

# Overview of Late Lane (Zipper) Merge

FHWA TN-DIVISION



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# Focus Areas

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- Typical Early Merge vs. Late Lane Merge
- State Peer to Peer
- State and Federal Resources
- Public Perception/Outreach



# Typical Early Merging Maneuver

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Drivers want to merge early as possible as they approach a lane reduction or lane merge even in congestion.

Drivers are familiar with the existing signage and traffic control layouts.

Early Merge is beneficial on uncongested and low-volume roadway.



# Late Lane(Zipper) Merge

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A **Late Lane Merge** is to utilize both lanes up to the defined merge point.

Each driver alternate merging in "zipper" fashion into the open lane.

## **Benefits:**

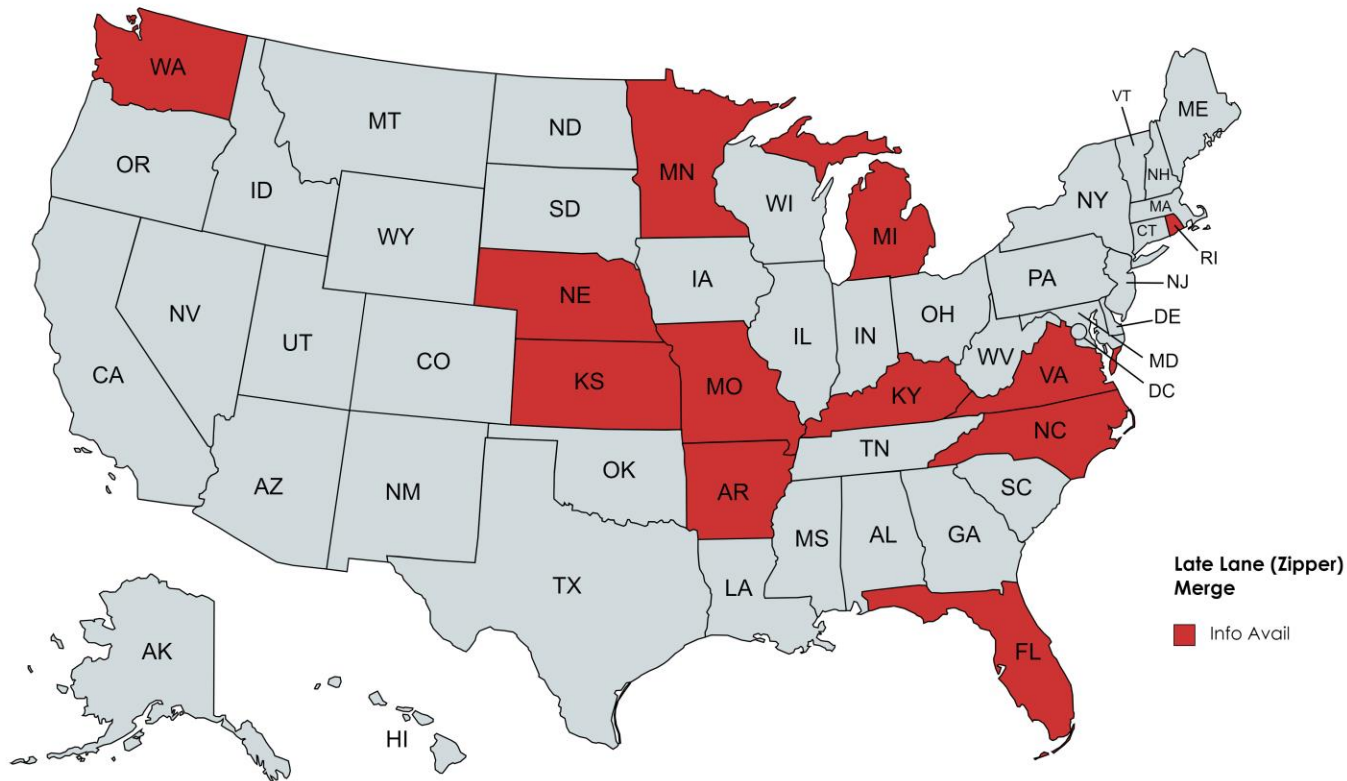
It can improve traffic flow by encouraging the use of both lanes and reducing aggressive driving behavior.

*However, agencies differ on Application of Late Lane Merges.*



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# Late Lane Merges Across the US



12 States that have documented (or pending) research, standard drawings, and/or and public outreach



# Peer-to-Peer Question

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Which states have **standard drawings** or requirements in **policy** for encouraging or requiring zipper merges with lane closures?

- **Work Zones**
  - and/or with Law Enforcement



# Peer to Peer Responses

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- Standard Drawings
  - Minnesota ([Zipper Merge - MnDOT \(state.mn.us\)](http://state.mn.us))
  - Kansas (Static Late Lane Merge System on Multilane Hwy)
  - Arkansas (Freeway and Law enforcement)
  - North Carolina (Project Special Provisions)
- Queue Warnings and Smart Work Zones
  - Washington
  - Florida (*in development*)

*Many States still do not have any standards or policies available.*



# Available Research

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- **Kentucky Transportation Center** : Other State Cases Studies and Reviewed Performance of I-275 and KY 9 (2017)
- **Missouri University**: Work Zone Zipper Merge using Driver Simulators (2021)
- **Virginia Transportation Research**: Evaluation of the Late Merge Work Zone Traffic Control Strategy (2004)
- **FHWA Tech Brief**: Evaluation of Lane Reduction and Late Merge Signing (2023)

<https://highways.dot.gov/research/publications/safety/FHWA-HRT-23-070>





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# Public Outreach: Driver Education Component

- [Zipper Merge \(ksdot.gov\)](http://ksdot.gov)
- [Do the Zipper Merge! - NDOT \(nebras.gov\)](http://nebras.gov)





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# Questions?

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