

Indiana State Route Bicycle Suitability Rating Criteria

Purpose

Bicycle riders on public roads have the same rights and responsibilities as motorists, and are subject to the same rules and regulations. These laws include stopping for stop signs and red lights, riding with the flow of traffic, using lights at night, yielding the right-of-way when entering a roadway, and yielding to pedestrians.

The purpose of the bicycle suitability analysis is to provide a snapshot of the quality of state roadways for use by experienced bicyclists. All streets where bicyclists are permitted to ride are technically classified as shared roadways. On shared roadways, bicyclists and motorists share the same travel lane. Motorist may have to cross over into the adjacent travel lane to pass a bicyclist. **Please Note:** *A bicyclist is not required to ride in a designated bike lane. Bicyclists have the right to use either the bike lane or the travel lane.*

The State Route Bicycle Suitability analysis assumes conditions of the roadway travel lanes and does not consider the availability of a dedicated bike lane. The analysis will be used to develop a bicycle suitability map that will serve as a dynamic tool for bicyclists to help select the most appropriate state route for their travel.

Please Note: *Not every bicyclist will agree with all of the ratings within the Bicycle Suitability Map. All bicyclists must use good judgment regarding their skill levels to determine the routes most appropriate for them.*

Targeted Bicyclist

The Bicycle Suitability Analysis and Map and the rating criteria is designed for the experienced adult riders. The suitability map is not intended for children, inexperienced riders, or riders who are not comfortable riding in roadway travel lanes. For the intent of this analysis, riders are classified into two experienced rider groups:

1. **Advanced Adult Bicyclist** – experienced riders who generally use their bicycle as they would a motor vehicle. Advanced Adult Bicyclists are generally more willing to ride on roadways that have no bicycle accommodations. They ride for convenience and speed and want direct access to destinations with a minimum of detour or delay. They prefer to have sufficient operating space on the street to eliminate the need for themselves or a passing motor vehicle to shift position. The Bicycle Federation of America estimates that five percent of all bicyclists fall into the Advanced Adult Bicyclists category.
2. **Basic Adult Riders** - Basic or less confident adult riders may still be using their bicycles for transportation purposes but have a higher aversion to interaction with traffic. These bicyclists have both a wide variation of skill and strength, and great differences in their self-assessment of

skills. For these reasons, this category contains the broadest cross-section of user profiles and operating characteristics. Basic riders are more comfortable riding on neighborhood streets and multi-use paths and prefer designated facilities such as bike lanes on busier streets. If possible, they avoid roads with fast and busy traffic unless they have additional space in which to operate. Despite their aversion to traffic, basic adult riders can still be expected to use major arterials. Many bicycle-dependent users are forced to travel on high-speed, high-volume streets in order to reach jobs or basic needs. Further compounding this problem, many of these bicycle-dependent riders live in central city areas and are employed in service industries with nontraditional work hours, often requiring them to commute in the dark. Many bicycle-dependent users have little enthusiasm or skills for bicycling, and in many cases they are not aware that they are required to follow traffic laws. **Source:** CHAPTER 16 *Bicycle and Pedestrian Facilities* Jennifer L. Toole, AICP and Bettina Zimny, AICP

Methodology

The Bicycle Suitability Map and the rating criteria method will continue to evolve as better information and professional input is made available. INDOT's Planning & Asset Management Team will be responsible for updating the rating criteria, routes, and maps as needed.

Data used for the suitability mapping derives from the INDOT's road inventory and HPMS data sets. Various categories were evaluated through assessment engineering input and consultation of knowledgeable staff experts at district offices and MPOs. Please note, these data sets and suitability analyses do not consider:

- **At grade rail-road crossings** - Rough and uneven railroad crossings and those that are set at an acute angle to the roadway and are obstacles to bicyclists.
- **Bridge Crossings** - Surface conditions on bridges and inadequate space to accommodate motor vehicles and bicycles can cause problems for cyclists and pedestrians.
- **Manhole and Utility Covers** – Recessed manholes covers that create obstacles to cyclists. These sometime appear after roadway resurfacing when a manhole is not raised to the new surface level.
- **Bicycle-Safe Drainage Gates** - Some types of drainage grates can trap a bicycle wheel and cause a crash, particularly those with bars that are parallel to the direction of travel and with wide openings between the bars.
- **Signed Shared Roadway** – At this time, there's no comprehensive database within the agency for signed shared roadways on state roadway facilities. As this information develops, the Planning & Asset Management Team will begin incorporating this information into suitability analyses.
- **Dedicated Bike Lanes** – The availability of dedicated bike lanes was not considered in the suitability analysis as bicyclists are not required to ride in a designated bike lane. Bicyclists have the right to use either the bike lane or the roadway travel lane. As more information develops

on designated bicycle lanes becomes available, the Asset Planning & Management Team will begin incorporating this information into suitability analyses.

The Asset Management Team used 4-category ratings for experienced bicyclist:

- **Suitable:** basic level rider would be able to travel with a moderate level of comfort, while an advanced rider would be very comfortable.
- **Moderately Suitable:** basic level rider would be somewhat uncomfortable, while an advanced rider would be moderately comfortable.
- **Not Suitable:** Roadway is not well suited for bicycle travel. Basic level riders should not travel on this type of facility and advanced riders should use extreme caution.
- **Prohibited** - Bicycles are not allowed on these types of facilities. These facilities are either full access controlled (interchange access only) or may be partial access control with INDOT future plans to upgrade to a full access controlled facility.

The Bicycle Suitability Map considers the following factors:

Access Control and Freight Traffic

- Full Access Control: Interstate, freeways, expressways, corridors with interchange access only, or corridors scheduled to be upgraded to freeways (Prohibited)
- Partial Access Control: divide facilities with interchanges at select roadways (Not Recommended to Moderately Suitable)
- No Access Control: no interchanges (Suitable)

Lanes Configuration

- >4 lanes (Not Recommended)
- 4-lane divided (In most cases Not Recommended. However, can be Moderately Suitable in cases where speed, traffic volume, and commercial freight volume is low.)
- 4-lane undivided (Moderately Suitable)
- 2-lanes (Suitable to Moderately Suitable) depending on speed, traffic volume, shoulders, and roadway geometrics

Lane Width

- < 11' – lanes (Not Recommended)
- Between 11-12' lanes (Moderately Suitable)
- 12' lanes and greater (Suitable)

Shoulder Type

- Gravel Shoulder (Not Suitable)
- Curb Shoulder (Moderately Suitable), depending on speed limit, and lane width
- Paved shoulder (Suitable), depending on shoulder width

Paved Shoulder Width

- No Shoulder (Not Suitable)
- Shoulder with rumble strips (Not Suitable)
- Between 1-3' shoulders (Moderately Suitable)
- >3' shoulders (Suitable)

Roadway speed limit

- >55 MPH (High speed, Not Suitable)
- < 55 MPH (Suitable) depends on lane configuration, shoulder width, access control, shoulder type, and traffic volume.

Traffic volumes (Automated process under development)

- Multi-Lane Facilities (speed limit, commercial volume, shoulder width, and lane width) :
 - >40,000 (not suitable)
 - 25,000-40,000 (Moderately Suitable)
 - 0-24,999 (Suitable)
- 2-lane Facilities:
 - >10,000 for 2-lane facilities (Not Suitable)
 - 6,000-10,000 for 2-lane roadways (Moderately Suitable)
 - 0-5,999 for 2-lane (Suitable)

Commercial Vehicle Volumes (Automated process under development)

Commercial volumes includes: buses, RVs, and all trucks (including delivery, utility, mining, garbage, and construction related trucks)

- High Commercial Vehicle Volume: >10% commercial (Not Suitable)
- Medium Commercial Vehicle Volume between 5-10% (Moderately Suitable)
- Low Commercial Vehicle Volume: 0-5% commercial (Suitable)

Roadway geometrics (Staff Observation)

- Poor Site Distance: blind curves, vertical alignment issues, hilly terrain, dense number of driveways per mile (Not Suitable)
- Moderate Site Distance: limited site distance concerns, moderately hilly, no-blind curves, moderate driveway cuts (Moderately Suitable)
- Good sight distance: no vertical alignment issues, no blind curves, and relatively flat terrain (Suitable)

Pavement Quality and Maintenance (Underdevelopment)

- Excellent (Suitable)
- Good (Suitable)
- Fair (Moderately Suitable)
- Poor (Not Recommended)

Results & Findings

A GIS Map was developed based on the 4-categories of suitability discussed. The MAP file will be converted into a common shapefile that can be downloaded by cyclists and special interest groups for use and comment. The shapefile will be stamped and dated by the Asset Management Division. As noted, the Asset Management Division will continue to improve the bike suitability map and process based on input and available information.

For more information on the Suitability Map or INDOT's Bike and Pedestrian Program, please contact our Bike and Pedestrian Coordinator, Jerry Halperin at jhalperin@indot.in.gov or by telephone (317) 232-5476.