

TPF Success Story

TPF-5(370) Fostering Innovation In Pedestrian and Bicycle Transportation Pooled Fund (TPF) Study

April 2024



To collaboratively address these difficult problems, the Federal Highway Administration's (FHWA) Transportation Pooled Fund (TPF) Program initiated the Fostering Innovation in Pedestrian and Bicycle TPF Study (TPF-5(370)).⁽³⁾ This TPF study aimed to bring intergovernmental partners together to efficiently research, design, plan, test, and implement safety improvements that align with FHWA's *Strategic Agenda for Pedestrian and Bicycle Transportation*.⁽⁴⁾

Crowds of people walking across a busy crosswalk at the intersection of 23rd Street and 5th Avenue in New York, NY.
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Livable communities that support bicyclist and pedestrian safety are a high priority for the transportation sector. Walking and bicycling play a vital role in creating sustainable, healthy, and equitable communities, but these modes of transportation can be high risk. Annually, more than 6,500 pedestrians and 800 bicyclists die in roadway crashes in the United States, making up approximately 19 percent of yearly traffic fatalities. Also, every year, more than 60,500 pedestrians and 41,500 bicyclists are injured in roadway crashes.^(1,2) Transportation improvements are clearly needed to enhance nonmotorized travelers' safety and experience. But designing and implementing safe, accessible, and well-connected infrastructure for pedestrians and bicyclists presents many challenges.

To collaboratively address these difficult problems, the Federal Highway Administration's (FHWA) Transportation Pooled Fund (TPF) Program initiated the Fostering Innovation in Pedestrian and Bicycle TPF Study (TPF-5(370)).⁽³⁾ This TPF study aimed to bring intergovernmental partners together to efficiently research, design, plan, test, and implement safety improvements that align with FHWA's *Strategic Agenda for Pedestrian and Bicycle Transportation*.⁽⁴⁾

Its three-phase research projects gave multiple transportation agencies a platform to pool their resources and share their expertise. The phases included identifying and reviewing existing research, piloting innovative pedestrian and bicycle transportation projects, and developing best practices

for improving pedestrian and bicycle transportation. The study's results were used to update the *Manual on Uniform Traffic Control Devices for Streets and Highways*.⁽⁵⁾

One of the primary areas of focus in the TPF study involved bicyclist and pedestrian safety at intersections. Through critical exchanges of knowledge and research, TPF study participants identified a need for improved insight into crosswalk designs. As a result, a research team conducted a field experiment to test how effective high-visibility crosswalk designs work in encouraging driver-yielding behavior. This research, along with extensive outreach to practitioners on current agency practices in crosswalk design, resulted in the FHWA publication *Crosswalk Marking Selection Guide*.⁽⁶⁾



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The TPF study also helped to further research safety improvements involved with Complete Streets, an effort to make streets designed to support all users regardless of age, mobility level, or transportation mode of choice.⁽⁷⁾ Complete Streets includes commonplace safety features, such as sidewalks, bike lanes, and crosswalks, but may also incorporate median islands, curb extensions, or traffic-calming measures, depending on a community's need.

The study has provided crucial research on some of the most innovative and effective interventions for reducing crashes and improving bicyclist and pedestrian safety.

The projects in this TPF study contributed to the body of research demonstrating the safety benefits of Complete Streets design elements. In these designs, each infrastructure feature potentially reduces the rate of pedestrian crashes. For example, sidewalks may reduce crash rates by 88 percent and shoulders by 71 percent.^(8,9) The addition of bike lanes resulted in large reductions in fatal bicycle crashes in major cities like San Francisco, CA (49.3 percent), Denver, CO (40.3 percent), and Chicago, IL (38.2 percent).⁽¹⁰⁾ A combination of these features on one street has the potential to revolutionize nonmotorized transportation and provide a rich data source for safety research. Engaging community members and stakeholders can help ensure that infrastructure meets the needs of all users and is inclusive of diverse populations.

A key accomplishment of the Fostering Innovation in Pedestrian and Bicycle TPF Study is producing research that complements comprehensive guides for bicycle facility design, like the National Association of City Transportation Officials' *Urban Bikeway Design Guide* and the forthcoming fifth edition of the American Association of State Highway and Transportation Officials' *Guide for the Development of Bicycle Facilities*.^(11,12) Recognizing the need to encourage further implementation of these designs, the TPF study brought together multiple agencies to promote the use of bicycle facilities that are safe, accessible, and comfortable for users of all ages and abilities along higher speed roadways. TPF study participants identified specific challenges in implementing safe and comfortable bicycling facilities in these contexts, where the safety benefits are potentially great, and a forthcoming guidebook will describe issues, challenges, and successful case studies for implementation.

The TPF study is wrapping up with a round of new projects seeking to advance the state of practice for mixed-use trail design. In particular, these projects are focusing on integrating trails with street networks, collecting data on walking and bicycling activity, and developing safer, more comfortable bikeway design details. The study has provided crucial research on some of the most innovative and effective interventions for reducing crashes and improving bicyclist and pedestrian safety. Such an endeavor enables transportation agencies to make informed decisions about where to invest their limited resources. By tackling complex transportation challenges together, the TPF Program demonstrates the immense potential of collaborative research. Working together through a TPF study like this one can create more sustainable, healthy, and equitable communities that are better equipped to identify and implement effective strategies for improving pedestrian and bicycle transportation nationwide.



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Example of bicycle lane innovation on a city boulevard.

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Example of bicycle path in a residential neighborhood.



Every year, more than 60,500 pedestrians and 41,500 bicyclists are injured in roadway crashes.

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Make an Impact Through a TPF Study!

The TPF Program is a great resource to combine limited funds to address important transportation issues. Learn more about initiating a TPF study and browse the list of open solicitations on the TPF website at <https://www.pooledfund.org/>.

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Publication No.: FHWA-HRT-24-098
HRTM-10/04-24(Web)E
<https://doi.org/10.21949/1521768>

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