

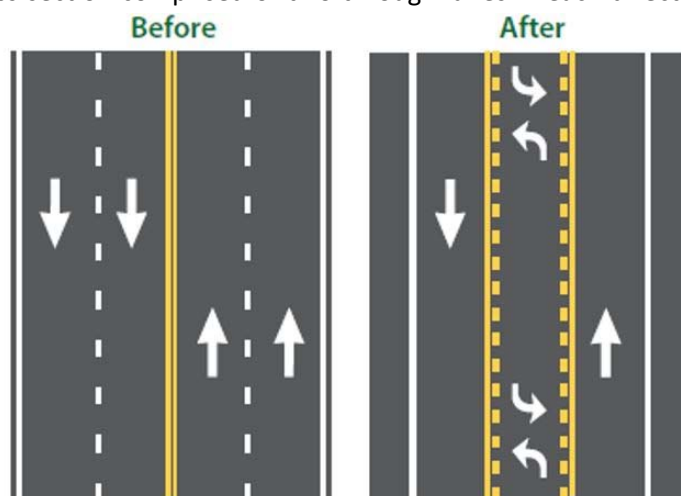
Topic: Road Diet

What is a Road Diet?

A road diet is an infrastructure strategy which converts a traditional 4-lane undivided configuration to a 3-lane undivided comprised of one through lane in each direction and a center two-way left-turn lane (TWLTL). The center TWLTL ultimately reduces the number of conflict points by removing left turning vehicles from the mainline. Road diets can also take the form of a converted 6-lane undivided cross section to a 5-lane cross section comprised of two through lanes in each direction and a center TWLTL. Conversion to a 5-lane configuration occurs less frequently and consequently the benefits of the conversion are not nearly as well documented as the 3-lane conversion. A 4- to 3-lane conversion also commonly provides the option to install bicycle facilities on one or both sides of the thru lanes. The bicycle enhancements coupled with a reduced number of conflict points along a corridor results in a safer and more complete environment for drivers as well as pedestrians.

Key Points

- In MN, 3-lane crash rate = 2.0 vs. 4-lane crash rate = 5.7 (per MEV)
- Fewer conflict points than 4-lane undivided roads
- Low cost solution to reduce rear-end crashes



Source: FHWA, *Road Diet Informational Guide*. 2014 (FHWA-SA-14-028)

How effective is a Road Diet?

Road diets reduce the number of conflict points, particularly those with left-turn movements, by removing the turning vehicles from the thru lane. Fewer conflict points along a section of road with a TWLTL ultimately reduces the total number of crashes. Road diets are an effective countermeasure to address rear-end, right angle and head-on crashes. The overall crash modification factors (CMFs) can range from 0.81 to 0.53, demonstrating a notable decrease in crashes. This range is based on characteristics of the site being considered. In Minnesota, average crash rates for 3-lane facilities is 2.0 and 5.7 crashes per million entering vehicles (MEV) per year for 4-lane facilities. The 3-lane configuration crash rate is 46% lower than that of 4-lanes. The CMF range is dependent upon the surrounding environment. Typically, larger CMFs are associated with more urban settings and smaller CMFs appear in more suburban or small town, environments. It is important to note that because of the decreased number of lanes, there exists the possibility for drivers to experience increased delay while traversing the 3-lane section.

How does a Road Diet operate?

If daily traffic volumes remain relatively unchanged before and after the conversion, 3-lane roads especially benefit in locations that have medium to high access densities. With fewer lanes, total throughput of vehicles may decrease, subsequently adding delay to the corridor. Road diet studies have

demonstrated an upper limit of average daily traffic (ADT) of around 20,000 vehicles per day (vpd). Certain locations may be able to handle as much as a 25% increase in capacity while other locations may meet the estimated 20,000 vpd threshold before congestion occurs. Two local examples of 3-lane roads in Minnesota with ADTs greater than 20,000 vpd are Rice Street and Lexington Avenue in Roseville. The number of intersection or driveway accesses along the roadway may also adversely affect a road diet's performance. A newly converted section of road containing multiple signalized intersections should have a traffic signal timing study to reduce undesirable congestion.

Where is the best place for a Road Diet?

When traffic congestion passes a certain threshold, historical practices would suggest widening roads and adding lanes. Converting 2-lane roads to 4-lanes was standard practice. However, data has shown that 4-lane undivided roads have the highest crash rate of any urban cross section. Also, in urban/suburban retail areas that have a moderately high access density, road diets are typically a safer alternative. Converting 4-lane roads to 3-lanes ultimately reduce the amount of rear-end and right angle crashes, especially those involved with left-turn vehicle movements attempting to access businesses or residences. In either type of setting, urban or suburban, repurposing the road surface not only reduces the total number of lanes, but allows for bicycle enhancements and/or the addition of on-street parking.

How expensive are Road Diets?

Road diets are typically a lower cost solution than reconstruction or expansion to a divided cross section to address higher crash rates and frequency of crashes. Unlike a costly reconstruction, a road diet typically only needs the surface to be re-striped, signs installed and any signal heads to be realigned to the appropriate lanes. Conducting a traffic signal timing study may also be an appropriate step to assess the road's performance.

Other Considerations?

Anecdotal information that a moderate speed reduction has been observed along segments converted to 3-lanes suggests that this cross section may be part of a speed management package. This conversion aims to help drivers perceive an urban environment and select an urban (30 MPH) speed.

References

FHWA, *Road Diet Informational Guide*. 2014 (FHWA-SA-14-028)

MnDOT, *Safety and Operational Characteristics of Two-Way-Left-Turn Lanes*. (MN/RC 2006-25)

MDOT, *Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan*. (RC-1555)

FHWA, *Evaluation of Lane Reduction "Road Diet" Measures on Crashes*. 2004 (FHWA-HRT-04-082)