

CONSERVE BY BICYCLING AND WALKING

PHASE II EXECUTIVE SUMMARY



Prepared by:



EXECUTIVE SUMMARY

In 2005, the Florida Legislature created section 335.067, F.S., the Conserve by Bicycle Program. The Program aimed to make improvements in several aspects of Floridians' lives through the encouragement of bicycle travel. One significant outgrowth of the legislation was the development and adoption of the Conserve by Bicycle Program Study, a report charged with quantifying the benefits of bicycling and bicycling encouragement. This Florida Department of Transportation (FDOT) Conserve by Bicycling and Walking report represents the second phase of the original Conserve by Bicycle Program Study. The first phase, which was completed in 2007, evaluated the energy and health-related benefits of providing bicycle facilities and bicycle-related programs. There are two primary purposes for this new phase of the study: 1) to fulfill many of the recommended areas for further research that were identified during Phase I, and 2) to expand the scope of the research to include the pedestrian mode. The original Conserve by Bicycle Program purposes and the corresponding Conserve by Bicycle Program Study goals are replicated below; please note that the Phase I report also provides a more extensive discussion of the benefits of bicycling and related existing conditions and trends.

Conserve by Bicycle Program Objectives

- Save energy by increasing the number of miles ridden on bicycles, thereby reducing the usage of petroleum-based fuels.
- Increase efficiency of cycling as a transportation mode by improving interconnectivity of roadways, transit and bicycle facilities.
- Reduce traffic congestion on existing roads.
- Provide recreational opportunities for Florida's residents and visitors.
- Provide healthy transportation and recreation alternatives to help reduce the trend toward obesity and reduce long-term health costs.
- Provide safe ways for children to travel from their homes to their schools by supporting the Safe Paths to Schools Program.

Conserve By Bicycle Program Study Goals

- Where energy conservation and savings can be realized when more and safer bicycle facilities, such as bicycle paths, bicycle lanes, and other safe locations for bicycle use, are created which reduce the use of motor vehicles in a given area.
- Where the use of education and marketing programs can help convert motor vehicle trips into bicycle trips.
- How, and under what circumstances, the construction of bicycling facilities can provide more opportunities for recreation and how exercise can lead to a reduction of health risks associated with a sedentary lifestyle.
- How the Safe Paths to Schools Program and other similar programs can reduce school-related commuter traffic, which will result in energy and roadway savings as well as improve the health of children throughout the state.
- How partnerships can be created among interested parties in the fields of transportation, law enforcement, education, public health, environmental restoration and conservation, parks and recreation, and energy conservation to achieve a better possibility of success for the program. The above stakeholder groups for instance, may be brought into new or existing groups such as the Bicycle and Pedestrian Advisory Committee operated by Florida Department of Transportation.¹

The Conserve by Bicycle Program Study accomplished these goals to a large degree and, in the process, identified numerous areas for additional research that would assist in advancing the achievement of the Program's purposes. These research needs were prioritized by the FDOT Safety Office, and several of them were selected as tasks to be performed during Phase II. The selected tasks and corresponding task summaries are identified in the following section.

Conserve by Bicycling and Walking (Phase II) Tasks and Findings

1. Steering Committee Coordination

The Conserve by Bicycle Program Study benefited greatly from input provided by its project Steering Committee. This Committee consisted of members from FDOT, other state agencies,

¹ FDOT's Bicycle and Pedestrian Advisory Committee no longer exists.

metropolitan planning organizations and universities. This Steering Committee was maintained and supplemented to assist the research team during the development of Phase II. Many members of the original Committee were retained, and others were added because of their ability to guide work on the specific Phase II tasks. Among the new members were the ongoing Conserve by Transit² FDOT project manager and researchers. The Steering Committee met with the research team multiple times and provided extensive comments regarding draft report materials.

2. Collect Additional Corridor Data and Refine Models

Among the most anticipated components of the Conserve by Bicycle Program Study was the development of predictive models for mode choice and induced recreational bicycle travel based on characteristics of a study roadway corridor and its surrounding area. These models were developed, based in part on companion research performed for FDOT District Seven, and have already been applied as part of FDOT projects. However, the researchers believed that additional data would likely improve the performance of these models. While originally envisioned to consist in part of “after” data from many of the corridors studied during Phase I, several new corridors were ultimately selected instead because of their relatively high bicycle and pedestrian usage, a characteristic uncommon to many of the corridors in the prior dataset. The additional data formed the basis for refinement of both existing models and the creation of a new induced recreational pedestrian travel model.

The new data resulting from this task have been beneficial in improving the predictive capabilities of the prior model versions. Model refinements have been made, including the transformation and addition of key variables. Most significantly, a new induced recreational pedestrian travel model has been created to complement the corresponding model for the bicycle mode.

² This report is scheduled for adoption in November 2009.

3. Develop Energy and Health Benefits Calculator and User Guide

The models described above are relatively complex and require a significant number of inputs in order to predict corridor-level bicycling and walking use. As such, this task involved the creation of a Microsoft Excel computational engine, which was intended to be both user-friendly and well-designed.

The resulting computational engine serves as a Benefits Calculator by converting the predicted trips into corresponding energy, health and (at the request of Steering Committee members) CO² emissions benefits. A companion User Guide was developed that provides information on the model development and potential applications, as well as variable definitions and detailed guidelines for the collection and entry of required data items. The Benefits Calculator is available separately from FDOT; the User Guide is included as Appendix B of the Conserve by Bicycling and Walking Phase II Report.

4. Determine Long-Term Effects of Bicycle and Pedestrian Facilities

This task serves to identify the long-term impact of providing bicycling and walking on individuals' travel and fitness habits. Specifically, the researchers examined whether a correlation exists between the provision of such facilities and bicycling and walking behaviors throughout later stages of their users' lives, with a focus on recreational travel leading to utilitarian travel. In-person interviews were conducted at locations around the state to gather data on participants' lifelong bicycling and walking behaviors and the availability of associated facilities during various stages of their lives.

The majority of the individual tests indicate that *sustained* increases in utilitarian bicycling as a result of earlier recreational bicycling are not statistically significant. However, instances of significant increases can be found throughout the data and there appears to be a trend toward recreational bicycling and utilitarian bicycling being coincident. This may indicate that as people take up recreational riding they also begin to ride for utilitarian purposes. Interestingly, the results for recreational walking suggest that recreational walking may be linked to more frequent use of walking for commuting or running errands. This appears to be the case even when prior recreational walking is not significantly correlated with current recreational walking.

5. Determine the Effects of Incentives for Automobile and Bicycle Use on Levels of Bicycling

Financial incentives for bicycling are generally believed to be associated with increased bicycling activity, while financial incentives for driving are correspondingly believed to be associated with lower levels of bicycling activity. As part of this task, a literature search was performed to identify research results related to this hypothesis. Ultimately, little research on this topic was found and the review of literature was expanded to include the impact of providing bicycling infrastructure. Both direct and indirect effects have been examined, and recommendations for additional research were identified.

Unfortunately, there has been too little research on the relationship between financial incentives and bicycling to enable development of a model that can predict how large a change in bicycling would result from a change in financial incentives for bicycling or for driving. However, the literature does support some qualitative conclusions: 1) bicycling parking and storage provides a greater incentive to bicycle commuting than workplace showers; 2) connectivity of bicycling infrastructure is an important factor in affecting the amount of bicycling in an area; 3) over time, incentives and subsidies for driving have helped to create conditions that make cycling a less attractive alternative; and 4) the bicycling market consists of different market segments with different needs, and the development of financial and nonmonetary bicycling incentives needs to consider these market segment differences.

Several recommendations for further research on this topic have been identified. These recommendations include increased study of integration of the bicycle and transit modes, a more focused analysis of bicycle-related components of demand management data, standardization of the identification of bicycle market segments, and gathering better data regarding the users of web-based bicycle trip-planning services.

6. Evaluate the Effectiveness of Florida-Based Safe Routes to School Programs

Safe Routes to School (SRTS) programs have now been operational in Florida for several years. However, little research has been performed within the State to evaluate whether these programs (and their various components) lead to increased numbers of children walking and bicycling to

and from school. This task involved the collection of all available data from existing programs to determine whether conclusions can be drawn at this time.

The data from Florida's Safe Routes to School Program are limited and, at this point, are not able to show a strong increase in bicycling or walking as a direct result of Safe Routes to School programs. In part, this is due to the need for programs and infrastructure projects to become established over a longer period of time. True before and after data, while unavailable for the majority of existing sources, was available for some programs and these data were analyzed for potential conclusions. The preliminary results from the analyzed programs show the potential for more clear findings when before and after data are collected and the program has a focus on increasing bicycling and walking to school.

If data collection remains the same in the future, the lack of program-specific data for individual schools will continue to make component-specific analysis of the Safe Routes to School programs difficult. However, recent changes to data collection requirements such as Florida's requirement that grant recipients collect before-and-after data, as well as the National Center's suggested revisions to Safe Routes to School requirements in the federal transportation bill, indicate that improved effectiveness data will be available in the future. These changes are welcome, as information on the benefits of Safe Routes to School programs will be critical to future decisions about how to both encourage more children to walk and bike to school and make it safer for them to do so.

Report Format

The nature of the Phase II tasks is such that, while they all share a common theme of evaluating and/or measuring bicycling and walking activity, they are also largely independent of one another. Accordingly, the various chapters of the Phase II report should be treated by the reader as stand-alone documents.