



WHAT ARE SPEED MANAGEMENT STUDIES?

Speed Management Studies are an alternative to typical speed studies. These studies may indicate that the 85th percentile speed is much greater than the posted speed limit, but instead of raising the speed limit, speed management should be considered to instead lower the 85th percentile speed.

HOW DO I REQUEST A SPEED MANAGEMENT STUDY?

Speed Management Studies are performed through the UDOT traffic studies process in the same manner as traditional speed studies, signal warrants, left-turn studies, and many other common study types. Request are generally initiated at the regional or community level then are submitted through Workflow Manager by UDOT Region traffic engineers.

WHERE TO UTILIZE SPEED MANAGEMENT STUDIES?

Speed Management Studies should be utilized when there is a disconnect between vehicle speeds and the roadway context or when 85th percentile speeds are higher than recommended for safety. This includes situations when non-motorists are commonly present, when adjacent land uses are not consistent with roadway character, or when the roadway design does not match the traveling speed.

SPEED MANAGEMENT \neq ARTIFICIALLY LOWERING SPEED LIMITS

Speed management is a holistic approach to dealing with speed. Research has shown that artificially lowering speed limits generally does not lead to lower vehicle speeds. Speed limits should be lowered in conjunction with speed management measures.

SPEED MANAGEMENT MAY MEAN “ENGINEERING UP”

When there is a disconnect between vehicle speeds and roadway design the solution may not always be to slow traffic. Sometimes on key connectors carrying significant traffic the solution may be to design the roadway to better accommodate the speeds in which users want to travel. This could mean wider shoulders, median barrier, consolidated accesses, improved alignment, etc.

Speed Management is considered within the framework of the **Safe System Approach**¹, which means designing a roadway in which impacts on the human body are kept at tolerable levels. Examples of this are as follows:

- 1 If a roadway has frequent pedestrian or bicycle users, then speeds should be managed so that an impact is less likely to be fatal. If speeds can't be reduced, vulnerable roadway users need to be separated from vehicular traffic.
- 2 If there is a high likelihood of centerline crossing crashes, then speeds should be managed so that a head-on crash is less likely to be fatal. If speeds can't be reduced, centerline crossing can be mitigated via median barrier.

This guide focuses specifically on measures to slow traffic. Design improvements to accommodate higher speeds could be an outcome of a speed management study, but specific recommendations would not be provided.

INFO SHEETS

Information sheets on a range of speed management measures are provided to help guide the study engineer when selecting appropriate treatments.

These info sheets highlight key aspects of each speed management measure including advantages, disadvantages, costs, implementation considerations, and example/typical locations.

- Radar Speed Sign
- Pavement Speed Limit Marking
- Optical Speed Bars
- Road Diet
- Median Island
- Roundabout
- Roadway Narrowing (bike lanes, lane narrowing, on-street parking, etc.)
- Curb Extensions (bulb-outs)
- Roadside Gateway Features (street trees, lighting, signage, banners, public art, etc.)

For guidance on roadway safety improvements outside of speed management please consult the Safety Countermeasure Fact Sheets.

RADAR SPEED SIGN

2-10 REDUCES SPEEDS FROM 2 TO 10 MILES PER HOUR

PRE-SITE INSTALL COST IS APPROXIMATELY \$10,000

5% REDUCES CRASHES UP TO 5%

ADVANTAGES
Relatively quick installation and low cost. Aren't physically located in the road, thus they do not affect the roadway surface maintenance, emergency vehicle operations, drainage, etc.

DISADVANTAGES
Overuse could result in a loss of effectiveness. Passive measure which doesn't require drivers to alter behavior, so over time effectiveness could wear off.

TYPICAL LOCATIONS
Entering a rural community. Rapid decrease in posted speed limit. Where 85th percentile speeds are > 10 MPH above posted speed limit.

EXAMPLE LOCATIONS
US-91, Mantua
SR-150, Samak
SR-132, Leamington
US-6, Wellington
SR-9, Rockville

TRAVEL SPEEDS
Radar Speed Signs are appropriate for roadway speeds between 25 and 65 miles per hour.

TRAFFIC VOLUMES
Radar Speed Signs are appropriate for Low to Moderate traffic volumes.

NUMBER OF LANES
Radar Speed Signs are appropriate for 1 to 2 lanes of traffic in each direction.

zero Fatalities | SPEED MANAGEMENT INFO SHEETS | JUNE 2021 | 3



1 https://safety.fhwa.dot.gov/zerodeaths/docs/FHWA_SafeSystem_Brochure_V9_508_200717.pdf



2-10 REDUCES SPEEDS FROM 2 TO 10 MILES PER HOUR

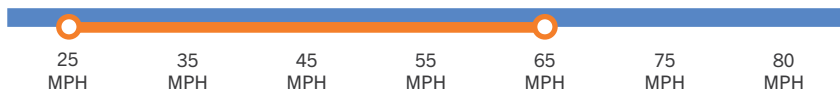
AVERAGE INSTALL COST IS APPROXIMATELY \$10,000 **\$10,000**

5% REDUCES CRASHES UP TO 5%



TRAVEL SPEEDS

Radar Speed Signs are appropriate for roadway speeds between 25 and 65 miles per hour.



TRAFFIC VOLUMES

Radar Speed Signs are appropriate for Low to Moderate traffic volumes.



NUMBER OF LANES

Radar Speed Signs are appropriate for 1 to 2 lanes of traffic in each direction.



+ ADVANTAGES

Relatively quick installation and low cost.
Aren't physically located in the road, thus they do not affect the roadway surface maintenance, emergency vehicle operations, drainage, etc.

- DISADVANTAGES

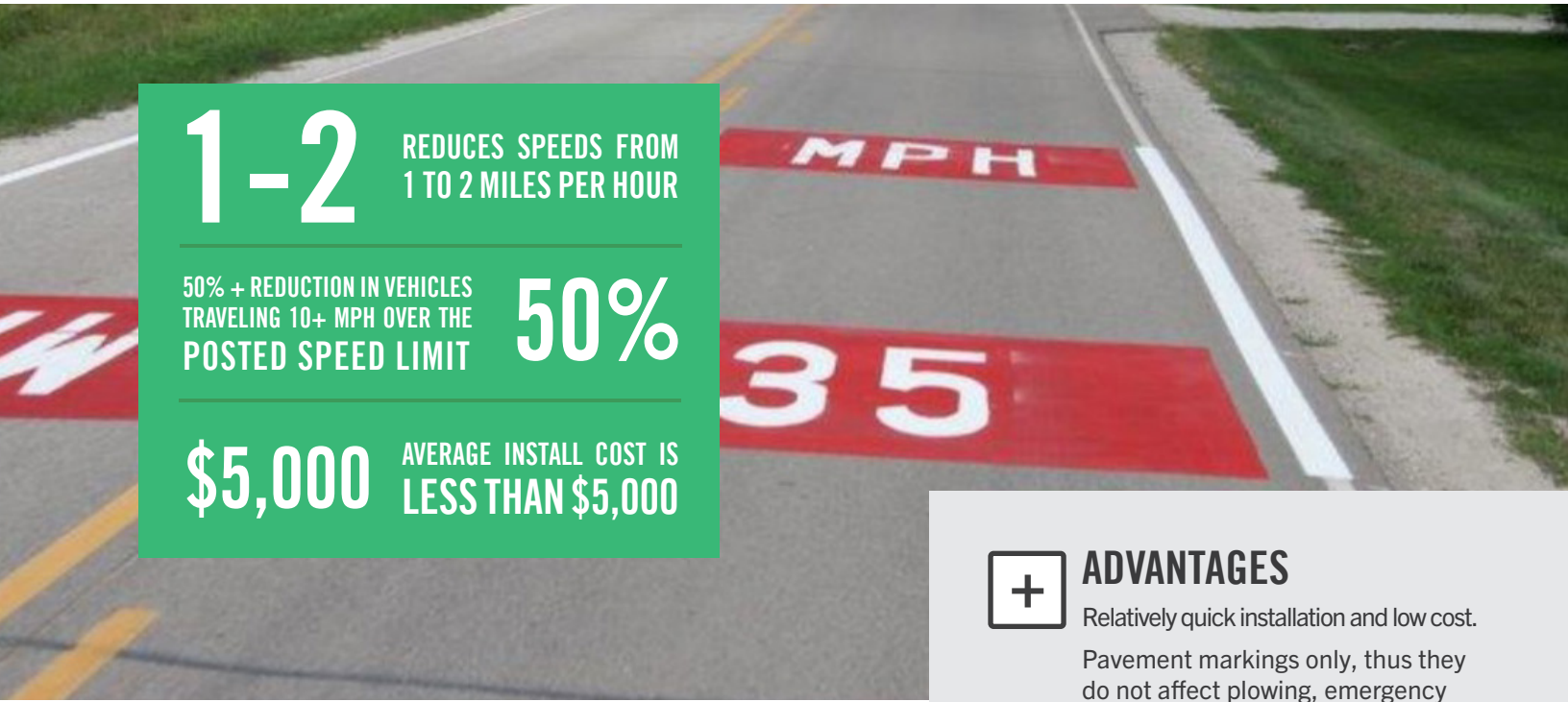
Overuse could result in a loss of effectiveness.
Passive measure which doesn't require driver to alter behavior, so over time effectiveness could wear off.

📍 TYPICAL LOCATIONS

Entering a rural community.
Rapid decrease in posted speed limit.
Where 85th percentile speeds are > 10 MPH above posted speed limit.

📍 EXAMPLE LOCATIONS

- US-91, Mantua
- SR-150, Samak
- SR-132, Leamington
- US-6, Wellington
- SR-9, Rockville



1-2 REDUCES SPEEDS FROM 1 TO 2 MILES PER HOUR

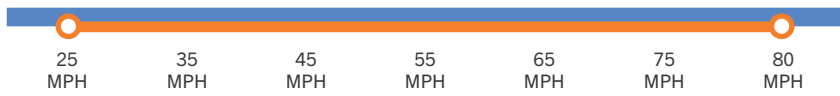
50% + REDUCTION IN VEHICLES TRAVELING 10+ MPH OVER THE POSTED SPEED LIMIT **50%**

\$5,000 AVERAGE INSTALL COST IS LESS THAN \$5,000



TRAVEL SPEEDS

Pavement Speed Limit Markings are appropriate for ALL roadway speeds.



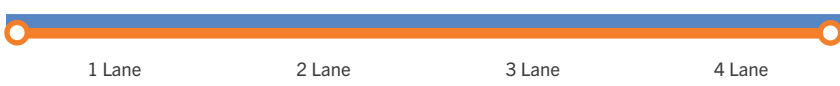
TRAFFIC VOLUMES

Pavement Speed Limit Markings are appropriate for ALL traffic volumes.



NUMBER OF LANES

Pavement Speed Limit Markings are appropriate for ALL lanes of traffic.



ADVANTAGES

Relatively quick installation and low cost. Pavement markings only, thus they do not affect plowing, emergency vehicle operations, drainage, etc.



DISADVANTAGES

Passive measure which doesn't require driver to alter behavior, so over time effectiveness could wear off. In the traveled way, thus wear off over time.



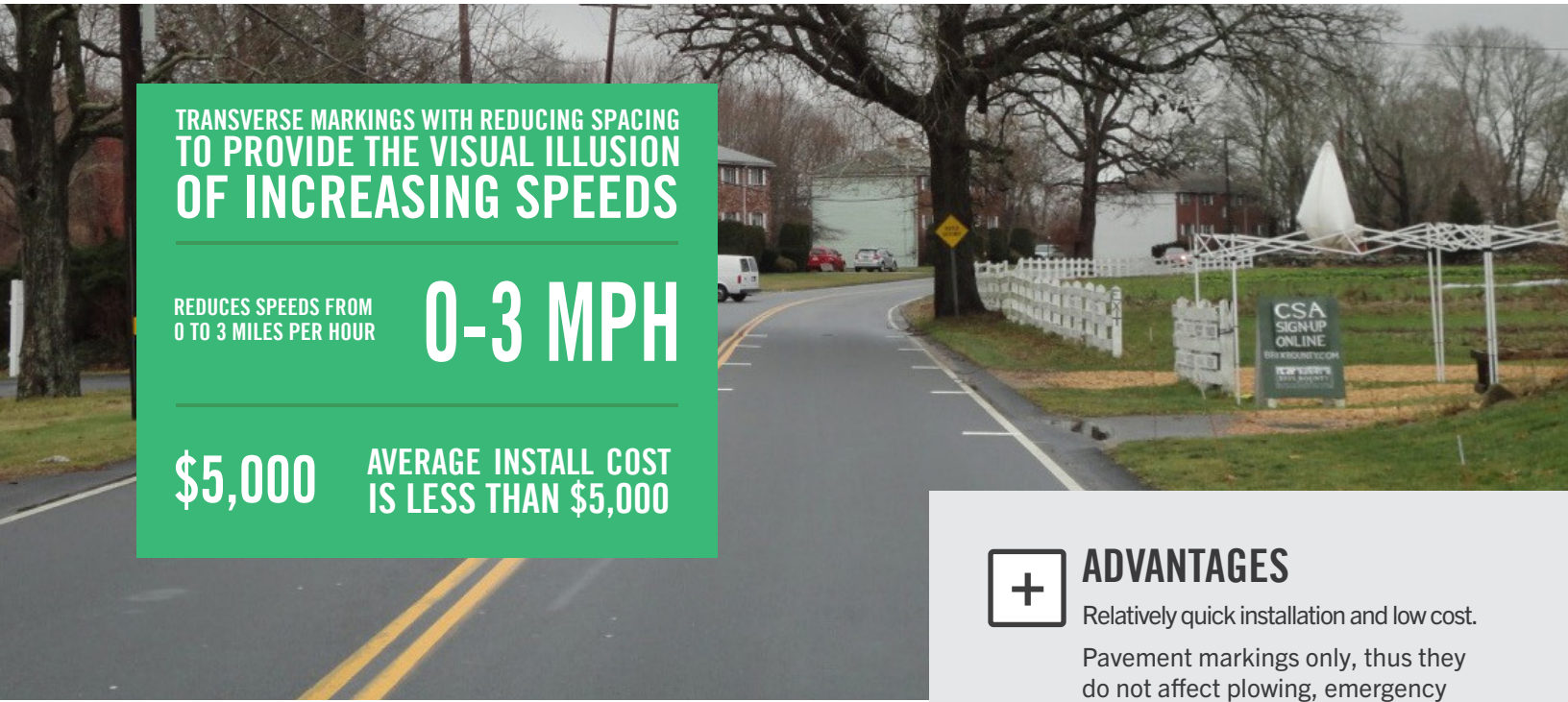
TYPICAL LOCATIONS

Any location where additional emphasis is needed. (curves, entering developed areas, reduction in posted speed limit).



EXAMPLE LOCATIONS

I-80 Eastbound at I-15, SLC



TRANSVERSE MARKINGS WITH REDUCING SPACING TO PROVIDE THE VISUAL ILLUSION OF INCREASING SPEEDS

REDUCES SPEEDS FROM 0 TO 3 MILES PER HOUR

0-3 MPH

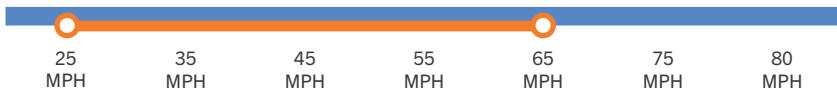
\$5,000

AVERAGE INSTALL COST IS LESS THAN \$5,000



TRAVEL SPEEDS

Optical Speed Bars are appropriate for roadway speeds between 25 and 65 miles per hour.



TRAFFIC VOLUMES

Optical Speed Bars are appropriate for Low to Moderate traffic volumes.



NUMBER OF LANES

Optical Speed Bars are appropriate for 1 to 2 lanes of traffic in each direction.



ADVANTAGES

Relatively quick installation and low cost. Pavement markings only, thus they do not affect plowing, emergency vehicle operations, drainage, etc.



DISADVANTAGES

Passive measure which doesn't require driver to alter behavior, so over time effectiveness could wear off. In the traveled way, thus wear off over time.



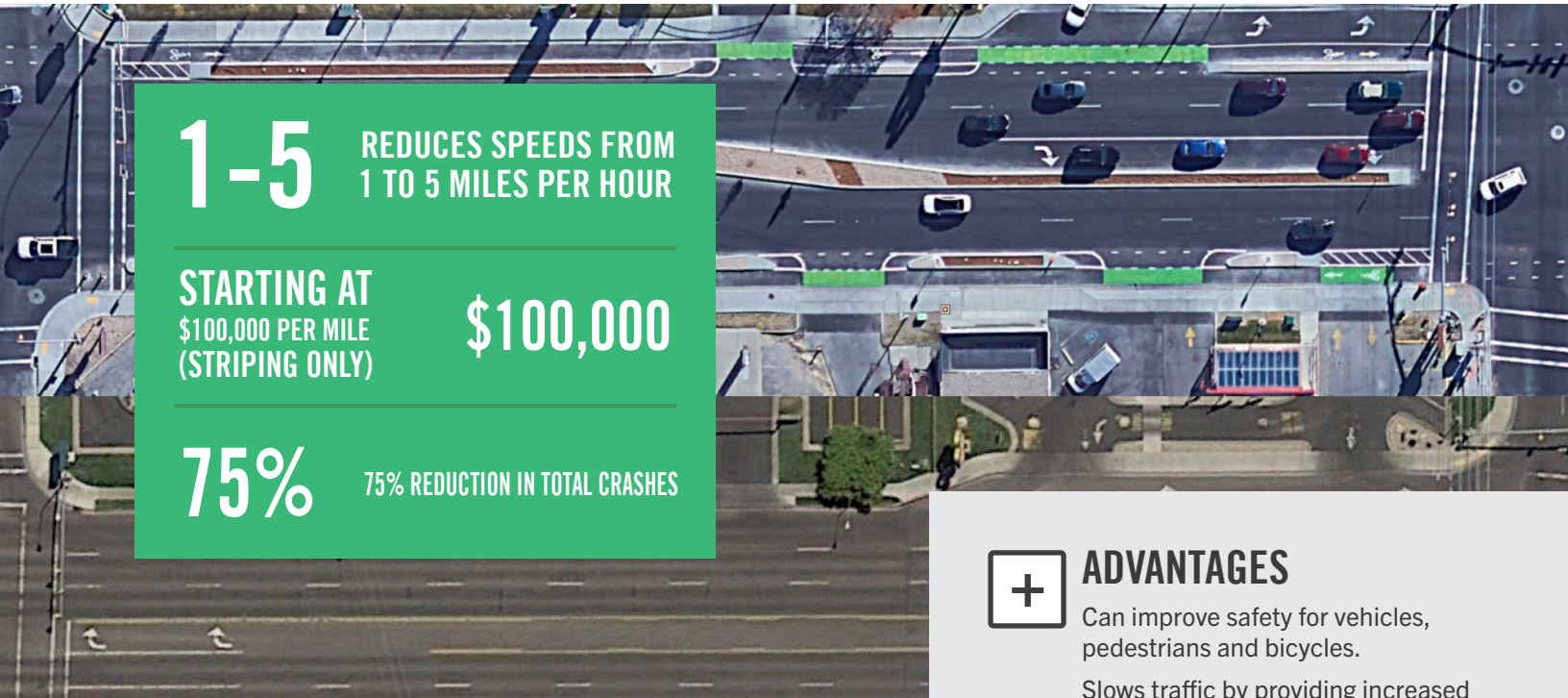
TYPICAL LOCATIONS

Curves and entering rural communities.



EXAMPLE LOCATIONS

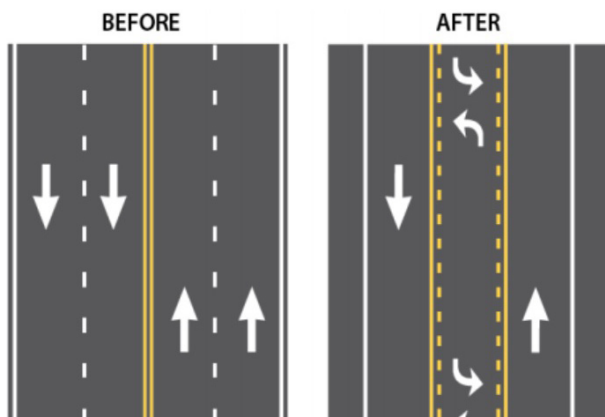
None within Utah



1-5 REDUCES SPEEDS FROM 1 TO 5 MILES PER HOUR

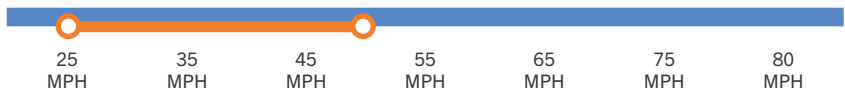
STARTING AT \$100,000 PER MILE (STRIPING ONLY) **\$100,000**

75% 75% REDUCTION IN TOTAL CRASHES



TRAVEL SPEEDS

Road Diets are appropriate for roadway speeds between 25 and 50 miles per hour.



TRAFFIC VOLUMES

Road Diets are appropriate for Low to Moderate traffic volumes.



NUMBER OF LANES

Road Diets are appropriate for 2 to 4 lanes of traffic in each direction.



+ ADVANTAGES

- Can improve safety for vehicles, pedestrians and bicycles.
- Slows traffic by providing increased friction.

- DISADVANTAGES

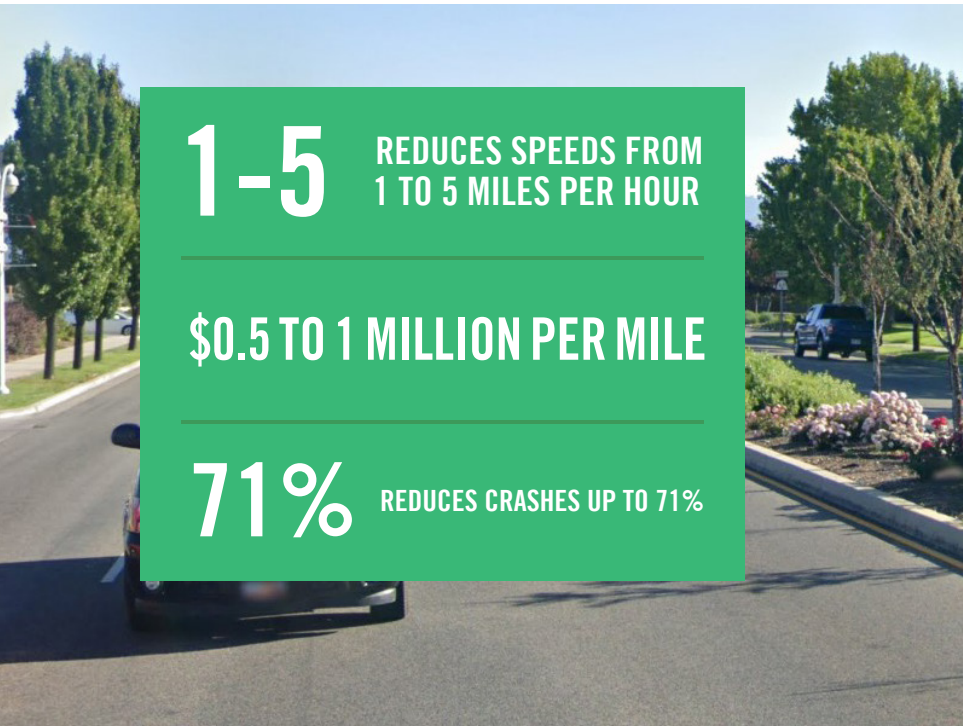
- Could impact roadway capacity, and emergency services/evacuation times.

📍 TYPICAL LOCATIONS

Roadways with frequent curb cuts and with traffic volumes that are lower than roadway capacity.

🔍 EXAMPLE LOCATIONS

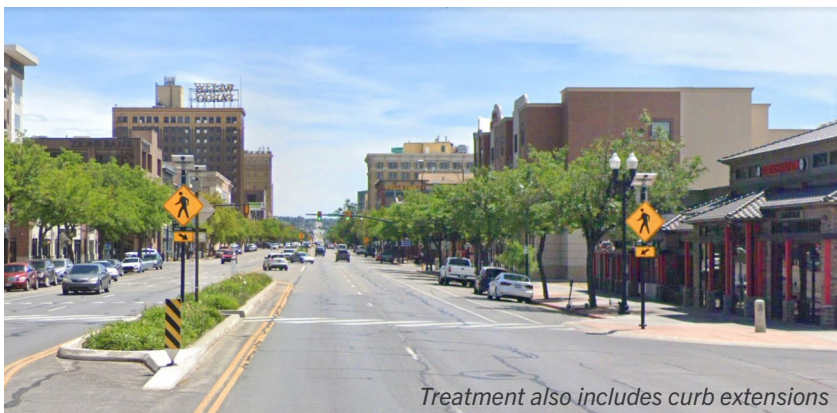
- SR-258, Elsinore
- SR-118, Richfield
- Cougar Blvd, Provo
- 200 West, SLC
- California Ave (east of Redwood Rd), SLC



1-5 REDUCES SPEEDS FROM 1 TO 5 MILES PER HOUR

\$0.5 TO 1 MILLION PER MILE

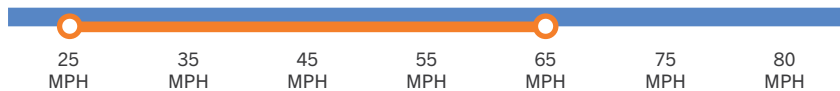
71% REDUCES CRASHES UP TO 71%



Treatment also includes curb extensions

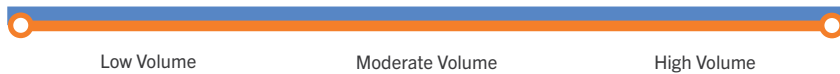
TRAVEL SPEEDS

Median Islands are appropriate for roadway speeds between 25 and 65 miles per hour.



TRAFFIC VOLUMES

Median Islands are appropriate for ALL traffic volumes.



NUMBER OF LANES

Median Islands are appropriate for All lanes of traffic.



ADVANTAGES

Physical treatment so effectiveness does not wear off with time.

Provides improved pedestrian crossing.

Landscaped medians improve aesthetics as well as reduce travel speeds.



DISADVANTAGES

Increased maintenance. Could require additional right-of-way.

Back to back curb medians without landscaping have not been shown to reduce travel speeds.



TYPICAL LOCATIONS

Roadways with two-way left-turn lanes and where u-turns, alternate access, or median openings can be accommodated. Existing and potential pedestrian crossing locations.



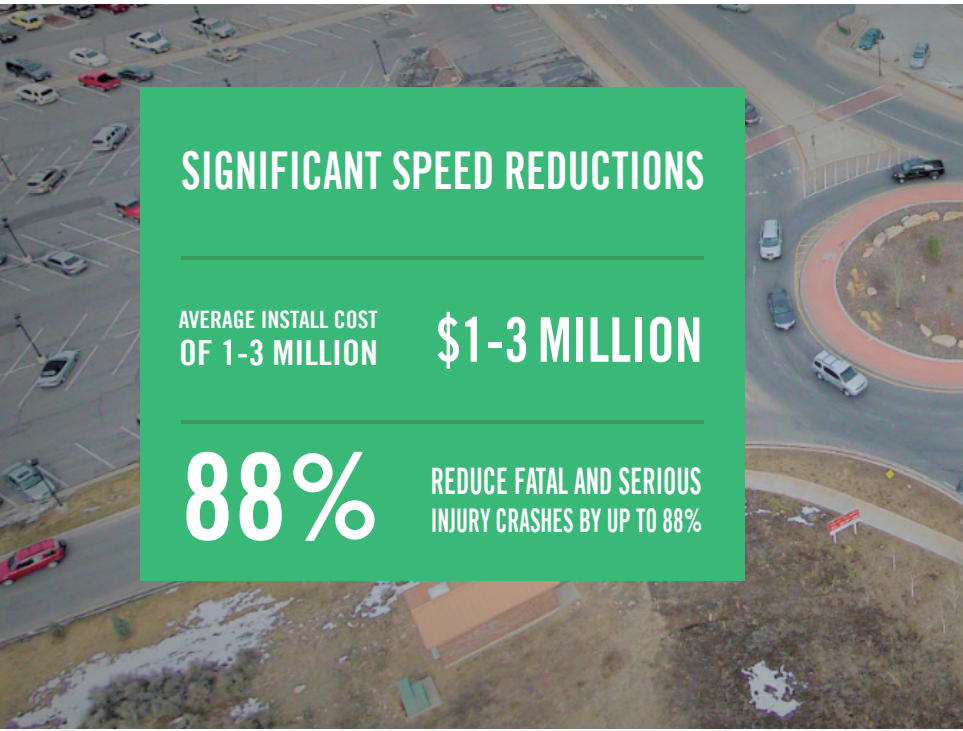
EXAMPLE LOCATIONS

US-89, downtown Ogden

US-89 @ 50 North, SLC

SR-68 @ 5500 South, Taylorsville

SR-34, St. George



SIGNIFICANT SPEED REDUCTIONS

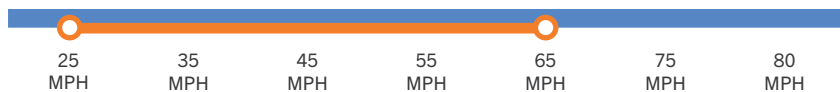
AVERAGE INSTALL COST OF 1-3 MILLION **\$1-3 MILLION**

88% REDUCE FATAL AND SERIOUS INJURY CRASHES BY UP TO 88%



TRAVEL SPEEDS

Roundabouts are appropriate for roadway speeds between 25 and 65 miles per hour.



TRAFFIC VOLUMES

Roundabouts are appropriate for Low to Moderate traffic volumes.
**High volume roadways may be possible with additional review / design.*



NUMBER OF LANES

Roundabouts are appropriate for 1 to 2 lanes of traffic in each direction.
**3 lane roadways may be possible with additional review / design.*



ADVANTAGES

- Alters vehicle path thus necessitates major reductions in speed.
- Major safety improvements.
- Can handle a wide range of mainline and turning traffic.
- Pedestrian safety improved due to lower speeds.



DISADVANTAGES

- Relatively expensive. May require additional right-of-way.



TYPICAL LOCATIONS

Intersections with available right-of-way. Where speeds, safety, and congestion are all concerns.



EXAMPLE LOCATIONS

- I-80 interchange, Jeremy Ranch Park City
- SR-163, Oljato-Monument Valley
- SR-12 & SR-63, Bryce Canyon
- SR-130, Enoch



STARTING AT \$20,000 PER MILE (STRIPING ONLY)

0-3 MINOR (0 TO 3 MILES PER HOUR) EFFECT ON VEHICLE SPEED WITHOUT OTHER CHANGES

PROVIDES SPACE FOR BIKE LANES OR PARKING



ADVANTAGES

Potentially improved bike facilities or increased on-street parking.
Low cost.



DISADVANTAGES

Without other changes has not been shown to drastically vehicle speeds.



TYPICAL LOCATIONS

Combined with other treatments. Where treatments are needed for bicycle activity, high demand for parking, etc. and not just lowering vehicle speeds.

Roadways with wider pavement section than needed.



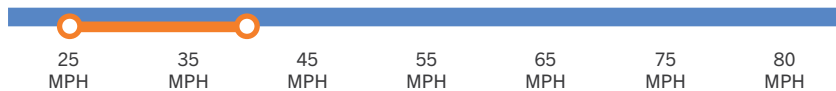
EXAMPLE LOCATIONS

200 South @ 800 East, SLC
Daybreak Parkway, South Jordan



TRAVEL SPEEDS

Roadway Narrowing is appropriate for roadway speeds between 25 and 40 miles per hour.



TRAFFIC VOLUMES

Roadway Narrowing is appropriate for Low to Moderate traffic volumes.



NUMBER OF LANES

Roadway Narrowing is appropriate for 1 to 3 lanes of traffic in each direction.





**LIKELY REDUCTION IN VEHICLE SPEEDS
DEPENDING ON DESIGN**

APPROXIMATELY
\$100,000 OR GREATER **\$100,000**

**UP TO 30% REDUCTION
IN PEDESTRIAN CRASHES**



ADVANTAGES

Physical treatment so effectiveness does not wear off with time.
Provides improved pedestrian crossing.



DISADVANTAGES

Increased maintenance. Could interfere with large vehicle movements.



TYPICAL LOCATIONS

Corridors with on-street parking.
Intersections with pedestrian activity and a small number of turning heavy vehicles.



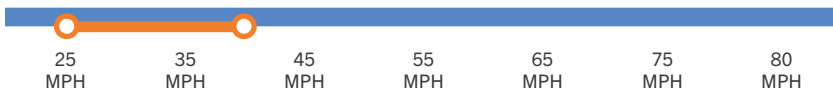
EXAMPLE LOCATIONS

US-89, downtown Ogden
US-89 & 500 N, SLC
US-40, downtown Ogden
SR-120, Richfield
US-89, Gunnison
SR-12, Triopic



TRAVEL SPEEDS

Curb Extensions are appropriate for roadway speeds between 25 and 40 miles per hour.



TRAFFIC VOLUMES

Curb Extensions are appropriate for Low to Moderate traffic volumes.



NUMBER OF LANES

Curb Extensions are appropriate for 1 to 2 lanes of traffic in each direction.



ROADSIDE GATEWAY FEATURES

(STREET TREES, LIGHTING, SIGNAGE, BANNERS, PUBLIC ART, ETC.)



POSSIBLE VEHICLE SPEED REDUCTION
DEPENDING ON DESIGN

VARYING INSTALLATION COST



ADVANTAGES

Alerts drivers when entering community. Beautifies community gateway.



DISADVANTAGES

No researched speed reductions. Speed reductions will vary greatly on level of treatment.



TYPICAL LOCATIONS

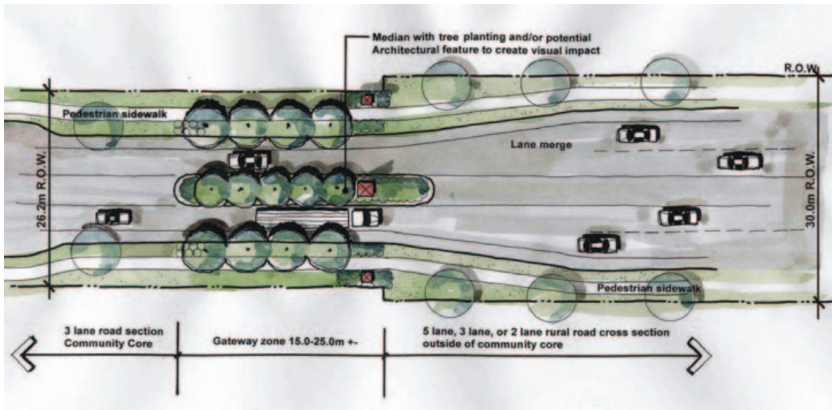
Entering a community with a decrease in speed limit.

Combined with other speed management measures.



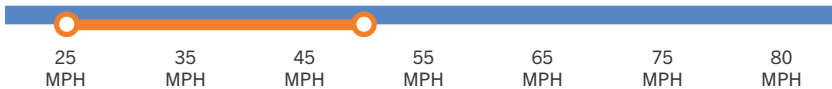
EXAMPLE LOCATIONS

SR-9 (over Virgin River), La Verkin



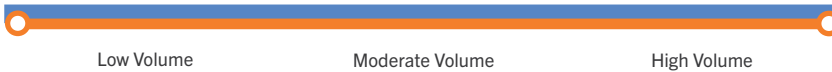
TRAVEL SPEEDS

Roadside Gateway Features are appropriate for roadway speeds between 25 and 50 miles per hour.



TRAFFIC VOLUMES

Roadside Gateway Features are appropriate for ALL traffic volumes.



NUMBER OF LANES

Roadside Gateway Features are appropriate for ALL lanes of traffic.



TOUCAN SIGNAL



The information sheets supplied above provide measures for typical UDOT roadways. In unique situations more local roadway or urban centric measures might be desired. The list below, provides additional speed management measures.

FORCED TURN ISLAND / TOUCAN SIGNAL

Limits higher speed cut through trips by forcing turns at major intersections. Provides priority to bicycles.

SIGNAL PROGRESSION

Timing a corridor to a lower target speed can help reduce travel speeds.

CHICANE

Slows drivers by alternating parking or curb extension along a corridor.

RAISED CROSSWALK



RAISED CROSSWALK

Forces drivers to slow down. May be combined with midblock pedestrian crossings.

RAISED INTERSECTION



TRAFFIC CIRCLE / MINI ROUNDABOUT

Reduces speed for previously uncontrolled movements.

RAISED INTERSECTION

Slows vehicles through the intersection and provides a more protected pedestrian environment.

These additional measures provide significant reductions in travel speeds and associated improvements to safety, however they may also reduce mobility. These should be used in situations when safety is a significant concern and must be prioritized over mobility. These also may be applicable in communities where the treatment supports local initiatives and is consistent with land use and street plans.