TAC Educational Achievement Award Nomination

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The Cone Zone Experience

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ABSTRACT

Context

Launched in 2013, the Cone Zone Kart Track was an initiative developed to reach a wide spectrum of road user audiences in an interactive way to communicate the dangers associated with roadside safety while leveraging an industry-led safety awareness public education campaign titled “Cone Zone”. Since conception, the project has turned into an immersive and interactive carnival-like “Cone Zone Experience” delivered at provincial fairs (Cloverdale Rodeo, 108,000 + in attendance) at no cost to teach a variety of roadside safety best practices with a central humanistic message: slow down so everyone can make it home safe at the end of the day.

Objectives

The “Cone Zone Experience” objectives include: changing road user behaviour, to slow down, pay attention, and be respectful in roadside work zones; highlight new “slow down move over” provincial legislation; raise awareness to the dangers roadside workers face (and gain appreciation for the work they do); promote safe practices when using public roadways (i.e. refrain from use of mobile devices); understand the impacts of impaired (drunk, distracted, fatigued, enraged) driving has on perception, reaction time, and cognitive demand in work zones; create a multi-faceted "family learning experience.”

Target Audience

The “Cone Zone Experience” took an innovative approach by primarily targeting tomorrow’s drivers (youths 10 – 16) to empower, educate and reinforce road safety behaviours intended for adults, parents, or guardians who became the secondary target audience.

Activities

Roadside work-themed go kart track with roadside workers (flaggers directing first time drivers through detours in track), Family Photo Station (dress up), urban art (graffiti) competition, cartoon depicting children of roadside workers, traffic control training station, selfie station (social media contest), participant survey about driving habits, railway safety station, commercial vehicle safety station, distracted driving station, crashed vehicle ambulance and tow truck scene, driver simulator, in work zone, try dressing as a flagger and directing traffic in the track with a TCP professional volunteer, dress up in flexible drums with arm and face hole to personify the traffic control device.

Deliverables

Change in road user behavior; change in perception towards roadside work; shaping future drivers' behavior; creating platform that roadside workers can engage with the public in a meaningful way to change perceptions that road user behavior can change in other ways besides enforcement.

1.0 INTRODUCTION AND OVERVIEW

Poor road user conduct in work zones and resulting roadside worker safety risks are of chief concerns for road maintenance and construction companies in British Columbia as well as the rest of Canada. On a daily basis there are a multitude of reported incidents and near misses which involve motorists failing to acknowledge the presence of workers, or comply with posted signage and devices in road side work zones. There is little protection for a worker at the roadside other than advance warning signage and channelizing devices to separate a worker from road users. There are thousands of families that rely on the competence and attention of a driver to ensure their loved ones make it home safely at the end of the day. While countless research projects and engineered solutions are introduced to improve safety and assist in attempts to reduce the risk roadside workers face, a key factor must be addressed and altered: the road user's behaviour.

Road safety communication campaigns are considered an efficient strategy for reaching a wide audience. They aim at reducing the number and severity of road crashes by influencing road user behaviour. Despite a large number of campaigns that have been designed and implemented in recent years, few have utilized multiple mediums and diverse target audiences in the same campaign to create new avenues for old messaging. This paper highlights and evaluates a unique communication campaign that applies multiple social learning theories through community engagement events. This paper reviews the intent, design, implementation and results of this joint initiative whose main message is to slow down, pay attention, and be respectful in work zones.

Figure 1 –BC's Attorney General Hon. Suzanne Anton takes a spin with a local radio celebrity

2.0 DESCRIPTION OF THE ACHIEVEMENT

This interactive event is its own small theme park included as part of the popular public attractions at the Cloverdale Rodeo and exhibition, as well as the Abbotsford Agrifair and Rodeo. 2016 marks the event's fourth year in operation.

Families who complete the Cone Zone Experience gain a greater understanding of the dangers road side worker's face. They have a deeper knowledge and understanding of the role the different worker's play on the roadways, and understand that they have a responsibility in helping maintain the integrity of the work zone. The achievement of this event is for the participants to change their way of thinking of a road side work zone from an inconvenience to conscious caution. The ultimate goal is to make an impact with the children at impressionable ages so they are more aware of road safety. If a child needs to remind their parent to slow down in a work zone, the parent will likely be more receptive to the message from their child rather any roadside signage, device, or legislation in place requiring them to comply.

Figure 2 – Overview of the Cone Zone Experience grounds

By taking the child and/or the family unit through a series of different mediums/ scenarios/ environments that involve interaction and/or touch response mechanisms, we ensure multiple interactive touch-points with the messages we want to convey. Each of these mediums require visual, auditory, physical and cognitive participation by various members of the family unit. Training of future road users to respect work zones on the roadway and what to do when

encountering those work zones is the top priority. This is accomplished through a simulated audio-visual classroom with a Traffic Control Person (TCP) interacting with the students and expanding on what signage means, what the consequences are, etc. The parents are encouraged to participate by standing around the perimeter of the space listening to what is being taught to their children.

Figure 3 – Parents watching and listening in on the safety presentation

We follow the session with the child demonstrating their newly learned skills by putting them in a go kart in a simulated work zone with real equipment and flaggers. To immediately apply the classroom lesson, they must obey the flaggers and the rules of the roadway they just learned. The parents continue to watch and observe, listening to not only the training but their child's comments and enthusiasm. An additional opportunity this event presents is the interaction between actual road safety professionals who work in these environments and the road users, both current and future. This interaction, in a happy and fun environment, ensures a positive experience between workers and public. This also starts to humanize the relationship between the worker and the road user when the information is exchanged on a more personal level than an enforcement level.

Figure 4 – A Traffic Control Person interacting with the go-kart drivers

Another two stations involve the family participating in photo stations and becoming a part of the work zone and/or an accident scene creating a personal moment for the family as well as a connection of being a participant in the work zone; thus demonstrating the importance of no texting and driving and the dangers of distracted driving - teaching future road users on the appropriate behaviour to display while driving to include the inappropriate use of texting and driving, speed, awareness, different work zones, and signs. One of the other mediums used is the driver simulator where the dangers of texting and driving, speed, careless attention, signage, are simulated in a safe yet realistic environment. Both child and adult participate in this in front of each other and the whole family. Different challenges are loaded into the virtual simulator and the resulting failures are displayed on the screen where everyone can see. Again, if the correct action is displayed this reinforces the messaging and mentoring required to have a sustainable message that is now being taught not because it is the law but that this is the morally and correct action to display. All of the results are being performed voluntarily and on display to further reinforce that each family member show the other that they know the correct method to use when encountering this type of situation.

Ranked by the Vancouver Sun provincial daily newspaper as the #2 reason (behind the rodeo itself) to visit the rodeo and exhibition, the event has seen tremendous growth in three years and has become a popular attraction in the community. In 2013, the Cone Zone Experience started out with 17 sponsors and 70 volunteers teaching 877 youths and 73 parents in 2013. In 2015 there were 35 sponsors and 287 volunteers teaching 1944 children and over 1800 parents.

A participant survey was conducted onsite with a small sampling of 68 participants in 2015. 38% of surveyed respondents stated their driving behavior will change after participating in this event. Though the sampling group is small, there are opportunities to develop this qualitative and quantitative research tool to further record and analyze these results to demonstrate current road user behavior being changed through the family value modelling method. The survey and its results can be found in Addendum 1 of this document.

3.0 CONTRIBUTION MADE TO EDUCATION/TRAINING

The attitude change approach demonstrated by the “Cone Zone Experience” drew on Festinger's cognitive dissonance theory, which concludes that when a person is persuaded to act in a way that is not congruent with a pre-existing attitude, he or she may change the attitude to reduce dissonance (Smith & Ragan, 1999). To use dissonance to produce attitude change, the persuader must first establish the dissonance, and then provide a method to reduce it. Ideally, this will involve making the chosen alternative attractive, perhaps by displaying a social group with the desired attitude; demonstrating the issue's importance; providing free choice; and establishing a wide latitude of acceptance through successive approximation (Martin & Briggs, 1986). The “Cone Zone Experience” challenges the child and adult’s current perceptions of roadside workers during the first interactive booth where they are greeted by a roadside worker who opens up a conversation about current experiences with road safety. Typically the participants have limited to no previous experience interacting with a road safety worker at a personal level in close proximity. The participants are confronted with a paradigm shift by humanizing “cone zone” workers, safety equipment, and working environment as not just a roadway inconvenience but a human being; thus initiating the establishment of the dissonance for the participants.

Affective-cognitive consistency theory examines the relationship between attitudes and beliefs and concludes that individuals are in an unstable state when their attitudes towards an object, event or person and their knowledge about that object, event, or person are inconsistent (Simonson & Maushak, 2001). The theory suggests that the affective component of the attitude system may be changed by providing new information (changing the cognitive component) via a persuasive message. Once the individual has processed the new information, he or she will undergo an attitude change to bring the knowledge and affect into harmony. Processing the message requires that the audience pay attention to and comprehend the message, then accept and retain it (Zimbardo & Leippe, 1991). Affective-cognitive consistency theory suggests that the affective component of the attitude system may be changed by first changing the cognitive component through providing new information. It does not matter how the new cognition is produced, only that it occurs. Although the fact that attitudes are stored separately from their related cognitions means that a person may experience a feeling without remembering the information or event that triggered it, attitudes will generally be stronger when the link between their cognitive and affective components is consciously recalled (Zimbardo & Leippe, 1991). The “Cone Zone Experience” leverages this cognitive and affective component relationship by creating a memorable family experience that can consciously and easily be recalled by the family members.

The Experience enables a further attitude and behaviour shift by using stations that demonstrate the negative consequences of not following road safety directions with the accident scene station and virtual driving simulator. According to Zimbardo and Leippe

(1991), "a persuasive message is most likely to cause attitude and behavior change if it can shape both beliefs about its topic and beliefs about what important individuals and social groups think about the topic and how they behave toward it". The most effective persuasive messages are those "that get the audience to think about an issue or object in concrete, vivid images that have definite implications for behavior".

Social judgment theories emphasize the role of prior attitudes in shaping attitude formation and change. They describe attitude as a kind of spectrum with a "latitude of acceptance" surrounding a current attitude; a new position is more likely to be accepted if it falls within this latitude and less likely to be accepted if it does not (Smith & Ragan, 1999). The “Cone Zone Experience” leverages the benefits of this approach by appealing to the family’s sense of family by humanizing the roadside workers as someone’s mother, brother, father, etc. Emphasizing familial relationships falls within the participants “latitude of acceptance” that all humans are a part of someone’s family and deserve to work in a safe environment. As with dissonance theory, social judgment theory presents attitude change as a response to the receipt of a message that is not entirely in agreement with the currently held attitude. Acceptance of the new position is contingent upon its falling within the latitude of acceptance of the receiver. "The use of successive approximations can expand the latitude of acceptance and thereby permit greater attitude change than might otherwise be possible" (Bednar & Levie, 1993).

Social learning theory focuses on the development of cognitions related to the expected outcome of behaviour. This theory suggests that an individual learns attitudes by observing the behaviours of others and modeling or imitating them (McDonald & Kielsmeier, 1970). When the children are at the Traffic Control Person (TCP) station, they are given the opportunity to mimic the motions of the TCP which would reinforce social learning theory. The theory also posits that an observed behaviour does not have to be reinforced to be learned (Zimbardo & Leippe, 1991), and the model "can be presented on film, by television, in a novel, or by other vicarious means" (Martin & Briggs, 1986). The model must be credible to the target audience (Bednar & Levie, 1993). Credibility is largely a function of expertise and trustworthiness which is established by the TCP leading the group activities at the station. Observational learning is greater when models are perceived as powerful and/or warm and supportive, and "imitative behavior is more likely when there are multiple models doing the same thing" (Zimbardo & Leippe, 1991). While "attitudes formed through direct experience with the attitude object or issue are more predictive of behavior than those formed more indirectly" (Zimbardo & Leippe, 1991), "media can be substitutes for many live experiences" (Wetzel et al., 1994). Thus, observing a model via video is a viable method of learning a new attitude. For passive learners, instruction delivered by media may facilitate the rapid acquisition of complex affective behaviors more effectively than live demonstrations (McDonald & Kielsmeier, 1970). However, receivers may attend mediated messages less closely than those presented directly, thereby diminishing their effectiveness (Bednar & Levie, 1993). Social learning theories of attitude change are closely related to theories that emphasize the role of social learning in cognitive development. Social learning theory also shares cognitive apprenticeship's emphasis on modeling as a way of sharing knowledge.

Figure 5 – Parents and other onlookers watching the child go through the simulation

Further to the theories presented above, the colourful, varying, and engaging types of environments the interactive road safety stations display creates a more receptive learning environment because learning is not forced or mandatory but the people are there voluntarily and willingly want to participate with the games and other stations in the surrounding area for entertainment and amusement. Now the mundane subject matter of safety has a new form, a new sense of value, and creates an interest not usually associated with this type or subject of education.

The main focus appears to be about getting the children into an educational environment to teach road safety while having fun. What actually happens is a barrage of different elements portraying the same type of messaging in different methods and applications. These different methods include all family members in varying degrees. Instead of the usual 5-10-minute attention time span that people will usually give this subject matter, the whole family are not only exposed to but are participating in this environment stimulating different senses for 35-55 minutes. There are so many elements that find a way to resonate with each member of the family.

Presenting this material to the child as well as making this of value for the parent brings new meaning to this type of messaging. All of a sudden the message isn't about policy and legislation enforcement, but it is about a humanistic basic right to safety, and a desire to display that positive message. This type of messaging presented to the child benefits the

parent even if the parent does not attend the event. When the child comes home and talks about this event/experience it brings that message to the forefront creating a trigger point for the adult to relate to and model the correct behaviour when encountering that scenario and/or action. When the child is in the car they will make a statement such as “slow down” or “cone zone” which will trigger that parent to display the appropriate action to demonstrate the positive value.

Figure 6 – Children and parents at one of the Distracted Driving Texting selfie stations

With moments that are created within the family units at the photo station, to the family doing the driver simulator together or the first time their child has ever driven a go Kart by themselves - this is what creates a special moment unique to that moment in time and a family memory. These types of moments become cherished and are therefore retained longer along with the messaging instilled in that group. The other retention factor is the child themselves and the age in which we target that group. Ages 10-16 are in their prime for learning and at a point of piqued interest in driving and motor sports. This is an opportunity to give them the experience of driving in a vehicle to feel how it is different from driving in a video game and to display the appropriate action that they have been taught in a real life situation. This teaching then transfers to the family vehicle and an inappropriate action may be questioned where without that knowledge this would never be questioned. This also creates a moment of clarity for the road user displaying an inappropriate action or a distracted action when the child makes the statement “Slow Down, Cone Zone”. These types of moments will continue long after the event is over and whenever the child is in the vehicle and that trigger for the child happens. It is those moments that are hard to teach.

Figure 7 – Group of friends pose at the Cone Zone Race Track

4.0 BENEFITS/PAYOFF

Changing user behaviour is a far less expensive option than either engineering a solution or enforcement of a law to ensure compliance. This type of model not only ensures an appropriate behaviour in the future road users of tomorrow but also changing the road users today through those future road users. This type of solution does not need reengineering to find new solutions but just needs refreshing to ensure a captive audience therefore it is sustainable. User behaviour is also affected by the humanistic relationship that is created by the interaction with industry workers. They are no longer viewed as an inconvenience but as a person protecting them and workers.

Transportation Worker behaviour also changes because they see people care. They see the future road users want to follow their directions. They interact with road users which also puts these people in a new light to workers showing there are people who are concerned with their well-being and they are not an object or a mere inconvenience. For the first time the worker feels they can make a difference to a situation that was previously unresolvable.

Industry behaviour is changing too. Industry is not only seeing that this type of training is good for public relations but more importantly it can be more important for their worker morale. Supporting this type of behaviour can change the worker's perception of the company's commitment to their safety. Industry is also seeing how this type of outreach program can be

relatively cheap if done with other companies that have the same type of issues through sponsorship models. In other words, return on investment can be quite high if performed properly.

69% of respondents stated they would slow down and over 58% would be more cautious when they saw a traffic person on the roadway directing traffic. 64% would be more cautious and more aware travelling through a construction zone.

5.0 VALUE TO THE CANADIAN TRANSPORTATION COMMUNITY

Figure 8 – The Cone Zone Experience provides a multi-sensory experience

The value to the Canadian transportation community is a new way to drive change in road user behaviour. This approach towards behaviour change is more economical and sustainable than engineering and enforcement. The messaging can be the same as other types of public education and awareness campaign messaging, but the delivery method and the environment it is presented in needs to be different. This delivery method changes current and future road users to change their behaviour because it reflects a societal value that is humanistic and desirable when displayed for others. The public engagement approach and

framework presented in and demonstrated by the “Cone Zone Experience” has a proven formula of success which could be applied to other transportation community initiatives as a solid foundation.

Figure 9 – Operation Lifesaver and Traffic Control People working together to teach road and railway crossing safety

6.0 SUMMARY

In conclusion, the delivery model of the “Cone Zone Experience” continues to deliver education, engagement, and behavioural change long after the event itself is over. This is a new approach to put stale messaging forward that is filtered out or has perceived little value for the end user. This current model appears to be more sustainable and more cost effective in changing public road user behaviour in the long run. This type of educational messaging needs to be further explored and researched to determine the true qualitative value this approach and education medium will bring. Qualitative and quantitative statistical data was retrieved from a sample of adult participants that reflect positive results. There stands an opportunity for more research to be conducted to further test and prove the benefits of this new community engagement model approach.

Figure 10 – Canada's future drivers

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ADDENDUM 1

Survey conducted onsite in 2015 from Adult participants in the Cone Zone Experience

Do You recall watching a cone zone Video

	%	count
Yes	33.82	23
No	66.18	45
Total respondents		68

What should you do if you see construction vehicles working on the roadway with lights flashing and o
out? (choose all that apply)

	%	count
Slow Down	83.82	57
Move over if safe to do so	48.53	33
Be cautious and more aware travelling through the construcion zone	64.71	44
Detour around the construction zone	20.59	14
Check Text messages	1.47	1
Total respondents		68

will your driving behaviour change since participating in this education event?

	%	count
Yes	38.24	26
No	61.76	42
Total respondents		68

Will you tell someone to slow down when entering a cone zone

	%	count
Yes	64.71	44
No	35.29	24
Total respondents		68

Will you slow down when seeing a cone zone or a Traffic Control Person

	%	count

Yes	97.06	66
No	2.94	2
Total respondents		68

What does it mean to you if you see a Traffic Control Person on the roadway directing traffic

	%	count
Slow Down	69.12	47
Follow the traffic instructions of the traffic control person	85.29	58
Be cautious and more aware travelling through the construcion zone	58.82	40
Check Text messages	1.47	1
Total respondents		68