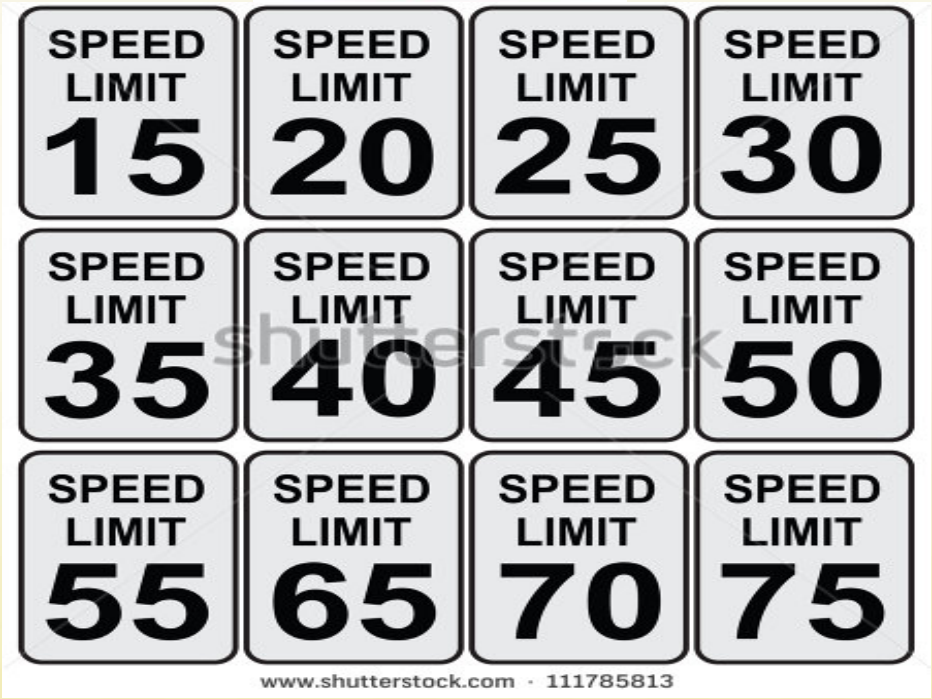
USLIMITS2 – A Tool in the Tool Box



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Background

Speed limits are selected to balance travel efficiency versus safety. Some may argue that a rational speed limit is one that is safe, that most motorist consider appropriate, that will protect the public, and can be enforced.

USLIMITS2 employs a decision to advise users of the appropriate maximum speed limit for the specific road section of interest.

USLIMITS2 was developed based on input from a panel of experts in the USA that included traffic engineers, enforcement personnel, decision makers, and researchers from different parts of the country.

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USLIMITS2 Helps Practitioners Set Appropriate Speed Limits

- USLIMITS2 is a tool to aid practitioners in determining appropriate speed limit recommendations.
- USLIMITS2 is a web based tool designed to help or assist in setting reasonable, safe, and consistent speed limits for specific segments of roads. USLIMITS2 is applicable to all types of roads ranging from rural local roads and residential streets to urban freeways. However, the tool is not applicable to school zones or construction zones.
- User-friendly, logical, and objective, USLIMITS2 is of particular benefit to local communities and agencies without ready access to engineers experienced in conducting speed studies for setting appropriate speed limits. For experienced engineers, USLIMITS2 can provide an objective second opinion and increase confidence in speed limit setting decisions.

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USLIMITS2 Helps Practitioners Set Appropriate Speed Limits

- Users input factors including route type, section length, average daily traffic (ADT). 50th and 85th % speeds, statutory speed limit (if applies), and crash history
- Users will receive a recommended speed limit and list of issues that might need to be further investigated.
- Users can save their project file and / or create Word and Excel versions of their reports.

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Accessing the Expert System

- Since this program is accessed through the Internet the user is only required to have a computer with web-browsing software connected to the internet. Any web browser version developed in 2003 or later would be sufficient.

- Users do not need any special skills to access and use the system. However, to obtain useful results from the system, the user is required to provide specific engineering and crash information about the road section that is being examined.

- Next slides will demonstrate how USLIMITS2 is an useful tool when determining proper posted speed limits.

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USLIMIT2 SPEED ZONING REPORT SR 322 Mifflin County East Bound

USLIMITS2 Speed Zoning Report

Project Name: SR 322 Eastbound

Analyst: TM

Date: 11-01-2018

Basic Project Information
Route Name: SR 322
From: 102
To: 200
State: Pennsylvania
County: Mifflin County
City: Reedsville CDP
Route Type: Limited Access Freeway
Route Status: Existing

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 10032 veh/day
Total Number of Crashes: 22
Total Number of Injury Crashes: 10
Section Crash Rate: 22 per 100 MVM
Section Injury Crash Rate: 10 per 100 MVM
Crash Rate Average for Similar Roads: 49
Injury Rate Average for Similar Roads: 13

Roadway Information
Section Length: 5.5 mile(s)
Statutory Speed Limit: None
Existing Speed Limit: 55 mph
Adverse Alignment: No
Terrain: Rolling
Interchanges: 2
Transition Zone: No

Traffic Information
85th Percentile Speed: 63 mph
50th Percentile Speed: 61 mph
AADT: 10032 veh/day

Recommended Speed Limit:

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Equations Used in Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (10032 * 365 * 5.5 * 5.00) / (100000000)
M = 1.0070

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (4.40 * 100000000) / (10032 * 365 * 5.5)
Rc = 21.85 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (2.00 * 100000000) / (10032 * 365 * 5.5)
Ri = 9.93 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Cc = 49.20 + 1.645 * (49.20 / 1.0070) ^ (1/2) + (1 / (2 * 1.0070))
Cc = 61.20 crashes per 100 MVM

Critical Injury Rate (Ic)
Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^

https://safety.fhwa.dot.gov/uslimits/

USLIMIT2 SPEED ZONING REPORT SR 322 Mifflin County West Bound

USLIMITS2 Speed Zoning Report

Project Name: SR 322 Westbound

Analyst: TM

Date: 11-01-2018

Basic Project Information
Route Name: SR 322
From: 103
To: 201
State: Pennsylvania
County: Mifflin County
City: Reedsville CDP
Route Type: Limited Access Freeway
Route Status: Existing

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 8785 veh/day
Total Number of Crashes: 27
Total Number of Injury Crashes: 17
Section Crash Rate: 31 per 100 MVM
Section Injury Crash Rate: 19 per 100 MVM
Crash Rate Average for Similar Roads: 49
Injury Rate Average for Similar Roads: 13

Roadway Information
Section Length: 5.5 mile(s)
Statutory Speed Limit: None
Existing Speed Limit: 55 mph
Adverse Alignment: No
Terrain: Rolling
Interchanges: 2
Transition Zone: No

Traffic Information
85th Percentile Speed: 68 mph
50th Percentile Speed: 61 mph
AADT: 8785 veh/day

Recommended Speed Limit:

Note: The injury crash rate for the section of 19 per 100 MVM is more than 30 percent above the average for similar roads (13) but below the critical rate (20). A comprehensive crash study should be undertaken to identify engineering and traffic control deficiencies and appropriate corrective actions. The speed limit should only be reduced as a last measure after all other treatments have either been tried or ruled out.

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Equations Used in Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (8785 * 365 * 5.5 * 5.00) / (100000000)
M = 0.8818

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (5.40 * 100000000) / (8785 * 365 * 5.5)
Rc = 30.62 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (3.40 * 100000000) / (8785 * 365 * 5.5)
Ri = 19.28 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))

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Results

- After an traffic and engineering speed study was performed and concluded it was determined the posted speed limit along this section of SR 322 in Mifflin County warranted a speed increase to 65 mph

- USLIMITS2 was an useful tool that we utilized in determining the recommended and proper posted speed limit

For more information Google USLIMITS2 or

https://safety.fhwa.dot.gov/uslimits

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Comments/Questions

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