



FINAL REPORT

Driver Education for New Multimodal Facilities

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16. Abstract <p>Local and state transportation agencies are redesigning roads to accommodate multimodal travel, including the addition of new configurations, infrastructures, and rules that may be unfamiliar to current drivers and other road users. Education and outreach to prepare drivers for these significant changes to roadways is an important tool by which transportation planners and operators can make new multimodal facilities more functional and effective. While general agreement on the value of education in these situations exists among practitioners, there is little systematic or comprehensive information about the best practices for driver education integrated into planning and design of new multimodal facilities. This report, drawing on prior research, media products, and extended interviews with practitioners in the field, supplies recommendations for implementing successful education programs alongside new multimodal facility projects.</p>			
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1. Introduction

This report provides transportation planners and operators with best practices and background information to enhance education and outreach practices when streets are redesigned to include new multimodal infrastructure. Multimodal infrastructure includes a wide range of design changes to rights-of-way include bike lanes, bike boxes, enhanced pedestrian crossings, and new signalization that incorporates multiple modes. As described in the report, planners and engineers are introducing a wide variety of new road configurations to meet mobility objectives, but the usability of these facilities may be dependent on the ability of not just walkers and cyclists but also of motor vehicle drivers to recognize how to operate around these new facilities. Importantly, this report does not directly address broad-safety campaigns, though its recommendations take into account that such safety campaigns exist, such as those operated by VDOT and Virginia DMV. Rather, this report focuses on the education and outreach practices associated with specific new facilities, preparing local residents, as well as the broader region, to use roads with significant changes to their configuration, striping, and signalization.

This report was completed in response to a research need identified by the VDOT Transportation Planning Research Advisory Committee. We have structured the report for usability, with an emphasis on best practices, presented both in detail and as an easy to use set of recommendations laid out at the end of this introduction (Section 1.2). These recommendations for implementation are supported by research including a review of current research and practice, as well as interviews with practitioners. The report can be readily used as a Guidebook for planners and roadway designers in the Commonwealth and beyond.

1.1 Purpose and Need

Streets are changing. New designs, new technologies, and new rules are all being deployed in order to make roadways more usable for people travelling by multiple modes: walking, biking, transit, and driving. Best practices in roadway design dictate that, at much as practicable, changes to streets be “intuitive” within the context of generally accepted rules of the road and - for drivers - the training required in order to become licensed. Therefore, bike lane striping is primarily comprised of painted lines familiar to drivers and other road users, and Departments of Motor Vehicles have taken on the task of teaching drivers how to recognize and operate around the most common types of pedestrian and bicycle facilities. These two approaches, intuitive design and basic driver education, are what planners and engineers rely on to make new multimodal streets usable for drivers and other road users. Sometimes, however, intuitive design and basic driver education may not be enough. This report addresses the specific but increasingly common situation where planners and engineers choose to implement new facilities that (1) may not be readily intuitive for current drivers and (2) are not addressed by standard driver education. This report identifies a role for planners and engineers to directly address this situation during the process of planning and implementing new multimodal facilities on public roads, identifying best practices for education and outreach at local and regional scales.

Importantly, what are we talking about when we invoke the term “new multimodal facilities”? The term is deliberately broad, inasmuch as the best practices reported on here should be relevant to numerous situations where new designs, technology, or rules of the road are implemented that serve non-drivers but must be understood by drivers. However, to be specific, our focus is on multimodal street facilities that are being deployed or tested in US cities today including “sharrows,” bike boxes, bike sharing facilities, bike and transit signalization, as well as less visible changes to roadways such as pedestrian-priority crossings. As stated

above, the best practices in the report should apply to multimodal facilities that are less intuitive and not addressed by basic driver education. Note also that these best practices do not address or are replacements for large regional or statewide safety campaigns ongoing throughout the US, encouraging road user awareness on caution on multimodal streets. This report focuses on education associated with the opening of new facilities, which may be integrated within ongoing campaigns but may also be understood as distinct from those campaigns. That said, our findings do strongly suggest that education programs for new facilities benefit from integration with ongoing campaigns and human factors considerations such as a general mobility culture of empathy and awareness.

Driver Education Today

What does the terrain of driver education look like today? Many state agencies and other actors are involved in teaching drivers to operate on the streets, but the system remains fairly straightforward. Departments of Motor Vehicles (DMVs) are the primary agencies responsible for the driver education, and outreach, through the licensure process and their deep engagement in most state's safety campaigns. While important, the licensure process, both at first and through license renewal, provide only limited moments of contact with drivers and don't provide knowledge of how to use emergent types of facilities. Safety campaigns, also often supported by DMVs in concert with other agencies, focus on driver behavior and awareness, which is critical, but are less likely to focus on usability.

In addition to DMVs, state police are significant participants in safety campaigns, and also can participate in youth education. Schools, districts, and Departments of Education are also engaged specifically in teaching young road users, not yet drivers, to safely walk and bike on multimodal streets, including how to use facilities like bike lanes and signalized pedestrian crossings. Still, like DMVs, youth-directed education cannot address changing multimodal infrastructure. Departments of Transportation, like Virginia's (VDOT), are important partners in safety campaigns, but also find themselves in the position of teaching communities about possible, pending, and newly implemented changes to their roadways. The plethora of videos online from VDOT and other DOTs demonstrating how to use roundabouts, diverging diamonds, flashing yellow signalization, and other changes to rights-of-way show how planners and engineers are already invested in the process of education and outreach, both through mandated public comment processes and best practice. The best practices described in this report build on the approaches already in use by state, regional, and local transportation agencies, distilling what has worked and what hasn't, as well as new findings from research, into a systematic approach to developing education programs for new multimodal facilities.

New Multimodal Facilities: Bringing Together Planning and Education

Underlying this research is a question about the role of planners, engineers, and planning practice in education. Planners and engineers are not central actors in driver education, or even during safety campaigns. However, planners are responsible for helping communities choose how their rights-of-way will be used, including the introduction of unfamiliar facilities. Thus, there is a logical nexus between what planners do and the need for education around new facilities, not yet incorporated into traditional education practices such as licensure. In some cases, this nexus is obvious, such as the notification processes associated with testing experimental road designs, beyond the approved designs in books such as the Manual of Uniform Traffic Control Devices or other engineering standards. However, in many cases new multimodal facilities may be already approved in a particular state or city but remain highly unfamiliar to most drivers and other road users. In those cases, systematic outreach with the intent of teaching drivers how to operate in and around new facilities may still be warranted. Instagram and other social websites are filled with pictures of drivers parked in bike

lanes, waiting a signals inside of a bike box, and speeding through pedestrian crossings. Part of the issue is surely awareness and, as human factors research has shown, a bit of empathy. However, we contend that awareness and empathy are likely to be increased with understanding as well, sometimes just a basic understanding of what new stripes and green paint are doing on the street.

What can planners and engineers engaged in design and implementation of new multimodal facilities do? This report suggests that while planners should not expect to become experts in education theory and practice, some fundamental best practices gleaned from educators, market researchers, and planners already working in this area can be applied to most situations where new, unfamiliar facilities are planned. As our research finds, some planners have some sense of these practices, while most are still seeking recommendations about where to begin. At a minimum, this report can be an actionable guidebook for sharing knowledge and resources on this issue, reducing redundancy of efforts and investments currently occurring. More broadly, we hope to encourage continued exploration of the role of planners in installing capabilities in the users of our transportation facilities. This review of prior research and current practice highlights that practitioners have in many ways moved ahead of research but still seek a consistent approach to enhancing driver education for new multimodal facilities. We hope this report begins to facilitate a shared awareness of what role planning can and should have in educating travelers to use the transportation system.

1.2. Recommendations

The following recommendations distill the research results from the sections that follow into a set of clear guidelines when establishing drivers and other road user education programs for new multimodal infrastructure.

A. Use education and outreach for new/novel infrastructure

All infrastructure should be designed intuitively, but communication is particularly important when implementing novel or complex kinds of infrastructure like bike boxes or bike share systems. Even simple treatments can create confusion around rights of way.

B. Leverage professional marketing expertise

Planners in the field agree that professional marketing expertise can greatly improve the efficacy of outreach and marketing. Governments should consider consulting with 3rd party marketing firms or bringing their own professionals in house.

C. Make sure your outreach is adequately funded

Obtaining sufficient funding is a challenge for many agencies. Some agencies find that the inclusion of funding in a capital budget during the planning stages of a project can increase the availability and quantity of resources for a project.

D. Clarify roles and responsibilities when collaborating

Collaboration can allow for larger and more successful projects, but can be become a liability if roles and responsibilities are not clearly assigned. Contingency plans should also be put in place in case any collaborator struggles to fulfill their responsibilities.

E. Leverage engineering, education, enforcement, emergency

For any safety campaign to be successful it must be part of a broad campaign that leverages the Four Es: engineering, education, enforcement, and emergency response. For best outcomes, entities involved in all of these areas should coordinate their efforts.

F. Utilize marketing materials developed by other agencies/jurisdictions

Planning agencies worldwide share very similar missions and professionals in the field are usually happy to share marketing materials. Just ask for permission before using it and be sure to give credit where credit is due.

G. Understand demographics and use patterns in your locality

Understanding demographics is critical to delivering your messages effectively. A city with a large tourist industry or a college town with new students arriving every year will need to rely on marketing channels specific to those demographics.

H. Proximity to time and place of application

Education and outreach is most effective when delivered close to the time and place of application. This reduces the cost of recalling the information and allows reinforcement through immediate application.

I. Consider language and tone carefully

Fear-based messaging is shown to be less effective on adults than teens and can negatively influence active transportation by making cycling and walking appear dangerous. Instead, consider positive and humanizing messages that promote compassion, cooperation, and safety among all road users.

J. Combine emotional and rational arguments

Different population groups will respond differently to different kinds of messaging. To maximize the appeal of your education and outreach, utilize emotional and rational arguments side by side.

K. Use a variety of communications channels

Multiple channels should be utilized to reach a broad range of road users. In cases where specific demographics are targeted, these channels should be selected based on how well they reach the desired audience. Emerging technologies may facilitate previously unavailable channels, such as in-vehicle messaging.

L. Evaluation is important and can be done affordably

Evaluation of education efforts provide valuable information that informs future campaigns. However, due to the cost and resources required, some states and localities are unable to conduct comprehensive reviews. In these cases, agencies should consider less resource-intensive evaluation methods, such as informal surveys and focus groups.

2. Research Methodology

The recommendations and best practices presented in this report are synthesized from two major sources, literature on driver education practices and extended interviews with a range of transportation practitioners engaged in multimodal transportation planning and education associated with transportation planning. In addition to these two sources, the research is informed by the education materials themselves, which range from pamphlets and manuals to online websites and videos. These materials are included in the Media Analysis, Section 5.

Interviews Methodology

The interviews, summarized in the Interview Synthesis and contributing significantly to the recommendations, were collected over several months from December 2015 to March 2016. The semi-structured interviews were guided by a set of questions developed from the literature review, allowing interviewers to address key, common themes across a range of practitioners. The questionnaire, which guided the interview and did not require that each question be asked, is included as Appendix 1.

Interviews typically ranged from thirty minutes to one hour. Most interviews were with one individual, however when an invited subject suggested colleagues join, we held group interviews. Participants were chosen in order to cover two general groups of practitioners: (1) potential experts in driver and road user education, familiar with new multimodal infrastructure and (2) local and regional multimodal transportation planners with an unknown degree of familiarity with education practices. We sought to speak with both groups in order to understand both potential best practices and also what planners generally do and do not know about these practices.

The list of interviewees includes:

- Kimberly Burt,
Program Manager, Virginia Highway Safety Office
- Henry Dunbar,
Program Director of Bike Arlington, Walk Arlington, and Capital Bikeshare (Arlington)
- Michael Fontaine,
Associate Principal Research Scientist, Virginia Department of Transportation
- Pamela Hnytka,
Social Marketing Program Supervisor, City of Edmonton, Canada
- Greg Krykewycz,
Associate Director, Transportation, Delaware Valley Regional Planning Commission
- Amanda Poncy,
Bicycle and Pedestrian Coordinator, City of Charlottesville, VA
- Lori G. Rice,
Deputy Director of Programs, Development, and Implementation, Virginia Highway Safety Office
- John Saunders,
Director, Virginia Highway Safety Office

- Melanie Stokes,
Occupant Protection Program Manager, Virginia Highway Safety Office
- John Bolecek (VDOT) and other attendees,
Statewide Bicycle and Pedestrian Committee Meeting

Interviews were recorded, with the permission of the interviewees, and transcribed by team researchers. Key themes were then highlighted by the researchers. The content associated with these themes is described in the Interview Synthesis.

3. Literature Review

3.1 Conceptual Research Review

By improving the quality of education and outreach, planners hope to produce safer and more informed road users. Understanding current trends in road safety helps contextualize that goal and identify solutions being implemented today.

Looking abroad offers examples of communities with better safety records. Cyclist fatalities are 3-5 times higher in the US than in Germany, Denmark, and the Netherlands, although this was not always the case. Between 1970 and 2008 these European countries reduced their annual cycling fatalities by 60-80 percent. Today these countries have greater numbers of cyclists using roads, more consistent use of bicycles starting in childhood, traffic laws that heavily favor cyclists, and strict enforcement of laws on all commuters, all of which contribute to their safety record¹.

Other reports explore bicycle crashes in the U.S. more closely. They find that the majority of these crashes occur in urban areas and that 75% occur at intersections (including driveways)². Planners should focus education and outreach in these around these areas to realize the greatest safety improvements. Vehicle speeds play a large role in both bicycle and pedestrian fatalities and reducing those speeds should be a safety objective for transportation planners³.

Safety is cited as the number one reason more people in the United States choose not to commute by bike⁴. Research also shows that the more people there are walking and biking the safer roads become for all of them, since vehicles start to expect them and change their driving behavior⁵. This creates potential for a positive feedback loop between safer bicycle and pedestrian infrastructure, higher utilization of active transport, and safer roads.

¹ Buehler, R., & Pucher, J. (2012, May). Walking and Cycling in Western Europe and the United States Trends, Policies, and Lessons. TR News. Retrieved May 23, 2016.

² Raborn, C. et al. (2008). A Guide for Reducing Collisions Involving Bicycles (Rep. No. 500, Vol. 18). Retrieved May 24, 2016, from National Cooperative Highway Research.

³ Leaf, W. A., & Preusser, D. (2009). Literature Review on Vehicle Travel Speeds and Pedestrian Injuries (Rep. No. DOT HS 809 021). Washington D.C.: U.S. Department of Transportation, National Highway Traffic Safety Administration.

⁴ Reynolds, C. C., Harris, M., Teschke, K., Crompton, P. A., & Winters, M. (2009). The impact of transportation infrastructure on bicycling injuries and crashes: A review of the literature. *Environmental Health Environ Health*, 8(1), 47.

⁵ Jacobsen, P. L. (2015). Safety in numbers: More walkers and bicyclists, safer walking and bicycling. *Injury Prevention Inj Prev*, 21(4), 271-275.

Driver Attitudes and Formal Driver Education

To explore road user education and outreach in the United States, an obvious starting place are the driver education programs implemented by state DOT's nationwide. The most startling revelation of the literature is that it has been unable to demonstrate a statistical difference between young drivers with and without formal driver education^{6 7}. This suggests a classroom setting is not prerequisite to creating safe drivers. To improve the relevance of these programs, the literature suggests that they focus on more experiential teaching to develop young driver psychomotor, perceptual, and cognitive skills, which are actually shown to reduce driver risk. Experiential teaching also encourages drivers to problem solve, which demands general attentiveness and further promotes safety. On the reverse side, teaching advanced driving techniques, such as skid control, was found to create overconfidence in young drivers and increase risk of crashes⁸.

Among young drivers are a range of different personality types and the group should not be treated as homogeneous in regards to formal driver education of broader education and outreach initiatives. Among the subgroups of novice drivers, some were more receptive to safety messaging (including females, on average). Others subgroups displayed risky personalities including aggression, impulsiveness, and low altruism that made them both more likely to get in a crash and less likely to pay attention to safety messaging that might prevent it. These personality traits are linked to lifestyle factors, which cannot be easily changed by a driver education or outreach program⁹. This is important for recognizing both the need for varied outreach to reach different audiences and the limitations of education and outreach in changing behavior.

Crash rates are highest for young drivers and decline for each older age cohort¹⁰. Teenagers may lack the mental and emotional maturity to drive with care. This has inspired safety advocates to push for delayed licensure, which evidence suggests could dramatically reduce crash rates¹¹.

⁶ Vernick, J. S., Li, G., Ogaitis, S., Mackenzie, E. J., Baker, S. P., & Gielen, A. C. (1999). Effects of high school driver education on motor vehicle crashes, violations, and licensure. *American Journal of Preventive Medicine*, 16(1), 40-46.

⁷ Williams, A. F. (2004). Driver education renaissance? *Injury Prevention*, 10(1), 4-7.

⁸ Mayhew, D. R., & Simpson, H. M. (2002). The safety value of driver education an training. *Injury Prevention*, 8(2). Retrieved May 24, 2016.

⁹ Ulleberg, P. (2001). Personality subtypes of young drivers. Relationship to risk-taking preferences, accident involvement, and response to a traffic safety campaign. *Transportation Research Part F: Traffic Psychology and Behaviour*, 4(4), 279-297.

¹⁰ McKnight, A. J. (2006). Content of Driver Education. *Transportation Research Circular*, E-C101. Retrieved May 24, 2016.

¹¹ Williams. (2004). (see 7 above).

New Infrastructure

The literature includes two examples of new infrastructure implementations that did not include outreach or education campaigns. Understanding unbiased road user reactions can help illustrate road user tendencies and the potential gain of implementing outreach campaigns.

The first study examines installation of an RRFB system at a road and bike trail intersection in Virginia. Without any education or outreach, the system influenced road user behavior by eliciting higher yield rates among motorists and enhanced perception of safety by those using the trail. More frequent trail users were less likely to use the system, suggesting that familiarity with a route influences road user behavior. The system was most likely to be used when automobile traffic was present, reflective of a desire among trail users to influence driver behavior. Although the system seems intuitively designed, it is still not clear to road users who has the right of way, suggesting there is still a role for education and outreach to play¹².

The second study examines the installation of zig-zag pavement markings near road and bike trail intersections in Virginia. Installation of these markings also induced lower traffic speeds and increased driver awareness without any education or outreach. Local residents understood the purpose of the markings because of their familiarity with the trail but non-local residents did not. It is unclear whether the behavior change was induced by the intended meaning of the road markings or whether drivers drove more carefully out of confusion. In either case, the markings had a sustained effect that did not significantly diminish from 1-week after implementation to 6-months or 1-year after¹³.

Effective Campaign Messaging

Review of the literature reveals several general recommendations to keep in mind when performing education and outreach.

Campaigns trying to promote increased lawfulness (such as obeying speed limits) were shown to be most effective when combining outreach with enforcement¹⁴. Outreach gives road users fair warning and an opportunity to change their behavior on their own. By pairing it with increased enforcement, road users are prevented from ignoring your message.

A meta-analysis of 67 studies of road safety campaigns reveals trends among them. It shows that emotional messaging can be effective, but doesn't necessarily inform the type of emotional

¹² Dougald, L. E. (2015, May). Evaluation of a Rectangular Rapid Flashing Beacon System at the Belmont RIDGE ROAD AND W&OD TRAIL MID-BLOCK CROSSWALK (Rep. No. VCTIR 15-R22). Retrieved May 24, 2016, from Virginia Center for Transportation Innovation and Research.

¹³ Dougald, L. E. (2010, December). Best Practices in Traffic Operations and Safety: Phase II: Zig-zag Pavement Markings (Rep. No. 11-R9). Retrieved May 24, 2016, from Virginia Transportation Research Council website.

¹⁴ Williams, A. F., Lund, A. K., Preusser, D. F., & Blomberg, R. D. (1987). Results of a seat belt use law enforcement and publicity campaign in Elmira, New York. *Accident Analysis & Prevention*, 19(4), 243-249.

messaging. The most effective campaigns incorporated both emotional and rational messaging together¹⁵. It's logical to assume that including both approaches appeals to a wider audience.

The most effective campaigns were also shown to deliver their message close to the time and place of application¹⁶. This makes sense since that reduces the effort necessary to recall the information and makes it more likely that road users will change their behavior in response which will help reinforce the information.

3.2 Roundabouts: A Historical Parallel

Roundabouts are typically installed as a means of improving the safety and increasing operational efficiency of road networks. Due to the limited number that are in operation in United States, however, some drivers are unfamiliar with how to use them. Nevertheless, due to the benefits they provide, there has been a large increase in the number of roundabouts implemented in the United States since the 1990s¹⁷. To address the lack of knowledge in some areas, many state and local transportation agencies engage in educational outreach efforts. Furthermore, because DOTs and related agencies have been installing and educating road users about roundabouts for over two decades, a number of academic papers as well as state and federal guides exist. These documents evaluate past initiatives as well as provide recommendations for future roundabout installations.

Due to the similarities between the installation and education around roundabouts with new bicycle and pedestrian facilities—the focus area of this report—roundabouts provide an important historical parallel. In this section, we review academic literature and state and federal government publications in order to highlight findings that have potential implications for bicycle and pedestrian educational and outreach programs.

The Need for Education: The Federal Perspective

Federal roundabout documents make it clear that education is a necessary component for more complex roundabout installations. The National Cooperative Highway Research Program's roundabout guide, titled "Roundabouts: An Informational Guide," states the following:

"One of the most important aspects of planning a roundabout construction project is providing public education. The public needs to be notified and educated whenever there is a change in traffic patterns. It can be especially important for a roundabout because the first roundabout in a city or region will be new to many motorists."¹⁸

¹⁵ Phillips, R. O., Ulleberg, P., & Vaa, T. (2011). Meta-analysis of the effect of road safety campaigns on accidents. *Accident Analysis & Prevention*, 43(3), 1204-1218.

¹⁶ (see Phillips above)

¹⁷ Pochowski, A., & Myers, E. (2010). Review of state roundabout programs. *Transportation Research Record: Journal of the Transportation Research Board*, (2182), 121-128.

¹⁸ Rodegerdts, L. A. (2010). *Roundabouts: An informational guide* (Vol. 672). Transportation Research Board.

The Need for Education: The State Perspective

In addition to the federal government, numerous states provide official guidance regarding the need for education and outreach in conjunction with the planning, implementation, and operation of roundabouts. A recent Transportation Research Record paper, titled “Review of state roundabout programs,” studied roundabout programs administered in four states. After reviewing programs in Kansas, Maryland, New York, and Wisconsin, researchers Alek Pochowski and Edward Myers conclude that:

“Education of drivers on how to navigate a roundabout is a priority of each of the four states. Each jurisdiction has developed some form of brochure or handout related to roundabouts, and each state has materials related to roundabouts available for public meetings.”

Recommended Methods of Outreach

A number of state DOTs offer specific guidance on the methods of communication that should be utilized. In reviewing various state efforts, Pochowski and Myers report that the Pennsylvania Department of Transportation roundabout guide, for example, recommends public meetings, brochures, videos, radio, and newspaper outreach. In Kansas, a state roundabout guide contains an entire chapter covering public engagement and involvement. The document highlights the importance of public meeting during the design phase to achieve necessary public support.

For reaching the general public, the Federal government’s “Roundabouts: An Informational Guide,” lists the following channels for public education:

- Public meetings during design phase;
- Press releases and information materials before, during, and after construction;
- On-road variable messaging before and during construction;
- Radio advisory before and during construction;
- Signs to advise drivers of changing traffic patterns.

Innovative Communication Strategies

A number of less traditional strategies have been employed by some states to educate the public. Pochowski and Myers highlight several of what they describe as innovative methods of outreach. After reviewing educational initiatives conducted across four states, the following strategies were identified in this category:

- Creation and dissemination of videos and animations on the internet;
- Distribution of videos on local access cable TV stations;
- Distribution of videos in local retail establishments, such as malls;
- Placement of brochures in local stores
- Placement of brochures in grocery store shopping bags;
- Demonstrations in schools.

The Importance of Targeting Stakeholders

Some publications indicate a need to customize messaging for certain stakeholder groups. The federal guide titled “Roundabouts: An Informational Guide” advises agencies to tailor

information to fit the intended audience. The first step, the report notes, is identifying the intended audience. Various potential stakeholders are listed outside the general public that may require specially-tailored efforts and materials. Included in this group are public-service oriented agencies, such as fire, police, schools, transit providers. Business community members including developers and local business owners are also mentioned as potential sources for targeted materials.

Informational Websites: VDOT as an Example

Websites can serve as an important resource hub for information pertaining to roundabouts in a particular state. The Virginia Department of Transportation (VDOT) is highlighted in the National Cooperative Highway Research Program's roundabout guide for its website outreach efforts on roundabouts. The website¹⁹, which is dedicated to roundabout information, includes facts, step-by-step usage guidelines, as well as example roundabouts. VDOT's roundabout website was also acknowledged in "Approaches to Roundabout Education and Outreach," which also mentions Virginia's multi-channel efforts that, beyond the website, include video, public meetings, as well as articles submitted to newspaper and magazines. The paper notes the agency took a "not one size fits all" strategy, specifically tailoring messaging to address local concerns.

Methods of Education: What DOTs are Doing

A recent survey shows that most state DOTs report performing some form of outreach around roundabouts. A National Cooperative Highway Research Program survey recently identified the specific types of outreach that are used at state and local agencies. The results, published in a Michigan Department of Transportation (MDOT) report²⁰, indicate that 68 percent of state agencies conducted educational efforts. At the local level, however, only 41 percent performed outreach. The researchers note that of the campaigns conducted, most were performed before the construction phase. The same survey also respondent was also asked about types of outreach they engage in. The researchers asked about "existing public awareness programs related to roundabouts at their agency." The survey found that:

- 30 percent held special public meetings;
- 30 percent produced informational brochures;
- 9 percent announced on local TV or produced a video;
- 30 percent "did not do anything specifically related to roundabouts on a regular or project-specific basis."

Promotional or Informative? A Review of Tone

Researchers have found that, in general, state and local agencies tend take an educational tone with regard to roundabout educational efforts. In "Approaches to Roundabout Education and Outreach," researchers Veneziano and Ewan interviewed individuals at 33 different agencies. They discovered that none of the agencies they spoke with intended to have a promotional tone

¹⁹ Roundabouts in Virginia. (n.d.). Retrieved May 24, 2016, from <http://virginiadot.org/info/faq-roundabouts.asp>

²⁰ Savolainen, P. T., Gates, T. J., Datta, T. K., Kawa, J., Flannery, A., & Retting, R. (2011). *Improving Driver's Ability to Safely and Effectively Use Roundabouts: Educating the Public to Negotiate Roundabouts* (No. RC-1542).

in their outreach materials. Instead, agencies took an approach geared toward educating users on how to use the infrastructure.²¹

Roundabout Education Evaluations: What State and Local Agencies Are Doing

Although evaluation is widely recognized as being a valuable tool for understanding past efforts as a means for improving future initiatives, academic research on roundabouts indicates that many agencies for various reasons have not produced formal studies of their efforts. A Michigan Department of Transportation study surveyed DOTs and local transportation agencies across the United States in an effort to quantify the rate that evaluations are performed. Based on survey results, the researchers found that fewer than half of responding state agencies conducted formal assessments of their efforts. At the local level, fewer than 20 percent performed a formal study. Furthermore, the authors note that the evaluations tend to be simple efforts intended to document the process. Such efforts include simple metrics such as recording meeting attendees.

²¹ Veneziano, D., & Ewan, L. (2015). Approaches to Roundabout Education and Outreach. In *Transportation Research Board 94th Annual Meeting* (No. 15-1642).

4. Interview Synthesis

This synthesis of the interviews conducted with practitioners in Virginia and selected locations in the United States and Canada is organized according to common themes across interviewees. The seven themes are:

- Do You Need Education and Outreach?
- Structuring and Funding Education Programs
- Collaboration
- Variations by Mode
- Media Channels
- Language and Tone
- Evaluation

While a synthesis, specific sources from the interviews are cited as appropriate to identify specific points made by individual interviewees.

4.1 Do You Need Education and Outreach?

Successful outreach tries to both inform people's technical understanding as well as promote cultural and behavioral changes. The cultural component includes both a willingness to follow the rules and an attitude of safety, caution, and compassion to fall back on when the rules break down. Behavioral change initiatives typically attempt to achieve a higher degree of rule compliance or a change in usage patterns.

New and Modified Facilities

Most practitioners interviewed agreed that campaigns may be needed when unfamiliar styles of infrastructure are implemented. As public awareness increases, these campaigns are typically reduced or ended. One challenge that these types of educational campaigns face is variations in implementation of a particular type of facility. Many facilities face unique challenges, resulting in modifications to a standard design. This can lead to confusion among users, particularly when installed infrastructure differs from what appears in educational materials. Planners in Edmonton, Canada, have found that educational efforts are simplified when standardized designs are implemented. However, when variations are necessary, it is important for educational material to reflect this.

Context Sensitivity

Considerable variations exist in infrastructure as well as demographic, migratory, and behavioral patterns. Therefore, it is important for campaigns and outreach efforts to account for this. Initiatives should be designed to meet the specific needs of the intended geographic areas and the desired target audiences. For example, because Charlottesville, VA, is a college town, commercial center, and tourist destination, road users include both local residents and visitors from abroad. This creates a special need for on-the-road messaging to reach visitors not accessible by radio, mail, television, or other place-based channels. It also creates a temporal challenge as students graduate and new ones move to the area every year.

Promoting Mode Shift

Not all campaigns are strictly educational in nature. Some agencies seek to cause behavioral shifts, such as encouraging mode shift or advertising a new transit services. For example, the Capital Bikeshare in the Washington, D.C area program provides a new way to access bike mobility. In this case, outreach is necessary to attract users and train new users how to pay, access bikes, and follow the system's rules. In addition to providing technical information, this type of outreach is also an opportunity to build cultural norms by promoting safety, compassion, etc.

The Four Es

Practitioner interviews identified large variations in the roles that transportation professionals play in implementing the Four E's of traffic safety—engineering, education, enforcement, and emergency response. Involvement can be expected to vary considerably based on the agency they work for and the type of projects they work on. Those involved in long-range regional transportation planning, for example, may view their role to be on the engineering side: to design self-evident transportation systems that provide safety for all modes. Other practitioners, such as those involved in advocacy or facilitating bike share systems, may be directly involved in implementation and therefore see a greater need to spend time with the educational component.

4.2 Structuring and Funding Education Programs

Structuring an Outreach Campaign

Most outreach efforts fall into one of two categories. The first are broad, long-term outreach campaigns intended to build awareness and cultural norms around safe and informed road use. The second are more focused campaigns built around a single idea of infrastructure change.

Planners in Charlottesville Virginia, for example, conduct general outreach efforts to promote safe and responsible road user behavior. These efforts include a “Drive 25 campaign” in neighborhoods, pamphlets about road-user rights and responsibilities, and annual PSA's about night-time driving when daylight savings goes into effect. More targeted campaigns include specific outreach about the installation of new bike boxes and how to use them.

Few will argue against the benefits of promoting safe road usage in ongoing campaigns, but it's also important for planners to keep a pulse on road culture over time. As an example, conflict and animosity is growing between cyclists, drivers, and pedestrians due in part to rising bicycle usage over the past few years. Arlington used that as an impetus to launch their PAL (predictable, alert, lawful) campaign, encouraging all road users to follow those three guidelines.

More targeted campaigns can be triggered not only by new infrastructure projects, but whenever any construction starts that impacts traffic patterns. Road users in these areas must be more alert since temporary traffic patterns can be both unfamiliar and less spacious. For these reasons, construction sites are great places to put targeted messaging encouraging caution, safety, and compassion for other road users as well as construction workers.

Funding an Outreach Campaign

Successful outreach requires funding to cover personnel and advertising costs. Several planners we interviewed include outreach and education expenses in their capital budgets on the basis that successful outreach is as critical to project success as the paint that goes on the road. This strategy can increase the amount of funding available beyond that of operational budgets alone, allowing for more thorough education and outreach. For the budget to be approved, however, outreach expenses cannot be too great relative to more “tangible” expenses. This limits the amount planners can spend on outreach for a given project and makes it harder to connect those initiatives to a broader campaign.

There are other outreach funding sources available as well. Planners in Charlottesville, for example, are pursuing grant funding to promote education and outreach for a Safe Routes to School Program. More grant funding may be available than planners think since safety and sustainability are more likely to be grant funded objectives than improving traffic throughput. Regional planners we surveyed indicated that their large projects are too broad to include specific budget amounts for education and outreach. This could represent an opportunity for localities to promote the benefits of local outreach about regional projects and ask regional planning authorities for funding to do so on their behalf.

4.3 Collaboration

Whose Job is Outreach?

Delivering successful planning outcomes is interdisciplinary by nature, relying on both planning and engineering expertise to design effective systems and marketing expertise to communicate with system users effectively. Planning professionals in the field agree that having professional marketing expertise improves the efficacy of outreach efforts but planners are not necessarily trained as outreach professionals themselves. This raises several interesting questions: Should planners develop professional marketing skills or should those responsibilities be given to a dedicated marketer? Should governments contract to 3rd party marketing firms or bring that expertise in-house?

Arlington offers a strong example of a municipality leveraging professional marketers in-house. Planners there (especially in the TDM division) are trying to promote behavior change and they’re doing so using standard marketing techniques. They sometimes find themselves fighting for respect from constituents because marketing seems “soft” relative to building roads, running transit systems, etc. Fortunately for them, the Arlington Government believes they bring a skillset that planners and engineers are not trained for and contribute value to taxpayers by more effectively behavior change to promote successful transportation outcomes. The government of Edmonton, Canada has taken similar steps themselves.

The city of Charlottesville has a communications department that handles communication, press releases and, news spin for the city government. With limited staff, that department can’t necessarily prioritize transportation outreach over other city goals, which creates ambiguity whether other departments are free to perform their own outreach instead. To avoid stymying

communication initiatives, cities should clarify the responsibilities of their communications team relative to the needs of other departments. This could necessitate improved interdepartmental communication, expanded communications teams, or communications training for departments with outreach needs.

Inter- and Intra-Governmental Collaboration

Governments that incorporate professional marketing expertise must then foster a strong culture of inter-agency collaboration. This is especially challenging when numerous funding sources and agencies become involved, demanding that collaborators identify common goals, clarify responsibilities, share information, and evaluate outcomes.

In practice, planners interviewed in the Washington, D.C. area have found that this can be challenging in localities with high volumes of concurrent projects. Collaboration has a logistical cost that grows the more projects you have trying to leverage a single marketing team. It can also be difficult to leverage marketing expertise at the right time if projects go on and off the schedule, bond cycles are missed, etc. The more predictability governments can bring to their infrastructure development the more effective outreach can be leveraged.

State government could play a role in helping to streamline these processes. In Virginia, the Virginia Highway Safety Office brings together federal, state, and local agencies that share a goal of reducing traffic crashes, injuries, and fatalities. Together with the Virginia Department of Transportation, Virginia State Police, and the Virginia Department of Education, the Virginia Highway Safety Plan is developed. This document, which focuses on education and enforcement, collectively guides the various agencies.

Sharing Marketing Resources

Without in-house marketing expertise, planners must follow others' examples and rely on intuition to produce the most effective messaging they can. Fortunately, planners working in the field naturally develop a working knowledge of what other professionals are doing in cities around the world. Portland, for example, is widely regarded as a top bike city in the United States. This informal knowledge base, along with internet searches, helps practicing planners find exemplary outreach and education initiatives that they can base their own work on. The Charlottesville "You Know Me I Ride a Bike" campaign was inspired by a similar initiative from Fort Collins, Colorado. Planners there were happy to let Charlottesville use the same name for their program, and this is indicative of a widespread willingness in the planning profession to share outreach material between localities. It is simply encouraged that planners ask first and give credit to the original creators of shared resources.

It would be valuable if there were a 3rd party clearinghouse to aggregate, organize, and distribute outreach and educational material in the planning profession. Part of outreach is cultural change and by leveraging a unified message more broadly and consistently across municipalities, the rate of cultural adoption could be accelerated.

4.4 Variations by Mode

Our interviews offered us limited insight into specific channels, messaging, or techniques that planners are using to target road users of different modes. This remains as an area for future inquiry. The information we did find, in conjunction with our literature review, offers general guidelines to practitioners.

Messaging is most effective when delivered close to the time and place of application, as described in the literature review sections of this report. Messaging on the back of a bus, for example, should be addressed to drivers since they are the road users most likely to see it while driving. Messaging delivered to passengers inside the bus could be tailored towards users of other modes.

When outreach budgets are limited or when multimodal users can be reached through a single channel, planners should consider presenting multimodal messages side by side (i.e. when driving do this, when biking do this, etc.). This also reinforces the notion that all road users have a part to play. Charlottesville planners takes this approach and tries to humanize all road users in hopes of promoting greater compassion.

The federal government provides guidance for education and behavior change campaigns in a document titled “Countermeasures That Work.” The guide, published by the National Highway Traffic Safety Administration, synthesizes research in a succinct manner, with separate sections for different transportation modes. It can serve as a valuable tool for initiatives at various scales. In Virginia, for example, the Virginia Highway Safety Office considers this publication to be a significant guiding document for their work.

4.5 Media/Outreach Channels

It is imperative that campaigns to utilize the appropriate channel to reach their intended audience. If a campaign seeks to reach a broad audience, it is necessary for multiple channels to be utilized. This can include a mix of, but are not limited, social media platforms, television and radio advertisements, billboards, flyers, roadside signage, pamphlets, on-vehicle signage, public meetings, and posters.

Different communication channels also facilitate different types of messaging, with some styles working better than others on any specific channel. It is important that the message itself is tailored not only to its desired audience, but also to fit the channel it is delivered on. Roadside signage, for example, is typically limited brief statements, but can be directed directly at users. Longer forms of communication, such as brochures and posters, can feature more content, but can also be more difficult to achieve broad consumption.

Defining Target Audiences

The Virginia Highway Safety office uses data to inform its decisions and target specific demographics with its various safety campaigns. For example, the demographics of users who are least likely to wear seatbelts are obtained through observational and form survey data methods. After this data is processed, campaigns are developed and targeted towards the

identified at risk groups. This could involve purchasing TV commercials during specific types of programming at certain hours.

Case Spotlight: Charlottesville, VA's Approach

Charlottesville uses several media channels including advertising on busses, radio ads, press releases, print campaigns, mailers, and outreach personnel. Planners in the area would like to leverage video messaging as well, but note that existing publications that are publicly available on the internet don't necessarily apply to those few, unique intersections in each city that really need explanation the most. Charlottesville's Bicycle and Pedestrian Master Plan recommends that planners conduct user outreach, but offers no specific recommendations to planners in regards to messaging or channels to pursue.

Utilizing "Attention Grabbing" Techniques

Arlington planners leverage social media, "old-school" approaches, and some that are entirely novel. One is mobile signage on a bike trailer that a part-time worker is paid to ride around the city during rush hour traffic. This ensures the messaging is delivered close to the time and place of application. Another is the use of "protester" rallies who hold positive signs about sharing the road, distribute print materials, and create a friendly atmosphere by talking with stopped cars, distributing candy, and giving high fives.

The Indigo Bike Share Program incorporated educational messaging directly into the design of its bike share system. Basic "rules of the road" were placed on bicycles as a means to communicate bite-size pieces of information. "It's called a sidewalk, not a sideride," for example, can be effective low-cost strategies.

Ticket Diversion Educational Programs

Ticket diversion programs can serve as one channel for educating bicyclists and drivers about the proper usage of new infrastructure. Under programs like this, individuals who are cited for a violation are given an opportunity to reduce or eliminate their fine in exchange for completing an approved educational course. These types of programs are in existence in numerous states for automobile violations. California, however, recently passed legislation that enables localities to offer this type of program for bicyclists that receive citations. The bill was signed into law by Governor Jerry Brown in 2015 and became effective as of January 1, 2016. Although the state will not directly create ticket diversion programs for cyclists, the bill does enable bicycle advocacy groups and police departments to initiate programs in municipalities. Programs, such as those that target both motorists and bicyclists, provide an opportunity for individuals to receive updated information regarding traditional and new multimodal infrastructure²².

4.6 Language and Tone

Many practitioners have found that the language and tone used in a campaign can have a significant impact on its perception, interpretation, and response from the general public. Based on this insight, words should be thoughtfully crafted. When possible, decisions about language

²²Streetsblog California. (n.d.). Retrieved May 24, 2016, from <http://cal.streetsblog.org/2015x/09/22/governor-brown-signs-law-allowing-bicycle-ticket-diversion-programs/>

and tone should be informed by past experience, research, and evaluation. Decisions should take audience and context into account. Different modes and user groups will react more favorably to different styles of messaging. Some practitioners see this concept extending beyond simply the content of a campaign. In Edmonton, Canada, for example, planners do not use “bicycle safety campaign” as a public label for its initiatives. Through professional experience, they have identified that this label generates an understanding that cyclists are not safe unless they take care of certain tasks and follow specific procedures. Instead, the planners and marketers in Edmonton seek to convey a message to users that is perceived as helpful information that offers a way for users to increase safety—not as a warning to users to abide by rules.

The Value of Humanizing Users

A preference for positive messaging that tries to humanize road users exists among many practitioners. This perspective—based on their understanding of available research as well as their professional experience—results in campaigns that aim to tell stories about road users that engender compassion.

Work done by the Virginia High Safety Office has resulted in similar findings of user perception of tone. The office, which administers focus groups to gauge the perception and comprehension of campaigns, found that “blood and gore” style campaigns are not the most effective tones for eliciting behavior change. Instead, their view is that individuals are more responsive to consequences that threaten their way of life. Examples of this tone include consequences of actions that significantly impact an individual’s life, such as the loss of car, income, or spouse. These techniques are employed specifically in the context of being the potential consequences of driving under the influence.

An example of this humanizing approach is the “You Know me I Ride a Bike” campaign, which featured actual citizens who volunteered as models for a series of posters to help attach a friendly and familiar face to every biker. The Washington D.C. area “Tired Faces” campaign that depicts cyclists and pedestrians with tire tracks on their faces to scare drivers into driving more safely is not an example of this approach. One practitioner interviewed as part of this research noted that while the campaign is “powerful and gets your attention,” a more positive and humanizing messaging could be more appropriate and elicit better responses from broader demographics.

Depicting Ideal Versus Realistic Use

Arlington planners are adjusting their bike safety messaging by subtly downplaying the importance of helmets. This approach addresses concern among bicycle advocates that safety campaigns focused on helmets exaggerate the danger of biking and obscure the benefits. Sideline helmets creates an opportunity to talk about those benefits in hopes of driving more effective behavior change in transportation. More broadly speaking, planners are trying to shift from fear-based messaging to incentive or benefit-based messaging.

Arlington uses paid staff to put a positive presence on the street. One part-time worker bikes during rush hour with bike-trailer signage promoting the cities PAL (predictable, aware, lawful) campaign. They also sponsor street-side rallies where participants with positive signs advocate for safe driving, and distribute print material, candy, and high fives to stopped traffic.

4.7 Evaluation

Under ideal circumstances, educational and outreach campaigns are quantitatively evaluated to determine their effectiveness. This information is then used to evaluate to improve effective campaigns and inform future initiatives. Under this ideal scenario, scientific sampling techniques are used to conduct observational and form-based surveys, both before and after campaigns are administered. This enables professionals to quantify behavior change and information recall among road users and target audiences. In practice, however, this ideal scenario requires a significant amount of time and money. Additionally, behavior change is difficult to quantify due to the accuracy and precision necessary to detect subtle trends as well as the numerous variables involved, which can make results difficult to interpret. Therefore, our research has found that many professionals -- particularly those at smaller agencies -- are constrained in their ability to evaluate their efforts. Nevertheless, basic surveys and focus groups can uncover actionable data.

Case Spotlight: Charlottesville

In Charlottesville, planners are evaluating the technical success of their new road treatments, but not the success of their outreach efforts. Of course planners want to know if their efforts are effective and in what ways they might improve them, but actual methods for measuring outreach efficacy are not apparent.

Case Spotlight: Arlington

Arlington's Transportation Demand Management team measures the impact of their outreach indirectly by way of vehicle counts. This creates an opportunity to partner with the locality's department of transportation. Arlington found that, despite rising population, traffic volumes on several arterial roads had remained constant.

Case Spotlight: Virginia Highway Safety Office

The Virginia Highway Safety Office performs extensive evaluations to inform its initiatives. Based on the results from focus groups, the office has even modified its campaigns to improve perception and effectiveness. For example, the office discovered through focus groups that individuals would be more likely to be influenced by a DUI campaign if the tone was less law-enforcement oriented. In response, the office altered its campaign and re-focused it around the concept "nothing is more beautiful than a safe ride home."

Case Spotlight: Edmonton

The city of Edmonton, Canada, researches the effectiveness of its campaigns by testing recall of the information contained in their marketing among target audiences. The city looks at both aided and unaided recall. Although planners are interested in quantifying behavior change through observational data, Edmonton has determined this process would be too resource

intensive and is not feasible based on the current framework. For information recall, the city considers 30-40 percent recall of campaigns to be successful. Based on their latest multi-channel campaigns the city achieved 56 percent recall.

5. Media Analysis

This section presents three pieces of outreach material and explains how our recommendations can be applied to them. More outreach examples can be found in the media appendices, Appendices 2 and 3. Though these pieces are from safety campaigns, which generate the bulk of education and outreach materials in multimodal transportation, their content can be used as an example of the applicability of this report’s recommendations for new infrastructure education as well.

<p>A</p> <p>B</p> <p>C</p> <p>B</p>	<p>For Pedestrians:</p> <ul style="list-style-type: none"> Cross the street at marked crosswalks and intersections. Watch for turning vehicles. Before crossing, look left, right, then left again. Use pedestrian pushbuttons. 	<ul style="list-style-type: none"> Begin crossing the street on the "walk" signal. Stay visible after dark and in bad weather. Watch out for trucks & buses backing out of parking spaces and driveways.
	<p>For Bicyclists:</p> <ul style="list-style-type: none"> Obey all regulatory signs and traffic lights. Never ride against traffic. Ride with traffic to avoid potential accidents. Use hand signals to tell motorists what you intend to do. 	<ul style="list-style-type: none"> Ride in a straight line at least a car door's width away from parked cars. Always wear a helmet. Helmets dramatically reduce the risk for head injury in a bicycle accident. Use lights at night and when visibility is poor.
	<p>For Drivers:</p> <ul style="list-style-type: none"> Stop for pedestrians at crosswalks and be careful when passing stopped vehicles. Slow down and obey the posted speed limit. Yield to pedestrians & bicyclists when turning. 	<ul style="list-style-type: none"> Look before opening your door. Allow 3 feet when passing bicyclists.

People don't come with airbags.

Street Safety Tips
For Pedestrians, Bicyclists and Drivers

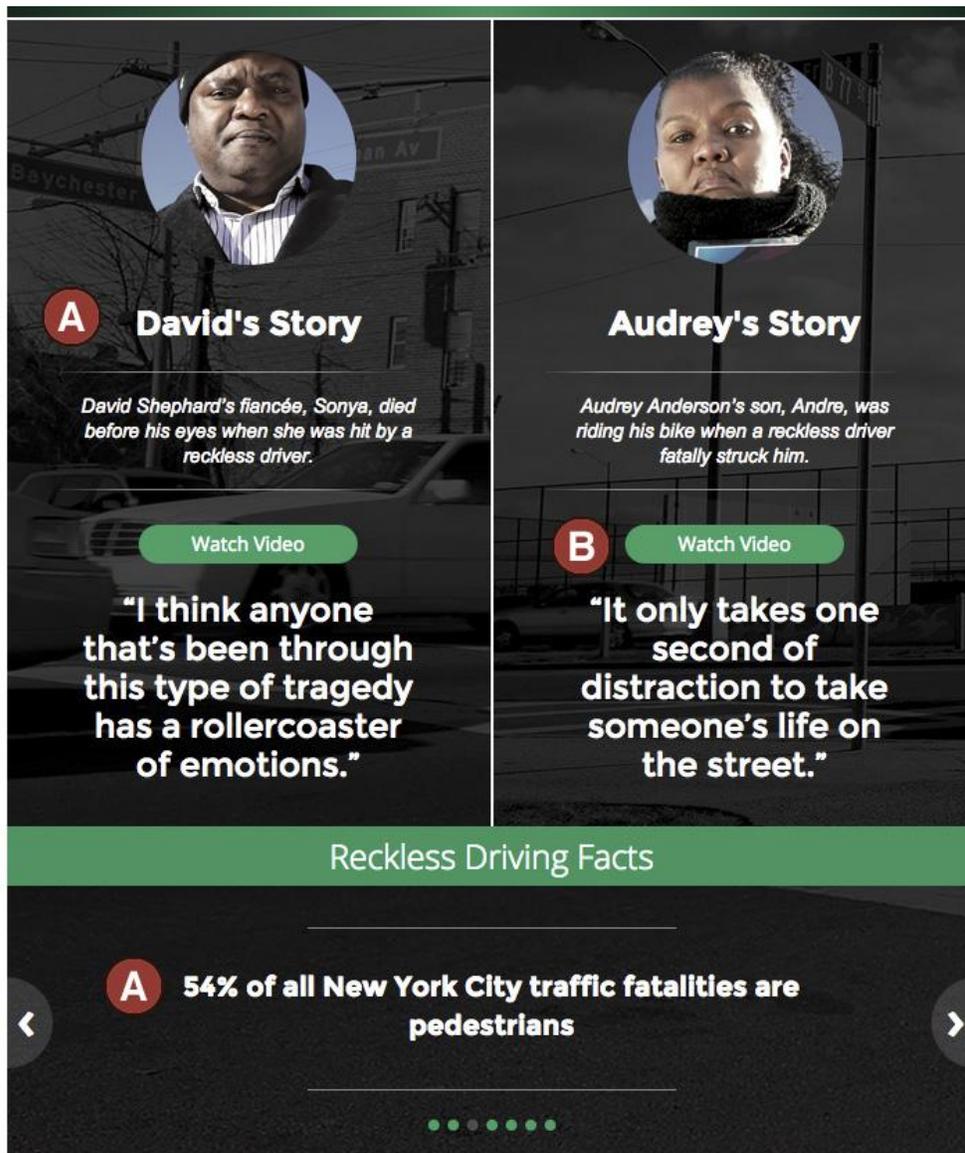
STREET SMART
BeStreetSmart.net

A public safety program of Metro, the District of Columbia, Maryland and Virginia.

Street Smart - Washington D.C.

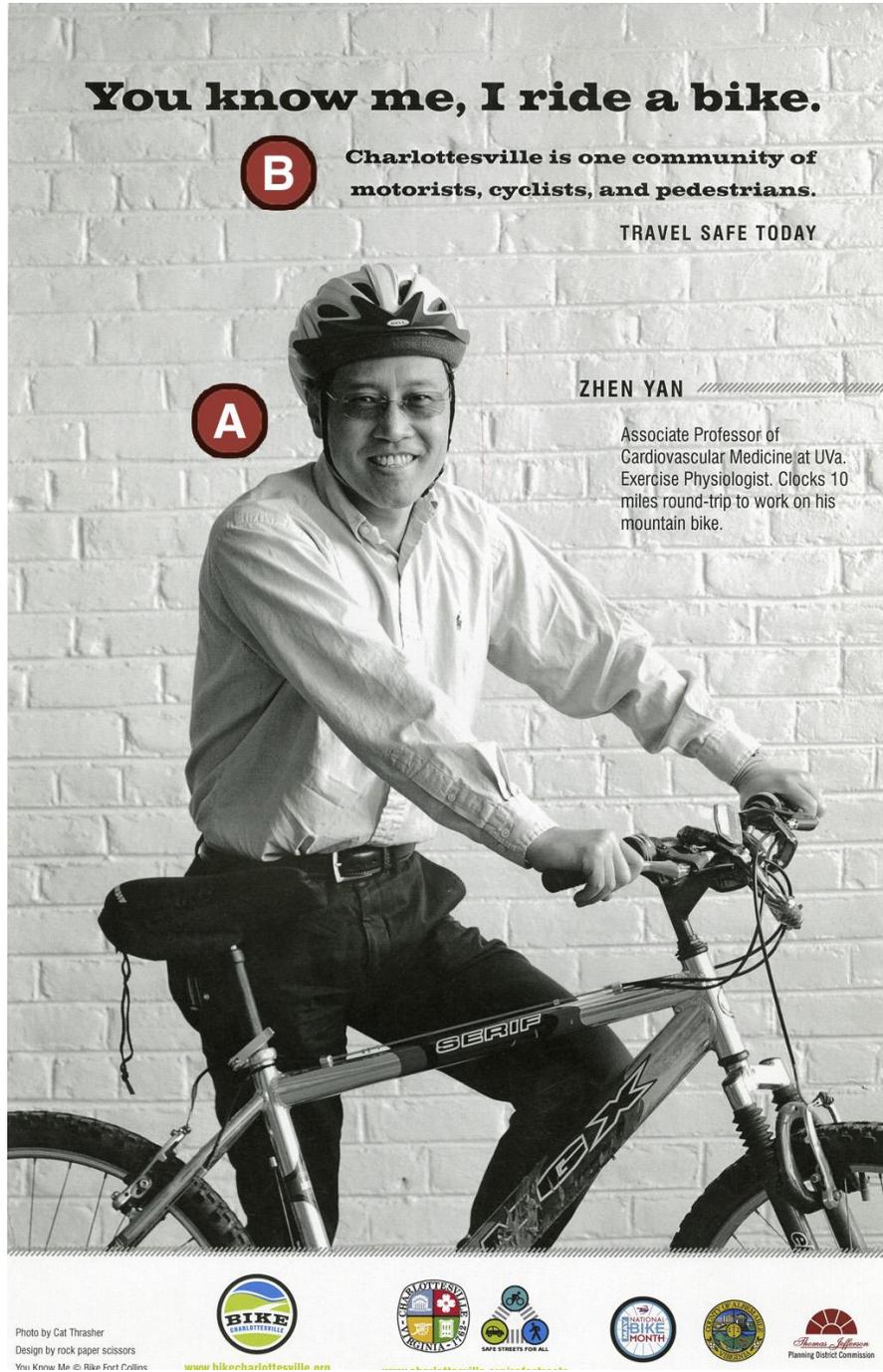
This piece from Vision Zero New York is in a format that can be printed and trifolded as a brochure, but can also be printed in large format as a poster. This allows the same piece to be leveraged via different outreach channels. **(A)** The provocative tone set by this “tired face” can elicit a powerful response but can also discourage active transport by making walking look like an inherently dangerous endeavor. **(B)** By presenting multimodal information side by side, this material cost-effectively addresses multiple audiences and promotes the concept of shared

responsibility for safe roads. **(C)** This material distills important traffic laws and presents them in an easily understood way. This also brings together emotional and rational content.



Vision Zero - New York

(A) This electronic material brings together emotional content by way of the individuals' stories and rational content by way of the traffic statistics below. Since different road users respond differently to different kinds of content, this varied approach helps broaden the appeal of this message. **(B)** This piece leverage different forms of outreach by using static content, scrolling statistics, and video media.



You know me, I ride a bike.

B Charlottesville is one community of motorists, cyclists, and pedestrians.

TRAVEL SAFE TODAY

A

ZHEN YAN

Associate Professor of Cardiovascular Medicine at UVA. Exercise Physiologist. Clocks 10 miles round-trip to work on his mountain bike.

You Know Me, I Ride a Bike - Charlottesville, Virginia

The inspiration for this poster came from a similar campaign in Fort Collins, Colorado. Most planning agencies are happy to share materials in support of common goals. **(A)** This poster's goal is to create a human connection between the viewer and the cyclist. The smiling face and positive tone of the material try to foster compassion that will manifest the next time the driver sees a cyclist on the road. **(B)** Charlottesville has a small-town feel where many people know each other. This campaign tries to leverage that cultural context to promote road safety.

6. Further Research

This report addresses a heretofore underexamined aspect of the planner's role in transportation systems, specifically how education plays a role in the introduction of new, more multimodal facilities. The research underlying this report, however, represents only a starting point for a broader base of research that could inform the transportation planning/education nexus.

Differentiating Outreach by Mode

Neither the interviews we conducted nor the literature we reviewed went into great depth on road user variation by mode. To what extents is mode a useful delimiter of education practice, or are there too many subgroups or more significant cross-cutting groups? Can users of different modes be reliably characterized as having certain dispositions or circumstances that correlate to varying receptivity towards tone and messaging? This research recommends delivering messaging close to the time and place of application which, for cars, could include bumper stickers, external bus advertising, rush-hour radio pieces, etc. What equivalents could be leveraged for cyclists and pedestrians?

Developing More Effective Evaluation

Evaluation of education and outreach efforts remains a challenge. This is especially true in regards to behavior change, since so many factors influence road user behavior. This research explores the current best practices within the planning field but future research could more effectively leverage the current body of marketing literature. By doing so, planners could better understand not only how to more effectively perform education and outreach but what other messages are competing to influence the minds of road users.

Leveraging Channels Effectively

Many planning agencies use formats like brochures and posters to communicate with road users. This report offers recommendations with which we can assess the language and tone of these materials and the organizational initiatives that produced them, but the problem remains of how you actually get road users to engage with these materials. Will road users read a pamphlet if you get it in their hands? Are these education channels obsolete in this digital age? Are road users any more likely to watch a road safety public service announcement on YouTube? What would it take to get road users self-interested in pursuing road education and outreach?

The Role of Planners in Transportation Systems Education and Outreach

Ultimately, this report is predicated on the idea that planners establish systems that require drivers and other road users to learn new skills and behaviors to utilize those systems. To what degree are planners and engineers responsible for education, and can we expect planners and engineers to take on new skills in order to make new facilities more usable for travelers.

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Appendix 1. Interview Questionnaire

(Note that interviews were semi-structured, and this questionnaire served as a guide to help ensure that key themes were captured.)

Agency and Job Description

- What is your professional background?
- Please tell us a little about your job. What are your main responsibilities?
- In what capacity does your agency interact with road users? To what extent does it interact with different kinds of road users (car, bike, ped, etc.)?
- How do road users perceive your agency?
- What are your objectives regarding road users? Safety vs. Road Volume vs. Sustainability
- What objectives do you set for road user behavior and system performance? (measurable?)

New Programs

- What new infrastructure or operational changes are you currently working on?
- Do you plan to have an education or outreach component to these new programs?

Safety

- How does your agency prioritize road safety relative to other transportation objectives?
- How do you build safety into ongoing and new programs?
- Do you see safety as primarily being a part of infrastructure design, user behavior, or both? What, generally, do you think are road users' responsibilities in terms of training and everyday use of roads?

Education and Communication

- Does your agency have designated outreach, education, or communications offices or staff members?
- Do you see road user education as a core part of your responsibilities?
- What education strategies and communication channels has your agency used to communicate with road users and prepare them for new facilities (driver education, public outreach campaigns, signage, etc.)?
- How do you set the tone of your communications? How do you leverage emotional versus informational content?
- Does your agency communicate successfully? How do you measure your success?
- Are road users receptive to your agency's communication?
- What challenges does your agency face when attempting to communicate with road users?
- Are your communication initiatives over or underfunded?
- Do you think communication and education work better as part of a broader, long-term program or on a short-term basis for new facilities?

Coordination and Collaboration

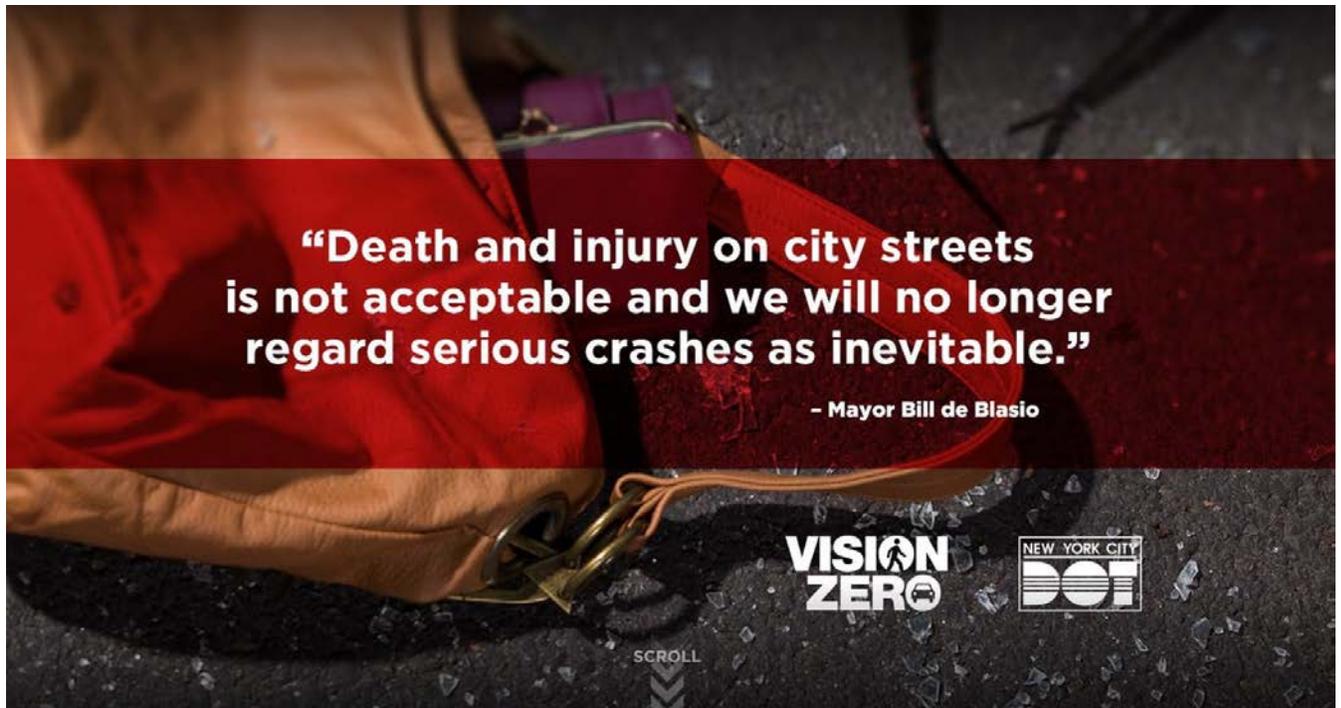
- In what capacity does your agency interact with other agencies?
- What challenges does your agency face in regards to interactions with other agencies?
- Do you have any affiliation with the Virginia Strategic Highway Safety Plan?

Concluding Remarks

- Do you have any insights that our questions did not touch on?

Appendix 2. Media Examples

This section presents examples of print and online media from a variety of campaigns in and around the Virginia region.



Vision Zero View

The Vision Zero Crash & Interventions Map is an interactive tool that shows detailed information on traffic injury and fatality crashes in New York City and highlights how the city is responding every day to make our streets safer. The map displays crash types, dates and locations and highlights Vision Zero initiatives such as Arterial Slow Zones, planning workshops and expanded traffic enforcement, major safety projects, as well as other long running safety programs. (Please see the [disclaimer](#) below.)

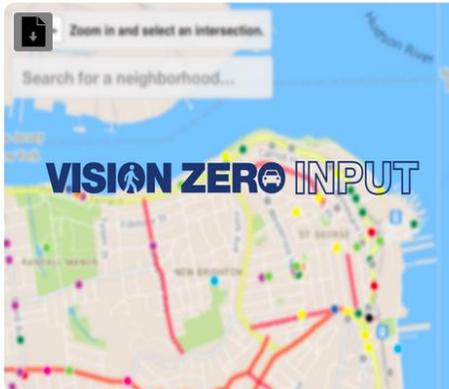


Above: This marketing piece describes the goal of the Vision Zero New York campaign.

Left: Vision Zero New York leverages interactive maps as part of their outreach strategy in order to better engage the communities they are serving.

Vision Zero Input Map

The Vision Zero map public input period concluded on July 31, 2014. NYCDOT is now analyzing the over 10,000 comments submitted and shown here for inclusion in the City's Vision Zero borough safety action plans which will be released later this year.



David's Story

David Shephard's fiancée, Sonya, died before his eyes when she was hit by a reckless driver.

[Watch Video](#)

"I think anyone that's been through this type of tragedy has a rollercoaster of emotions."

Audrey's Story

Audrey Anderson's son, Andre, was riding his bike when a reckless driver fatally struck him.

[Watch Video](#)

"It only takes one second of distraction to take someone's life on the street."

Reckless Driving Facts

54% of all New York City traffic fatalities are pedestrians

Above: This example from Vision Zero New York illustrates how outreach can combine both emotional content (videos and stories) and rational content (statistics).

Below: These examples from the Boston Public Health Commission leverage scare tactics to encourage cyclists to ride with a helmet. They do not attribute any responsibility to drivers and, by emphasizing the danger of cycling, might actually be discouraging more people from biking altogether.



**STILL THINK IT'S THE HELMET
THAT'S UNATTRACTIVE?
THERE ARE NO GOOD EXCUSES.**

**BOSTON
PUBLIC
HEALTH
COMMISSION**

Wearing a helmet can prevent serious head and face injury.
Make it an essential part of bicycling.
www.bphc.org/helmetsafety

Brought to you by Mayor Thomas M. Menino and the Boston Public Health Commission

**NO EXCUSES
WEAR A HELMET**

**NOT THINKING ABOUT
HELMET HAIR NOW, ARE YOU?
THERE ARE NO GOOD EXCUSES.**



Wearing a helmet can prevent serious head and face injury.
Make it an essential part of bicycling.
www.bphc.org/helmetsafety

Brought to you by Mayor Thomas M. Menino and the Boston Public Health Commission





Above: This material from the Watch For Me NC campaign in North Carolina provides a clear and easy to read summary of road rules. While well designed, it can be challenging to leverage posters and pamphlets effectively.

Below: This bumper sticker advocates for cautious and aware road usage. Bumper stickers can offer an opportunity to deliver messages at the time and place of application provided they are legible enough not to necessitate tailgating.



Below: This bumper sticker from Washington DC's Street Smart campaign uses fear tactics to scare drivers into driving more carefully. Hurting people is a legitimate fear of most drivers, but this style of messaging can unintentionally dissuade people from choosing to walk or bike.



	<p>For Pedestrians:</p> <ul style="list-style-type: none"> Cross the street at marked crosswalks and intersections. Watch for turning vehicles. Before crossing, look left, right, then left again. Use pedestrian pushbuttons. 	<ul style="list-style-type: none"> Begin crossing the street on the "walk" signal. Stay visible after dark and in bad weather. Watch out for trucks & buses backing out of parking spaces and driveways.
	<p>For Bicyclists:</p> <ul style="list-style-type: none"> Obey all regulatory signs and traffic lights. Never ride against traffic. Ride with traffic to avoid potential accidents. Use hand signals to tell motorists what you intend to do. 	<ul style="list-style-type: none"> Ride in a straight line at least a car door's width away from parked cars. Always wear a helmet. Helmets dramatically reduce the risk for head injury in a bicycle accident. Use lights at night and when visibility is poor.
	<p>For Drivers:</p> <ul style="list-style-type: none"> Stop for pedestrians at crosswalks and be careful when passing stopped vehicles. Slow down and obey the posted speed limit. Yield to pedestrians & bicyclists when turning. 	<ul style="list-style-type: none"> Look before opening your door. Allow 3 feet when passing bicyclists.

People don't come with airbags.

Street Safety Tips
For Pedestrians, Bicyclists and Drivers

A public safety program of Metro, the District of Columbia, Maryland and Virginia.

Above: This pamphlet/poster from the Street Smart campaign combines emotional and rational messages. It also presents multi-modal road usage side by side. This is less expensive than preparing separate materials for each mode and promote the concept of shared responsibility for safe roads.

 <h2>BE AWARE</h2> <p>When you drive to work, school or the store, the person walking, running or riding their bike on the side of the road next to you is someone's friend or neighbor. Do you remember to Share The Road? Are you aware that bicyclists have the same rights and responsibilities as motorists? Are you aware that a simple brush with a vehicle can be deadly to someone walking or riding a bike? Awareness is critical to being a good driver, bicyclist, or pedestrian and sharing the road.</p> 	  <p>DRIVESMARTVA.ORG DRIVE SMART VIRGINIA P.O. BOX 26246 RICHMOND, VIRGINIA 23260 (804) 340-2870</p> 	<h1>BE AWARE SHARE THE ROAD, SAVE A LIFE.</h1> 
<h2>SHARE THE ROAD WITH ME</h2>  <p>I walk every morning before work for exercise, always against traffic. Sometimes I'll run. If it's dark, I'll wear reflective clothing. I use the sidewalk and crosswalks when available. I'm also very aware of motorists because I know distracted drivers are my biggest threat when walking on the road.</p>	<h2>SHARE THE ROAD WITH ME</h2>  <p>I ride my bike everywhere. On the road, I bike with traffic, stop at lights and signal my turns. I always have blinking lights and reflective clothing that make me more visible to motorists. I also always wear my helmet. I know some motorists are uncomfortable sharing the road with bicyclists, so I take every precaution to keep myself safe.</p>	<h2>THINK ABOUT THIS</h2> <p>When you're driving, focus on the road - it will make you a better driver. Give bicyclists, runners and walkers extra room. Slow down, don't get frustrated. Never drive distracted. Distracted drivers are the biggest danger to bicyclists and pedestrians.</p> <h2>SHARE RESPONSIBILITIES</h2> <p>MOTORISTS AND BICYCLISTS</p> <ul style="list-style-type: none"> - Travel on the right side of the road - Obey traffic laws and signals - Yield to pedestrians <p>BICYCLISTS</p> <ul style="list-style-type: none"> - Use lights - Wear a helmet and reflective clothing <p>MOTORISTS</p> <ul style="list-style-type: none"> - It's a good idea to give at least three feet of space when passing bicyclists <p>PEDESTRIANS</p> <ul style="list-style-type: none"> - Walk on the left side of the road, against traffic - Use sidewalks and crosswalks - Use lights and wear reflective clothing 
<h2>THE FACTS:</h2>	<p>81 PEOPLE DIED IN 2011 WALKING OR CYCLING ON VIRGINIA ROADWAYS.</p>	<p>IN ADDITION, 730 BICYCLISTS AND 1,712 PEDESTRIANS WERE INJURED.</p>

Left: This example from Virginia illustrates a more positive plea to drivers. Instead of visceral imagery and the threat of injury, this messaging uses bright colors and encourages drivers to “Save a Life”.

RESPECT

SHARE THE ROAD
THE ROAD
BICYCLIST & PEDESTRIAN AWARENESS

Here's how we all can contribute to making the roads safer:

- Motorists AND Bicyclists:**
 Travel on the right side of the road, use turn signals (lights or hand signals), obey traffic signs and roadway markings, lights required at night, yield to pedestrians in marked and unmarked crosswalks.
- Cyclists:**
 Local ordinance can prohibit riding on sidewalks and require helmets.
- Pedestrians:**
 Travel against traffic if walking in road, use sidewalks when available, use marked crosswalks when available.
- Motorists:**
 Pass pedestrian or bike with at least 2 feet of space, pass at reasonable speed.
- Smart Tips for Everyone:**
 - Be visible! Bright colors, blinking lights, reflective clothing.
 - Think! Your decisions can save your life or the life of another.
 - Take extra time around cyclists and pedestrians.
 - Be engaged! Don't be distracted. Slow down.

Go online to learn more about biking and walking the roadways of Virginia go to sharingtheroadinvirginia.org

RESPECT

We're all on the road together

Our world is changing
and so is the way we get places.
We still like to drive
And we are also cycling, walking and running.
We need to share the road.

REMEMBER:

- Allow a safety cushion: Slow down, wait until the roadway is safe for passing, and pass with at least 2 feet of clearance.
- The smallest bump to a cyclist or pedestrian can be fatal.
- Minimize your distractions: Distracted drivers are more likely to hit cyclists and pedestrians.

DRIVE SMART VIRGINIA
drivesmartva.org

sharingtheroadinvirginia.org

dmv
www.dmv.virginia.gov

BIKE WALK VA

Above: This example presents the same messaging as the previous example in a simple two-page format.

Below: This bumper sticker focuses on a specific law and very clearly presents driver expectations to the time and place of application.

3 FEET PLEASE

drivesmartva.org

DRIVE SMART VIRGINIA

It's Virginia Law

VBF

You know me, I ride a bike.

Charlottesville is one community of motorists, cyclists, and pedestrians.

TRAVEL SAFE TODAY

ZHEN YAN

Associate Professor of Cardiovascular Medicine at UVA. Exercise Physiologist. Clocks 10 miles round-trip to work on his mountain bike.

Left: This poster is from the “You know me, I ride a bike” campaign in Charlottesville, Virginia. The idea was inspired by a Fort Collins, Colorado campaign that happily agreed to share the name. The campaign tries to humanize road users and encourage them to empathize with each other.

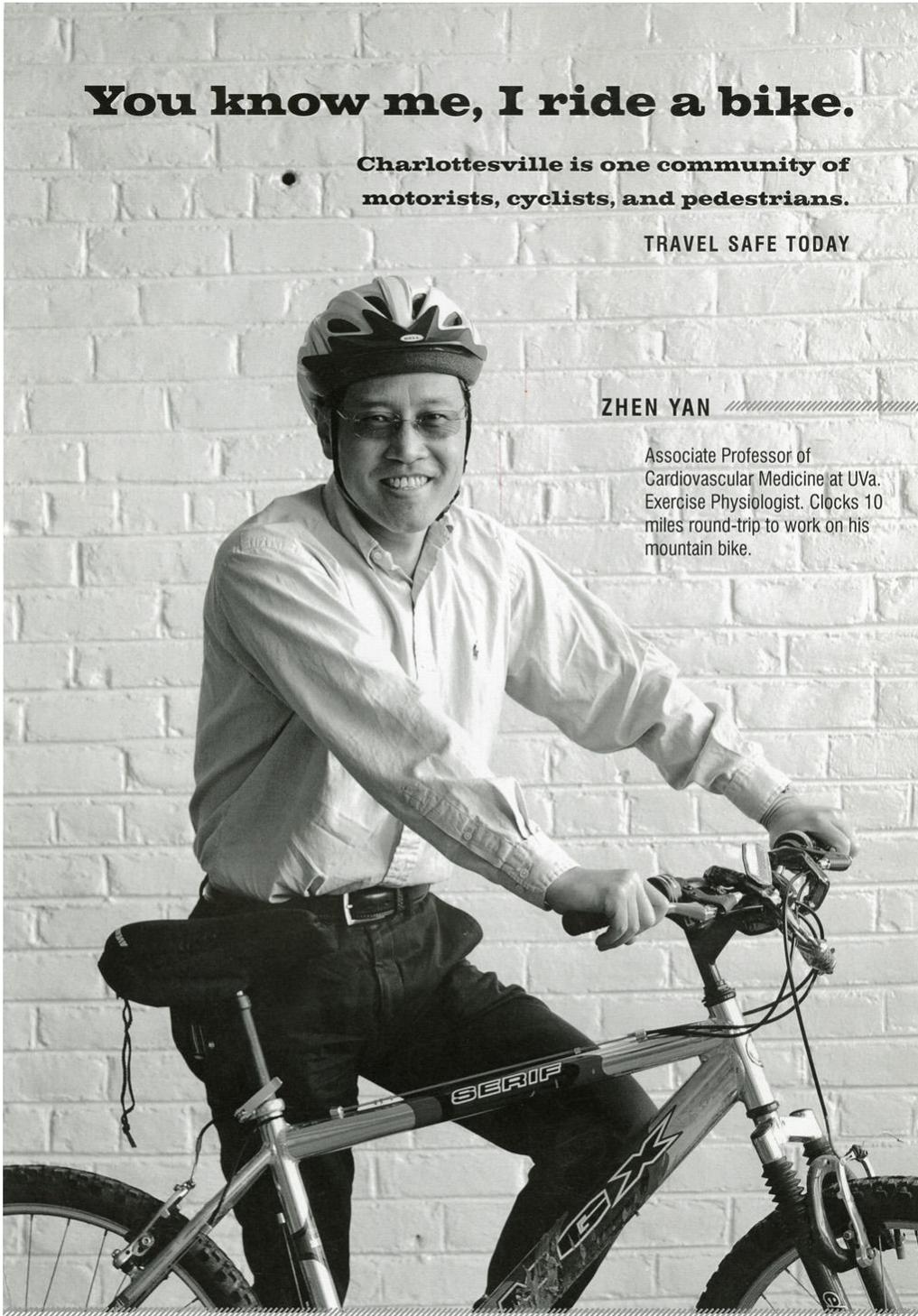
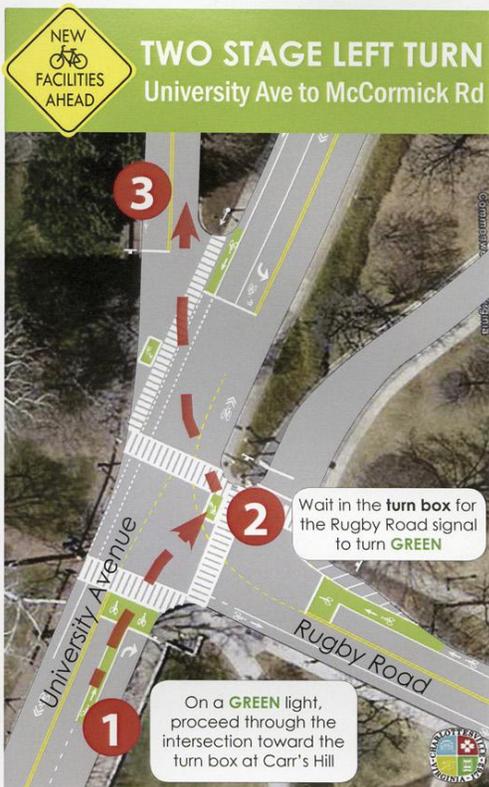


Photo by Cat Thrasher
Design by rock paper scissors
You Knew Me © Bike Fort Collins



www.bikecharlottesville.org

www.charlottesville.org



TWO STAGE LEFT TURN University Ave to McCormick Rd

WHAT BICYCLISTS SHOULD KNOW:

- When the light is **red**, enter the **bike box** using the bike lane. Once in the bike box, position yourself in the box directly in front of the right turn lane and **wait for a green light**.
- When the light is **green**, proceed through the intersection to the **turn box** near Carr's Hill Rd.
- Bicyclists turn their bikes and **wait for the traffic light** to change to **green** to complete the turn, yielding to pedestrians.

NEW PAVEMENT MARKINGS IMPROVE SAFETY FOR ALL ROAD USERS

- Increases awareness and visibility of bicyclists
- Encourages more predictable approaches to and through an intersection
- Creates safer intersection crossings - especially when drivers are turning right and bicyclists are going straight

For more information visit:

www.charlottesville.org/safeststreets



BIKE BOX Rugby Rd

WHAT BICYCLISTS SHOULD KNOW:

- When the light is **red**, enter the bike box along the bike lane. Once in the bike box, position yourself according to the direction you intend to travel and **wait for a green light**. (See diagram on back for more instructions to use the University Avenue bike box to make a left hand turn)
- When the light is **green**, proceed in advance of vehicles.
- When approaching the intersection on a **green light**, be aware of **right-turning motorists**.

WHAT DRIVERS SHOULD KNOW:

- When the signal is **red**, wait **behind the bike box**, keeping it clear for bicyclists.
- When the light turns **green**, proceed through the intersection as usual, allowing **cyclists in the box to go first**.
- When turning right on **green**, signal and watch for cyclists to the right.
- There will be one lane for motor vehicles approaching the Rugby Road intersection. There is no right turn lane.

For more information visit:

www.charlottesville.org/safeststreets



Above: This pamphlet from Charlottesville, Virginia clearly describes how to use two new types of bike infrastructure: a bike box and a two-stage left turn box. This material is especially helpful because it depicts one of Charlottesville's trickiest intersections. The only problem is the challenge of actually exposing road users to this material.

Appendix 3. Survey of Internet Videos

Video Title	Publisher	Posted Date	Views	Likes	Dislikes	Link
How to Trigger a Traffic Light on your Bike	Go Redmond	6/18/09	174,137	562	29	https://www.youtube.com/watch?v=Sj-mNB6dLkk
Sharing the Road with Cyclists - Road Safety Authority Ireland	Road Safety Authority Ireland	3/19/13	39,275	258	9	https://www.youtube.com/watch?v=JB9d-c-M7D0
Bike Safety	City of Tallahassee	10/28/09	34,483	34	13	https://www.youtube.com/watch?v=LaaprWlgKuA
RSA - Cyclist Safety - Rules of The Road	Road Safety Authority Ireland	11/16/12	34,064	67	16	https://www.youtube.com/watch?v=LKFg5XptHvY
Bicycle Safer Journey	Federal Highway Administration (FHWA)	4/29/15	27,226	57	5	https://www.youtube.com/watch?v=dkoVxBnnGko
Introducing the Dunsmuir separated bike lane	City of Vancouver (Canada)	6/21/10	22,282	93	7	https://www.youtube.com/watch?v=Nkg9szoJ2Tc
Introducing the Dunsmuir separated bike lane	City of Vancouver (Canada)	6/21/10	22,282	93	7	https://www.youtube.com/watch?v=Nkg9szoJ2Tc
Minneapolis Know the Road: Bike Lanes	City of Minneapolis	3/29/12	14,447	65	3	https://www.youtube.com/watch?v=eeDDYfUP4BU
RSA Cyclist Safety Bike Door	Road Safety Authority Ireland	9/5/13	13,983	3	0	https://www.youtube.com/watch?v=6pNvSRzNWe4

HGV and Cycling Safety	Road Safety Authority Ireland	11/11/11	11,792	25	3	https://www.youtube.com/watch?v=gOZbnisJow
Coaching Corners: Left Turns for Cyclists	City of Edmonton (Canada)	9/18/13	9,889	101	4	https://www.youtube.com/watch?v=MWhUo1BcYiM
Get Behind It - The Bike Box 4 Way Intersection	City of Edmonton (Canada)	10/22/13	7,271	25	7	https://www.youtube.com/watch?v=siixA3FJc1I
Indianapolis Bike Lanes 2012	The City of Indianapolis and the Office of Sustainability	2/23/12	7,046	15	3	https://www.youtube.com/watch?v=0QhFz6GrnIM
Bike Boxes and Beyond	City of Bellingham Washington	9/3/15	6,406	0	0	https://www.youtube.com/watch?v=Lf8-_uS-T_A
Bicycling Safety	Michigan DOT	5/5/14	5,948	13	1	https://www.youtube.com/watch?v=QvEM3o4o08E
"Riding & Driving to Safety": Tommy and Billy Mind their Bike Route Ps & Qs	City of Edmonton (Canada)	8/14/13	5,416	42	3	https://www.youtube.com/watch?v=l1f6N0-b2Ik
Cyclists not stopping at stop signs - City of Vancouver Road User Safety	City of Vancouver (Canada)	2/2/12	5,155	5	7	https://www.youtube.com/watch?v=yHHv22EOtuQ
Bike Boxes	The City of Toronto (Canada)	11/25/10	5,025	9	2	https://www.youtube.com/watch?v=ze4K2W7S6Fs
Laurier Avenue	City of	7/21/11	4,351	0	0	https://www.youtube.com/

Segregated Bike Lane	Ottawa (Canada)					watch?v=BVQsqGVWswl
Northwestern Highway Bicycle Lane: A Safer Place to Ride	Michigan DOT	12/5/12	4,345	24	0	https://www.youtube.com/watch?v=2bEwFvKAJKk
Bike Traffic Signals	District Department of Transportation (DDOT)	8/14/10	3,936	10	0	https://www.youtube.com/watch?v=3_BvEfC5FI4
Protected Bike Lanes	City of Chicago	6/22/11	3,757	0	0	https://www.youtube.com/watch?v=wJPZEfmdlMc
City of Guelph Bike Box	City of Guelph, Canada	5/26/11	3,608	5	4	https://www.youtube.com/watch?v=KvNN0TIDnXk
Safely Navigate Chicago's Intersections on Bike	City of Chicago	10/25/10	3,262	9	0	https://www.youtube.com/watch?v=oH0b8PTU_yc
How Do I? - Bike Box	City of Tallahassee	10/24/12	3,209	12	0	https://www.youtube.com/watch?v=KeLhfd15zhw
Malibu's New PCH Bike Lane	City of Malibu	4/4/15	3,067	8	2	https://www.youtube.com/watch?v=Z0-MjRJ7fPo
Think Bike Safety First!	Ann Arbor Energy Office	4/15/11	2,997	12	0	https://www.youtube.com/watch?v=6o86fMujA4I
Heads up! Pay Attention	City of Edmonton (Canada)	11/29/10	2,845	5	1	https://www.youtube.com/watch?v=2PfGk3VcFWA
Bike Safe, Bike Smart, Bike Indy	The City of Indianapolis and the Office of Sustainability	1/15/15	2,443	26	0	https://www.youtube.com/watch?v=Vi5JTUYwEcc
Parking in Bike	City of	3/9/10	2,397	2	0	https://www.youtube.com/

Lanes	Kelowna (Canada)					watch?v=i47vM_znehQ
"Share the Road" - Bike PSA, City of Fresno	City of Fresno	5/16/14	2,339	36	0	https://www.youtube.com/watch?v=ZRZCla_DRF8
Bike Lane Education - Columbus Indiana	Columbus (Indiana) Regional Health	6/16/11	1,704	8	0	https://www.youtube.com/watch?v=EfPUj3ExpiA
Using Calgary Bike Lanes	City of Calgary (Canada)	10/20/11	1,612	3	2	https://www.youtube.com/watch?v=BvMFkIpi5aw
Salt Lake City Bicycle Turn Box	Salt Lake City Bicycle Turn Box	5/22/12	1,552	7	0	https://www.youtube.com/watch?v=NXJ6dfQ9WhY
Left Turn Bike Boxes	York Region Government (Canada)	8/20/14	1,463	4	1	https://www.youtube.com/watch?v=8IBruUhr9QU
How to use bike lanes correctly	Fargo ND Government	1/25/13	1,422	2	1	https://www.youtube.com/watch?v=vfx2PQTqQ_4
How to cycle through bike box on 10 Street N.W.	The City of Calgary	10/12/11	1,147	4	2	https://www.youtube.com/watch?v=8rqK2uwvnRA
Bike Box #1	City of Tallahassee	10/3/12	1,073	4	0	https://www.youtube.com/watch?v=2bBmkKcaEPw
Bike Box #2	City of Tallahassee	10/8/12	864	3	0	https://www.youtube.com/watch?v=KiFKBZ7Urxo
Bicycle Safer Journey	Federal Highway Administration (FHWA)	4/29/15	847	2	0	https://www.youtube.com/watch?v=ebA_J0gO11w

City of Wichita - Bike Lane Markings PSA	City of Wichita	7/29/15	828	6	0	https://www.youtube.com/watch?v=lig00FZP7bM
Fargo Bike Lanes: A guide for bicyclists & drivers	Fargo ND Government	10/18/13	819	6	0	https://www.youtube.com/watch?v=jsqTdru5BCI
Protected Bike Lanes in Saskatoon	City of Saskatoon (Canada)	6/25/15	756	5	1	https://www.youtube.com/watch?v=C7tMq1ACDUI
Bike Box #3	City of Tallahassee	10/16/12	684	6	0	https://www.youtube.com/watch?v=bMThQaymncx
Gearing Up for Cycle Tracks	City of Ottawa (Canada)	11/7/14	471	0	0	https://www.youtube.com/watch?v=b0B3oIVr5Pk
Cycling - Entering Streets from Lanes or Bike Lanes	City of Saskatoon, (Canada)	1/29/16	445	1	0	https://www.youtube.com/watch?v=8Zdqgq1KXI4
Bicyclists and Safe Passing Law	Oregon DOT	6/23/15	444	4	1	https://www.youtube.com/watch?v=HTRe-LIT6jc
Rules of the Road	City of Fargo, ND	1/25/13	427	0	0	https://www.youtube.com/watch?v=MVk6uhXxD0o
Green Bike Lanes	City of Palo Alto	5/29/14	408	3	0	https://www.youtube.com/watch?v=csDJ-qo7r-U
BikeSafe - Riding on the Street: Claiming the Lane	BikeSafe Program, KiDZ Neuroscience Center.	3/18/16	377	6	0	https://www.youtube.com/watch?v=Kt-51FpWVy0
BikeSafe - Riding Safely on Sidewalks	BikeSafe Program, KiDZ Neuroscience Center.	3/2/16	359	5	0	https://www.youtube.com/watch?v=KAsd4VZBtXE
Bikes Take the Lane - City of	City of Lawrence,	8/4/14	287	0	0	https://www.youtube.com/watch?v=Qz2KURJQF-s

Lawrence, Kansas	Kansas					
Ride Smart, Drive Smart: Navigating the Laurel Protected Bike Lanes	City of Fort Collins	4/15/16	283	10	0	https://www.youtube.com/watch?v=x1RBnvTIMm0
BikeSafe - Riding on the Street: Navigating Intersections	BikeSafe Program, KiDZ Neuroscience Center.	3/31/16	257	6	0	https://www.youtube.com/watch?v=q6Qs5-JOqG8
New Palo Alto Bike Signal	City of Palo Alto	9/4/14	256	3	0	https://www.youtube.com/watch?v=YUeBcDlwkR8
You see a cyclist, I see my daughter	City of Ottawa (Canada)	9/23/15	250	1	0	https://www.youtube.com/watch?v=n705kC7Xntw
Urban Traffic Safety	City of Edmonton (Canada)	5/7/13	221	0	0	https://www.youtube.com/watch?v=NI36QwS2Rs0
Bike Lane Education	City of Cheyenne, Wyoming	8/24/15	219	1	0	https://www.youtube.com/watch?v=OclFEjR7nJU
Shared Bike Lanes: Sharrows on Washington Avenue	City of Miami Beach	6/9/11	185	4	0	https://www.youtube.com/watch?v=qwSIJqhnKIA
You see a cyclist, I see my husband	City of Ottawa (Canada)	9/23/15	131	0	0	https://www.youtube.com/watch?v=cocfNnOHRQU
You see a cyclist, I see my grandpa	City of Ottawa (Canada)	9/23/15	129	0	0	https://www.youtube.com/watch?v=CmzD9XDFq90
Bicycle Safety: Sharing the Road	North Dakota Department of	5/6/16	105	0	0	https://www.youtube.com/watch?v=kgc13GgFbTg

	Transportation					
Proper turns and watching for bicycles when making right turns	Fargo ND Government	6/14/13	90	0	0	https://www.youtube.com/watch?v=gcnbfXPh7t0