SOLUTIONS

MONTANA DEPARTMENT OF TRANSPORTATION

RESEARCH PROGRAMS

Summer 2019

IN THIS ISSUE

PROJECT HIGHLIGHTS

Key Information for Cannabis and DUIC Policy

https://www.mdt.mt.gov/research/projects/trafficsafety-duic.shtml

There is growing concern about driving under the influence of cannabis (DUIC), especially as more states consider changing laws regarding cannabis possession and use. A key question regarding the legalization of cannabis for recreational or medical purposes is its potential impact on public health issues such as traffic safety. There is considerable uncertainty – and even debate – about the impact of cannabis and its legalization on traffic safety. For example, among the general population, one study indicated that a sizeable percentage of the population (36%) perceive no risk associated with DUIC. Indeed, a minority (10%) even perceive that DUIC reduces crash risk.

This uncertainty and debate can be attributed to the greater complexity of the effects of cannabis on traffic safety compared to alcohol, which is a very different form of drug with a long history of research and attention in traffic safety. Information that might increase understanding and resolve debate about the effects of cannabis on traffic safety is often published in academic journals. However, this information may not accessible to lay audiences as well as traffic safety practitioners and policymakers. This inaccessibility can hinder attempts for traffic safety practitioners and policymakers to decide on appropriate policies and implement effective strategies to mitigate risk.

To address the needs of traffic safety practitioners and policymakers, a synthesis report commissioned by the Traffic Safety Culture Transportation Pooled Fund summarizes key information about the role of cannabis in traffic safety in order to inform policy regarding cannabis legalization and traffic safety.

CONTINUED ON PAGE 2

An examination of the literature and meta-analyses suggests that the preponderance of evidence indicates that driving under the influence of cannabis (DUIC) increases the risk of the driver being fatally injured in a motor vehicle crash, especially when combined with alcohol. Indeed, Tetrahydrocannabinol (THC)-positive drivers also appear more likely to be responsible for these crashes, probably because of insufficient attention or excessive speeding.

The mechanism for this increased crash risk appears to begin with the effect of THC on brain activity and functioning. These neural changes then impair cognitive functions that are necessary for driving, especially attention. The impairment of core cognitive functions translates to impairment of driver behaviors, most notably those not requiring conscious control. The absence on conscious control for these behaviors means that it is not possible for drivers to compensate for their impairment.

To the extent that decriminalization of cannabis increases access within a population – including drivers – it is logical to expect an increase in DUIC and associated motor vehicle crashes, especially those related to the behavior of impaired drivers. However, it is pragmatically difficult to isolate the causal effect of cannabis laws on traffic safety metrics. Moreover, there have been too few rigorous analyses of the effect of such laws on traffic safety using only a few states (CO, OR, WA) and relatively short post-legislation periods. Thus, there is insufficient evidence to make any conclusions about the legalization of cannabis on traffic safety.

Such conclusions may be disputed by individuals who believe they drive safely after using cannabis. However, evidence that tolerance to the acute effects of cannabis can be developed is inconclusive. Even those cannabis users professing they can compensate for the acute effects of cannabis are truly unable to compensate completely for their impairment.

Regardless, laws regarding DUIC are a public health issue – and as such – need to reflect the risk imposed by the drug across the entire driving population, rather than reflect the unique circumstances of a small minority of individuals.

Products developed through this research include:

- Final Report
- PowerPoint Presentation
- Talking Points for Driving after using Cannabis
- Poster on the Effect of Legalization of Recreational Cannabis on Crash Risk
- Infographic on the Effects of Cannabis on Traffic Safety
- Infographic on the Cultural Factors that Predict the Frequency of Driving within 4 Hours of using Cannabis

This project was funded through the Traffic Safety Culture Pooled Fund Program. For more information visit the project website or contact Sue Sillick (ssillick@mt.gov or 406.444.7693).

Understanding Law Enforcement Attitudes ande Beliefs about Traffic Safety

https://www.mdt.mt.gov/research/projects/trafficsafety-attitudes.shtml

The goal of this project was to understand how the culture within law enforcement agencies impacts engagement in traffic safety enforcement.
The four objectives were to understand: (1) how law enforcement leaders and officers prioritize traffic safety relative to other public safety issues; (2) self-reported attitudes, beliefs, and behaviors about traffic safety enforcement activities; (3) law enforcement's perceptions of how traffic safety enforcement behaviors have changed in recent years; and (4) how prioritization of traffic safety attitudes, beliefs, enforcement behaviors, and perceptions of change vary between leaders and officers, agency types, and urban and rural settings. A survey was developed, pilot tested, and completed by a total of 568 officers in 19 agencies (four statewide, six sheriff's offices, and nine municipal agencies) in four states (Connecticut, Idaho, Illinois, and Montana). The survey results were augmented by 10 interviews with law enforcement leaders.

On average, officers indicated traffic safety and enforcement were relatively high priorities with statewide agencies rating it higher than sheriff's offices or municipal agencies. An individual officer's prioritization was strongly correlated with their perception of how others prioritized traffic safety and enforcement – especially their perceptions of other officers in their agency and their immediate supervisor. On average, officers reported positive attitudes about traffic safety enforcement and shared supportive beliefs. However, some had beliefs that were not supportive of enforcement behaviors including perceiving a lack of support for traffic safety enforcement from local prosecutors and judges and a lack of recognition by their agency and supervisor for regularly engaging in traffic safety enforcement. The most significant barriers to regular enforcement were lack of time and lack of follow through by prosecutors and judges.

While many officers indicated they knew where locations with traffic safety concerns were located, far fewer indicated they were well briefed on crash data and enforcement activities in their jurisdiction. Officers who participated in four or more training activities (related to traffic safety enforcement) in the past three years were two times more likely to engage in frequent traffic safety enforcement compared to officers who indicated participating in two or fewer training activities.

About one-quarter of officers (24%) reported decreases in three or more enforcement areas (i.e., not wearing a seat belt, speeding/aggressive, impaired, and distracted driving). A similar portion (28%) reported increases in three or more enforcement areas. Recommendations for growing engagement in traffic safety enforcement are included in the final report.

This project was funded through the Traffic Safety Culture Pooled Fund Program. For more information visit the project website or contact Sue Sillick (ssillick@mt.gov or 406.444.7693).

JOINTBOND® Asphalt Joint Stabilizer

https://www.mdt.mt.gov/research/projects/jointbond.shtml

Generally, the weakest part of asphalt paving is the longitudinal construction joint (or meet-line) between paving machine passes. A poorly constructed joint may cause distress and allow air and water to enter the pavement structure and cause premature deterioration of the seam.

Centerline rumble strip prior to Jointbond application.

Concern has been expressed that the Department's expanding practice of installing centerline rumble strips on many of the State's two-lane roads has exacerbated joint weakening by exposing more of the internal joint to the intrusion of water and air.

Based on this concern, the MDT Butte District has elected to test a joint stabilizer in an effort to mitigate meet-line deterioration. The chosen product is the Jointbond (JB) longitudinal joint stabilizer. This was installed in Gallatin County on Bridger Canyon Road (P-86), milepost 11-12.8, in June of 2019.

Per the manufacturer's information, Jointbond was developed to inhibit the premature deterioration of construction joints by penetrating the asphalt pavement and combining with the existing asphalt binder. As a polymerized maltene-based emulsion, this stabilizer may extend the service life of longitudinal joints and adjacent areas in two ways:

- Improving the chemistry of the in-place asphalt binder
- Adding a physical in-depth seal to the construction joint thereby sealing the joint and surrounding area against intrusion by air, water and deicers, and detrimental effects of freeze-thaw

Once topically sprayed, the stabilizer migrates 1-2" into the asphalt joint and surrounding mat (applied one- and one-half foot on either side of the joint) and may take several hours to fully cure based on ambient air temperature. It is typically used on pavements less than two years old.

Appearance after 90 minutes of application

This project has one added element. JB has only been applied on unsealed pavements; because of time constraints, the application of JB was delayed a season. The pavement received a seal & cover (chip seal) prior to the JB installation. This will be the first trial in the country using this stabilizer on a chip sealed asphalt pavement.

Application by modified spray-truck

For more information please contact Craig Abernathy (cabernathy@mt.gov, 406.444.6269).

LIBRARY CORNER

MDT Library Digitization Project - By Kaia Rosen, MDT Library Intern

http://www.mdt.mt.gov/research/unique/services.shtml

The fall of the VHS over the last 20 years was finalized in 2016 when the last VCR player was made in Japan. And while VHS are not entirely dead, libraries across the country have started purging their VHS collections in favor of converting the film into a digital format. This summer, the Montana Department of Transportation Library decided to hop on that train.

What is digitization?

Digitization involves converting data from an analog or physical form into a digital format that can be read by computers. Analog forms of data include handwriting, photographs, audio cassettes, or video home systems (VHS). Audio cassettes and VHS both utilize magnetic tapes to record and playback data. A VHS is considered analog because the magnetic tape is not encoded in a format that a computer can read. Instead, the magnetic tape carries an electric frequency that is read by the VCR player only when it physically alters the state of the machine.

Converting data from an analog format, such as video tape, to a digital format does not have to mean just one thing. There are many different forms of digital data. Digital video disks, or DVDs, are a common way to digitize videos, whereas compact disks (CDs) are a digital format for audio. Other analog forms of data such as photographs or documents are most commonly digitized and stored in computer or online databases.

While DVDs remain a viable method of digital video storage, they face the same issue as analog data—deterioration. In the same way that a tape can wear down, disks can scratch, making the media unreadable. Further, disks are on their way out, as fewer computers have disk drives and streaming is taking over resulting in more durable forms of storage such as hard drives or “the cloud”.

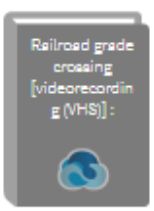
Why is digitization important?

Unlike Disney, the rest of the world doesn’t remake their films every decade, meaning that the information in a library’s VHS collection may still be pertinent today. With the dwindling of VCR players comes a shortage of ways to view these old films, so we create a digital record of the film to preserve the content and allow people to continue to view it.

The MDT Library is home to a unique collection of more than 550 VHS. We hold recordings of seminars, safety videos, maintenance best practices, college lectures in subjects such as structural engineering and fluid mechanics, and so much more. Having such specific material makes it hard to find it anywhere else, making the digitization process even more important. Many of the films were produced by the Montana Department of Transportation, meaning that we are the ones responsible for preserving that information! In May, we began our lofty digitization project with a purge—eliminating duplicates and outdated materials that would no longer be relevant to MDT staff. From there, we’ve been able to convert films one-by-one into AVI format, which can be viewed via Windows Media Player. In order to do that, we must play each video in full while it is connected to a digital converter box… it takes a while.

Our goal is to make it easier for MDT users around the state to find and access video materials remotely. The process is ongoing, but all the titles can still be found on the Montana Department of Transportation’s online catalog (see below screenshot). Video recordings will appear as results in any keyword search, making them easy to find. If you find a title in VHS format that you are interested in viewing, send an email to mdtlibrary@mt.gov. If the video is already digitized, we can send you a link to the file in a network folder. If we haven’t gotten to it yet, we will get it done for you!

For more information, please contact Bobbi deMontigny (bodemontigny@mt.gov, 406.444.0871).



Railroad grade crossing [videorecording (VHS)] : diagnostic engineering review

Place Hold

Author produced by Federal Highway Administration and the Montana Department of Transportation.

Published 1989

DID YOU KNOW?

Research Peer Exchanges

At least every five years, all state DOT's are required by the Federal Highway Administration (FHWA) to conduct a peer exchange of their respective Research, Development, and Technology Transfer management process. Peer exchanges can be on the entire research program or components of the program. Participation in peer exchanges not only makes each state eligible for Federal Highway Administration (FHWA) State Planning and Research (SPR) funds, but also affords each state a tremendous opportunity to improve its research program, both by hosting and participating in peer exchanges.

Peer exchanges are not compliance reviews; they are exchanges of information between the host and visitors. The host determines the topic(s) and format of each peer exchange. The host state may facilitate the peer exchange or contract with a consultant to provide facilitation and report writing services. All participants benefit in an atmosphere of open exchange of ideas, knowledge, and brainstorming.

A report on each peer exchange is written and presented to upper management. The report is a team effort, involving all visitors and the host state Research Program Manager. In the reports, each peer exchange team member identifies the ideas, methods, and concepts that the team member plans to consider implementing in their own organization.

Research peer exchanges have been extremely successful, causing other areas to conduct peer exchanges as well.

For general information on peer exchanges, visit the AASHTO Research Advisory Committee web page. For more information and MDT peer exchange reports, visit the MDT Research web page on peer exchanges or contact Sue Sillick (ssillick@mt.gov or 406.444.7693).

CALENDAR OF EVENTS

August
MDT RRC Meeting- 8/30

September
NCHRP IDEA Proposals Due- 9/4
ACRP Topics Due- 9/6
ACRP Legal Topics Due- 9/13
Rail-Safety IDEA Proposals Due- 9/15 NCHRP
Legal Topics Due- 9/17
ACRP Synthesis Topics Due- 9/20
ACRP Panel Nominations Due- 9/21

October
MDT RRC Meeting- 10/30

November
TCRP IDEA Proposals Due- 11/1
NCHRP Problem Statements Due- 11/1

December
MDT RRC Meeting- 12/12

January
ACRP Synthesis Panel Member Nominations Due- 1/20
TCRP Panel Member Nominations- 1/25
MDT RRC Meeting- 1/31

For additional information, please see: https://rppm.transportation.org/Lists/Calendar/calendar.aspx.

NEW RESEARCH PROJECTS

Bridge Deck Cracking

Guidance to Promote Workplace Policies and Family Rules Reduce Cell Phone Use While Driving and Promote Engaged Driving

Monitering Stream Flow

NEW RESEARCH REPORTS

Key Information for DUIC Policy

Research 2018 FFY Annual Report

Understanding Law Enforcement Attitudes and Beliefs about Traffic Safety

A listing of all past and current research projects can be found at

http://www.mdt.mt.gov/research/projects/sub_listing.shtml

NEW EXPERIMENTAL PROJECTS

Evaluation of Crafco Mastic One® Hot Applied Sealant

The Use of Autodesk Products for Project Delivery

A listing of all past and current experimental projects can be found at

http://www.mdt.mt.gov/research/projects/exp_sub_listing.shtml

REMINDER

Information on research services and products, such as research and experimental project processes and reports and technology transfer services, can be found on the Research web site at www.mdt.mt.gov/research.

MDT's library collection can be searched through the library catalog. The catalog and other information resources are available through the MDT Library web site.

CONTACT US

Sue Sillick – Research Programs Manager
406.444.7693
ssillick@mt.gov

Craig Abernathy – Experimental Projects Manager
406.444.6269
cabernathy@mt.gov

Bobbi deMontigny – Librarian
406.444.0871
bodemontigny@mt.gov

0 copies of this public document were published at an estimated cost of $0.00 per copy, for a total cost of $0.00, which includes $0.00 for printing and $0.00 for distribution