

The table below summarizes the safety objectives associated with each of the treatments included in the toolkit.

Treatment	Reduce Speeds	Safer Crossings	Increase Visibility	Mode Separation	Rural Road Safety
Advance Stop Lines		•	•		
Advisory Bike Lanes	•			•	
Automated Enforcement	•	•			•
Bicycle Crossings		•	•	•	
Bike Boxes		•	•	•	
Buffered Bike Lanes				•	
Chicanes/Roadway Curvature	•				
Conventional Bike Lanes				•	
Corner Radius Reduction	•	•	•		
Crossing Islands	•	•	•	•	
Curb Extensions/Bulb Outs	•	•	•	•	
Floating Transit Islands				•	
Gateway Treatments		•	•		
Hardened Centerlines and Turn Wedges	•	•	•		
High-Visibility Crosswalks		•	•		
Leading Bicycle Intervals and Leading Pedestrian Intervals		•	•		
Lighting		•	•		
Mini-Roundabouts	•	•			
Neighborhood Slow Zones	•	•			
Neighborhood Yield Streets	•	•			
No Turn on Red		•		•	
Off-Street Trails				•	
Parking Restrictions at Crossing Locations/ Daylighting		•	•		
Pedestrian Hybrid Beacons (PHB)		•	•	•	•

Treatment	Reduce Speeds	Safer Crossings	Increase Visibility	Mode Separation	Rural Road Safety
Posted Speed Limit (Target Speeds and School Speed Zones)	•	•			•
Protected Crossing Spacing for Managing Conflicts	•	•	•	•	•
Protected Intersections	•	•	•	•	
Protected Signal Phases		•		•	•
Raised Crossings	•	•	•		
Raised Medians	•	•	•		•
Rectangular Rapid Flashing Beacons (RRFB)		•	•		
Road Diets and Lane Width Reductions	•	•	•		•
Road Improvements at Curves					•
Roundabouts	•	•	•		•
Separated Bike Lanes				•	
Shared Streets	•				
Shoulders				•	•
Sidepaths				•	
Signal Timing and Pedestrian Recall		•			
Speed Humps, Tables, and Cushions	•				
Tree Buffer	•			•	

Which treatments are effective?

Researchers have estimated the reduction in crashes that can be achieved by implementing many roadway safety treatments. Where research has shown a reduction in crashes for a given treatment, that is noted in the toolkit. Crash reduction estimates do not exist for all treatments, but other research and data gathered from prior use can provide an indication of safety benefits.

Multiple treatments at the same location often have complementary benefits. Caution and engineering judgement should be exercised when extrapolating the safety impact in these cases.

According to the Federal Highway Administration:¹

- A crash reduction estimate should be regarded as a generic guide of safety effectiveness.
- Environmental, traffic volume, traffic mix, geometric, and operational conditions may affect the safety impact of a treatment.
- Engineers must exercise judgement and consider these factors to ensure that a treatment applies to the conditions.



Where should treatments be applied?

Roadways throughout the county have different characteristics. Based on the number of lanes, daily vehicles, travel speeds, and other factors, different safety treatments may be appropriate on different roadways. In addition, some treatments are generally applied along segments, while others improve safety at intersections.

Montgomery County is currently developing a Complete Streets Design Guide, which assigns each county roadway a street type based on the roadway's surrounding context and transportation function for all travel modes. The table below summarizes the applicable locations, including both location type and street type, associated with each of the treatments included in the toolkit.

Treatment	Location Type				Street Type*											
	Along Segment	Midblock Crossing	Signalized Intersection	Unsignalized Intersection	Downtown Boulevards	Downtown Streets	Boulevards	Town Center Boulevards	Town Center Streets	Neighborhood Connectors	Neighborhood Streets	Neighborhood Yield Streets	Industrial Streets	Country Connectors	Country Roads	Major Highways
Advance Stop Lines		•		•	•	•	•	•	•	•	•	•	•	•	•	•
Advisory Bike Lanes	•										•	•				
Automated Enforcement	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•
Bicycle Crossings		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bike Boxes			•		•	•	•	•	•	•	•	•	•	•	•	
Buffered Bike Lanes	•									•	•		•			
Chicanes/Roadway Curvature	•				•	•	•	•	•	•	•	•	•	•	•	
Conventional Bike Lanes	•									•	•		•			
Corner Radius Reduction			•	•	•	•	•	•	•	•	•	•	•	•	•	
Crossing Islands		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Curb Extensions/Bulb Outs			•	•	•	•	•	•	•	•	•	•	•	•	•	
Floating Transit Islands	•				•	•	•	•	•	•	•					
Gateway Treatments		•	•		•	•	•	•	•	•	•	•	•	•		
Hardened Centerlines and Turn Wedges		•	•	•	•	•	•	•	•	•	•					
High-Visibility Crosswalks		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Leading Bicycle Intervals and Leading Pedestrian Intervals			•		•	•	•	•	•	•	•		•			
Lighting	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mini-Roundabouts				•							•	•				
Neighborhood Slow Zones	•									•	•	•				
Neighborhood Yield Streets	•											•				
No Turn on Red			•		•	•	•	•	•	•	•					•

Treatment	Location Type				Street Type*											
	Along Segment	Midblock Crossing	Signalized Intersection	Unsignalized Intersection	Downtown Boulevards	Downtown Streets	Boulevards	Town Center Boulevards	Town Center Streets	Neighborhood Connectors	Neighborhood Streets	Neighborhood Yield Streets	Industrial Streets	Country Connectors	Country Roads	Major Highways
Off-Street Trails																
Parking Restrictions at Crossing		•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Pedestrian Hybrid Beacons (PHB)		•			•	•	•	•	•	•	•	•	•	•	•	
Posted Speed Limit (Target Speeds and School Speed Zones)					•	•	•	•	•	•	•	•	•	•	•	•
Protected Crossing Spacing for Managing Conflicts	•	•			•	•	•	•	•	•	•	•	•	•	•	•
Protected Intersections			•	•	•	•	•	•	•	•	•	•	•	•	•	
Protected Signal Phases			•		•	•	•	•	•	•	•	•	•	•	•	•
Raised Crossings		•	•	•		•		•		•	•	•				
Raised Medians	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
Rectangular Rapid Flashing Beacons		•			•	•	•	•	•	•	•	•	•	•	•	
Road Diets and Lane Width Reductions	•				•	•	•	•	•	•	•	•	•	•	•	•
Road Improvements at Curves	•													•	•	•
Roundabouts			•	•	•	•	•	•	•	•	•		•	•	•	•
Separated Bike Lanes	•				•	•		•	•				•			
Shared Streets	•					•		•								
Shoulders	•													•	•	•
Sidepaths	•						•			•			•	•	•	•
Signal Timing and Pedestrian Recall			•		•	•	•	•	•	•	•	•	•	•	•	•
Speed Humps, Tables, and Cushions	•				•	•		•	•	•	•	•	•			
Tree Buffer	•				•	•	•	•	•	•	•	•	•	•	•	•

*For definitions of the street types, see the Montgomery County Complete Streets Design Guide.