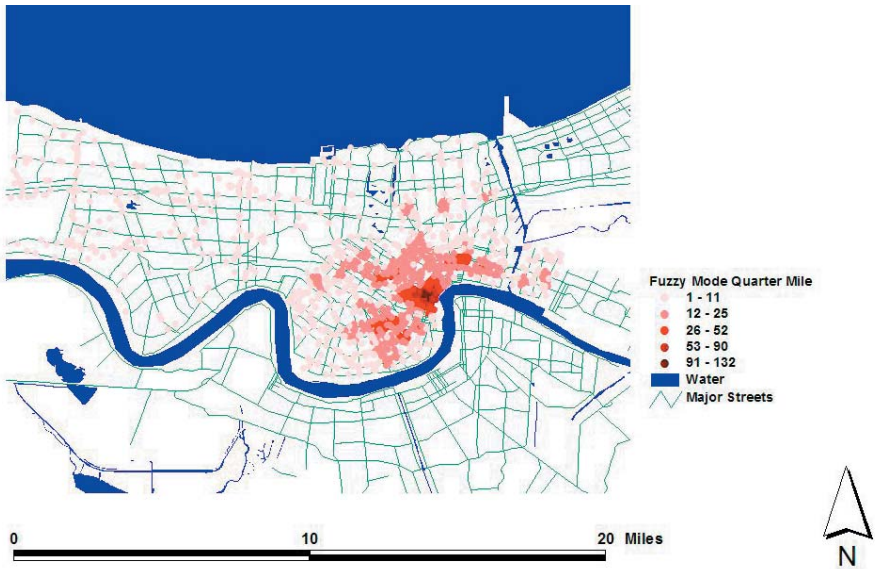
The fuzzy mode is useful for crash research because multiple pedestrian and bicycle crashes rarely happen at exactly the same point (FHWA 2004, p. 57). Clusters of pedestrian and bicycle crashes are more likely to occur in a small geographic area such as multiple corners in a neighborhood. The fuzzy mode routine, thus, allows the user to identify "small hot spot areas, rather than exact locations" (Levine 2002, p. 216).

Figure 33 shows an example of a fuzzy mode run analyzing pedestrian data in the core areas of Orleans and Jefferson parishes. The graphic shows the most focused run with tolerances set at a quarter mile. The darkest red/brown areas indicate the areas of highest frequencies of pedestrian crashes.

While this technique has the advantage of identifying these small hot spot areas, the user must be careful in using the routine to establish exact frequency values. The fuzzy mode routine identifies the small hot spot areas through a succession of radius searches that count points multiple times. This results in accurate identification of small hot spot areas, but results in inflated frequency counts. In Figure 33, for example, the numbers associated with the hot spots do not accurately reflected the exact number of incidents in these areas.

The kmeans routine is another hot spot statistical technique available to examine bicycle and pedestrian crashes. The kmeans routine defines a k number of groupings of incidents for a defined area set by the analyst. This technique is particularly useful for defining an equal number of groupings for multiple jurisdictions. For example, the kmeans routine could be used to determine five hot spot clusters for Jefferson Parish and equally five hot spot clusters for Orleans

Figure 33
Pedestrian Fuzzy Mode Tolerance Quarter Mile



Parish. The kmeans routine is less useful for comparing the significance of these multijurisdictional groupings however. Levine (2002) points to this weakness when he argues "By definition, the technique is somewhat arbitrary since the user defines how many clusters are to be expected. Whether a cluster could be a 'hot spot' or not would depend on the extent to which a user wanted to replicate 'hot spots ' or not" (p. 275).

Figure 34 shows the results of one of the most focused runs of the kmeans routine for the same pedestrian data set. The tolerances are set with 5 hot spot clusters and a separation value of 3.

The resulting five clusters shown in brown in the graphic are probably too broadly defined to be useful in identifying specific intersections or even neighborhoods in need of crash intervention. The kmeans routine, however, could be used as a first step in broadly defining areas in need of intervention.

Figure 34
Kmeans Pedestrian Cluster 5 Separation 3

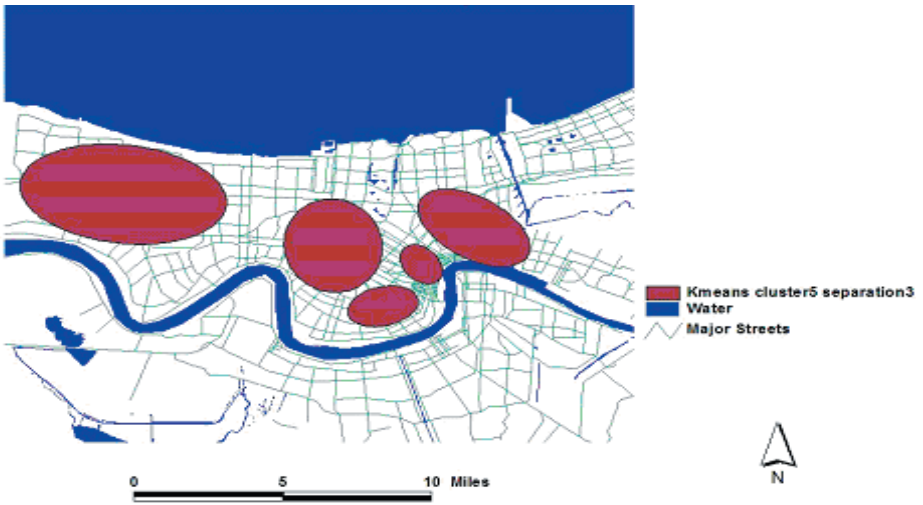
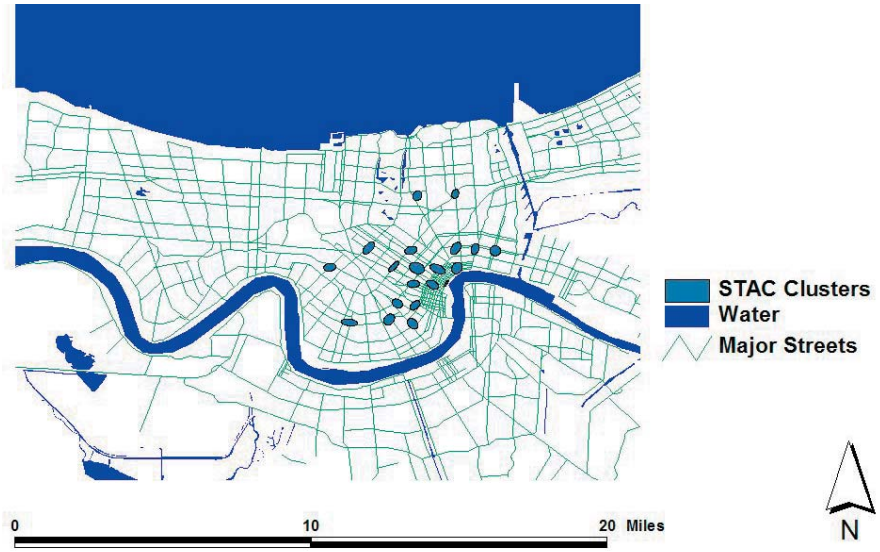


Figure 35
STAC Quarter Mile Cluster 5 Triangular



The Spatial and Temporal Analysis of Crime (STAC) routine is another technique for identifying hot spots. STAC defines the density of clusters of any point data for a specified area by defining the best fitting standard deviational ellipse or circle for the point data. STAC combines this circle clustering technique with hierarchical clustering techniques that aggregate small clusters into larger clusters (Block and Block 2002, p. 257). It functions best when there is a large data set from which to identify clusters.

The result is a technique that allows the user to attain the advantages of the fuzzy mode technique of scanning for small cluster areas, but avoids the disadvantage of the fuzzy mode by not double counting the point data. Figure 35 shows the STAC run for the same pedestrian data set. The tolerances are set at a quarter mile, minimum of 5 clusters and triangular orientation.

Unlike the kmeans technique, the number of clusters is not entirely predefined. While a minimum number of clusters initiate the search (in this case five), more clusters can in fact be identified by the routine. In the example, 20 clusters (shown in light blue) were eventually identified. Another advantage of the STAC technique is that it allows the analyst to perform a Monte Carlo test to help determine the statistical validity of the clusters themselves. The numerical results of this test help to determine the degree to which the clusters that are returned by the technique are statistically significant. Overall, the STAC technique offers probably the most accessible and accurate statistical routine currently available for identification of small, focused hot spot areas.

Pedestrian Crash Hot Spots
1999 to 2002

With this basic overview of spatial statistical techniques in mind, pedestrian data can now be examined in greater depth. Multiple runs of the four different statistical routines (mode, fuzzy mode, kmeans, and STAC) were

carried out for the Orleans/Jefferson parish core area. Because 77% of all pedestrian crashes occur in the dense, urbanized east bank areas of Jefferson and Orleans parishes, this focused zone was chosen for this spatial analysis[10].

Mode

The mode provides a simple technique for determining the locations with the largest number of crashes. Table 11 shows the top 15 pedestrian crash locations in the Jefferson/Orleans east bank core area. Of these, all but three are in the French Quarter/CBD area. The intersection of Bourbon and St. Louis tops the list with 12 recorded crashes. Two other intersections on Bourbon Street (Bourbon and Toulouse and Bourbon and Conti) also made the list. Within the 14 blocks of Bourbon Street in the French Quarter, 48 pedestrian crashes were recorded.

In addition to Bourbon Street, Canal Street is also heavily represented with five locations in the top 15. Within the 17 or so blocks of Canal Street from the Mississippi River to Claiborne Avenue, 77 pedestrian crashes were recorded overall. This makes this stretch of Canal the highest pedestrian crash corridor in the area. Other important pedestrian crash corridors identified include: the length of Broad (66 crashes), the length of St. Claude (65 crashes), the length of Veterans (61 crashes), the length of Carrollton (57 crashes), the CBD fringe of Claiborne (43 crashes), the length of Williams (33 crashes), and the length of Rampart (31 crashes).

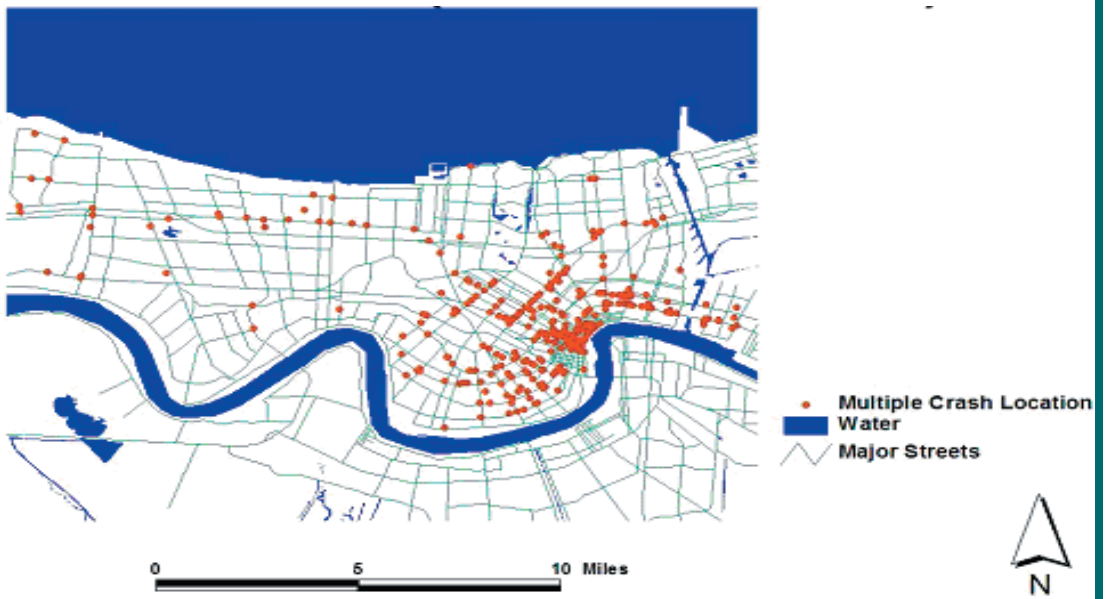
In addition to helping to identify specific high crash intersection locations, the mode function also helped quantify the pattern of multiple crash locations. Overall, 1,239 different locations in the east bank core of Orleans and Jefferson parishes were identified as crash sites. To help sort through these large number of crash sites to establish more meaningful patterns, the locations that recorded multiple crashes were identified (Figure 36). The mode routine located 314 locations from this list that recorded more than one pedestrian crash. This figure represents 25% of all crash locations in the east bank core area of Orleans and Jefferson parishes. The fact that 25% of all pedestrian crash locations in the study area had more than one crash event should be seen as a source of concern. As was stated earlier in this chapter, specific locations with multiple pedestrian crash events are relatively rare (FHWA 2004, p. 57). In the core east bank area of Orleans and Jefferson parishes, however, one in four crash locations had multiple events. Serious consideration should be given to conducting more de-

Table 11

Rank	Top 15 Pedestrian Crash Locations	Number of Crashes 1999 to 2002
1	Boubon and St. Charles	12
2	Carrollton and Tulane	9
3	Canal and Rampart	8
4	St. Charles and Jackson	8
5	N. Peters and Natchez	8
6	Canal and St. Charles	7
7	S. Peters and Conti	7
8	Canal and S. Peters	6
9	Canal and Elks Place	6
10	Bourbon and Toulouse	6
11	Elysian Fields and St. Claude	6
12	Canal and Basin	6
13	Decatur and St. Louis	6
14	Boubon and Conti	6
15	Iberville and St. Peters	5

[10]To increase the likelihood of achieving statistical significance it is important to have a large dataset of continuous points. Because of the physical separation created by the Mississippi River, Industrial Canal, and Lake Pontchartrain, the areas outside the core zone of New Orleans need to be analyzed separately. The dataset does not contain enough information to conduct a valid statistical analysis of these zones. The mode and fuzzy mode functions can, however, be used to analyze concentration and frequency of crashes in these areas.

Figure 36
Multiple Pedestrian Crash Locations
1999-2002 (East Bank Core)



tailed analyses of the locations with the highest number of crash events. This is particularly true for the French Quarter/Central Business District area where 83 locations recorded multiple crash events.

Fuzzy Mode

The fuzzy mode routine was run with quarter-mile, half-mile, and one-mile tolerances set for the Jefferson/Orleans core area. The three runs produced very similar results with the identified clusters of highest intensity focused on the French Quarter/CBD area. Figure 33 (shown previously) shows the most focused quarter-mile run. Increasing the tolerances merely widened the zone of highest intensity; the zones remained centered around the French Quarter/CBD area.

The highly clustered zone in the French Quarter/CBD area identified by the fuzzy mode analysis matches the zone identified previously by the mode analysis. The mode analysis further strengthens the need for countermeasures in this area.

Kmeans

The next test performed was the kmeans test. Two tolerances enable the user to alter the run of this test: cluster tolerance and separation tolerance. The Jefferson/Orleans core area pedestrian data were run with tolerances set at cluster 5 separation 4, cluster 5 separation 3, cluster 6 separation 3, and cluster 5 separation 8. The runs produced a series of geographic ellipses that identified clusters of high crash areas. Figure 34 (shown previously) shows the results of the cluster 5 separation 3 run.

While this run produced the most focused results, the ellipses are probably too broad to be utilized to produce

an effective countermeasure campaign. The kmeans may be more appropriate for initial scans of the data or, possibly, for use in a smaller geographic area.

STAC

Finally, the STAC routine was run. Three basic tolerances are available to the analyst. They allow the analyst to determine the size of the ellipse, the minimum number of points to include, and the type of area scanned (either rectangular or triangular). Runs were carried out with tolerances set at half-mile minimum 5 rectangular, quarter mile minimum 3 rectangular, half-mile minimum 3 triangular, quarter mile minimum 3 triangular, quarter mile min 5 triangular, and half-mile minimum 3 triangular. Figure 35 (shown previously) shows the STAC quarter mile min 5 triangular. This was the most focused run, providing the most clearly defined hot spot zones.

It is important when using STAC to take advantage of the routine's ability to analyze statistical significance of the identified clusters. The routine is capable of running a Monte Carlo test, which uses multiple simulation runs to provide statistical confidence intervals to test whether the identified clusters are likely to have occurred by chance. The Monte Carlo test is important because it allows the analyst to be much more precise in identifying those clusters that are statistically significant.

The Monte Carlo test was run with 100 simulations to test the statistical significance of the quarter mile, minimum 5, triangular run. Figure 37 shows the results of the Monte Carlo test.

Confidence intervals are provided for three key components of the STAC data run: area, number of points, and density. At the bottom of Figure 37, the confidence intervals are listed along with the numeric value above which statistical significance can be determined. When the values for the 95% confidence interval are compared with values for each of the 20 clusters identified by the STAC run, the clusters that are deemed statistically significant can be determined.

Interestingly, none of clusters identified by STAC had statistically significant values for the categories of the number of points or the area. While it would be ideal to have found statistically significant values for these categories, New Orleans' oddly shaped geography with its curving river and lake may have affected these categories.

While none of the clusters was statistically significant in terms of absolute number of events, several of the clusters were significant in terms of the density of events. The routine was able to identify with 95% confidence 10 statistically significant clusters based on density. Because the density of points is the most important characteristic of a hot spot, finding statistically significant density spots is very valuable. Figure 38 and Table 12 show the statistically significant pedestrian clusters.

With 95% confidence, we can say that these 10 multiple block zones have densities of pedestrian crashes that are statistically significant. The crash densities in these zones are not likely resulting from chance, but instead are the result of a series of social and engineering issues that are creating these high-density zones. While the hot spot analysis cannot tell us why these zones are centers of pedestrian crashes, the analysis certainly suggests that these zones should be considered for special countermeasure consideration.

Pedestrian Data Summary

While pedestrian crashes are a persistent problem throughout the core area of Orleans and Jefferson parishes, the crashes are significantly clustered in key zones throughout the region. Areas surrounding schools, public housing developments, and transit corridors appear to need special attention. In addition, the mode function was utilized to identify the top 15 pedestrian crash locations. These locations should be considered for special countermeasure treatment to help decrease crash incidents at these particularly high incident locations. In addition, the high percentage of multiple pedestrian crash locations in the dataset (25%) seems to suggest that many locations could utilize similar attention.

Figure 37
Spatial and Temporal Analysis of Crime:

Sample Size	1,584	Measurement Type	Direct
Scan Type	Triangular	Input units	Degrees
Output units	Miles, Sq. Miles, Points per Sq. Miles	Standard Deviations	1.0
Start Time	01:05:05 PM, 07/19/2004	Search radius	401.336000
Boundary	-90.13586,29.91653 to -90.00261,30.03043	Points inside boundary	1,582
Simulation runs	100		

Cluster	Mean X	Mean Y	Rotation	X-Axis	Y-Axis	Area	Points	Cluster Density
1	-90.06550	29.95600	3.19025	0.12696	0.19336	0.07713	83	1076.167537
2	-90.07401	29.95571	8.20268	0.17976	0.14695	0.08299	78	939.889630
3	-90.09364	29.93847	0.70931	0.20306	0.17073	0.10891	29	266.264986
4	-90.09137	29.96357	84.86808	0.12935	0.19804	0.08048	29	360.354732
5	-90.08192	29.96508	0.61309	0.17367	0.18204	0.09932	22	221.504981
6	-90.06275	29.96505	60.89798	0.17736	0.14237	0.07933	22	277.335783
7	-90.09159	29.94700	24.52578	0.23252	0.14905	0.10888	21	192.875285
8	-90.07391	29.93964	48.38043	0.14897	0.17290	0.08092	20	247.165702
9	-90.06538	29.97306	46.39796	0.10277	0.16817	0.05430	19	349.936379
10	-90.05405	29.97305	7.03499	0.23014	0.09278	0.06708	19	283.243120
11	-90.09190	29.92886	24.75497	0.13712	0.17928	0.07723	17	220.123622
12	-90.07241	29.96472	11.61592	0.13429	0.15320	0.06463	17	263.018391
13	-90.07192	29.98243	7.50908	0.10456	0.16932	0.05562	17	305.654845
14	-90.08442	29.93843	47.78097	0.21042	0.15720	0.10392	17	163.592435
15	-90.08324	29.95604	66.74351	0.21563	0.17230	0.11672	17	145.649270
16	-90.05989	29.99911	33.44647	0.07941	0.12145	0.03030	17	561.099479
17	-90.07208	29.94821	11.83781	0.11343	0.21585	0.07692	17	221.014122
18	-90.01051	29.96476	82.72231	0.18978	0.12021	0.07167	15	209.297069
19	-90.08272	29.94454	85.65948	0.07277	0.22186	0.05072	15	295.736357
20	-90.12244	29.96370	88.57711	0.18148	0.13626	0.07769	15	193.074554

Distribution of the number of clusters found in simulation (percentile)									
%	Clusters	Area	Points	Density	%	Clusters	Area	Points	Density
min	20	0.02388	7	40.658858	90.0	20	0.16789	13	223.835493
0.5	20	0.02388	7	40.658858	95.0	20	0.17221	14	264.941541
1.0	20	0.02425	7	42.433370	97.5	20	0.18029	14	298.307369
2.5	20	0.02484	7	42.867670	99.0	20	0.18258	15	329.933926
5.0	20	0.03352	7	46.291657	99.5	20	0.18662	15	335.036666
10.0	20	0.03608	7	47.537806	max	20	0.18662	15	335.036666

While individual countermeasure treatments should be considered for the highest incident locations, the statistically significant hot spot zones identified through the use of the STAC routine should be considered for area wide treatment. These special areas have particularly high incident counts and creating an effective countermeasure program could help to create a significant improvement in pedestrian safety.

Bicycling Crash Analysis

Compared to pedestrian crashes, bicycle crashes were less frequent and more dispersed. The number of bicycle crashes identified in the core east bank of Orleans and Jefferson parishes was 1,042 compared to 1,854 for the pedestrian crashes in the same area. The pattern of bicycle crashes was more dispersed than the pedestrian crashes with 135 multiple crash locations identified compared to 314 multiple crash locations for the pedestrian crash dataset.

While the 1,042 crash events testify to the significance of the bicycle crash problem in the core area of Jefferson and Orleans parishes, the geographic pattern of bicycle crashes presents a more complex problem for countermeasure implementation than that suggested for pedestrian crashes. In general, cyclists travel longer distances through corridors. They, thus, travel through many more intersections on their journeys than would a pedestrian on a similar trip. This may explain the more dispersed nature of bicycling crashes. This suggests that corridor-wide improvements may be an important element in a bicycling safety improvement campaign.

Despite this difference in the distribution of bicycling crashes, significant geographic patterns could still be identified. The STAC analysis results are presented first. This is followed by the results of Kmeans, mode, and fuzzy mode routines.

Figure 38
Statistically Significant Pedestrian Clusters, Orleans Parish

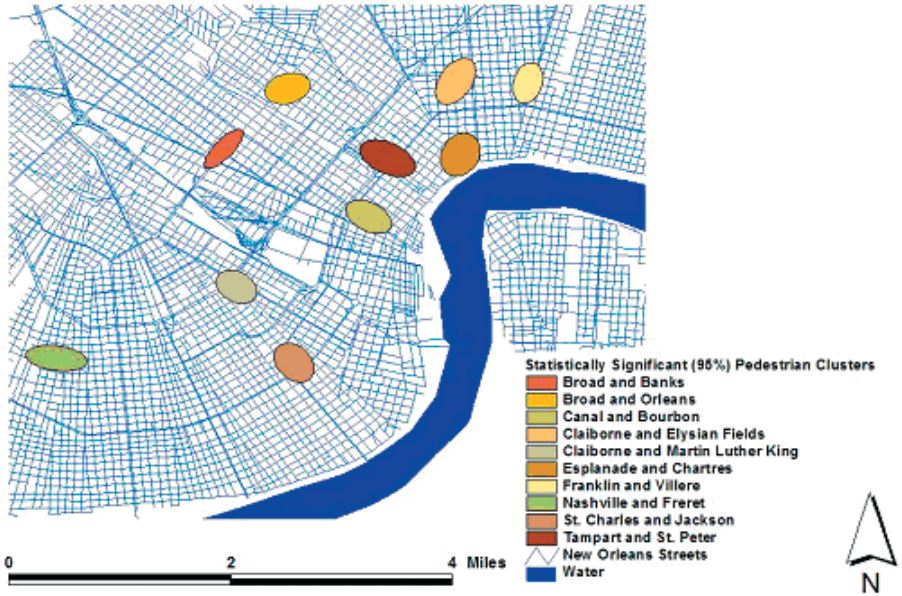


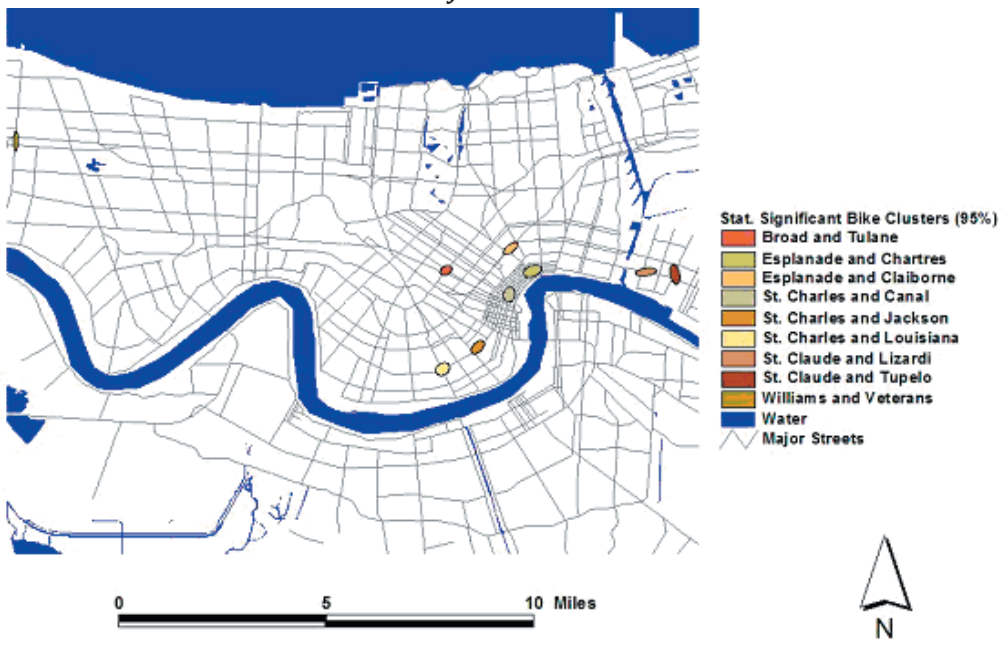
Table 12

Statistically Significant (95%) Pedestrian Crash Clusters, Orleans Parish	
1	Broad and Banks
2	Broad and Orleans
3	Canal and Bourbon
4	Claiborne and Elysian Fields
5	Claiborne and Martin Luther King
6	Esplanade and Chartres
7	Franklin and Villere
8	Nashville and Freret
9	St. Charles and Jackson
10	Rampart and St. Peter

STAC

The STAC routine was run with a quarter mile tolerance for the bicycle crash data for the Eastbank core of the Jefferson/Orleans area. The routine was able to identify with 95% confidence 9 statistically significant clusters based on density. Just as with the pedestrian data, density and not area was found to be significant. Because the density of points is the most important characteristic of a hot spot, finding statistically significant density spots is very valuable. Figure 39 and Table 13 show the statistically significant bicycle clusters. Figure 40 shows the results of the Monte Carlo test to determine statistical significance.

Figure 39
Statistically Significant Bicycle Crash Clusters
Orleans and Jefferson Parishes



Kmeans and STAC

While the kmeans routine was used to analyze the data, it did not prove nearly as effective with the smaller, more dispersed dataset. The kmeans routine returned results that were not particularly useful for developing effective countermeasure programs. The kmeans routine was run multiple times at different tolerance scales, but the routine consistently could only produce one very large identified cluster. The cluster covered nearly the entire Metropolitan area and was, therefore, not usable as a tool to identify particular locations ideal for countermeasure implementation.

Mode

The mode routine, once again, provides a simple, straightforward technique for determining the locations with largest number of crashes. Table 14 shows the top 15 bicycle crash locations in the Jefferson/Orleans east bank core area.

Unlike the pedestrian data, the bicycling crash data show that the two highest concentrations of crashes occurred in Jefferson Parish. With 22 crashes being logged cumulatively, the corners of Loyola and Veterans and

Table 13
Statistically Significant (95%) Bicycle Crash Clusters, Orleans and Jefferson Parishes

1	Broad and Tulane
2	Esplanade and Charters
3	Esplanade and Claiborne
4	St. Charles and Canal
5	St. Charles and Jackson
6	St. Charles and Louisiana
7	St. Clauce and Lizardi
8	St. Claude and Tupelo
9	Williams and Veterans

Figure 40
Spatial and Temporal Analysis of Crime:

Sample Size	1,335	Measurement Type	Direct
Scan Type	Triangular	Input units	Degrees
Output units	Miles, Sq. Miles, Points per Sq. Miles	Standard Deviations	1.0
Start Time	01:19:55 PM, 01/21/2005	Search radius	402.336000
Boundary	-90.27683,29.83578 to -89.90952,30.07120	Points inside boundary	1,333
Simulation runs	100		

Cluster	Mean X	Mean Y	Rotation	X-Axis	Y-Axis	Area	Points	Cluster Density
1	-90.06796	29.95430	5.62656	0.12095	0.18013	0.06845	51	745.104023
2	-90.05987	29.96259	63.38746	0.12798	0.20285	0.08156	22	269.750551
3	-90.05680	29.97041	88.95382	0.22501	0.14331	0.10131	18	177.676076
4	-90.06743	29.97051	45.81869	0.08834	0.18822	0.05223	18	344.596990
5	-90.02022	29.96221	80.23750	0.09155	0.21746	0.06254	17	271.814952
6	-90.04825	29.97044	56.42910	0.20941	0.21298	0.14011	16	114.193593
7	-90.09031	29.94564	79.41642	0.17510	0.20016	0.11010	16	145.316833
8	-90.09000	29.96277	47.89362	0.09900	0.13974	0.04346	15	345.130891
9	-90.24020	30.00803	0.77734	0.04315	0.24267	0.03290	15	455.949257
10	-90.01010	29.96142	80.67539	0.24050	0.09889	0.07472	14	187.376500
11	-90.07897	29.93587	36.24125	0.10191	0.18181	0.05821	14	240.501607
12	-90.09122	29.92822	39.61422	0.13345	0.16648	0.06979	13	186.264919
13	-90.07649	29.95354	69.60449	0.11467	0.21885	0.07884	12	152.210931
14	-90.08874	29.93566	77.30612	0.25016	0.13636	0.10716	12	111.979464
15	-90.07058	29.96243	48.99231	0.25499	0.16842	0.13492	12	88.943954
16	-90.06035	29.99768	89.20661	0.21768	0.13825	0.09455	12	126.923605
17	-90.06979	29.98015	65.50446	0.23890	0.15253	0.11447	11	96.091247
18	-90.10016	29.94471	12.82390	0.14263	0.20236	0.09067	10	110.290612
19	-90.11291	29.96248	40.51918	0.10680	0.28390	0.09525	9	94.485420
20	-90.08821	29.97276	8.72105	0.25350	0.11034	0.08787	9	102.421853

Distribution of the number of clusters found in simulation (percentile)

%	Clusters	Area	Points	Density	%	Clusters	Area	Points	Density
min	1	0.01382	5	23.972866	90.0	3	0.17767	6	113.092986
0.5	1	0.01382	5	23.972866	95.0	3	0.19427	6	185.125952
1.0	1	0.01382	5	23.972866	97.5	3	0.19679	6	208.274382
2.5	1	0.02401	5	25.408161	99.0	4	0.20857	6	361.836957
5.0	1	0.02701	5	25,738012	99.5	4	0.20857	6	361.836957
10.0	1	0.04421	5	28.141472	max	4	0.20857	6	361.836957

Table 14		
Rank	**Top 15 Bicycle Crash Locations**	**Number of Crashes 1999 to 2002**
1	Loyola and Veterans	12
2	Williams and Veterans	10
3	St. Claude and Elysian Fields	7
4	Claiborne and Esplanade	6
5	Canal and Camp	5
6	Esplanade and Decatur	5
7	Dauphine and Conti	5
8	St. Charles and Henry Clay	4
9	St. Charles and Josephine	4
10	Carrollton and Earhart	4
11	Iberville and Royal	4
12	Franklin and St. Claude	4
13	Conti and Bourbon	4
14	Broad and Banks	4
15	Esplanade and Broad	4

Williams and Veterans were the two highest crash incident locations in the dataset. The high number of crashes occurring at these two closely spaced intersections, unfortunately, has a great deal to do with the social and morphological characteristics of the surrounding neighborhoods.

As was discussed in Chapter 5, the street system in this part of the parish provides very few north/south travel corridors. The intersections in question provide two of the very few ways to move north/south in this part of the parish. Unfortunately, these two intersections were designed almost exclusively with the automobile in mind. The high traffic volumes and non-existent road shoulders make these two intersections particularly difficult to traverse via bicycle. The problem is compounded by the higher percentage of low-income residents that live in the area immediately surrounding these intersections. Because low-income residents are more reliant on non-motorized forms of transportation, these two corridors have become necessary routes for the surrounding populations to traverse in order to get to the commercial services along Veterans Boulevard.

The limited number of north/south routes, poor bicycling conditions on these routes, and a population more reliant on non-motorized forms of transportation have combined together to help create a serious bicycling crash problem in this area. The creation of bicycling-friendly north/south routes for this side of the parish should be strongly considered as a possible engineering countermeasure for this problem area.

While the two highest incident locations are in Jefferson Parish, Orleans Parish still has a significant, and probably greater overall bicycling crash problem. The most frequent bicycling crash locations in Orleans, once again, center around the CBD/French Quarter area. Unlike in the pedestrian crash data, the bicycle crashes are spread more broadly around this zone. In order to help decrease bicycle crashes in the areas surrounding the CBD/French Quarter, countermeasure treatments need to be spread more broadly around the area. Designated routes with improved bicycle signage and amenities should be analyzed and implemented as a way to help create linear zones to improve safety. The Regional Planning Commission and the New Orleans City Planning Commission have already begun to help create these bicycle-friendly corridors in this broad area.

Another important way to analyze crashes is to look at the incidence of multiple crashes in the database. Overall, 135 locations were recorded as having more than one bicycle crash in the Jefferson/Orleans east bank core (Figure 41).

Once again, this figure is lower than that found in the analysis of pedestrian crashes because of the wider range of bicycles. Despite the lower number of multiple crash locations, the fact that 841 locations recorded multiple crashes is still far too high. Specific countermeasure

treatments should be considered especially for the locations with the highest number of multiple crashes.

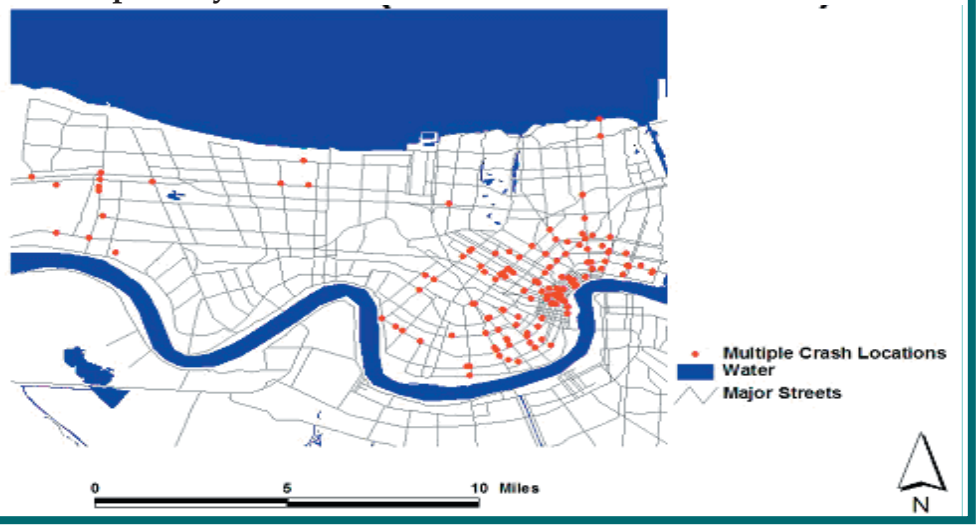
Bicycle Crash Data Summary

While bicycle crashes are spread more broadly than pedestrian crashes, definitive geographic patterns are still evident from the analysis. The STAC analysis identified 9 statistically significant hot spot clusters. The local characteristics of these zones should be studied in greater depth to help determine the specific safety problems in these areas. The mode and fuzzy mode helped identify two, broader zones of high concentration of crashes. These areas are: the Loyola/Williams area in Jefferson Parish and the zone in and around the CBD/French Quarter area in Orleans Parish. Routes to help bicyclists to traverse these zones should be a priority in planning to improve bicycling safety.

Individual locations that recorded multiple crashes have also been examined. Not surprisingly, these individual locations are concentrated primarily in the two identified broad zones of crashes. Planners should consult the multiple crash list when planning bicycle corridors to help either route around these locations or to help improve safety conditions in these places.

Planning for bicycling safety involves a broader agenda than simply implementing engineering countermeasure programs at individual locations, however. While it is important to improve high incident locations, it is also crucial to implement system wide changes that help to make the broader transportation system more accessible to bicyclists. Bicyclists are legal vehicles on city streets and should be accommodated with streets that allow for full multi-modal participation.

Figure 41
Multiple Bicycle Crash Locations 1999-2002 (East Bank Core)



Transit Stop Pedestrian Survey

Introduction

A selected set of transit employees in Orleans Parish was asked to fill out the questionnaire: Transit Stop Pedestrian Survey. The survey was written and conducted by S.W. Leader, Inc. for the Regional Planning Commission. The survey was designed to assess the quality of pedestrian conditions in and around transit stops in Orleans Parish. Transit employees were instructed to identify "problem" transit stops and fill out a survey on the conditions of various elements that could affect the pedestrian's experience. In addition, S.W. Leader, Inc. created a numeric scale that was designed to rate the intensity of pedestrian use at each transit stop. This "Magnitude of Usefulness" scored each identified stop on a scale ranging from 3 to 15 depending on the score received from three categories: pedestrian destinations, pedestrian density, and proximity to transfer locations.

This survey was based in part on a similar survey conducted in Jefferson Parish by GCR & Associates, Inc. In Jefferson Parish, GCR surveyed the quality of the pedestrian landscape around transit stops. Both surveys have helped to define the quality of the existing pedestrian landscape in transit corridors.

Location of Problem Transit Stops

Transit routes are fairly extensive in the southshore area of metro New Orleans (Figure 42). The survey in Jefferson and Orleans parishes identified nearly 150 different transit stop locations that were perceived to be problematic. In Orleans, transit employees identified 95 locations as being problem transit stop (Figure 43).

In Jefferson Parish, 46 locations were identified as being problem transit stops (Figure 44).

The locations selected in both parishes correspond fairly well to the actual location of pedestrian crashes identified through police reports. In Orleans Parish, for example, 16% of recorded pedestrian crashes from 1999 to 2003 occurred within one-tenth of a mile of the identified transit stops. When the buffer is widened just slightly to a quarter of a mile, the number of recorded pedestrian crashes jumps to 35%. Another way of thinking about this is that within a quarter mile of the 95 point locations identified by transit operators, 35% of all pedestrian crashes in the city were recorded. In addition, 77 of the 95 points (81%) had at least one recorded pedestrian crash occur within a tenth of a mile. When the buffer is widened to a quarter of a mile, 92 of the 95 locations (97%) had at least one recorded crash.

In Jefferson Parish, the numbers were slightly lower but still significant. Within a tenth of a mile of identified transit stops, 8% of recorded pedestrian crashes occurred. Within a quarter of a mile, the number jumps to 15%. Of the 46 stops identified in Jefferson Parish, 28 had a pedestrian crash occur within a tenth of mile (61%). When the buffer is widened to a quarter of a mile, 34 of the 46 stops (74%) had at least one recorded pedestrian crash.

Figure 42
Metro Area Bus Routes

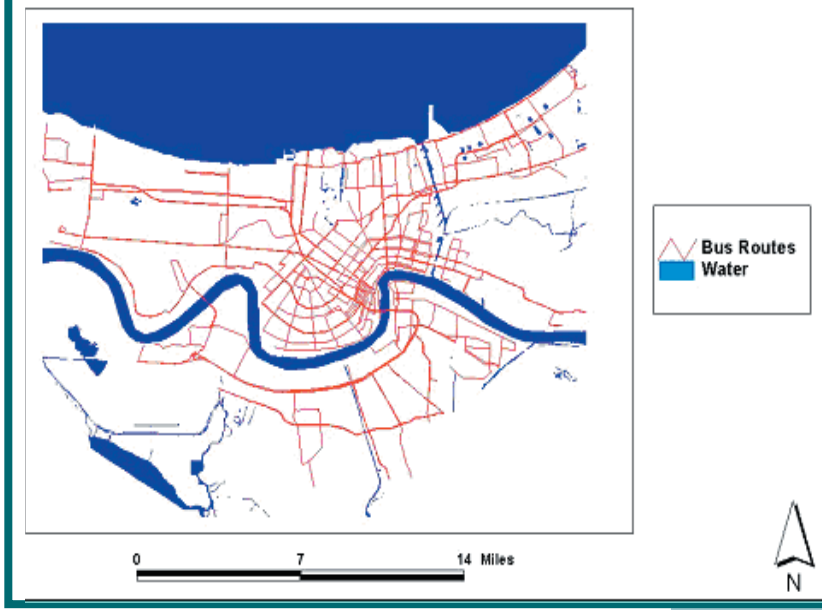


Figure 43
Transit Operator Identified Problem Stops: Orleans Parish

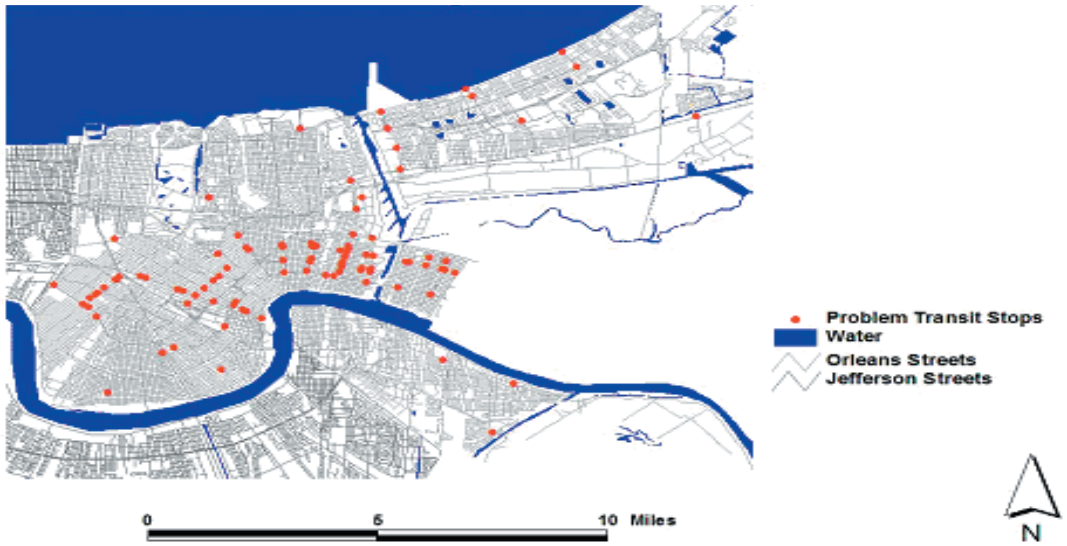
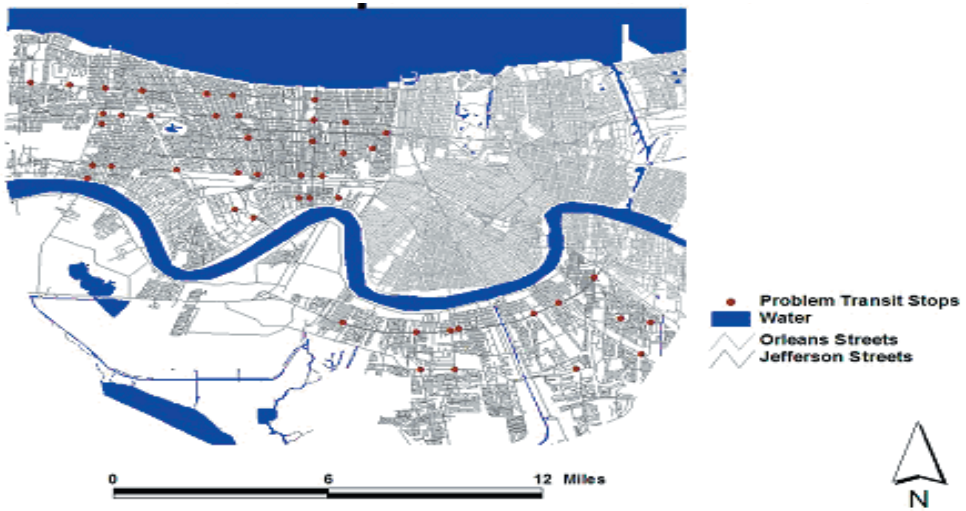


Figure 44
Transit Operator Identified Problem Stops: Jefferson Parish



The results from both Orleans and Jefferson parishes suggest that attention should be paid to the problem transit stops. As Chapter 5 pointed out, transit routes are the site of 85% of recorded pedestrian crashes in Orleans in 2002. The transit stop survey further highlights important locations that could be driving this phenomenon. Transit corridors are significant locations for pedestrian crashes and need systematic attention to help improve safety.

Survey of Pedestrian Conditions

In addition to identifying perceived problem locations for pedestrians, the quality of the environment around transit stops was also surveyed. In Orleans Parish, Leader and Associates asked transit employees to rate the quality of pedestrian striping, sidewalks, curb ramps, shelters and benches, trashcans, lighting, pedestrian signs, and the pedestrian signal phase. The possible response categories included: adequate, some/not all, poor condition, and none (Table 15).

In Orleans Parish, transit employees ratings appeared to swing from the extremes of "adequate" to "none". Unfortunately, "no response" was also a dominant response with 24% of all survey fields returned blank. It is difficult from these responses to create a meaningful portrait of the overall conditions of transit stops that could be used to help direct resources.

In Jefferson Parish, GCR surveyed the condition of the pedestrian environment around the problem transit stops (Table 16). While nearly all fields in the survey were populated, it was still difficult to assess the policy implications of the findings in general. The "sidewalks", "curb ramps", and "lighting" categories did not

Table 15
Orleans Parish Transit Survey Responses

	Pavement Striping	Side-walks	Curb Ramps	Shelters/ Benches	Trash Cans	Lighting	Pedestrian Signs	Pedestrian Signal Phase
No Response	19%	27%	15%	18%	23%	34%	28%	29%
None	23%	4%	34%	70%	39%	29%	35%	34%
Poor Condition	18%	16%	9%	0%	0%	1%	1%	1%
Some, Not All	15%	13%	12%	5%	11%	10%	4%	3%
Adequate	26%	39%	29%	7%	26%	25%	31%	33%

Table 16
Jefferson Parish Transit Survey Responses

	Pavement Striping	Side-walks	Curb Ramps	Shelters/ Benches	Trash Cans	Lighting	Pedestrian Signs	Pedestrian Signal Phase
No Response	4%	2%	4%	%	%	4%	2%	2%
None	44%	15%	24%	%	%	11%	93%	93%
Poor Condition	11%	7%	5%	%	%	24%	0%	0%
Some, Not All	20%	47%	42%	%	%	18%	4%	4%
Adequate	22%	29%	25%	%	%	44%	2%	2%

produce coherent system-wide results. The "shelters/ benches" and "trashcans" categories were reported as "non-applicable" for a large segment of stops and were, therefore, not reported.

Despite these general difficulties, the results for the "pedestrian signs" and "pedestrian signal phase" categories are instructive. In both categories 93% of the stops were reported to have neither adequate pedestrian signal phases nor any pedestrian signs. Without these basic elements of a quality pedestrian environment, it is very difficult for pedestrians to effectively and safely cross the large intersections that are characteristic of Jefferson Parish. The survey has picked up on a central and basic weakness with the Jefferson Parish pedestrian environment. In addition, the results from the "pavement striping" category show that 44% of problem transit stops have no striping. When coupled with the lack of pedestrian signs and pedestrian signal phases, the lack of striping effectively leaves pedestrians without the basic landscape prerequisites that are necessary for safe crossings on wide suburban streets.

Rating Pedestrian Usage

While the data examined thus far have generally been useful for identifying problem locations and for examining the perceived quality of the transit stops, the "Magnitude of Usefulness" scale probably cannot be used as a significant planning tool. While the idea of determining the level of pedestrian usage at a particular location is certainly valuable, this attempt to create a quantitative "score" did not result in a clear differentiation between transit stops. While this effort was not as successful as was originally hoped, emerging techniques, such as quantitative pedestrian counts and GIS analysis of distances, are becoming available for this type of evaluation. These emerging techniques could be used in future research on pedestrian conditions.

Conclusions

A systematic approach to upgrading transit stop conditions is an important step in helping to improve pedestrian safety in the New Orleans area. Despite some limitations with the survey, the survey provides a useful portrait of the perceived quality of transit stops. Transit employees have a unique position of observation that provides an unusually detailed understanding of conditions around transit stops. The fact that actual pedestrian crashes so closely line up with transit employees perceptions highlights the value of their perceptions.

Transit riders may be able to provide even greater detail about the pedestrian conditions surrounding transit stops. Survey research of transit riders or qualitative interviews of these riders may be a useful next phase to help identify problem locations.

Bicycle Parking and Bike on Bus

This chapter examines two recent efforts by the RPC and area parishes to improve bicycling conditions in the region. First, recent efforts to improve bicycle parking are examined. This is followed by an examination of the important Bike on Bus program.

Bike Parking

For bicyclists to successfully complete a trip, they must have at least two basic types of facilities available to them. The first and most obvious is a reasonably safe and attractive route to a destination. Chapter 10 will examine regional routes that can be used to traverse the metropolitan area. This section examines the second, less obvious component of a successful bicycling trip: destination facilities. Destination facilities, such as secure parking areas and changing facilities, are necessary because a bicyclist must stow their gear and change out of their cycling apparel. Just as a driver needs parking to complete a trip, so too does a cyclist. While a great deal of emphasis has been placed on automotive parking over the years, bicycle parking has only recently begun to receive serious attention.

In New Orleans, one of the most critical areas for bicycle parking is in the Central Business District and adjacent French Quarter. Today few dedicated facilities exist for bicycle parking. Bicycles instead are often attached to street signs, posts, and fences. Unfortunately, these locations are not very secure. The stripped remnants of bicycles locked to street signs are a frequent reminder of how insecure these makeshift places actually are. Where there is no parking attendant or security oversight, the ability to park as close as possible to the front door of any building is paramount to deterring bicycle theft.

NOBAC Study

Secure bicycle parking throughout the New Orleans region has been an implicit issue for the New Orleans cycling commuter for many years. An informal inventory of existing bicycle racks in downtown New Orleans was completed by Charles-Louis Coron and Brian Lambert of the New Orleans Bicycle Awareness Committee (NOBAC) in 1993. NOBAC has added Regional to its name to become NORBAC reflecting its broad outreach. It is a non-profit organization dedicated to educating the public about bicycling-related issues. The early report found that several important conditions must be satisfied to increase bicycle ridership. These conditions include:

- Improved personal safety
- Safe, secure and convenient bicycle parking
- At least some supervision of parking sites
- Protection of the bicycle from weather
- Available showers and lockers

In addition to the survey of riders, the report inventoried area bicycle racks. This first-ever survey located twenty-one racks. Seven were located on private property and restricted to employee use. The report estimated that approximately 229 bicycles could be accommodated in racks in the Central Business District or CBD. Interviews with guards, property managers, cyclists, policemen, parking attendants, and business owners were also carried out. From this survey, the report found that: “Some (racks) were found in restricted areas. Some are heavily guarded; others are totally unsupervised unless one considers the general public and passerby as a security precaution.” They noted that there was good evidence to suggest that many bicycle commuters brought their bicycles into their workplace for safekeeping.

In addition, the report highlighted that most of the racks were inadequate for modern bicycles with quick release wheels. The old bike rack design places one wheel in between two metal bars and allows for only one wheel and the frame to be locked. Because of quick release systems, this leaves the other wheel open to theft. Also, the report found that some facilities had inadequate bicycle parking spaces in relation to the number of employees.

The cumulative impact of all of these points, the report argues, is that there is a clear need for improved bicycling parking facilities in the CBD area. Importantly, the report underscores that the lack of a strong public policy in support of cycling as a legitimate mode of

transportation has hampered the growth of cycling. A stronger emphasis on improved cycling conditions, the report argues, can help to encourage more bicycle commuting with the ancillary benefits of improved health and increased tourism.

On-line Survey of Cycling Conditions

Another important report highlights the needs of area cyclists. In 2003, Louisiana SafeKids, an agency of the Louisiana Department of Health and Hospitals, in partnership with the Regional Planning Commission conducted an on-line survey of employees, employers, hospitals, office managers, and clients of facilities in the Central Business District and French Quarter. The purpose of the survey was to get input on possible impediments to cycling and the potentially important role that bicycle parking plays in deciding whether to utilize the bicycle for transportation. The survey attempted to reach actual and potential bike users and those responsible for the buildings in the designated area. The list of individuals surveyed was informally compiled by the RPC and SafeKids based on known contacts within the district. Contacts were asked to forward notice of the survey to fellow employees and friends working in the area. The survey tool was placed on the LA SafeKids web site for a period of two months ending September 15, 2003.

The following highlights summarize the findings:

- The total number of responses was 328.
- Of the total responses, 61.9% did not use their bike to commute to work regularly.
- Of the 123 respondents who said they biked to work, a majority (68%) said they biked to work more than three times per week.
- More than half of the respondent's organizations did not encourage biking to work among the staff/employees and clients/patients.
- Nearly 50% of the respondents had a specific area allotted to secure bikes at work.
- Approximately 70% of bike parking areas were not clearly marked.
- Why respondents did not bike to work (multiple reasons):
  - 70.3% responded due to traffic concerns
  - 61.7% responded due to a lack of bike routes and trails
  - 60.6% felt it was due to the attitudes and behaviors of drivers
  - 58.7% felt it was due to the lack of motorist knowledge about the rights of bicyclists
- What would encourage respondents to bike to work?
  - 76.1% responded they would like bike routes and trails to be made available from their neighborhoods to the CBD area
  - 63.1% responded they would like bicyclists and motorists to be educated on sharing the road safely
- 76% of respondents said they would like bicycle racks installed in a secure fenced area. In addition, 44.7% of respondents said having security equipment and installation of bicycle bins would encourage them to bike to work
- 34% of respondents would not pay for bike parking and the same percent were willing to pay $1-9 per month if a secure bike parking area were made available
- 64.3% of respondents would support making bicycle parking facilities a required feature for their organization
- Very few people knew or provided the information on the person responsible for improving parking in their organization

The survey, while not designed as a random, statistical sample, provides some important information on the

current population of cyclists. Notably, 123 or 38.1% of respondents rode their bikes to work and 87 of those rode regularly. This is a fairly high percentage given the low percent (.46%) of bicycle commuters identified in the New Orleans region in the 2000 census. It was somewhat expected given the bike- biased contact list. This number, unfortunately, does not provide us with an accurate snapshot of the number of actual workers using a bicycle to commute to the CBD. It does, however, tell us we hit our mark in getting feedback from the current bicycle commuter community.

Notably, 50%of respondents reported having bicycle parking at their place of employment. This is somewhat surprising considering the relative scarcity of identified bicycle parking in this area. This should not be seen as an endorsement of the status quo extent of bicycle parking. 64% of the respondents still indicated that bicycle parking should be a standard feature at their place of work indicating that it is not standard for everyone. This response helps to underscore how important bicycle parking is in making the decision to commute. Because the survey is intentionally-biased towards existing cyclists, the high number of bicycle parking places at work over- represents the percentage of places for the general population. On the other hand, it shows that existing cyclists who commute have found and are utilizing bicycle parking at their place of work. These results seem to suggest that bicycle parking may be an important component in making the decision to commute. Despite this, 74% still desired a fenced bicycle parking area, 44% desired a security guard or bicycle bin, and 34% would pay a fee to insure security. It appears that though some form of bicycle parking is available, it was not necessarily "secure" to the degree desired.

In addition to bicycle parking issues, traffic concerns, lack of driver education, and the paucity of designated safe routes seemed to be the largest impediments in making a decision to ride. This does not diminish adequacy of parking as a necessary component in the choice to commute by bike to work, but underscores the multiple facets and interactive pieces that contribute to bicycle commuting.

Programmatic Responses

Armed with the knowledge that bicycle parking is deficient in the Central Business District, the Regional Planning Commission, the New Orleans City Planning Commission, the Department of Public Works, the Downtown Development District, and the New Orleans Arts Council met to discuss submission of an LA DOTD Transportation Enhancement application for bike rack funding. The Regional Planning Commission investigated programs in Chicago and Cleveland to understand cost considerations, maintenance, liability, design, and location strategy. To act swiftly and to stimulate improved public policy, the group agreed to tackle rack placement in public rights-of-way and buildings first. Once a program was up and running, the group agreed to then address private sector location strategies. A local artistic rack design competition was also discussed but deferred due to time constraints.

In an unusually quick timeframe of three months, critical issues were resolved and an application for enhancement funding was submitted to the LA DOTD. Two phases, each with 288 staple shaped racks, were approved. It is important to note here that the turn-around time to pull consensus and data together for most projects takes one to three years. A large amount of credit for this quick turn-around time goes to the city of New Orleans Planning Commission who laid a foundation for bicycle improvements in their multi-year work effort, the Transportation Element of the Master Plan. The Department of Public Works was also instrumental in supporting implementation.

Inverted, 36" high, U-shaped racks ("staple" racks) were chosen for their low-cost, interchangeability, ability to lock both wheels, and ability to accommodate two bicycles (parallel to the street) on variable width urban sidewalks. The city of New Orleans is the project sponsor and shoulders the responsibility for providing all design and engineering drawings, construction oversight, and a 5% match. Each phase requested $126,000 federal-aid funding with the city of New Orleans (via the Department of Public Works) providing a $7,000

local match. This was the first time Transportation Enhancement funding was allocated for bicycle racks in the state of Louisiana. In fact, it was the first application for funding of bicycle racks through the state program. It is expected that more metropolitan areas will follow suit as this project has a tremendous impact for a relatively small cost.

The strategy targeted vicinities with a high concentration of employment, public buildings and tourism facilities. Two phases of work were proposed. Phase one includes three areas; the medical district, the museum district, and numerous public structures along Loyola Avenue. The medical district is bounded by Canal Street, Loyola Avenue, the Pontchartrain Expressway and several blocks of Claiborne Avenue. The northern border does not include the Superdome.

The museum district is bounded by Howard Avenue-Lee Circle-Andrew Higgins Boulevard on the west, Corondelet Street on the north, Podyras Avenue on the east and Magazine-Julia-Tchoupitoulas streets on the south. Eight museums are located in or near this area. Public buildings in or near the area include City Hall, state and federal offices, the New Orleans Public Library, the Union Passenger Terminal, the U.S. Post Office headquarters, and others.

The first phase of work was approved for funding and the second phase will be resubmitted in the next Transportation Enhancement application cycle June 2005. Work is underway to evaluate individual sites as bike rack locations on public sidewalks in designated blocks of Phase I.

Phase II is one large "C" shaped area that includes the dense core business blocks of the CBD and the residential, retail and commercial blocks surrounding Baronne and Tchoupitoulas Streets. See the figures 45 and 46 for detailed graphics of the boundaries.

The first phase was approved for funding and the second phase will be resubmitted in a subsequent Transportation Enhancement application cycle. Work is underway to evaluate individual sites on public sidewalks in designated blocks.

An early positive outcome of the investigation into bicycle racks in downtown was the timely inclusion of 88 U-shaped racks in the Canal Street design and renovation plan of the Downtown Development District, a separately funded initiative. An artistic bike rack design competition for Canal Street is tentatively planned by the Downtown Development District. Design specifications would mandate that artistic rack designs match stud bolts holding the staple rack in place. Local businesses would have the opportunity to sponsor a rack.

The initial results of the bicycle parking project begin to rectify an important impediment for bicycle commuters. Along with continuing work in this area, it is important to remember that other destination impediments still exist. Due to the relatively hot and humid summer conditions, it is especially important to encourage changing facilities for cyclists. Efforts should be continued to encourage private and/or public changing facilities to help encourage commuting through the long summer months.

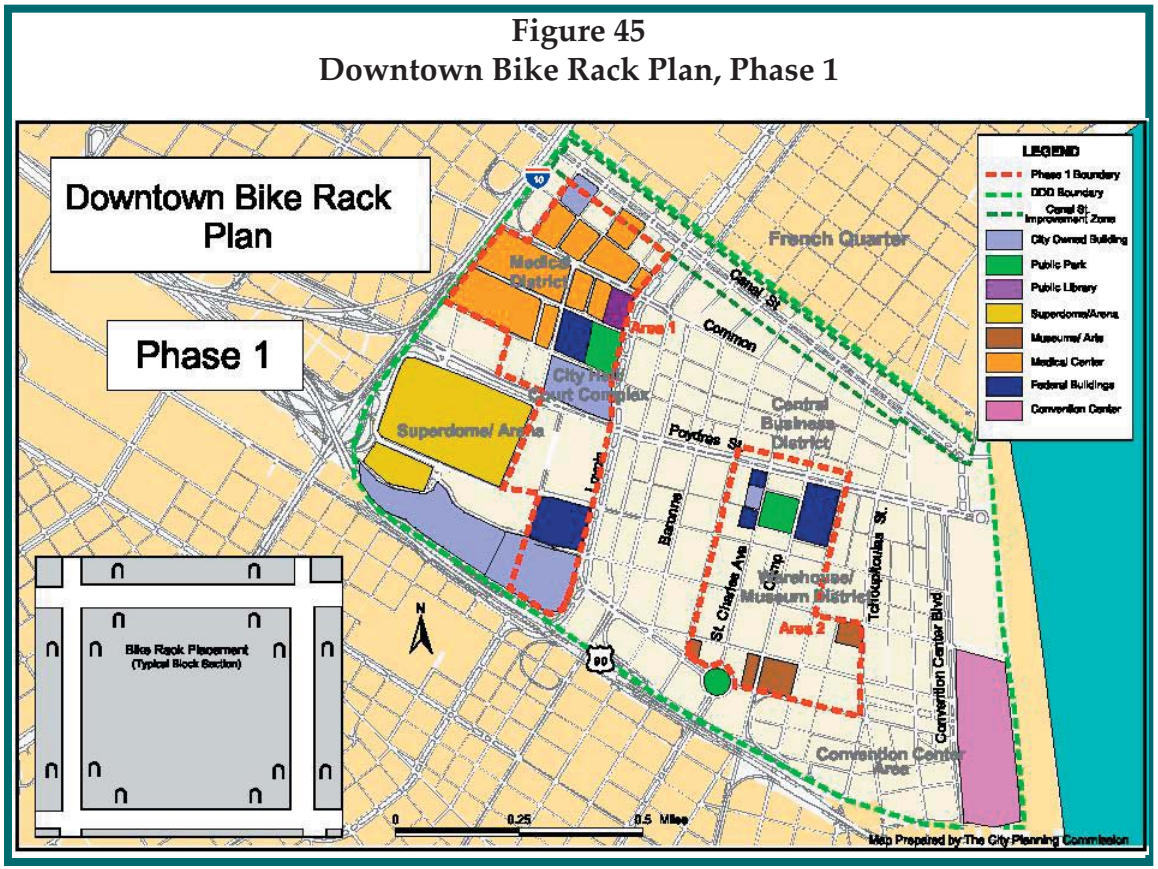
Bike-on-Bus

Another important element that can encourage bicycle commuting is the use of bicycle-on-bus programs. These programs allow cyclists to link to transit. The programs are particularly useful in helping cyclists skirt unusually difficult sections of routes that act as deterrents to commuting. This is especially important in the New Orleans area because of the numerous water crossings that make many cycling trips difficult, if not impossible. This section describes the history, need for, and use of bike on bus equipment in the New Orleans region.

Need for Bike on Bus Programs

In Chapter 5, significant weaknesses with the current cycling transportation system were identified. One of the most significant obstacles that area cyclists face is crossing the many water bodies that encircle the area.

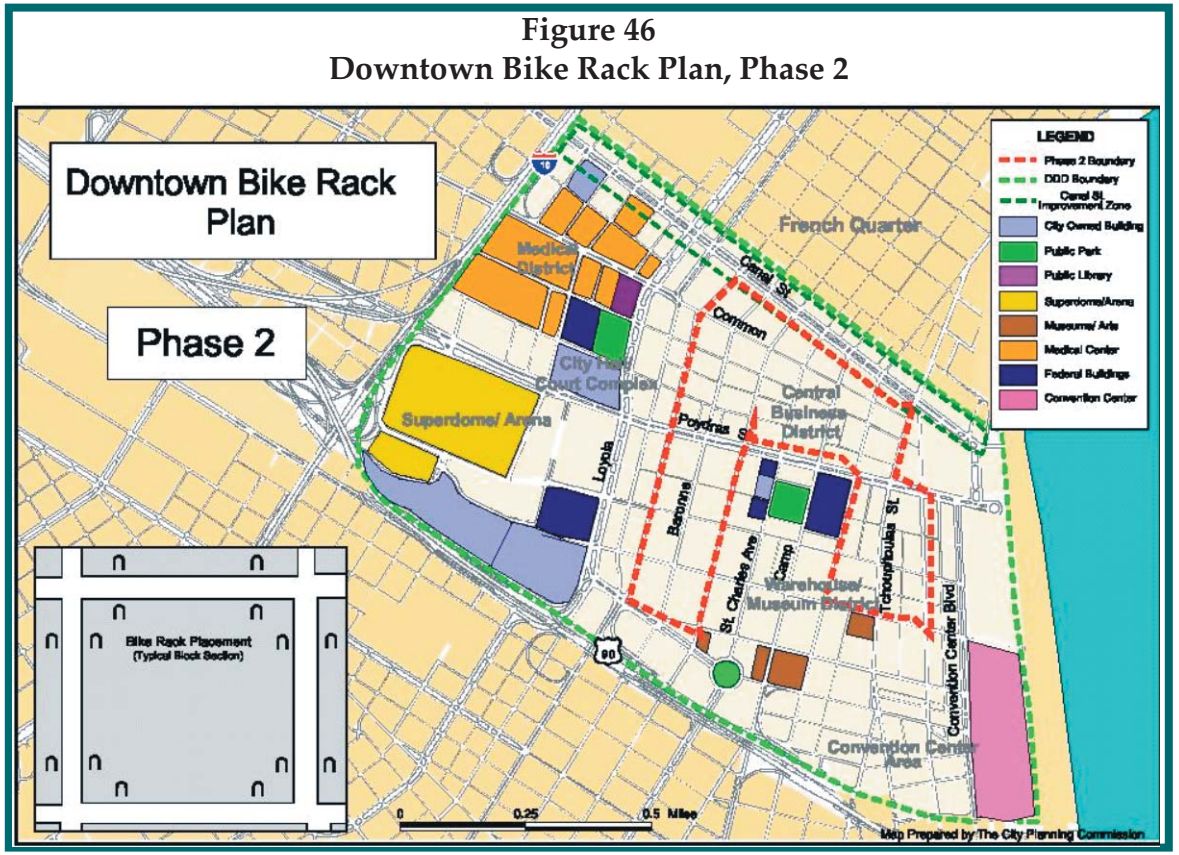
Figure 45
Downtown Bike Rack Plan, Phase 1



The bridges over these bodies of water often do not have sufficient width to accommodate cyclists. These bridges then act as significant breakages in the system, trapping cyclists to small areas. In addition to working to make these bridges more cycling-friendly, one way of overcoming bridges and roadways lacking adequate bicycle access is to utilize transit as a way to transport bicycles through these choke points and hazardous corridors. One widely used technique to accomplish this is to install bike racks on transit busses. This program is generally referred to as Bike-on-Bus.

In many ways Bike-on-Bus equipment helps to strengthen the bicycle network by providing an accessible route through difficult "choke" points. This is particularly important in areas of Jefferson Parish and New Orleans East where roadways are the least conducive to bicycling. Bike-on-bus in effect allows an "accommodation safety zone" that moves cyclists around difficult areas while necessary changes are being made to the bicycle network. These changes will take time as one of the most significant barriers to cycling is poor bridge design. Bridges can only realistically be modified when the bridge is refurbished or replaced at the end of its life-cycle. While it takes time to fund and retrofit bridges over the numerous canals and waterways in the area, bike-on-bus can act as a short-term remedy to breach the many difficult-to-access areas of the region.

Figure 46
Downtown Bike Rack Plan, Phase 2



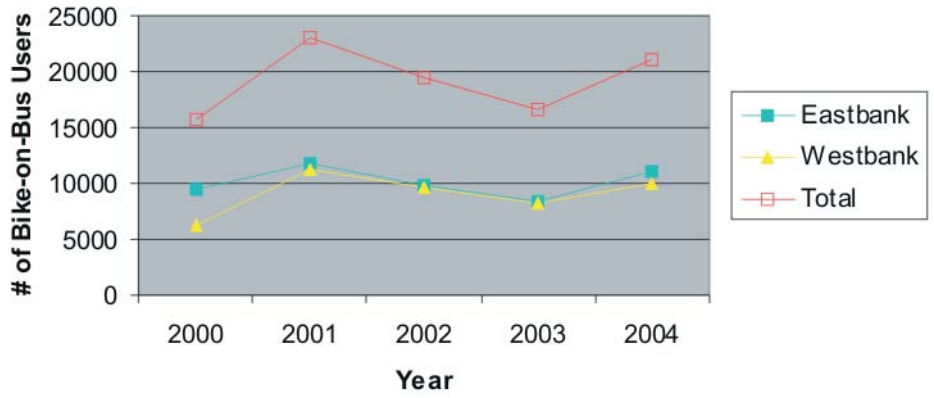
Bike-on-bus operates through a rack system that is installed on the front, exterior of the bus. This places the rack in a position that is clearly visible to the operator. The process of pulling the equipment open and setting the bicycle into the carrier takes less than a minute. All users must watch a training video that provides them with the appropriate technique for securing the bicycle. A certification card is then issued to the Bike-on-Bus user that must be presented to the bus operator when utilizing the system.

Jefferson Parish Transit (JeT)

The Louisiana Transit Authority, through the work of Mike Seither, was instrumental in helping to spur development of the bike-on-bus program in Jefferson Parish. In 1995, Jefferson Parish became the first area transit agency to implement bike-on-bus with service on three routes. By 1996, Jefferson Parish Transit (JeT) had expanded the use of bike-on-bus service to their entire East and Westbank fleets.

Full data on use of the bike on bus was first collected in 2000. Data collected on use showed that there were 15,757 uses of bike on bus in 2000. By 2001, this figure had grown to 23,031. Subsequent years have shown a modest decrease from the 2001 figure. In 2002, 19,462 people used bike-on-bus. In 2003, the figure fell again to 16,666. In 2004, however, the figures have begun to rebound with 21,075 bike on bus users (Figure 47).

Figure 47
Jefferson Transit Bike-on-Bus Users 2000-2004



One reason for the fluctuation of bike-on-bus figures may be the prevalence of several large-scale construction projects on main transit arteries in 2002 and 2003. According to Karleene Smith of GCR, these projects helped make access to the routes difficult. With the completion of these projects, bike-on-bus usage has begun to rebound.

While these figures have shown improvement, there has been little active promotion of the bike-on-bus program after a brief initial campaign. With the imminent start of the bike-on-bus program in Orleans Parish, the time may be ripe for a new promotion campaign that can help expand the awareness and use of the system.

Regional Transit Authority (RTA)

The Regional Transit Authority has also begun a bike-on-bus program. The RTA authorized the purchase of 375 stainless steel Bike-on-Bus racks in the spring of 2003. The cost of each rack was $995 for a total purchase price of $373,125. Funding for the racks came from Section 5307 (formerly section 9) formula grant from the Federal Transit Administration for capital and planning projects. $139,000 was garnered from 2003 funding and the remaining $234,125 came from previous years funding. By October 2004, the bid process and installation of all racks was complete. The RTA has been working to institute a certification process that will allow joint JeT and RTA Bike-on-Bus certification. One card will be accepted by both transit agencies when finalized. Operator training to ensure safe loading and unloading of the bicycles is also underway. The seamless integration of bike-on-bus service between the two parishes should help to significantly improve access to cyclists on transit.

St. Bernard Transit

The small fleet of St. Bernard Transit busses does not have Bike-on-Bus equipment to date.

Conclusion

Both bike-on-bus and bicycle parking initiatives have begun to gather momentum in the Metropolitan area in recent years. These two initiatives help to make cycling a more attractive commuting option by working to minimize some of the significant obstacles that have made

cycling trips complicated events. By providing bicycle parking spaces in the CBD, the current initiative seeks to provide at least the minimum necessary condition for commuting, a place to store the bicycle. In the future, efforts should be made to both expand the coverage of racks to other parts of the city and, importantly, to identify locker and shower facilities that address the full extent of end of trip facilities necessary to make cycling an attractive commuting option. Bike-on-bus initiatives in Jefferson and Orleans parishes show important progress in providing a seamless integration between the adjacent parishes. These efforts should now make it possible for cyclists to breach some of the significant barriers that currently limit the extent of bicycle travel. While bike-on-bus programs help to extend access to cyclists, they should be coupled with efforts to improve the on-street bicycling network. By working from multiple angles, bicycling improvements can help to create a fully integrated network.

Bicycle Networks

Introduction

Currently, the dedicated bicycle network in the New Orleans metropolitan area is composed of several fairly continuous shared use paths along the Mississippi River and Lake Pontchartrain and a few discontinuous trail systems sprinkled around the area. While bicycle movement along the edge of the lake and river is facilitated by these trail systems, dedicated facilities for bicycle transportation outside these corridors remain few and scattered. Despite the presence of some successful trails, the overall condition for area cyclists is generally poor. Cycling along much of the area road system can be both difficult and dangerous.

While there are only a fairly small number of dedicated facilities, area bicyclists have concocted routes that utilize the base street network to travel throughout the area. These routes seek to maximize convenience, safety, and recreational enjoyment. While these routes represent the best efforts of area bicyclists to move throughout the region, most of the routes identified have glaring weaknesses that limit the wide acceptance of the bicycle as a mainstream transportation tool.

This chapter examines the bicycle route system in the New Orleans region. The chapter evaluates current and proposed routes by utilizing the framework of best practices for bicycle routes set out in Chapter 5. These best practices help to define the overall connectivity and safety of these routes. Existing bicycle routes identified by area bicyclists are examined to determine their current suitability for bicycling and their potential as regional cycling corridors. The routes examined include local connector routes, sport cycling routes, and the regional Mississippi River Trail. Recommendations to improve cycling conditions are made for each corridor. Broader policy recommendations to improve the entire network are included in the Setting Priorities chapter.

It should be noted that much of the metropolitan area is not covered by official bicycle routes. While it is possible to ride in all parts of the area, much of the unrouted portion of the region offers exceedingly poor conditions for cyclists. While this chapter focuses attention on a selected set of utilized bicycle routes, there may be latent demand for additional facilities in underserved areas. This is particularly true for areas that are blocked by major impediments. A good example of such a connectivity barrier is the lack of a bicycle route between the East- and Westbanks of the Mississippi River. Despite the fact that there are major employment centers at the foot of both the Huey P. Long Bridge, there is no current route to take cyclists over the river. The lack of connectivity is also a problem around other area water bodies including underserved populations blocked by the Harvey Canal and Industrial Canal. In these cases, the lack of cyclists is more a function of lack of facilities than lack of demand. In this context, this chapter represents only a first look at needed facilities and improvements, not a comprehensive list of all regional needs.

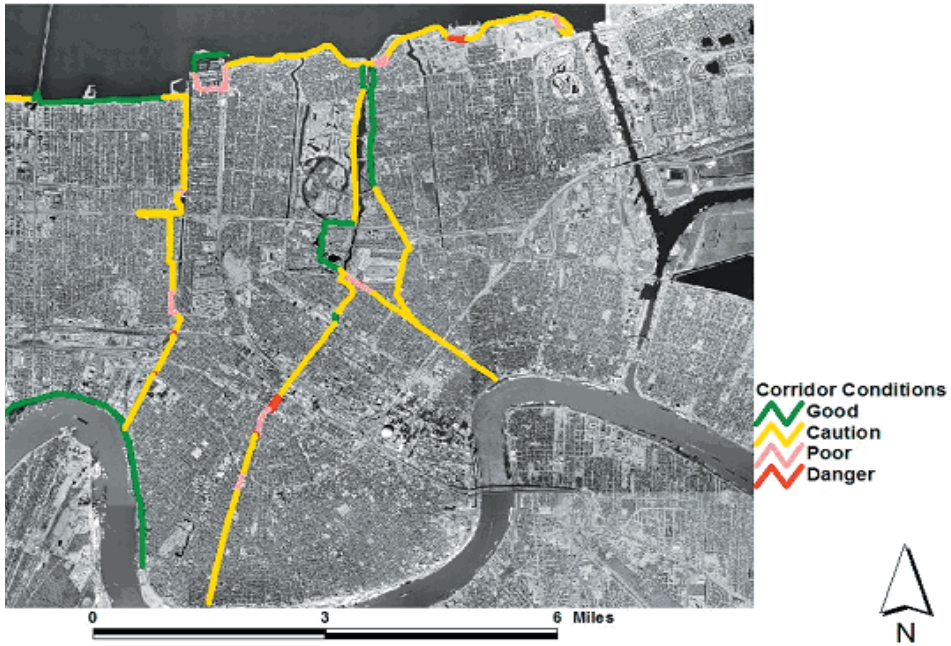
Regional Connector Corridors

Over the course of the last three years, numerous area cyclists and bicycle clubs and organizations have been asked to provide input on the best available metropolitan area bicycle routes. Seven routes were identified: three north/south routes on the eastbank of Jefferson Parish, three routes in Orleans Parish, and a route circumnavigating the westbank.

Each route is analyzed in this section for connectivity, perceived safety, and general appeal based on the framework of best practices laid out in Chapter 5. A basic quality scale was used to map the condition of the routes. Good cycling conditions were labeled as green. These areas generally had a combination of low traffic volume, wide shoulders, decent pavement, and low potential for vehicle conflict. Areas where caution is advised were labeled yellow. These areas had a degraded combination of the above variables. Poor areas were labeled in light red. These zones had significant weaknesses in at least one of the categories examined above. Finally, dark red was used to designate areas of perceived danger for cyclists. These areas had significant weaknesses that make them difficult areas for use by cyclists. High traffic volume, small or non-existent shoulders, high traffic

speeds, and poor design were some of the factors that were present in these areas. In addition to the physical factors, empirical data on crashes recorded at these locations was also factored into these ratings. Figure 48 shows the color-coded routes in the central area of the New Orleans metropolitan area.

Figure 48
Central New Orleans Routes



This classification scheme should be used to help direct the attention of area traffic engineers and planners to potential problem areas in the current bicycle network. While area bicyclists have already been utilizing these routes, prudent care should be taken when attempting to utilize these routes for bicycle travel. Many of the on-street routes are currently suitable only for the more advanced riders with good traffic reading skills. Even for these riders, major sections of the routes may be acceptable only during off-hour, low traffic intervals. The New Orleans metropolitan area is only at the first phase of creating a fully functioning, efficient, and safe bicycle network. Much work remains ahead of us to achieve these goals.

Jefferson/St. Charles Route

One of the most difficult trips for a cyclist in the New Orleans metropolitan area is traveling north/south between the Mississippi River and Lake Pontchartrain. North/south routes in Jefferson Parish are particularly problematic because of numerous large-scale east/west transportation corridors, railroad tracks, and drainage canals that criss-cross the area. The route along the Jefferson/St. Charles Parish line is a particularly difficult one for cyclists. From 1999 to the first quarter of 2003, 43 bike crashes were recorded along this route[11]. Figures 49, 50, and 51 show the overall cycling conditions in this corridor.

Moving from north to south, the route begins at the Lake Pontchartrain path. The shared use path along the Jefferson/St. Charles parish line begins as a smooth paved path at the lake. The east/west portion of the shared use path running parallel to the lake in this area, however, is extremely rough because of its placement directly adjacent to the lake. Weather and time have taken their toll on this portion of the path. This section of the path is currently scheduled to be replaced within the next several years.

The route along the parish line heads south to West Esplanade along the smooth paved path. While the paved portion of the path continues past West Esplanade approximately another three-quarters of a mile, there is no street outlet at the end of the path. Cyclists must turn at West Esplanade onto the shared use road system to continue. Cyclists travel approximately a quarter mile to the east along West Esplanade. This section can have a fair amount of traffic and limited width. Cyclists are advised to exercise caution.

[11]The number of crashes for the routes includes all recorded crashes within 1/10 of a mile of the corridors. This distance picks up crashes immediately adjacent to the routes.

The route now heads onto fairly quiet suburban streets. The route turns south along Tulane Drive. This shared use street usually has little traffic. At the end of Tulane, the route turns onto Furman Drive for a block before continuing south along Northwestern Drive. After a block on Northwestern Drive, the route turns onto Duke Drive. There is more traffic along this street, but it is still fairly easy to traverse this section.

At this point the route turns onto Loyola Drive. This turn marks the end of the easy cycling section and takes the cyclist, unfortunately, directly into the heart of one of the most difficult cycling intersections in the Metropolitan area (Figure 50). The cycling conditions heading south along Loyola are labeled "Danger" for a good reason. From 1999 to the first quarter of 2003, 15 bike crashes were recorded for the three long blocks between Duke Drive and Veterans Boulevard along Loyola Drive. The worst place by far along this section was the intersection of I-10 and Loyola Drive. There were 12 recorded crashes at this site alone. This intersection had the highest recorded crash total of any location in the New Orleans metropolitan area. This section along Loyola Drive has no shoulders, high traffic volume, and a confusing design with Interstate entrance ramps in the area. These factors make the area highly undesirable for cyclists.

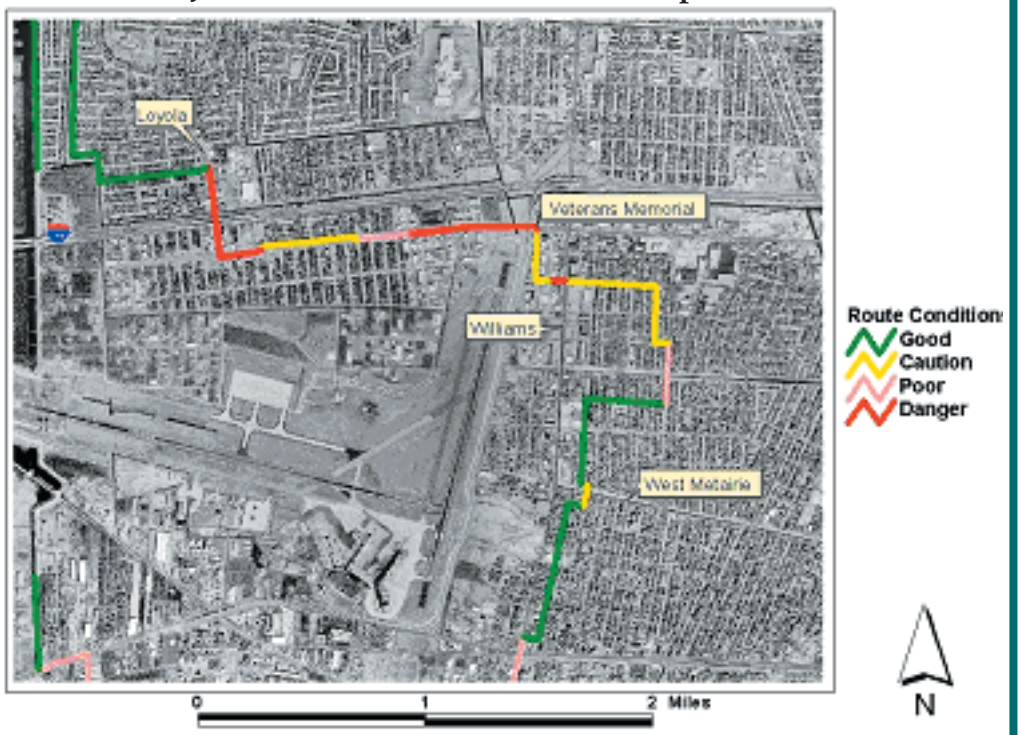
The problem for cyclists, however, is that there are no alternative routes in this area. Because of the obstruction of the Interstate, cyclists are forced to utilize a poorly designed space to move within this portion of the parish. Several planning options should be considered to help improve this area. First, consideration should be given to extending the shared use path that currently exists along the parish line. This path is currently blocked by a parish pumping station and a canal. With the installation of a bridge over the canal at this spot and the extension of the path along the levee, the possibility may exist to extend the path further along this corridor. Because of the poor safety situation along Loyola Drive, the path should extend at least as far as under the Interstate to the end of Veterans Boulevard.

Figure 49
Jefferson/St. Charles Corridor North

At about this point, airport land starts just to the south. The airport places a significant barrier in the way of extending the path all the way to the south to link to the Mississippi River Trail. While it may not be feasible to extend the path south from this point, every effort should be made to explore providing some type of connection through this zone either along the east side or along the western side. A similar type of linkage close to the airport is provided along the edge of Reagan National Airport in Washington, DC.

As the current route continues, it heads west along Veterans Boulevard. For a short period, there is adequate width due to the wide curb lane. This area is, however, poorly maintained with plenty of debris covering the road. After this short section, traversing Veterans Boulevard by bicycle becomes much more problematic. Near the end of the north/south runway of the airport, the width of the road decreases, the traffic volume increas-

Figure 50
Jefferson/St. Charles Corridor Airport Area



es, and all alternative routes disappear. The cyclist, once again, is heading into a very difficult and potentially dangerous area.

This area provides bicycle planners and engineers with a complex safety problem. There is limited space to install more bicycle specific facilities because of a traffic flyover for airport bound traffic, the multiple traffic lanes of Veterans Boulevard. and the Interstate, and, finally, the airport runways themselves. This tight spatial situation poses significant challenges to planners, but, because of the significant safety problem, the situation needs to be addressed. Serious and creative attention needs to be given to alleviating this significant safety problem.

If the cyclist is able to negotiate the difficult conditions along the Veterans corridor, it is possible to craft a route that extends to the Mississippi River from this point. The cyclist then can head south on Delaware Avenue through a fairly lightly traveled light-industrial area. After two blocks, the route turns east onto 26th Street. Once again, the cyclist is confronted with a challenging situation. Crossing Williams Boulevard with its higher speed traffic and high volume can be very difficult. Two bike crashes were recorded at this location from 1999 to the first quarter of 2003. Once this difficult intersection is cleared, the route becomes much more manageable.

After a little under half a mile, the route turns south onto Kentucky Avenue. After two blocks, the route turns onto 24th Street for one block. Here the route turns onto the relatively high volume Roosevelt Boulevard for several blocks. After the cyclist goes over the drainage canal, the route turns onto 22nd Street. At this point, the cyclist can expect much improved conditions as the route utilizes low-volume suburban streets for a couple of miles (Figure 51).

After six blocks, the route turns south again along Idaho Ave. After a short jog onto Clay Street to cross yet another drainage canal, the route turns onto 18th Street for a block. The route again heads south here along Compromise Street. At 9th Street the route jogs to the west for a block before encountering the more difficult intersection of Williams and Airline. Four bike crashes were recorded at this intersection from 1999 to the first quarter of 2003.

The next quarter or so mile along Williams Boulevard is labeled "poor" because of higher traffic volume and lack of space. Once this section is cleared at the railroad tracks, the next section of Williams Boulevard is more manageable and is labeled "caution." Finally, the cyclist must cross the River Road intersection to reach the smooth, shared use path of the Mississippi River Trail.

Clear problems currently exist along Jefferson Parish/St. Charles Parish corridor route. Numerous high volume intersections, tight roadways, and numerous barriers

such as the Interstate, airport, and drainage canals must be negotiated to move along this section of the parish. Because there are no alternative routes, local cyclists are forced to utilize a shared use street network that has significant shortcomings.

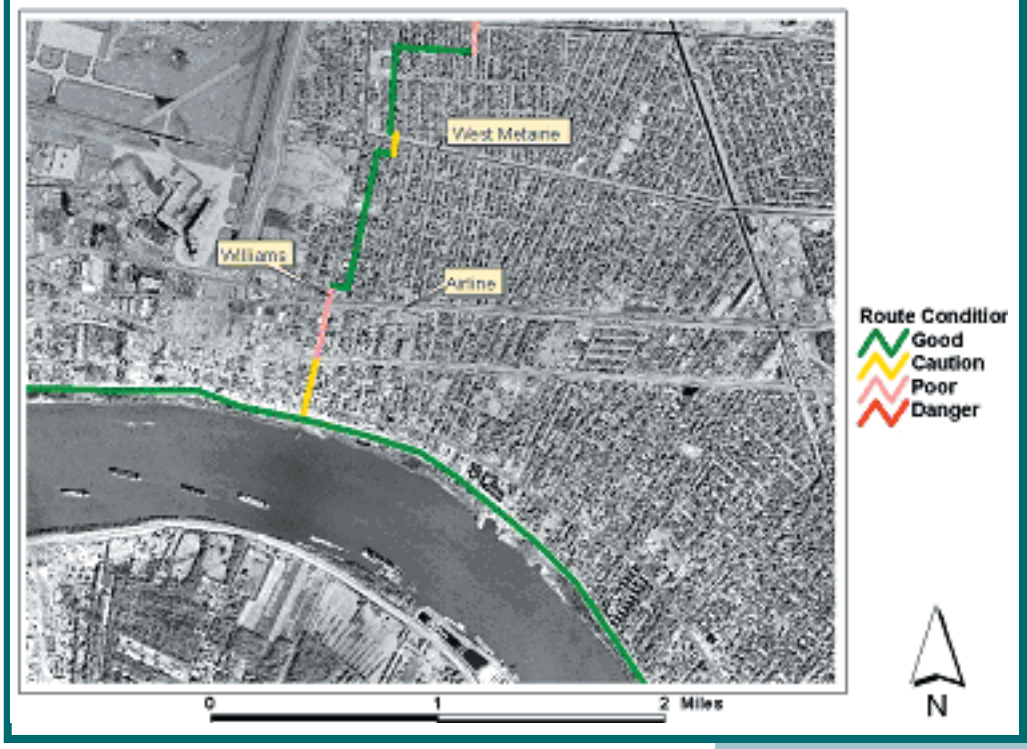
Serious attention should be paid to improving conditions in this area. While no one solution will "solve" the safety problems along the route, several steps can be take to vastly improve conditions. First, more bicycle-friendly facilities should be integrated into future roadwork projects scheduled for the problem intersections identified along this route. While these problem intersections provide the most difficult challenges, the conditions along the entire route could be improved by exploring adding extra width when overlay projects are scheduled along the route.

Because the intersection area around Veterans Boulevard and Loyola Drive/Williams Boulevard is such a significant barrier to movement of bicycles on this side of the parish, it may be necessary to consider providing a dedicated bicycle/pedestrian bridge to provide access around the area. A pedestrian/bicycle bridge placed over Veterans and then over Interstate-10 starting at the end of Roosevelt Street just to the east of the Williams/Veterans intersection could help to breach the significant barriers in this part of the parish. While this solution is potentially more costly than spot specific improvements, it offers the possibility of creating a long-term benefit to parish residents that should be considered.

Jefferson Mid-Parish North/ South Route *(Central Avenue Corridor)*

Another north/south route identified by area cyclists takes the cyclist from Laketown in Kenner to the Mississippi River Trail via a circuitous route that involves a long stretch of Central Avenue. The Central Avenue corridor route, while slightly better than the Jefferson Parish/St. Charles Parish route just examined, has significant weaknesses that make it difficult to traverse the entire length of the Jefferson eastbank area. Figures 52 and 53 show that while the northern portion of the

Figure 51
Jefferson/St. Charles Corridor South



route is fairly user-friendly, significant barriers exist on the southern portion of the route that make the route unsuitable for all but the heartiest of cyclists. There were 15 recorded bike crashes along this route from 1999 to the first quarter of 2003.

The corridor is broken down into 12 segments. These include a segment on the lakefront Linear Park, a segment on Janice Avenue joining the Linear Park to Vintage Drive, a segment on a pathway from Vintage Drive to 37th Street, a segment on 37th Street joining Power Boulevard and Page Drive, a segment on Page Drive joining 37th Street and Yale Street, a segment on Green Acres Road joining Yale Street and Utica Street, a segment on Utica Street joining Green Acres Road and Transconti-

nental Drive, a segment on Transcontinental Drive joining Utica Street and West Napoleon, a segment on West Napoleon joining Transcontinental Drive and Houma Boulevard, a segment on Houma Boulevard joining West Napoleon and Airline Drive, a segment on Central Avenue joining Airline Drive and Jefferson Highway, and finally a segment on Central Avenue joining Jefferson Highway and River Road.

Linear Park from Laketown to Janice Avenue

This segment length is .5 miles. Proceed east along the lakefront on the Linear Park. Cross the levee via asphalt ramps. The north and south ends (approximately 20 feet each) of these ramps are too steep to be negotiated by the average rider. Diagonal ends could lessen the grade and accommodate all riders.

Janice Avenue from Levee to Vintage Drive

This segment length is .6 miles. Continue south on Janice Avenue to Vintage Drive, Janice Avenue is a residential street with very light traffic. Janice Avenue runs parallel to Erlanger Drive, which is the northern extension of Power Boulevard Use of Erlanger Drive would be a more direct route; but it cannot be used for northbound traffic since the two blocks of Erlanger Drive just north of Vintage Drive are one-way south. A practical improvement would be a northern extension of the pathway, which runs through the median of Power Boulevard from West Esplanade Avenue to Vintage Drive, through the easement along Erlanger Drive.

Pathway on Power Blvd. neutral ground

Pathway from Vintage Drive to 37th Street

This segment length is .6 miles. At Vintage Drive pickup the above pathway to 37th Street This pathway is well maintained by the Jefferson Parish Parkway Department and is sparsely used except by an occasional jogger. Four U-turn lanes intersect the pathway. If this pathway is to become a major bike route, the intersections with the U-turn lanes will need to be improved. Generally pathways in the middle of neutral grounds are not recommended because of possible conflicts with cars at intersections. In order to improve safety at this already developed path, it may be necessary to install broad table-top traffic calming areas where the path crosses the intersection. This type of facility has been used in Atlanta in their Centennial Olympic Park and might be used at these intersections to improve safety. At a minimum, clear pavement markings and signs need to be posted warning motorists of bicycle traffic.

37th Street from Power Boulevard to Page Drive

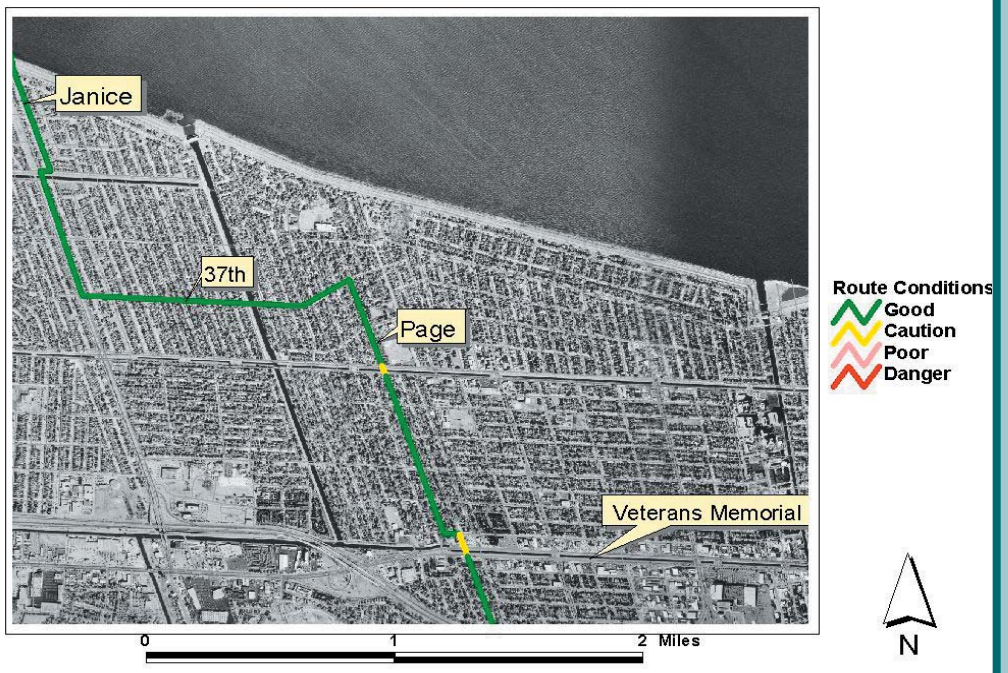
This segment length is 1.1 miles. Head west on 37th Street Traffic is very light in this residential area. All intersections on 37th Street have four-way stop signs

that slow down motorists, but also cyclists. Constant starting and stopping for bicycles is problematic. Some thought should be given to improving the flow of cyclists through these multiple intersections. 37th Street crosses the Elmwood Canal via a pedestrian/bike bridge between Wilson Drive and Academy Drive.

37th Street

Pedestrian/Bike bridge over Elmwood Canal

Figure 52
Central Avenue Corridor North



Page Drive from 37th Page Street to Yale Street

This segment length is 1.2 miles. Page Drive has the right of way at most intersections. The crossing at West Esplanade Avenue has a pedestrian/bike bridge across the street and the canal and a traffic signal on the south side of West Esplanade Avenue. This bridge may need to have better access, as the curved ramp and lack of a pedestrian/bike street crossing requires one to walk the bike across both the road and the bridge. Girard Playground is one block east of the corridor between Irving Street and West Esplanade Avenue.

Green Acres Road from Yale Street to Utica Street

This segment length is .5 miles. Page Drive ends at Yale Street Turn east on Yale Street for one block, then south on Green Acres Road The crossing at Veterans Boule-

Pedestrian/Bike bridge over West Esplanade Canal

vard is protected by a traffic signal and intersects the JET bus route (E-1 Veterans). This intersection has a fair amount of traffic and could be difficult for less experienced cyclists. Signing the area as a bike route could help alert left or right turning vehicles to the presence of cyclists.

Green Acres Rd. crossing Veterans Blvd.

Utica Street from Green Acres Road to Transcontinental Drive

This segment length is .3 miles. Green Acres Road ends at Utica Street. Turn east on Utica Street. Utica Street is just north of and parallels I-10, so there is no cross traffic.

Transcontinental Drive from Utica Street to West Napoleon Avenue

This segment length is .7 miles. Turn south on Transcontinental Drive. Traffic on Transcontinental Drive can be heavy at times. While there is no shoulder along Transcontinental Drive, there is a sidewalk under the Interstate. Bicyclists that feel uncomfortable in traffic could walk their bicycles under the Interstate and then take a side street to avoid this corridor. For cyclists using Transcontinental Drive, extreme care must be taken when turning left at either end of this portion of the route. There were four recorded bike crashes at the intersection of Transcontinental Drive and West Napoleon Avenue from 1999 to the first quarter of 2003. The route would be greatly enhanced if extra width could be provided along this area. Transcontinental Drive intersects York Street, which connects the corridor to Lafreniere Park via a .9 mile ride.

Transcontinental at the I-10 underpass

West Napoleon Avenue from Transcontinental Drive to Houma Boulevard

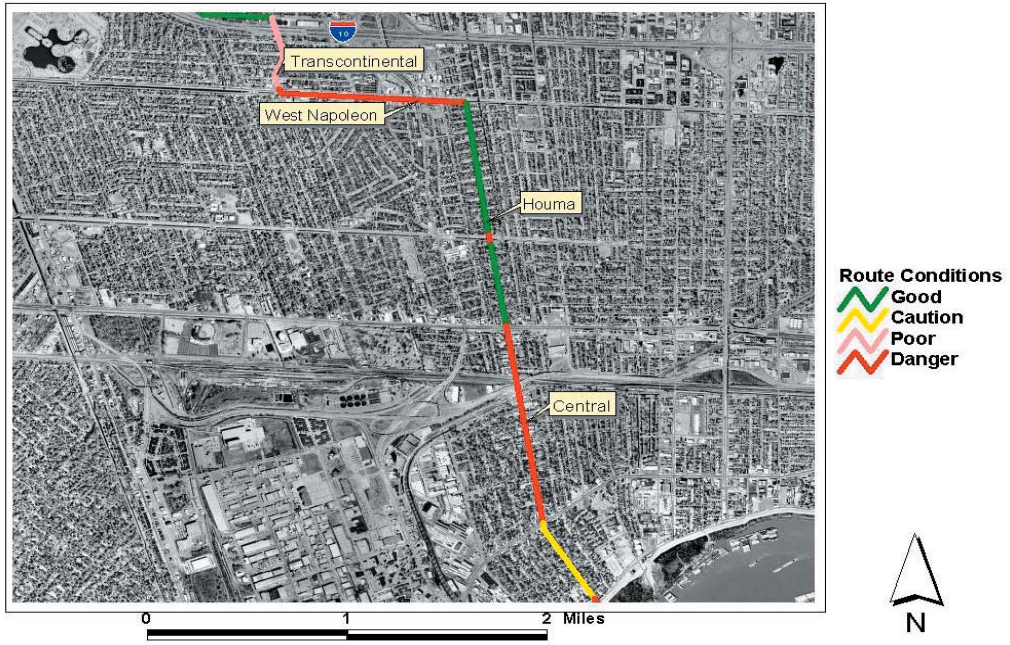
This segment length is .9 miles. Turn east on West Napoleon Avenue. At present, West Napoleon Avenue, due to the width of the roadway and traffic density, is suitable for skill level A and B riders; however, future plans call for extending West Napoleon Avenue both east and west. When this occurs, traffic volume will greatly increase. To accommodate all riders, extra width or other bicycle facilities should be considered for this overlay project. The corridor passes by the Eastbank Regional Library, which has a bike rack in front of it.

West Napoleon

Houma Boulevard from West Napoleon Avenue to Airline Drive

This segment length is 1.3 miles. Turn south on Houma Boulevard. This is a lightly traveled residential road that has the right of way at most intersections. The crossing at West Metairie Avenue is in need of improvement. Houma Boulevard used to go directly through West Metairie Avenue and the canal in middle West Metairie Avenue. When the bridge was replaced, a double U-turn bridge was placed just east of the intersection. At present, the only way cyclists may legally cross West Metairie Avenue (in a southern direction) is by riding/pushing their bicycles through the grass for 200 feet. This intersection

Figure 53
Central Avenue Corridor South



Houma Blvd. near Girard

West Metairie and Houma Blvd.

poses a significant challenge for bicyclists. Because of the volume of traffic using West Metairie Avenue, some type of bicycle facility, either a pedestrian/bicycle bridge or extra width, should be considered for this area.

Central Avenue from Airline Drive to Jefferson Highway

This segment length is 1.1 miles. At Airline Drive, Houma Boulevard changes into Central Avenue (LA 48) and

Houma Blvd. and Airline Drive

the corridor once again intersects a JET bus route (E-2 Airline/Airport). This segment is the most heavily traveled and challenging part of the corridor. It is, however, the only way to cross under the Earhart Expressway. Since traffic is so heavy on this segment, the addition of shoulders is needed to accommodate even skill level A and B riders.

Railroad tracks crossing Central Ave.

South of Airline Drive, the corridor crosses over eight sets of railroad tracks. Although this makes for a fairly rough ride, lights, bells and barricades protect all crossings. The entrance to the United Parcel Service Depot is in the middle of the rail crossings. At this point, directly underneath the Earhart Expressway, water tends to pool at times completely covering the southbound lane and part of the northbound lane. Increased drainage is needed to eliminate this hazard to cyclists as well as motorists.

Because this route is one of the only ways for cyclists and motorists to move north/south in this area, future road projects should include provision of bicycle facilities to improve this vital linkage in the bicycle network.

Central Avenue from Jefferson Highway to River Road

This segment length is .6 miles. At Jefferson Highway, the corridor once again intersects a JET bus route (E-3

Kenner/Local). The state highway designation changes to 611-2. While the traffic flow decreases significantly on this portion of the route, care should still be taken because of through traffic connecting to River Road. South of Jefferson Highway, Central Avenue intersects South Drive, which connects the corridor to Jefferson Playground via a .3 mile ride.

If the corridor was not complicated enough, it ends with two more obstacles. First, crossing River Road (LA 611-1) can be difficult because of the relatively high volume

Central Ave. and Jefferson Hwy. Levee path access via gravel ramp.

of traffic and speeds on this winding two-lane road. The second challenge is that the ramp up to the Mississippi River Trail is unpaved. A cyclist without fat tires currently has to push up to the levee top or risk riding along River Road for a quarter mile to a paved path entrance a quarter mile downstream. This intersection needs to be improved to accommodate cyclists entering and exiting the Mississippi River Trail.

Jefferson/Orleans Parish Line Corridor

A highly favored bicycling north-south route is located near the border of Jefferson and Orleans Parishes. It is a natural choice for riders because is it the shortest route between two existing corridors; Jefferson Parish Lakefront Linear Bike Path parallel to Lake Pontchatrain and the Mississippi River levee east bank path. The Mississippi River has a bend here shortening the distance between the two waterfront corridors and therefore, makes a natural connection between neighborhoods north and south and to destinations along each. Some (not all) segments of the northern portion of the corridor are signed as a bike route by Jefferson Parish ending at Metairie Road.

Overall, continuous north-south roadways for cars or bikes are few throughout the region due to the natural geography of the region. The Jefferson-Orleans bicycle corridor crosses six major east-west roadways and two sets of railroad tracks. So although it is attractive to cyclists because of its central position it is also dangerous in numerous locations and needs special attention to signage, pavement markings and intersection crossings.

Orpheum St. between pedestrian bridge and Hammond Hwy. (looking toward the late)

Lakefront to Hammond Highway

Beginning from the northern end, the Jefferson-Orleans parishes bike route connects to the lakefront path at Orpheum Street in Jefferson Parish. The Orleans Parish lakefront path intersects Orpheum Street at the west end of the pedestrian bridge that crosses the 17th Street Canal

near the marina and lakefront restaurants. Following Orpheum Street south for one long block and next to the 17th Street Canal the route crosses on the west side of the Hammond Highway bridge, under construction at this time. The intersection is signaled. However, no bike route signage exists at this location to notify cyclists.

Intersection of Orpheum St. and Hammond Hwy (looking river bound)

Hammond Highway to Veterans Boulevard

After crossing the Hammond Highway intersection, the route continues south on the top of the levee, next to the floodwall. The floodwall is approximately 7 to 8 feet tall and the levee top path is approximately 10 wide and consists of grass and gravel. Orpheum Street runs along the base of the levee. It is a two-way roadway but narrow, approximately 16 feet wide. Cyclists may choose to use the roadway although it is in very poor condition with potholes and loose gravel debris.

The levee top path changes to an 8 foot wide asphalt path at Rosebud Street while Orpheum Street ends abruptly one block earlier at Lilac Street The cyclist can continue south on the levee top to Veterans Boulevard. At Veterans Boulevard the path turns right or upriver (westerly) and joins a sidewalk crossing the 17th Street Canal bridge at Veterans Boulevard. (Note the Orleans Parish path does not continue into Orleans Parish on the east side of the 17th Street Canal bridge on Veterans Boulevard making for a serious choke point in the network.)

Levee top path along the 17th St. Canal floodwall at Lilac St. (looking riverbound).

Veterans to the South I-10 Service Rd.

The path next to Veterans Boulevard narrows to a 3 to 4 wide sidewalk from the 17th Street Canal bridge, crossing Lake Street and proceeding to Carrollton Avenue where it turns riverbound again and crosses six lane Veterans Boulevard. It is unclear if the cyclists should "become a pedestrian" at this intersection. There are bicycle no pavement markings to guide the cyclist while the crosswalk on the downriver side of the intersection is designed as an ADA compliant crossing for pedestrians and is well marked.

After crossing Veterans Boulevard at Carrollton Avenue, the route proceeds on Carrollton Avenue approximately four blocks to the north I-10 Service Road. The north I-10 Service Road is a two-lane roadway, which experiences a range of traffic volumes depending on the time of day and day of week. A separate bike path, approximately 7 feet wide is currently located adjacent to the north Service Rd. between Interstate 10 and the service road. The entrance to the separate path is blocked by a curb,

Veterans Blvd. looking east to Orleans Parish

Veterans Blvd. west to Jefferson Parish

which has intermittent V-shaped curb cuts, not suitable for riding through. The cyclist must walk the bike across the north Service Road to negotiate entering the path. Interstate 10 will be widened in the section between the 17th Street Canal and Causeway Boulevard with sound walls erected, possibly impending on the adjacent bike paths on the north and south I-10 service roads. Cycling accommodations should be incorporated into the design.

The separate path continues upriver (westerly) and turns left under Interstate 10 between Andrews and Rosa

Crossing at Carrollton Blvd. and Veterals Blvd.

North I-10 Service Rd. bike path

streets, prior to reaching Bonnabel Avenue, the major street crossing street under I-10. The separate path turns downriver (easterly) on the riverside of I-10 and again is adjacent to the south I-10 Service Road between I-10 and the south Service Road

South I-10 Service Rd. to Northline

The path continues downriver on south I-10 Service Road and abruptly ends as it turns riverbound and joins the street network once again at Carrollton Avenue. Unfortunately this leaves the rider facing traffic for one block on Carrollton Avenue until they reach Holly Grove Street and turn left, following the bike route signs. Holly Grove Street dead ends at the 17th Street Canal and the cyclist will turn toward the river at the intersection of Lake Street, next to the 17th Street Canal. The signed route continues on Lake Street southward jogging slightly as it crosses over one of many canals in the region. Pavement markings are needed at this location to guide motorists and cyclists safely through the intersections on either side of the canal, both named Canal Street

The route continues on Lake Street and turns right on Pink Street for one block as it returns to Carrollton Avenue once more. (The bike route avoids Carrollton Avenue where possible because it is a higher volume street overall. It is one of seven locations that cross the back belt railroad track in Old Metairie neighborhood, making it an attractive route for through traffic.) The route continues river bound on Carrollton, over the signaled railroad track until it intersects Hyacinth Street, approximately two blocks. The route turns left or downriver on Hyacinth Street for two blocks and intersects Orpheum Street.

The route turns riverbound on Orpheum Street, abutting the 17th Street Canal once again, and continues to Old Metairie Road. Old Metairie Road. and Orpheum Street have a signal. However, traffic is heavy because Old Metairie Road is a major arterial and designated truck route.

Orpheum St. between Hyacinth St. and Old Metairie Rd.

At old Metairie Road. the route turns right or upriver for a half block to Friedrichs Street. Caution should be used for this short block because the rider must cross into the left turning lane in short order and negotiate four lanes of traffic. While most of the route is on quaint residential streets thus far, the crossings at Hammond Highway and

Orpheum St. at Old Metairie Rd.

Old Metarie Road may be very hazardous. The route continues riverbound on Friedrichs Street to Northline Drive, approximately three blocks. The route turns downriver (easterly) on Northline Drive and proceeds over the 17th Street Canal to Monticello Road. Once over the 17th Street Canal the rider will be in Orleans Parish.

Northline Drive to Airline Blvd.

The route turns river bound from Northline Drive onto Monticello Road and the street condition and neighborhood characteristics change from good to poor. Monticello Road is a poorly marked 2-lane roadway.

Cyclists continue on Monticello Road to Airline Boulevard, approximately 8 blocks. Airline Boulevard is a major impediment for two reasons: the boulevard is an 8-lane corridor with 50 mph, high volume traffic and the New Orleans Union Passenger Terminal railroad track traverse east-west on the riverside of Airline Boulevard. Both thoroughfares are highly dangerous to cyclists and pedestrians. Yet cyclists and pedestrians routinely cross here to reach a bus stop located on the riverside of Airline Boulevard at this location. In addition, on the riverside of the track, Monticello Road continues unimpeded to S. Claiborne Avenue. While the Regional

Monticello Ave. riverbound at Airline Blvd.

Planning Commission cannot advocate this as a safe route, it is the route being used today for lack of any other corridor.

A complete review of this critical crossing (road and rail) should be underway by the RPC to see if a design solution is possible. A "desire line" over the railroad tracks from the Holly Grove neighborhood (riverside

of the railroad track) to the bus stop is visible in aerial photographs of the area. Cyclists carry their bicycles over the track at this location to reach the street network on the other side. The next closest roadway is the current extension of Dakin Street in Jefferson Parish. Dakin Street, however, will accommodate large numbers of car and truck traffic from Labarre Business Park, Earhart Expressway and Jefferson Highway. There needs to be careful consideration of alternative routes or an improved crossing design to replace this unsafe and "unofficial" pedestrian and bicycle rail crossing with a linkage that is safe and easy to use.

South Claiborne to the Mississippi River

Monticello Canal is on the upriver side of Monticello Street through the Holly Grove neighborhood. At South Claiborne the route turns upriver for a short block crossing into Jefferson Parish where South Claiborne Avenue becomes Jefferson Highway.

The cyclist must cross three lanes of traffic into the median on Jefferson Highway to turn left across three more lanes of traffic onto Monticello, now located on the upriver side of Monticello Canal in Jefferson Parish.

Jefferson Hwy. at jog between Monticello Rd. in Orleans and Monticello in Jefferson, looking upriver (westerly)

Monticello (LA 611-8) from Jefferson Hwy. looking river bound

Monticello Street is a recently repaved 2-lane roadway here, posted at 25 mph.

It is also state route LA 611-8. Today this route experiences little traffic but once the Dakin Street extension is opened, traffic will likely increase and the intersection at Jefferson Highway and Monticello may become more congested. Traffic signalization and careful planning to accommodate cyclists at this intersection are needed.

Monticello crossing of NOPB track near River Road

Monticello crosses the New Orleans Public Belt Railroad single track near River Road. The crossing has been upgraded and is fairly smooth for cyclists although care should always be taken to cross perpendicular to the track to avoid getting a bicycle tire caught in the track slot. The railroad crossing is not signalized but because the number of trains is low, the crossing is manageable.

The final obstacle for the cyclist to enter the Riverfront East Bank Levee path from the Jefferson-Orleans route is the intersection at River Road. A curve in the road upriver one block impairs the ability to see oncoming traffic. A traffic calming measure should be installed here and a bicycle cross alert signal considered.

Wisner/Jefferson Davis/Uptown Corridor

This route takes the cyclist from Lake Pontchartrain at Bayou St. John to the Mississippi River near Audubon Park. While the route has several more difficult sections,

Figure 54
Jefferson/Orleans Corridor North

it is, in general, a fairly good route to move north/south in Orleans Parish. There were 18 recorded crashes along this route from 1999 to the first quarter of 2003. Of these crashes, all but four occurred along the Jefferson Davis Parkway portion of the route.

The route is divided into two basic sections: the Wisner Avenue/Jefferson Davis Parkway section and the Uptown/Nashville Avenue section (Figures 56, 57, and 58). The Wisner Boulevard section joins Uptown bicycle traffic to Mid-City and the Lakefront via relatively low-volume streets. This route is also a critical link for students and employees of the University of New Orleans, Southern University of New Orleans, and John F. Kennedy High School. Other points of interest or employment centers near the route are the Agriculture Research Center at Robert E. Lee and Wisner boulevards, the many amenities of City Park, the Fairgrounds, the New Orleans Museum of Art, and the Pitot House. The route also provides an opportunity to peddle along the scenic,

Figure 55
Jefferson/Orleans Corridor South

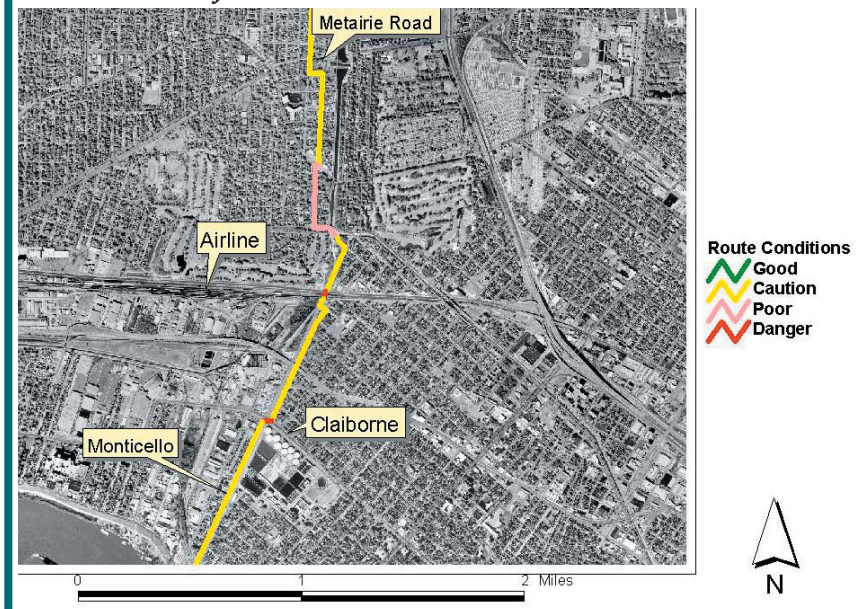
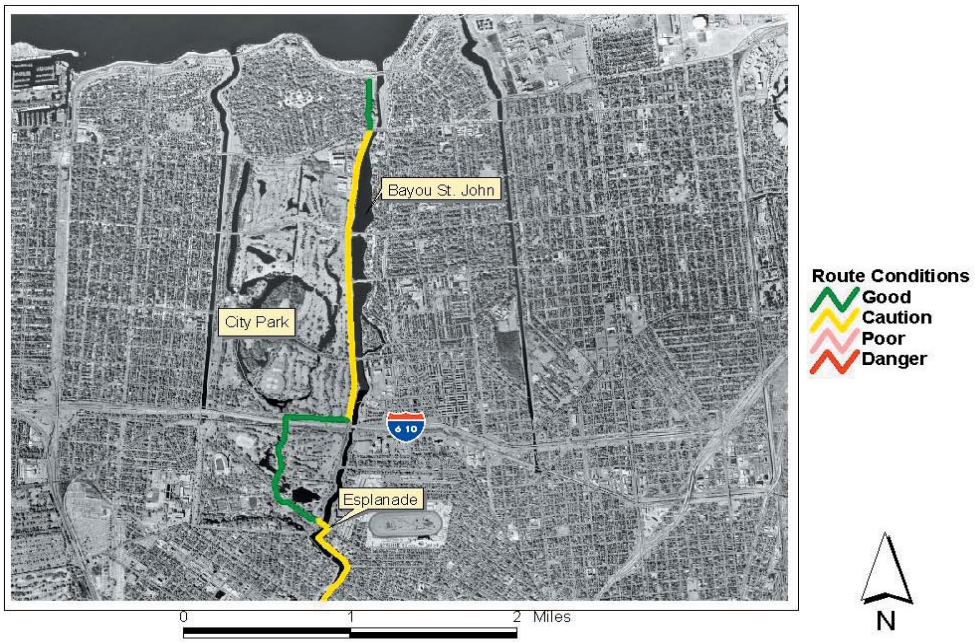


Figure 56
Wisner Corridor North



historic Bayou St. John area. While the route primarily serves bicycle commuters, it can also be enhanced to serve as a corridor for recreation and for tourism.

Wisner Corridor

The Wisner Corridor is broken into four logical segments. These include a segment on Beauregard Avenue between Lakeshore Drive and Robert E. Lee Boulevard, a planned separated path on Wisner Boulevard between Robert E. Lee Boulevard and Zachary Taylor Drive, a segment going through City Park beginning at Wisner Boulevard and ending at the intersection of Moss Street and Carrollton Avenue, and a segment on Moss Street from Carrollton Avenue to an ending point at the Jeff Davis Parkway Path at Iberville Street.

Beauregard Ave. between Lakeshore Dr. and Robert E. Lee Blvd.

This segment is on an existing neighborhood roadway. The lanes are wide and have a gentle curve. Traffic volumes are low and debris does not seem to be a major problem. Signage is needed to mark the route as a bicycle route. A major RTA bus stop exists at the corner of Wisner and Robert E. Lee boulevards. The University of New Orleans is less than a mile away to the east and is a major destination in the area.

Robert E. Lee Blvd. to Zachary Taylor Dr. on Wisner Blvd.

Wisner Boulevard with its high speed (40 mph) and overgrown, cracked shoulders can be a difficult stretch for cyclists. While skill level A (expert) and B (experienced adult) cyclists will use this stretch even at high traffic times, the general condition of this stretch makes it undesirable for wider use. Plans currently call for a separated bike lane to be placed along the bayou side of the roadway and wider shoulders to be added to the roadway itself. These changes could help improve the condition for cyclists. Care should, however, be taken at intersections along this route. The high speeds of cars turning off the route could be a major safety problem. Roadway treatments, signage, or possibly lower speed limits should be considered through this area to underscore that this roadway is in a park and not a high-speed traffic corridor.

Signals at major intersections such as Harrison, Filmore and Mirabeau avenues may need to be redesigned for both the proposed bicycle path and a future bike lane or wide curb lane on the street. The bicycle plans for this area should be coordinated with the city of New Orleans Department of Public Works citywide signal project to adequately plan for proper signal locations.

Zachary Taylor Drive to the Intersection at Moss and Carrollton

This segment consists of a tour through City Park in order to avoid the dangers of the narrow bridge lanes that cross the Interstate and the increasing traffic south of

Beauregard Ave. between Robert E. Lee Blvd. and Lakeshore Dr.

Wisner between Harrison and Mirabeau

the Interstate on Wisner Boulevard. The service roads that enter and exit onto Zachary Taylor Drive near the Pan Am Stadium provide access off of and onto Wisner Boulevard. These roads are in fairly poor condition and should be candidates for resurfacing if possible. The other City Park roadways named as the bike route, Golf Drive and Dreyfus Avenue, are in fairly good condition

I-10 and railroad underpass in City Park

aside from road debris that builds up along the shoulder. The portion that passes under the Interstate, however, is particularly dangerous. The drainage grates on the downhill portion of the underpass are parallel to cyclist's wheels. This type of design can result in dramatic and dangerous crashes as the cyclist's wheel becomes lodged in the grate resulting in an over the handlebars crash. These grates should be immediately replaced with a cycling-friendly design.

On the south side of the Interstate, the narrow roadways carry a fairly high number of cars to the revenue producing venues of the museum, the tennis courts, and the botanical gardens. At certain times, especially around the museum, the amount of traffic and on-street parking can make cycling difficult. One solution that could balance the need of the park to keep generating revenue while at the same time accommodating cyclists and pedestrians is a dedicated bike lane through the park. The possibility of signing and painting a bike lane through the park should be explored.

Moss St. at Carrollton Ave. to Jefferson Davis Parkway at Iberville St.

The crossing at Moss Street and Carrollton Avenue is heavily trafficked and potentially dangerous to the bicycle and pedestrian. This intersection should be exam-

ined in the citywide signal project so that appropriate signal timing and signal devices are installed.

Once safely across Carrolton Avenue, the route continues south along Moss Street along the banks of Bayou St. John. The width of roadway is narrow on Moss Street but is balanced by low traffic volumes and speed. After crossing Orleans Avenue, Moss Street becomes Jefferson Davis Parkway. The Wisner Corridor then merges with the Jefferson Davis-Nashville Corridor.

Jefferson Davis-Nashville Corridor

This corridor is currently used by all levels of cyclists for diverse purposes. It is used as a transportation route between Mid-City and Uptown neighborhoods by low-income bicyclists (and pedestrians). It is an important leg in many recreational rides for both circular tours of historic neighborhoods and as a connection to the Lakeshore area and Mississippi River Trail. To a lesser extent, it is also used by more experienced cross-town commuters and university students. It is also used by many people to bicycle from Uptown to Jazz Fest and events in City Park.

Most importantly, this corridor provides the least hazardous crossing of I-10 between Mid-City and Uptown.

Moss Street near Dumaine

The bridge has a protected center sidewalk that is used by pedestrians and cyclists with skill levels B and C, as well as a relatively wide right lane that is used by the most experienced cyclists (Level A). Importantly, there are no direct exits or entrances to the Interstate crossing the bicyclists' route.

This corridor is primarily composed of Jefferson Davis Parkway, a relatively wide street that also has a neutral ground path, and Nashville Avenue in Uptown. In the middle there is a somewhat bewildering crossing of Washington Avenue and Earhart at odd angles. In Uptown, Jefferson Avenue and State Street have been suggested as routes that are parallel to Nashville Avenue and that may be preferable for this corridor. However, based on width of road, speed and volume of traffic, and character of intersections (crossing traffic at controlled intersections), Nashville Avenue seems most suitable.

Destinations directly on this route include Memorial Hospital and the Blue Plate Factory. Delgado College, Xavier, Loyola and Tulane universities are located on or within a few blocks of this corridor. Fortier and McMain high schools and Ursuline Academy are also located on the corridor. The Jefferson Davis-Nashville Corridor links the Wisner- Lakeshore Corridor with the Mississippi River Trail.

Jefferson Davis/Moss between Orleans Ave. and Tulane Ave.

A neutral ground path begins at Orleans Avenue. The path's end point deposits bicyclists on the street (and collects them off the street) at an awkward and dangerous point. Cyclists leaving the path must swerve around a curb in the middle of Orleans Avenue if they want to continue cycling along the bayou. The path needs an endpoint that is well marked, clearly visible to motorists, and doesn't force cyclists to ride illegally or unpredictably.

This neutral ground path is characterized by multiple, unsigned intersections. It crosses several streets with high volume (Tulane Avenue, Canal, Banks and Bienville streets) with no signaling to stop traffic for crossing

bicyclists. Bicyclists are in danger of being hit by cars making left turns as they cross the neutral ground. In addition, the path is often cluttered with broken glass and other debris.

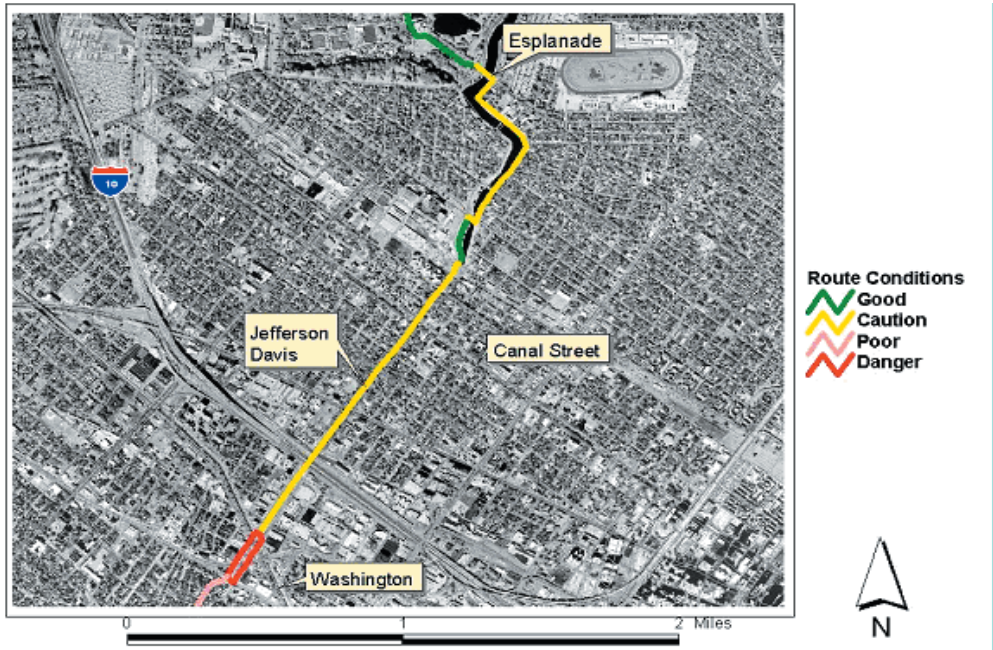
Several steps could be taken to improve this route. Striping the path clearly across the road, providing appropriate signage, and improved signals at major intersections are all possible measures that have been suggested to make these intersections less hazardous.

It may, however, be more appropriate to concentrate scarce resources on improving the on-road, shared use portion of the route. The street in this segment is in good condition and has a fairly wide curb lane. Many experienced cyclists use the on-street facilities because of the many present problems with the path system. In addition, bicycle path design recommendations specifically warn against median or neutral ground paths with multiple crossings. The Jefferson Davis path, unfortunately, is exactly what current design guidelines recommend against. As was stated previously, of the 18 recorded bike crashes along this route from 1999 to the first quarter of 2003, 14 were recorded along the Jefferson Davis Parkway stretch of the route.

Because of the width of the street, there is a possibility of striping the area with bike lanes. In addition to this possible improvement, the consistent placing of stop signs on the roadways traversing the neutral ground should be considered. Many of the intersections between Jefferson Davis Parkway and neighborhoods are completely uncontrolled: there are no stop signs for either direction. Stop signs could be placed to decrease the speed of cars that are leaving the neutral ground crossing directly into the path of approaching cyclists.

The street has a high traffic volume during rush hour. There is well-enforced School Zone between Canal and Tulane Avenue that slows the traffic to 20 mph. There are two day care facilities on the lakeside of this segment that have a large number of cars pulling over for quick stops, sometimes unpredictably.

Figure 57
Wisner Corridor Mid-City



Jefferson Davis Parkway between Tulane Ave. and Earhart Blvd.

As in the previous segment, there are many unsigned and uncontrolled intersections between the neutral ground path and city streets. Many of the same recommendations apply to this segment as well.
While the new Alberton's temporarily increased traffic in this area, its recent closing has alleviated potential traffic conflicts in this area for now. If a new tenant is found for this spot, consideration should be given to eliminating on-street parking on the block of Jefferson Davis Parkway next to the site. This would greatly enhance visibility of bicyclists to motorists.

Both the protected pedestrian path and the curb lanes of the bridge are perpetually covered in broken glass. Regular sweeping of both the on-street edge of the bridge and the center path should be undertaken.

In this segment, the path's end point deposits bicyclists on the street (and collects them off the street) into/from the left lane of traffic mid-block. This may be dangerous, as bicycles have to leave and enter the neutral ground path in a surprising, unsigned and uncontrolled point.

Riverbound: Vendome between Earhart and Fountainbleau

Lakebound: Octavia between Earhart and Fountainbleau

In this segment, the lanes of Jefferson Davis Parkway, previously separated by a wide neutral ground, split around a city block and become two-way streets. Rather than keep the corridor on one street, it seems safer to divide the corridor by direction and to keep bicycles traveling with the flow of traffic on separate streets for several blocks.

Neutral Ground Path on Jefferson Davis Parkway between Bienville and Iberville streets

The intersection area in the vicinity of Washington Avenue and Earhart Boulevard has become a major problem for cyclists. Recent roadwork has turned what used to be a difficult crossing with higher traffic volume into a confused, high volume intersection crossing. Because the roadwork involves replacing a bridge, the work could go on for some time. Efforts should be made to mediate this situation with signage and regular street sweeping of the minimal cyclable area.

Jefferson Davis neutral ground at Tulane Avenue, I-10 Overpass in the background

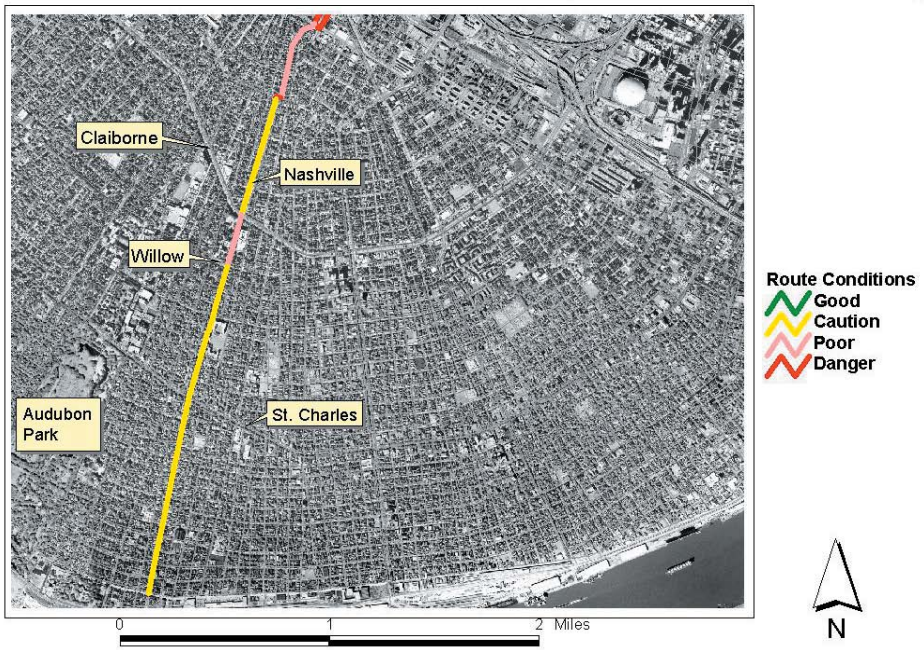
Traveling riverbound, Vendome Place is a wide street with low traffic. In the past, the pavement on this section was in terrible condition, acting as a traffic-calming device. The pavement surface has been improved in this area, however. Speeds have increased and the riding conditions have become more challenging. Residents and bicyclists may desire intentional traffic calming devices to keep the residential character of the street.

Traveling lakebound, Octavia Street is a wide street with excellent pavement over most of the segment. There are a few big cracks at the lake end of the street that would require improving.

Nashville between Fountainbleau and Claiborne

Nashville Avenue in this segment has a neutral ground, four travel lanes, and on street parking on both sides. It has an 18-foot curb lane including on-street parking. The pavement condition is good.

Figure 58
Wisner Corridor South (Nashville Area)



Jefferson Davis intersection with Earhart and Washington Avenue

Nashville between Claiborne and Willow

Nashville Avenue in this segment has no neutral ground and two travel lanes. It has a narrow curb lane. School buses, service vehicles, and school drop-offs make use of the curbside space. This creates a difficult and dangerous situation for cyclists during the heavily trafficked afternoon and morning rushes. This section is particularly important because it provides a linkage for Tulane/Loyola university students (as well as Ursuline and McMain students) to campuses along Willow Street.

In addition, this segment has extremely poor pavement condition. It has a dangerous pavement change/crack that is parallel to the flow of traffic and in an area where bicycles travel. The street bulges--it has a significant slope between the centerline and curb. All of these factors make this section extraordinarily difficult to traverse during a traffic times. Consideration should be given to placing a bike lane on Nashville Avenue to improve the situation.

Nashville between Willow and St. Charles

The pavement is slightly better in this segment. The curb lane is about 16 feet. On-street parking significantly reduces the area for cyclists, however. With the relatively high volume of traffic on this segment, the small cycling area makes this stretch fairly difficult to traverse. Once again, a bike lane could significantly improve conditions.

Nashville between St. Charles and Tchoupitoulas

On the riverside of St. Charles Avenue, Nashville Avenue has newly redone pavement and a wide curb lane (about 22 feet) including on street parking. After a few blocks, at Hurst Street, the road narrows 3 feet to about

Nashville between Fountainbleau and Claiborne

Nashville between St. Charles and Tchoupitoulas

18.5 feet. At this point, the pavement is in poor condition. Once again, a bike lane should be considered to help improve the condition for cyclists on this major bike route. The corridor ends at Tchoupitoulas Street, one block from the Winn Dixie-Blockbuster Mall and several blocks from Audubon Park.

The Esplanade Avenue Bicycle Corridor

The Esplanade Avenue Corridor can provide both a strategic and direct route for bicycling commuters as well as a unique, historic bicycling experience to locals and tourists alike. It is already used by many French Quarter and CBD workers who bike to work from their homes in Treme, Esplanade Ridge, Faubourg St. John, Mid-City and beyond. The Esplanade Corridor with its rich Creole history and direct linkage to City Park and the neighborhoods along the Esplanade Ridge is also ideally suited to provide access to tourists wanting to explore the neighborhoods outside of the French Quarter. Establishing a well-designed bicycle corridor through this area would help to tap into this growing segment of the tourist market. A well-designed bicycle corridor through this area could help to spread out the positive impacts of tourist spending while at the same time providing facilities that local bicycle commuters and average cyclists can utilize. A bicycle corridor along Esplanade Avenue would create a beautiful and safer way for these tourists and locals to explore the magnificent homes, Creole architecture, and gardens along this avenue and adjacent neighborhoods.

This route is strategically located because it would link up with the new Wisner Bicycle Corridor, thus allowing students and employees of the University of New Orleans, Southern University of New Orleans, Xavier University and Dillard University to get to and from the French Quarter and the CBD. The Esplanade Avenue Corridor is divided into two main segments: N. Peters Street to N. Claiborne Avenue and N. Claiborne Avenue to City Park (Figure 59).

North Peters St. to North Claiborne Ave.

This segment of Esplanade Avenue (.9 miles) is in good condition and has a total width of 22′ 1″. The lane is divided into a stripped parking lane of 9′ and a moving lane of over 13′. Shared use lanes next to on-street parking are recommended to be 15′ wide by AASHTO (1999, p. 17). While the current situation is close to the recom-

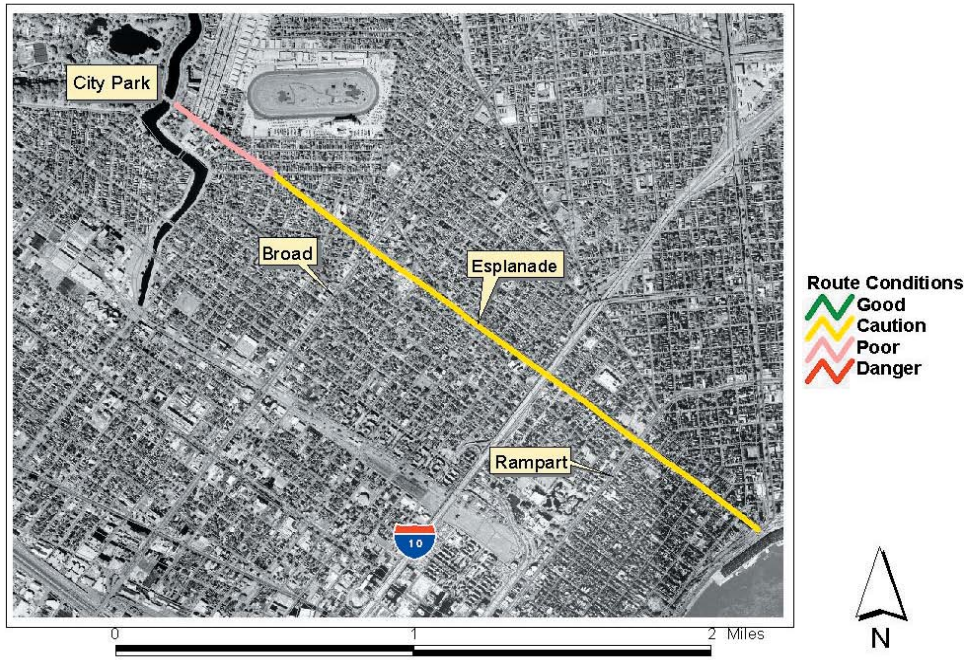
mended width, future plans should probably decrease the parking lane by a foot to provide the slight extra width that would make this section optimal. In addition, traffic volume is relatively low and debris is not often a problem. Two other improvements could help to improve this section: 1) signage to mark the route as a bicycle route and 2) reduced speed limit to 25 miles per hour to make the route more conducive to a shared traffic environment. In addition, the intersection of Esplanade Avenue and Claiborne Avenue poses some problems. Traffic turning onto Claiborne Avenue often does not habitually yield to bicycles crossing Esplanade Avenue. A combination of increased enforcement, improved signage, and/or a change in the light cycle for turning vehicles should be considered for this intersection.

North Claiborne Ave. to Wisner Blvd.

On this segment of Esplanade Avenue (1.6 miles), the street is in fair to poor condition with very rough pavement as well as some potholes. This segment currently has two moving car lanes and one parking lane with a total width of 26′ 4″. The left moving lane is 10′ wide. This leaves 16′ 4″ for the right moving lane as well as the parking lane. When there are cars parked along this segment of Esplanade Avenue, there is simply not enough room for two cars to drive side-by-side safely. When a bicycle is included into this narrow space, the situation can become dangerous. All 10 recorded bike crashes along the Esplanade Avenue corridor from 1999 to the first quarter of 2003 occurred in this stretch. Specifically, all 10 bike crashes occurred between N. Galvez and N. Broad streets.

This stretch of road would be a perfect candidate for a bicycle lane. AASHTO (1999) recommends that bike lanes between the parking area and road lane have a minimum width of 5 feet with a 6 inch solid line separating road traffic and a 4 inch solid line separating the bike lane from the parking lane (p. 22). If one moving lane was removed along Esplanade Avenue, the dimensions of this segment from curb to neutral ground could be: a parking lane of 8 feet, a bicycle lane of 5 feet 10

Figure 59
Esplanade Corridor



Esplanade Avenue between Royal and Bourbon streets

inches (with striping), and a travel lane of 12 feet 6 inches. For this to work effectively, this segment would have to be resurfaced with stripping and appropriate signage. It would also be helpful to reduce the speed limit to 25 miles per hour. That would make this segment consistent with the first segment of Esplanade Avenue.

With a combination of a separate bike lane on one segment and a shared use lane on the other segment, the

Esplanade Avenue between Prieur and Galvez

Esplanade Avenue Bicycle Corridor could become a widely used route for both advanced cyclists (skill level A) and intermediate cyclists and commuters (skill level B).For the Esplanade Avenue Bicycle Corridor to realize its full potential, the issue of safe and convenient bicycle parking in the French Quarter and CBD needs to be addressed. Placing bicycle racks in a number of key locations would help to answer the issue of convenient bicycle parking, but would leave the bicycles parked in these unprotected locations open to the weather and to theft. Protected bicycle parking facilities should be explored to help address the issue of theft. One possibility to help make safe and convenient bicycle parking a reality in the French Quarter/CBD area is to explore partnerships with existing parking garages or area non-profits and churches. With the addition of two or three strategically located bicycle storage facilities, the important issue of safe bicycle parking could be addressed.

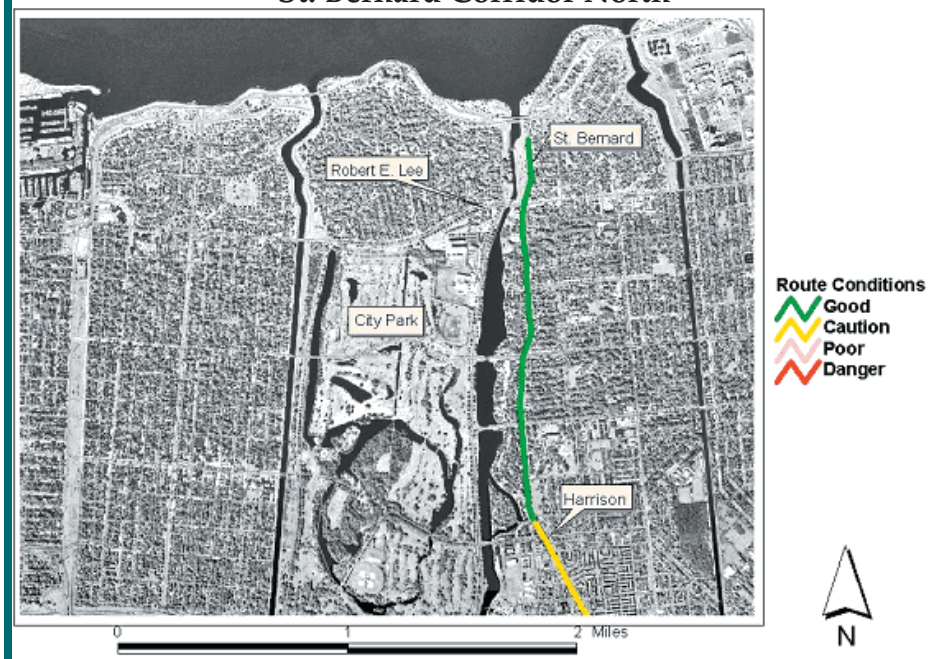
Esplanade Avenue is currently a major corridor that the bicycle community uses to get to and from the French Quarter and the CBD. It also has a high latent demand for bicycle commuters in that many workers would leave their cars at home if they had a safer route such as Esplanade Avenue to commute by bicycle. This is even more important because of the link with the existing Wisner Boulevard Bicycle Corridor.

Making Esplanade Avenue a bicycle corridor would also have an important impact on tourism. There are a considerable number of tourists who want to explore outside of the French Quarter area, but who do not want to do this via a bus tour. The numbers of tourists who have rented bicycles or taken bicycle tours have been increasing since the late 1990's. Providing an avenue for tourist dollars to reach out of the French Quarter and into the surrounding neighborhoods is an important way to help manage tourism for the betterment of local residents. The Esplanade Avenue Bicycle Corridor can provide an important means for tourists to explore the many other historic neighborhoods of the city while providing an important means for local cyclist to move safely around their city. The Esplanade Avenue Bicycle Corridor provides a "win-win" combination: the quality of life for locals is improved through the creation of an important transportation option and the benefits of tourism can be expanded into neighborhoods strengthening the local economy. Serious consideration should be given to exploring how to implement this relatively low-cost economic development and quality of life project.

St. Bernard Corridor

Another important commuter connector route is the St. Bernard corridor (Figures 60 and 61). This route parallels the Wisner Boulevard route for a short period then skirts the Gentilly area before finally connecting to the Esplanade Avenue corridor. While the northern portion of the route provides ample room and relatively light traffic, the southern portion becomes much more con-

Figure 60
St. Bernard Corridor North



St. Bernard riverbound at I-610 entrance ramp

gested. All recorded bike crashes in this corridor from 1999 to the first quarter of 2003 occurred on the southern portion of the route. The beauty of this route is that it connects to Esplande Avenue, a highly desirable bike route, and is one of the few locations one can travel under the Interstate. It provides the shortest route between the lake and the French Quarter/CBD area.

The first stretch of the route starts near the mouth of Bayou St. John at Lakeshore Drive. The stretch between Lakeshore Drive and Harrison Avenue has low traffic volumes and a wide outside lane with a largely unused parking lane. However, the pavement conditions worsen between of Robert E. Lee Boulevard and Mirabeau Avenue with many cracks, potholes and a large amounts of settling. At Harrison Avenue, the traffic (both pedestrian and motor vehicle) becomes heavier and the traffic conditions more congested. There are a large number of pedestrians crossing from the St. Bernard Housing units between Harrison Avenue and the Interstate to commercial/medical land uses across St. Bernard Avenue. Two bike crashes were recorded on this stretch.

As the route passes under the Interstate-610 and past the entrance and exit ramps on the west (it is a half clover leaf design rather than a full clover leaf with two instead of four ramps), traffic speeds tend to rise. There are sweeping right hand turns entering and exiting the ramps along with signals for straight ahead movements at St. Bernard Avenue. Caution is advised as motor drivers transition to or from 70 mph at St. Bernard Avenue, a major arterial in this area, creating a more difficult situation for riders. Drainage grates under the Norfolk Southern elevated rail bridge next to I-610 are also a hazard for narrow bicycle tires and debris tends to collect under the overpass. These can be easily remedied with regular sanitation and replacement with more bike friendly grate design.

The St. Bernard Parish route moves into the Gentilly neighborhod at the intersection of Gentilly Road and St. Bernard Avenue where Desaix Avenue begins, intersecting from the west. Gentilly Road curves south at this location. As a five-way intersection, the streets are not at right angles. It is one of several complex intersections evolving from the wagon wheel pattern of development in Orleans Parish. Multiple medians of different shape exist to route traffic, making it a bit confusing for the uninitiated cyclist and motorist. There is a great deal of turning traffic with unclear lane markings. Clear markings and signage displaying the designated route would greatly improve bicycle safety at this intersection.

The five-way intersection of Gentilly Rd., St. Bernard and Desaix avenues

A cyclist moving towards the river on the St. Bernard Parish bike route can expect to see some traffic make a 90 degree right turn onto Desaix Street, a 45 degree right turn onto Gentilly Road or continue straight ahead to continue on St. Bernard Avenue. A 100 degree left turn places traffic onto Gentilly Road traveling upriver or easterly. The designated St. Bernard Bike route continues on Gentilly Road (right 45 degree turn) with three lanes plus a parking lane in each direction begin. This stretch normally has low volumes of traffic and the right lane is comfortable for riding. However, the local Fairground is situated on this stretch, explaining the higher number of travel lanes which accommodate episodic special events such as race day events and the annual Jazz Fest. The Jazz Fest experiences the highest attendance of bicycle riders of all the events in the area due to the central location and easy access by bicycle. Bicycle parking is readily available and is accessed from Gentilly Road.

Two recorded bike crashes occurred on the Fair Grounds stretch of Gentilly. The route necks down to four lanes as it gently turns left and becomes to Bayou Road. Bayou Road crosses Broad Street, a major arterial carrying fast moving, high volume traffic. The cyclist must move into the left lane to cross Broad Street because the right lane is designated right turn only. Special pavement marking to guide the cyclist into the left lane and to alert drivers of the designated route would be helpful at this intersection. Bayou Road intersects Esplande Avenue on an angle, past N. Miro Street. Left turning movements from Bayou Road onto Esplande Avenue are difficult and the cyclist should negotiate the intersection with caution. Again, motorist some traffic alert to notify drivers cyclists are present would increase safety at this intersection.

While this route links the population of the Lakefront, Gentilly with the Esplanade Corridor, the conditions along the southern part of the route (Harrison to Esplande avenues) recommend it for more advanced riders. Improving the intersections and marking the route clearly could help to improve cycling conditions along this corridor.

Sports Routes: Lakeshore Drive

While the routes described above are used for both bicycle commuting and recreation, there are several routes around the area that act as the primary linear corridors for recreational and training cyclists. These sports routes generally have fewer stops and more continuous segments. Cyclists who are training for specific events require long, continuous segments in order to effectively train. While these routes are primarily used for training and recreational riders, they also can act as effective commuting routes as well.

The most widely used sports route in the New Orleans metropolitan area is the Orleans Parish lakefront section along the designated parkland of Lakeshore Drive (Figures 62 and 63). The route stretches approximately 6.5 miles from the Industrial Canal to West End. It encompasses some of the most important recreational and parkland in the region. As water quality increases in Lake Pontchartrain, people are rediscovering what an incredible resource we have right out our back door.

While this route has been the primary destination for sports cyclists in the area for at least the last thirty years, no bicycle-specific signage or markings have been included to designate the route. The increasing size of the University of New Orleans and the opening of the Research and Technology Park have generated more traffic along Lakeshore Drive. This coupled with the newly paved roadway that has increased vehicle speeds has created more difficult cycling conditions along Lakeshore Drive. Five bike crashes were recorded along this designated parkland area from 1999 to the first quarter of 2003. This section traces specific conditions along the route from West End to the Industrial Canal.

The West End section of the route from the Point to the end of Pontchartrain Boulevard provides a connection to the Jefferson Parish shared use path network along the lake, to the restaurants and marinas in West End, and to the Coconut Beach volleyball courts. On weekends and holidays, Lake Marina Drive can have a fair amount of traffic. While the volume of traffic is not generally continuous, the four-lane segment of Lake Marina Drive has no shoulder on the westbound lane and only a small shoulder on the eastbound side. The traffic volume and the lack of shoulders make this segment unpleasant at best and unsafe at worst. Because the volume of traffic is generally not high and the destinations include parks and restaurants, this segment could probably be redefined into a single lane in each direction with a striped and signed bicycle lane. At the very least, the left lane should be signed and designated as a shared use lane.

Figure 61
St. Bernard Corridor South

As the route moves to the east, cyclists are confronted with a difficult intersection at Lake Marina Drive and Lakeshore Drive. Two bike crashes have been recorded in the immediate vicinity of this intersection. Lake Marina ends at the intersection with two lanes: one heading south and one heading north towards the lake. The cyclist must merge into the left lane, occupy the lane, stop at the stop sign, and then wait for a break in left

Figure 62
Lakefront Corridor West

turning vehicles onto Lake Marina Drive. This is a difficult maneuver when traffic is light. The maneuver, however, becomes nearly impossible on weekend afternoons when traffic can become heavy. This intersection should be studied to attempt to create a more coherent and safe path for cyclists.

Once the cyclist turns onto Lakeshore Drive heading north, there are several blocks of potentially heavy traffic as the cyclist approaches Joe's Crab Shack. Once around the turn at the lake, the traffic generally lightens up somewhat. The route continues to the east along Lakeshore Drive. The conditions along this segment to Bayou St. John vary greatly depending on when the journey is undertaken. In the morning, early evening, and when classes at the University of New Orleans are letting out or starting, the route has a fairly high volume of cars. The signed speed limit for the section between Canal and Bayou St. John is 35 mph, but the speed limit is regularly exceeded. The high speeds, higher traffic volume, and small to non-existent shoulders can make the ride a potentially harrowing experience. If, however, there is light traffic when the journey is undertaken, the cyclist may not notice any problem with this segment. Due to increasing traffic, however, the relaxed ride along the lake is becoming a rare experience.

The only accommodation provided to cyclists on the route is the weekend closure of the westbound traffic lanes. While this traffic routing scheme has acted to decrease and control motor vehicle activity, it does not clearly incorporate cycling-specific provisions. On weekend mornings when there is little traffic, this plan works fairly well. During the afternoon when traffic picks up, however, the cycling conditions deteriorate greatly. Cars can often be spotted driving for stretches in the wrong direction because of inadequate and confusing placement of signs. This situation is particularly bad at the intersection of Lakeshore Drive and Marconi Drive where cars often turn into the westbound lane of Lakeshore Drive. Once they turn in this direction, they begin traveling at the posted speed limit or above directly into the path of approaching cyclists. The possibility of head on crash at 35 or 40 miles an hour should prompt more clear signage and enforcement at this location. In addition to wrong way driving, cars swing into parking places across the closed lanes of traffic that act as the shared use path. This situation is incredibly dangerous, as cars parking or reentering traffic are not accustomed to looking for two-way bicycle traffic in the closed lane. No signs alert drivers of the presence of cyclists or pedestrians.

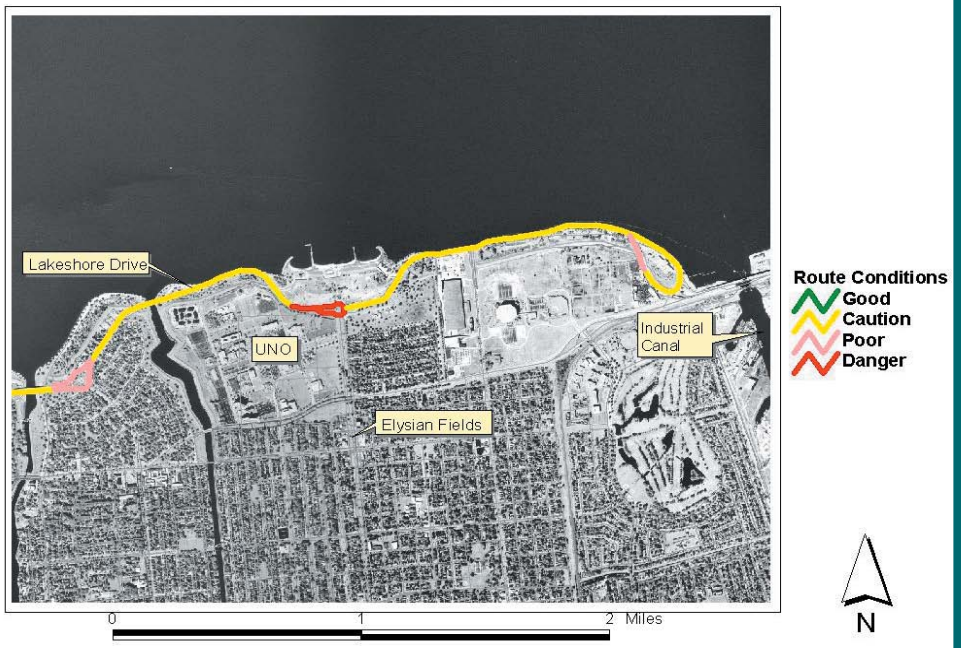
The final problem along this section occurs just before the bridge over Bayou St. John. Bicycle traffic heading to the east comes to a barricade at Tern Street. At this point, two-way traffic resumes for two approximately two blocks. There is a small sign designating "Local Traffic Only" for westbound traffic, but it is routinely ignored. No signs tell cyclists heading east that they can expect on-coming traffic. Cyclists generally continue heading the wrong direction into oncoming traffic lanes. This is a significant safety situation that should be dealt with as soon as possible.

For the long term, serious attention should be given to creating a bicycling management plan for the lakefront corridor. The current traffic management plan provides little guidance to cyclists or to motorists as to what to expect along the route. The chaotic situation results in a needlessly hazardous safety situation along one of the most popular and busy bicycling corridors in the metropolitan area.

As the route continues to the east, the exit from the Bayou St. John Bridge into a traffic circle poses another challenge for cyclists. The two lanes of Lakeshore Drive merge into two poorly marked lanes of a traffic circle immediately at the end of the bridge. The traffic going downhill picks up speed and then immediately must make a quick decision about which lane they want to continue in. The result is traffic that often swerves across lanes to get in the right location to continue of Lakeshore Drive or to exit onto Paris Avenue. The cyclist continuing on Lakeshore Drive must momentarily merge with traffic in the circle or traffic moving from behind to continue. This situation is not particularly problematic when traffic is light, but when traffic volumes increase, the situation becomes much more difficult. As cyclists continue on Lakeshore Drive about another mile, they are confronted with an even higher volume traffic circle at the end of Elysian Fields. This traffic circle serves the University of New Orleans and the Research and Technology park. The same poorly marked conditions and erratic driver responses exist in this location with the added variable of far higher traffic volumes.

A design fix for these traffic circles should be examined. One possibility would be to decrease the roadway to a single lane as traffic on Lakeshore Drive approaches the traffic circle. This would decrease speeds and greatly enhance the clarity of this intersection. This along with clear signage and traffic striping would go a long way towards creating a safe and functional intersection.
As the route heads east from the traffic circle, the route generally has lighter traffic. With the exception of peak periods, the conditions along this section are fairly good. Once again, however, conditions at peak periods deteriorate significantly. The situation is particularly poor

Figure 63
Lakefront Corridor East



in the evening when auto commuters seeking to avoid traffic delays on Leon C. Simon utilize Lakeshore Drive to bypass traffic to get to the bridge over the Industrial Canal. Traffic speeds regularly exceed posted limits and driver's frustration levels often reach the boiling point when they have to "wait" to go around cyclists in the left lane.

On the weekends there is one-way traffic from the Lakefront Arena to the Industrial Canal. Once again, the same criticisms that applied to the traffic management program around the Bayou St. John area apply here as well. Cars often go the wrong direction in the closed portion of the roadway either out of ignorance of the traffic closure or the desire to not be inconvenienced by circling around to Leon C. Simon.

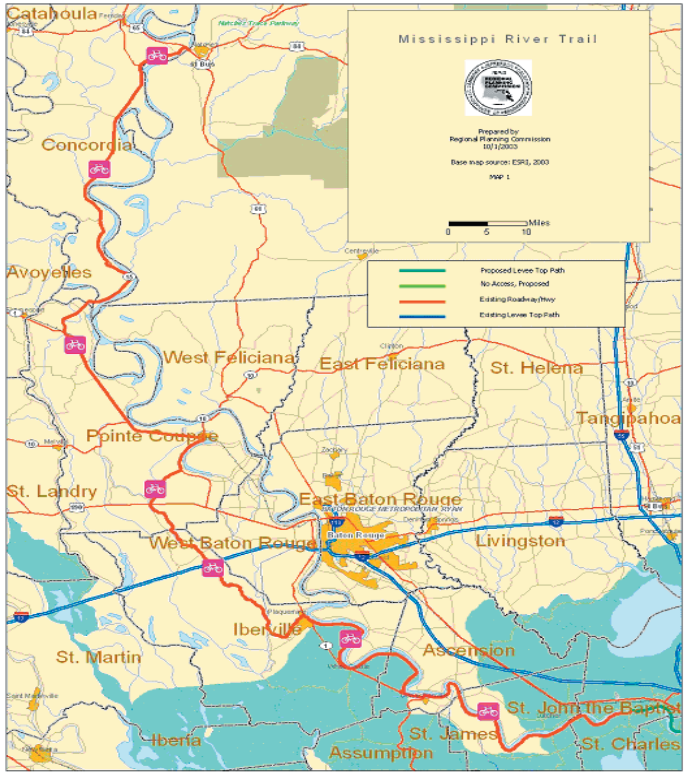
Overall, the cycling conditions along Lakeshore Drive have deteriorated as more traffic generators have de-

veloped along the route. The newly repaved route also provides the most direct and smooth route for east-west traffic in this area. Consequently, traffic volumes and speeds have increased significantly impacting the recreational value of this important corridor. The land on the shores of Lake Pontchartrain is designated as parkland and is one of, if not the most, valuable recreational areas in the region. As water quality increases and residents begin to rediscover the wondrous resource that is Lake Pontchartrain, demands on this area will increase. Managing the flow of traffic through this corridor is one of the most important ways to improve the recreational quality of this valuable place. The public land on the shores of Lake Pontchartrain is in need of a comprehensive reexamination to improve both the recreational opportunities for bicyclists and pedestrians as well as for other recreational users of this incredible and under appreciated place.

Mississippi River Trail Multi-State Bike Route

The Mississippi River Trail (MRT) is a nationally recognized, locally designated bike route that uses bike paths and street routes to provide a continuous bikeable route from the origin of the Mississippi River at Lake Itasca in Minnesota to the mouth of the river near Venice, Louisiana. It was created in 1990 when the Lower Mississippi River Delta Development Commission, recommended the creation of a non-motorized bicycle (interstate) system along the Mississippi River. The goals of the MRT are to provide: safe bike lanes or bike paths, landscaping and overviews of the river, bicycle amenities such as water, shelter, and bathrooms, natural historical and cultural interpretive signs and sites that tell the story of the Mississippi River, information on overnight accommodations and local restaurants, and link to other local state and national trails.

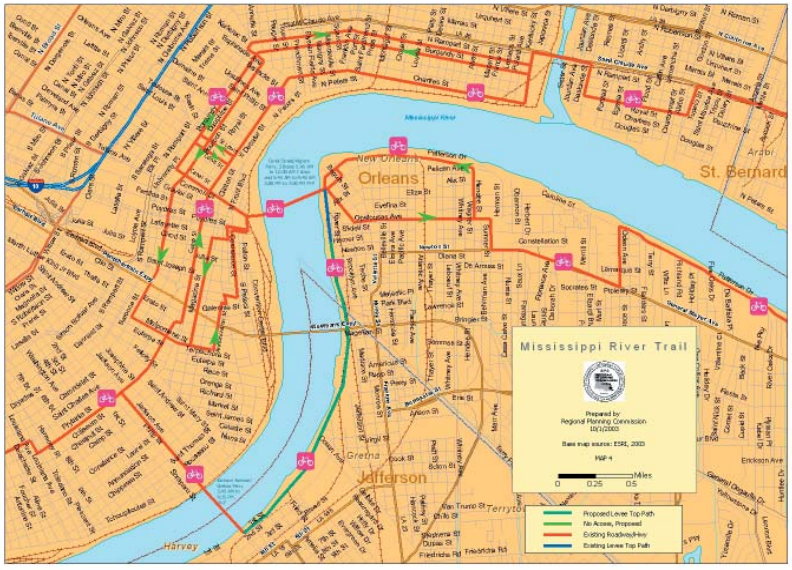
The MRT essentially supports bicycle tourism, and is meant to provide a safe corridor for local non-motorized transportation and recreation along the Mississippi River. The route will eventually be designated and improvements made through the New Orleans area on both banks of the Mississippi River as more and more levee top paths and street facilities are built or upgraded for bicycling. The Louisiana route was initially designated by a group of cyclists in the early 1990's from the Mississippi state line to Audubon Park. This study has worked to extend the route from Audubon Park to Venice, Louisiana, the furthest city south on the river. This proposal covers currently available and optimal alignments at this time.

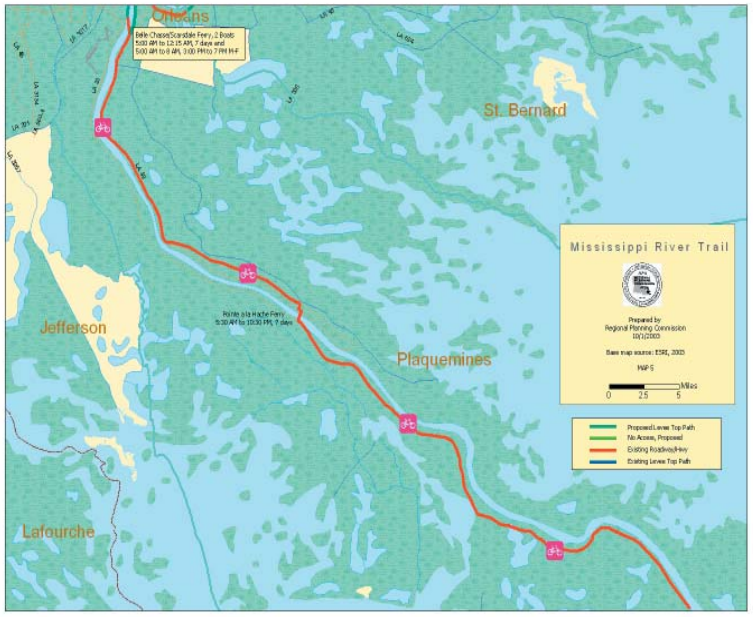


St. John Parish to Audubon Riverside Park

The trail enters the metro region as part of the Levee trail on the west bank of St. John Parish and crosses to the East Bank at the Reserve Ferry. Presently, the St. John Parish levee top is compacted dirt which limits cycling to wide-tired bikes. An asphalt levee top bike path begins

Mississippi River Trail





near Ormond Plantation in St. Charles Parish and from there, a continuous levee top asphalt path is provided through Jefferson Parish to Audubon Park. (St. Charles Parish has completed design and engineering for bike paths on both banks of the Mississippi River. Two segments on the west bank in St. Charles Parish are funded but not yet constructed.) Locally the MRT links to the Ring-Around-the-Lake Bicycle route.

Through Audubon Park

The route leaves the levee top path and crosses into an area called "The Fly" where local soccer fields are located at the river edge of Audubon Park. The cyclists move onto the existing road network at the Fly which is a one-way corridor downriver and surrounded by parking on both sides. Cyclists do travel in both directions in this one-way park corridor but caution is advised. (Magazine Street is the one-way counterpart route to ride.) The Fly roadway continues to Magazine Street where it crosses onto the Audubon Park pedestrian/bicycle path, a loop, until reaching St.Charles Avenue. Magazine Street is heavily traveled and has a lot of turning traffic into and out of the park. Signals and traffic calming measures at this intersection are needed to facilitate crossing by pedestrians and cyclists.

St. Charles Avenue to Toledano Street

There is agreement that St. Charles Avenue should be used in both directions between Audubon Park and the vicinity of Louisiana Avenue. St. Charles Avenue is wide enough for a striped bicycle lane, one parking lane and one travel lane in each direction. The city of New Orleans has incorporated this design into their Bicycle Plan and have plans to eventually provide bike lanes as phased resurfacing is completed. Below Louisiana Avenue, the street widens and a second travel lane is added in each direction. The travel lanes narrow at Louisiana Avenue and, therefore, the route moves to Prytania Street near Louisiana Avenue One block downriver of Louisiana Avenue is Toledano Street where the route turns right toward the river from St. Charles Avenue.

Toledano Street from St. Charles Avenue to Prytania Street

This short block is has a median and is a residential street with on-street parking.

Prytania Street from Toledano Street to Clio Street

Prytania Street is a two-way, four lane major arterial with 35 mph and higher traffic. It has a parking lane in each direction and is host to 20 year old bike route signs that are faded and unhelpful. Caution should be used because of the fast moving vehicles, possible door openings, and difficulties moving safely through frequent intersections. The route will take you down Prytania Street for approximately one mile ending at Clio Street. Turn right onto Clio Street. It is a half block long and connects to Camp Street near the entrance to the Central Business District (CBD).

The CBD/General Overview

Generally, the MRT within the Central Business District consists of one-way couplets. The MRT minimizes the use of Canal and Poydras Streets to avoid traffic and minimize danger. Caution is advised throughout the area.

Cyclists will notice a major barrier into the CBD as they near the elevated approach roadway to the Mississippi River Bridge crossing to the West Bank. It is the US Business 90 also called the Pontchartrain Expressway. US Business 90 is a major impediment to cycling. Four routes are designated under the Pontchartrain Expressway that are more conducive to regional cycling routes and safety. Together they are the "Bicycle Gateway" between Uptown and the CBD. The designated MRT bike gateway crossings are Baronne Street (one-way upriver), Camp Street (one-way downriver), Magazine Street (one-way upriver), and Annunciation Street (two-way).

Few of the underpass areas are considered safe for cyclists. At this time there are no specific bicycle treatments implemented. Caution should be used at all four gateways because there is a four lane service road with ramps on each side of the elevated portion. The

Camp St. one-way eastbound at Pontchartrain Exprssway with on-street parking underunderpass

Baronne St. on-way westbound at Pontchartrain Expressway with on-street parking

Magazine Street on-way westbound at Pontchartrain Expressway (ramp modificaitons under construction)

Tchoupitoulas Street crossing should be avoided entirely. It is the major truck route connecting the Port of New Orleans to the Pontchartrain Expressway and I-10.

Camp Street fron Clio to Canal Streets

From Clio Street, the route turns left onto Camp Street, a one-way street going downriver to the CBD under the Pontchartrain Expressway. Camp Street is particularly harrowing because after passing under the Expressway, off-ramp traffic from the Expressway enters Camp Street on the right side. Cyclists can be caught between lanes and must be very careful to watch for exiting vehicles. A two-phased signal is planned for this intersection (in the heart of the Museum District) to allow a cyclist time to move into the right lane without competing with down ramp traffic. Camp Street riders will find fairly high traffic volumes and a parking lane. Travel lanes are fairly generous but no bicycle striping has been instituted yet. The Camp Street corridor is a top candidate for a future bike lane as well as Magazine Street, the corresponding return route.

Ferry Tales

Six ferries operate in the New Orleans MRT region. Day of week and hours of operation vary so plan your bicycle trip times accordingly. Like bike on bus, ferries become

an integral part of the MRT route to carry cyclists across corridors where bikes literally can not tread.

Edgard/Reserve Ferry
5:15 a.m. to 8:00 p.m. M-F

Gretna/Jackson Avenue Ferry
5:30 a.m. to 9:15 p.m. M-F

Algiers/Canal Street Ferry
Boat 1: 5:45 a.m. to 12:00 a.m. 7 days
Boat 2: 5:45 a.m. to 9:45 a.m. and 3:00 p.m. to 7:00 p.m. M-F

Lower Algiers/Chalmette Ferry
Boat 1: 5:45 a.m. to 9:30 p.m. 7 days
Boat 2: 5:45 a.m. to 9:15 p.m. 7 days

Belle Chasse/Scarsdale Ferry
Boat 1: 5:00 a.m. to 12:15 a.m. 7 days
Boat 2: 5:00 a.m. to 7:45 a.m. and 8:00 p.m. to 6:15 p.m. M-F

Point a la Hache Ferry
5:30 a.m. to 10:30 p.m. 7 days

From Camp St. two ferries are available to reach the West Bank:

Jackson Avenue Ferry

A supplemental route uses Jackson Avenue between Prytania Street and the Mississippi River to reach the Jackson Avenue Ferry landing (no weekend service). After crossing to the West Bank, the MRT route follows a newly constructed levee top path between the city of Gretna and the Canal Street Ferry West Bank landing in Algiers.

Possible Future Riverfront Route near Jackson Avenue

Trust for Public Land and the City of New Orleans are working with the Port of New Orleans to plan a park space roughly from Jackson Avenue to the Convention Center at the riverfront. A long-term goal is to provide full riverfront access for bicycles and pedestrians between Jackson Avenue and the Canal Street Ferry. This alignment would be included in the MRT should it come about.

Prytania to the Canal Street Ferry

From Prytania Street (near the Pontchartrain Expressway), turn right on Melpomene Avenue which intersects Annunciation Avenue. Turn left on Annunciation Avenue (two-way) and pass under the US Business 90, going about four blocks. Turn right on Poeyfare Street for two blocks. Turn left on Tchoupitoulas Street (two-way) for one block. Turn right on North Diamond Street (one-way) and continue for one block. Turn left on South Peters Street (one-way) and travel a good distance to Poydras Street, the major downtown thoroughfare. Turn right on Poydras Street for one block. Turn left onto Convention Center Boulevard for one block (passing the World Trade Center on your right). Turn right at the foot of Canal Street at the river, near the Audubon Aquarium. The route meets the Canal Street Ferry at the riverfront.

The Return

The return from the Canal Street Ferry to Prytania Street is a somewhat different route. From the ferry turn left onto Convention Center Boulevard and follow it through a jog to the left at the intersection of Poydras Street. Go one block and turn right onto Lafayette Street (one-way) for three blocks. Lafayette Street is a one-lane wide pedestrian mall built for the 1984 World Exposition in New Orleans to move people from the Superdome to the Riverfront. Turn left onto Magazine Street. Take Magazine Street under the overpass to St. Mary Street. A right turn takes the path back to Prytania Street. Prytania Street is used up to Pleasant Street close to Toledano Avenue. Pleasant Street will be used back to St. Charles Avenue.

Continuing Downriver to the French Quarter

Chartres Street: Canal Street to Poland Avenue to St. Claude Ave.

Camp Street is renamed to Chartres Street as it enters the French Quarter after crossing one of the oldest and widest downtown streets in America, Canal Street. Canal Street is a bustling main street with an enormous number of pedestrians, cars, bus tours, taxi's and it accommodates the world's longest continuously operated streetcar. Use caution biking across Canal Street.

All streets in the Quarter are narrow and of a pre-automobile era. Chartres Street stops briefly at the Jackson Cathedral and then picks up again on the other side of the block. The route detours to St. Peter, Bourbon, and St. Ann streets, each one-way streets. Traffic in the French Quarter can be congested but moves at generally the same speed as a bicycle. Cyclists must be mindful of numerous one-way stop signs and pedestrians.

Chartres Street in the Marigny Neighborhood

Exiting the Quarter the route crosses Esplanade Avenue into the Marigny neighborhood, a densely built, residential neighborhood having rather poor street surface. This

Chartres Street Bicycle Shared Lane pavement markings

area is popular with cyclists because it is a nice cycling distance to the CBD and the French Quarter. It is also a burgeoning arts community.

Chartres has been repaved between Press Street and Poland Avenue in the Bywater neighborhood. The first bicycle pavement markings in the city were used here. The new slick surface is also attractive to drivers and has served to greatly increase motor vehicle speeds while decreasing bicycle safety. Chartres Street hugs the water and port land uses are turning away from freight related activity to tourism in this section. The route turns left onto Poland Avenue and then turns right on St. Claude Avenue (LA 46).

The Return from Poland Avenue

The MRT names a one-way couplet for the return route through Bywater, Marigny and the French Quarter

neighborhoods. These are Burgundy Street(one-way downriver) and Dauphine Street (one-way upriver). Dauphine Street turns into Baronne Street as it enters the CBD. Burgundy Street becomes O'Keefe Street as it enters the CBD. These two streets are perhaps the best thoroughfares for traversing the French Quarter and the CBD as the traffic moves near the speed of a bicycle and they are a distance from the heaviest tourist traffic.

St. Claude Bridge poses major hazard for cyclists

St. Claude Avenue: Poland to Delery (Jackson Barracks)

St. Claude Avenue is a designated truck and bus route with high volumes of truck, bus, pedestrian and bicycle traffic. It is one of only two connecting corridors into St. Bernard Parish and services numerous commercial and industrial businesses. It is a divided highway with two travel lanes and one parking lane in each direction. The parking lane is generous but not wide enough for a bicycle fit with comfort. For these reasons, the MRT darts onto parallel neighboring streets when possible as it makes its way toward St. Bernard Parish.

While bicycles are allowed on the St. Claude Bridge over the Industrial Canal, safety is low. There is no shoulder on the bridge and travel lanes are narrow. St. Claude Bridge is unusually dangerous for cyclists.

St. Claude Bridge and Pedestrian Walkway

The St. Claude Bridge has a three to four foot pedestrian walkway that is accessible from the service road. Bicycles can be carried up a staircase and be walked across, although difficult. Another alternative is to take advantage of the new RTA bike on bus equipment that allows a rider and his bike to board after certification.

St. Claude Avenue is a busy thoroughfare that services multiple surrounding neighborhoods and commercial/heavy industrial properties downriver from the CBD. St. Claude Avenue, therefore, is an exceedingly important corridor for many types of traffic. Communities along St. Claude Avenue walk and bicycle frequently in the area to neighborhood destinations.

The MRT route continues downriver and detours into the Holy Cross neighborhood on Forstall Street (two-way) for one block. The MRT turns left onto N. Rampart Street (two-way) and travels through the residential neighborhood to Delery Street (two-way), ending at the Jackson Barracks. The route turns left on Delery Street and returns to St. Claude Avenue. St. Claude Avenue changes its name at the border with St. Bernard Parish becoming St. Bernard Highway

St. Claude Service Road to bedestrian bridge

Cyclists carrying bike up the stairs to the St. Claude pedestrian bridge

St. Bernard Hwy: Jackson Barracks to Murphy Oil

The MRT continues on St. Bernard Highway (LA 46) for nearly ten miles due to industrial uses blocking access to the riverfront. This section is a busy state highway with lots of trucks. It does, however, pass the entrance to the Chalmette Battlefield and National Cemetery, the location of the decisive American victory of the Battle of New Orleans in 1815 over the British. The proximity of the Norfolk Southern Railroad track on the riverside of St. Bernard Hwy and lack of sidewalks make the shoulder the only area for pedestrians as well.

St. Bernard Highway near Norfolk Southern Railroad crossing

St. Bernard Highway commercial strip

Rumble strips on LA 46 on newly repaved surface

St. Bernard Highway was widened and repaved near Center Street near the Orleans/St. Bernard parish line and continues past Paris Road (I-510). Rumble strips, unfortunately, were gouged into the asphalt overlay along the corridor making riding difficult. The striping falls short of a full four foot shoulder in some sections.

Picture from top of levee (future paved bike path) downriver of Murphy Oil in St. Bernard Parish

St. Bernard East Bank Levee: Murphy Oil to Point a la Hache

From St. Bernard Highway the route will move to the East Bank levee top beginning downriver of Murphy Oil Company. Parish plans are underway to provide a 10′ wide asphalt path for several miles to the Violet Canal and ship docks where it will divert to LA 46 once again. The MRT will move back to the levee top and continue to the St. Bernard State Park located at the St. Bernard/ Plaquemines parish line. St. Bernard State Park is the only state park on the Mississippi River in Louisiana.
From here the path will continue on the Plaquemines Parish East Bank to the Belle Chasse/Scarsdale Ferry and beyond. Several pockets of industrial use exist downriver. The path will alternate between a levee top path and highway route downriver to get around blocked frontage. LA 39 and LA 15 are the roadways available south of St. Bernard State Park to the furthest East Bank locations just beyond Point a la Hache near river milepost 45.

West Bank MRT

Canal Street/Algiers Ferry to LA 407 Bridge and Back

The West Bank Canal Street Ferry landing is on the levee in Algiers. There are ramps up and down to the street network leading to some one-way streets. At the bottom of the ramp, two alignments are available. The first, to the right is Bouny Street which goes to Opelousas Street. Opelousas Street goes to Behrman Avenue The second choice also comes to Behrman Avenue by a different set of streets.

At the bottom of the ferry ramp, the alternate route turns left on Delaronde Street (one-way) to Valette Street (one-way). A left turn takes the path to Patterson Street (two-way) which runs along the levee to Hendee Street. A right turn on Hendee Street goes to Opelousas Street. The two routes converge at the corner of Hendee and Opelousas streets.

The corner of Opelousas and Behrman streets is the beginning of the Naval Support Activity Station. The available route turns right on Behrman Avenue to Newton Street which becomes General Meyer Avenue or LA 407. This is a 4-lane divided roadway with heavy traffic at times. With the possible closure of the Naval Support Activity Station a future (optimal) route may be to construct a route on the levee top between the Algiers Ferry the Intracoastal Waterway.

At Ellen Park turn left to return to Patterson Street. Patterson Street is lightly traveled and the roadway surface is poor along some stretches. At Woodlands Street turn right to General DeGaulle Avenue, then left to the LA 407 bridge over the Intracoastal Waterway. Use caution when crossing the bridge. There is a 180 degree turn reducing driver visibility and it has a steep grade.

The Return

Woodlands Street back to Patterson Street is the return route. Patterson Street to Ellen Park, then to General Meyer Avenue to Behrman Avenue, and Opelousas Street. At Opelousas Street turn right on Hendee Street back to Patterson Street. From this point, Patterson Street will carry the trail back to the ferry.

LA 407 Bridge to Belle Chasse Ferry to Venice

From the intersection at the base of the LA 407 bridge at Woodland Hwy, turn left on Woodland Hwy to Ed-

ward Hebert Blvd. Edward Hebert Blvd. passes the new Woodland Trail and Park in Plaquemines Parish which has five miles of birding and walking trails. Edward Hebert Blvd. traverses the Lower Coast of Algiers created by a large bend in the Mississippi River. The cyclist must cross River Road from the end of Edward Herbert Boulevard to reach the levee top. Turning downriver on the Plaquemines Parish West Bank levee top, the MRT goes to the Belle Chasse Ferry. From there the MRT route can be on either side of the river. Remaining on the West Bank the MRT will be on the levee top until it reaches the Chevron plant and other industrial riverfront development. Plaquemines Parish plans to upgrade the levee top in the future to this location. The cyclist must exit the levee onto the LA 23.

There are no plans for improvements to the levee top or the roadway specifically for cyclists outside the urban area due to the extensive mileage. LA 23 does have wide shoulders but traffic speed is 60 mph and higher. The levee bicycle route s undeveloped and will likely remain so. LA 23 ends at Venice, Louisiana on the West Bank at river milepost 10.5. The mighty Mississippi River continues further southeast for 10 miles through coastal mud, marsh and lowlands and flows into the Gulf of Mexico.

St. Bernard Sports Cycling Loop

An informal St. Bernard Parish route has been established by area sport riders on Saturday mornings primarily using the shoulders of state highways. It is described briefly here.
The route begins on LA 39 near Colonial Drive, just upriver from the Violet Canal. Take LA 39 downriver past the St. Bernard High School. to LA 46. Turn left on LA 46 and enjoy an 8 mile long ride to Three Corners. This stretch has very little traffic and generous shoulders. It passes the Toca Plant, the Model Airplane strip and goes over the levee into unprotected territory to Three Corners. From Three Corners you have a choice of two routes into St. Bernard Parish's bayous on winding, two-lane blacktops. A ride to Delacroix is 6.7 miles. If continuing on LA 46, it 4.5 miles to Yscloskey and another mile over the Mississippi River Gulf Outlet to

St. Bernard Parish Bike Route

Shell Beach. Routes from Three Corners are somewhat dangerous because they have short sight distances and narrow lanes. But they are deep in fishing country and offer true bayou scenic routes.

New Orleans East Almonaster Loop and Ft. Pike Loop

The New Orleans East Almonaster Loop and Ft. Pike Loop both begin at Shelter #1 on Lakeshore Drive and continue east on Hayne Boulevard. After crossing the Sen. Ted Hickey Bridge, continue south on LA. 47 (Pearl Street at Little Woods) onto I-510, exiting I-510 onto Lake Forest Boulevard.

Almonaster Loop

From Lake Forest Boulevard, the Almonaster Loop continues south on the west I-510 Service Road to Almonaster Boulevard, continues west on Almonaster Boulevard to Jourdan Road then north on Jourdan Road back to Dowman Road at the Lakefront Airport then crosses the Sen. Ted Hickey bridge and returns along Lakeshore Drive to Shelter #1.

I-510 Service Road

Ft. Pike Loop

From Lake Forest Boulevard, the Ft. Pike Loop continues south on the east I-510 Service Road to Chef Menteur Highway (Hwy. 90) then travels east on Chef Menteur Highway to Ft. Pike at the Rigolets Bridge then makes a U-turn and returns west on Chef Highway, then north on the east I-510 Service Road then west on Lake Forest Boulevard, then north on the west I-510 Service Road then north on Bullard Road then west on Hayne Boulevard back to the Sen. Ted Hickey Bridge.

Strategic Importance

The Almonaster and Ft. Pike Loops are both heavily utilized every Saturday and Sunday by large (~10 to 30 bicyclists) organized group rides. The largest group is identified as the New Orleans Giro. This is a racing competition-training group (i.e. expert rider skills) that travels at high speeds (25 to 30 mph) in a pace-line formation. Other bicyclists that routinely use these loops consist of club riders and tri-athletes (i.e. expert riders) that are also traveling at relatively high speeds for fitness training. These loops are strategically important because of their consistent and concentrated use by large numbers of recreational riders. These routes are heavily utilized because they are convenient for city riders and they offer high-speed roads with relatively light traffic on weekend mornings and minimal traffic interrupters such as stop signs and stop lights.

In addition, the Ft. Pike Loop serves as the only reasonable route for the ring around Lake Pontchartrain and for connecting New Orleans to St. Tammany Parish and the Mississippi Gulf Coast and is the only reasonable route for bicyclists crossing southern Louisiana in an east/west direction.

This route also serves low-income neighborhoods in New Orleans East and connects these neighborhoods with the Sen. Ted Hickey Bridge, which is currently the best available location for bicyclists to cross the Inner

Long distance cyclists ride recumbent bikes onHwy. 90

Harbor Navigation Canal. Another option for commuters in this low-income area would be available if they could transport bicycles on the RTA bus (Chef Menteur Highway is a major bus route) and then use their bicycle for connecting to their final destination, thereby avoiding the time delay required for bus transfers.

Logical Segments

The Almonaster Boulevard and Ft. Pike Loops can be broken into five logical segments. From the Lake Shore Drive Shelter #1 to the east end of Hayne Boulevard is one segment. From the east end of Hayne Boulevard

to Lake Forest Boulevard and continuing south along either the west or east I-510 service roads is another segment. From the west I-510 Service Road along Almonaster Boulevard to Jourdan Road is another segment. Along Jourdan Road to the Seabrook Bridge is another segment. And from the east I-510 Service Road to Ft. Pike is another segment.

Lakeshore Drive Shelter #1

The route to the Sen. Ted Hickey Bridge along Lakeshore Drive has relatively low traffic, few stops, smooth pavement, and the potential to reach high speeds. These factors make this section an excellent place to ride early on weekend mornings. The condition of the route takes a significant turn for the worse if the cyclist chooses to ride latter on the weekend or chooses a weekday. The description of the route provided earlier in this section should be examined for a full description of the cycling situation.

The portion of the segment crossing over the industrial canal is nearly always problematic, however. The Sen. Ted Hickey Bridge has no room for a separated bike lane, and it is the only realistic crossing of the canal. This bridge is used by experienced cyclists consistently, but 'B' level cyclists may not feel comfortable with its crossing.

Hayne Blvd.

Hayne Boulevard Segment

On weekend mornings, there are generally no significant issues or concerns with this segment. Hayne Boulevard has moderate traffic, a long length and relatively few stops. *Share the Road* signs along Hayne Boulevard or signs identifying the route as a "cyclist training" route would be an improvement. Riding this segment at higher volume traffic times, however, can be a significantly different experience. The connections with the bridge and the lack of space become significant impediments.

East End of Hayne Boulevard to Lake Forest Boulevard

This segment travels on I-510 for approximately half a mile. This route is currently illegal but is routinely used. I-510 has wide shoulders so bicyclists do not ride in the travel lane and other states allow the use of Interstate routes by bicyclists. Therefore, this segment presents an opportunity to revise the law in Louisiana to allow bicyclists to use the shoulders of Interstate roadways. The I-510 service roads are excellent bicycle routes at this time. *Share the Road* signs or *Cyclist Training Route* signs would be an improvement. Automobile traffic in this area is increasing due to continuing development creating concerns for future use. It is unclear whether the service roads are wide enough to support bicycle lane stripping.

Almonaster Boulevard

The road making up this segment has a minimum four-foot wide shoulder that should be ideal for signing as a bicycle lane or training route. However, the shoulder needs significant cleaning and is currently unusable for bicyclists due to many years of piled-up gravel and debris. After initial shoulder cleaning, routine cleaning and maintenance would be required to maintain usability due to heavy truck usage from unpaved (gravel) lots along this route. Signing this shoulder as a bicycle lane would potentially raise issues regarding the requirement for bicyclists to use the shoulder versus the travel lane, especially if the shoulder is not adequately main-

tained. Because this is a four-lane roadway with very light weekend traffic, motorized vehicles can easily pass cyclists on the roadway without interference. However, during weekday commuter hours cyclists would generally need to ride on the shoulder for safety. The overpass connecting Almonaster Boulevard to Jourdan Road has little room for a separate bike lane, and less experienced cyclists are likely to be uncomfortable with using it.

Almonaster Overpass

Hayne Blvd. with Sen. Ted Hickey Bridge in background

Jourdan Road to Sen. Ted Hickey Bridge

This route has very low traffic on weekends and minimal traffic on weekdays. Again, *Share the Road* signs would be an improvement and some sections of the roadway are in poor (but usable) condition.

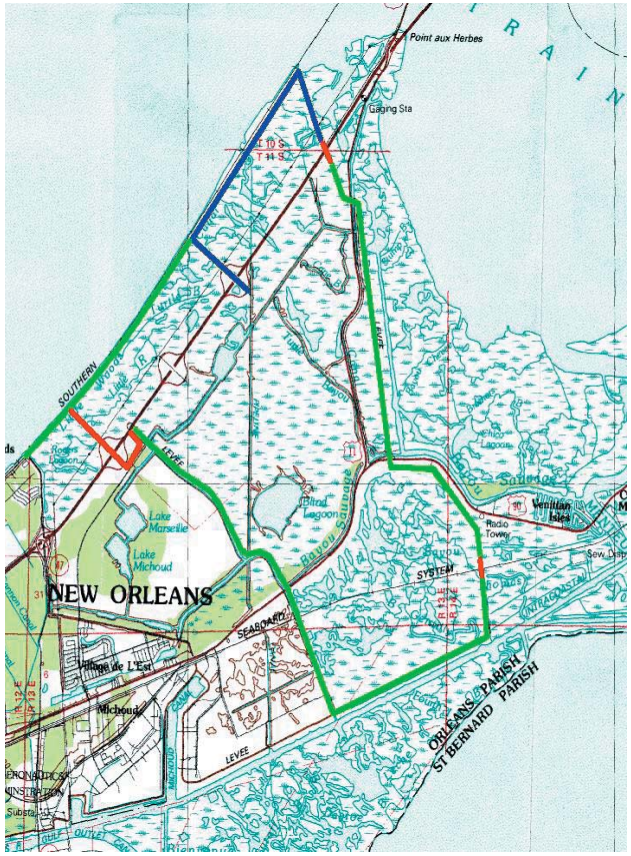
Chef Menteur Highway (Hwy 90)

Many of the issues associated with the Chef Menteur Highway segment are similar to those associated with the Almonaster Boulevard segment, except that in addition to shoulder cleaning and maintenance concerns there is an approximately one mile segment of shoulder that is reduced to approximately one foot of usable width due to the installation of rumble strips. This route is particularly nice for bicyclists because it travels through the Bayou Sauvage National Wildlife Refuge and has a very minimal number of intersections. Going towards New Orleans, however, traffic becomes more intense and staying on Chef Menteur Highway without switching to either the Hayne Boulevard or the Almonaster Boulevard segments is not recommended.

Man rides along Hwy. 90 returning from a fishing trip along Hwy. 90

New Orleans East Trails Development

The Bayou Sauvage/Irish Bayou area presents an excellent opportunity for development of a bicycle/pedestrian trail that would provide New Orleans citizens the same recreational opportunities provided by the Tammany Trace on the Northshore and would greatly increase non-motorized access to the Bayou Sauvage National Wildlife Refuge. It appears that it would be relatively easy to develop this route from Little Woods at the east end of Hayne Boulevard to the Irish Bayou exit at I-10 and the Highway 11 Bridge across Lake Pontchartrain. There is an existing bike path in this area but it is difficult to access and is in poor condition. Ideally, a pedestrian/bicycle bridge over I-10 and a paved shoulder addition to Highway 11 through Irish bayou and the Bayou Sauvage National Wildlife Refuge would connect this route from Little Woods through to Highway 90 at Powers Junction, thereby providing a very significant addition to the ring around Lake Pontchartrain route.



Lafitte Corridor

Lafitte Corridor Greenway is a multi-phase, 2.8 mile project to convert the land along the former Carondelet Canal/Norfolk Southern Rail Corridor from Rampart Street to City Park Avenue into a multiuse urban trail and linear green space. The project will provide a much needed bicycle and pedestrian connection between the Mid City, Treme, and Tulane/Gravier neighborhoods to the future Wisner Bike Path, the Jefferson Davis bike path, City Park Lakefront and uptown amenities. The 2000 census shows over 29,000 persons live within one-half mile of the Lafitte Corridor Greenway, an easy biking distance from surrounding streets. It has the potential to serve a broad population and act as a safe throughway for cyclists in the heart of the city.

The Lafitte Corridor Project IBroad Street looking toward Jefferson Davis Parkway)

Tulane Routes Case Study: Uptown New Orleans

Finally, a detailed case study of the bicycling quality in the Tulane University area in Uptown New Orleans is provided to show how a detailed bike analysis can help guide specific recommendations for improving the quality of bicycle connectivity in a specific area. Tulane University, working with the RPC, helped to create this case study in order to help improve the safety and quality of the cycling experience for the many students and faculty who cycle to the dense, Uptown campus. Tulane's work shows how community partnerships can be utilized to help identify significant urban design problems and then suggest constructive and practical solutions that can benefit the entire community.

Louisiana Statewide Plan Bicycle Route Classifications and Criteria

An important first step in the analysis of the biking connections in the Uptown area of New Orleans is a survey of the available bicycle routes. The Louisiana Statewide Plan defines a clear set of bicycle route classifications that can be used to define the bicycling network. These classification standards are outlined in Chapter V of the Statewide Plan, Bicycle Planning and Design Guidelines.

The classifications in the Louisiana Plan are based mainly on three criteria: traffic speed, traffic volume, and width available to bicyclists. We should note that these criteria do not include pavement condition, which can be a huge impediment and safety hazard to bicyclists in the New Orleans region. Potholes and other pavement problems can force bicyclists to swerve unexpectedly, or force them to ride in the center or left side of a lane. Any street that is used by bicyclists and/or meets the criteria to be designated a bicycle route should receive priority for pavement condition repairs and improvements.

Several types of bicycle facilities can be utilized to help improve bicycling connectivity. The types listed in the Louisiana Plan include: bike paths, shared lanes, wide curb lanes, paved shoulders, and bike lane routes.

A bike path is removed from all other vehicular transit. It is used by bicyclists and pedestrians. The desired width of bike paths is 10 feet. A bike path should be striped for two-way traffic. Because a bike path is separate from traffic it has an extremely limited ability to connect to other bicycle routes. All skill levels of bicyclists use bike paths, though many advanced cyclists prefer riding on streets.

Bike paths should only be considered in areas that have few intersections with streets, such as abandoned rail beds. Particular care should be paid to designing safe entry and exit points for a bike path.

The next type is shared lanes. Both motor vehicles and bicycles can use these roads without any special striping or signage. They have traffic speeds of 30 mph and less, and traffic volumes of less than 3,000 vehicles per day. The prescription for recommended width of Shared lane routes in the Statewide plan is vague: "A standard 12-foot travel lane is sufficient to accommodate both motorists and cyclists" (V-2). It is unclear whether or not a 12 foot travel lane is a recommended minimum width. Shared lane routes function as neighborhood routes, and should link destinations such as schools, libraries, recreation facilities and parks, shopping areas and bus routes.

Wide Curb lane routes are another element of cycling network. They are defined as streets having speed limits of 30 mph or less, and traffic volumes of 3,000-10,000. The statewide plan defines a Wide Curb lane route as 14-15 feet wide, but it is unclear how the plan defines curb lane. Adding an average 8 foot parking lane, we estimate that a Wide Curb lane route would have 22-24 feet total width for cars, bicycles and parking.

Many New Orleans streets that are currently used as arterial bicycle routes are similar to the Wide Curb Lane routes defined in the statewide plan, but don't quite meet the criteria. Most streets with wide curb lanes in New Orleans have neutral grounds, and therefore have a slightly faster speed limit of 35 mph. They also tend to have curb lanes that are slightly narrower (21 feet in most cases)

than the width suggested by the statewide plan (22-24 feet). Lowering speed limits on arterial routes dedicated as bicycle corridors should be considered.

On roads in rural areas with high traffic speeds of 55 mph and over, bicycle routes should have a paved shoulder of 4-6 feet. The statewide plan recommends a minimum paved shoulder width of four feet on bicycle routes, with a wider shoulder on roads with high traffic, high speeds, or heavy use by trucks and RVs. A wider paved shoulder should also be used in areas where Children and Basic Bicyclists are expected to bicycle on the road.

Table 17
Minimum street width needed for retrofitting with bicycle lane (center line to curb)

One travel lane, no parking	16.5 - 18 feet
One travel lane, parking	25 feet
Two travel lanes, no parking	27 feet
Two travel lanes, parking	36 feet

A bike lane is a designated, marked space on the street for bicyclists to move adjacent to traffic. These routes have traffic that moves at higher speeds and have a greater number of trips per day. The bike lane itself should be 4 ½ to 6 feet wide, on the right side of moving traffic[12], and directing the bicyclist to go in the same direction of the traffic flow. Traffic in this category moves at speeds greater than 30 mph and with more than 10,000 trips per day.[13] Bike lanes should offer the greatest connectivity because they offer the most efficient travel for bicyclists.

While there are currently no bicycle lanes marked on streets in the New Orleans area, potential Bike Lane Routes should be identified on arterial streets now frequently used by bicyclists. Many of these streets are currently used by bicyclists because they have underused parking lanes or travel lanes, and therefore could be improved as bicycle routes by reallocating and restriping the street width. The table below gives the minimum width needed from center line to curb to incorporate bicycle lanes into existing streets. For detailed discussion of retrofitting streets for bicycle lanes, see the Louisiana Statewide Bicycle and Pedestrian Master Plan (1998), V-18-22. These streets also should be protected for bicycle travel—both current and future bicycle travel-- by limiting the number of entrances to commercial parking lots and other types of dangerous intersections.

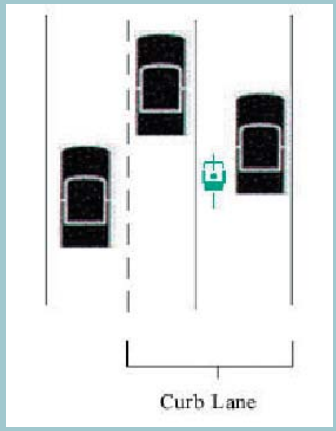
Table 18
Speed Limites

70 mph	Rural Interstates
65	Multi-lane, divided state or U.S. highways with median
55	Two-lane highways and other state roads
35	City streets with boulevards/neutral ground
25	City streets

Proposed Additional Bicycle Route Classification

To enhance safe bicycling for Children, we recommend that Bicycle Boulevards should be added as an additional route type to the bicycle route classifications outlined in the Statewide Plan. Bicycle Boulevards are neighborhood routes that are similar to Shared Lane routes, but they use some kind of traffic calming measure to limit automobile traffic to local access only. Traffic calming or diverting devices, such as bollards, allow bicycles and pedestrians to pass through, but interrupt automobile through traffic. This creates a much safer on-the-street route for children and basic cyclists. This designation is

[12]Roger Geller - Portland Bicycle Planner
[13]Louisiana State Plan section 5, page 2



used in a number of other cities, and should be considered in future planning in our region.[14] Bicycle boulevards may be very popular with residents who are worried about traffic on their street.

Collecting Data for Bicycle Route Classification

The bicycle route classifications outlined in the Statewide Plan are based on traffic speed, traffic volume, and the street or lane width. Using Uptown New Orleans as a pilot, we attempted to locate these data and assess uptown streets using these criteria.

Traffic speed

Most speed limits in Louisiana are set according to the following table:

Traffic volume

Traffic volumes on a limited number of streets were available from the Regional Planning Commission database and provided traffic volume data for selected Uptown New Orleans street segments. Traffic volume data are available for arterial streets with more than 10,000 trips per day, but not for residential streets with lower volumes. Also, most of the volume data are dated from 1997, with only one figure was measured in 2000-02. Local jurisdictions are generally responsible for and keep track of residential volumes. The Regional Planning Commission collects volume data within the metropolitan area on a limited basis due to the high cost to do so. Generally it is collected only on major arterial streets to track congestion and forecast future growth.

[14]For an excellent overview of Bicycle Boulevards, see the description given in the Oregon Bicycle and Pedestrian Plan, at http://www.odot.state.or.us/techserv/bikewalk/planimag/II1e.htm

Street or lane width

In order to classify New Orleans streets as bicycle routes, we found it necessary to develop and collect two different measures of street width:

> ***Width***: The total space for travel and parking in one direction (i.e. from the centerline to curb on two-way streets; or the entire width, including parking lane, of one-way streets.) This measure of width tells the potential space currently available for bicycle travel, space that could be reallocated for bicycle travel through measures such as restriping lanes or eliminating parking.
>
> ***Curb Lane Width:*** We are defining "curb lane width" as the total width of the right-most lane and any space to the curb or shoulder edge, including space for parking. Most New Orleans streets have on-street parking on both sides, and the parking lane is not usually marked on the side of the right-most travel lane. Parked cars, bicycles and moving vehicles share the space without a clear delineation. This measure of street width tells the current space available for bicycle travel.

We found it most accurate to measure these widths in the field with a tape measure (and at the same time observe road characteristics such road condition and presence of parking). We were surprised by how dramatically the widths of several streets in uptown New Orleans changed from block to block. The city of New Orleans Department of Public Works, Engineering Division, provided us with widths of the right of way, roadway and neutral grounds, which we used mainly to corroborate our measurements. In several cases there were significant differences. Future assessments could use aerial photography to accurately measure road widths, particularly as it becomes more widely used by each parish and municipality and as the technology improves measurement capabilities.

Assessing Uptown New Orleans Streets as Bicycle Routes

While both the engineering directive and the statewide plan lay out criteria that set excellent goals for bicycle routes, only a few streets in our sample currently meet those criteria specifically. Many neighborhood streets most likely meet the criteria to be classified as shared lane routes. To be a shared lane roadway, a street should have fewer than 3,000 trips/day according to the statewide plan.

Very few, if any, streets meet the state criteria for the Wide Curb Lane and Bike Lane routes, which would serve Advanced Bicyclists. Several streets, most notably St. Charles upriver of Louisiana, are wide enough to be striped with a bicycle lane without significant improvements. At the other end of the skill level scale, children would benefit from neighborhood routes that are protected for bicycle travel using bicycle boulevards designs.

The arterial streets that are currently used by principal and casual bicycle commuters with moderate to advanced skill levels include St. Charles, Nashville, Jefferson Davis and share some common features. Neutral ground streets such as Nashville and Jefferson Davis have a curb lane width of at least 21 feet, traffic volume around 12,000 trips per day, and two travel lanes in each direction. On these four-lane streets, at lower traffic volumes, cars can comfortably pass cyclists by moving or traveling in the left lane. At times of higher traffic volume, when cars are traveling in both lanes, they are much less comfortable for bicyclists. If traffic volumes increase, these streets will be much less comfortable for even advanced bicyclists.

The table below compiles available data for a sampling of uptown New Orleans streets, many of which are currently used by bicyclists.

In the short term, the curb lanes of these streets could be improved for bicycle travel by widening them 1-2 feet through restriping travel and parking lanes. In the long term, most neutral ground streets would best serve bicyclists through the addition of a bike lane.

Bicyclists already tend to favor streets that have excess capacity for either traveling vehicles or parking (i.e. that are less used by motor vehicles), and this excess capacity could be utilized to improve a route to meet the state criteria through reallocation of lane width. For example, a number of four lane neutral ground streets could adequately serve motorists with just two lanes for motor vehicles, creating space for striping a bicycle lane. Many residential areas have adequate off street parking to al-

Table 19
New Orleans Street Classifications

Street	Between	Speed	Curb Lane	Width	Volume	Bicycle Route Classification
Magazine	State - Eleanor	25	11.5			
Hampson	S. Carrollton - Broadway	25	12.5	25		Shared Lane
Short	St. Charles - Claiborne	25	15	30		Shared Lane
Magazine	State - Webster	25	15.5			
Lowerline	St. Charles - Claiborne	25	16	26		Shared Lane
Camp	Jefferson - Napoleon	25	17.5	24		Shared Lane
Prytania	Jefferson - Napoleon	25	18	36		
Maple	Broadway - Carrollton	25	18	26		
Pine	St. Charles - Claiborne	25	18	26		Shared Lane
Tchoupitoulas	Nashville - Jefferson	25	18.5	28	11513	
Fontainebleau	Broadway - Nashville	25	25	48	9026	Wide Curb Lane
State	St. Charles - Claiborne	25	(16.5)	32		
Freret	Broadway - Nashville	25	(17.5)	35		
Claiborne	Broadway - Nashville	35	17	108	49745	
Nashville	St. Charles - Claiborne	35	18	36	12639	
Jefferson	St. Charles - Magazine	35	21	40	12589	
Napoleon	St. Charles - Claiborne	35	21	64	18026	
Broadway	St. Charles - Claiborne	35	21	44	17960	
St. Charles	Jefferson - Napoleon	35	25	48	24495	

low elimination of on-street parking on one side of the street.

Recommendations

The bicycle route classifications and criteria outlined in this chapter can be used by municipalities in our region in three different ways:

1. To identify streets in our region that can function as bicycle routes in their current condition (or with relatively easy improvements such as resurfacing and signage).

2. As a standard to guide improvements to the major bicycle corridors in the region. Corridors and streets that are currently heavily used by bicyclists should be improved to meet the standard of the bicycle route type appropriate to that street. Where street volumes or widths do not exactly meet the state standards all effort should be made to work the problem with the safety of the cyclist in mind.

3. To provide an initial design standard that should be considered in all road improvement and construction projects in the region.

In addition to endorsing the bicycle route classifications and criteria outlined in this chapter, we make the following recommendations:

1. Use the Mississippi River Trail as a pilot project for bicycle route improvements. Continuing the Mississippi River Trail from its current endpoint at Audubon Park to Venice, Louisiana will require analysis of a number of different types of streets. Improving each segment so that each meets the criteria of the bicycle route classification appropriate to that street will provide an excellent pilot project for developing bicycle routes that meet these standards. For example, the traffic speed and volume of St. Charles Avenue classify it as a bicycle lane route, and it should be restriped and signed to meet the standard. Improving this route will give city and parish departments experience making these improvements in the context of a project that has wide public support.

2. In order to create safe routes for children on city streets, "Bicycle Boulevards" should be considered as an additional route type to the bicycle route classifications outlined in the statewide plan.

3. Identify the streets currently used by bicyclists and improve them to meet the bicycle route design criteria outlined in the statewide plan. Advanced bicyclists and bicycle commuters currently use wide neutral ground streets with lower traffic volumes; on many the width could be reallocated and restriped with bicycle lanes. Bicycle lanes on busy arterial routes would provide clearly defined corridors for bicycling between neighborhoods and across the city, and they would draw bicyclists off of dangerous routes. Routes designated as potential bicycle lane routes should be protected from additional driveways into commercial areas and other types of car traffic between street intersections. They should receive a higher level of street sanitation to clear small debris that might cause a cyclist to veer in traffic. These streets should also receive priority for pavement condition repairs and improvements. Combining restriping and pavement improvements would efficiently, substantially improve conditions for bicyclists and may garner support from motorists as well.

State Laws

Introduction

An important objective of this Master Plan is to identify existing laws and ordinances to ascertain the limitations, obligations, and range of law pertaining to the bicycle and pedestrians in the state of Louisiana and in the study area. (Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, and St. Tammany parishes). This section reviews, therefore, state law and parish ordinances. It also reviews similar laws of other states to create a comparative analysis of legislation. This analysis will help evaluate the extent and effectiveness of the current legal environment and inform policy. It will assist in making recommendations that may be needed to help in promoting development and management of bicycle paths on separate right-of-ways and particularly routes on existing state and local street networks.

Overview of Bicycling in State Law and Parish Ordinances

A review of Louisiana Revised Statutes and existing ordinances of the six parishes in the study area that pertain to the use of existing streets, highways and levee right-of-ways as bike lanes, paths or routes showed that the statutes do not limit bicycling as a viable transportation mode. It is noted that the state law as well as the local and parish ordinances give bicycles the same rights and duties with reference to the use of a road as are commonly given to automobiles.

The use of the bicycle on public roadways is generally authorized both at the state and local level. However, bicycling on the Interstate System of highways is prohibited. This is to protect the safety of the bicyclist in high volume, high speed traffic. Bicycling on sidewalks is also generally prohibited except by children. There is, however, a state law that prohibits cycling on public streets where a separate path is available. This is troubling to cyclists, particularly those with a high skill level and are accustomed to riding in traffic. There are also several local ad hoc prohibitions for corridors and bridges where local officials and traffic engineers consider bicycle use to be overly dangerous.

State Laws

The use of bicycles has been historically prohibited on levees in the study area until recently. Within the last five years, local parishes and levee district boards have requested the ability to construct bicycle paths on the main levee system in order to provide a separate bicycling and/or walking facility.

The nature of parish ordinances does not vary widely from parish to parish, and is fairly consistent with the language of state laws governing bicycles and their use. In addition, the importance of avoiding conflicts between bicyclists and pedestrians is made clear as the importance of avoiding conflicts between bicyclists and automobiles.

Summary of State Bicycle Laws

In Louisiana, general traffic laws that apply to automobiles also apply to persons riding bicycles. Essentially, persons riding bicycles are granted all of the rights and are subject to all of the duties applicable to drivers of automobiles or other vehicles. It is noteworthy that state law grants to local municipal authority to adopt ordinances governing the use of highways, other than state maintained highways within their corporate limits, so long as they do not modify or conflict with state provisions.

State laws allow local jurisdictions the power to regulate processions or assemblages on highways, and the ability to designate one-way highways, through highways, and no passing zones. Local jurisdictions may require the registration and licensing of bicycles.

Revised Statute 47:451 defines those vehicles which may be required to register and pay a license tax. It exempts devices moved by human power. Therefore, to date, there is no state mandated bicycles registration and licensing tax.

State law (RS 32:408) that discusses required examinations for different classes of licenses notably does not require a bicycle user examination prior to using a bicycle on public roadways. However, motor vehicle

drivers must pass a state exam that now includes some language on the proper behavior of a bicyclist and motorist in traffic. Further, all driver education and training programs for children and associated funding have been transferred from the Department of Public Safety and Corrections to the State Board of Elementary and Secondary Education and the Department of Education (RS 17:270).

Revised Statutes 32:199 that are in respect to the Louisiana Highway Traffic Safety Commission goes into detail on the topic of bicycle helmets and restraining seats. It defines a bicycle as having two wheels. A helmet made prior to 1999 must meet or exceed helmet safety standards set by the American National Standards Institute or the Snell Memorial Foundation and if manufactured after 1999 must meet or exceed helmet safety standards set by the Consumer Product Safety Commission. It also authorizes funding for the Louisiana Safe Kids Coalition for the purchase of bicycle helmets.

Revised Statute 32:401 also classifies a motorized bicycle as a human powered pedal bicycle and/or as a bicycle with a motor rated with no more than one and a half horsepower. It cannot exceed twenty-five miles per hour on a flat surface.

State law also governs the extent of authority for all levee boards and districts in the state of Louisiana that have jurisdiction over the levee system. Levees in our area are constructed to hold back periodic flooding of the Mississippi River, Lake Pontchartrain, and surrounding wetlands. These structures are often perfect candidate locations for separated bicycle, walking, jogging, and in-line skating paths. Levees in urban areas are especially useful because recreation space is limited and because levees have long uninterrupted corridors. In addition, they offer scenic vistas of the Mississippi River, Lake Pontcharatrain, and the wetlands. The bulk of Transportation Enhancement funding expended in the New Orleans metropolitan area has been spent to design, engineer, and construct levee bicycle and walking paths.

Since 1999, four acts of the state Legislature have increased the authority of levee boards "to authorize the construction of bicycle paths and walkways along the main line levees of the Mississippi River in certain parishes; and to provide for related matters." In 1999, Act 1340 amended and reenacted R.S. 38:301 (A) (3) to add Jefferson, St. Charles, and St. John parishes. In 2001, Act 432 added Orleans Parish. In 203, Act 243 added Ascension, East Baton Rouge, Iberville, and St. James parishes. Finally, in 2004, Act 82 added St. Bernard and Plaquemines parishes. Together these parishes constitute all the river parishes between Baton Rouge and the Gulf of Mexico. This legislation is a necessary predecessor to any construction and ongoing maintenance of a levee top bike path.

Following are some particulars regarding the use of bicycles on Louisiana roadways.

- Requirements
  - Persons riding bicycles must ride on the right side of the road as practical to the curb.
  - Persons riding bicycles must, when riding with other cyclists, ride no more than two abreast.
  - A person riding a bicycle must ride astride a permanent and regular seat attached to the bicycle.
  - A person operating a bicycle must at all times keep at least one hand on the handle bars.
  - Whenever a usable bicycle path has been provided adjacent to a roadway, cyclists must use the path and not the roadway.
  - Persons riding bicycles must obey instructions from police officers.
  - A motorized bicycle may only be operated upon the roadway of the highways of this state by a person fifteen years of age or older who possesses a valid Louisiana

driver's license and shall not be operated upon sidewalks or interstate highways.

- Prohibitions
  - A bicycle shall not be used to carry more persons at one time than the number for which it is designed and equipped.
  - A person riding a bicycle shall not operate the bicycle at a speed greater than is reasonable and prudent under prevailing conditions.
  - A person riding a bicycle shall not attach the bicycle or himself to any vehicle upon a roadway.
  - No person under the age of eighteen years shall operate or ride upon a motorcycle, motor driven cycle, or motorized bicycle unless the person is equipped with and is wearing on the head a suitable safety helmet.
  - No child under the age of twelve may operate or ride as a passenger on a bicycle without wearing an approved helmet of good fit fastened securely upon the head with the straps of the helmet.
  - No child who weighs less than forty pounds or is less than forty inches in height may ride or be a passenger of a bicycle without being properly seated in and adequately secured to a restraining seat.
  - Bicycles are prohibited on the interstate highway.
- Required bicycle equipment
  - Every bicycle when in use at night must be equipped with a lamp on the front which emits a white light visible from a distance of at least five hundred feet.
  - Every bicycle when in use at night must be equipped with a red reflector on the rear and a reflector on each side visible from one hundred feet to the rear when directly in front of lawful lower beams of headlamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred feet to the rear may be used in addition to the red reflector.
  - Every bicycle must be equipped with a bell or other device capable of giving a signal audible from a distance of at least 100 feet, except that a bicycle shall not be equipped with nor shall any person use upon a bicycle a siren or whistle.
  - Every bicycle must be equipped with a permanent and regular seat attached to the bicycle.
  - Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheel skid on dry, level, clean pavement.

Review of Parish Ordinances for Bicycles

Jefferson Parish

In general, persons riding bicycles on the streets of Jefferson Parish are granted all of the rights and are subject to all of the duties applicable to drivers of automobiles or other vehicles. Part II, Chapter 36, Article VIII, of the Jefferson Parish Code of Ordinances is concerned with bicycles and their use. Following are laws pertaining to the use of bicycles in Jefferson Parish.

- Requirements
  - Persons riding bicycles must ride on the right-hand side of the road as near as practicable to the curb.

- Persons riding bicycles, when riding with other cyclists, must ride no more than two bicycles abreast.
- A person riding a bicycle must ride astride a permanent and regular seat attached to the bicycle.
- Whenever a usable bicycle path has been provided adjacent to a roadway, cyclists must use the path and not the roadway.
- Persons riding bicycles must obey instructions from police officers.

- Prohibitions
  - A bicycle shall not be used to carry more persons at one time than the number for which it is designed and equipped.
  - A person riding a bicycle shall not operate the bicycle at a speed greater than is reasonable and prudent under prevailing conditions.
  - A person riding a bicycle shall not attach the bicycle or himself to any vehicle upon a roadway.
  - A person riding a bicycle shall not carry any package, bundle, or article which prevents the rider from keeping at least one hand on the handlebars.
  - A person shall not park a bicycle on a street other than on the roadway against the curb, or on the sidewalk in a rack to support the bicycle, or against a building or at a curb in such a manner as to afford the least obstruction to pedestrians.
  - A person riding a bicycle shall not ride on a sidewalk in a business district. When riding a bicycle on a sidewalk (presumably outside of a business district), such a person must yield the right-of-way to any pedestrian and must give audible signal before overtaking and passing the pedestrian.
  - A pedestrian or person riding a bicycle, including an individual walking his bicycle, shall not cross or attempt to cross the Lapalco Bridge on Lapalco Boulevard crossing the Harvey Canal and Bayou Segnette.

- Required bicycle equipment
  - Every bicycle when in use at night must be equipped with a lamp on the front which emits a white light visible from a distance of at least five hundred feet.
  - Every bicycle when in use at night must be equipped with a red reflector on the rear and a reflector on each side visible from one hundred feet to the rear when directly in front of lawful lower beams of headlamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred feet to the rear may be used in addition to the red reflector.
  - Every bicycle must be equipped with a bell or other device capable of giving a signal audible from a distance of at least 100 feet, except that a bicycle shall not be equipped with nor shall any person use upon a bicycle a siren or whistle.
  - Every bicycle must be equipped with a permanent and regular seat attached to the bicycle.
  - Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheel skid on dry, level, clean pavement.
  - Of particular interest to cyclists may be that Section 36-253, under the rubric of Riding on Sidewalks, the sheriff appears to be empowered to prohibit the use of bicycles on any roadway in the parish.
  - The sheriff's department is authorized to erect signs on any sidewalk or roadway

prohibiting the riding of bicycles thereon by any person and when such signs are in place no person shall disobey the same.

Orleans Parish

In general, persons riding bicycles on the streets of the parish of Orleans are granted all of the rights and are subject to all of the duties applicable to drivers of automobiles or other vehicles. Chapter 38, Article XIV, of the Code of New Orleans is concerned with bicycles and their use. The following are laws pertaining to the use of bicycles in Orleans Parish.

- Requirements
  - Persons riding bicycles must ride on the right-hand side of the road as near as practicable to the curb.
  - A person riding a bicycle must ride astride a permanent and regular seat attached to the bicycle.
- Prohibitions
  - A bicycle shall not be used to carry more persons at one time than the number for which it is designed and equipped.
  - A person riding a bicycle shall not operate the bicycle at a speed greater than is reasonable and prudent under prevailing conditions.
  - A person riding a bicycle shall not carry any package, bundle, or article which prevents the rider from keeping at least one hand on the handle bars, or which in any way interferes with the stability of the bicycle, or impairs the rider from maintaining control of the bicycle.
  - A person shall not park a bicycle on a street other than on the roadway against the curb, or, on the sidewalk in a rack to support the bicycle, or, against a building or at a curb, in such a manner as to afford the least obstruction to pedestrians.
  - A person riding a bicycle shall not ride on a sidewalk in a business district.
- Required bicycle equipment
  - Every bicycle, when in use at night, must be equipped with a lamp on the front which emits a white light visible from a distance of at least five hundred (500) feet.
  - Every bicycle, when in use at night, must be equipped with a red reflector on the rear and a reflector on each side visible from one hundred (100) feet to the rear when directly in front of lawful high beams of headlamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred (500) feet to the rear may be used in addition to the red reflector.
  - Every bicycle must be equipped with a bell or other device capable of giving a signal audible for a distance of at least one hundred (100) feet, except that a bicycle shall not be equipped with nor shall any person use upon a bicycle any siren or whistle.
  - Every bicycle must be equipped with a permanent and regular seat attached to the bicycle.

Plaquemines Parish

The Parish President's Office, the Parish Council Chairman's Office, the Parish Council Secretary's Office, and the Parish Permit Department, were contacted for information regarding the existence of parish ordinances governing bicycles and their use in Plaquemines Parish. Plaquemines Parish Commission Council Ordinance Number 82, adopted on November 2, 1967 prohibits the use of vehicles on levees.

Ordinance No. 82 exists to ". . . prohibit vehicular traffic or the riding, driving or hauling upon public levees,

including river levees and the back levees in the parish of Plaquemines, except such vehicular drivers as may be necessary for maintenance, or repair work, on said levees and to fix the penalties for the violation thereof . . . all persons, firms or corporations are prohibited from riding, driving or hauling upon the public levees, including the river levees and the back storm tide protection levees in the parish of Plaquemines, except vehicular drivers engaged in the performance of duty in inspecting, maintenance or repair of said levees".

There are at least two justifications for Ordinance No. 82. One is that the sod growing on the levee is the levee's protective clothing from the elements. The sod protects the levee from the erosive effects of the rain and the wind holding the soil in place. Vehicles operated on the levee tend to damage or destroy the sod. The U.S. Army Corps of Engineers (the Corps) and the Louisiana Department of Transportation and Development (DOTD) join with Plaquemines Parish each year to perform a levee inspection, a substantial component of which is an inspection of the condition of the sod. Both the Corps and DOTD make recommendations to the parish on steps to take to maintain or improve the sod each year.

A second reason is anchored in the nature of the servitude, or easement, upon which the levee rests. Except in rare instances where the rights of way for the levees have been purchased in fee simple title by the government, levee districts or in this case Plaquemines Parish owns only a surface right to build, operate and maintain a flood control device, i.e., the levee. The land beneath the levee is in private ownership, and those private owners have a right to use the levee for any purpose that does not conflict with the servitude, including the right to fence and secure their property against trespassers or public use.

It is unknown if the recent state authorization for the Plaquemines levee district to construct bicycle paths and walkways on the main line levees of Plaquemines Parish supercedes local ordinance. The Parish Council, which also acts as the levee district, will have to address this issue should construction funds for a levee path become available.

St. Bernard Parish

The St. Bernard Parish Code of Ordinances, Chapter 20, is concerned with traffic, and authorizes the parish traffic engineer to locate and designate, with appropriate traffic control devices, bicycle routes, lanes and paths. Article VI is concerned with bicycles and their use in St. Bernard Parish. In general, persons riding bicycles on the streets of St. Bernard Parish are granted all of the rights and are subject to all of the duties applicable to drivers of automobiles or other vehicles.

St. Charles Parish

Bicycle related ordinances are found in Part II of the St. Charles Parish Code, Chapter 14, Miscellaneous Provisions and Offenses.

Sec.14 10. Bicycling, skating in Courthouse area.

(a) Prohibited: It shall be unlawful for any person to bicycle or skate in the lobby of the Courthouse or on the porch/terrace area around the Courthouse.

(b) Penalty: Any person violating the provisions of this section shall be guilty of a misdemeanor and subject to a fine of one hundred dollars ($100) and/or imprisoned for a term not exceeding thirty (30) days or both.

St. Charles Parish officials were contacted who verified that no ordinances exist other than those cited above. In St. Charles Parish, state laws govern the use of bicycles.

St. Tammany Parish

There are no ordinances pertaining to cyclists in St. Tammany Parish law and the state has not authorized the construction of bicycle paths or walkways on levees in St. Tammany. This may be, in part, because of the extensive nature of the Tammany Trace path.

Tammany Trace, Louisiana's first and most prominent rails to trails project, follows the old Illinois Central Railroad for 31 miles, connecting Covington, Abita Springs,

Mandeville, Lacombe, and Slidell. In the Tammany Trace right-of-way there are parallel paths for equestrians and a paved bicycle/walking path. It has its own set of rules governing bicycles and their use. The Trace uses a protocol for mixed non-motorized traffic that is common etiquette for most trails around the country.

> Roller bladers yield to cyclists.
> Cyclists yield to joggers.
> Joggers yield to walkers.
> Walkers yield to horses.

St. Tammany Parish Code of Ordinances, Chapter 15, Offenses and Miscellaneous, Article IX states,"It shall be unlawful for any person, whether on foot, bicycle, or in a vehicle of any type, to travel, loiter, walk, play, jog, traverse or encroach upon any levee within the boundaries of Drainage District No. 4."

Significant Legislation Implemented in Other States

This section contains a summary of significant ordinances or legislation implemented in other states or jurisdictions for regulation of bicyclists.

From a review of the laws in the table above, it is easy to see that Louisiana bicycle laws are much the same as their neighbors in Arkansas, Mississippi, and Texas.

Table 20
Multi-Jurisdictional Comparison of Bicycle and Pedestrian Laws

Bicycle Behavior	Louisiana	Arkansas	Mississippi	Texas	Jefferson	Orleans	Plaquemines	St. Charles	St. Bernard	St. Tammany
Have same road rights and duties as other vehicles, except on Interstate Highways	X	X	X	X	X	X	X	X	X	X
Must ride on right side of road, near to edge.	X	X	X	X	X	X	X	X	X	X
Ride no more than 2 abreast	X	X	X	X	X	X	X	X	X	X
Keep 1 hand on handle bars	X	X	X	X	X	X	X	X	X	X
Ride on separate path when such is provided (see footnote)	X				X	X	X	X	X	X
Carry no more passeners than bicycle is designed to carry	X	X	X	X	X	X	X	X	X	X
Obey police officers.	X				X	X	X	X	X	X
Operate at safe speed.	X	X	X	X	X	X	X	X	X	X
12-year olds must wear helmets	X				X	X	X	X	X	X
Must not attach moving bicycle to another moving bicycle.	X				X	X	X	X	X	X
Bicycle must be registered and licensed (with a tag).					X	X				
Levee Districts may construct bicycle paths.	X				X	X		X		

Table 21
Required Bicycle Equipment

	Louisiana	Arkansas	Mississippi	Texas	Jefferson	Orleans	Plaquemines	St. Charles	St. Bernard	St. Tammany
A regular fixed seat	X	X	X	X	X	X	X	X	X	X
A head lamp	X	X	X	X	X	X	X	X	X	X
Rear reflectors	X	X	X	X	X	X	X	X	X	X
A bell or other such device, but a siren or whistle is prohibited	X				X	X	X	X	X	X
Good brakes	X				X	X	X	X	X	X

Most require basic equipment and safe riding behavior. Louisiana is more stringent in its provision for children 12 and under requiring them to wear a helmet, to require riders to provide a bell or similar device, to obey policy and to disallow riding when attached to a moving vehicle. Conversely, of the four, Louisiana is the only state to restrict the use of the street whenever a usable path for bicycles has been provided adjacent to a roadway. This law may cause undue crossing problems. In most cases, the separated path will only provide a partial route to the cycling destination and it may actually hamper commuting patterns and confuse cyclists.

Further, in the process of discussions with government agencies, it became clear that fear of liability underpins the requirement for cyclists to ride on separate paths when they are available. Liability is an overarching concern for all levels of government. In the past, Louisiana had a law that limited liability using sovereign immunity. Sovereign immunity is rooted in the British Common Law which held that the "king could do no wrong," so to speak. This protection limited the extent to which the governing agency, the state of Louisiana, could be held liable. Sovereign immunity was rescinded in --- ?????? and under current law Louisiana has much greater exposure to liability for all transportation endeavors.

Evaluation of Existing Laws and Ordinances

Overall, there appears to be little in the state law or local ordinances that directly inhibits or de-emphasizes the use of bicycles as a legitimate mode of transportation. State Law RS 32:197 tends to vex and anger cyclists because while it is intended for their safety it may unwittingly redirect attention and funds away from streets in urban areas where most cycling takes place. It also may imply that only separate paths are safe.

Pedestrian Statutes

Just as for state bicycle laws, local municipalities are granted authority to adopt ordinances for the pedestrian governing the use of highways other than state maintained highways within their corporate limits so long as they do not modify or conflict with state provisions.

State law regulates pedestrian traffic, pedestrian rights and motorized behavior towards pedestrians at signalized and unsignalized intersections. However, they are silent as to mid-block crossings except to prohibit crossings of the interstate highway system.

State Law Requirements

- Pedestrians must walk only on the left side of the highway or its shoulder, facing traffic which may approach from the opposite direction when sidewalks are not provided.
- Pedestrians shall move, whenever practicable, upon the right half of crosswalks.
- Whenever special pedestrian-control signals exhibit a flashing or steady "WALK" message, a pedestrian facing the signal may proceed across the roadway in the direction of the signal and shall be given the right-of-way by a driver of a vehicle. RS 32:233
- A pedestrian who has partially completed his crossing on the "WALK" signal shall proceed to a sidewalk or safety island while the "DON'T WALK" signal is showing, RS 32:233
- When traffic-control signals are not in place or not in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be so to yield, to a pedestrian crossing the roadway within a crosswalk when the pedestrian is upon the half of the roadway upon which the vehicle is traveling or when the pedestrian is approaching closely from the opposite half of the roadway as to be in danger.
- Operators of motor vehicles approaching a physically disabled pedestrian who is carrying a cane predominantly white in color,

with or without a red tip, or a physically disabled pedestrian using an assistance dog shall take all necessary precautions to avoid injury to such pedestrian.

Please note that the first requirement (walking facing traffic when in the roadway) does not reflect current practice. Walking with traffic is the accepted standard.

State Law Prohibitions

- It is unlawful for a pedestrian to cross an interstate highway, except in the case of emergency.
- Where sidewalks are provided, it shall be unlawful for any pedestrian to walk along and upon an adjacent highway.
- No pedestrian shall start to cross the roadway in the direction of the signal whenever a special pedestrian-control signal exhibits a flashing or steady "DON"T WALK" message. RS 32:233
- Any such operator who fails to take all necessary precautions to avoid injury to a physically disabled pedestrian shall be liable in damages for any injury caused to the pedestrian and any injury caused to the pedestrian's assistance dog.
- No operator of a motor vehicle shall drive into or upon any crosswalk while a physically disabled pedestrian is on the crosswalk or crossing or attempting to cross the crosswalk if such pedestrian indicates his intention to cross or to continue to cross the crosswalk.
- Failure by the pedestrian to signal his intention to cross the crossway shall not deprive him of the right of way given to him by other applicable law or regulation.
- No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close that it is impossible for the driver to yield.
- Whenever any vehicle is stopped at a marked cross-walk or at any unmarked cross-walk at an intersection to permit a pedestrian to cross the roadway, the driver of any other vehicle approaching from the rear shall not overtake and pass such stopped vehicle.
- No person shall stand, or park a vehicle, except when necessary to avoid conflict with other traffic, or in compliance with law or the directions of a police officer or traffic control device in any of the following places:
  - on a sidewalk
  - in front of a public or private driveway
  - within an intersection
  - within fifteen feet of a fire hydrant
  - on a cross-walk
  - within twenty feet of a cross-walk at an intersection
  - within twenty feet upon the approach to any flashing beacon stop sign or traffic control signal located at the side of a roadway
  - between a safety zone and the adjacent curb, or within twenty feet of point on the curb immediately opposite the ends of a safety zone
  - within fifty feet of the nearest rail or a railroad crossing
  - within twenty feet of the driveway entrance to any fire station, and on the side of a street opposite the entrance to any fire station with seventy-five feet of said entrance, when properly posted
  - alongside or opposite any street excavation or obstruction when stopping, standing or parking would obstruct traffic

- on the roadway side of any vehicle stopped or parked at the edge or curb of a street
- upon any bridge or other elevated structure upon a highway or within a highway tunnel
- at any place where official signs prohibit such
- any place where parking will obscure or obstruct visibility of any traffic control device.

Review of Parish Pedestrian Ordinances

In general, parish laws pertaining to pedestrians match both the language and overall intent of the state pedestrian laws just covered. The review of parish pedestrian laws in this section does not repeat these similarities, but instead highlights exceptions and peculiarities of the parish ordinances.

Jefferson Parish

- Sec. 29-89. Pedestrian and bicycle traffic on the Lapalco Boulevard bridges is prohibited. It shall be unlawful for pedestrian(s) or bicycle rider(s) including an individual walking his bicycle to cross or attempt to cross the Lapalco Bridge on Lapalco Boulevard crossing the Harvey Canal and Bayou Segnette. (Ord. No. 19400, § 3, 6-7-95)

Orleans Parish

- Sec. 154-1603. Use right half of cross-walk. Pedestrians shall move, whenever practicable, upon the right half of cross-walks. (Code 1956, § 38-177)
- Sec. 154-1605. When to yield the right-of-way. (a) Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway. Any pedestrian crossing a roadway at a point where a pedestrian tunnel or overhead pedestrian crossing has been provided shall yield the right-of-way to all vehicles upon the roadway.
- Sec. 154-1607. Walking along roadways. (a) Where a sidewalk is provided, it shall be unlawful for any pedestrian to walk along and upon an adjacent roadway. (b) Where a sidewalk is not provided, any pedestrian walking along and upon a highway shall, when practicable, walk only on the left side of the roadway or its shoulder, facing traffic which may approach from the opposite direction. (Code 1956, § 38-181)
- Sec. 154-3. Use of coasters, roller skates and similar devices restricted. No person upon roller skates or riding in or by means of any coaster, toy vehicle or similar device or hand-propelled vehicle shall go upon any roadway except while crossing a street on a cross-walk and when so crossing such person shall be granted all the rights and shall be subject to all of the duties applicable to pedestrians. (Code 1956, § 38-127)

St. Bernard Parish

- Sec. 20-190. Pedestrians walking along roadways. Where a sidewalk is provided, it shall be unlawful for any pedestrian to walk along and upon an adjacent roadway. Where a sidewalk is not provided, any pedestrian walking along and upon a highway shall, when practicable, walk only on the left side of the roadway or its shoulder, facing traffic which may approach from the opposite direction. (Ord. No. 30-83, § 1005, 10-26-83) Secs. 20-191--20-200. Reserved.
- Sec. 20-34. Pedestrian-control signals. Whenever special pedestrian-control signals exhibiting the words “Walk” or “Don’t Walk” are in place, such signals shall indicate as fol-

lows: (a) Walk. Pedestrians facing such signal may proceed across the roadway in the direction of the signal and shall be given the right-of-way by the drivers of all vehicles. (b) Don't Walk. No pedestrian shall start to cross the roadway in the direction of such signal, but any pedestrian who has partially completed his crossing on the "Walk" signal shall proceed to a sidewalk or safety island while the "Don't Walk" signal is showing. (Ord. No. 30-83, § 404, 10-26-83)

What is Missing in Louisiana Bicycle and Pedestrian Related Law

The Regional Planning Commission reviewed Oregon State law,[15] as one of the most progressive set of bicycling and pedestrian statutes in the country. The following is a summary of notable statutes Louisiana lacks:

- Mandated drain design and installation for street drains, sewer drains, storm drains and other similar openings in a roadbed over which traffic must pass that are in any portion of a public way, highway, road, street, footpath or bicycle trail that is available for us by bicycle traffic.
- Prohibition of pedestrians from crossing a highway at any place other than within a marked or unmarked crosswalk
- Bicycle racing is permitted on any highway in this state upon the approval of, and under conditions imposed by, the road authority for the highway on which the race is held.
- Failure to yield to vehicle; penalty. Pedestrian fails to yield the right of way to a vehicle upon a roadway when the pedestrian is crossing the roadway at any point other than with a marked crosswalk or an unmarked crosswalk at an intersection.
- Failure to use pedestrian tunnel or overhead crossing; penalty; if crossing a roadway other than by means of a pedestrian tunnel or overhead pedestrian crossing when a (public) tunnel or overhead crossing serves the place where the pedestrian is crossing the roadway.
- Establishment of appropriate bicycle and vehicle hand signals to indicate a left turn, a right turn, and a stop or decrease in speed.
- Unsafe operation of bicycle on sidewalk; penalty: (a) suddenly leave curb into path of vehicle, (b) no audible warning to pedestrian when overtaking and passing and does not yield right of way to pedestrian, (c) careless operation, (d) speed greater than ordinary walking speed.
- Bicyclist on sidewalk or crosswalk has the same right and duties as a pedestrian.
- Failure to use bicycle lane or path when it is adjacent to or near the roadway.
- Extensive explanation of improper use of lanes; penalty. Exceptions include overtaking other vehicles including bicycles, executing a left turn, and to avoid hazardous conditions.
- Failure to signal turn with exceptions for when both hands are needed on handlebars for safety of cyclist.
- Helmet requirement for persons 16 years old or younger unless it violates a religious belief or practice of the person; penalty $25.
- Evidence of lack of protective headgear is not admissible in court.

[15]Oregon statutes are nicely summarized by the Oregon Department of Transportation at www.odot.state.or.us/techserv/bikewalk/plan_app/statutes.htm

- Improper opening or leaving open of vehicle door; penalty. Must not interfere with movement of traffic (bicycles are considered vehicles and therefore traffic) or with pedestrians and bicycle on sidewalks and shoulders.
- Driver of a vehicle commits offense of failure to yield to a pedestrian on a sidewalk if the driver does not yield the right of way to any pedestrian on a sidewalk.
- Class B infraction if driver of a vehicle fails to yield to a pedestrian proceeding under traffic control devices.
- Class B infraction if driver of a vehicle making a right turn at a red light (permitted) and fails to yield to a pedestrian lawfully within an adjacent crosswalk.
- Failure to stop for loading of transit vehicles; penalty. Exceptions including passing on a one-way street and at a speed not greater than is reasonable with due caution when transit vehicle is stopped at curb or is officially set apart for the exclusive use of pedestrians and is protected.
- Offense if a person obstructs cross traffic by entering an intersection or marked crosswalk when there is not sufficient space without obstructing the passage of other vehicles or pedestrians whether or not a traffic control device indicates to proceed.
- Mopeds are not allowed on sidewalks, bicycle paths or bicycle lanes.
- Establishment of a state Bicycle and Pedestrian Advisory Committee; eight members, four-year term, meet four times a year. Bicycle industry representative, environmental representative, land use planner, member from state recreational trails and one person under age of 21.

The laws noted above go beyond those passed in Louisiana. Oregon law included similar laws described for Louisiana (above), but typically they have more detail and clarification. Please note Oregon laws listed here are those that the Louisiana legislature normally relegates to the municipal government. By taking the lead, the state of Oregon set the precedent for local government regulation of local roadways. There is no reason why Louisiana law and municipal law should not be more uniform for bicycle and pedestrians. If state laws were more specific, it would assist police officers in enforcement of the law and help citizens to understand the law as they move between jurisdictions. It would also make education of the law less complex. We recommend the following laws be passed at both the state and municipal level:

- In particular, laws to prevent cyclists from being "doored" are necessary. This is a common problem for bicycle commuters. A cyclist was recently thrown in front of a truck and killed in uptown New Orleans when the door of a parked car was opened in his path.
- Clarifying that cyclists have the same duties and responsibilities as a pedestrian when on a sidewalk would help them to understand how they should behave in difference locations, on and off the street.
- Mandated grate design would speed the installation of bicycle-friendly grates throughout the state. Too often cyclists are thrown from their bikes when their tires become stuck in a wide grate opening. This could be easily changed.
- The Regional Planning Commission has found a high correlation of traffic incidents and deaths near transit routes. With this information, the inclusion of laws controlling the movement of traffic near transit vehicles unloading and loading individuals is imperative. Too many people are hit while rushing to or exiting a bus or streetcar by impatient drivers.

- Laws to control the behavior of motorists at intersections when pedestrians are present are necessary and urgent.
- A law to limit pedestrian mid-block crossings where no signal or markings are located would reduce hazards and increase safety tremendously, particularly in the New Orleans region where 60% of all pedestrian incidents occur in the state of Louisiana.
- In general, all state laws applicable to bicyclists and pedestrians should be reviewed and enhanced by a newly established group and submitted as a comprehensive package for adoption.

Conclusions and Recommendations

The Louisiana Department of Transportation and Development (DOTD) produced the 1998 Statewide Bicycle and Pedestrian Master Plan, and is in the midst of developing a statewide Bicycle Goals Map and a statewide Route Suitability Map for Louisiana. The Goals and Suitability Maps will also produce an algorithm for measuring a roadway's bicycle friendliness. Additionally, the DOTD Transportation Enhancement Program favors projects that provide for use of bicycles as a means of transportation, specifically pointing out that the project must have transportation potential as opposed to being simply for recreation. Language in the introduction of the Transportation Enhancement Program manual available at their web site in fact states "The goal is to work toward building a more balanced transportation system that includes pedestrians and bicyclists as well as the motoring public."

There is little evidence that the goals stated in the 1998 Louisiana Master Bicycle and Pedestrian Master Plan have been substantially acted upon. It is significant that the Plan was never officially adopted by Louisiana policy makers. The Bicycle Goals and Suitability Maps were required in 1998 federal transportation legislation but execution was delayed until 2003-04.

In 2003, the state produced and adopted the Statewide Transportation Update. This document included a broad overview of policy goals and named projects within a three tier financial plan. It did support routine accommodation of the bicycle but did not specifically name any state highways that would be included for bicycle improvements. While the substantial inactivity by the state DOTD over the last ten years to incorporate bicycle planning for state roads suggests cycling was a low priority, there has been some effort recently to institutionalize bicycle and pedestrian issues.

The few limitations in state and local law, particularly for bicycle use, are significant. Based on the lack of current bicycle accommodations in urban areas and the slow shift of attention at the state level, we can only conclude that historic transportation investment patterns overlooked the needs of cyclists and pedestrians while the law, for the most part, did not hinder the user. Most provisions in the law are for the basic safety of all cyclists and pedestrians. It implies that state and local policy makers have not adequately moved to incorporate existing federal policies to bring forth comprehensive laws, policies, design and construction of facilities. The inclination to favor the automobile is evident, not only in the project area, but across Louisiana and the United States since World War II. As a result, most citizens are denied the choice to bicycle and walk safely because of lack of adequate facilities.

In ISTEA and TEA-21, Congress firmly established the principle that the safe accommodation of bicycling and walking is the responsibility of state and local transportation agencies and that this responsibility extends to the planning, design, operation, maintenance and management of the transportation system.[16]

Current federal transportation law says: Bicycle and pedestrian improvements are an eligible activity in all

[16]America Bikes, 2004

the major funding programs. State and local transportation plans are required to include consideration of bicycle and pedestrian projects and programs. Bicycle and pedestrian facilities shall be considered in all new construction and reconstruction projects. Bridges being replaced or rebuilt with federal funds shall be replaced so as to provide safe accommodations for bicyclists (where bicyclists are permitted at each end of the bridge). No project or regulatory action shall be approved that severs an existing major route or has a significant adverse safety impact on bicyclists or pedestrians unless a reasonable alternative exists or is to be provided.[17]

The perception of liability and thinking it is outside our "highway" responsibility continues to be touted as the reason for the state and local jurisdictions to shy away from accommodating bicyclists and pedestrians adequately on state and local routes. It is necessary for all jurisdictions to confront the problem head on and together. This is important for several reasons. Pedestrian and bicycle activity are a valid component of the transportation system. We have a responsibility to address the problems, especially if it cannot happen without our involvement. Higher aspirations for design, state and local law, law enforcement or education are required for success. Second, safety statistics are telling. Ten percent of all traffic fatalities in the state of Louisiana are pedestrian-related. Louisiana is ranked 47th among all the states for pedestrian fatalities per 100,000 population. Louisiana is ranked 45th among the states for bicycle fatalities. With this in mind, the Regional Planning Commission makes the following recommendations:

Recommendation One

The Regional Planning and all Metropolitan Planning Organizations throughout the state of Louisiana should work with the state legislature and DOTD to adopt the 1998 Bicycle and Pedestrian Master Plan and to daily incorporate the goals stated in the Statewide Transportation Plan Update.

[17]America Bikes, 2004

Recommendation Two

Prioritized roadways identified in the Goals and Suitability Maps should be aggressively upgraded to accommodate cyclists safely on state maintained roadways.

Recommendation Three

The Regional Planning Commission should work with the Louisiana legislature and the Jefferson Parish Council to repeal LRS 32:197(c) and Jefferson Parish Ordinance 36-247C.

Recommendation Three Discussion

State Law (RS 32:197(c) states that, "Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway." Jefferson Parish Codes of Ordinances, Sec. 36-247(c), reads precisely the same. Bicycle advocates consider this provision to be overly restrictive and fear that as more separate paths are constructed the law may evolve toward prohibiting the use of bicycles on the roadway network altogether. The bicyclists are seeking to preserve the freedom to use the roadway network, and to make the roadway network more bicycle friendly. They see this provision of the law as an obstacle to attaining the goals and aspirations of ISTEA, TEA-21 and the Statewide Bicycle and Pedestrian Master Plan.

Recommendation Four

The Regional Planning Commission should work with the Louisiana legislature, the Louisiana Department of Transportation and local parish governments to establish a comprehensive, proactive approach to prioritize public investment and institute proactive policies for cycling corridors and pedestrian intersections and areas. Liability will be reduced by acknowledging a need, by defining, prioritizing and phasing projects, and demonstrating an aggressive program to improve safety. Liability can be minimized in a court of law by demonstrating a well considered planning process and will be made defensible through incremental implementation.

Recommendation Five

The Regional Planning Commission in partnership with the Federal Highway Administration, the Department of Transportation and Development, state bicycle and pedestrian advocates and the Louisiana Highway Safety Commission should work together to influence significant changes in state statutes to comprehensively clarify and detail the rights and responsibilities of motorists, bicyclists and pedestrians and institute new progressive laws that will help reduce incidents and fatalities in all areas of the state (urban and rural).

Law Enforcement Practices

Law Enforcement Practices

Introduction

Any bicycle plan needs the proper physical and institutional infrastructure in place to be successful. This chapter focuses on some of the institutional aspects. Bicycle ridership will increase if people feel that bicycling is a safe and convenient mode of transportation. Law enforcement officials must protect their rights; equally law enforcement officials have the duty to make sure that bicyclists behave in a safe manner. Information collected from the police about their current bicycle enforcement efforts helps to give planners an idea of where this institutional infrastructure currently is compared with where it needs to go. Data on bicycle incidents—accidents, injuries and fatalities—can enhance the effectiveness of both bicycle safety enforcement practices and education programs.

The information collected suggests that biking is an extremely low priority for public officials. The police claim that it would be more important in their eyes if their superiors required it. Hence any meaningful institutional change must include some top down transformation.

Current Law Enforcement Practices Supporting Bicycle Safety

Research Method

Data for this section was primarily collected through the use of an informal phone survey given to the different precincts. The police departments were difficult, though not impossible, to contact. With few exceptions, it took several phone calls from our Office to a precinct before an officer would call us back. To be fair, an officer's primary responsibility is to patrol, thus it is understandable that our requests for information would not receive the utmost attention. Given the hectic and varied schedules of the student team responsible for collecting this information, it was difficult to find a mutually available time with most officers.

The police that were easiest to contact were those that took a personal interest in bicycles. Gretna Bicycle Officer Phil Saladino stands out as one of our earliest contacts. In addition, the bicycle officers of the 1st District of NOPD showed an interest in our project.

Findings

Throughout the region current law enforcement measures to protect bicyclists are varied but generally weak. A phone survey was developed and addressed to local police officers. The survey was intended to assess the state of bicycle safety enforcement practices in the area through an assessment of the attitudes of police officers. There was some difficulty in getting in contact with officers capable of answering our questions. One of the largest problems was that as soon as we mentioned bicycles we were usually told to contact the Quality of Life or patrol officer. Having no insight into police organizations, we tried to speak with whoever was sent our way. It took a while to realize that we were most interested in the opinions of the traffic officers in different districts. Additionally, the police were, in general, difficult to speak with on the telephone. With most of their time spent on patrol and a lack of organizational e-mail, it was difficult to reach most officers.

The practices in bicycle enforcement vary somewhat by municipality. According to a Kenner police officer, his district has little need to increase bicycle enforcement practices because bicycling is of little necessity to its residents. There have been almost no bicycle related incidents within the past 10 years. Despite this perception, the highest recorded crash incident location in the entire Metropolitan area is in Kenner (Veterans and Loyola). Meanwhile, Sgt. Rudolph M. Thomas, Supervisor of the 2nd District of the New Orleans Police Department admits that little attention is paid to bicycles, but he wishes that the situation could be different. In fact, he would like to see his own police officers on bikes. He believes that having bicycle officers would aid the police in interacting with the community and make them more aware of the street life in the district and the needs of its residents. He sees biking as an effective and friendly tool of law enforcement, but he asserts that the only way to get enough bicycle officers out there is for City Hall to want them. Surprisingly, the 1st District currently has some

bicycle officers who they even feature on their website at (http://www.nopdonline.com/1stbike.htm), however they are self-trained. As these officers will attest, getting police officers on bicycles within the city can help the officer and the community.

In contrast to the rest of the region, Gretna seems to be the most advanced municipality in terms of bicycle awareness of its officers. In fact, they have an official Bicycle Officer, currently Officer Phil Saladino. He frequently stops bicyclists who are heading down the wrong side of the street and attempts to have children wear helmets. The Gretna officers are seeking to improve safe riding behaviors. They are a good source for better bicycle enforcement practices.

What became most apparent from talking with officers was that bicycles are barely even mentioned in the Police Academy and not seriously regarded. Just about all tickets given to a bicyclist are in relation to accidents that occurred. Other officers simply regard bicycles as nuisances on the road. When data collection for this report started, the police pointed us towards their Quality of Life officers who cover issues such as stolen bikes and missing pets. Yet we needed information from the traffic officers. This assumption by the police reveals the need for education of the police officers.

Trauma Data

Data are collected by Charity Hospital's Trauma Center on any injured person brought to them from an accident that involves a bicycle. These data include most of the serious bicycle injuries in Orleans Parish. By law, all serious trauma cases in Orleans Parish must be brought to them. In addition, there are some cases from surrounding parishes brought to Charity. If the victim is conscious and the injury not deemed critical enough, the patient will be brought to their regular hospital. Additionally, cases in which the severity of the injury is more serious than originally assessed or the health of the patient declines are typically transferred to Charity. Therefore their data contains mostly serious injuries such as broken bones, unconsciousness, and concussions. The data were supplied to us by Sara Levine, Trauma Prevention Educator at Charity Hospital.

The manner in which the hospital collects data leaves some gaps in the information. Different people collect it from different records within the hospital; there is no standard form. For example, it is not consistently asked whether or not a helmet was worn. These data do not include location, time, or apparent cause of the crash.

Table 22
2001 Bike Injuries by Race, Age and Gender

		Male	Female
Black	Over 18	42 cases (age range: 20-65)	6 cases (age range: 35-49)
	Under 18	44 cases (age range: 5-17)	11 cases (age range: 6-17)
White	Over 18	20 cases (age range: 23-66)	5 cases (age range: 22-45)
	Under 18	2 cases (age range: 7, 17)	1 case (age: 7)
Asian	Over 18	None	None
	Under 18	1 case (age: 16)	None
Other	Over 18	3 cases (age range: 39-50)	None
	Under 18	None	None

Source: Charity Hospital Trauma Data

Observations on Incident Data

From 1996-2001, there were 12 bicycle related fatalities in the city of New Orleans, while in 2001 alone there were 135 bicycle related injuries brought to Charity Hospital.

The Charity Hospital Trauma data give the fullest picture of the magnitude of the problem and the populations affected, while the New Orleans bicycle fatality data gives the most detailed information of the circumstances in which people are seriously and fatally injured. These data can show officials where the most constructive education dollars can be spent in terms of preventing injuries to those most susceptible. For example, the large number of nighttime bicycle fatalities in Orleans Parish points to the need to increase the distribution of bicycle lights much like the programs that distribute helmets at steep discounts. Many of the incidents occurred because the victim disregarded a red light or stop sign, which should be made a key point in bicycle safety education campaigns. Additionally, most of the fatalities occurred at intersections with collector roadways.

Of the injury and fatality cases in Orleans Parish, a disproportionate number are black males. According to the 2001 data from Charity Hospital, patients ranged in age from 5 to 66 years old. The data shows that in New Orleans males are more likely than females to be involved in a bicycle accident and blacks more than whites. What is most alarming is that there were 44 injuries sustained by black males under 18, but only 2 in the same age group of white males. 10 out of the 12 fatalities in the period of 1996-2001 were black males.

Data Collection Recommendations

Throughout this process many different sources of data were found. While in its most basic form all the data report the number of accidents and fatalities involving bicyclists, some data contain more complete information than others. The source of this can be linked to a lack of focus on the bicycle overall. Most of these data were collected under the auspices of accidents or trauma cases. To improve the availability of bicycle data available in the New Orleans area so that smart planning decisions can be made, we suggest the following:

- ***Collect the data in a well-organized and retrievable manner***. It should be possible to request bicycle data from local and state traffic agencies and retrieve it quickly. To aid in this, an effort should be made to record data involving bicycles under their own category.
- ***Make the data complete***. Include many fields that are appropriate to understanding the demographics, cause and seriousness of bicycle accidents. Include fields such as Age, Race, Sex, Time of Day, Location, Description of the Accident, etc. All of the data fields delivered by Charity Hospital contain information categories that should be collected by all agencies with the addition of accident location, apparent cause, and time of day.
- ***Standardize the information collected***. Currently Orleans Parish does not report its accident information to the state because it codes it in a different format. All parishes should use the same format to collect bicycle data so the efforts can be coordinated statewide.

Arrests and Convictions due to Bicycle Fatalities

Over the last five years in Orleans Parish, there have been two arrests for bicycle fatalities. Both incidents involved drivers driving under the influence of alcohol. In August 1997, the perpetrator of a hit and run fatality was located and arrested with a BAC of .11%; in April 2002 a driver with a BAC of .19 was arrested after striking a killing a man sitting on his bicycle on the edge of the street in front of his home. We have not learned whether these drivers were convicted.

Law Enforcement Recommendations

Most of the injuries and fatalities could be avoided with better bicycle education programs targeted at the most vulnerable segments of the New Orleans population. Bicyclists must learn that the rules of the road apply to them as well. At a minimum, yielding at lights and stop signs is required, while wearing helmets and using lights at night should be actively encouraged.

With all of these patterns in mind, it is important that the police take notice of bicycles, yet we understand that the police have many other things to look out for. Hence the goal is to move bicycles from a 'Quality of Life' issue to a traffic issue within the police department. This helps the police and the community recognize that the use of bicycles as more than just a means of childhood recreation. We need to make the streets safe for those who would like to—or who must-commute on their bicycles. With these facts and objectives in mind, we recommend the following enforcement guidelines.

- ***Increase bicycle education for police officers***. Training within the police academy as well as continuing education programs should include sections on bicycles as a form of transportation. The rules and regulations concerning bicycles should be clearly communicated. Currently, little, if any, information is taught about bicycles as a legitimate means of transportation.
- ***Lead by example***. Area bicycle police officers should lead by example. An effort should be made to ensure that helmets are worn properly, bicycles are properly equipped, and that officers know how to ride safely themselves.
- ***Officers should consider a warning program for bicyclists***. In order to increase awareness of proper cycling techniques, a traffic violation warning program should be considered. Bicyclists in the area generally do not expect to get stopped for traffic violations. An unexpected program of citations of cyclists for violating traffic laws could also be perceived as an unequal targeting of low-income and African-American bicyclists. The initial goal of this awareness campaign should be simply to inform the cyclist that s/he is behaving in a potentially usafe manner.
- ***Enforce right-of-way regulations on arterial and collector streets*** (i.e. Canal, Carrollton, South Claiborne, Veterans Blvd.) Essentially allow bicyclists to make decisions about their riding habits on back roads and residential streets, but make sure that bicyclists follow a reliable set of predictable behavior where traffic is heaviest.

  Violations to watch for in regards to bicycles

  - Riding in the wrong direction
  - Riding on sidewalks
  - Helmet violations (for those where a helmet law applies)
  - Riding without lights at night
  - Failing to stop at stop signs and stop lights

  Violations to watch for in regards to cars

  - Driving too close to bicyclists
  - Harassing bicyclists (constant beeping, attempting to move bicyclist into the gutter)
  - Not yielding to a bicyclist who has the right-of-way when making a turn
  - Speeding
  - Running red lights

- ***Allow non-hazardous bicycle parking***. Sometimes it can be tempting to ticket or even impound an improperly parked bicycle. However, people usually lock their bikes against meters, signposts, or other similar property on sidewalks because there is a lack of bicycle racks. Not allowing bicycle parking discourages bicycle use and

leads to greater traffic congestion. Thus, do not ticket for unauthorized bicycle parking except where it is clearly a hazard or sufficient official bicycle parking is available nearby.

- ***Increase bicycle enforcement practices in crowded pedestrian areas***. Much like cars present the biggest threat to bicyclists on the road, bicyclists present the greatest threat to pedestrians on pedestrian streets. The French Quarter is a zone that deserves particular attention. A bicyclist should respect the safety of pedestrians. At the same time, bicyclists ride on sidewalks because they feel threatened on the streets. A dual policy of improving conditions on the streets for bicyclists and ensuring pedestrian safety on sidewalks is important to consider.
- ***Create a Bicycle Safety School***. As a mean of educating the public, a Bicycle Safety School should be created. The school can educate through the use of ads, pamphlets, videos, and even formal classes. In conjunction with law enforcement, tickets could be issued in which the violator must attend a class, watch a video, or read a pamphlet. The school should also feature bicycle helmet and light giveaways. For example, a helmet violator might get a ticket, but if they go in and pick up a free helmet with instructions on how to wear it, the ticket is erased.

Recommendations for Local Officials

Classify bicycles as traffic. There is a tendency to regard bicycling as purely a recreational activity. Include bicycles in all traffic planning, much like cars and pedestrians are.

Provide funds to police for bicycle training and equipment. Bicycling is seen by the police as a low priority for both police use and targeted enforcement of civilians. By providing funds specifically for bicycle use and enforcement, the municipalities effectively tell the police that bicycling is becoming a greater priority. Placing more officers on bicycles has many benefits, both for bicycle safety and community relations.

Request and monitor bicycle injury and fatality data. Currently bicycle incident data is mixed in with car traffic and pedestrian data in the New Orleans area. One of the largest reasons for this is that there is almost no perceived need for separate data collection by the police and the state. If the city simply requests such data with some level of frequency, collecting and monitoring these data will become a priority

Conclusion

Bicycling in New Orleans has a great deal of room for improvement. The police can play a vital role in creating that improvement. Better understanding of the bike as part of traffic on the part of the police officer is a first step, while understanding the safety issues and communicating them with the public is a close second. Ultimately the role of law enforcement officials is to allow cyclists to feel safe on the streets. With that, greater demand for bicycle accommodations will be fostered much more easily.

Table 23
Information Requests on Bicycle Enforcement to Local Police, Spring 2002

Unit/ Municipality	Attempted	Interviewed	Summary
NOPD 1st District	X	X	Bicycle officers effective in dealling with bicyclists. Bicycling is not a priority of NOPD. Policemen should be on bikes more
NOPD 2nd District	X	X	Very little attention is paid to bicyclists, but more policemen should be on bicycles. It would help the police do their job better
NOPD 3rd District	X		
NOPD 4th District	X	X	Priorities do not allow for bicycle awareness
NOPD 5th District	X	X	Cite bicyclists in relation to accidents, but not proactively
NOPD 6th District	X		
NOPD 7th District	X		
NOPD 8th District	X		
Harahan	X		
Kenner	X	X	Room for improvement in bicycle training for officers, but there is no real need.
JPSO 1st District	X		
JPSO 2nd District	X		
JPSO 3rd District			
JPSO 4th District			
Mandeville			
Covington	X		
Slidell			
Gretna	X	X	Bicycle officer seriously attempts to promote safety of bicyclists: alerts people who ride the wrong way, enforces bicycle registration, and promotes bicycle education.
Plquemines Parish Sheriffs Office			
St. Bernard Parish Sheriffs Office			

Police Officer Phone Survey Questions

Interviewer:

Name of Officer:
Position:
City:
Department:

1. When on patrol do you pay attention to bicyclists?
2. Have you ever given a warning or citation to a bicyclist?
3. Have you ever given a warning or a citation to a motorist in relation to a bicycle incident?
   a. Why or why not?
4. From a realistic standpoint, should bicycle regulations be enforced?
   a. If yes, which ones? If no, why not?
5. What is the largest barrier to increasing bicycle regulation enforcement?
6. In the long term, what is the best way to increase bicycle safety in the New Orleans area?
7. In the short term, what is the simplest way to increase bicycle safety in the New Orleans area?
8. How were you trained to handle bicyclists?
9. What improvements could be made in the training process to increase police awareness of bicycles?

Education and Training

Introduction

Providing the public with bicycle education programs builds a strong foundation on which to promote increased bicycle safety and awareness. Determining the best type of education programs becomes the challenge. Many communities across the country have faced this problem and developed solutions to fit their needs. The first step for New Orleans' education program is to review programs underway in other cities. Another important consideration involves determining the appropriate segment of the population to target. Current programs available to the citizens of our region must also be reviewed. Once these steps are complete, changes, improvements and additions can be made to the bicycle education available in the New Orleans metropolitan area.

Progressive Bicycle Education Policies and Programs in Other States

We contacted various agencies and city governments in order to find the most progressive bicycle education programs in the country.[18] The education programs offered by the League of American Bicyclists serve as a basis for many bicycle education programs. Previously known as the Effective Cycling Program, the League's BikeEd program improves the basic ability to use a bicycle adding confidence and competence for pleasure, utility and/or sport under various highway, climate, terrain and traffic conditions. The courses combine classroom discussion and activities with on-road practice of the principles of riding a bicycle in traffic. The League has a program to certify cycling instructors.

[18]For a critical analysis of bicycle education programs, see Frederick P. Rivara and Jane Metrik, Training Programs for Bicycle Saftey http://depts.washington.edu/hiprc/report.pdf

Another very helpful general resource on bicycle education is bicyclinginfo.org, the web site of the Pedestrian and Bicycle Information Center. The site features bicycling education information targeted for different age groups, as well as links to successful programs.

League of American Bicyclists
http://www.bikeleague.org/educenter/education.htm

Pedestrian and Bicycle Information Center
http://www.bicyclinginfo.org

Education Programs for Children

School Programs

The Florida Traffic and Bicycle Safety Education Program provides a traffic and bicycle safety education program to Florida elementary and middle school teachers, community volunteers, law enforcement officers, and recreation leaders through workshops and certificate programs. The program aims to reduce childhood injuries and fatalities by teaching educators, parents and children the skills to be competent and safe as pedestrians and/or cyclists. Michael Klasmeier of the League of American Bicyclist recommended the Florida program. The Texas Super Cyclists program also focuses on training teachers. Teachers are trained to teach bicycle safety to 4th and 5th grade students in their physical education and health classes. In these classes, children learn bicycle safety and benefit from the physical activities.

Florida Traffic and Bicycle Safety Education Program
http://www.dcp.ufl.edu/centers/trafficsafetyed/

Texas SuperCyclist
http://www.supercyclist.org/

Bike Rodeos

A bike rodeo is a single day event, where small groups of children rotate through stations that emphasize different aspects of bicycle safety and riding skills. According to the Illinois State Police, James Sebastian, Arthur Ross, and Stanley Cosper, bike rodeos are the best way

to reach children for bicycle safety instruction. A bicycle obstacle course, uniformed officers, repair specialists, and role models make up the ideal components of a Bike Rodeo. The presence of uniformed officers and adults following the rules of the road influence children in their critical stages of bicycle habit forming. They can be held at schools or hosted by youth organizations.

Bike Rodeo Sites
http://www.ci.mesa.az.us/police/bikes/bikerodeo.htm

http://www.askeric.org/Virtual/Lessons/Health/Safety/SFY0005.html

http://www.dclxvi.org/chunk/travels/bikerodeo/

Web Sites: Illinois State Police have a website directed toward young riders. This site offers information on preparing to ride, tips and rules, the law, knowing the parts of a bike, and helmets. It also includes a bicycle safety test and a bicycle inspection form. Additionally, the Illinois State Police work with the Secretary of State to sponsor a Bike Rodeo at the State Fair.

Illinois State Police Bicycle Safety Command Center
http://www.state.il.us/kids/isp/bikes/default.htm

Education Programs for Adults

Employee Encouragement

Through local businesses, large group of adults can be educated about cycling and encouraged to bike to work. Bicycle user groups are groups of employees who advocate for bicycle friendly facilities and programs at their place of work. Employers and other organizations can also encourage cycling among employees through events such as the "encouragement lunches" hosted by James Sebastian and the Washington, DC Office of Transportation and Planning. Bike to Work Days/Weeks (see below) can be most effective when employers designate a workplace contact/recruiter/organizer.

Bicycle User Groups
http://cycling.gn.apc.org/bugs/bugs.html

Bike to Work Days/Weeks

Bike to Work Days often have check-in points so commuters can register for prizes, eat, and ride to work together. Some programs enlist celebrity bicycle commuters and encourage workplace coordinators.

Bike to Work Week 2002 (Madison, WI)
http://www.btww.org

Web Sites: The web site of the Washington Area Bicyclist Association provides cyclists with all the kinds of information they need to negotiate the city by bike: gear, rules of the road, routes, ride times, even a mentor network.

Washington Area Bicyclist Association
http://www.waba.org

Festivals, Rides and Parades

These kinds of events give bicycling advocates the opportunity to present cycling to communities in a non-threatening manner, make bicycle education fun, and can attract media coverage of safe cycling practices. Cities host different rides to encourage bicycling. Some cities have New Years Day Rides or Picnic in the Park rides. Parades can be used to impart many bicycle safety lessons including how to dress, what to take along when you ride, or what time of the day to ride. Media coverage of these events can communicate bicycling safety information, such as the importance of wearing a helmet, to a large audience.

The city of Tucson, Arizona, hosts a multi-week bicycle festival that includes multiple events that celebrate cycling.

Bike Fest 2001

In response to feedback regarding Critical Mass in Austin, a Courteous Mass Bike Parade is held once a month.

Austin's Courteous Mass Parade
http://www.bicycleaustin.com/

Public Service Announcements

The commercials, radio spots, and print advertisements that impart safe bicycling messages are produced by the Bicycle Transportation Alliance in Oregon. The commercials address the cyclists, the drivers, and the rules pertaining to bicycles. Michael Klasmeier from the League of American Bicyclists pointed to the Bicycle Transportation Alliance's education programs as exemplary. They utilize media including a newsletter, a web site, and an email digest.

Bicycle Transportation Alliance
http://www.bta4bikes.org

Pamphlets: Karen Frost says that you need to use many forms of education to reach people on different levels. Pamphlets produced by the University of California Davis, the Bicycle Transportation Alliance, League of American Bicyclists, and the Bicycle Federation of Wisconsin include information about bicycle safety, helmet use, traffic rules, and bicycle maintenance.

Videos: Independent companies also produce education programs and videos that they sell for bicycle education purposes. Videos allow specific audiences to view material on issues relevant to their individual needs. Issues commonly covered in videos include effective cycling.

An independent Florida company, Seidler Productions, produces such media.
http://www.streetside.com/sp/effectiv.html

Other Resources/Programs

Educators: The city of Madison has hired a Bicycle Educator. The position requires the educator to work with children in elementary physical education classes, encourage middle school students by sponsoring after school clubs and summer day camps, and coordinating commuter education programs. The bicycle educator also organizes bike rodeos and Bike to Work Days.

Madison Bicycling
http://www.ci.madison.wi.us/transp/bicycle.html

Conferences: Each year bicycle advocacy organizations hold conferences designed to teach professionals and advocates more about bicycle safety. The topics covered by the conferences include safe routes to schools, innovating teaching approaches, bicycle safety and the media, organizing events, injury prevention, and legislative changes. The League of American Bicyclists hosts two such conferences.

Bicycle Education Leaders Conference
http://www.bikeleague.org/educenter/wisconsin_conf.htm

National Bike Summit
http://www.bikeleague.org/involved/nationalbikesummit.htm

The people consulted for this compilation of education materials:

Michael Bluejay
Bicycle Austin

Michael Klasmeier
League of American Bicyclists

Karen Frost
Bicycle Transportation Alliance

Michael Farrell
Metropolitan Washington Council of Governments

James Sebastian
Office of Transportation and Planning
Washington DC

Illinois State Police

Arthur Ross
Pedestrian-Bicycle Safety Coordinator
City of Madison, WI

Educating Drivers
Existing Venues and Programs in the New Orleans Region

Louisiana Drivers Manual and Exam

The "Sharing the Road with Bicycles" section in the Louisiana Driver's Manual <www.dps.state.la.us/omv/chapter4.pdf> highlights general information about bicycling. When compared to other state driver's manuals, Louisiana's manual is lacking in informing drivers of laws, regulations, and procedures that need to be known and practiced around bicyclists. The one common regulation that all states mention is bicycles have the same rights to use public road as automobiles and must follow the same laws and signals as automobiles.

The Louisiana Drivers' Manual includes the following instructions to drivers and cyclists:

- Bicycles share the same rights to use the roads as automobiles.
- Allow plenty of room when passing a bicyclist.
- Avoid passing a bicyclist and on coming vehicles on a two-lane roadway.
- After dark, bicycles must use a front light and rear reflectors.
- Drivers should watch for bicycles on the side of the road.
- Bicycles may be hard to see at night because of headlights of oncoming traffic.

The following are points that are commonly made by some of the more progressive bicycling states in their driver's manuals:

- A three-foot distance must be present between the passing automobile and slower traveling bicycle.
- Be cautious of bicycles moving legally into the center of the lane because of road hazards or into the left lane because of a left turn.
- Bicycles must travel with the flow of traffic.
- Use caution when passing bicyclists because the air current created by a passing automobile may cause bicyclists to have an accident.
- Increase following distances behind bicyclists because bicycle-stopping distances are shorter than automobiles.
- Speeds of bicycles are hard to judge, so good communication and eye contact between auto drivers and bicyclists are needed to prevent accidents.
- Bicycles are required to have a rear reflector and a front headlight when traveling at night.
- Extra caution should be used when motorist are near bicyclists in wet, windy, or icy weather.

Many other points are printed in various driver's manuals that would be great additions to any manual. Two states, Oregon and Tennessee, have produced a very thorough section in their driver's manual. Pennsylvania has taken the best measures to educate both motorists and bicyclists by producing a bicycle driver's manual.

For Louisiana, revising the driver's manual and test is not difficult. According to Harlon Allbritton, a Commercial Drivers' License Consultant in the Louisiana Department of Public Safety (225/925-6738), a team is currently revising the manual. Once the revised content has been approved, the revised manual may be put into publication after the previous manuals have been totally distributed. The publication period is based on availability of the current manual. He suggests that recommendations of changes to the Driver's Manual be directed by letter to the office of Kay Hodges, Commissioner of the Office of Motor Vehicles, P.O. Box 64886, Baton Rouge, LA 70896-4886.

Drivers Manuals consulted	
Arizona www.dot.state.az.us/mvd/mvdforms/documents/dlmanual.pdf **California** www.dmv.ca.gov/pubs/pdfs_cadl/englishdl.pdf **Colorado** www.state.co.us/gov_dir/revenue_dir/mv_dir/forms.pdf/drvrbook.pdf **Florida** www.usmv.state.fl.us/handbook/English/ch_205.html#anchor225560 **Indiana** www.ai.org/bmv/driverlicense/manual/2000_drivers_manual.pdf **Iowa** www.dot.state.in.us/mvd/ods/dlmanual/section5.pdf **Kentucky** www.state.ky.us/agencies/ksp/pdf/section4.pdf **Louisiana** www.dps.state.la.us/omv/driversguide.html **Massachusetts** www.state.ma.us/rmv/dmanual/dmanual.pdf#Page=111	**Minnesota** www.dps.state.mn.us/dvs/DLTraining/DLManual/text/chapter3.htm#Bicycles **New Jersey** www.state.nj.us/mvs/dm99/99pt4.htm **New York** www.nydmv.state.ny.us/dmanual/chapter11-manual.htm#bicska **North Carolina** www.dmv.dot.state.nc/driverlicense/DriversHandbook/Chapter6/Bicycles.html **Oregon** www.odot.state.or.us/forms/dmv/37.pdf **Pennsylvania** www.dot.state.pa.us **Tennessee** www.state.tn.us/safety/graphics/Manual.pdf **Virginia** www.dmv.state.va.us/webdoc/pdf/manual/manual.pdf

Driver's Education Programs

In the city of New Orleans, there are approximately eight driving schools. These schools offer a variety of courses that will, upon successful completion, educate their students of the necessary regulations and/or abilities to safely operate a motor vehicle. Many of the schools listed in the official Yellow Pages phone book are all state accredited and court approved to teach driver's education. Courses available at select schools include 30-36 hour comprehensive driver's education course, six-hour pre-licensing course, refresher courses, defensive driving education course, and driver's education course for a commercial driver's license. Also, many schools in the greater New Orleans area offer a driver's education course to their students. These courses follow the same format as the 30-36 hour courses given by the driving schools.

The 30-36 hour courses and the six-hour pre-licensing courses are taught using the current driver's manual as a guide/handbook. The longer courses discuss the driver's manual more in depth, and many courses have a workbook to accompany the driver's manual. These courses prepare its students on how to pass the state driver's exam. Information that is not in the Louisiana State Driver's Manual (LSDM) is not discussed unless the student initiates it. Some instructors of these courses may include information that does not contradict the LSDM but is not in the LSDM. Instructors, generally, are required to stick to a guideline that will cover all of the necessary materials and information that a student will need to know to successfully pass the state driver's licensing examination. For these reasons, adding information about bicycling to the state driver's manual and exam would be the easiest way to ensure that bicycling is addressed in the curriculum of local driving schools.

Educating Bicyclists
Existing Venues and Programs
New Orleans Region

K-12 and youth organizations

The New Orleans Regional Bicycle Awareness Committee (NORBAC) has spearheaded bicycle safety and awareness in Orleans Parish and its surrounding parishes. This group has run many programs educating children, adults, and businesses on bicycle safety. With funding from the Metropolitan Safety Council and the Louisiana Highway Safety Commission, their programs have targeted major bicycle safety problem areas, such as teaching bicycle safety in St. Bernard Parish Schools after 3 children had been killed in bicycle accidents in the parish during one year. Funding and limited personnel restricts many programs. Efforts are being made to create sustained programs, but currently education programs can not be offered on a consistent basis.

Education programs offered by NORBAC through schools consist of a one-hour presentation and sometimes a bike rodeo.

> ***Orleans Schools, 2001-2002***: a mechanics class in one middle school; approved in four schools but restricted due to funding and limited personnel. When middle school mechanics are trained, they can participate in programs in elementary schools.
>
> ***Jefferson Parish***: Programs in the past covering 10 schools per year, no activity during last year.
>
> ***St. Bernard Parishes***: all schools have safety classes due to bicycle related children's deaths.

NORBAC organizes bicycle rodeos, which are one day, interactive demonstrations for bicycle handling skills, bicycle safety, and bicycle maintenance. Offered through scouts, churches, 4-H clubs, safety camps and hospitals in Jefferson, Orleans, St. Bernard, and St. Charles and St. Tammany parishes.

NORBAC offers bicycle safety programs at summer camps in St. Charles Parish

NORBAC trains bicycle safety instructors and mechanics for continuing education within each school or parish

Adult Education

NORBAC staffs booths at safety fairs at major local employers.

NORBAC offers a bicycle program development course for businesses and institutions, which teaches people how to create a bicycle program, bicycling group, and/or bicycle routes for a neighborhood or business (Mobil Oil and NASA, 2001).

Internet Sites and Printed Materials

Louisiana Safe Kids Coalition has bicycle safety brochures and sells quality helmets at discounted prices. 504-568-2508

Bicycle Map of New Orleans: Produced by the Center for Bioenvironmental Research at Tulane and Xavier Universities, shows lower and higher risk routes used by local cyclists, and includes information on safe riding, local bicycle shops, and local bicycle and bicycle planning organizations.

Jazz Fest Bike Map: In 2001, NORBAC made a map showing bicycle routes to the Jazz Fest and where to park your bicycle. 20,000 were printed, the bike shops gave out 3,000; 2,000 went to places all over the French Quarter; and the Crescent City Classic gave out 15,000.

Events and Rides

Bike New Orleans: Held in May, an annual 25-mile bicycle ride through the city of New Orleans. Sponsored by the YLC and Police Fraternal Organization.

The MS Tour for Cure: A two-day ride that begins in Hammond every October draws hundreds of area cyclists.

The Louisiana Bicycle Festival: Held on Father's Day, this annual event in Abita Springs hilights vintage, unusual, and custom-made bicycles, and features a parade. Over 600 people attended the 2002 festival, and it received extensive press coverage. It is hosted by the UCM Museum in Abita Springs. <http://ucmmuseum.com/bikefest.htm>

Sierra Club Bike Fest: Held for the first time in April 2002 at the Riverview Park on the Mississippi River Levee. With helmets for sale, free passes to the zoo, and an easy ride on the levee, it was an event of special interest to young riders and beginning cyclists. Television news coverage showed bicyclists being fitted for helmets.

Crescent City Cyclists offers weekly rides in New Orleans and country rides north of the lake. Provides an informal safety and route training. <www.crescentcitycyclists.org>

New Orleans Bicycle Club organizes training rides and races. www.gnofn.org/~nobc/

Other

NORBAC held a very successful End-of-School year Bicycle Safety press conference in May 2002. Three local television stations covered the event, effectively printing safe bicycling tips for children and youth.

The Louisiana Police Mountain Bike Association offers bicycle police training courses on the Tulane campus. Lt. Stanley Cosper, the president of the organization, is an internationally recognized expert and consultant on bicycle police work.

Recommended Education Strategies for Drivers and Bicyclists in New Orleans

After examining the various bicycle education programs in place in New Orleans and other parts of the country we recommend that the following measures be implemented for children and adults. In the New Orleans region, key messages of education programs for cyclists should be the importance of wearing a helmet, obeying all traffic laws, and riding with a light at night.

Priority Education Programs

The following three programs should be given priority implementation. These recommendations are based on feasibility and effectiveness in reaching different segments of the population.

Children

Because children can learn healthy behaviors more easily than adults, they are the most essential target of changes and improvements in bicycle education. Our first recommendation is to expand existing bicycle education program taught in the schools, especially middle school, to reach more schools more regularly.

Adults

To educate adults and to promote safety among adults, we suggest that additions and improvements be made to the DMV's driver's manual. Because most adult bicyclists are also drivers, the drivers' manual can be an effective tool for educating both drivers and bicyclists about relevant traffic laws, safe cycling practices, and safe driving near bicyclists. Suggested text for the driver's manual is included as Appendix.

Businesses can communicate easily with large groups of adults—their employees. Businesses should be encouraged to support employees who bicycle, just as they provide support (parking) to employees who drive. They can effectively provide incentives and safety information for employees riding bicycles to work, such as having showering facilities and encouragement lunches for the employees. This initiative should include government employers, such as local, state, and federal agencies, universities and schools, and other public agencies.

Once the above programs have been implemented, resources should be invested into the following programs to further increase bicycle education in New Orleans.

Children

Creative, community support for helmet usage. For example, provide incentives to children for helmet use and safe bicycle riding, such as coupons for free ice cream distributed by police officers to children demonstrating exemplary behaviors.

Adults

Public Service Announcements and Media Events should be utilized to alert bicyclists and drivers to the current bicycling laws and correct cycling procedures. PSAs and media coverage can lay the groundwork for increased enforcement of bicycle traffic laws through warnings and citations. In New Orleans, PSA's should focus on safe passing of cyclists, riding on the right, wearing a helmet and using a light at night. NORBAC's 2002 end of school year bicycle safety press conference demonstrated the potential of media events to inexpensively communicate a bicycle safety message to large television news audiences.

Distribution of a bicycle maps would help ensure that adults are aware of the least hazardous routes through the city. The map could be distributed along with a pamphlet on basic safety upon registration of bicycles.

Additional ideas that may be considered for future implementation include:

- Programs to promote use of lights at night, such as making inexpensive lights available to bicyclists.
- Festivals: encourage community involvement, promote helmet use, and riding in general.
- Community and bicycle policing: sets an example of safe riding for children and adult bicyclists.
- Advertising on or with RTA. Use to reach low-income audiences who may use bike or bike and bus as main forms of transportation.
- Bicycle Traffic Safety School: alternative to fines for bicycle violations.
- Safety training or videos for participants in large bicycling events, such as the Bike New Orleans or MS Tour for Cure.

Conclusion

Thirty percent of the Orleans Parish population does not drive automobiles. Many of those who do not drive utilize public transportation, while others walk or ride bicycles to get to where they need to be. Those who use bicycles as transportation for the most part ride dangerously on public streets. Bicyclists and drivers are not aware of basic safety practices and traffic laws related to bicycling. Many accidents that involve bicycles could have been prevented if these traffic laws and practices were followed. By having properly educated drivers and bicyclists, many if not all bicycle accidents can be prevented.

There are education programs in New Orleans to teach proper bicycle etiquette, but these programs are not organized in a cohesive manner. A small infrastructure is already in place, such as bicycle rodeos and safety classes in some schools. But due to the lack of funding, trained available people, and time, bicycle safety programs in our region for the most part address the troubled areas in a reactive instead of a proactive manner.

In the present moment, there are events, such as the MS Tour for Cure and Bike New Orleans, which promote bicycling to a large number of people and businesses. These events introduce bicycle awareness and safety to the participants, but there is no support system to encourage and reinforce the newly learned practices.

A change in people's thinking must also occur. The majority of people still view the bicycle as a toy instead of a means of transportation. Once this type of thinking is altered, bicycling will begin to receive the respect it deserves. As a mode of transportation, bicycles may share public roads with motor vehicles. Just like the programs

promoting seatbelts in an automobile, bicycle safety education programs can encourage a large scale change of thinking that can reduce harm from accidents.

To achieve these results, the small infrastructure for educating people needs to be established and maintained. Successful existing programs should be expanded to reach more children and adults, and be offered more regularly. Funding and trained personnel need to be made available. Once established, these educational programs may teach and train others to maintain and spread these programs to other areas that are in need. As these programs progress, support programs need to be in place to reinforce the proper practices.

We recommend education programs that will reach both children and adults, and that will reinforce a message of following the proper rules and regulations for bicycle safety. When adults begin to take the correct actions when riding a bicycle, children will begin to accept the safe and proper actions for riding a bicycle. We also recommend that programs for adults always speak to drivers as well as bicyclists.

Recommended Additional Text for Louisiana Drivers' Manual

Sharing the Road with Bicycles

Bicycling is a healthy form of recreation for many people, while for others it is an important form of transportation. Bicycles and motor vehicles can safely "share the road" without incidents, if both obey traffic laws and follow some simple safe driving and riding habits.

Bicyclists have the same right to use public roads as motorists.

When approaching and passing a bicyclist, motorists must:

- Share the road with bicyclists
- Before passing cyclists, look to see if there is loose debris on the pavement that might cause them to move into the center of the lane. Pass a cyclist only when it can be done safely, and give ample room between your automobile and the cyclist (min. 3 feet). Be careful that in windy weather or the air turbulence created by your vehicle at high speeds may cause bicyclists to loose control and cause an accident.
- Avoid passing between a bicyclist and on coming vehicles on a two-way roadway. Slow down and allow oncoming vehicles to pass. Then move to the left to allow plenty of room to pass the cyclist safely.
- If you are pulling a trailer, allow for extra passing room when passing bicyclists.

When turning near bicyclists:

- When turning right after passing a bicyclist, leave ample room so you do not cut the cyclist off when you slow to make a right turn.
- When turning left in front of on coming traffic, be careful of bicyclists. Bicyclists' speeds may be difficult to judge because of their slim profiles; bicyclists may easily reach speeds up to 35mph.

Watch for bicyclists:

- In poor weather or on poorly maintained roads, increase your following distance. Bicycles are able to stop faster than automobiles, and they are more susceptible to irregularities and debris on the road than automobiles.
- When opening your door, check for bicyclists.
- At night, be extra alert for bicyclists, and avoid using high beams because the bright lights may blind bicyclists.

- Bicyclists who ride in the center of the lane may be avoiding debris or other hazards.

When riding a bicycle you must:

- Use hand signals to communicate your actions with other drivers on the road.
- Obey the instructions of official traffic control signals and signs. Stop at stop signs and for stoplights just like a motor vehicle.
- Ride on the right hand side of the road with traffic; unless, when making a left hand turn, where riding on the left side of the turn lane should be done. You may ride in center of lane to avoid hazards.
- Yield to pedestrians on crosswalks and on sidewalks.
- When riding at night, bicycles must have a white front light and a red rear light or reflector visible from the rear.
- Carry no more persons than the number for which the bicycle is designed and equipped.
- Two cyclists may ride side-by-side, but it is safer to ride in a single file line.

Safe Routes to School

Introduction

While generations of Americans remember walking and biking to their neighborhood schools, the present generation of children has, unfortunately, been left out of this important right of passage. As late as the early 1970s, 66% of American children walked or rode their bicycles to school. Now, however, only 13% of children are afforded this experience (NHTSA 2002, p. 6). This tremendous decrease in childhood walking and biking, among other factors, has helped fuel a dangerous rise in childhood obesity.

In addition to health concerns associated with the present pattern of school transportation, the use of personal cars to transport kids to and from schools has created high levels of congestion in and around school areas. A study in Marin, California noted that 21% of all morning trips resulted from parents driving their children to school (NHTSA 2002, p. 4).

The Safe Routes to School movement has emerged as a way to help create healthier and safer communities. Developed by the Federal Highway Traffic Safety Administration and pioneered in Marin County California and Boston in 2000, the Safe Routes to School movement seeks to create safer bicycle and pedestrian routes to and from schools. After successful pilot projects in California and Massachusetts, the Safe Routes program has begun to spread around the country.

Safe Routes to School: An Emerging Safety and Health Model

The program centers on incorporating one or more of the following four key strategies:

- *The Encouragement Approach* encourages participation in walking and biking through events and contests
- *The Education Approach* helps to increase safety skills through educational outreach activities
- *The Engineering Approach* seeks to improve the physical infrastructure around schools to improve safety
- *The Enforcement Approach* uses a law enforcement presence to help increase traffic safety around school areas (NHTSA 2002, p. 6).

The specific use of these four interlocking strategies is, however, predicated on existing local conditions. A Safe Route to School Program is not a top-down prescriptive approach. Instead, the program allows a community to develop school-based programs based on the maturity of their individual capacities to support the various aspects of the program. To help identify these important local capacities, the program encourages the creation of a broad partnership between school administration and staff, parents, and local government agencies. Decisions on the specific elements of implementation are then mutually agreed upon.

The national Safe Routes to School toolkit offers informative aids in getting a program started and off the ground at your school (http://www.nhtsa.dot.gov/people/injury/pedbimot/ped/saferouteshtml/toc.html). It provides numerous classroom activities and school-wide events to educate and involve children and parents in fun ways. The toolkit describes ways a community can evaluate their streets and identify the needed capital projects, monitor progress, and organize for success. The toolkit provides forms that can be used to begin a dialogue with parents, make media announcements, and conduct travel surveys to count pedestrian, bicycle, and cars so that existing conditions can be quantified.

Once the program has gained momentum, efforts are usually made to help improve the existing infrastructure around the school. For instance, a Safe Routes to School program may focus on identifying and delineating a program of capital projects that needs to be accomplished around a school to improve safety. Elements that may be identified include: restoring or widening sidewalks, installing new sidewalks where disconnects exists, installing new pedestrian signal heads at crosswalks, and providing well-defined, highly visible cross-

walks in the neighborhood. Identifying and getting consensus on a list of projects is jointly undertaken with the agency that is responsible for that roadway. This usually will include the municipal or parish engineering and planning departments.

Another important step that should be taken to help enhance the likelihood of the program's success is the establishment of clear goals for the community to strive to meet. The Center for Disease Control has developed a series of goals, the Healthy People 2010 objectives, that provide guidance on improvements that should be achieved in this area. The CDC proposes that local communities should strive to:

> Increase the proportion of children's trips to school within 1 mile made by walking from **31% to 50%**
>
> and
>
> Increase the proportion of children's trips to school within 2 miles made by bicycling from **2.4% to 5.0%**.

These modest goals could be incorporated into the appropriate local governmental agencies long-term vision statements to help spur improved conditions.

Safe Routes to School Funding

New program funding specifically for Safe Routes to School is proposed in the next reauthorization of federal transportation legislation called SAFETEA or Safe, Accountable and Efficient Transportation Equity Act of 2004 (through 2009). Currently the country is operating under a continuing resolution of the existing federal transportation legislation, TEA-21 (1998), which expires in May 2005 and has no Safe Routes to School program funding.

SAFETEA stipulates $70 million dollars be apportioned to states for planning, design, and construction of infrastructure on public roadways within a two mile vicinity of schools. The program also includes funding eligibility for behavioral programs. It is directed for the use of primary and secondary schools (K-12). Those able to utilize funding include state, regional and local agencies. Eligible projects include sidewalk improvements, traffic calming and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bicycle parking facilities, traffic signal improvements, and pedestrian-railroad grade crossing improvements. Eligible behavioral program improvement projects include public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, and student sessions on bicycle and pedestrian safety, health, and the environment.

Federal funding for locally owned infrastructure is generally limited today. Typically residential street improvements are the jurisdiction of the municipality or parish and, therefore, are not usually a high priority of the Metropolitan Planning Organization's Transportation Improvement Plan (TIP) that is responsible for roadways of regional significance. New federal eligibility essentially elevates the priority of residential street improvements as they relate to children and their local routes to school. At this time, it is unknown whether SAFETEA Safe Routes to School funding, as proposed, will be controlled by the LADOTD or be allocated to the Metropolitan Planning Organizations. Most likely it will be designated a competitive program by LADOTD, much like transportation enhancement projects are handled today.

The Extent of the Youth Pedestrian Crash Problem

To better understand the dynamics of crashes around schools locally, a detailed examination of youth pedestrian crashes was undertaken. Pedestrian crash data for the core, Eastbank area of Orleans and Jefferson parishes were sorted to focus on crashes involving youth under 18. For more background data on the pedestrian crash problem overall, a detailed analysis of the full dataset was presented in Chapter 5. Chapter 7 added

to this analysis by exploring the prevalence of crashes around schools.

In this section, three aspects of the youth crash problem are explored: the extent of the youth crash problem, the time of day of crashes, and the age distribution of youth involved in crashes. In terms of the extent of the crash problem, an unacceptably high number of youth crashes appear to be occurring in the core, eastbank area of Orleans and Jefferson parishes. Between 1999 and 2002, 874 youth pedestrian crashes were recorded. Of these, 353 of the crashes resulted in "moderate" injuries, 52 resulted in "severe" injuries, and 7 resulted in death.

In terms of the time of day of crashes, most youth pedestrian crashes occur in the afternoon hours between 2 and 7 pm. During these hours, 53% of all recorded youth crashes occurred. This contrasts with the approximate morning school zone hours of 7 to 9 am where only 6% of all youth crashes occurred. The approximate afternoon school zone hours of 2 to 4 pm represented 13% of total youth pedestrian crashes.

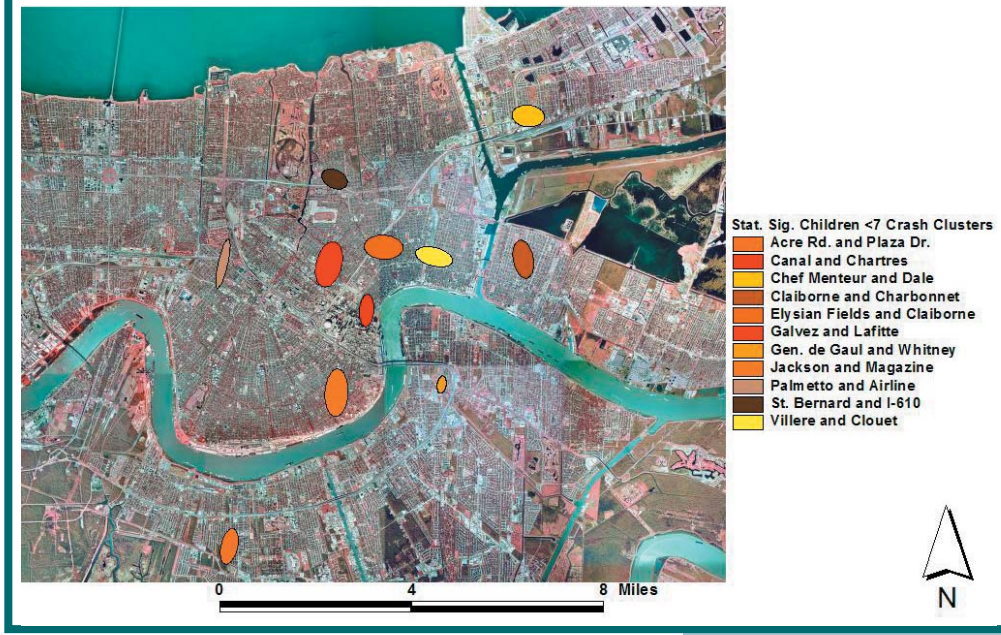
Interestingly, when the afternoon period is extended to include the hours of 2 to 5 pm, the percentage of youth pedestrian crashes jumps dramatically to 28%. Echoing the analysis in Chapter 7, it appears that more emphasis should be placed on this afternoon block of time. Many school activities push kids travel times past the official cut off of school zone times at 3:45 pm. Serious thought should be given to how best to address this dangerous time period for children.

In terms of age, young children (6 years and younger) appear to be particularly vulnerable. Children 6 and under make up 35% of all youth crashes. In fact, the largest single age spike represented in the analysis of crashes in Chapter 5 was age 6 (see figure 24).

To further explore these data, a hot spot analysis of pedestrian crashes affecting young children (6 and under) was performed. Figure 64 shows the statistically significant pedestrian crash hot spots for children 6 and under resulting from a STAC statistical analysis of pedestrian crashes in Orleans and Jefferson parishes (see chapter 7 for a full description of the methods used). The ovals shown represent the statistically significant clusters of high incidence. With 95% confidence, we can say that these 11 multiple-block zones have densities of pedestrian crashes for young children that are statistically significant. The crash densities in these zones are not likely resulting from chance, but instead are the result of a series of social and engineering issues that are creating these high-density zones.

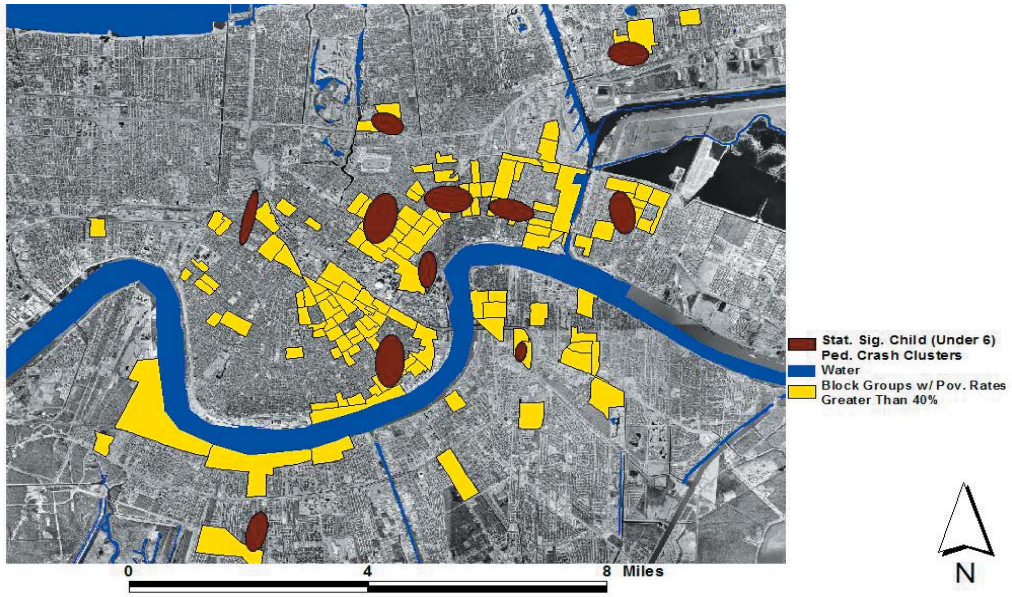
One of the social issues that has been explored by public health researchers in the study of pedestrian crashes is the relationship between the incidence of poverty in an area and crashes. Chapter 5 explored the impact of

Figure 64
Statistically Significant Children 6 and Under



poverty on pedestrian crash patterns for the full dataset. An even stronger correlation can be seen between pedestrian crashes involving young children 6 and under and poverty. Figure 65 shows the statistically significant crash hot spots overlaid over the high poverty (40% or greater) year 2000 census block groups in Orleans and Jefferson parishes. Each of the 11 hot spot zones is either in or immediately adjacent to the areas of high poverty.

Figure 65
High Poverty Block Groups and Statistically Significant Child Pedestrian Crash Clusters



Continuing the analysis, Figure 66 shows the statistically significant youth pedestrian crash hot spots resulting from a STAC statistical analysis of all youth pedestrian crashes in Orleans and Jefferson parishes. The ovals shown represent the statistically significant clusters of high incidence. Once again, with 95% confidence, we can say that these 19 multiple block zones have densities of youth pedestrian crashes that are statistically significant. The crash densities in these zones are not likely resulting from chance, but instead are the result of a series of social and engineering issues that are creating these high-density zones.

Safe Routes to School Pilot Project in Orleans Parish

While each of these 19 hot spot zones should be evaluated for possible improvements, three schools are the target of intervention in the first phase of the Safe Routes to School Program. A pilot program in Orleans Parish was established in 2004 by the STEP Together New Orleans health initiative. Three schools were identified by reviewing neighborhoods with a high incidence of bicycle and pedestrian crashes in each of the Council districts. School principals were contacted to explore their interest in starting a program.

The three schools are:

Edison Elementary- 1339 Forstall St.

Guste Elementary- 2625 Thalia St.

McDonough 42- 1651 N. Tonti St.

The schools selected for this intervention fall either within one of the designated hot spots (McDonough 42 and Guste Elementary) or fall just on the edge of a zone (Edison Elementary). Figure 67 shows a close-up of these schools with all of the crashes within one mile of the schools and the youth pedestrian crash hot spots that surround them highlighted. One-mile buffers around the schools were chosen because this distance is one of the targets for encouraging walking discussed earlier in the chapter.

It should be clear from the above hot spot analysis that youth pedestrian crashes are an important problem for children surrounding these schools. While this analysis does a good job of quantifying the extent and location of the crash problem, the specific landscape and social causes of these hot spots cannot be pinpointed from afar.

More detailed work should be undertaken to determine specific problem intersections that could pose pedestrian safety problems. This type of detailed urban design evaluation and other proactive responses form the basis of strong Safe Routes to School Programs.

Programmatic Response

The Safe Routes to School Program is still in its first phase of development in the metropolitan area. Initial findings indicate that instituting a full program of in-class education and school-wide events will require a more substantial commitment of parent and staff involvement than is present at this time. Part of the program development is to empower school and community leadership to embrace the program. This difficult first step of getting the program off the ground is being taken.

A positive transition is taking place within the local planning and engineering environment in acknowledging the role that the city of New Orleans government can take in identifying Safe Routes to School street projects. STEP Together New Orleans is pursuing potential SAFETEA and local parish funds to move the initiative forward.

Conclusion

The Safe Routes to School program has emerged as an important national and local program to help improve the safety and health of our children. The program, while still in its infancy in the greater New Orleans area, shows tremendous promise as a way to deal with important local safety and health concerns that affect area children.

It is hoped that increased awareness of the extent of the youth crash problem will spur greater involvement among both the school community and local public sector agencies. The Safe Routes to School Program represents an important way to ensure the health and safety of our most vulnerable population.

Figure 66
Statistically Significant Youth Pedestrian Clusters Orleans and Jefferson Parishes

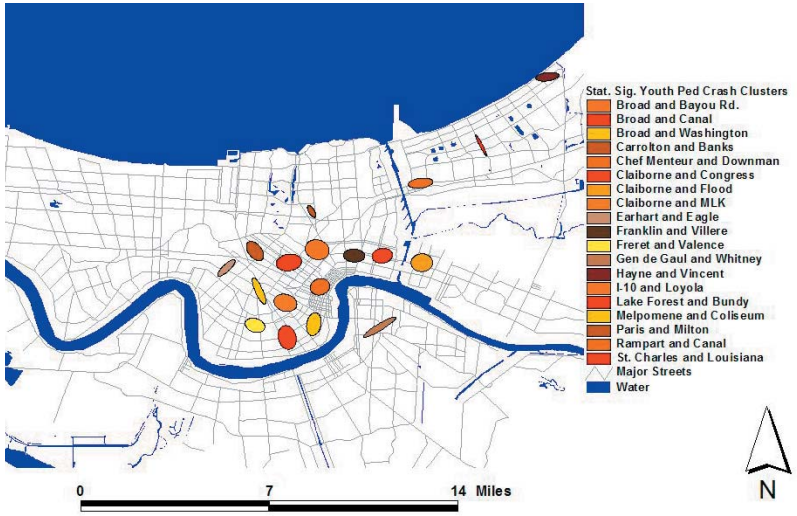
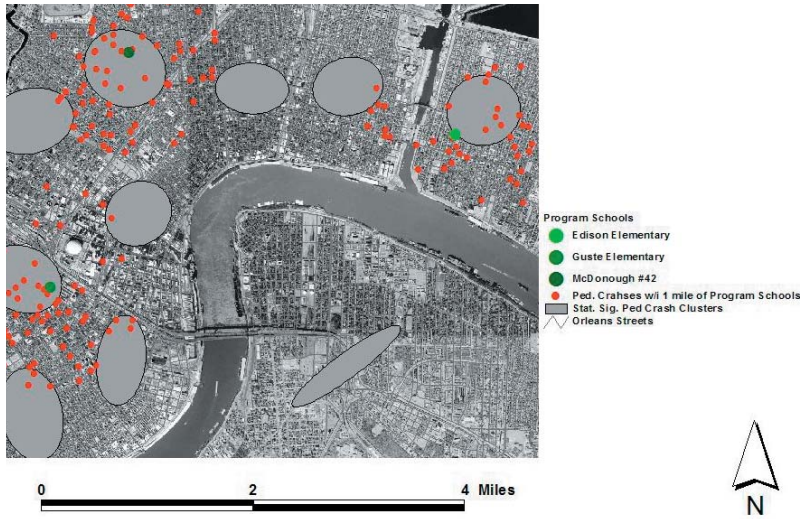


Figure 67
Statistically Significant Pedestrian Crash Clusters and Crashes within 1 Mile of Program Schools



Chapter 13 Setting Priorities

Introduction

This chapter explores current priorities in the public sector funding and policy priorities of bicycle and pedestrian improvements. The first section of the chapter covers the major funding source for bicycle and pedestrian improvements: transportation enhancement funding. The final half of the chapter explores two surveys of the policy priorities of area municipalities and parishes. These funding and policy priorities are critically examined to determine the current status of support for bicycling and pedestrian activities.

Overview of Current Funding: Transportation Enhancement Analysis

The Transportation Enhancement program is specifically designed to assist with the construction of bicycle facilities and other transportation related enhancements. It was established in 1991 under ISTEA and continues under TEA-21. Under the Transportation Enhancement program, states are to allocate 10% of their Surface Transportation Program funding to a variety of projects that address non-traditional transportation initiatives. It is the largest single source of funding for bicycle and pedestrian enhancements.

Transportation Enhancement projects have a more flexible funding standard than other categories of transportation projects. As a result of the flexibility in federal guidelines, each state has developed program guidelines tailored to meet both tailored to meet state goals and objectives as well as the broad federal guidelines.

Twelve categories of projects are eligible under the federal guidelines of the Transportation Enhancement program. These include:

1. Provision of facilities for pedestrians and bicycles
2. Provision of safety and educational activities for pedestrians and bicyclists
3. Acquisition of scenic easements and scenic or historic sites
4. Scenic or historic highway programs including the provision of tourist and welcome center facilities
5. Landscaping and other scenic beautification
6. Historic preservation
7. Rehabilitation and operation of historic transportation buildings, structures of facilities including historic railroad facilities and canals
8. Preservation of abandoned railway corridors including the conversion and use thereof for pedestrian or bicycle trails
9. Control and removal of outdoor advertising
10. Archaeological planning and research
11. Environmental mitigation to address water pollution due to highway runoff or reduce vehicle caused wildlife mortality while maintaining habitat connectivity
12. Establishment of transportation museums

One of the more helpful aspects of this program is that it allows flexible funding techniques to be used. These include:

- Flexibility in federal and non-federal contributions (state or local funds are considered the non-federal funding source). In Louisiana federal funds are allowed to cover the cost of a project up to 95% under certain conditions rather than the standard 80% federal and 20% split for federal-aid highway projects.

- Ability to use other federal funds, (not other U.S. DOT funds), to be credited toward the non-federal share of the costs of a project. Allows the value of other contributions (as determined by the secretary or his designee) to be credited toward the non-federal share.
- Allowance for the value of local and state government services, materials, and land applied to the project.
- Ability to finance the costs of preliminary engineering prior to project approval.
- Allowance for the non-Federal share to be calculated on a project, multiple-project, or program wide basis.

As a result of the flexibility in federal guidelines, each state has developed program guidelines tailored to meet both their own individual goals and objectives as well as the broad federal guidelines.

The LaDOTD program process has slowly developed into a specific set of guidelines as the range of acceptable projects has been defined by the state over the last twelve years. Program guidelines are posted at the state web site at: http://www.dotd.louisiana.gov.

In addition to flexible funding, Transportation Enhancement projects generally have less arduous environmental clearance requirements than standard federal-aid highway projects. This is because the project types, by their very nature, meet the criteria for Categorical Exclusion under the National Environmental Policy Act. However, TEA-21 did not diminish the importance of public involvement in the federal-aid transportation improvement process. Most projects must go through a solicitation of views whereby all resource agencies and local affected entities are contacted and asked to state what negative impact, if any, the project will bring.

New Orleans Metropolitan Area Transportation Enhancement Analysis

The state of Louisiana Department of Transportation and Development is divided into eight districts. The New Orleans regional parishes fall within two of these districts: District 02 and District 62. District 02 includes the parishes of Jefferson, Orleans, Plaquemines, St. Bernard and St. Charles. District 62 includes the parishes of Livingston, St. Helena, St. John, St. Tammany, Tangipahoa, and Washington. Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany are members of the Regional Planning Commission. St. John and St. Charles parishes are affiliated members of the Transportation Policy Committee of the Regional Planning Commission.

Today roughly $8 million dollars is allocated annually across state districts for enhancement projects. Each parish and municipality competes for Transportation Enhancement funding with other projects in their district by competitive application submitted to and administered by the state DOTD. The Metropolitan Planning Organizations typically assist the parishes with their applications and must approve the projects prior to submittal. DOTD headquarters reviews projects for eligibility and soundness while the DOTD District administrators, after consultation with the Metropolitan Planning Organizations, select the projects to be funded in their district.

Distribution of funds shifts somewhat across the state due to the size and importance of projects. Areas with the highest number of people served by a project and having the most promise of going to construction, generally have more success in securing funding. In the early years of the program the larger parishes were more active in seeking funds and the application process was not well defined. Therefore, the larger parishes were also some of the first to receive project endorsement and often at higher amounts than are approved today. The LaDOTD now suggests project applications not exceed $250,000.

The following is a recap and discussion of the Transportation Enhancement funding allotted to the seven parishes of the Transportation Policy Committee of the Regional Planning Commission over the period from 1992 to 2004. Amounts listed include projects in the design phase, under construction and completed.

Orleans	$ 9,744,834.00
St. Tammany	$ 9,467,735.00
Jefferson	$ 7,540,491.00
St. Charles	$ 2,272,500.00
Plaquemines	$ 564,000.00
St. John	$ 527,300.00
St. Bernard	$ 274,000.00
Total	$30,390,860.00

The desire for non-motorized transportation accommodations was not recognized in pre-ISTEA legislation. This latent demand has become readily apparent under the TE program. The predominant category of project request has been for bicycle and pedestrian facilities in the last decade of TE funding availability. Roughly 86% of TE funds have gone for shared use paths (a separated path from vehicle traffic) and for sidewalk construction, rehabilitation or elevated walkways. It is notable that project eligibility, to date, has not addressed comprehensive on-street bicycle treatments such as lane striping and pavement markings for the bicycle commuter.

Shared use path segments in various stages in the "construction pipeline" are located on the Mississippi River levee (east and west banks), at the Jefferson Parish lakefront, along Bayou St. John, in the green space between West End and Pontchartrain Boulevards (New Basin Canal), and in the CSX railroad right-of-way of the north shore (Tammany Trace). Approximately X miles of shared use paths are funded and it is estimated that to complete mainline trails in all parishes X miles at a cost of X $ will be required. In 1992, $1,637,743 was used to purchase the CSX right-of-way for the St. Tammany trace, the only rails to trails project in the state.

Providing good condition pedestrian corridors has been a growing necessity in all parishes. Aging and missing sidewalks are a safety hazard. In addition, government jurisdictions are striving to be compliant with stringent American with Disabilities Act guidelines to better accommodate disabled citizens including the growing population of elderly. A functional pedestrian-oriented network is also a critical component of economic stimulation in local economies.

Sidewalk projects are substantially less costly than bike paths and easily implemented by local parishes and municipalities. It is feasible to select sidewalk improvement projects under the $250,000 recommended limit and, thus, they are becoming more attractive targets under the transportation enhancement program. Conversely, bike path projects are becoming harder to build because of the high cost and the increasing statewide competition for limited resources. Altogether twenty of fifty projects approved in the 2004 funding cycle were specifically for sidewalk improvements across the state.

Between 1992 and 2004, eight sidewalk projects in the New Orleans region were funded at a cost of $2,080,243. The New Orleans region also funded the elevated pedestrian walkway under I-10 at Claiborne and Galvez Streets to eliminate recurring pedestrian incidents and enhance the economic vitality of the Medical District. This project was completed in conjunction with an expansion of power facilities for the Medical District, in partnership with Entergy, the medical community, the state DOTD and the Regional Planning Commission. Enhancement program funding of $2,300,000 was used.

The TE program has helped to address planning of bicycle and pedestrian corridors as well. One of the earliest planning projects undertaken was a study for a designated bicycle corridor around the Lake Pontchartrain or the *Ring-Around-the-Lake* plan. Many segments of designated routes in this plan are being implemented as levee top bike paths today. The Upriver Greenway Corridor planning study was also funded to help delineate neighborhood bicycle and pedestrian access to the Mississippi Riverfront between Jackson Avenue and the Mississippi

River Bridge as a part of riverfront redevelopment. That study will be completed in June 2005. The state DOTD has recently completed a statewide analysis of state highways and established a priority bicycle network using TE funds.

A move toward bicycle commuter-friendly TE projects was demonstrated by the first statewide funding of bicycle racks in the 2004 cycle. A modest $126,000 investment will locate over 288 U-shaped bicycle racks in strategic areas of downtown New Orleans. Several future phases are planned for the CBD. This project is relatively simple to implement but will be of enormous benefit in several ways. It will provide secure, on-street bicycle parking opportunities on public sidewalks, encouraging the latent demand for bicycling as a mode choice. Secure bicycle parking is a factor in choosing to ride a bike to work or other destinations just as availability of automobile parking places is a factor in choosing to make an auto trip. It should also aid with estimating the demand for non-motorized transportation facilities when evaluating the quality of available facilities (streets, congestion and for the first time, a quantifiable number of bike racks).

Landscaping and beautification projects in the median or along state highways ranked second highest among the twelve eligible categories. Approximately $3.654 million has been dedicated to landscaping projects since 1992. Other project categories have seen less interest. Only $1,390,817 has been allocated for gateway signage, depot and train restorations and transportation museums. Many of the categories eligible for funding have not had project requests, concluding they are a lower priority statewide.

Survey of Parish Bicycle and Pedestrian Policies

This section is composed of two parts: the results of a survey of parish planners and engineers completed in 2001 and the results of a survey of parish planning departments completed in 2005. The 2001 survey highlights both a generalized desire to invest in bicycling and walking facilities and a general reluctance to prioritize these investments. The 2005 survey, on the other hand, begins to show movement towards considering bicycling and walking as more basic components in an integrated transportation system. While this process of cultural change has begun in the region, much work still remains to create a safe and efficient multimodal transportation system. Chapter 16 focuses on specific goals that can help to translate the desire for better conditions into reality.

2001 Survey of Parish Planners and Engineers

This survey includes the parishes of Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles and St. Tammany. Understanding the long and short term objectives as well as the current plans and policies of these six major stakeholders for implementing bicycle and pedestrian routes and related facilities in their jurisdiction was considered important for developing an integrated, regional master plan for bicycles and pedestrian facilities. Hence, meetings were organized with the relevant parish officials in order to determine their expectations of the master plan. A questionnaire was developed to obtain the views of the parishes. The discussions with each Parish are summarized under the following headings:

- Goals, objectives, plans, policies and expectations
- Level of support in the parish for bicycle and pedestrian facilities
- Problems foreseen in implementing bicycle and pedestrian facilities
- Recommendations for changing the planning process to provide greater emphasis on bicycle and pedestrian facilities
- Views on management issues
- Views on operations, maintenance, and liability issues

Jefferson Parish

Meetings and discussions were held with Jefferson Parish officials to seek their views on the goals and objectives of the master plan and to share their vision of the way bicycle and pedestrian planning should develop in the future.

a. ***Goals, Objectives, Plans and Policies***

The parish officials agreed with the overall objectives of the master plan and the view that alternative transportation such as bicycle facilities should be included in the transportation planning process. However, they felt that the initiative in raising the level of bicycle planning should be a regional one, preferably headed by the Regional Planning Commission of the New Orleans metro area. Bicycle and pedestrian facility plans and policies should be generated for the metro region.

b. ***Level of Support for Improved Facilities for Bicyclists and Pedestrians***

The parish officials supported the need for improved facilities for bicyclists and pedestrians but felt that they are constrained by limited funding for transportation improvements and competing demands. Improvement priorities are decided based on public demand and specific public requests. At present bicycle facilities have a low demand and use of automobiles is the prevalent mode of transportation. Hence, planning of bicycle facilities is not a high priority. The low demand is attributed to a variety of reasons that stem from environmental conditions, weather, the nature of land use in the parish and public attitudes about transportation. The perception was that the hot, humid and rainy weather and pollution in the New Orleans metro area make it difficult and exhausting to use bicycles to travel to work. Biking to work would also require availability of changing, showering, and bike storage facilities at work. Presently businesses are not equipped to provide all of these facilities. At present, public interest is limited to the need for well developed, regionally connected biking and pedestrian facilities for recreational purposes rather than for getting to work or other commuter destinations.

With reference to the pedestrian needs, the parish not only has walking paths along the lake and river levees but also along most major urban arteries. Moreover, all road improvements under the road bond issues incorporate walkways. In addition the parish is constantly making efforts to improve existing walkways and make them compliant with Americans with Disabilities Act (ADA) requirements. Pedestrian paths are provided along major traffic routes such as Veterans Boulevard and along the median on David Drive.

c. ***Problems in Implementing Bike and Pedestrian Facilities***

There are no major issues with reference to separate bike paths along levees and in parks for recreational purposes. However, the parish believes that there are several problems in implementing these along major traffic routes, in order to enable the use bicycles to employment centers and other commuter destinations.

- At present the right-of-way (ROW) of most major urban arteries is restricted and acquisition of more ROW raises major issues of re-settlement and increased costs. To integrate bicycle planning with roadway improvement, wherever ROW is required, would also prolong the process of making much needed roadway improvements.

Table 24
Programmed Transportation Improvement Projects (1994-2004)

Project Number	Description	Estimated Cost	Fund Source	Const. FY
Jefferson Parish				
742-92-0002	Jefferson Bikeway (Phase 1)	615,797	STP ENH	1996
742-26-0024	Jefferson Bikeway (Phase 2)	846,135	STP ENH	1998
744-26-0005	Jefferson Linear Park Bicycle Path	751,015	STP ENH	2000
744-26-0100	Jefferson Linear Park (Phase 2)	856,426	STP ENH	2002
744-26-0016	Westbank Mississippi River Levee Bike Path (Seg. 1)	1,048,415	STP ENH	2002
744-26-0019	Westbank Mississippi River Levee Bike Path (Seg. 2)	894,473	STP ENH	2003
744-26-0018	Gretna Bike Path	383,923	STP ENH	2004
744-26-0014	Jefferson Linear Park Bike Trail (Causeway - Suburban Canal)	825,000	STP ENH, STP>200K	2004
744-26-0021	Bike Path, Jefferson Parish (Orepheum-Huron)	326,000	Demo	2007
000-26-DEM2	Jefferson Bikepath Reconstruction	1,000,000	HP	2009
744-26-0006	Jean Lafitte Bike Trail	620,160	STP ENH	in design
744-26-0013	Jefferson Linear Park Bike Path in Kenner (Duncan - Rhine)	375,000	STP ENH	in design
Orleans Parish				
742-36-0015	Orleans Bikeway	349,942	STP ENH	1998
744-36-0003	Mississippi River Levee Pedestrian Facility (Algiers Ferry)	532,458	NHS	1999
744-36-0008	New Basin Canal Bicycle Path (Seg. 4)	267,699	STP ENH	2001
744-36-0014	N.O. Medical Center Pedestrian Walkway	7,075,000	STP ENH; STP>200K, Local	2001
744-36-0011	New Basin Canal Bike Path (Seg. 3)	394,316	STP ENH	2003
744-36-0004	Wisner Blvd. Bike Path	1,378,000	STP ENH	2005
742-36A	Pedestrian Improvements, ADA Improvements, Shelters	200,000	STP>200K	2007
006-03A	Pedestrian and Landscaping Improvements, Claiborne Ave.	500,000	STP>200K	2008
744-36-0012	Upriver Greenway Project	120,000	STP ENH	Study
744-36-0013	Dillard University Sidewalks and Streetscape	136,600	STP ENH	in design
744-36-0009	New Basin Canal Bike Path (Seg. 1)	450,000	STP ENH	in design
744-36-0016	New Basin Canal Bike Path (Seg. 2)	725,000	STP ENH	in design

Table 24 (continued)
Programmed Transportation Improvement Projects (1994-2004)

Project Number	Description	Estimated Cost	Fund Source	Const. FY
St. Bernard Parish				
062-02-0099	LA 23, Sidewalks in Belle Chasse	300,000	STP>200K	2002
744-38-0002	Sidewalk Rehab. (Buras & Port Sulphur)	284,000	STP ENH	in design
St. Tammany Parish				
742-07-0121	Carroll Road Pedestrian Improvements (Slidell)	34,426	STP ENH	1992
700-36-0133	Study - Ring around Lake Pontchartrain	105,600	STP ENH	1994
742-52-0002	Tammany Trace, Rail Corridor Bike Path	292,668	STP >200K	1996
742-52-0004	Tammany Trace, Bike Path Improvements	551,874	STP>200K	1997
737-52-0001	15th Avenue, Bike/Pedestrian Path	133,318	STP ENH	1998
744-52-0001	Tyler St. Pedestrian Path (Covington)	297,886	STP ENH	1998
744-52-0022	Covington, Columbia St. Bike/Ped. Path (Tyler - Collins)	391,000	STP ENH	2000
742-52-0006	Tammany Trace Bike Path (Covington - Abita Springs)	673,043	STP>200K	2001
744-52-0019	Mandeville Pedestrian/Bike Paths	432,045	STP ENH	2001
744-52-0020	Tammany Trace Bicycle Tunnel	886,359	STP ENH	2001
742-52-0005	Tammany Trace Bike Path (Covington - Abita Springs)	411,103	STP>200K	2002
744-52-0023	Jackson Avenue Bike Path	480,166	STP ENH	2003
744-52-0006	Gerard Street Improvements, Sidewalks and Landscaping	1,252,862	STP ENH	2003
744-52-0029	Pineview Middle School Sidewalks	207,660	STP ENH	2004
744-52-0021	Tammany Trace Ext. to Pelican Park	235,000	STP ENH	2006
744-52-0025	Sidewalks in Mandeville, Phase I	435,000	STP ENH	in design
744-52-0026	Sidewalks in Mandeville, Phase II	73,000	STP ENH	in design
744-52-0033	Madisonville Sidewalk Rehabilitation	1,054,438	STP ENH	in design
St. Charles Parish				
744-45-0003	St. Charles Pedestrian/Bike Path	1,054,438	STP ENH	2002
744-45-0007	Westbank Pedestrian/Bike Path	456,000	STP ENH	2005
744-45-0002	Paul Mailard Rd. Sidewalks, St. Charles Parish	227,000	STP ENH	2009
744-45-0008	Eastbank Pedestrian/Bike Path, Phase III	171,000	STP ENH	in design
St. John Parish				
744-48-0001	St. John, Woodland Canal Bike Path	288,114	STP ENH	2003

- Some major traffic routes present safety and operational concerns such as Veterans Boulevard.
- Many improvements being presently implemented were planned years ago without a bicycle component.
- Transportation funding is scarce and limited. It is directed towards high demand transportation improvements. Bike facilities are not perceived to be as important as automobile and pedestrian improvements.
- The pedestrian public is much more vocal about the need for sidewalks compared to the bicyclists who have not presented any major demand for new and better facilities.

d. ***Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities***

The parish officials felt that a separate plan review could be included for all new facilities that would evaluate the plans from the point of view of the possibility of or the adequacy of proposed bike and pedestrian facilities.

e. ***Management Issues***

The parish officials felt that overall management and planning of such facilities should be done on a regional basis.

f. ***Operations, Maintenance and Liability Issues***

The existing and possible future bike routes in the parish pass through the jurisdiction of different municipalities and governmental entities. The parish feels that each jurisdiction should be responsible for the operation, maintenance, and liability issues of the segment in its area.

Orleans Parish

A meeting was held with the New Orleans Department of Public Works (DPW) to discuss bicycle and pedestrian issues in Orleans Parish.

a. ***Goals, Objectives, Plans and Policies***

The New Orleans Department of Public Works indicated that the leadership in New Orleans is supportive of the idea of providing a transportation system that is more conducive to walking and bicycling as alternatives to automobile use. New Orleans supports the point of view that bicycles have a right and a duty to the road just as motorized vehicles do. The New Orleans DPW will, however, respond to the needs of the all citizens, giving due consideration to the needs and demands that compete for scarce resources.

b. ***Level of Support for Improved Facilities for Bicyclists and Pedestrians***

There has been substantial investment of public resources in making the network more pedestrian and bicycle friendly, even if there are still traffic conditions on the roadway network that appear to be hostile to pedestrians and bicyclists.

While the New Orleans DPW has no maps of existing urban pedestrian and bicycle routes that have been developed in New Orleans, they did express confidence and willingness to sit down with planners and mark-up maps to show urban routes that have high potential for development.

c. ***Problems in Implementing Bicycle and Pedestrian Facilities***

Safety considerations cause decision-makers to discourage bicycle use on major routes where traffic volumes (motor vehicles) and

speeds are high. New Orleans traffic engineers are aware of, and are guided by, the pedestrian and bicycle design guidance presented in both the American Association of State Highway and Transportation Officials (ASSHTO) A Policy on Geometric Design of Highways and Streets, 1994, and the U.S. Department of Transportation, Federal Highway Administration Manual on Uniform Traffic Control Devices, 2000.

Scarcity of resources and competing demands are obstacles that get in the way of accommodating the preferences of pedestrians and bicyclists in a larger way. In addition, safety is perceived to be a problem. Design and implementation of bicycle facilities, more so than pedestrian facilities, has lagged behind the evolution of the transportation infrastructure since World War II and the widespread growth in automobile traffic. Fast growth, suburban areas have been built to the scale of the automobile rather than to the pedestrian and bicycle scale. Limited rights-of-way for bicycle accommodation are a problem in retrofitting older areas of the city where automobile traffic is high and streets are narrow.

There are no special plans and/or policies in place or being considered that would provide greater support and investment in pedestrian and bicycle facilities than those described above. Nor are there any special plans or policies in place or being considered to encourage walking and biking. However, accommodation of such activities is routinely given consideration when allocating available resources to the needs of the transportation system.

d. ***Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities***

In the urbanized New Orleans area, pedestrian accommodation has always been given consideration in roadway design projects. Bicycle accommodation has as well but to a much lesser extent.

The Department of Public Works had no specific recommendations in this regard, but agreed that having a separate review of the design of proposed transportation improvements to evaluate the possibility of including bicycle and pedestrian features projects might be a good idea.

e. ***Management Issues***

DPW officials felt that the Regional Planning Commission should do overall management and planning of such facilities on a regional basis. No other views were expressed.

f. ***Operations, Maintenance and Liability Issues***

DPW feels that problems associated with the operations, maintenance, and liability will increase if New Orleans were to provide greater emphasis on additional facilities. They did feel, however, that they could and would handle day-to-day line of duty issues. There would be little or no impact on maintenance responsibilities, while liability issues would increase with increased bicycle facility implementation. Sanitation and clean up is not seen as a problem any greater than already exists. A public driver education program drawing attention to bicycle presence on the roadway network might have some effectiveness, but DPW was not sure how much.

g. *Connection with Transit Routes*

DPW has not been involved in any discussions about connecting transit stops with bicycle paths, etc.

Plaquemines Parish

A meeting was held with the Plaquemines Parish Department of Engineering to discuss bicycle and pedestrian issues in Plaquemines Parish and in the New Orleans metropolitan area.

a. *Goals, Objectives, Plans and Policies*

It was the impression of the Department of Engineering that the leadership in Plaquemines Parish is supportive of the idea of providing a transportation system that is more conducive to walking and bicycling as alternatives to automobile use, giving to cyclists a right and ability to use the roadway network commensurate with that given to them in state and local statutes. However, there has been more interest, and, therefore, more investment of public resources, in making the network more pedestrian-friendly than in making it more bicycle-friendly.

Demand for bicycle use of the roadway network is perceived to be relatively small in Plaquemines Parish. Bicycling is viewed more as a means of recreation and exercise rather than as a means of transportation. This is reflected in the August 2001 Plaquemines Parish Bike Path Plan. A program for increasing public awareness of bicycle use and providing training and education related to bicycle use might work toward changing that perception.

b. *Level of Support for Improved Facilities for Bicyclists and Pedestrians*

Plaquemines Parish has an on-going effort to retrofit and improve sidewalks and make them more ADA compliant. In addition, the parish has built recreational walking tracks in such urban areas as Belle Chasse, Port Sulfur, Buras, and Venice. Other than the on-going sidewalk efforts, walking tracks, and the August 2001 Plaquemines Parish Bike Path Plan, the Engineering Department was unaware of any plans and policies, either in place or being considered, to encourage walking and cycling or to provide an increased level of support of bicycle and pedestrian facilities.

c. *Problems in Implementing Bicycle and Pedestrian Facilities*

According to the Plaquemines Parish Engineering Department, what prevents decision-makers from allocating public resources towards accommodating cyclists is the overall scarcity of the resources and the competing demands for them. Demand for bicycle needs is perceived to be small and/or ineffectively expressed, while that for the automobile or motorized vehicle is large, loud, and clear.

d. *Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities*

The Engineering Department had no specific recommendation in this regard, but agreed that it would be good to have a separate review of the design of contemplated transportation improvements that would evaluate the plans from the point of view of the viability of including bicycle and pedestrian features in the project.

e. *Management Issues*

The Department of Engineering felt that the overall management and planning of such facilities should continue to be done on a regional basis by the Regional Planning Commission.

f. ***Operations, Maintenance and Liability Issues***

The Department of Engineering viewed problems associated with the operations, maintenance, and liability issues to be issues that will increase once the parish provides additional facilities, but would be handled like other facilities.

St. Bernard Parish

A meeting was held with the St. Bernard Parish Department of Public Works to seek their views on the bicycle and pedestrian planning issues in the parish and generally within the New Orleans metro area.

a. ***Goals, Objectives, Plans and Policies***

The parish officials were supportive of the concept of alternative transportation such as biking and walking. They felt that, however, the public in St. Bernard is currently more interested in bicycle facilities for recreation and fitness purposes rather than as an alternative mode of transportation to commuter destinations and employment centers. Hence, the first step in promoting bicycles for use as a means of urban transportation would have to begin by increasing awareness, training, and education related to bicycle use. This would also help in creating a greater demand for bicycle use.

The parish already has considered the connection of bicycle and pedestrian facilities with transit routes. Due to the much greater public interest for maintaining and developing better pedestrian facilities and improvement of sidewalks, the overall improvement of sidewalks and their connection with transit facilities is a high priority goal of the parish. Bicycle improvements such as providing connection between bicycle routes and transit stops, providing bike on bus access, and providing bicycle storage near transit stops are other future goals.

b. ***Level of Support for Improved Facilities for Bicyclists and Pedestrians***

Similar to the views of officials in other parishes, the officials in St. Bernard Parish also felt that improvement in bicycle and pedestrian facilities are dependent on funding priorities. The allocation of limited transportation funds is driven by public demand. The public in the parish has expressed keen interest in pedestrian facilities and bike paths for recreational purposes. The public has expressed limited interest in developing bicycle routes in urban corridors for using bicycles as a means of transportation to work and for other urban area commutes. This low level of interest was attributed to the urban sprawl in the parish, hot and humid weather conditions, and the lack of changing, shower, and bike storage facilities at work places.

With reference to the pedestrian needs, the parish has an on-going program in association with the St. Bernard transit authority to retrofit and improve sidewalks to make them ADA compliant.

c. ***Problems in Implementing Bike and Pedestrian Facilities***

The parish officials stated that there are no problems with reference to the implementation of the bicycle and pedestrian paths along the levee. Efforts in this regard are progressing as planned.

With reference to potential urban routes, they stated that such routes are not planned but could potentially be developed along St. Bernard Highway, Judge Perez Drive, and Patrica/Genie streets. The parish officials felt that ROW would not be an issue in creating shared bike lanes or even a parallel bicycle path along these routes. Even though ROW

will not be a problem, funding will be an issue and with low-level demand it will not be possible to divert scarce funds to developing bicycle facilities.

Another problem is that none of the signals are owned or operated by the parish but have been provided and are being operated by the state. This makes signal related changes to accommodate bicyclists problematic to the extent that the state will have to make the changes.

d. ***Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities***

The parish officials felt that a separate plan review could be included for all new facilities that would evaluate the plans from the point of view of possibility of or adequacy of proposed bike and pedestrian facilities.

e. ***Management Issues***

The parish officials stated that the parish government and the Lake Borgne Levee District are the only two agencies within whose jurisdictions the potential bicycle and pedestrian facilities can fall. They felt that they would prefer to enter a joint use agreement with the levee district for all routes passing through the levee district and, thereafter, build and maintain the routes through the parish Public Works Department.

f. ***Operations, Maintenance and Liability Issues***

The parish officials felt that they foresee no major problems with the operations, maintenance, and liability issues, all of which will increase once the parish provides additional facilities but would be handled like other facilities.

Training, education, and awareness with reference to bicycles would necessarily require greater focus and perhaps integration with automobile driver licensing.

St. Charles Parish

A meeting was held with Gregory E. Bush, the Director of the St. Charles Parish Department of Public Works, to discuss bicycle and pedestrian issues in St. Charles Parish and in the New Orleans metropolitan area.

a. ***Goals, Objectives, Plans and Policies***

The Director advised that in his perception the leadership in St. Charles Parish was very supportive of the idea of providing a transportation system that is more conducive to walking and bicycling as alternatives to automobile use. However, in regards to pedestrian and bicycle facilities, St. Charles Parish is more recreation oriented, i.e., there has been more investment in bicycle and pedestrian paths separate from the roadway network used mostly for recreation and exercise rather than as a mode of transportation.

b. ***Level of Support for Improved Facilities for Bicyclists and Pedestrians***

Plans or policies in place or being considered to provide greater support for pedestrian and bicycling activities include the development of a parish-wide master plan for traffic flow and a requirement for sidewalks in new subdivisions. Other than these, there are no St. Charles Parish plans or policies, either in place or being considered, specifically designed to encourage walking and biking. Pedestrian and bicycle facility planning is done informally through subdivision planning, and when large enough, St. Charles Planning and Zoning Department has an impact. Otherwise it is done project by project.

c. ***Problems in Implementing Bicycle and Pedestrian Facilities***

Obstacles to accommodating the preferences of cyclists and pedestrians include: subdivision developers who are trying to maximize the number of lots/gross area ratio; the scarcity of the resources and competing demands (primarily drainage funding); and the DOTD policy regarding sidewalks and bicycle lanes and paths on state routes. Additionally, old narrow streets with no shoulders and open ditches make retrofitting for sidewalks and bike lanes or paths very difficult and expensive.

d. ***Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities.***

The Department of Public Works had no specific recommendation in this regard, but agreed that it might be good to have a separate review of the design of contemplated transportation improvements that would evaluate the plans from the point of view of the viability of including bicycle and pedestrian features in the project.

e. ***Management Issues***

From a Department of Public Works point of view, there are no perceived management issues of consequence related to existing and proposed bicycle routes within the parish.

f. ***Operations, Maintenance and Liability Issues***

The Department of Public Works views problems associated with the operations, maintenance, and liability issues to be issues that will increase once the parish provides additional facilities, but would be handled like other facilities.

g. ***Connection with Transit Routes***

The parish has not had to consider connecting transit stops with bicycle paths, but is pursuing rail service and a station associated with Amtrak.

St. Tammany Parish

Meetings were held with officials from the parish Public Works Department, Planning Department, and Tammany Trace. The purpose was to ascertain the specific goals and objectives of the Parish with reference to bicycle and pedestrian planning as well as to share with them the general goals and objectives set up for this master plan. These discussions are summarized a below:

a. ***Goals, Objectives, Plans and Policies***

The parish officials concurred with the overall objectives of the master plan towards increasing the safe use of bicycling and walking and agree that alternative transportation such as bicycle facilities should be included in the transportation planning process. The parish *Master Plan 2025* addresses such alternative transportation. Some years ago the parish had initiated the implementation of the Tammany Trace, a 31-mile long bike and pedestrian trail. The last section of this path that connects Mandeville with Covington is due to be completed shortly. Upon completion of this segment, almost all major cities in the parish will be connected through this path. In future the parish would like to provide links from Tammany Trace to town and city centers and other urban commuter destinations such as schools and employment centers. Some such initiatives are already underway.

b. ***Level of Support for Improved Facilities for Bicyclists and Pedestrians***

The parish officials supported the need for improved facilities for bicyclists and pedes-

trians and stated that the parish is making an effort to promote the use of Tammany Trace. The present reported average use of the Trace is about 3,000 people per month. They stated that the present demand from the community is for more linkages to the Tammany Trace so school children may ride their bikes to schools. The parish is, therefore, focusing attention on creating such links. The parish as well as the cities of Mandeville, Slidell, and Covington plan several links. Two such links are meant to provide access from the Trace to local schools. One of these links runs from Pine View School to the Tammany Trace in Covington. The route runs from Pine View to Peter Atkins Park, to Tyler Street, then continues east down 27th Avenue and terminates behind the parish courthouse.

The second link runs between the Trace and Fontainebleau Junior and High Schools in Mandeville. Once these are completed, many more school children will be able to ride bikes to schools. At present, most Fontainebleau students either use the school bus or are driven to school by parents. Pine View School is not in a very affluent neighborhood and many of the students walk to school. Another link connecting Covington to Mandeville crossing the Trace between Mandeville and Abita Springs will be created through the extension of Fairway Drive to LA Highway 59. Fairway Drive has shoulders suitable for bicycles. Yet another project for which funding is in place is the link from Pelican Park to the Tammany Trace crossing US Highway 190. A bike path through Camp Salmen in Slidell is also proposed.

Pedestrian facilities are included in the Tammany Trace. In addition a pedestrian path is proposed along the Airport Road in Slidell.

c. *Problems in Implementing Bike and Pedestrian Facilities*

The Tammany Trace has been implemented without any major problems. However, expanding the bicycle and pedestrian network to connect city/town centers, residential areas with commuter destinations, and link various parts of the parish to the Tammany Trace pose certain problems that are listed below:

- Right of Way of roads is the biggest constraint in providing these facilities. At present, there is insufficient funding to permit purchase of more than the minimum ROW required to accommodate roadways.
- Many of the major corridors in the parish are state owned. The parish has no jurisdiction over these. Even for emergency maintenance, they need the authorization of the state (for example, to clean ditches to prevent flooding).
- Most commuter destinations such as schools, libraries, and employment centers fall within the jurisdiction of cities and towns in the parish. These municipalities would be the ones initiating bicycle and pedestrian routes to provide connections to commuter destinations.
- At present the parish does not have any regulations to mandate sidewalks for pedestrians.
- Safety and operational concerns are high on some of the traffic corridors where shoulders had been provided for pedestrian and bicycle paths.
- Transportation funding is scarce and limited. Funding is directed towards high demand transportation improvements such as automobile and pedestrian facilities.

d. ***Recommendations for Changing the Planning Process to Include Bicycle and Pedestrian Facilities***

The parish did not recommend any changes to the transportation planning process specifically for bicycles and pedestrians, but noted that their present long term planning goals and objectives include planning for bicycle and pedestrians.

e. ***Management Issues***

The various cities and municipalities in the parish plan and implement the routes within their boundaries. The parish is responsible for planning, implementing, and operating other routes. The parish did not have any management issues that needed consideration at present.

f. ***Operations, Maintenance and Liability Issues***

The parish officials felt comfortable with the present arrangement of inter-governmental agreements that enable the parish to assume overall responsibility for management and maintenance of the Tammany Trace even when it passes through a different city jurisdiction. The parish realizes the increased liability issues it faces and has full-time and part-time maintenance and security personnel to check on the maintenance (particularly of shoulders and pipe bollards). At present, the parish spends between $60,000 to $85,000 on annual maintenance of just the Tammany Trace. This bill would go up as new routes are added.

Conclusions from the 2001 Survey of Parish Officials

A common theme expressed by nearly all parish officials surveyed was that competing needs for transportation funding limit the extent to which they feel that they can undertake biking and pedestrian projects. Despite a willingness to consider biking and pedestrian facilities, these facilities are perceived to be low priority "extras" and not integral elements of the transportation system. It is generally only when Transportation Enhancement funding is available that biking and pedestrian facilities are seen as viable projects.

While these reactions are certainly rooted in a clear understanding of the limited nature of transportation funding, these perceptions are telling regarding the extent to which biking and pedestrian projects are truly integrated into new roadway construction. TEA-21 stipulates that biking and pedestrian access must be "considered" except in situations where they are not legally permitted. While all parishes surveyed nominally "considered" the provision of biking and pedestrian facilities, few concrete mechanisms are present to translate these indistinct desires into action. In order to improve biking and pedestrian access in the metropolitan area, clear guidance must be provided to ensure that TEA-21 guidelines to create a multimodal network of transportation options are being met. The following section attempts to further quantify existing policy support for biking and walking through a survey of funding expenditures.

2005 Survey of Parish Planners and Engineers

A survey of area parish and municipalities was undertaken in the beginning of 2005 to determine the existing level of support for biking and walking. This survey focused specifically on establishing a baseline set of data that could be used to set benchmarks for improvement in biking and walking conditions for the region. These benchmarks are set out in Chapter 16.

Surveys were sent out in January of 2005 to the municipalities of Covington, Grand Isle, Gretna, Harahan, Kenner, Mandeville, New Orleans, Slidell, and Westwego. In addition, the parishes of Jefferson, Plaquemines, St. Bernard, St. Charles, St. John, and St. Tammany were also surveyed. The questionnaire asked the municipalities

and parishes to provide information on the current level of support for biking and walking. Topic areas included the current number of miles of biking routes, trails, and lanes, current expenditures on walking and biking facilities, and policy and planning support for biking and walking.

As of April 1, 2005, surveys were received back from Covington, Harahan, Jefferson Parish, New Orleans, St. Bernard Parish, and St. John Parish. Table 25 provides a summary of the results of the survey.

Two important points can be taken from the results of the survey. First, especially in Orleans and Jefferson parishes, bicycling and walking planning has begun to become a recognized part of the overall transportation planning process. Master plans in both parishes have sections that focus on bicycling and walking. In addition, progress on the ground can be measured in the number of miles of paths and trails that have begun to traverse the area.

While these improvements are noteworthy, much work remains to fully integrate bicycling and walking into the established transportation planning culture. Many smaller parishes and municipalities in the region have not taken significant steps to improve conditions for pedestrians and cyclists in their areas. For many areas municipalities and parishes in the region, bicycling and walking still appear to be seen as frivolous "extras" that are important solely for their recreational value.

In addition, progress in the region has generally been limited to the establishment of off-road path systems. While these paths are an important component of the non-motorized transportation system, they make up only one part of the whole system. On-road access for cyclists and effective sidewalks and crossing systems are crucial to broader acceptance and safety of non-motorized modes. Movement towards this broader conception of bicycling and walking as real alternatives to the automobile will be needed to make more rigorous progress.

Conclusion

The results of this survey suggest that between the 2001 survey and the 2005 survey, the acceptance of bicycling and walking as viable modes of transportation has slowly increased. While parish planners and engineers have begun to accept the principle of routine accommodation of cyclists and pedestrians in new construction projects, they still feel constrained by funding pressures that place greater emphasis on automobile accommodation. While the "we would if we could" attitude is now prevalent, focused policy changes can help balance the funding and priority equation. The following benchmarking chapter highlights both the important safety needs of cyclists and pedestrians and the necessary policy changes necessary to improve the present situation.

Table 25
2005 Survey Response on Bike / Pedestrian Policies

	Covington	Harahan	Jefferson Paish	Orleans Parish	St. Bernard Parish	St. John Parish
Specific Bicycle Plan or Policy?	Yes	No	Yes	Yes	No	No
Council adopted Bicycle Plan or Policy Statement?	No	No	Yes	No	No	No
Specific Walking Plan or Policy Statement?	Yes	No	Yes	Yes	No	for Subdivision regs. only
Does Plan or Policy Address ADA Requirements?	Yes	No Plan or Policy Statement	No	Yes	No Plan or Policy Statement	No Plan or Policy Statement
Council adopted Walking Plan or Policy?	No	No	Yes	Yes	No	No
Miles of Official, Signed, On-street Bike Routes	Not Calculated	Not Calculated	Not Calculated	1.5 miles	Not Calculated	Not Calculated
Miles of Official, Signed, Off-street Bike Paths/ Trails	Not Calculated	Not Calculated	30 miles	7 miles	Not Calculated	Not Calculated
Number of Bicycle Parking Spaces	Not Calculated	Not Calculated	No	No	Not Calculated	Not Calculated
Published Map of Bicycle Routes, Trails, Lanes Publicly Available?	No	No	**No**	No	No	No
100% Local Funds Expended on Specific Bicycling Projects (1994-2004) (not as federal-aid match)	No	None	$1,417,440	not answered	None	None
100% Local Funds Expended on Specific Pedestrian Projects (1994-2004) (not as federal-aid match)	No	None	None	not answered	$150,000 per year for repairs	None

Covington
- Greenways and Trails Plan, 2002

Jefferson Parish
- Transportation Element of Envision Jefferson 2020
- Comprehensive Plan, adopted August, 2003, effective March, 2004

New Orleans
- New Orleans Parks, Recreation and Open Space, 2002
- New Orleans Transportation Element of the Master Plan, 2004
- Riverfront Vision, 2005

Benchmarking

This chapter explores appropriate future goals that should help to direct long-term investment and policy decisions to improve bicycling and walking in the New Orleans region. The chapter seeks to highlight both current improvements that have been made in the bicycling and walking arena and the long-distance that must be traveled to truly develop an integrated and safe walking and bicycling network. At present, the lack of a coordinated organizational infrastructure to deal with bicycling and pedestrian issues limits the extent to which widespread improvements can be propagated. Throughout the region, there has been a failure to effectively integrate bicycling and pedestrian issues into broader transportation, safety, and health improvement planning initiatives. The organizational limitation significantly restricts the extent to which specific, targeted goal setting can take place. At present in many areas of the New Orleans region, no specific agency has responsibility for either walking and biking successes or failures. The lack of responsibility in many cases translates into a lack of action. While this current weakness frustrates larger policy initiatives, small changes have begun to take place that show movement towards a broader walking and bicycling policy framework.

The chapter begins with an overview of the benchmarking process. This is followed by a discussion of overarching local goals for bicycling and walking. Finally, broad benchmarks for these goal areas are established. While these benchmarks fall short of the specific, targeted goals that more advanced benchmarking programs establish, the benchmarks help to set the stage for long-term progress that can help to improve walking and bicycling in the New Orleans region.

Significance of Benchmarking

What gets measured, gets managed
Washington State Department of Transportation 2003 page ii.

One of the most important ways to improve the conditions for bicycling and walking is to begin to measure the quality, quantity, and safety of facilities designed for non-motorized transportation. By measuring a set of well-established indicators, public policy-makers and the public at large can see clear trends in the provision of safe and accessible walking and bicycling opportunities for the New Orleans region.

A wide range of institutions ranging from private companies to public agencies has used the benchmarking process successfully to manage for results. For public agencies, the benchmarking process generally involves three basic steps. First, a set of indicators is selected to highlight the desired public policy goals. To be effective, selection of these indicators should be based on several key factors. These include: a manageable number of benchmarks, data that is "reliable, economical, and regularly available", and realistic targets (State of Oregon 1999, p. 70). Because benchmarks should be used to manage policy initiatives, it is crucial that the chosen benchmarks directly address policy goals with easily understood current condition information.

For this master plan, several policy goal areas were selected based on the organizational mandate set out for the Regional Planning Commission. These policy goal areas are:

- safety of pedestrians and cyclists
- extent and quality of facilities for non-motorized transportation
- modal share of walking and biking
- ensuring appropriate funding
- organizational effectiveness for pedestrian and bicycle planning.

Specific indicators that track the progress in these policy areas were then chosen to provide concrete evidence on the attainment of these policy goals.

The second basic step in the benchmarking process is the acquisition of baseline data on the current status of these indicators. With these baseline data in mind, attainable goals targeted to improve conditions are estab-

Benchmarking Steps

Select a set of indicators that highlights desired public policy goals.

Acquire baseline data on the current status of these indicators and create attainable goals.

Provide regular updates on the status of benchmarks to evaluate policies.

lished and tracked over time. This master plan and the just discussed survey of parish and local municipality officials in Chapter 15 helped to create this baseline data. In addition, the RPC has worked with local bicycling and walking advocates and local public agencies to help create these benchmarks.

The third step in the benchmarking process involves providing regular updates to the public and policy makers on the status of the benchmarks. This step ensures that the important data from the indicators can be used to make timely policy decisions. The RPC is committed to tracking these benchmarks and providing the important data needed to help keep the benchmarking process current and timely.

Overview of the New Orleans Regional Benchmarking Process

To establish a set of bicycling and pedestrian benchmarks, the RPC gathered together relevant stakeholders for a benchmarking strategy session in November 2004. Meeting participants were asked to provide comments on a preliminary set of bicycling and pedestrian indicators. The results of this session helped to create consensus on the practical procedures necessary to implement a locally tailored benchmarking process for the New Orleans area. This locally tailored process aims to track a small set of indicators based on the five policy goal areas (see below).

While there was near unanimous agreement that these areas should be tracked, there was less agreement on what specific goals should be set to track policy impacts in achieving improvements in the policy areas. Two main difficulties hindered the benchmarking process. First, because the benchmarking process is relatively new, there is not an extensive body of knowledge upon which to draw to help set targeted goals for bicycling and pedestrian improvement. In the short benchmarking meeting, it was difficult to both synthesize the relevant data and at the same time work to set long-term goals. In addition, the policy framework that is currently in place to help improve bicycling and pedestrian conditions in the region is relatively weak and fragmented. Because of the general lack of directed polices in place to improve bicycling and walking conditions, it was difficult to set advanced targets for improvement for specific agencies.

These weaknesses are, however, telling. There is a great need for a more concerted and effective policy network to address bicycling and walking conditions in the region. These improvements will not happen overnight. As a result of the current weaknesses in the benchmarking process and the established policy framework for addressing bicycling and walking needs, the benchmarking working group set a short-term set of targeted goals for improvement in a narrow range of categories. Benchmarks established for bicycling and walking should, therefore, be seen as working categories rather than fully established, definitive classifications. Benchmarking should be seen as an ongoing process in which further refinement is necessary.

Benchmarks for Bicycling and Walking for the New Orleans Metropolitan Region

This section sets out limited benchmarks that will be tracked to show progress in the effort to promote bicycling and walking opportunities in the New Orleans metropolitan region. Much of the information in this section is drawn from a survey of local parishes and municipalities that was conducted in the beginning of 2005 (discussed in Chapter 15). This survey was sent out to in January of 2005 to the municipalities of Covington, Grand Isle, Gretna, Harahan, Kenner, Mandeville, New Orleans, Slidell, and Westwego. In addition, the parishes of Jefferson, Plaquemines, St. Bernard, St. Charles, St. John, and St. Tammany were also surveyed. As of April 1, 2005, surveys were received back from Covington, Harahan, Jefferson Parish, New Orleans, St. Bernard Parish, and St. John Parish.

Unfortunately, the lack of response to this survey is significant. In many municipalities and parishes in the region, there is no agency or person that has designated

responsibility over bicycling and walking. This lack of coordinated responsibility places bicycling and walking in bureaucratic limbo. The lack of designated responsibility means that no one group takes ownership for improving conditions. As the quote from the state of Washington that started this chapter says, "What gets measured, gets managed." Right now for many municipalities and parishes in the area, no entity is effectively measuring or managing bicycling and walking.

The lack of coordinated action makes it difficult to set specific targets for improvement. The benchmarking process is predicated on spurring action of responsible agencies by measuring results. When there is no responsible agency and no entity measuring results then the benchmarking process cannot spur targeted activity.

This honest assessment of the current status of bicycle and pedestrian activity in the New Orleans area is the first step in a long-term process of changing the role that local municipalities, parishes, and the RPC has towards walking and bicycling. From an organization standpoint, the creation of a coordinated group from the many different municipalities and agencies that share responsibility for biking and walking should be formed to help steer the region's response to the challenge of improving biking and walking conditions. This group can then help to build a more comprehensive benchmarking process that truly is based on results-based management.

Because of the lack of a current strong organizational framework for action on bicycle and pedestrian issues, the current benchmarking process is designed to act as an educational forum to spur action. From the results of this process, a clear need for improvements is found in each of the five action areas. Each of the five goal areas is examined in detail below.

Safety

Goal is to Improve Safety of Bicyclists and Pedestrians

One of the most important goals of this master plan is to improve the safety of pedestrians and cyclists. During the course of this master plan, quantitative evaluations of the extent and severity of the safety problem were conducted for the first time. This baseline set of data shows that the New Orleans metropolitan area has a significant problem with pedestrian and cyclist crashes. In order to help decrease the number of crashes in the area, the Benchmarks Working Group established a series of initial benchmarks to chart progress on this important issue. The group agreed that bicycle crashes and fatalities, pedestrian crashes and fatalities, and the penetration of Safe Routes to School Programs should be tracked with benchmark reports issued in 2008 and 2010. The goal set for pedestrian and bicycle crashes was a 4% reduction by 2008 and a 10% reduction in fatalities by 2008. The working group set the creation of Safe Routes to School Programs in all area parishes by 2010 as its target. Current baseline data for this goal area are presented below.

Modal Share

Goal is to Increase the Share of Non-Motorized Trips in the Region

An important way to judge the success of cycling and pedestrian programs is to measure the number of people who use these modes for transportation. While in

Table 26
Safety - 2002

	Bicycle Crashes	Bicycle Fatalities	Pedestrian Crashes	Pedestrian Fatalities
Jefferson	133	1	154	6
Orleans	233	4	522	11
Plaquemines	2	1	4	2
St. Bernard	22	0	15	2
St. Charles	9	0	8	0
St. John	5	1	5	3
St. Tammany	24	2	24	3

Table 27
Safe Routes to School Programs - 2005

Jefferson	No
Orleans	Yes
Plaquemines	No
St. Bernard	No
St. Charles	No
St. John	No
St. Tammany	No

the future it may be possible to create a direct tracking program to count pedestrians and cyclists directly in certain areas, the only current source of data for mode share is the US Census count for pedestrian and bicyclist commuters. The working group did not set specific numeric targets for increasing the mode share of these indicators, but current low levels suggest that there is a great deal of room for improvement. Current baseline data for these indicators is presented below.

Table 28
Modal Share - 2000

	Bicycle Communters	Pedestrian Commuters	Total	Bicycle % of Total	Pedestrian % of Total
Jefferson	679	3,654	209,611	0.32	1.74
Orleans	2,187	9,822	188,703	1.16	5.21
Plaquemines	78	222	10,074	0.77	2.20
St. Bernard	100	396	28,739	0.35	1.38
St. Charles	44	298	21,134	0.21	1.41
St. John	27	256	17,466	0.15	1.47
St. Tammany	221	716	87,130	0.25	0.82

Facilities

Goal is to Create a Complete Pedestrian and Bicycling Network for the Region

Another important way to judge the success of cycling and pedestrian programs is to measure the extent of dedicated facilities that are present in our communities. The working group agreed that the number of miles of bicycle routes, lanes, and off-road, dedicated paths should be tracked. In addition, the number of bicycle parking places and the number of passengers utilizing bike-on-bus services of area transit providers are also to be tracked.

Table 29
Facilities - 2005

	Miles of Existing On-Street Bicycle Lanes	Miles of Existing On-Street Bicycling Routes
Jefferson	0	not calculated
Orleans	0	1
Plaquemines	0	not calculated
St. Bernard	0	not calculated
St. Charles	0	not calculated
St. John	0	not calculated
St. Tammany	0	not calculated
Regional	0	1

Table 30
Facilities - 2005

	Miles of Existing Off-Street Shared-Use Paths
Jefferson	30
Orleans	7
Plaquemines	0
St. Bernard	0
St. Charles	7.9
St. John	0.8
St. Tammany	31
Regional	76.7

Targets were set for transit ridership in Jefferson and St. Tammany parishes. In St. Tammany, the target was 1% of all trips taken by transit by 2010 and 2.5% by 2020 (St. Tammany currently has very limited transit service). In Jefferson, the target for transit ridership was 3% by 2010 and 4% by 2020. No other target levels for the other indicators were set.

It should also be noted that no current indicators are available to assess the extent of pedestrian facilities. Unlike the road network that is mapped in a GIS database, no local community has a computerized database of sidewalk facilities. This failure to track pedestrian connections tells a great deal about transportation priorities. During the next iteration of these indicators, efforts should be made to address this deficiency. In addition to tracking the extent of the sidewalk system, other possible indicators for pedestrian facilties include: the number of pedestrian crossing devices at intersections, tracking pedestrian intersection improvements, and/or tracking the extent of new sidewalks compared with the extent of new roadways.

Funding

Goal is increase effective funding for bike/pedestrian facilities

An important way to track the importance of pedestrian and cyclist programs is to quantify the amount of funding that is dedicated to non-motorized improvements. While all participants in the working group session would like to see greater funding for pedestrian and cyclist programs, participants noted that tracking the expenditures could be difficult. Much of the spending that could improve conditions is wrapped up in larger roadway projects. While breaking out these expenditures may not always be feasible, the expenditure of Transportation Enhancement funds and the expenditure of identified local funds were chosen as benchmarks. No numeric targets were identified. Baseline figures for current bicycle and pedestrian funding are presented below.

Organizational Benchmarks

Goal is to Meet US DOT Policy Statement Integrating Bicycling and Walking into Transportation

The final goal area seeks to address the effectiveness of public sector organizations in integrating the US DOT *Statement on Bicycling and Walking* into their transportation planning frameworks. The US DOT policy statement makes it clear that bicyclists and pedestrians are to be routinely accommodated in new roadway construction. One way to quantify the extent to which local communities are meeting this policy goal is examine whether there is an adopted bicycle and pedestrian plan for the area.

Table 31
Facilities - 2003

	Bike on Bus Ridership
Jefferson	8,410
Orleans	0
Plaquemines	0
St. Bernard	0
St. Charles	0
St. John	0
St. Tammany	0
Regional	8,410

Table 32
Facilities - 2005

	Number of Quantified Bicycling Parking Space
Jefferson	not calculated
Orleans	not calculated
Plaquemines	not calculated
St. Bernard	not calculated
St. Charles	not calculated
St. John	not calculated
St. Tammany	not calculated
Regional	0

Table 33
Funding - 1994-2003

	Transportation Enhancement Funding for Bike/ Pedestrian Facilities
Jefferson	$7,540,491
Orleans	$9,744,834
Plaquemines	$565,000
St. Bernard	$274,000
St. Charles	$2,272,500
St. John	$527,300
St. Tammany	$9,467,735
Regional	$30,390,860

Table 34
Funding - thru 2004

	Local Funding (not match) for Bike/Pedestrian Facilities
Jefferson	$1,417,440
Orleans	not calculated
Plaquemines	not calculated
St. Bernard	not calculated
St. Charles	not calculated
St. John	not calculated
St. Tammany	not calculated
Regional	$1,417,440

To help assess the scope of these plans, plans were evaluated to determine their comprehensiveness. Three basic stages of plan development were identified. This basic continuum runs from:

Preliminary Plan: a general focus on existing conditions and policy approaches. Bike/pedestrian focus may be part of a larger plan, but generally lacks specificity. Plan may or may not be adopted by resolution.

Basic Plan: a more detailed appraisal of existing conditions with a detailed programmatic response. This most likely will be a stand-alone bicycle/pedestrian plan and will be adopted by resolution as legal policy.

Full-fledged Plan: Evaluation of existing conditions, detailed programmatic response with identification of responsible agencies, timeline of policy implementation, and clear monitoring of results. This will be a stand-alone bicycle/pedestrian plan and will be adopted by resolution as legal policy.

The targeted goal is for local municipalities, parishes, the region, and the state to move towards the implementation of full-fledged bicycle/pedestrian plans. While the presence of a plan does not guarantee that the community will meet this goal, it does go a long way towards ensuring that bicycling and pedestrian improvements will be taken seriously in roadway improvement projects.

Conclusion

This benchmarking process represents the first attempt to link bicycle/pedestrian policies with measurable results. As such, the categories and data selected represent the best available deduction about the most appropriate mechanism for ensuring successful policy implementation. As this process matures over time, it may be possible to set more ambitious goals to further help spur advances in bicycle and pedestrian use. The goals and targets established here should be seen not as end states, but as evolving standards that can consistently be improved upon.

Table 35
Organizational - Adopted Bike/ Pedestrian Plan

	Stage 1 Plan	Stage 2 Plan	Stage 3 Plan
Jefferson	Yes	No	No
Orleans	Yes	No	No
Plaquemines	No	No	No
St. Bernard	No	No	No
St. Charles	No	No	No
St. John	No	No	No
St. Tammany	No	No	No
Regional	Pending	Pending	No
State	No	No	No

Public and Private Sector Roles

Introduction

In the past, the needs of cyclists and pedestrians were not a recognized priority in the creation of the modern transportation system. In many areas around the Region, cyclists and pedestrians have been essentially left to fend for themselves as they attempt to use the public streets. The result of this current system is a large safety problem that unnecessarily endangers pedestrians and cyclists.

The New Orleans region has, however, begun to turn an important corner. Many people in the New Orleans region have begun to realize that this current laissez-faire system is not acceptable. This master plan has identified numerous actions both small and large that can be taken to help improve the current situation. Many of these actions do not require large outlays of money, but instead require a new mindset for how the transportation system is designed and managed.

While the region is at the beginning of a much-needed cultural change in the area's perceptions towards the legitimate needs of pedestrians and bicyclists, moving from the old autocentric planning model to the new model of routine accommodation for cyclists and pedestrians will require a concerted effort from multiple agencies in order to take hold. The cultural change involves moving towards a new policy framework that incorporates the needs of the non-motorized community. This cultural change must percolate within many individuals and organizations. The changes come in numerous forms from land use policy decisions to smaller, more micro-level decisions. It is only by incorporating a system-wide change within each organization that a true partnership for change will emerge.

This chapter is included to emphasize the critical roles that both the public and private sector can take in lobbying for, creating, and sustaining a new, hospitable non-motorized landscape. This mater plan does not signal the end of the planning effort. Instead, this master plan has begun the process of legitimizing pedestrian and bicycle planning. It is the first step in moving towards full inclusion of bicycle and pedestrian accommodation in all civic planning and design.

This chapter looks first at the specific actions that the public sector agencies can take to improve conditions for pedestrians and bicyclists. This is followed by a detailed look at specific actions that the public sector can take.

Public Sector Roles

Many different public sector agencies have a vested interest in maintaining the health, safety, and mobility of pedestrians and cyclists. Public agencies whose responsibilities range from public health to planning to engineering play important roles in defining the quality of the non-motorized landscape. While many agencies help to define the quality of the landscape, to this point, there has been little in the way of concerted and sustained policy intervention to improve conditions.

Throughout this master plan, numerous suggestions have been made to improve the safety and convenience of the non-motorized landscape. This section presents a compilation of specific, directed actions that the public sector can take to help create a more coherent and effective policy framework for intervention to improve the safety, health, and quality of life of pedestrians and bicyclists. The list is broken down into actions that the state, region, and local communities can take in four major categories: technical resources, regulatory mechanisms, educational opportunities, and funding priorities.

The list of action items has been tailored to provide an achievable set of important policy changes that can make significant improvements in the way that the public sector responds to the needs of pedestrians and cyclists. These action items represent a best estimate of the initial changes that should take place to begin the process of effectively integrating cyclists and pedestrians into the transportation system.

Technical

State

- Continue to collect crash data statewide from local police departments
- Disseminate data to each Metropolitan Planning Organization in the state
- Analyze crash data for trends and strategic targets for improvement for bike and pedestrians
- Review state bike map against proposed maintenance and capacity projects; Coordinate all design and construction work with desired bike friendly treatments including shoulder widening, clear intersection and pavement markings, and bike route signage.
- Prevent unfriendly designs such as shoulder rumble strips and inconsistency of bike facilities in favored bike corridors.

Regional

- Set regional benchmarks and evaluate progress
- Analyze bike and pedestrian crash data for hot spots
- Analyze bike and pedestrian crash data in relation to transit routes, poverty, schools, and age
- Disseminate findings to parish and local jurisdictions
- Begin latent demand analysis in targeted areas or corridors
- Provide a venue for pedestrian and bicycle advocates into the public planning process
- Support parish and local planning agencies analysis of transportation systems, intersections, and corridors for bike and pedestrian safety and convenience

Local

- Develop bicycle and pedestrian design criteria for local streets in your parish or municipality
- Improve police data collection of crash locations (particularly rural) and overall reporting procedures
- Develop an on-street bicycle network plan in each parish and jurisdiction
- Implement state education guidelines for bike and pedestrian safety education in schools
- Provide a venue for pedestrian and bicycle advocates into the public planning process
- Retrofit streets identified in the on-street bicycle network plan
- Retrofit all sidewalks and crosswalks identified in the pedestrian plan
- Continue the extension of off-street bicycle paths on river levees and lakefront and other off-street corridors
- Coordinate all parish or municipal departments to align with the goal of attaining a first rate bicycle and pedestrian network (street cleaning, street repair, design and engineering, planning, adult and child behaviors)

Regulatory

State

- Initiate a statewide advisory committee to evaluate all state laws pertaining to bicycle and pedestrian use
- Compare findings to other progressive state laws
- Recommend appropriate modifications, penalties, additions, deletions
- Adopt changes into state law

- Support targeted enforcement activities with all law enforcement agencies in the New Orleans region

Regional

- Support review of local laws and ordinances affecting the bicycle and pedestrian environment (land use, permitting, parking, penalties, allowable activities)
- Support state evaluation and modification of state laws

Local

- Facilitate local review of laws and ordinances affecting the bicycle and pedestrian environment including land use, permitting, parking, penalties, allowable activities
- Recommend and adopt changes
- Adhere to local policies in all zoning, land use, and transportation decision-making
- Institute targeted law enforcement interventions for bicycle and pedestrian safety

Educational

State

- Develop state guidelines for bike and pedestrian safety education in schools
- Develop state education guidelines for judges and law enforcement personnel
- Facilitate bicycle and pedestrian technical training for state and local planners and engineers
- Continue annual multi-disciplinary Bicycle and Pedestrian Safety Summit

Regional

- Facilitate bicycle safety education program for the region
- Raise public awareness, non-motorized and motorized operators
- Develop materials and facilitate training of judges and law enforcement personnel
- Support local bicycle and pedestrian education training of children
- Facilitate bicycle and pedestrian technical training for state and local planners and engineers
- Facilitate bicycle and pedestrian safety education for tourism market
- Facilitate pedestrian safety awareness education in bus and streetcar transit community

Local

- Institute bike and pedestrian safety education in local school districts including Safe-Routes-to-School Programs.
- Support and participate in bicycle and pedestrian safety education for tourism market
- Support and participate in pedestrian safety awareness education in bus and streetcar transit community
- Participate in available training for planners and engineers for bicycle and pedestrian facility design.

Funding

State

- Increase capital expenditures for bicycle and pedestrian projects in state transportation plan
- Incorporate funding for state highway accommodations of priority bicycle corridors
- Fund regional safety education programs for law enforcement, judicial branch and citizen awareness

- Through public input, adopt specific guidance that defines the set of specific conditions in which bicycle and pedestrian accommodation is not required in new roadway construction projects

Regional

- Increase percentage investment in planning and capital projects for non-motorized facilities in the Transportation Improvement Program and Long Range Plan

Local

- Increase capital projects and investment in non-motorized facilities
- Leverage funding through partnerships with other organizations

Private Sector Roles

Both individuals and local businesses can play an important role in helping to create and sustain the momentum for change. Individuals can work to make their desires for improved bicycling and pedestrian facilities known. Neighborhood residents know where the trouble spots are in the community and through advocacy can work to make these issues better known. In the private sector powerful tools for change include the external forces that it can bring to bear through political will and advocacy, and internal forces; incentives, encouragement, and being a role model for the community. These capabilities are essential to successful cultural change, but are often underestimated or misunderstood. Both individual and local business actions that can support improved bicycling and pedestrian measures are discussed in this section.

Advocacy

Individuals often do not know the extent of influence that they can wield on public-sector decision-making, particularly the influence wielded by a coalition of similar-thinkers combining forces on an issue. The combined voices of numerous different groups help to give public-sector officials a good grasp of the depth and breadth of issues. For example, bicycling goals can and do range based on who is cycling. A bicycle commuter's top priority may be to secure bicycle parking. A racing cyclist's priority may be the designation of a safe practice loop. A bicycle shop's top priority may be adequate and safe routes to help improve business. Acting together, these various cyclists can work together to create a coherent message for cycling improvements that can often include important components of their individual goals.

Acting together is particularly important for cyclists. In the past, the needs of cyclists have been downplayed because of the perceived small size of this constituency. A group of like-minded individuals commands more attention from the public sector because officials are reassured that the needs expressed by the group represent a significant public issue rather than the concerns of a lone individual.

Advocacy groups are particularly powerful as they can provide data and information to the public sector that is often difficult or expensive to collect. They can often demonstrate local impacts of policies and help to improve designs at the local level. In addition, advocacy groups can have a great impact on capital project design during the environmental clearance process. By law, all comments must be considered and if an impact is noted, mitigation measures are proposed and discussed.

Below is a list of desirable activities for advocacy groups to undertake:

- Organize
- Demand change of the culture for bicycles and pedestrians from elected officials
- Influence and help set bicycle- and pedestrian-friendly policies (local and state)
- Require official adoption of bicycle and pedestrian plans (local and state)

- Get involved in land use policies and decision-making effecting parking, speed and volume of traffic, number of entrances to new construction sites, and creative treatments such as bump outs and landscaping
- Attend national non-motorized education and political conferences to gain a broader perspective
- Attend public hearings and meetings to reinforce non-motorized perspective and officially make requests
- Attend local bicycle and pedestrian planning meetings
- Provide data about gross sales, taxes paid, and other figures related to positive economic impact of cycling on the community

Employers

The collective actions of employers can have a large impact on bicycle and pedestrian issues. Small and large corporations make daily decisions that affect employee safety and health. Embracing the cultural change toward bicycle, pedestrian and transit opportunities includes providing incentives, information, and facilities. The outcome is improved health and decreased health-related costs and employee sick time. Community health studies have shown a positive link between daily activity and reduced stress/improved overall health.

New Orleans has a large tourist trade serviced by numerous hotels and restaurants. There are also a large number of hospitals and college campuses in the New Orleans region. Employees and students at these locations are often lower income wage earners with less access to cars. It is helpful for employers and campus facilities to assist in accommodating their bicycle, bus, and pedestrian transportation needs. Actions that can be taken to help improve bicycling and walking conditions include:

- Providing new, technically up-to-date bike racks or bike storage facilities for both employees and customers. Locating racks near a prominent door where they are visible and safe from theft can make a large impact in use and safety.
- Providing a monetary incentive for riding a bike in lieu of paying for auto parking.
- Supplying facilities to store helmet, clothing, and other necessary items makes bicycling a much more viable alternative.
- Providing shower and changing facilities where practical.
- Providing information to employees and customers on designated bike routes to your building.
- Disseminating safety tips through your company newsletter or other company communication systems.
- Encouraging or providing incentives for wearing a helmet and using bike lights.
- Getting involved in setting public policy that will provide safer commuting corridors for your employees.
- Taking advantage of commuting information available on the web.
- Taking the lead and showing others in your company how to commute by bicycle.
- Promoting bicycling and walking as easy choices - mainstream the idea in the workplace.
- Helping your company be a community role model for non-motorized transportation use by advertising and marketing your success.

Conclusion

The policies and actions suggested in this master plan can help to make the New Orleans region a safer and

more encouraging place for cyclists and pedestrians. These policies and actions are not experimental or novel. They have been successfully implemented in cities around the nation. Clear progress in safety, health, and livability has been noted in communities around the country that have implemented these changes.

This master plan represents the first attempt to integrate pedestrian and bicycling issues into the mainstream of local transportation policy. The planning process has built organizational relationships and widened the understanding of the importance of bicycling and walking issues in the community. While this is certainly a significant accomplishment considering the low level of awareness that walking and biking have traditionally received in the New Orleans region, this should only be seen as the first step in a long-term transition process. One of the significant steps that remains ahead of us is the formation of a specific template for detailed, accountable actions to be undertaken by the differing layers of the public bureaucracy. While the plan highlights numerous effective policies that can be taken by municipalities, parishes, and state agencies that affect walking and bicycling conditions, it does not provide a clear organizational framework for detailed actions. To help build on the momentum established during this planning process, it is vital for the public sector to begin to build specific organizational accountability for bicycling and walking policy. This step requires hard work and concerted action.