The Traffic Impacts of Bicycle Facilities

- Objectives
  - Evaluate vehicular and bicycle interactions
  - Assess implications for design
- Methods
  - Video, manual reduction, classification of driver behavior
  - Interactions: No deviation, deviation within lane, encroachment into oncoming lane, passing movements, queueing
- 9 sites: 45 cases (camera views)
  - Buffered, striped, & shared lanes, wide shoulders, no facilities

Veteran's Bridge Re-deisgn, Mankato

Pre-Construction

Post-Construction

- Pre-post analysis
  - Pre: 12 ft travel lanes, 6 ft shoulders with fog line (quasi-bike lane), 6 ft sidewalks
  - Post: 11 ft travel lanes, 3 ft shoulder, 12 ft shared use path
- Analyses
  - Choice of cyclist location (road v. sidewalk, path)
  - Frequency of interactions

Changes in Cyclist Location

	Pre-construction*			Post-construction*		
Veteran's Bridge	Travel Lanes	Shoulder (6 ft)	Sidewalk (6 ft)	Travel Lanes	Shoulder (3 ft)	Shared use Path (12 ft)
Eastbound	5%	37%	58%	3%	12%	85%
Westbound	3%	27%	70%	3%	12%	85%

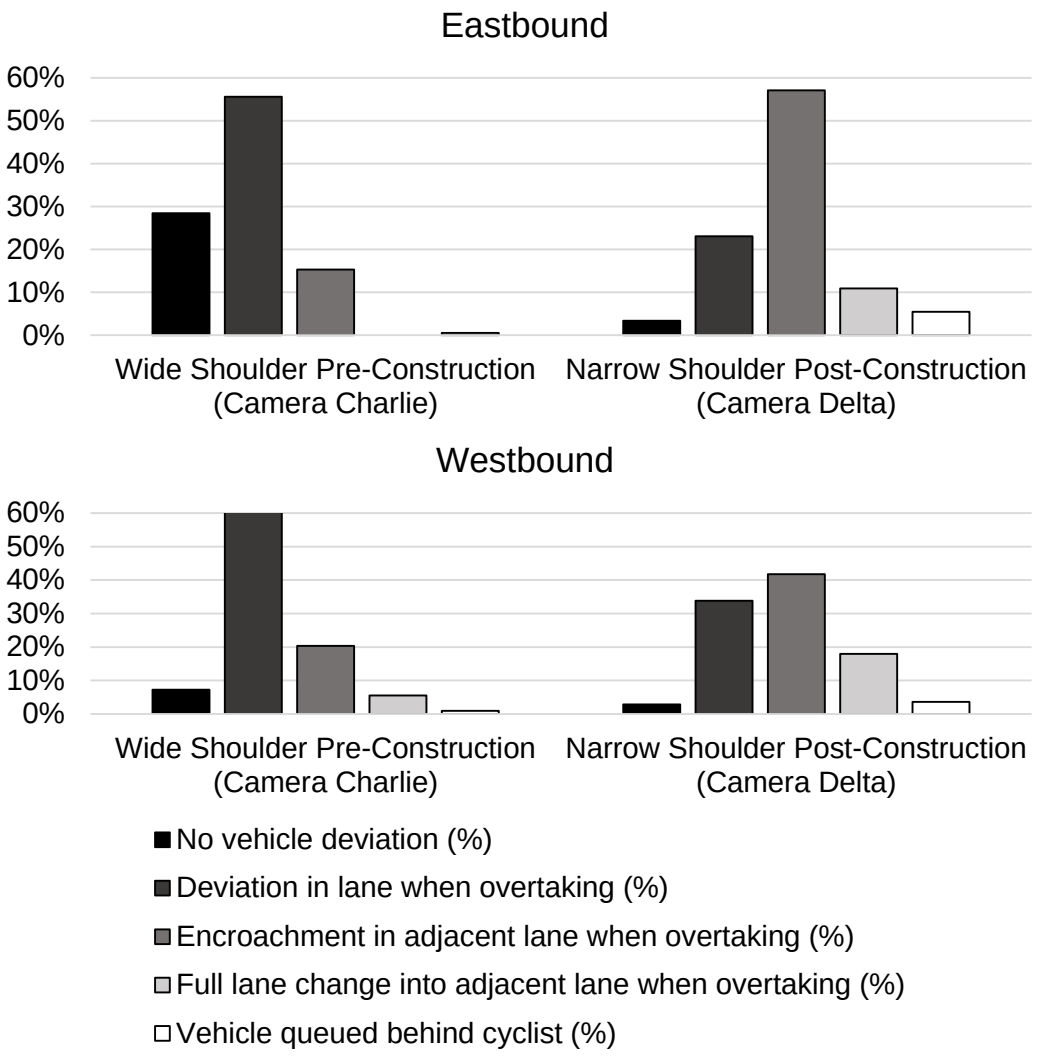
*sample sizes vary (see Task 4 report)

- Pre-construction: 30-45% of cyclists on road, shoulder
- Post-construction: 15% of cyclists on road, shoulder
- Many, not all cyclists moved to shared-use path
- Frequency, importance of interactions increased for cyclists remaining on road

Veteran's Bridge, Mankato

Pre-Construction

Post-Construction



Frequencies of Types of Interactions by Facility Types

Type of Facility (cases)	No Deviation or Deviated in Lane		Encroached in Adjacent Lane or Passed		Queued Behind Cyclist	
	Low	High	Low	High	Low	High
Adjacent Through Lane (3)	98.0%	99.2%	0.8%	1.6%	0.0%	0.4%
Buffered Bike Lane (9)	93.1%	100.0%	0.0%	6.9%	0.0%	0.4%
Striped Bike Lane (8)	57.0%	99.9%	0.1%	43.0%	0.0%	3.3%
Faded Bike Lane (1)	87.4%	87.4%	3.1%	3.1%	9.5%	9.5%
Wide Shoulder (4)	73.1%	97.5%	2.5%	25.9%	0.0%	2.1%
Narrow Shoulder (2)	26.5%	36.7%	59.7%	68.1%	3.6%	5.5%
Sharrows (4)	3.1%	61.5%	8.3%	82.8%	2.4%	30.2%
Shared Lane (signed) (5)	4.1%	13.2%	15.1%	40.5%	54.6%	80.8%
Shared Turn Lane (1)	41.4%	41.4%	1.4%	1.4%	57.1%	57.1%
Shared - Center Yellow (2)	70.0%	70.2%	25.0%	29.8%	0.0%	5.0%
No Facility (6)	46.0%	70.0%	20.3%	46.9%	3.1%	17.8%

Summary

- Not all cyclists use separated facilities
- Drivers less likely to deviate from their lanes or queue when facilities are clearly demarcated,
- Highest frequency of no observable effects on facilities with buffered or striped bicycle lanes
- Queueing behind cyclist was on roads with shared facilities