



# THE ASSOCIATION

FEBRUARY 2019

## AUTOMATED VEHICLE SAFETY

EXCERPTS FROM THE NHTSA REPORT ON AUTOMATED VEHICLES FOR SAFETY

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Driver Assistance technologies in today's motor vehicles are already helping to save lives and prevent injuries.

A number of today's new motor vehicles have technology that helps drivers avoid drifting into adjacent lanes or making unsafe lane changes, or that warns drivers of other vehicles behind them when they are backing up, or that brakes automatically if a vehicle ahead of them stops or slows suddenly, among other things. These and other safety technologies use a combination of hardware (sensors, cameras, and radar) and software to help vehicles identify certain safety risks so they can warn the driver to act to avoid a crash.

The continuing evolution of automotive technology aims to deliver even greater safety benefits and —one day—deliver Automated Safety Systems (ADS) that can handle the who task of driving when we don't want to or can't do it ourselves.

As part of the Five Eras of Safety, NHTSA foresees improvements that include Partially Automated Safety features, Lane Keeping assist, Adaptive

Cruise Control, Traffic Jam assist, and self-parking to be fully operational between 2016 and 2025. In the years 2025 and beyond, NHTSA projects features which will include Fully Automated Safety Features, and Full Highway autopilot.

Fully autonomous cars and trucks that drive us instead of driving them will become a reality. These self-driving vehicles ultimately will intergrate onto US roadways by progressing through six levels of driver assistance technology advancements in the coming years. These include everything from no automation (a driver is required at all times) to full automation (where an automated vehicle operates independently, without a human driver).

So, what are the benefits of Automation?

NHTSA reports that the safety benefits of automated vehicles are paramount. Automated vehicles' potential to save lives and reduced injuries is rooted in one critical and tragic fact: 94% of serious crashes are due to human error. Automated vehicles have the potential to remove human error from the crash equation, which will help protect driv-

ers and passengers, as well as bicyclists and pedestrians. When you consider more than 35,092 people die in motor vehicle-related crashes in the US in 2015, you begin to grasp the lifesaving benefits of driver assistance technologies.

Economic and Societal Benefits: Automated vehicles could deliver additional economic and additional societal benefits. A NHTSA study showed motor vehicle crashes in 2010 cost \$242 billion in economic activity, including \$57.6 billion in lost workplace productivity, and \$594 billion due to loss of life and decreased quality of life due to injuries. Eliminating the vast majority of motor vehicle crashes could erase these costs.

Efficiency and Convenience:

Roads filled with automated vehicles could also cooperate to smooth traffic flow and reduce traffic congestion. Americans spent an estimated 6.9 billion hours in traffic delays in 2014, cutting into time at work or with family, increasing fuel costs and vehicle emissions.

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# Drones Shown To Make Traffic Crash Site Assessments Safer, Faster & More Accurate

by Cynthia Sequin, Purdue University Research



Idling in a long highway line of slowed or stopped traffic on a busy highway can be more than an inconvenience for drivers and highway safety officers.

It is one of the most vulnerable times for “secondary accidents,” which often can be worse than an original source of the slowdown, according to the US Department of Transportation’s Federal Highway Administration. In fact, secondary crashes go up by a factor of almost 24 during the time highway safety officials are assessing and documenting the crash site.

In 2016, there were more than 7 million police-reported traffic crashes in which 37,461 people were killed and an estimated 3,144,000 were injured, according to the USDOT National Highway Traffic Safety Administration.

“It’s the people at the back of the queue where you have traffic stopped who are most vulnerable and an approaching inattentive driver doesn’t recognize that traffic is stopped or moving very slowly until it is too late,” said Darcy Bullock, the Lyles Family Professor of Civil Engineering and Joint Transportation Research Program director at Purdue University. “The occurrence of these secondary crashes can be reduced by finding ways to safely expedite the clearance time of the original crash.”

Conventional mapping a severe

or fatal crash can take two or three hours depending on the severity of the accident, according to Bullock.

“Our procedure for data collection using a drone can map a scene in five to eight minutes, allowing public safety officers to open the roads much quicker after an accident,” says Ayman Habib, Purdue’s Thomas A. Page Professor of Civil Engineering, who developed the photogrammetric procedures and envisions even more uses for the technology.

The technology is already in use. The Tippecanoe County Sheriff’s Office used drones to map crash scenes 20 times in 2018 and another 15 times in the same year to support specialty law enforcement teams throughout Tippecanoe County and in neighboring counties and jurisdictions.

“Overall, it can cut 60 percent off the down time for traffic flow following a crash,” said Capt. Robert Hainje of the Tippecanoe County Sheriff’s Office.

Bullock, Habib and colleagues from Tippecanoe County Sheriff’s Office prepresented their findings on Jan. 14th at the annual Transportation Research Board meeting in Washington, D.C., in the

“Traffic Law Enforcement Innovative Tools, Policy, and Countermeasures for Law Enforcement Safety” session. A video about the technology can be viewed at:

<https://youtu.be/LwwsUHu78t8>

“The collaboration with Purdue faculty and students has been tremendously effective in helping our law enforcement, first responders and special teams,” Hainje said. “The drone technology with the thermal imaging capability helps with all types of emergencies such as search and rescue, aerial support over water for diver teams or in wooded areas and for fugitive apprehension.”

John Bullock, a sophomore in the School of Mechanical Engineering and research assistant on the project, worked with local public safety colleagues to develop field procedures and post processing of images to create orthorectified images that clearly illustrate the position of vehicles, infrastructure and general terrain adjacent to the crash site. The drones are programmed to use a grid-type path and record about 100 photos in two-second intervals. This post processed data is used to develop an accurate scale map that with photos at the scene provides enough data to create a 3D print of the scene. “The technology is so much faster than traditional ground-based measurements and provides a much better comprehensive documentation that it opens up all different kinds of research,” Habib said.

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## MORE ABOUT: AUTOMATED VEHICLE SAFETY

With automated vehicles, the time and money spent commuting could be put to better use. A recent study stated that automated vehicles could free up as much as 50 minutes each day that had been previously dedicated to driving.

**Mobility:** While its full societal benefits are difficult to project, the transformative potential of auto-

mated vehicles and their driver assistance features can also be understood by reviewing US demographics and the communities these technologies could help support.

For example, automated vehicles may also provide new mobility options to millions more Americans. Today there are 49 million Americans over the age 65 and

53 million people have some form of disability. In many places across the country, employment or independent living rests on the ability to drive. Automated vehicles could extend that kind of freedom to millions more. One study suggests that automated vehicles could create new employment opportunities for approximately 2 million people with disabilities.

Do you know someone who may be interested in joining the IACAI? Visit [www.iacai.com](http://www.iacai.com) for more information

## CRASH INVESTIGATION TRAINING CLASSES ANNOUNCED

Recently, IPTM announced the following training courses which are coming to Indiana.

All courses will be taught in Lawrence, IN Please visit the IPTM website for registration.

3/25–4/5	At-Scene Traffic Crash/Traffic Homicide Investigation	\$1,095
4/22– 5/3	Advanced Traffic Crash Investigation	\$1,095
6/3– 6/14	Traffic Crash Reconstruction	\$1,095
7/8– 7/12	Commercial Vehicle Crash Investigation - Level I	\$795
7/29– 8/2	Commercial Vehicle Crash Investigation - Level II	\$825
8/26– 8/30	Investigation of Motorcycle Crashes	\$795
9/23 - 9/27	Pedestrian/Bicycle Crash Investigation - Level I	\$795

### Quotes of the day

- Some people say the glass is half full. Some people say the glass is half empty. Engineers say the glass is twice as big as necessary.
- There is a new trend in our office; everyone is putting names on their food. I saw it today; while I was eating a sandwich named Kevin.
- I get plenty of exercise, jumping to conclusions, pushing my luck and dodging deadlines.
- If everyday was a gift, I'd like a receipt for Monday. I want to exchange it for another Friday.
- If at first you don't succeed, redefine success.

## CONSIDERATIONS OF CRASH SCENE SAFETY

In the last issue of the Association, there was an article written about Law Enforcement Motor Vehicle Safety. The article addressed the number of officers killed each year in their 'office,' the patrol car. It also addressed concerns with regards to the type of equipment and distractions officers have in their 'office.'

Recently, the media reported a truly disturbing event which resulted in the death of a rookie police officer in California. This officer, fresh out of the academy, arrived to work a minor traffic crash only to be shot and killed by a bystander who reportedly suffered from mental health issues. This bystander then went home and killed himself. This officer had no direct contact with this bystander, no involvement before the fatal assault. Her only fault was being in the right place at the wrong time.

This tragic events brings

home something that most of us probably haven't given much thought to— situational awareness in crash investigation. We are taught to pay attention to traffic and other motorists when working a crash or being on/beside the roadway gathering evidence. We are told to wear hi-visibility clothing/vests in an effort to make ourselves more visible to those folks. We've even been taught how to deal with unreasonable, irrational and intoxicated drivers and passengers. However, I don't recall too many crash investigation classes which suggested or required heightened awareness as it relates to witnesses and bystanders. In today's world, we must keep our head on a swivel more so than ever before.

If you've managed to read the article this far, you're probably thinking, "geez, with all of this doom and gloom....I think I'll quit and start collecting trash..." as romantic as that

sounds, that's not the intent...

As crash investigators, we still have a responsibility to gather all the evidence we can to either solve a case or to provide enough information to prove a crime didn't occur. We also have an obligation to make sure the scene stays secure and everyone on scene is safe from injury or worse. Its just now, we must also add the fact that those we see as being "just gawkers" or "rubberneckers" may actually be looking to take advantage of a chaotic scene to do harm to others, including us, for whatever reason.

What can investigators do to prevent or avoid this type of situation? We must keep our eyes and ears open as we do our job. Unfortunately, those who want to do harm will take any opportunity they have to do so, whenever and however. Our job is to make sure we don't provide them with the opportunity to do so. We must be vigilant as we conduct our "routine" business just as we would be in the more serious crimes we investigate.

### More About: Drones Shown to Make Traffic...

(Continued from Page #2)

"It can provide high-quality maps, imagery, and models for post-crash investigation by engineers and public safety officials. This technology has many other civil

engineering applications beyond crash scene mapping and can be used to estimate the volume of material needed or used for a construction project within a couple of percentage points.

"It is very rewarding to see how this technology can be used to improve safety by reducing secondary crashes and exposure of colleagues to the hazards of working adjacent to highway traffic."



**HEY!!** If you haven't yet sent in your 2019 IACAI membership, what are you waiting for!?:

The IACAI uses funds obtained through membership fees to host training events each year, including this year's special training event with Tire expert TJ Tennett! We do our best to attempt to bring quality training events each year, but we can't bring folks like TJ here if we can't bring in the membership. If you know someone who might like to or be interested in joining the IACAI, please send them our way—check out the IACAI website for membership information and training announcements.

## Winter Weather Reminders

Well, it looks like most of us here in Indiana have survived one of the worst cold spells to hit us in quite some time, with below zero temperatures and wind chills temperatures of below -50 degrees! With these recent record temperatures and what appears to be more on the way, this is the perfect time to put out a little reminder about winter/cold weather safety for all of us who must play outside all day or night.

### **Cold Can Kill:**

While the first thought that comes to one's mind when seeing that statement is, "Duh!," it's something that we need to keep in mind. I see officers all of the time getting in and out of their patrol car wearing nothing more than their uniform, their jacket hanging neatly in the back window of their cruiser or laying along side of them in the seat.

Guys, BDU's and class A uniforms are no match for these cold temperatures. Uninsulated boots, paper thin gloves and ball caps don't work well, either. Time to let go of the Vogue images we want to portray. Layers of clothing and insulated clothing are the best materials to use in cold weather. If you're too cold, you can add more, if you're too hot, you can shed some. But the whole idea here is to stay warm and to keep your core temperature from dropping. A good investment is a good pair of heavy wool socks, and insulated boots. While this won't give you the same feeling as standing

out on the interstate for several hours wearing argyle socks and polished dress shoes, it will keep your feet warmer, which is what you want.

Another handy little investment are some disposable hand/feet warmers. These little devices are cheap and work, especially when you have to be out for a long period.

And, of course, don't forget about the long underwear. Today's long underwear, such as what is made by Under Armour, provides great insulation from the cold.

Dress for the conditions, not just to look good. Watch out for signs of frost bite and hypothermia. Try not to stay in one position for long periods—move around. Keep as much of your skin covered as you can and whenever possible, stay in your vehicle and stay warm.

While we're on this subject, another important thing to have in your vehicle is a blanket or two. Blankets are great for those times when you break down or get stuck and have to wait for assistance for some time. They're also handy for when you have to change tires in bad weather or poor conditions. Additionally, they're good for helping those who aren't dressed for the weather.

### **Outdoor Safety:**

It seems like more and more officers are being struck while performing their job recently. Let's face it, driver's don't drive the way

the did 20-30 years ago. Regardless of the rationale for their driving behavior, we must be ever vigilant working along or in the roadway.

Setting up proper work zones with traffic controls, such as cones, barrels, or barriers is always a good idea, as are the hi-vis traffic vests that all of us should wear. We may not be able to prevent every driver from sliding or losing control of their vehicle, but early warning in the form of traffic devices gives all of us a fighting chance.

### **Snow Can Kill:**

Snow is deceiving. The depth of snow is deceiving. If you've ever stepped down into a snow-filled ditch line off the interstate, you'll know what I'm talking about. Snow is also slick, wet, and heavy. Blowing snow makes for miserable, dangerous conditions. Slow Down!!! You won't get there if you speed. This is one time when it might be a good idea to use your siren sparingly rather than all of the time to prevent the desire to overdrive your siren.

Finally, we all want to show the public that we're tough, and can handle the snow. But, most of us aren't in the best physical condition we could be in. Manual snow removal is tough and can cause any number of health related issues, such as exhaustion, back injuries or even a heart attack.

Be careful out there - a true hero knows how to take care of themselves and live to fight another day.



Excerpts of Winter Weather Reminders were pulled from:

"16 Winter Weather Tips for On Duty and Off Duty Cops," by Duane Wolfe

And, "A Simple Cold Weather Survival Kit for Cops," by Pat Novesky, Published by Police One.com



**SEMINAR ANNOUNCEMENT**  
**- PLEASE POST -**

*The Indiana Association of Certified Accident Investigators will be sponsoring a seminar on*

**"Legal Update"**

**Presented by**

**Jennifer McKinney, St. Joseph Co FACT Prosecutor**

**Eric Tamashasky, St. Joseph Co Prosecutor's Office**

**Wednesday, March 20, 2019 0900-1500 hrs**

at the

Mishawaka Police Department

200 N. Church St., Mishawaka, IN

**Cost: \$50 for IACAI members; \$75 for non-members**

**\*No advanced registration is required.\***

Registration begins at 08:30am

Questions regarding this seminar may be directed to IACAI

President Kip Shuter

email: [kshuter@warsaw.in.gov](mailto:kshuter@warsaw.in.gov)

**- PLEASE POST -**

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