

Proven Safety Countermeasures

“Road Diet” (Roadway Reconfiguration)

The classic roadway reconfiguration, commonly referred to as a “road diet,” involves converting an undivided four lane roadway into three lanes made up of two through lanes and a center two-way left turn lane. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes, pedestrian crossing islands, and/or parking. Road diets have multiple safety and operational benefits for vehicles as well as pedestrians, such as:

- ♦ Decreasing vehicle travel lanes for pedestrians to cross, therefore reducing the multiple-threat crash (when one vehicle stops for a pedestrian in a travel lane on a multi-lane road, but the motorist in the next lane does not, resulting in a crash) for pedestrians,
- ♦ Providing room for a pedestrian crossing island,
- ♦ Improving safety for bicyclists when bike lanes are added (such lanes also create a buffer space between pedestrians and vehicles),
- ♦ Providing the opportunity for on-street parking (also a buffer between pedestrians and vehicles),
- ♦ Reducing rear-end and side-swipe crashes, and
- ♦ Improving speed limit compliance and decreasing crash severity when crashes do occur.

Background

Midblock locations tend to experience higher travel speeds, contributing to increased injury and fatality rates. More than 80 percent of pedestrians hit by vehicles traveling at 40 mph or faster will die, while less than 10 percent will die when hit at 20 mph or less. When appropriately applied, road diets have generated benefits to users of all modes of transportation, including bicyclists, pedestrians, and motorists. The resulting benefits include reduced vehicle speeds, improved mobility and access, reduced collisions and injuries, and improved livability and quality of life. When modified from four travel lanes to two travel lanes with a two-way left-turn lane, roadways have experienced a 29 percent reduction in all roadway crashes. The benefits to pedestrians include reduced crossing distance and fewer midblock crossing locations, which account for more than 70 percent of pedestrian fatalities.



Guidance

Road diets can be low cost if planned in conjunction with reconstruction or simple overlay projects, since a road diet mostly consists of restriping. Roadways with Average Daily Traffic (ADT) of 20,000 or less may be good candidates for a road diet and should be evaluated for feasibility. It has been shown that roads with 15,000 ADT or less had very good results in the areas of safety, operations, and livability. Driveway density, transit routes, the number and design of intersections along the corridor, as well as operational characteristics are some considerations to be evaluated before deciding to implement a road diet.

It is a good practice for someone in an agency to know well in advance of when road reconstruction and overlay projects will be initiated so an evaluation can be conducted. It is important to analyze and understand the effects of the proposed change, obtain input from the community stakeholders, and ensure the appropriate elements are included in the project. Improvements to intersection turn lanes, signing, pavement markings, traffic control devices, transit stops, and pedestrian and bicyclist facilities may be needed to support this concept. It should be noted that the classic four-to-three-lane road diet is very compatible with single-lane roundabouts.

Key Resources

Pedsafe: Pedestrian Safety Guide and Countermeasure Selection System, p. 62

http://www.walkinginfo.org/pedsafe/pedsafe_downloads.cfm

Pedestrian Facility User's Guide: Providing Safety and Mobility, p. 53

http://drusilla.hsrrc.unc.edu/cms/downloads/PedFacility_UserGuide2002.pdf

Guide for the Planning, Design, and Operation of Pedestrian Facilities, American Association of State Highway and Transportation Officials, 2004 [Available for purchase from AASHTO]

https://bookstore.transportation.org/item_details.aspx?id=119

Pedestrian Road Safety Audits and Prompt List

<http://www.walkinginfo.org/library/details.cfm?id=3955>

FHWA Office of Safety Bicycle and Pedestrian Safety

http://safety.fhwa.dot.gov/ped_bike/

Road Diet Handbook: Setting Trends for Livable Streets [Available for purchase from ITE]

<http://www.ite.org/emodules/scriptcontent/Orders/ProductDetail.cfm?pc=LP-670>

Comparison of empirical Bayes and full Bayes approaches for before-after road safety evaluations

http://www.cmfclearinghouse.org/study_detail.cfm?stid=192

Crash Reduction Factors for Traffic Engineering and ITS Improvements

http://www.cmfclearinghouse.org/study_detail.cfm?stid=23

The Safety and Operational Effects of Road Diet Conversion in Minnesota

http://www.cmfclearinghouse.org/study_detail.cfm?stid=68

AASHTO Highway Safety Manual (available for purchase)

<http://www.highwaysafetymanual.org/pages/default.aspx>

FHWA Traffic Analysis Toolbox, "Designing Walkable Urban Thoroughfares: A Context Sensitive Approach"

<http://www.ite.org/emodules/scriptcontent/Orders/ProductDetail.cfm?pc=RP-036A-E>

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FHWA Web site: http://safety.fhwa.dot.gov/ped_bike