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Issue 41

Stress Free is the Way to Be: Understanding Level of Traffic Stress for Bicycles

Is your community looking to get more people biking? A bicycle network that minimizes the stress or risk that a potential rider might experience related to conflicts with motor vehicles is more likely to attract new riders. Understanding the types of bicyclists you are designing for and the “level of stress” associated with different facility types can help with the development of a bicycle network that is accessible to all ages and abilities.

Understanding Bicyclists

There are four general types of people when it comes to comfort with bicycling, according to *a national survey*.

- **Highly Confident (4-7%)** – A small fraction of adults will ride nearly anywhere regardless of facilities, distance or roadway conditions.
- **Somewhat Confident (5-9%)** – Another small portion of adults are comfortable riding in traffic on the appropriate facilities and prefer shorter trips.
- **Interested but Concerned (51-56%)** – The majority of the population is not comfortable riding in traffic. However, they might ride in low volume, low speed roadway conditions, or on separated or off-street facilities.
- **No Way, No How (31-37%)** – The remaining adults are uninterested in or unable to ride a bike.

For communities aspiring to increase the number of residents riding bicycles, focusing on the “interested but concerned” group by providing new, low-stress connections is where they are likely to see the greatest results.



Measuring Traffic Stress

There are a variety of methods that can be used to determine the suitability of a community's roadways for bicycling. Level of Traffic Stress (LTS) is one of the most widely used by transportation professionals in recent years, including some Ohio communities.

While measures such as Level of Service (LOS) classify how a roadway is performing using motor vehicle-based metrics such as delay, LTS recognizes that bicyclists place a high value on comfort when choosing a route.

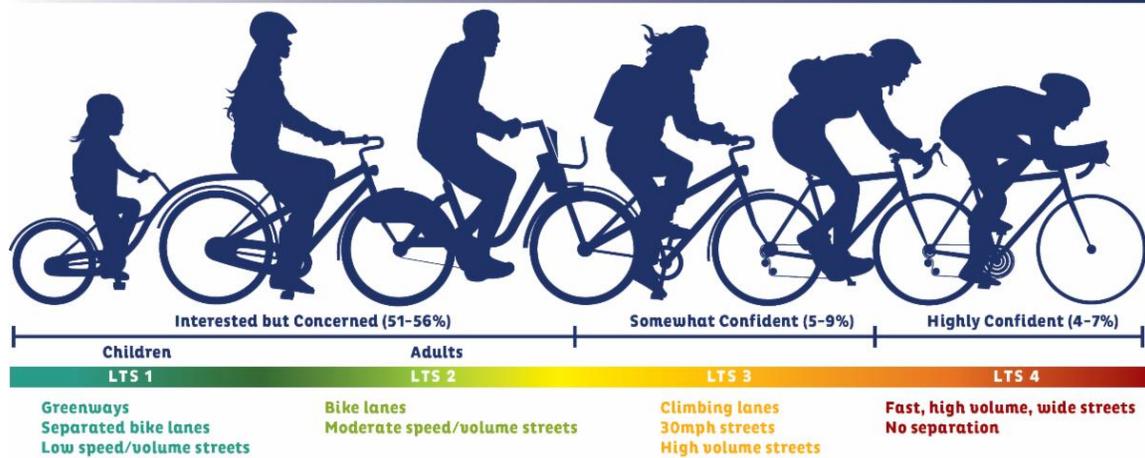
LTS was created to more accurately measure how comfortable riders feel on different types of roads with varying conditions, based on their level of confidence. LTS is calculated using measures including: the number of travel lanes, posted speed, bike lane presence, type and width, and presence of a roadway centerline.

While gathering adequate data can be one of the biggest challenges to understanding level of traffic stress, much of the needed data can be found using [ODOT's online Transportation Information Mapping System \(TIMS\)](#) In addition, the LTS methodology is [online](#).

The LTS methodology can be customized to various local situations, such as using different criteria for urban and rural roadways. For example, the organization People for Bikes combines LTS scores with US Census and [OpenStreetMap \(OSM\)](#) data to develop its [Bicycle Network Analysis \(BNA\)](#). In fact, People for Bike has conducted BNAs in [19 Ohio cities](#).

What's Your Road's Score?

LTS includes four rankings that correspond to the different types of bicyclists described above. Roads ranked LTS 1 and LTS 2 serve the "interested but concerned" population. Children are likely to be comfortable on LTS 1 and most adults on LTS 2 roads. A bikeway network made up of LTS 1 and LTS 2 roadways is considered a "low stress bicycle network."

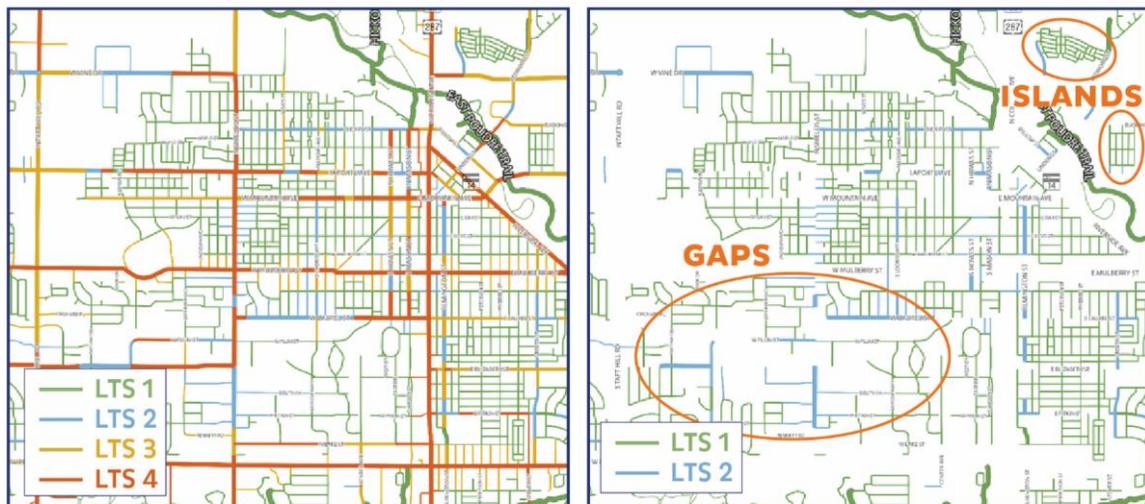


Using LTS Scores

LTS scores can inform planning processes, identify design needs, influence decisions about where to make investments and inform the public about roads that might be the most comfortable for riding.

Planning

Use an LTS map during bikeway planning to understand the degree of connection along low stress routes to important destinations. After identifying key destinations, see how critical high-stress segments create barriers for people who might consider biking to those locations. Then make plans to fill gaps and remove barriers.



Left: An LTS analysis ranks bicyclist traffic stress from 1 to 4.

Right: Mapping software removes higher stress routes from the map and reveals islands and gaps in the low stress network.

Design

When designing new bikeways to complete a low-stress network, experiment with different facility types. See how the LTS scores change as a result. Keep in mind that as motor vehicle speeds and volumes increase, a greater amount of separation is needed to provide a low-stress bicycle connection on that road.

Investment Decisions

When resources are limited, investments that can make the most impact need to be prioritized. Use the LTS analysis process to see how a high-stress network might change with different investments. For example, focusing on

improving high stress intersections throughout an area versus building a few key routes could each have different impacts on the connectivity of the overall network.

Informing the Public

LTS scores can help bicyclists pick routes on which they will be comfortable riding. For example, the Northeast Ohio Areawide Coordinating Agency includes LTS scores on its [county bike maps](#) as a communication tool to help people make bicycling decisions.

Learn more

Here are few of the many resources out there to help conduct an LTS analysis in your community.

- Calculate LTS using the [Mineta Transportation Institute's original methodology](#) and its [updated 2017 criteria](#).
- Learn how [Madison, WI calculated and applied LTS](#) to its regional network.
- Build new, low-stress connections using FHWA's [Bikeway Selection Guide](#) to choose appropriate facilities based on roadway speed and volume.

Announcements

ODOT's Safe Routes to School (SRTS) application window will open in January. Communities can apply for School Travel Plan development assistance using the 2020 non-infrastructure application. Tune in for [ODOT's Safe Routes to School 2020 Application Overview Webinar](#) on Thursday, December 12, from 2-3 PM to learn more.

Free [Active Transportation Academy Courses](#) will be hosted at ODOT Central Office. Attend [Conducting Walk & Bike Audits](#) on Thursday, November 14, from 9:30-2:45; and [Complete Streets Implementation and Health Equity in Transportation](#) on Wednesday, December 11, from 8:30-4.

Learn about ODOT's funding and resources at a free "[Show me the Money!](#)" workshop on Tuesday, December 3, from 9-3:15 at ODOT Central Office in Columbus. [Register today](#).

The national non-profit [Safe Routes Partnership](#) invites communities and organizations to apply for the [2020 Safe Routes to Parks Activating Communities program](#). The program provides technical assistance for seven communities to develop Safe Routes to Parks action plans and awards \$12,500 to each community to begin plan implementation.

Questions? Feedback?



2019 YEAR TO DATE DEATHS IN OHIO



23
BICYCLE



94
PEDESTRIAN

2018 YEAR TO DATE DEATHS IN OHIO

20 BICYCLE

112 PEDESTRIAN

*As of October 28, 2019

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