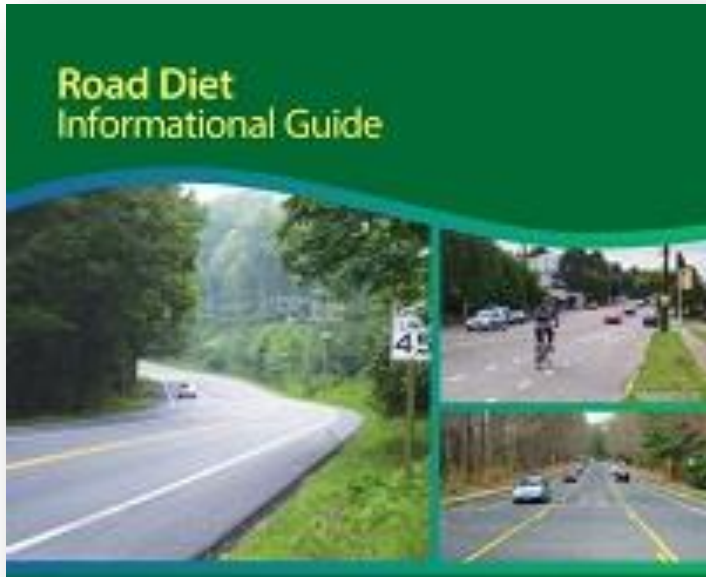


Road Diets: Improving Safety for All Road Users



Tamara Redmon, Federal Highway Administration

Brian Chandler, Leidos

Keith Knapp, Iowa Local Technical Assistance Program

March 3, 2015



**Pedestrian and Bicycle
Information Center**



THE UNIVERSITY OF NORTH CAROLINA
**HIGHWAY SAFETY
RESEARCH CENTER**

Today's Presentation

- ⇒ **Introduction and housekeeping**
- ⇒ **Audio issues?**
Dial into the phone line instead of using “mic & speakers”
- ⇒ **PBIC Trainings and Webinars**
www.pedbikeinfo.org/training
- ⇒ **Registration and Archives at**
pedbikeinfo.org/webinars
- ⇒ **PBIC News and updates on Facebook**
www.facebook.com/pedbike
- ⇒ **Questions at the end**

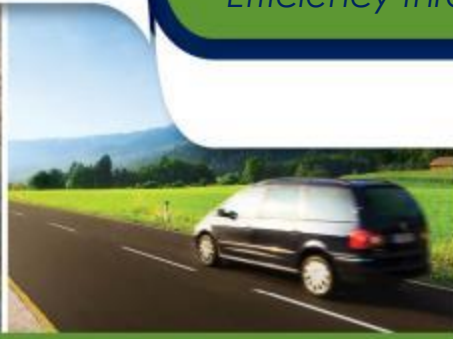


ROAD

DIET



Efficiency through technology and collaboration



Keith Knapp, Ph.D., P.E. – Iowa LTAP
Brian Chandler, P.E., PTOE – Leidos



Pedestrian and Bike Safety are priorities for the US Department of Transportation:

- Secretary's New Initiative on Ped/Bike Safety:
 - <http://www.dot.gov/briefing-room/us-transportation-secretary-foxx-announces-new-initiative-enhance-pedestrian-and>
 - Mayor's Challenge for Safer People, Safer Streets: <http://www.dot.gov/mayors-challenge>
- Bikesafe: Bicycle Safety Guide and Countermeasure Selection System
<http://www.pedbikesafe.org/BIKESAFE/>.
- Resident's Guide for Creating Safer Communities for Walking and Biking:
http://safety.fhwa.dot.gov/ped_bike/ped_cmnty/ped_walkguide/residents_guide2014_final.pdf



Road Diets – A Proven Safety Countermeasure

Office of Safety Proven Safety Countermeasures



These nine countermeasures address crashes that occur in the focus areas of intersections, pedestrians, and roadway departure.



[Roundabouts](#)



[Corridor Access Management](#)



[Backplates with Retroreflective Borders](#)



[Longitudinal Rumble Strips and Stripes on Two-Lane Roads](#)



[Enhanced Delineation and Friction for Horizontal Curves](#)



[Safety Edge_{SM}](#)



[Medians and Pedestrian Crossing Islands in Urban and Suburban Areas](#)



[Pedestrian Hybrid Beacon](#)



[Road Diet](#)



Road Diet Informational Guide



FHWA Safety Program



U.S. Department of Transportation
Federal Highway Administration

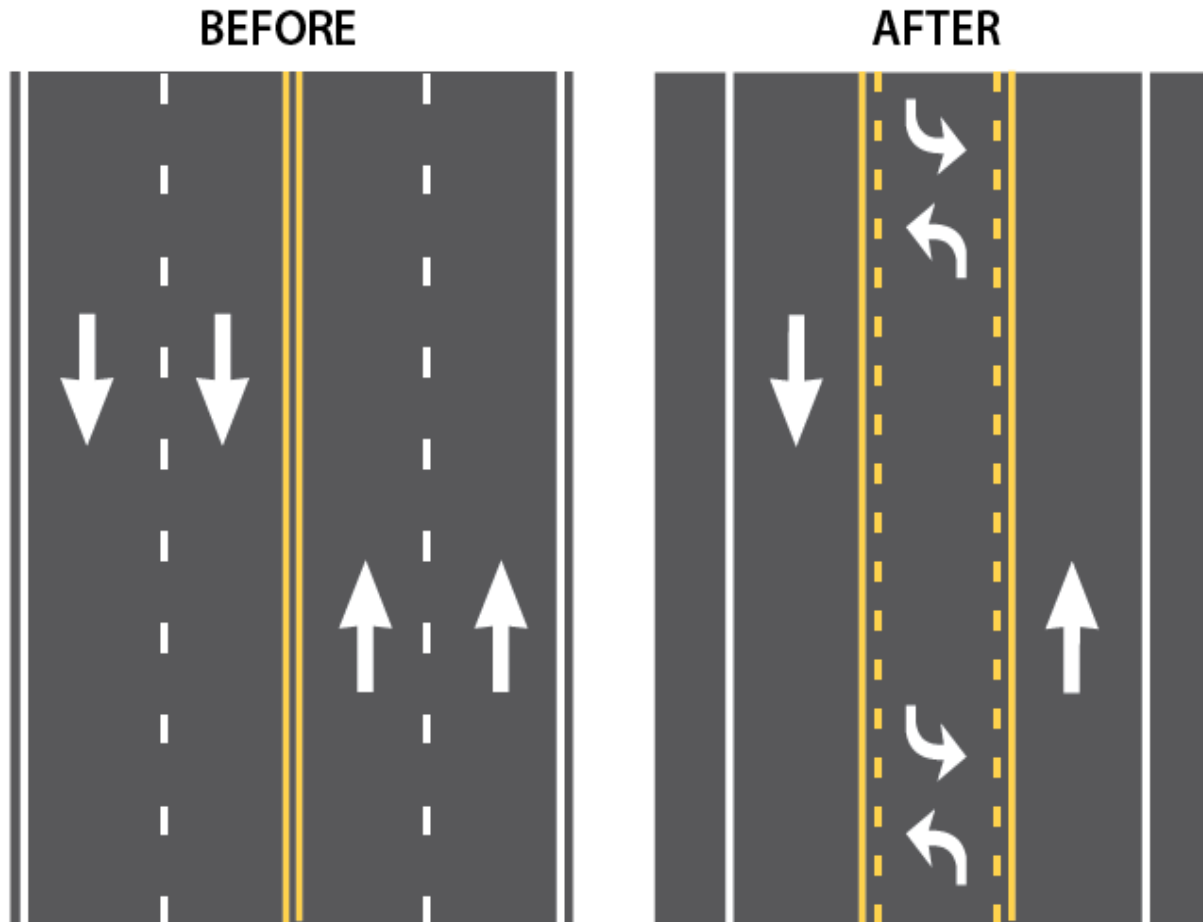


Safe Roads for a Safer Future
Investment in roadway safety saves lives

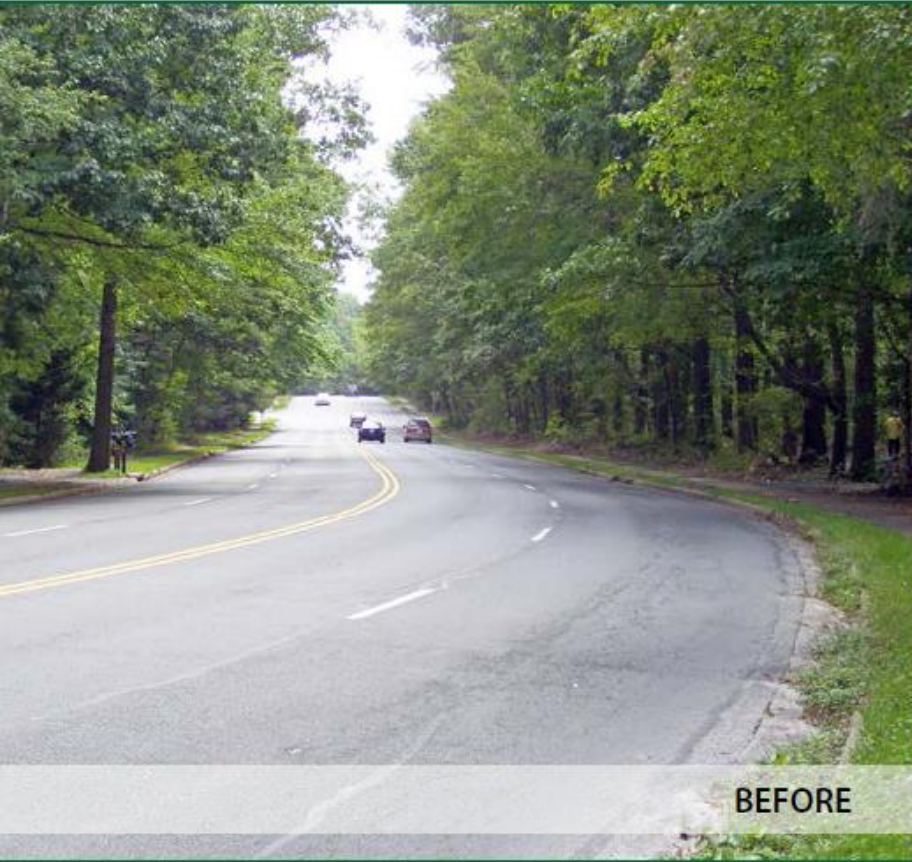
www.safety.fhwa.dot.gov



What is a Road Diet?



What is a Road Diet?



BEFORE

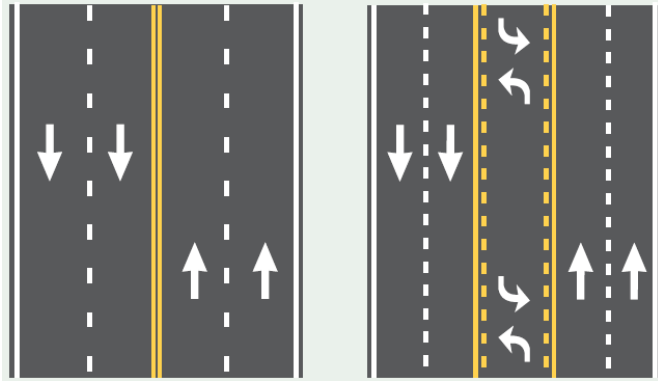
AFTER

Photo Source: Virginia DOT

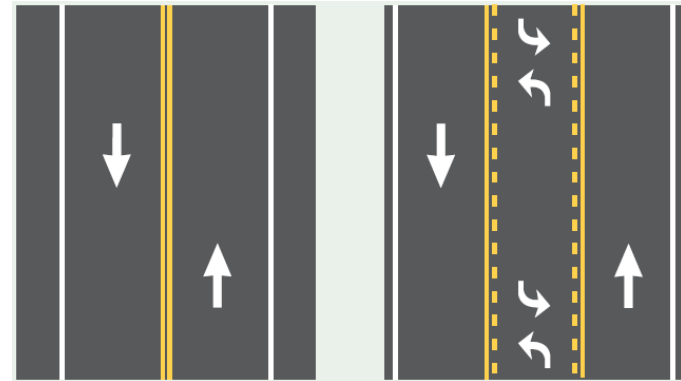


Other Roadway Reconfigurations

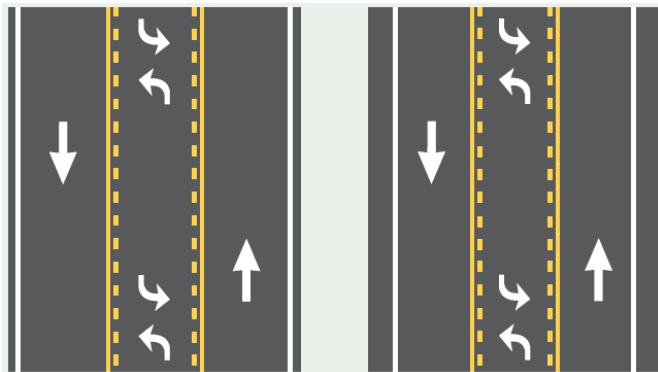
4-Lane to 5-Lane



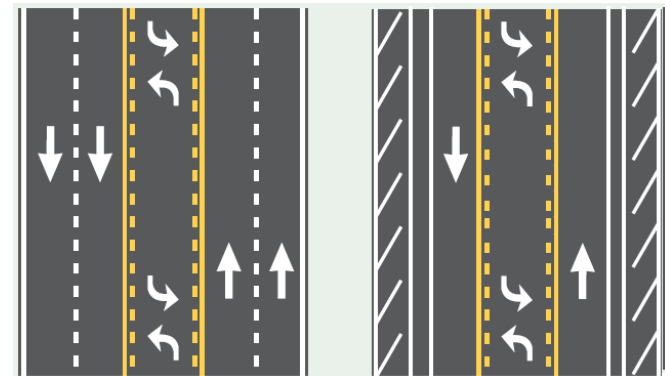
2-Lane to 3-Lane



3-Lane to 3-Lane

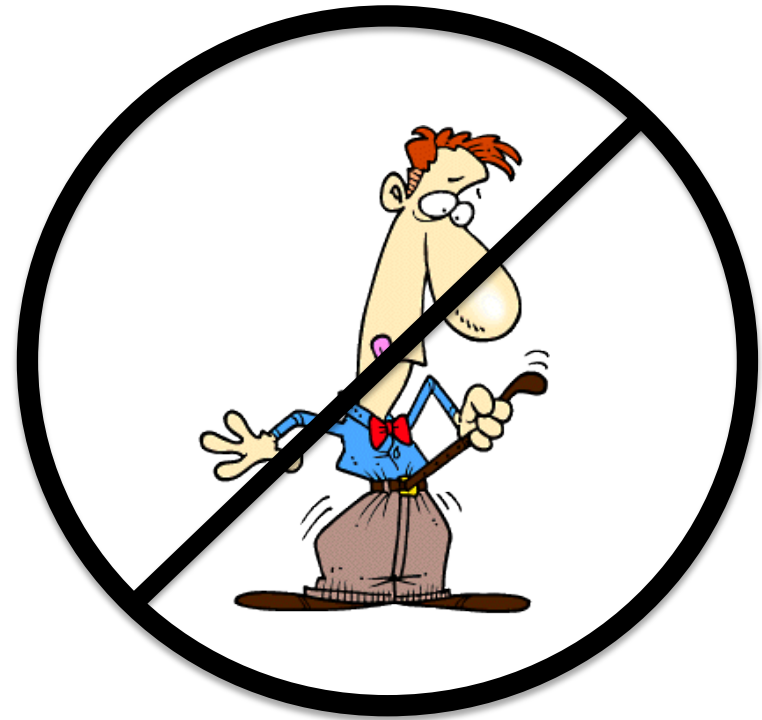


5-Lane to 3-Lane



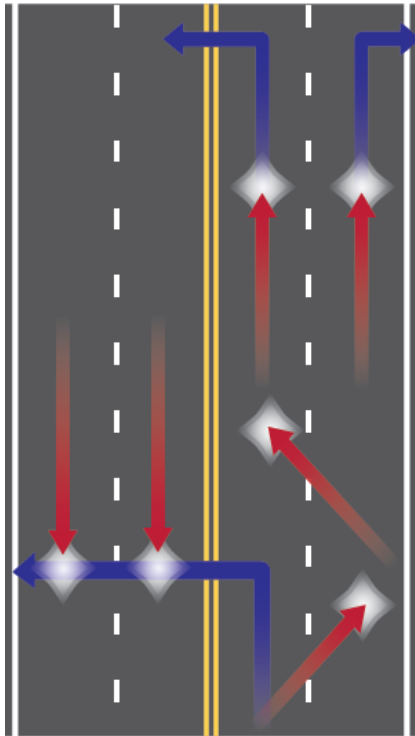
What a Road Diet is NOT

- No cross section reduction
- No lane width reduction required
 - Though not disallowed
- Think about it like this:
 - Lane Reallocation
 - Lane Rebalancing
 - Conversion

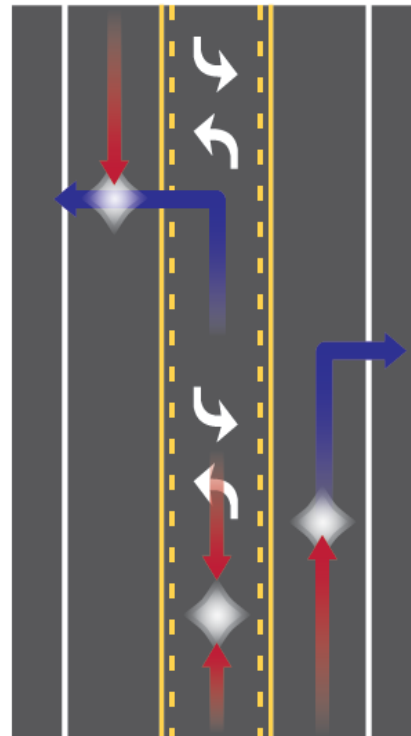


Benefits: Safety

4-Lane



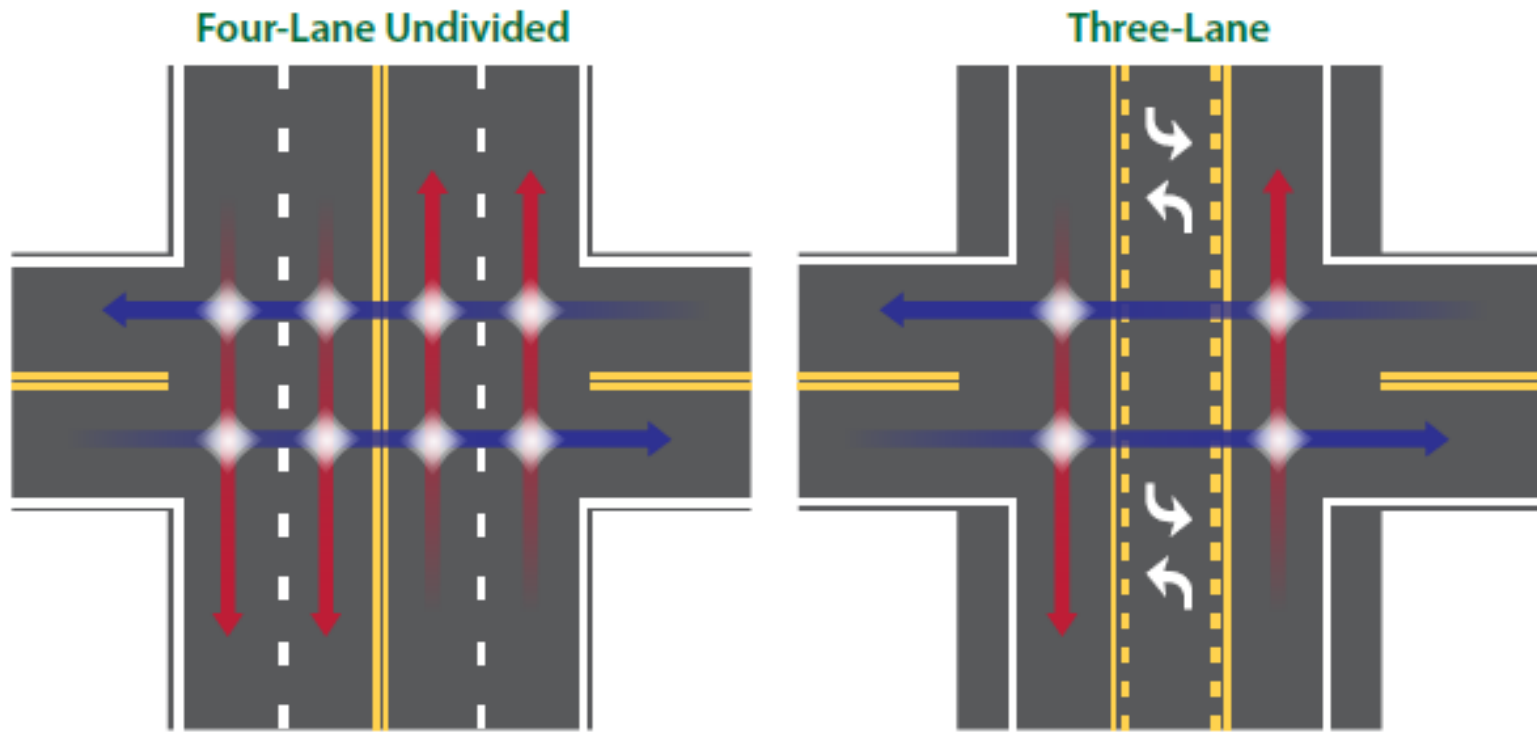
3-Lane



19 - 47%
overall
crash
reduction



Benefits: Reduced Conflict Points



Benefits: Non-motorized Safety & Accessibility

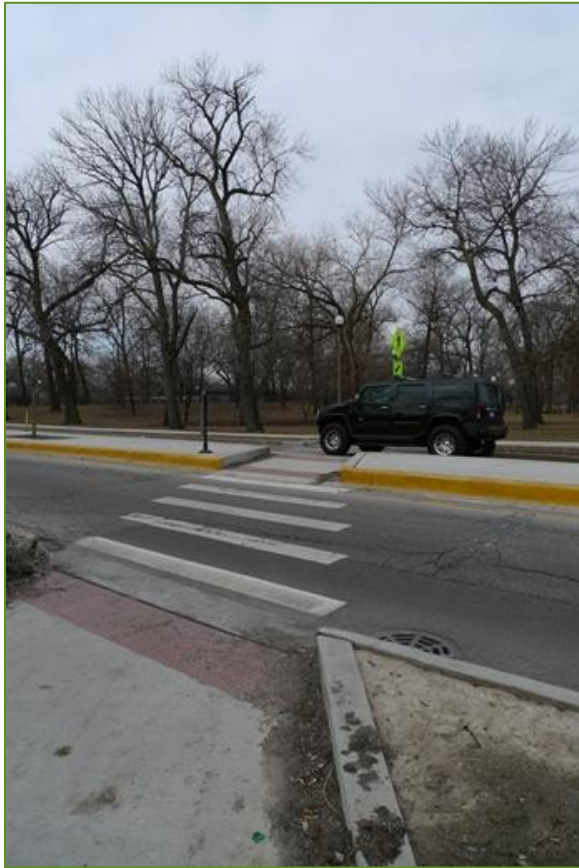


Photo Source: Stacy Meekins



Photo Source: City of Seattle



Benefits: Livability



Photo Source: Jennifer Atkinson



Benefits: Low-cost Installation

Most Road Diets are installed on existing pavement within the right-of-way.



Reston, Virginia



Lawyers Road

Photo Credit: VDOT

Objective: Improve Safety



Photo Credit: VDOT

Soapstone Road



Grand Rapids, Michigan

Objective: Improve Livability



Photo Credit: City of Grand Rapids

Division Street



Grand Rapids, Michigan

Objective: Accommodate Transit



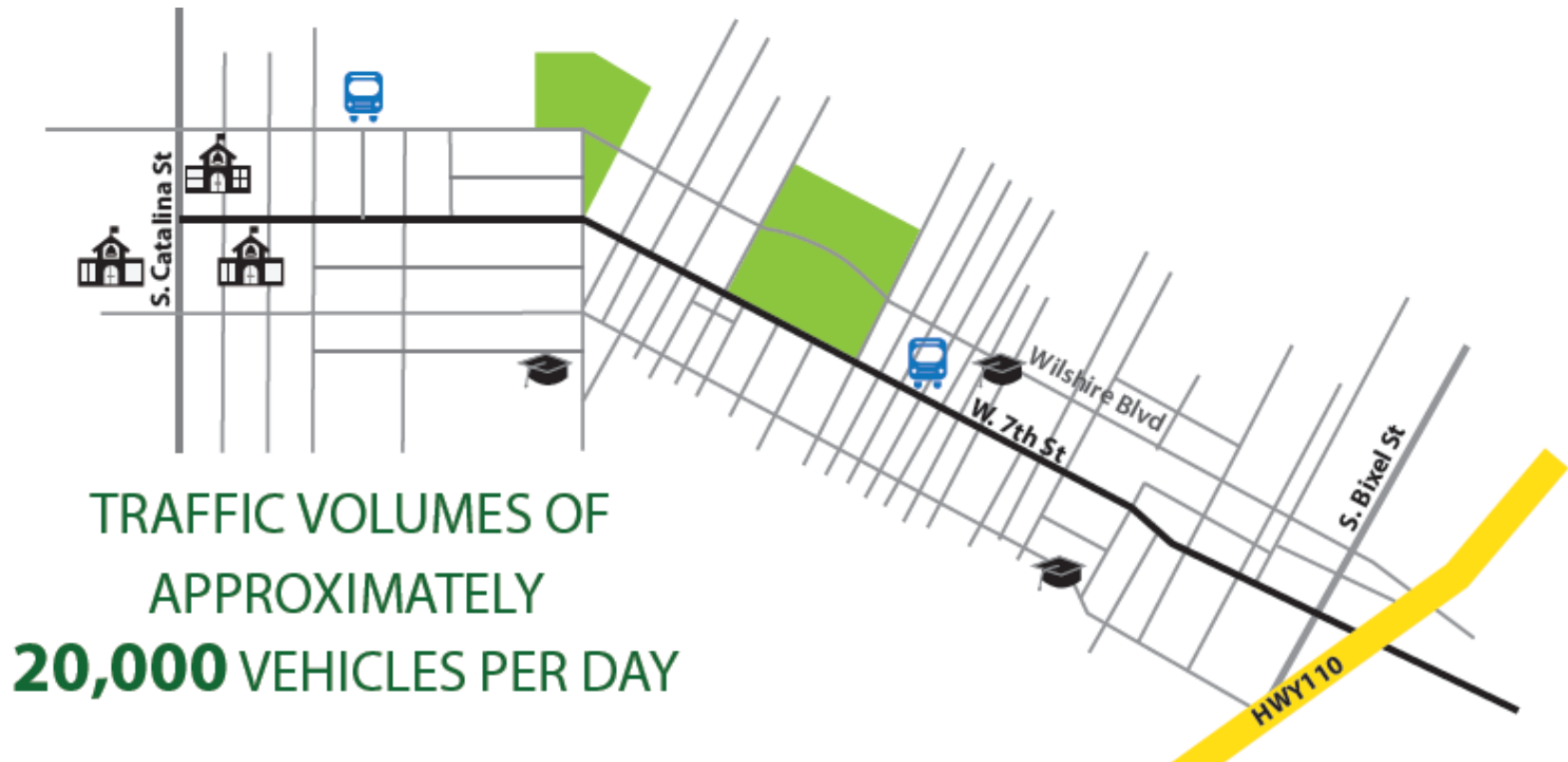
Burton Street

Photo Credit: City of Grand Rapids



Los Angeles, California

Objective: Increase Bicycle Use



Los Angeles, California



**Bicycle
use
TRIPLED**

Photo Credit: LADOT

7th Street



New York City



Photo Credit: NYCDOT

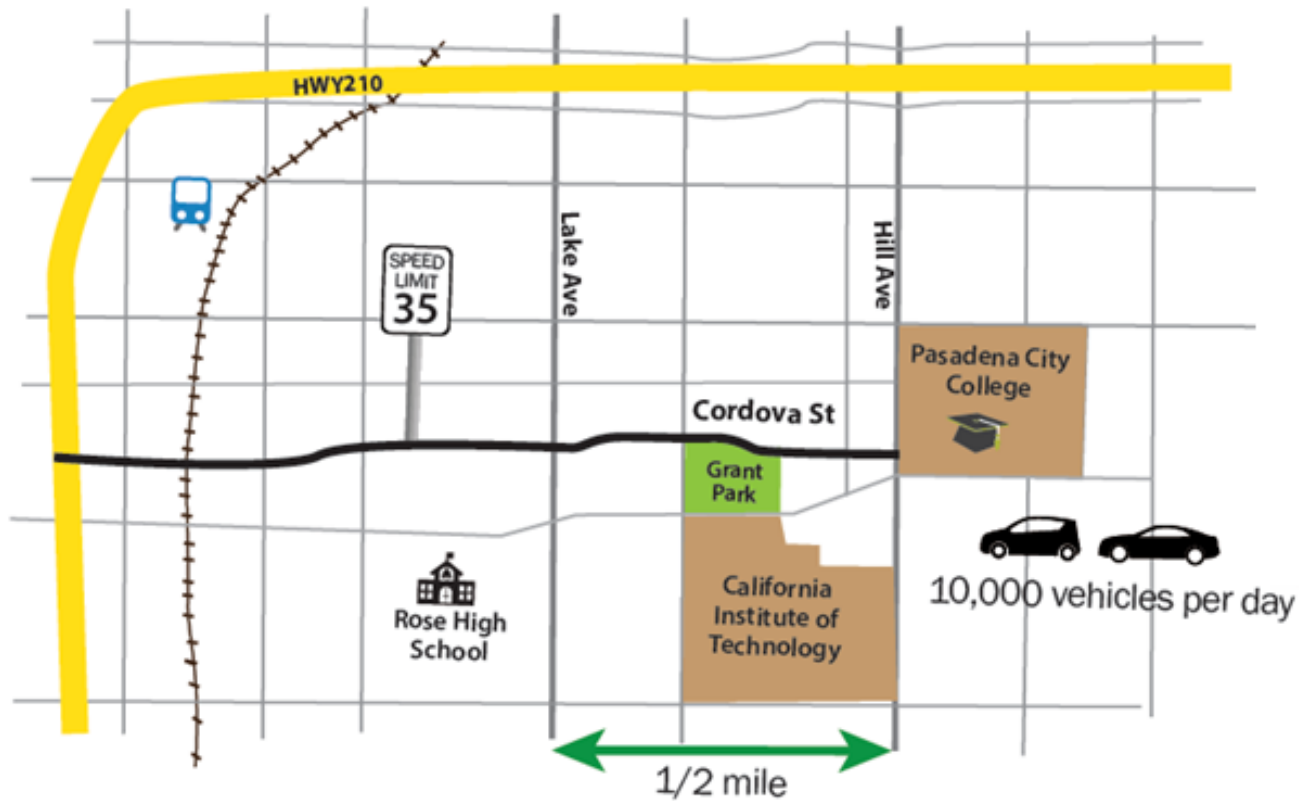
**Objective:
Improve
Pedestrian
Safety**

Photo Credit: NYCDOT



Pasadena, California

Objectives: Increase Ped Safety, Enhance Curb Parking



Pasadena, California



Photo Credit: City of Pasadena

Cordova Street



Determining Road Diet Feasibility: Identify the Objective(s)

One or More of the Following:

- Improve safety
- Reduce “high-end” speeders/differential
- Reduce queues caused with left-turners
- Improve pedestrian environment
- Improve bicyclist accessibility
- Enhance transit stops

Is a Road Diet Alternative something to Consider Further?



Determining Road Diet Feasibility: Evaluate/Compare Factors & Considerations

- **Chapter 3 of the Guide**
 - Safety Factors
 - Context Sensitive Solutions & Complete Streets (CSS/CS) Considerations
 - Operational Factors
 - Bicycle, Pedestrian, Transit, & Freight Considerations
 - Others
- **Appendix B: Example Feasibility Determination Factors, Characteristics, and Sample Evaluative Questions**



Determining Road Diet Feasibility: Safety Factors and CSS/CS Considerations

- Safety Factors
 - Crash locations, types, and patterns
 - Safety concerns of all road users
 - Can the crashes occurring be reduced with the conversion?
- CSS/CS Considerations
 - Roadway function/environment (context)
 - Policy/plan/guide exist?
 - What is the current, expected, and desired roadway function?



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Determining Road Diet Feasibility: CSS/CS Considerations (continued)

The street network should be planned, designed, maintained, and operated in a way that accommodates all road users and those who use the surrounding environment.



Photo Credit: City of Chicago



Complete Streets Commitment

More than 600 State, regional, and local jurisdictions have adopted Complete Streets policies or have made a written commitment to do so.

Determining Road Diet Feasibility: Operational Factors

- Does the current roadway primarily operate as a “de facto” three-lane roadway?
- Case-by-case intersection/arterial analysis



Photo Credit: Tom Welch



Determining Road Diet Feasibility: Operational Factors (continued)

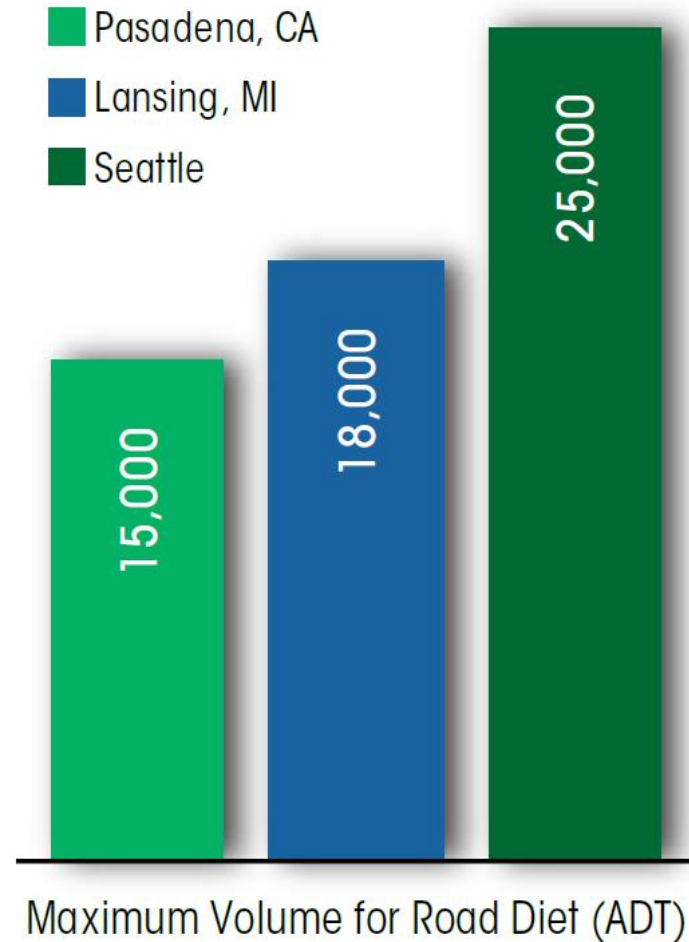
- Average daily traffic (ADT) and peak hour volumes
- Access point location, design, and use
- Speed – variability, “high end” speeders, & overall
- Delays, queuing, diversion, and level of service
- Frequent stop or slow-moving vehicles



Photo Credit: Tom Welch

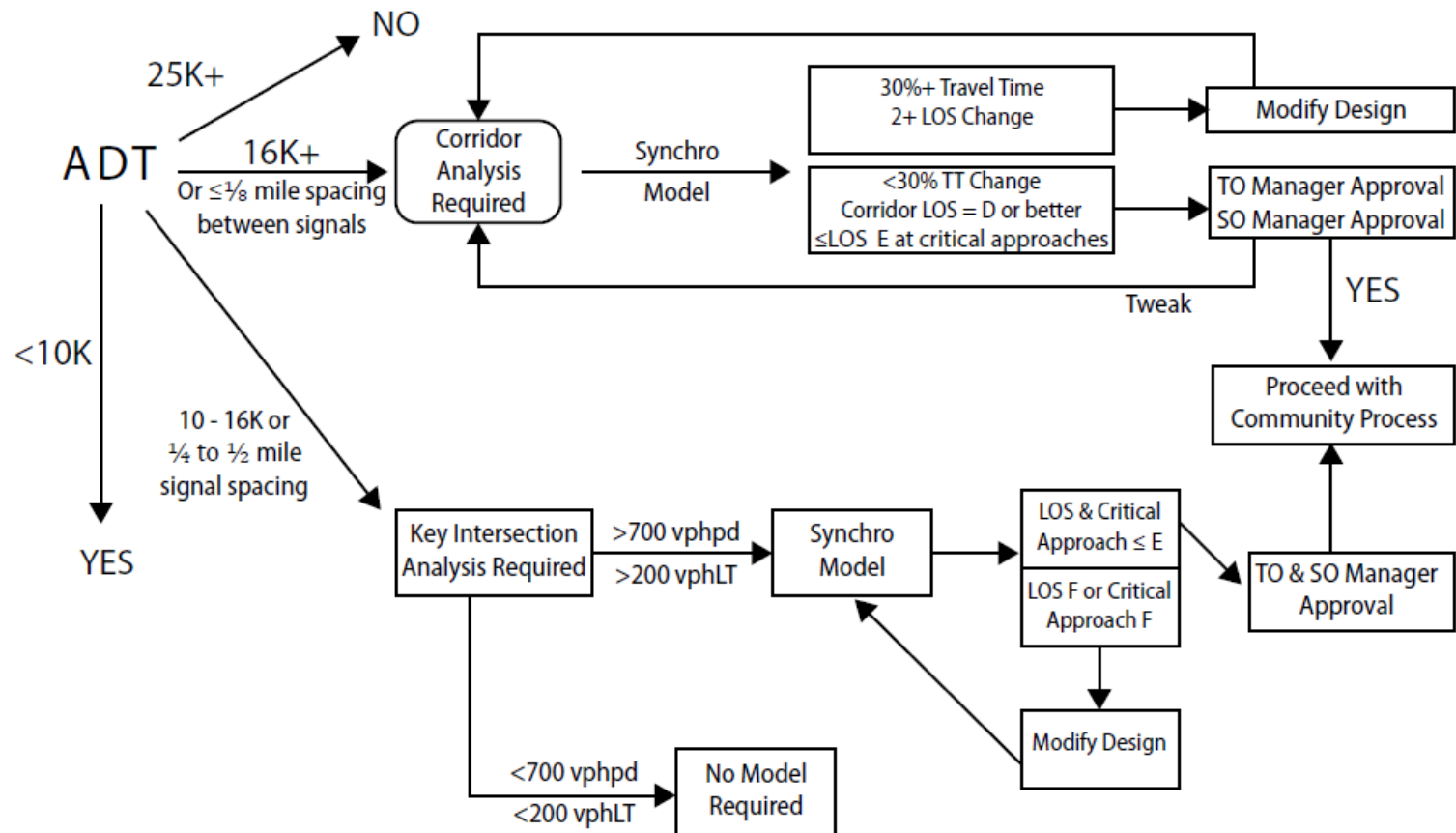


Determining Road Diet Feasibility: Average Daily Traffic Maximum Examples



Determining Road Diet Feasibility: Seattle Example

Modeling Flow Chart for Road Diets
[from 4/5 lanes to 3 lanes]



NOTES: vphpd = Vehicles per hour per direction
vphLT = Left-turning vehicles per hour
ADT = Average Daily Traffic
LOS = Level of Service



Determining Road Diet Feasibility: Bicyclist, Pedestrian, Transit & Freight Considerations

- Number, location, type, and interrelationship
 - Pedestrians
 - Bicyclists
 - Transit/Transit stops
 - Freight/Trucks/Deliveries
- Roadway in network?
- Typical successful case study characteristics: improved walkability, increased pedestrian/bicycle use, and terms like “more comfortable” used

Photo Credit: Stacy Meekins



Determining Road Diet Feasibility: Other Factors

- Right-of-Way availability & cost
- Parallel roadways – diversion issues
- Parallel parking
- At-grade railroad crossings
- Possibly public outreach, public relations, and political considerations



Road Diet Design

- Existing documents apply – roadway geometrics, bicycle facilities, pedestrian facilities, transit facilities, traffic control, etc.
- Cross section allocation decisions
- Pavement Marking & Signing
- Signal timing, design, and setup
- Driveway and intersection design (e.g., radii, parking, etc.)
- Others



Photo Credit: City of Seattle



Road Diet Effectiveness: Before/After Evaluations

- Safety Analysis
 - Crash reduction?
 - Certain crash types reduced?
 - Speed related impacts (if any)?
- Operational Analysis
 - Volumes, speeds, queues, etc.
 - Level of service? For all users?
- How were these road users affected?
 - Bicyclists
 - Pedestrians
 - Transit
 - Others



Conclusions

- Conversions are feasible over a wide range of corridor characteristics
- Consideration/evaluation of this alternative is case-by-case for all roadway users
- Roadway upgrade/maintenance periods can be a good low-cost time to consider feasibility
- Are the expected operations/impacts of the conversion acceptable?
- “New” ideas require education, outreach and involvement



Resources

Road Diet Informational Guide

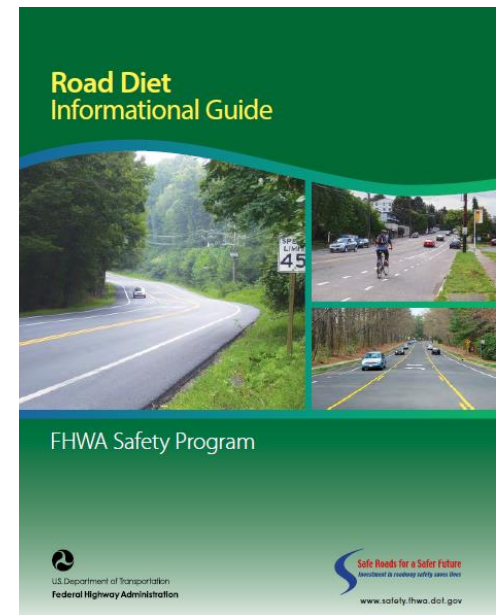
http://safety.fhwa.dot.gov/road_diets/info_guide/

Road Diet Brochure

http://safety.fhwa.dot.gov/road_diets/brochure/

Road Diet Case Studies & Desk Reference Coming Soon

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



For Additional Information

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Leidos

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Thank You!

⇒ Archive at www.pedbikeinfo.org/webinars

- Downloadable/streaming recording and presentation slides

⇒ Questions?

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- **Keith Knapp** | KKnapp@iastate.edu
- **General Inquiries** | webinars@hsrc.unc.edu