



Improving Traffic Safety Culture Using a Novel Dissemination Method

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State departments of transportation focus on eliminating fatalities and serious injuries. Addressing traffic safety culture is one approach that can help with this goal. Traffic safety culture strategies, including public awareness campaigns and safety videos, are an important way to educate the public and possibly change their beliefs and influence their behaviors related to traffic safety.

This article highlights an effort conducted in coordination with the Montana Department of Transportation (MDT) and the Montana Department of Justice (DOJ) to improve traffic safety culture by displaying traffic safety videos in waiting areas at motor vehicle division (MVD) driver license stations and county treasurer offices (CTOs). Data was captured using intercept and follow-up surveys examining whether participants recalled the information shared in the videos and if it influenced any changes in driving behaviors.

Method

Video sequences, which were a compilation of existing safety videos, infographics, and trivia slides, played as a continuous loop featuring topics from MDT’s Comprehensive Highway Safety Plan emphasis areas (i.e., impaired driving, unrestrained vehicle occupants, roadway departure and intersection crashes, and emergency response–after-crash care). Only videos granted permission for use were incorporated. To be less intrusive to staff and customers, video audio was removed and replaced with open captions.

The first video sequence was shown from July 2021 to April 2022; the second from April 2022 to August 2022. Intercept surveys were collected from five Montana, USA locations: Billings, Bozeman, and Kalispell MVD stations and CTOs located in Bozeman and Helena. Customers 18 years of age and older leaving a facility during the surveying period were asked to complete an intercept survey. Candy was offered as an incentive to participate. Approximately 2 weeks after completing an intercept survey, respondents who indicated they

had both seen the TV and agreed to be contacted for a follow-up survey were either emailed or mailed a follow-up survey. If they did not respond within 2 weeks, a second request was sent.

Intercept Survey Data and Results

During each video sequence, two rounds of intercept survey data were collected for a total of four data collection periods. Table 1 shows the number of surveys collected at each location during each period as well as the total.

Age & Gender

The minimum, average, median, and maximum age of intercept survey respondents was 18, 46, 44, and 90 years of age, respectively, with 55.7 percent (907) of survey respondents identifying as male, 43.8 percent (713) as female, and 0.4 percent (6) as non-binary. This data highlights valuable demographic aspects of this outreach effort: 1) all ages can be presented with traffic safety messages via this forum, and 2) there were an almost equivalent audience of men and women.

Conspicuity of TVs

Intercept survey respondents were asked, “Did you look at the TV monitor during your visit?” For the first video sequence, a total of 238 survey respondents (25.4 percent) reported seeing the video sequences on the TV; for the second video sequence, a total of 280 survey respondents (40.3 percent) reported seeing it on the TV (Table 2).

Table 1. Intercept surveys collected.

| | Data Collection Period | Billings MVD | Bozeman MVD | Bozeman CTO | Helena CTO | Kalispell MVD | TOTAL |
|--------------------|------------------------|--------------|-------------|-------------|------------|---------------|--------------|
| Video Sequence One | Aug/Sept | 93 | 113 | 126 | 57 | 92 | 481 |
| | Oct/Nov | 76 | 146 | 80 | 54 | 100 | 456 |
| | Subtotal | 169 | 259 | 206 | 111 | 192 | 937 |
| Video Sequence Two | April/May | 72 | 79 | 63 | 61 | 93 | 368 |
| | June/July | 62 | 64 | 68 | 74 | 59 | 327 |
| | Subtotal | 134 | 143 | 131 | 135 | 152 | 695 |
| TOTAL | | 303 | 402 | 337 | 246 | 344 | 1,632 |

Table 2. Intercept survey respondents reporting viewing the TV.

| | Data Collection Period | Billings MVD | Bozeman MVD | Bozeman CTO | Helena CTO | Kalispell MVD | TOTAL |
|--------------------|------------------------|--------------------|-------------------|--------------------|-------------------|-------------------|--------------------|
| Video Sequence One | Aug/Sept | 7 (7.5%) | 23 (18.3%) | 38 (30.2%) | 21 (36.8%) | 21 (22.8%) | 110 (22.9%) |
| | Oct/Nov | 9 (11.8%) | 42 (28.8%) | 29 (36.3%) | 19 (35.2%) | 29 (29.0%) | 128 (28.1%) |
| | Subtotal | 16 (9.5%) | 65 (25.1%) | 67 (32.5%) | 40 (36.0%) | 50 (26.0%) | 238 (25.4%) |
| Video Sequence Two | April/May | 49 (34.3%) | 16 (11.2%) | 29 (20.3%) | 27 (18.9%) | 22 (15.4%) | 143 (38.9%) |
| | June/July | 44 (32.1%) | 14 (10.2%) | 37 (27.0%) | 28 (20.4%) | 14 (10.2%) | 137 (41.9%) |
| | Subtotal | 93 (33.2%) | 30 (10.7%) | 66 (23.6%) | 55 (19.6%) | 36 (12.9%) | 280 (40.3%) |
| TOTAL | | 109 (21.0%) | 95 (18.3%) | 133 (25.7%) | 95 (18.3%) | 86 (16.6%) | 518 (31.7%) |

As the researchers compiled the data from the first data collection period (August/September), it became clear that many survey respondents did not view the TV. This was particularly true for the Billings MVD station, with less than eight percent of intercept survey respondents reporting that they saw it (Table 2). As a result, solutions were sought to bring conspicuity to the TVs. In some cases, the TV location identified prior to COVID-19 was no longer visible as chairs were rearranged to facilitate social distancing and plastic partitions were installed between desks. In another case, the building was remodeled. The Helena location had a unique challenge in that two TVs displaying different and unrelated content were located next to each other. Upon completing the data collection for the first video sequence, researchers worked with the Montana DOJ to attempt to relocate TVs. Unfortunately, due to lack of power accessibility in Kalispell, there were no options to relocate that TV. However, the TV at the Billings location was able to be moved (Figure 1). As shown, chairs did not originally face the TV. During the second video sequence, the TV was relocated behind a desk where visitors could view it while staff was assisting them.

Time Spent Waiting

Survey respondents were asked how much time they spent at a facility to determine if wait time influenced whether or not they saw a TV. Varying nuances were associated with this question, many of which were reflective of COVID-19 protocols at each office. For some survey respondents wait time was spent in their vehicles or outside of the building where they may not see the TV. Over the duration of the project, at least one location implemented the option to book appointments online. This ensured that the number of appointments matched the staff available to assist people, resulting in overall reduced wait times. Thirty eight percent of survey

respondents who identified the approximate duration of their wait during the first video sequence reported that they had spent approximately 15 to 30 minutes at a facility; a similar trend held for the second video sequence. The researchers considered the relationship between the time spent in the facility and the reported views of the TV monitors. The survey responses for both video sequences indicated that the more time respondents spent in the facility, their reported viewing percentage increased.

Screen Captures

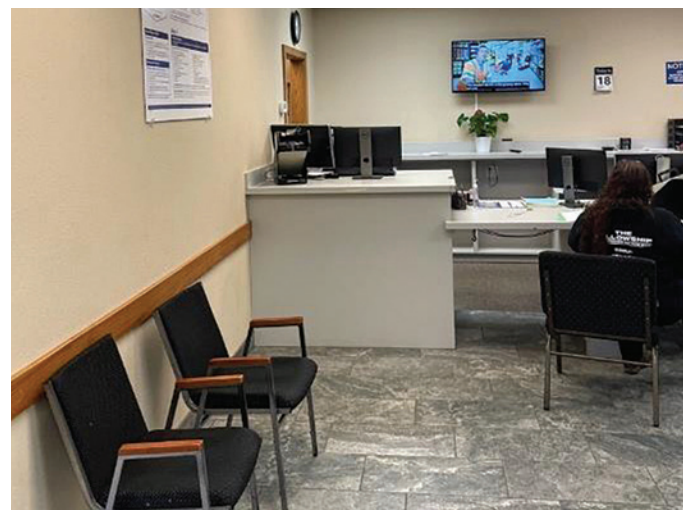
In the intercept survey for each video sequence, screen captures from four of the videos were presented to survey respondents who were asked if they recalled any of them (Table 3). The interest behind this question was to better understand if a visual image recall would appeal to a group of survey respondents as compared with a written text recall (i.e., slogans). The average number of screen captures recalled during the first video sequence was 1.6, with 4 being the maximum and 1 being the median. For the second video sequence, the average was 1.9, with 4 being the maximum and 2 being the median. Similar percentages of intercept survey respondents reported recalling at least one screen capture during each video sequence (24.2 percent vs. 25.6 percent). (Note: Not all intercept survey respondents who saw a TV monitor recalled a screen capture.)

For the first video sequence, a video on navigating a roundabout was by far the most frequently reported image recalled by respondents. Given MDT's current emphasis on constructing roundabouts as a safer intersection type, this video may resonate with more people. Furthermore, this result may in part be reflective of the length of the video—it was more than four-times longer than the second longest video. The videos in the second sequence were



First Video Sequence

Figure 1: First and second location for the TV at Billings.



Second Video Sequence

Table 3. Screen Captures Shown to Intercept Survey Respondents

| Video Sequence 1 | Screen Capture | Slow Down and Move Over | Rules of the Roundabout | Gratitude Video | Vision Zero – Just One Reason |
|------------------|-------------------|--|--|--|--|
| | Number & % Recall | 70 individuals, 30.8% (32 seconds, 7.5% of video sequence loop) | 189 individuals, 83.3% (137 seconds, 32.2%) | 40 individuals, 17.6% (30 seconds, 7.1%) | 57 individuals, 25.1% (30 seconds, 7.1%) |
| n = 227 (24.2%) | | | | | |
| Video Sequence 2 | Screen Capture | Buckle Up – Enough Reasons | Work Zone Safety – the Signs | Flashing Yellow Light | Slow Down for the Curve |
| | Number & % Recall | 53 individuals, 29.8% (30 seconds, 9.2%) | 122 individuals, 68.5% (30 seconds, 9.2%) | 72 individuals, 40.4% (40 seconds, 12.3%) | 94 individuals, 52.8% (45 seconds, 13.8%) |
| n = 178 (25.6%) | | | | | |

more similar in length—each ran 30 to 45 seconds. The “Work Zone Safety – the Signs” screen capture had the greatest number of survey respondents reporting recalling it. Overall, recall of the video clips were more evenly distributed, suggesting video length influences recall.

Slogans

Slogans were also provided in case where a respondent recalled written text rather than a visual image. More slogans were recalled during the second video sequence than the first (194 [27.9 percent] vs. 176 [18.8 percent]), although the result is heavily influenced by the Billings location (160 slogans recalled). Every location except Billings reported a lower recall of slogans during the second video sequence (e.g., Bozeman CTO had 103 for the first and 30 for the second). This could reflect the more conspicuous location of the Billings TV during the second video sequence. It could also suggest that slogans resonate more with patrons of the Billings facilities when compared with the other locations. Or it may also suggest that the slogans from the second video sequence resonated more with patrons of the Billings facility when compared with the first.

Summary

Overall, the researchers were not surprised that the roundabout video was mentioned by many survey respondents, as roundabouts are being implemented in many locations across Montana. Representing 32 percent of the first video sequence’s total run time, the roundabout video is by far the longest piece of content in the first video sequence. When compared with the second video sequence where the videos had more similar run times, the recall of each video was more similar. This suggests that the duration of a video can influence recall.

There was a considerable difference between the first and the second video sequence regarding the number of people that saw the monitors in Billings. In addition, one surveyor noted that as patrons

waited for their information to be entered into the computer by staff, patrons would watch the videos that were located behind the staff. Therefore, a good location for the videos to ensure conspicuity may be behind staff.

For the first video sequence, more intercept survey respondents reported recalling the screen captures than the slogans (24.2 percent versus 18.8 percent). However, for the second video sequence, more slogans were recalled than the screen captures (25.6 percent versus 27.9 percent). Therefore, a conclusion cannot be made regarding if one method is more effective, and consequently, suggests that both should be utilized unless further research indicates otherwise.

Follow-up Surveys

A total of 67 follow-up surveys were received for both video sequences. The goal of the follow-up surveys was to determine if longer-term impacts were made to traffic safety culture, as demonstrated by behavioral changes in response to the safety content or passing along what they viewed in the videos. While the general distribution was similar when comparing the time spent for intercept with follow-up survey respondents, those who completed the follow-up surveys had spent a slightly longer amount of time at the facilities. Therefore, the results of the follow-up survey have a bias towards survey respondents who spent more time at the facilities and may have viewed the videos through multiple loops and absorbed the content for a more extended timeframe.

Ten of all follow-up survey respondents (15.6 percent) reported that they did not recall the videos when they responded to the survey; however, eight of these survey respondents also reported not recalling any videos during the intercept survey. Consequently, it would imply that most people recalled the content over time. The majority of survey respondents reported that the videos did not result in a change in their beliefs (67 percent). Ten survey respondents (20 percent) reported sharing what they learned in the videos with someone else and two (5 percent) reported discussing

the slogan with some else. Follow-up survey respondents seemed to suggest that they would be safer drivers but did not report a change in their own driving behavior. These results suggest a minimal impact to traffic safety culture.

Conclusions

The roundabout video had the longest run-time. When comparing the first and second video sequence results, video length had an impact on recall. However, it is hard to completely uncouple the impact because of ongoing roundabout installations throughout the state running concurrent with this video project. Regardless, using this method would suggest that including videos more similar in length would ensure retention of each piece of information included in a video.

The impacts of placing a TV in a conspicuous location were best demonstrated when looking at the change in the number of intercept survey respondents who saw the TV in Billings. Indications are that the best placement is behind staff desks so that patrons can view the videos while staff enter their information. However, as policies change over time and technology advances, using this approach to disseminate traffic safety information and ensuring that patrons observe the monitors will continue to be a challenge.

While challenges were identified throughout the project, there are benefits to this safety dissemination method. First, the range of ages that have the potential of viewing the safety content is expansive and, there was not a bias in which gender was reached. Overall, the approach does not require staff involvement as once the videos are created, they can loop on the TVs for an extended period. They are also relatively easy to update.

Follow-up survey responses suggested that viewers were encouraged by the traffic videos to be safer drivers. In contrast, respondents generally reported that their safety beliefs were not changed. Therefore, from a traffic safety culture perspective, the results suggest a minimal impact. [itej](#)

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