INCORPORATING METRICS INTO YOUR TRAFFIC MANAGEMENT STRATEGY: 85TH PERCENTILE AND 10-MPH PACE

<u>AllTrafficSolutions.com</u>

STA



Incorporating Metrics Into Your Traffic Management Strategy

CONTENTS

85th Percentile and 10-mph Pace	3
The 85th Percentile	4
Applying the 85th Percentile Rule to Your Traffic Challenges	5
The 10-mph Pace	7
What this Means for Enforcing Speed Limits	8
Conclusion	9

All Traffic Solutions12950 Worldgate Drive, Suite 310, Herndon, VA 20170P 866.366.6602E sales@alltrafficsolutions.com

©All Traffic Solutions



Incorporating Metrics into Your Traffic Management Strategy: 85th Percentile and 10-mph Pace

According to the National Highway Traffic Safety Administration (NHTSA), fully 90% of all licensed drivers speed at some point in their driving careers, and 75% admit to committing this offense regularly. The extent to which you can accurately determine optimum speed limits on your roads—then monitor and enforce those limits—is crucial to maximizing the safety of travelers in your municipality.

When it comes to effective traffic management, you need fast access to timely, report-ready traffic data before you set or revise speed limits. Two important metrics related to speed limits that you should actively monitor are the 85th percentile and the 10-mph pace.

This paper is a practical guide to how these metrics work, why they are significant and what you can do to improve your traffic outcomes by using them.

The 85th Percentile

FACT: 15% of drivers cause the majority of road accidents

As a refresher, the 85th percentile is the maximum speed that 85% of drivers will not exceed on a given road, even if there were no speed limits, stop signs or traffic signals. This driver-determined metric is considered by experts to be the safest speed on the roadway because 85% of the vehicles are already traveling at that speed or below it. Most drivers behave in a reasonable manner; in their self-interest to remain safe, they don't drive at excessive speeds and don't want to be involved in crashes.



66

...so it's well documented that setting the speed limits near the 85th percentile of actual travel speeds results in fewer, less severe collisions. The concept of the 85th percentile was first published in a comprehensive study entitled *Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle* conducted by David Solomon in the 50s and early 60s and released in 1964. Several subsequent studies have been conducted and reached very similar conclusions, so it's well documented that setting the speed limits near the 85th percentile of actual travel speeds results in fewer, less severe collisions.

Research shows that vehicles traveling between the 50th and 85th percentiles of speed have the lowest risk of speed-induced crashing and that drivers who exceed the 90th percentile have a significantly greater risk of crashing.

Applying the 85th Percentile Rule to Your Traffic Challenges

Knowing what the 85th percentile is on any given road in your municipality is important because it's the most telling benchmark you can use to correctly determine the speed limit for that road.

The 85th percentile is the starting point for traffic engineers in determining where the speed limit should be set. In conjunction with other factors such as road design, road construction and development, the presence of schools or heavy pedestrian areas, and the transition between rural and urban areas on major highways, the speed limit typically falls between the 85th percentile and 10 mph lower.

Not only is the 85th percentile central for determining accurate speed limits, but as traffic management continues to become increasingly data-driven, you'll find the 85th percentile to be extremely helpful for analyzing your traffic data. For example, imagine a new daycare center is built in your jurisdiction and, despite a posted speed limit of 25 mph, drivers are continually traveling past it much faster. One way to understand why this is happening is to analyze the 85th percentile for the area surrounding the daycare center.





66

Data-enabled radar display signs make it easy to collect highly accurate, report-ready data from any Internetconnected device—without having to send someone to the sign location to perform a manual download.





Let's say your data indicates that the 85th percentile is 42 mph. Then you can demonstrate why cars are continually exceeding the 25-mph speed limit—because the road and the surrounding environment are designed for higher speeds. Now that you know what's causing the excessive speeding, you can resolve this potentially dangerous issue by putting measures in place to remind drivers to slow down.

If the prospect of performing ongoing data collection is giving you a headache, you should know that data-enabled radar display signs make it easy to collect highly accurate, report-ready data from any Internet-connected device—without having to send someone to the sign location to perform a manual download.

Data-enabled radar display signs not only collect the traffic data you need to produce reports, but they automatically upload data remotely and securely to the Cloud so you no longer have to drive to each sign to perform data collection. An added bonus is that you can download reports using a variety of metrics, making it easier to track the 85th percentile and many other key metrics with just a few clicks. When you employ webenabled signs, you will significantly cut down on resource hours because you can program the signs remotely, freeing up personnel to attend to other matters.

A variety of preset reports can be easily run based on data gathered by web-enabled radar signs.

Let's look at another traffic metric you should be using to keep your roads safer and how the Cloud makes it easier to utilize it for improved traffic safety.



The 10-mph Pace

The 10-mph pace is the range of speed at which the majority of cars are traveling on a particular stretch of road. While the 85th percentile is the maximum speed that 85% of drivers will not exceed, the 10-mph pace is the range of speed at which those cars are actually moving.

So, if the 85th percentile on a certain road is 37 mph, the 10-mph pace will typically be around 25-35 mph. However, the 10-mph pace can change throughout the day depending on how busy the road becomes. The 85th percentile, on the other hand, will remain the same regardless of congestion because the maximum speed that 85% of the drivers will not exceed does not typically change except under extreme circumstances such as severe weather.

For example, let's say that there's heavy road congestion on a particular stretch of highway at 7 a.m. The 85th percentile stays the same, but the average vehicle speed on that the road—at that time—will drop due to the high volume of cars present. You can measure this by placing a sensor on the road and collecting the resulting data. If the 10-mph pace decreases at a specific time each day, it's very likely due to congestion.



An ideal scenario would look like this:

- The 85th percentile is 37 mph
- The 10-mph pace is 23-33 mph
- The speed limit is 25 mph

What this Means for Enforcing Speed Limits

By looking at the 10-mph pace, we can gauge whether a specific car is speeding or is safely traveling at the average speed. If the speed limit is at the higher end of the 10-mph pace, that means the majority of cars will go slower than the speed limit. If the pace is toward the lower end of the range, then more cars will be traveling above the limit.

An ideal scenario would look like this:

- The 85th percentile is 37 mph
- The 10-mph pace is 23-33 mph
- The speed limit is 25 mph

The example above shows that vehicles are trending right around the speed limit, confirming that the speed limit is set correctly.

These data points could also justify raising the speed limit. If the 85th percentile was 45 mph, the 10-mph pace was 33-43 mph and the speed limit was 25 mph, many cars would be exceeding the limit, potentially causing those driving at the posted speed limit to be unsafe.



Conclusion

Studying proven data-driven metrics like the 85th percentile and the 10-mph pace enables traffic engineers to regulate speed limits with a much higher degree of certainty. Until recently, data gathering was fraught with difficulty, from manual data collection at each checkpoint to the labor-intensive and often confusing task of making sense of hundreds of data points.

Cloud-based traffic data capture not only automates the once arduous process of manual data collection and analysis, saving time and freeing up resources, but it also contributes to increased road safety. By applying the intelligence gleaned from timely traffic data, municipalities can make highly informed, verifiable decisions that can have a positive impact on the safety of everyone.

0

Ask us for a personal demo of TraffiCloud[™], our traffic management solution that lets you control your traffic devices and data from any Internet-ready device 24/7, providing a new level of awareness while reducing the amount of time needed to manage your equipment and information.

Call 866.366.6602 or email us at <u>sales@alltrafficsolutions</u> <u>com</u> or visit online.



TraffiCloud leverages our patented technology (US Patents 8,417,442; 8,755,990; 9,070,287; 9,411,893) to deliver unique cloud-based management, features and functionality.

All Traffic Solutions delivers cloud-based traffic management solutions, including radar speed and variable message displays, imaging products and intelligent transportation systems for law enforcement, transportation and communities.

Our innovative TraffiCloud[™] traffic management platform is changing the way communities solve their most complex traffic, transportation and parking challenges by allowing them to manage all their traffic equipment remotely, as well as leverage data to increase traffic safety, streamline their operations and achieve lasting results.



