

HighViz modifications for your motorcycle

Taillight, headlight, reflective tape, auxiliary driving lights and horn

This article is the fifth in a series discussing rider conspicuity strategies. Conspicuity (con-spih-CUE-i-tee) is a fancy term for "visibility." It's the ability of an object to draw attention to it, even if nobody's actively searching for it. Rider and motorcycle conspicuity, therefore, is the ability of a motorcyclist to draw attention to him or her and their motorcycle, even though other drivers may not be actively looking for them.

We introduced the topic and have published articles as follows:

- (1) More about the why and what of HighViz
- (2) Described our top 20 HighViz strategies
- (3) The use of a HighViz vest, a bright or light colored helmet and a HighViz jacket
- (4) Strategic lane positioning

This article addresses modifications you can make to your motorcycle that will increase your conspicuity including:

- Headlight
- Taillight
- Reflective tape
- Auxiliary driving lights
- Horn

Headlight Modulation

An easy motorcycle modification to boost your frontal visibility - the area from 11 o'clock to 1 o'clock position where most of your crash hazards come from - is to add a headlight modulator to your bike.

While little research has been done to prove a headlight modulator's benefit to conspicuity, it is generally accepted by motorcyclists that a modulator will draw extra attention from other drivers, especially those drivers who are planning to turn in front of a rider. A pulsing headlight is a rare sight in traffic, which makes it an oddity - and something people may be more apt to notice.

Most motorcycles are hard-wired to have the headlight on whenever the engine is running, but with the advent of daytime running lights on cars and trucks, the advantage this once gave has diminished. A headlight modulator can help bridge that gap.

There is some confusion among riders and law enforcement officers about whether headlight modulators are legal or not. Because they appear to be "flashing," some police officers consider them illegal, because flashing lights are only allowed on emergency vehicles. However, a motorcycle headlight modulator is an accessory device that oscillates the intensity (does not flash it on and off) of a motorcycle headlamp at 240 ± 40 cycles per minute between approximately 20% and 100% of full intensity. United States and Canadian regulations require headlight

modulators to include a light sensor that disables modulation when the ambient light level drops below a certain point. When this happens, the headlamps burn steadily. They are legal in all 50 states, provided they comply with the standards set forth in Federal Motor Vehicle Safety Standards.

A demonstration of the use of a headlight modulator (and auxiliary lights) can be seen here: <http://www.youtube.com/watch?v=YnQwSQUZq9g>

Taillight Modulation

An easy way to make yourself more visible to traffic from the rear is to flash your taillight. Instead of just braking to slow or to stop, squeeze the brake lever several times to alert other drivers before you begin to slow. This will raise awareness of both your presence and your intentions and allow other drivers time to adjust.

This is a very sound technique to use during bright sunlight, when the relatively small taillight of a motorcycle can be hard to see, as well as at dawn, at dusk or after dark.

You can also use this technique when you feel you may have vanished into surrounding traffic, or when another driver may be following you too closely. Often times, because a car driver can see around you, they do not realize how close you really are. A flashing taillight will undoubtedly get more attention.

There is an even better alternative to flashing your taillight: install a taillight modulator or modulating taillight bulbs on your bike. These devices pulse your taillight a few times like a headlight modulator every time you apply the brake(s). This means that in addition to making yourself more visible to vehicles behind you, you are able focus solely on your braking for added safety.

You might also consider adding auxiliary brake lights to your motorcycle. If one taillight can get you noticed from behind, then two or three additional taillights might really make you stand out in traffic.

NOTE: taillight modulators are not legal in every state; check with your local law enforcement authorities to make sure.

An example of the use of a taillight modulator can be seen here: <http://www.youtube.com/watch?v=IbQcIGUy4CY>

Reflective Tape

Here is a great tip for anyone who rides after dark: a cheap, easy, and fun way to dramatically increase your visibility is to use reflective materials on your helmet, clothing, and/or bike to stand out at night. You can buy pre-designed kits with skulls, flames, or other designs, or you can create your own custom set for your helmet or bike.



Reflective materials on your helmet, clothing, and/or bike to stand out at night

What's so special about some glow-in-the-dark sticker? During the day, these materials seem like ordinary (or even invisible) decals. But at night, when a light source such as a car's headlights hit them, they light up and leap out as if they have a life of their own.

That's because they're made from special materials that reflect the light back at the source ("retro" reflect). This is the same technology used for industrial safety purposes and on highway road signs.

And best of all, these materials are cheap. You can get a custom set of glow-in-the-dark flames for your whole motorcycle for less than \$75. You can get 12" sheets of retroreflective adhesive films starting at less than \$10 a sheet.

Reflective tape and stickers, even reflective cloth sewn on to a jacket, can go a long way to help make you more visible to other drivers. Because the helmet is usually the highest point on a rider, start there. Even a few square inches up high will make a big difference in how well other drivers can see you at night.



Photos above left to right (1) stock helmet (2) black reflective tape in normal light (3) same reflective tape with reflective light.

You can also add reflective decals to your bike, particularly the sides and rear of the motorcycle. The larger surface areas make ideal places for retroreflective materials.



You can even buy products that are a similar color to your bike or your bike's frame (black, silver, etc.) so they're all but invisible during the day, but glow like wildfire at night when the light hits them. And if putting stickers on your helmet or bike isn't your style, you can buy black reflective cloth to sew on to the back of your black leather jacket or saddlebags. Normally black, when a light shines on it, it glows white or silver!

Auxiliary Driving Lights

Most riders add auxiliary driving lights or fog lights to their motorcycles to help them see the road and shoulders at night or in bad weather. But a terrific fringe benefit is that auxiliary lights can make you more visible to other drivers. The available research indicates the daytime conspicuity benefits of a headlight modulator and the relatively rare triangular auxiliary light setup are about equal (<http://smarter-usa.org/research/conspicuity-highviz/>).



An example of auxiliary driving lights (white) and position/marker lights (amber). The available research indicates the larger triangular formed by the white driving lights is more noticeable.

Have you ever wondered why the railroad industry uses a triangle of lights, rather than just dual headlights like a car? One reason is to help drivers easily identify the oncoming lights as a train, for safety.

If you were approaching a busy intersection at night - or for that matter, during the day - wouldn't you prefer to have people to mistake you for a freight train? When faced with an oncoming train, most drivers will take an extra moment to make certain they have enough room before proceeding.

Another reason auxiliary lighting increases safety is because it makes it easier for other drivers to gauge your speed and distance (similar to position/marker lights). Three headlights in a triangular configuration, rather than one lone headlight, add a bit of perspective to an oncoming vehicle. This means that other drivers are less likely to misjudge how far away you are, and how fast you are going.



Pictures: left to right – (1) stock headlight on dim, (2) bright, (3) bright with lower set of auxiliary lights, (4) bright with lower and upper set of auxiliary lights

For increased conspicuity both day and night, install a good set of auxiliary lights on your motorcycle. Be sure to check your local laws for possible legal requirements such as distance from the ground, distance apart, maximum bulb intensity, etc.

Aftermarket Horn

An inexpensive, easy modification to draw attention to you is a loud aftermarket horn. While a loud horn won't make you more *visible*, it may be effective at alerting other drivers to your presence.

Most riders agree that the quality and volume of a stock motorcycle horn could be better. But how much better? And on that note, how effective *is* a motorcycle horn? Does it make any difference at all?

The Minnesota Motorcycle Safety Center decided to put these questions to the test, using sound-recording equipment to compare three different motorcycle horns (two stock and one aftermarket) in various environments.

Their verdict? An aftermarket horn is definitely more effective than a stock horn, and a worthwhile investment for a rider seriously interested in taking action to get noticed. However, these tests also told them something most riders already know - a horn can help you draw attention to yourself, but *don't* rely on it. From inside an enclosed car, even with the radio off, a horn - stock or aftermarket - doesn't do a whole lot. But every little bit helps.



Can you hear me now?

Editor's Note:

The material in this article was researched and written by motorcyclist safety expert and author of four books about safe riding Pat Hahn during the time he was employed as the Minnesota Motorcycle Safety Center Public Information and Education Coordinator. Sometime after Pat left his position with Minnesota, the state revised its motorcyclist safety web presence eliminating most of the HighViz.org material which was subsequently acquired by SMARTER, Inc. Edits have been made to Mr. Hahn's original article.