Expanding the Seat Belt Program Strategies Toolbox: A Starter Kit for Trying New Program Ideas

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16. Abstract
The purpose of this research was to explore alternative strategies for increasing seat belt use. Researchers examined behavior change strategies proven effective in education, healthcare, advertising, and marketing, and they considered how these approaches could be applied to increase seat belt use. The result—this resource—is a starter kit containing ideas of varying levels of readiness for occupant protection programmers to take and build from to enrich seat belt programming across the country. The 5 strategies explored include High School Service-Learning Programs, Hospital Discharge Programs, Targeted Online Advertising, Online Learning/e-learning, and Product/Message Placement. States, local jurisdictions, and other safety organizations are encouraged to explore and further develop these promising strategies as part of their innovative highway safety program activities. Pilot efforts could help guide future development of these strategies to refine and maximize their potential for changing seat belt use behavior.

17. Key Words
seat belt, strategy, nonuser, part-time user, countermeasures, highway safety, occupant protection, program development

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Introduction

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This research began with a review of the literature surrounding health promotion and behavioral change. The literature review led to identifying fields outside of traffic safety that housed effective strategies for changing behavior. Researchers looked to the specific strategies employed in the other fields and generated a list of 27 strategies with potential for increasing seat belt use. The list was far-reaching featuring a wide range of strategies including strategies for increasing recycling and vaccine rates, and strategies used for religious missionary work and military programs. Researchers used a two-step process to refine the 27 strategies down to the 5 with the greatest and most realistic potential for seat belt programs. For the first step, researchers collected some additional information on 13 strategies considered most applicable to estimate their transferability to seat belt programs. Researchers built detailed descriptions of the 13 strategies containing details on the target audiences, possible implementation methods, judgments on likely effectiveness, and cost and time to develop (see Appendix).

Based upon these more detailed descriptions, researchers made an informed decision regarding which 5 strategies to fully explore. This decision making process gave more weight to strategies closer to being ready for implementation. While some of the far-reaching "out-of-the-box" ideas had theoretical potential and interest, the team wanted to produce a list of ideas that were closer to application and more feasible to pursue by the traffic safety community.

In this light, some of the strategies have history in seat belt programming, but in some cases there is a need for more research or larger piloting efforts. The fact that this research included strategies already being used to some extent in seat belt programs may be helpful for occupant protection programmers. For example, those already conducting high school service-learning programs can read about the relevant research and make adjustments or engage in new developments, as they find appropriate for their programs.

Researchers conducted a focused literature review on the 5 selected strategies. The review broadened the team's knowledge of the strategy, which included formal evaluations and historical attempts to use each strategy to promote occupant protection. Researchers put the resulting information into an outline for use by subject matter experts (SMEs). SMEs in each of the 5 strategies were recruited based on prior contacts with the researchers and networking with other researchers and experts. Each SME used the outline as a guide and prepared a first draft of a detailed strategy description. Researchers and the SMEs interacted to arrive at the final version for each strategy.

The strategies discussed in this resource do not have existing evidence at the level of the countermeasures presented in the National Highway Traffic Safety Administration's *Countermeasures That Work* (Goodwin, Thomas, Kirley, Hall, O'Brien, & Hill, 2015). Rather, this starter kit resource is a launching point for further exploration of the various strategies. Each strategy has proven effective in domains other than occupant protection, but the evidence of effectiveness specifically for occupant protection varies by strategy. Most of the strategies require some further development to fully transfer the approaches to occupant protection, but each appears worthy of further testing.

States, local jurisdictions, and other safety organizations are encouraged to explore and further develop these promising strategies as part of their innovative highway safety program activities. Several successful small-scale tests could provide strong evidence of a strategy's effectiveness in the occupant protection domain. Pilot efforts could help guide future development of these strategies to refine and maximize their potential for changing seat belt use behavior. End-users of this resource are encouraged to develop and adapt each strategy as appropriate. Users could pilot these strategies either independently or in combination. For example, a user could pilot-test a program using both hospital discharge and online learning components. In addition, users could pilot these strategies in combination with preexisting strategies. For example, users could pilot targeted online advertising in combination with high-visibility enforcement.

Sharing the outcome of these activities with NHTSA, whether or not they are successful, will help the agency guide future development of program strategies aimed at increasing seat belt use in the United States.

The Strategies and SMEs

The 5 strategies and their subject matter experts:

- **High School Service-Learning Programs** employ an educational strategy focused on seat belt use that involves young people in meaningful service to their communities while also engaging them in study and reflection related to their service. Irwin Goldzweig served as SME for this strategy. Goldzweig is an assistant professor in the Department of Family and Community Medicine at Meharry Medical College in Nashville, Tennessee. He has written numerous papers on innovative behavioral change programs and has worked extensively on service-learning approaches for increasing seat belt use.
- **Hospital Discharge Programs** use hospital discharge programs supported by electronic health records and discharge specialists to convey information on seat belts and to create restraint solutions for those whose medical condition precludes the conventional use of seat belts. Joanne M. Fairchild, an experienced trauma nurse and the current co-chair of the Injury Prevention Committee of the Trauma Center Association of America (TCAA), served as the SME. She is also a trauma nurse coordinator at Legacy Emmanuel Hospital in Portland, Oregon, and one of the developers of the Trauma Nurses Talk Tough nationally renowned injury prevention program. Significant expert information and creativity for this chapter was also provided by the TCAA and its members, Michelle Haun-Hood, RN, BSN, MA; Gene Williamson, MSN, RN, NE-BC; and Mikalle Higby, RN.
- **Targeted Online Advertising** delivers timely Internet-based messages on seat belt use directly to people with high likelihood of being nonusers based on their demographics, search behaviors, or Internet browsing history. Subject matter expertise was provided by Jonathan Passley, president and CEO of PDR Web Solutions, an innovative Internet service company in Timonium, Maryland. Passley specializes in conversion rate optimization, account management, day-to-day operations, website design, and online marketing strategies.
- **Online Learning/e-Learning** develops online courses to inform and motivate use of seat belts by drivers who are likely to not wear seat belts based on prior research. Ruth C. Smith, owner of Rhombus Learning LLC, provided the subject matter expertise. Smith's passion for online learning began when she worked for an online education company that provides homebound instruction to K-12 students. Since then she has worked in the corporate, higher education, and nonprofit sectors to design and develop online instruction. Smith holds a master's degree in education technology leadership from George Washington University.
- **Product/Message Placement (Embedded Marketing)** convinces entertainment media producers, directors, and other involved personnel to portray and promote proper occupant restraint use whenever possible. John Fishback, president of P&P Studios, served as the SME for this section. Fishback provides services for film, TV, training video, and audio production. He has developed industrial safety films and videos, been involved in safety studies with Dunlap and Associates, and works extensively in the entire media production process.

Structure of This Resource

This resource contains 5 chapters devoted to exploring each of the strategies. Each chapter begins with the subject matter expert's historical account of the strategy and a description of how the strategy has worked in other fields, such as education and healthcare. The main feature of each chapter is the starter kit for pursing use of the strategy to increase seat belt use. Researchers gathered guidance from the theoretical and practical foundations of each strategy, and they constructed a resource to help program developers make informed decisions about the potential of each strategy in their seat belt programs. The strategies vary by readiness, as some require pilot testing, and others are much closer to implementation. This resource— the starter kit— provides information to help program developers take the first steps to pursue different ideas to expand their seat belt program toolboxes.

Example of Strategy Starter Kit

Strategy Description What the strategy may look like in practice.
Target Audience The recommended target audience (e.g., part-time belt users, young drivers).
Current Practice An account of existing use of the strategy in seat belt programs, if applicable.
Key Features of an Effective Program Description of strategy elements that would likely be effective.
Time to Implement An estimate of how long it would take to implement the strategy based upon the SME's experience.
Estimated Cost An estimate of how much it would cost to implement the strategy based upon the SME's experience.
Challenges Apparent challenges that may be encountered when applying the strategy. Provides foresight for planning ahead to minimize challenges.
Effectiveness The estimated effectiveness of the strategy for increasing seat belt use.
What's Still Needed? Required next steps to pursue the strategy (e.g., pilot testing).

Reference

Goodwin, A., Thomas, L., Kirley, B., Hall, W., O'Brien, N., & Hill, K. (2015, November). Countermeasures that work: A highway safety countermeasures guide for State Highway Safety Offices, 8th edition. (Report No. DOT HS 812 202). Washington, DC: National Highway Traffic Safety Administration.

Chapter 1: High School Service-Learning Programs

Occupant Protection Strategy Objective: This strategy involves developing and implementing a service-learning program to increase seat belt use among high school students. The program would be an ongoing, sustainable, research-based educational program using a peer-to-peer service-learning methodology to encourage teen safe driving behaviors with a special focus on seat belt use.

Rationale

Public health messages about safe driving can effectively reach teens if delivered in high schools. Although some drop out of school, most teens in this country attend high school anywhere from 1 to 4 years and therefore can be reached in that setting to deliver important health and safety information. For health topics that are not part of the traditional academic curriculum, conventional programs often include a single presentation on the topic in a gymnasium type setting, a mock crash scene if traffic safety related, or some other demonstration with little to no follow-up education or experience. In addition, these conventional efforts may not include peer-to-peer activities or individual deep reflection on the topic.

More recently through service-learning, however, programs on a wide variety of topics have been developed and implemented by students with assistance from teachers and/or administrators. Specific components of service-learning programs such as assemblies or mock crashes may still be carried out at a single time during the school year, but the entire service-learning program is carried out for a longer duration (i.e., over multiple school years) with the same students participating year after year.

Background

The Alliance for Service-Learning in Education Reform (1993) defines service-learning as an *educational strategy that involves young people in meaningful service to their communities and/or to society, while also engaging them in study and reflection related to their service.* Service-learning begins within the classroom, goes out from it, and returns for connections to the basics of meeting academic standards and fulfilling educational purposes. By combining hands-on experience with learning, service-learning reinforces, enriches, and enhances what students learn in the classroom.

The modern foundations of service-learning are rooted in the work of John Dewey and the field of experiential education. Dewey's research (e.g., Dewey, 1938), which has been replicated by

many others since, showed that the majority of people remember only 10 to 15% of what they are told or read but remember 75 to 85% of what they actually "do" through hands-on experiences. What is now referred to as service-learning is solidly rooted in this approach, linking what students learn in the classroom with out-of-class experiences in the real world that give them opportunities to apply and practice classroom content and skills. While schools exist that have always approached education using this model, use of the term "service-learning" emerged in the 1970s. The term was used then (and now) to distinguish service activities that met important community needs and were linked to academic learning from those which focused only on meeting community needs (the latter are referred to as *community service*).

Service-learning programs explicitly seek to do two things. One is to foster students' learning about the larger societal issues behind the human needs to which they are responding. This includes understanding the historical, sociological, cultural, and political contexts of the need or issue being addressed. The second factor that distinguishes service-learning from other forms of community service is an emphasis on reciprocity – everyone involved needs to benefit and learn from the service experience.

Summary of Relevant Research

In 2002, in order to ensure the quality of the service-learning experiences in which students participate, educators and practitioners began to look at the key elements of "quality" service-learning. Following a 3-year review of existing research and practice, a preliminary set of standards was released in 2005 for comment from the field. In addition, focus groups were held in numerous locations around the country. The final version of the *K-12 Standards for Quality Service-Learning Practice* was released by the National Youth Leadership Council in 2008 (Billig & Weah, 2009). These standards include:

(1) **Meaningful Service**: Quality service-learning actively engages students in meaningful and personally relevant service activities that meet real community needs and help students to deepen their understanding of the societal issues related to their service.
(2) **Linked to Curriculum:** Quality service-learning is intentionally used as an instructional strategy for meeting learning goals and/or content standards.
(3) **Reflection:** Quality service-learning incorporates multiple challenging reflection strategies that are ongoing and prompt deep thinking about oneself and one's relationship to society.
(4) **Diversity:** Quality service-learning promotes understanding of diversity and mutual respect among all participants and encourages them to recognize and overcome stereotypes.
(5) **Youth Voice:** Quality service-learning provides youth with a strong voice in planning, implementing, and evaluating their service-learning experiences.
(6) **Reciprocal Partnerships:** Quality service-learning is collaborative (involves a variety of partners), mutually beneficial, and addresses community needs.

(7) **Progress Monitoring:** Quality service-learning engages participants in an ongoing process to assess implementation quality and progress toward meeting goals and uses results for improvement and sustainability.
(8) **Duration and Intensity:** Quality service-learning has sufficient duration (lasts "long enough") and intensity (is "deep enough") to address and meet community needs. (This includes time spent on investigation of community needs, planning and preparation, service, reflection, and sharing results with others).

Current research (e.g., Billig, 2009) indicates that Standards 1, 2, 3, and 8 have the strongest impacts on student and community outcomes. It is also likely the outcomes associated with Standard 5 are "folded into" those of Standard 1.

Service-learning is widely used for a variety of educational topics. A number of studies have reported gains in student *grades and test scores* in language arts, mathematics, science, and other academic areas as a result of high-quality service-learning (e.g., Shumer, 1994; Dean & Murdock, 1992, O'Bannon, 1999; Follman, 1998; Billig & Broderson, 2007). Other studies report that students engaged in service-learning show a strengthened *sense of social and civic responsibility* (e.g., Melchior, 1999; Berkas, 1997; Yates & Youniss, 1996; Eyler et al., 2010). *Alienation and associated risk-taking behaviors decrease* as students experience a heightened awareness of personal competence and meaningful connection to their peers, teachers, schools, and community (e.g., Stephens, 1995; Yates & Youniss, 1996; Follman, 1998; Furco, 2002; Bradley, Eyler, Goldzweig, Juarez, Schlundt, & Toliver, 2007). Additional effects noted in various studies include: (1) an *increase in trust levels* among participants and more *positive bonds between students and the adults* with whom they interacted (Stephens, 1995; Morgan & Streb, 1999; Courneya, 1994); and (2) a greater sensitivity to and a corresponding *acceptance of cultural diversity* (e.g., Melchior, 1999; Berkas, 1997; Stephens, 1995; Weah, Simmons, & McClellan, 2000).

While involvement in service-learning can benefit all students, positive outcomes are strongest among youth who may feel alienated or disconnected from the world around them and those who come from disadvantaged backgrounds (Roehlkepartian, 2007). This may be due to the fact that many of these youth learn in ways not typically used in the classroom (hands-on, experiential with immediate real-world applications versus lectures, memorization and frequent testing). Involvement in service-learning meets this need for hands-on learning, resulting in youth who become more connected to their peers and their schools, are more motivated to take responsibility for their learning, and are more committed to civic participation (to making a positive difference).

High School Seat Belt Programs Using Service-Learning

Strategy Description

High schools are a convenient place to reach teens with public health messages about safe driving. The aim of this strategy is to develop and implement an ongoing, sustainable, research-based educational program using a peer-to-peer service-learning methodology to encourage teen safe driving behaviors with special focus on seat belt use. Any new curriculum being developed would need to meet the standards developed by the National Youth Leadership Council (NYLC) for a quality service-learning experience. Students would be involved in planning and implementing the program. The program would be designed to satisfy stated learning goals and/or content and would incorporate meaningful service to the community. It would emphasize respect for diversity among all participants and provide ample opportunity for reflection on the experience. Students would be asked to evaluate their own experience, as well as provide input to improving the program for future students. When community partners are involved in the service-learning program, they also would gain from the experience.

According to the NYLC, the Investigate, Plan, Act, Reflect, and Demonstrate (IPARD) process is the student experience in the service-learning cycle. As reported by the NYLC, the IPARD model entails:

- Investigate – Through research and inquiry, students and partners identify a genuine need and its root causes.
- Plan – Based on initial research, students identify a realistic and meaningful service project with clear goals, timeline, roles, and follow-up.
- Act – Project participants implement the plan through direct or indirect service. Throughout the act, participants collect evidence of their project and impact.
- Reflect – Through a variety of cognitively challenging activities, reflection should be implemented at every stage of the process to assist in understanding the connection between what they are learning and the action taken.
- Demonstrate – Students showcase learning and community impact to stakeholders and supporters while making recommendations for sustainability and expansion.

Students apply IPARD to develop, implement, and reflect upon their service-learning programs to develop meaningful activities to reach peers on the importance of traffic safety and seat belt use.

While individual programs are likely to vary across different urban, suburban, and rural school settings, example activities that would be consistent with a service-learning approach include:

- Having students talk about their personal experience with respect to car crashes, including sharing times when family members or friends have been injured or killed in a crash and how seat belts might have changed the outcome;
- Meeting with local hospitals, EMS, law enforcement, and others within the community who encounter the victims of car crashes;
- Asking students to estimate the percentage of their classmates who wear their seat belts, and then collect observational data to check their estimate;
- Interviewing students who do *not* wear a seat belt to better understand their reasons for nonuse;
- Designing and implementing a campaign to increase use of seat belts – by their fellow students, and/or community-wide; collecting and analyzing data to evaluate the effectiveness of the campaign; and
- Documenting and reporting their findings to their classmates and to the broader community.

Target Audience

The recommended target audience for this strategy is urban, suburban, and rural high schools of all racial, ethnic, and socioeconomic demographic profiles.

Current Practice

In a 2005 technical report titled *Increasing Teen Safety Belt Use: A Program and Literature Review*, NHTSA stated, "It appears that community programs that combine education, peer-to-peer persuasion, publicized enforcement, and parental monitoring have some potential for increasing teen safety belt use" (Fell et al., 2005). Juarez, Schlundt, Goldzweig, and Stinson (2006) outlined a conceptual framework linking service-learning and seat belt safety campaigns, suggesting that a peer-to-peer (service-learning) approach could be an effective alternative to traditional public health education campaigns or stand-alone law enforcement campaigns. NHTSA has been in partnership with NYLC to develop best practices for implementing student-led service-learning to increase seat belt use through an effort called Project Ignition. Through this effort, service-learning was conducted at six "leader schools" from across the country. Students at these schools applied the IPARD model to engage in service-learning activities.

Examples of Project Ignition service-learning activities include visiting local elementary schools to teach about seat belt use, creating videos of individuals sharing their personal crash experiences, having students and parents sign safe driving contracts, conducting mock crashes and talking about them at school assemblies and in the classroom to allow students time to reflect on the crash experience, and partnering with local law enforcement agencies to give presentations about the importance of seat belts.

Students in the program gave presentations to the school boards, community partners, and other high schools in the area about the service-learning activities. The Project Ignition program also expanded upon the service-learning effort by having Leader Schools provide mentorship on implementing service-learning to other schools in their area.

Key Features of an Effective Program

- Adheres to the criteria for *K-12 Standards for Quality Service-Learning Practice* (Billig & Weah, 2008).
- Applies NYLC's IPARD Model.
- Provides feedback to schools on seat belt use at those schools.
- Allows time for reflection – teachers/mentors might need training specifically related to how to facilitate student reflection.
- Relates to academic standards – to be called "service-learning" rather than community service; the project has to be clearly connected to academic standards.
- Is student-led with guidance from teachers/mentors.
- Includes training/orientation for teachers mentoring the service-learning student participants; the challenge is to help teachers see how to balance their expertise and what they have to teach with the need for student voice (see Goldzweig & Bradley, 2010).

Time to Implement

The design and implementation of a quality program including recruitment and training of teachers and students would take 18 to 24 months. This includes student data collection activities over a school year and presentation of results.

Estimated Cost

Common costs associated with the development and implementation of service-learning programs include teacher and staff training, time for students to engage in the program, and some travel to visit community sites to engage with community partners.

Estimated costs to start a new program at a single school are $5,000 or less if a school system has service-learning staff already available, since the program integrates with the existing school curricula. Material costs could be relatively low. Purchases might include printing handouts, obtaining supplies for large school demonstrations, such as mock crashes, and other outreach materials.

Challenges

- Motivating teachers to participate in this type of program considering the pressures they face related to student achievement, test preparation, and test taking.
- Preserving teacher fidelity – to what degree do teachers actually do what we train them to do?
- Helping administrators to understand that this type of program adds to the educational quality at their schools and gaining their willingness to support and recognize teachers and students that participate.
- Accounting for school/district context – what other issues are going on in the school/district that might interfere with a teacher's ability to fulfill his/her commitment to implement the program?
- Establishing the relevance of the program to students – how many students actually know someone who was killed or critically injured in a motor vehicle crash while not wearing a seat belt?
- Developing community support and involvement with the schools' determination to improve teen driving safety and decrease injuries and fatalities due to traffic crashes.
- Establishing an appropriate degree of student voice involved in projects – this is a challenge since most students may be familiar with schools that do not ask for their opinion or "voice." As a result, many students may not take sharing their views and leadership seriously.

Effectiveness

A number of studies provide evidence that supports the potential effectiveness of service-learning programs when applied to the topic of seat belts. The Meharry-State Farm Alliance Teen Service-Learning Project (TSLP) tested the potential of peer-to-peer, student-designed and implemented service-learning projects to increase seat belt use among urban high school minority youth. Results of a pilot study implemented in 2005 and 2006 were presented by Bradley, Eyler, Goldzweig, Juarez, Schlundt, and Tolliver (2007). The results supported the view that a service-learning approach that engaged students in the design and implementation of these projects could:

- Increase observed seat belt use by high school students and,
- Help develop leadership skills and civic engagement in student participants.

Later work by Eyler, Bradley, Goldzweig, Schlundt, and Juarez (2010) presented the results of studies conducted from fall 2006 to spring 2009. These studies focused on the relationship between the quality of the service-learning interventions and student knowledge, attitudes, and behaviors related to seat belt use. Behavioral data were gathered through pre/post observations at parking lot entrances and exits of the participating high schools, while survey data were gathered through pre/post surveys of service-learning participants and the wider student community. During the 2008-2009 year of that project, service-learning quality was assessed in two ways – first, by having teachers complete a tool based on the *K-12 Service-Learning Standards for Quality Practice* (Billig & Weah, 2008) and, second, from the perspective of students participating in service-learning projects. Results from the *K-12 Quality Standards Survey* (Bradley, 2009) showed that the quality of the service-learning intervention was positively associated with increased driver and passenger seat belt use, greater motivation for drivers and passengers to use seat belts,

reduction of perceived barriers to seat belt use among African-Americans, and reduction in disparities in seat belt use between African-Americans and whites.

A more recent study (Goldzweig et al., 2013) reported on 11 high schools that implemented a service-learning seat belt program in the 2011-2012 school year. Morning and afternoon observations of seat belt use were collected to obtain baseline data during the fall semester and for post-intervention observations in the spring. Overall seat belt use increased by 12.8 percentage points from 70.4% at baseline to 83.2% post-intervention ($p < 0.001$). A statistically significant increase in seat belt use was noted among White, Black, and Hispanic teen drivers. However, Black and Hispanic drivers were still less likely to use seat belts while driving compared to White drivers. Female drivers and drivers who had passengers in their vehicles had increased odds of seat belt use. This study concluded that a high school service-learning intervention was associated with improved seat belt use regardless of race, ethnicity, or gender, but it did not eliminate disparities adversely affecting minority youth. Continuous incorporation of service-learning in high school curricula could benefit quality improvement evaluations aimed at eliminating disparities and might improve the safety behavior of emerging youth cohorts. This type of intervention should be integrated into each school year because there are new students entering each year as well as annual graduations.

What's Still Needed?

Service-learning programs are an ongoing, iterative process of implementing, reflecting, evaluating, and revising. The documented successes of the strategy to promote high school seat belt use suggest that little additional detailed development effort is needed. The strategy, therefore, simply needs expansion to other locales to gain additional experience that could improve effectiveness.

References

Alliance for Service-Learning in Education Reform. (1993). *Standards of quality for school-based service-learning programs.* Chester. VT: Author.

Berkas, T. (1997). *Strategic review of the W. K. Kellogg Foundation service-learning projects, 1990-1996.* Battle Creek, MI: W.K. Kellogg Foundation.

Billig, S. (2009). Service-learning to enhance academic achievement. Presentation at National Service-Learning Conference, Nashville, TN.

Billig, S., and Brodersen, R. (2007). *Case studies of effective practices in the partnership in character education project: Evaluation for the School District of Philadelphia.* Denver, Co: RMC Research Corporation.

Billig, S., & Weah, W. (2009). K-12 Service-Learning Standards. In *Growing to Greatness*, Minneapolis, MN: National Youth Leadership Council.

Bradley, R. (2009). *K-12 Service-Learning Quality Standards Survey.* Columbus, OH: Learn & Serve Ohio.

Bradley, R., Eyler, J., Goldzweig, I., Juarez, P., Schlundt, D., & Toliver, D. (2007). Evaluation of the impact of peer-to-peer service-learning projects on seat belt use among high school students. In S. Gelman, & S. Billig. (eds.), *Service-Learning: From Passion to Objectivity.* Charlotte, NC: Information Age.

Courneya, J. (1994). An evaluation of the Native American school's water quality testing program. In M. Neal, R. Shumer, & K. Gorak (eds.), *Evaluation: The Key to Improving Service-Learning Programs.* Minneapolis, MN: Minnesota Department of Education and University of Minnesota.

Dean, L., & Murdock, S. (1992). The effect of voluntary service on adolescent attitudes toward learning. *Journal of Volunteer Administration,* Summer, pp. 5-10.

Eyler, J., Bradley, R., Goldzweig, I., Schlundt, D., & Juarez, P. (2010). The relationship between the quality of service-learning interventions and teen seat belt use. In J. Keshen, B. Holland, & B. Moely (eds.), *Research for What: Making Engaged Scholarship Matter.* Charlotte, NC: Information Age Press.

Fell, J., Baker, T., McKnight, S., Brainard, K., Langston, E., Rider, R., Levy, D., & Grube, J. (2005). *Increasing teen safety belt use: A program and literature review*. (Report No. DOT HS 809 899). Washington, DC: National Highway Traffic Safety Administration. Available at www.nhtsa.gov/staticfiles/nti/pdf/809899.pdf

Follman, J. (1998). *Florida Learn and Serve: 1996-97 Outcomes and correlations with 1994-95 and 1995-96.* Tallahassee, FL: Florida State University, Center for Center Education and Service.

Furco, A. (2002). Is service-learning really better than community service? A study of high school service program outcomes. In A. Furco & S. Billig (eds.), *Advances in Service-Learning Research: Vol. 1: Service-Learning: The Essence of the Pedagogy.* Greenwich, CT: Information Age.

Goldzweig, I., Levine, R. S., Schlundt, D., Bradley, R., Jones, G. D., Zoorob, R. J., & Ekundayo, O.J. (2013). Improving seat belt use among teen drivers: Findings from a service-learning approach. *Accident Analysis and Prevention*, *59*, 71–75.

Juarez, P., Schlundt, D., Goldzweig, I., & Stinson, N. (2006). A conceptual framework for reducing risky teen driving behaviors among minority youth. *Injury Prevention, 12* (Suppl. 1), 49-55.

Melchior, A. (1999). *Summary report: National evaluation of Learn and Serve America.* Waltham, MA: Center for Human Resources, Brandeis University.

Morgan, W., & Streb, M. (1999). *How quality service-learning develops civic values.* Bloomington, IN: Indiana University.

O'Bannon, L., Stueve, A., Doval, A., Duran, R., Haber, D., Atnafou, R., Johnson, N., Grant, U., Murray, H., Juhn, T., & Piessens, P. (1999). The effectiveness of the reach for health community youth-service learning program in reducing early and unprotected sex among urban high school students. *American Journal of Public Health, 89*, 2, 176-181.

Roehlkepartian, E. (2007). *Service-learning with disadvantaged youth.* Minneapolis, MN: Search Institute.

Shumer, R. (1994). Community-based learning humanizing education. *Journal of Adolescence, 17*, 4, 357-367.

Stephens, L. 1995. *The complete guide to learning through community service: Grades K-9.* Boston, MA: Allyn and Bacon Publishers.

Weah, W., Simmons, V., & McClellan, M. (2000). Service-learning and multicultural/multiethnic perspectives: From diversity to equity. *Phi Delta Kappan, 81(9),* 673-675.

Yates, M., & Youniss, J. (1996). Perspectives on community service in adolescence. *Social Development, 5*, pp. 85-111.

Chapter 2: Hospital Discharge Programs

Occupant Protection Strategy Objective: This approach pairs information and motivational messages on the use of seat belts with hospital discharge information to take advantage of the ready access to populations at risk and the source credibility of the medical community.

Rationale

Discharge instructions provide critical information for patients to manage their own care. The Centers for Medicare & Medicaid Services (CMS) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) require these instructions for all patients discharged from any hospital in-patient or emergency department (ED) setting. The addition of seat belt safety messages and seat belt use advice for people with special medical needs would be consistent with the other safety/health information provided and could be adjusted for the particular risk factors associated with the patient's characteristics and reason for treatment. The approach has been successfully used in the promotion of child safety seats.

Background

The requirement for hospital systems to change from paper medical records to electronic health records (EHR) provides an opportunity to tailor discharge instructions and make them an effective source of safety information. Expanding the benefits of the discharge process is consistent with the current trend of rapid change, improvement, and innovation in healthcare information and patient education.

In-patient hospital discharge is a complex process involving a team of health care providers including physicians, pharmacists, therapists, social workers, case managers, and dieticians. Discharge from the ED can be even more challenging due to high patient volumes, numerous distractions, and limited knowledge of patient health history (Samuels-Kalow, Stack, & Porter, 2012).

Generally, the discharge education process begins with the initial contact with the patient and family (Brian et al., 2009). Studies show that many patients do not fully understand or recall instructions they receive (e.g., Brian et al., 2009; Samuels, Stack, & Porter, 2012). This lack of comprehension also reduces patient satisfaction and compliance. Patients are admitted to the hospital with various amounts of information, experience with the health care system, language fluency, and health literacy. At patient discharge, the provider must effectively communicate the crucial information, verify comprehension, and tailor teaching to areas of confusion or misunderstanding to ensure a smooth transition to home or an extended care facility.

Currently, discharge instructions are delivered both orally and in written form. Instructions usually include the patient's name, the attending physician's name, information on the patient's diagnosis, the expected course of the disease or injury, potential complications, treatment plan, and information on any medications prescribed. The importance of this information generates a high probability that the patient or a family member will read the discharge instructions.

The current medical environment provides a strong impetus for hospitals to address seat belt use when discharging patients. The extensive patient data included in the EHR provides the ability to tailor any seat belt message to the reason for admission, discharge condition, demographics, and socioeconomics. CMS publically reports hospital data for a number of patient outcome measures including 30-day and hospital-wide readmissions. This can have an effect on hospital reimbursement for patients readmitted to the hospital. The CMS mortality and readmission measures include readmissions for any reason, not just those due to the same or a related condition for the original admission. Thus, if a patient discharged for a medical condition such as pneumonia requires readmission to a hospital for injuries from a motor vehicle crash, the discharging hospital's readmission measure would be negatively affected with an associated reduction in their subsequent CMS reimbursements (Centers for Medicare & Medicaid Services, 2014). This creates the motivation to include safety information in all discharge instructions for any diagnosis. Hospital systems serving capitation-based patient populations (fee per patient served instead of fee for each procedure) have the added motivation of a possible financial benefit from reducing unneeded re-hospitalizations. Under the Affordable Care Act, hospitals can share in the savings they achieve for their Medicare patients and be more attractive to other payers (Centers for Medicare & Medicaid Services, 2014).

Summary of Relevant Research

A review uncovered no studies of the effectiveness of hospital discharge programs focused on adult occupant protection, but it did uncover several studies of hospital-based programs focused on increasing child safety seat usage. One study concluded that providing child passenger safety recommendations on computerized discharge instructions was a convenient method of educating parents/guardians about motor vehicle safety. The data suggested that some parents found it educational and a subgroup changed their behaviors after receiving the education (Zonfrillo, Mello, & Palmisciano, 2011).

Another study enrolled families with children 4 to 7 years old and weighing 40 to 80 pounds who presented to a pediatric ED without a booster seat to evaluate the effectiveness of booster seat education in the ED setting. The families either received standard discharge instructions, a 5-minute booster seat training session, or a 5-minute booster seat training session plus a free booster seat with installation. Only 1.3% of the parents in the standard education group and 5.3 % of the parents in the booster seat education group reported using booster seats for their children at a 1-month follow up. However, 98.2% of the parents in the free booster seat group reported using the seats (Gittelman, Pomerantz, & Laurence, 2006).

In another study, a statewide network of hospital-based car seat rental and education programs was able to show increased car seat usage, increased correct car seat usage, and increased correct seat belt usage in children during the 5 years of the project (Colletti, 1986).

Although the studies related to discharge programs and occupant protection promotion are limited, additional support for the approach can be found in studies that used the discharge process to promote other analogous changes. The reengineered discharge (RED) program for in-patients is one example of an approach with promising results for increasing patient comprehension of and compliance with discharge instructions. RED includes a nurse discharge advocate who meets directly with each patient to deliver patient-specific education and to develop a personalized after-hospital care plan. The program also includes reinforcement from a clinical pharmacist who telephones the patient two to four days after discharge. One study of RED showed an approximate 30% decrease in ED visits and readmissions within 30 days of discharge (Brian et al., 2009).

Another study among patients 65 and older discharged from the ED who received a follow-up review of discharge instructions by phone resulted in expedited patient follow-up with their primary care physicians, but it did not find decreased return ED visits or hospital readmissions (Biese et al., 2014).

A Cochrane Review reported that counseling, written information, and telephone calls improved adherence to short-term medication regimens (Haynes, Ackloo, & Sahola, 2008). Several studies (e.g., Austin, Matlack, Dunn, Kesler, & Brown, 1995; Zeng-Treitler, Kim, & Hunter, 2008) have demonstrated that pictographs, illustrations, and even cartoons, in addition to written discharge instructions, can improve comprehension. One study demonstrated that watching an online video of discharge instructions at home increased the patient's understanding of their diagnosis and subsequent care (Atzema et al., 2013). A study on follow-up by ED physicians, either by telephone or e-mail, showed higher patient satisfaction when contacted by either manner, but it did not address patient compliance or outcome (Patel & Vinson, 2013).

Studies on brief alcohol interventions in general hospital wards, trauma centers, and EDs have shown decreases in self-reports of alcohol use, deaths within 6 months, and re-injuries requiring hospital or ED admission (e.g., McQueen, Howe, Allan, Mains, & Harvey, 2011; Schermer, Moyers, Miller, & Bloomfield, 2006). These interventions have been shown to capitalize on a "teachable moment" where the health care worker can link drinking and its consequences at a time when the effects are obvious (Gentilello, Ebel, & Rivara, 2005).

The direct electronic transfer of comprehensive and personalized discharge instructions to the patient's primary care physician has shown promise for improvement in discharge compliance (Bell, Takhar, Beloff, Schuur, & Landman, 2013; Taylor & Cameron, 2000). EHR includes computer software that facilitates this generation and personalization. To the extent that profiles of seat belt nonusers become available, EHR should also have the capability to prepare individualized seat belt materials as part of the discharge package.

Research provides an indication that people attend to safety messages in discharge materials. Children's Hospital and Regional Medical Center in Seattle added injury prevention messages to all computerized discharge instructions in the pediatric ED regardless of the diagnosis of the patient. Three drowning prevention messages were included: wear a life vest, swim in a safe area, and do not drink alcohol while swimming or boating. ED staff was aware of the existence

of the messages, but they were asked not to review them with patients or their parents. Half of the parents interviewed 1 to 2 weeks later who remembered receiving discharge instructions recalled a water safety message. Of these parents, 88% rated the drowning prevention messages as very or somewhat useful (Quan, Bennett, Cummings, Henderson, & Del Beccaro, 2002).

One promising communication modality that could improve patient compliance with discharge instructions is mobile telephone text messaging, or short message service (SMS). As an example of the potential of SMS, 95% of young adults 18 to 24 years old own mobile telephones, and 97% of them use SMS (Techspot, 2015). SMS has been used to promote health in a wide range of young adult health issues. A recent study examined using an SMS message from ED personnel to young adult ED patients who screened positive for past hazardous alcohol use. The intervention produced a small reduction in self-reported binge drinking and number of drinks consumed per drinking day (Suffoletto et al., 2014).

In summary, the successes shown by research in using discharge education to promote the use of child restraints and even with difficult-to-modify behaviors such as binge drinking support the potential for this strategy. This suggests that hospital discharge programs could represent a productive method for promoting seat belt use and ensuring that people who cannot use seat belts in a conventional manner receive appropriate instruction for occupant protection. Since high-risk adult populations often present at hospitals, EDs, and trauma centers, discharge programs could be a productive way to reach these groups.

Hospital Discharge Programs Focused on Occupant Protection: Computerized Discharge Instructions

Strategy Description

The strategy involves a hospital discharge program that includes a special focus on adult occupant protection. The proposed approach includes brief messages about proper seat belt use, preferably tailored to the risk profile of the patient, in all computerized discharge instructions for hospital in-patients and ED patients. This could also include computer-generated follow-up reinforcement education and encouragement via e-mails, SMS, and links to videos and other media. The most efficient approach would use the existing commercial EHR systems already in widespread use and profiles of users and nonusers of seat belts. Very little information exists on the use of EHR systems for discharge instructions on occupant protection. An alternative and less attractive approach would involve developing generic materials and then working with individual health care systems to add the materials to their discharge instructions. Such an approach would involve more time and effort and achieve less specific message targeting than an EHR-based approach tailored to the profile of a patient.

Target Audience

The proposed strategy would provide occupant protection information to ***all*** patients discharged from hospital settings. With electronic systems, this could also be expanded to cover exit materials given to any patient seen in any healthcare setting, not just hospitals. Special emphasis on the need for seat belt use could be targeted to patients who are admitted for a motor vehicle crash, especially if it can be determined that they either were not wearing a seat belt or were wearing it improperly. The messages could be personalized based on the patient's medical and socio-demographic information including their known health risk behaviors such as alcohol and other drug misuse, smoking, speeding, and motorcycle use. The strategy could also include targeted follow-up messages about occupant protection.

Current Practice

As suggested by research findings, most current discharge information practices related to occupant protection focus on child restraints. The Trauma Center Association of America recently queried its members about their use of discharge information related to traffic safety. The results revealed that many centers commonly disseminate information on child safety seats in discharge information for some crash victims, but few centers provide occupant protection instruction to all patients on discharge (Trauma Center Association of America, personal communication, April 2015). Many children's hospitals include child occupant protection information on discharge for all patients. Hospital discharge instructions found on the Internet for certain post-surgical patients and pregnant patients mention proper seat belt use; however, some of the information is incorrect.

The American Academy of Pediatrics (2015) recently released a best practice recommendations entitled: *Hospital Discharge Recommendations for Safe Transportation of Children*. The report was developed by an expert working group convened by NHTSA. No similar report focused on adult occupant protection, including special needs, exists.

Key Features of an Effective Program

An effective seat belt general hospital discharge program would likely need to include written and pictorial information that is age appropriate and targeted as closely as possible to the characteristics of the patient. The program should use more extensive discharge information, follow-up reinforcement (such as e-mails, SMS, and links to media), and encouragement to high-risk patients (e.g., those injured in a crash while unbuckled).

Most hospitals have occupational therapists and, in some cases, certified driving rehabilitation specialists (CDRSs) on staff. If so, these individuals would be ideal candidates to assist in developing and implementing a program.

Time to Implement

Electronic seat belt messages embedded in the existing discharge material could be designed and implemented in less than three months. Follow-up material that is computer generated, if feasible as part of EHR, could be designed and implemented in three to six months. The time to implement personalized targeted materials based on EHR data would depend on the availability of valid profiles of nonusers of seat belts.

Estimated Cost

The most significant recurring cost associated with the development and implementation of hospital discharge programs is for personnel. This cost can be greatly decreased through the use of universal and standardized electronic discharge instructions and follow-up. Discharge personnel would still need training in the use of the materials so they would be prepared to answer questions and to reinforce the message when possible. An initial program based only on information already in the EHR could be developed for $100,000 to $200,000.

Challenges

- Motivating companies that develop and maintain EHR systems to include seat belt materials or obtaining the funds to pay them to do so.
- Updating seat belt information as new research emerges.
- Developing effective program information and follow-up materials.
- Obtaining valid profiles of nonusers of seat belts that are based on data available in the existing EHR files.
- Personalizing the presentation based on data on the patient.
- Evaluating the effectiveness of implemented programs.

Effectiveness

The effectiveness of using computerized hospital discharge instructions for improving adult occupant protection is unknown, but evidence from other domains suggests a properly executed approach is likely to have a positive impact.

What's Still Needed?

The components to deliver the program are already in place at most hospitals, but the input information is not. Key players (e.g., EHR system developers, health care systems) need to be brought onboard, program materials and nonuser profiles developed, and one or more pilot programs implemented and evaluated. When new messages or delivery approaches are tried, it will be important to monitor how the approach impacts opinions and seat belt use behaviors to the extent possible.

Hospital Discharge Programs Focused on Occupant Protection: Special Medical Needs

Strategy Description

This approach involves developing and implementing a hospital discharge program that involves evaluating a patient's ability to safely use a seat belt given their current medical condition. Patients discharged to a home setting are escorted to their vehicle by hospital personnel. These personnel would be trained to check for proper seat belt use. If the patient is not able to be properly buckled due to a health condition, a hospital staff person trained in adaptive seat belt use would be alerted to suggest an approach to safe occupant protection use.

Target Audience

This strategy would target all patients of any age with special occupant restraint needs due to a temporary or permanent medical condition.

Current Practice

Some children's hospitals have programs that apply Car Seat Tolerance Screening for preterm and low birth weight infants and for children with medical conditions that involve special positioning requirements (American Academy of Pediatrics, 2015). Few, if any, similar programs exist for adult patients with conditions requiring special positioning or equipment for proper seat belt use in a vehicle. Some discharge instructions exist on the Internet for using pillows or other soft material to protect surgical sites or for transportation of oxygen tanks by securing them with a seat belt. One discharge instruction sheet found on the Internet counseled against seat belt use after heart surgery.

Keys Features of an Effective Program

An effective program must include a protocol that hospital staff can readily follow to determine whether a patient being discharged can safely use a seat belt or whether intervention is needed. If the latter, hospital staff specially trained in adaptive seat belt use should be readily available to offer assistance. Specialty organizations such as the American Occupational Therapy Association (AOTA) and/or Association of Driver Rehabilitation Specialists (ADED) are well qualified to assist in developing the intervention protocol. In addition, most hospitals have occupational therapists, and in some cases certified driving rehabilitation specialists, on staff. If so, these individuals would be ideal candidates to lead implementation of the strategy.

Time to Implement

The time to research adaptive positioning and equipment would be approximately three months. The time to train needed staff and acquire needed equipment would take an additional six months.

Estimated Cost

This program would require additional staff time and training for hospital discharge personnel. Additional funding and storage space would be required if hospitals were required to provide adaptive occupant protection equipment. These costs would be reduced, however, if there were already occupational therapists on staff who could be trained and equipped to perform this function.

Challenges

- Researching effectiveness of adaptive positioning and equipment for occupant protection for various medical conditions for all ages. Alternatively, the approach could be limited to the most prevalent conditions and/or those most amenable to solution.
- Ensuring that all staff (or occupational therapists on staff if this is more efficient) who escort patients to vehicles have received training on proper seat belt use.
- Training adequate staff on adaptive positioning and equipment to meet patient needs.
- Developing written information and follow-up reinforcement for patients with special needs.
- Acquiring and storing needed equipment to meet program needs.
- Providing retraining of staff as needed to meet best practice standards.
- Motivating hospitals to develop and implement the program.

Effectiveness

No studies of occupant protection hospital discharge programs focusing on special needs for adults with medical conditions were identified, but evidence from other domains suggests the approach has a reasonable likelihood of having an impact.

What's Still Needed?

The components to deliver the program are already in place at most hospitals. Key players (e.g., EHR system developers, health care systems) need to be brought onboard, program materials and nonuser profiles developed, and one or more pilot programs implemented and evaluated. When new messages or delivery approaches are tried, it will be important to monitor how the approach impacts opinions and seat belt use behaviors to the extent possible.

References

American Academy of Pediatrics. (2015, January). Hospital discharge recommendations for safe transportation of children: Best practice recommendations developed by an expert working group convened by the National Highway Traffic Safety Administration. (Report No. DOT HS 812 106). Washington, DC: National Highway Traffic Safety Administration. Available at www.nhtsa.gov/staticfiles/nti/pdf/812106_HospitalDischrgeRecSafeTransChildren.pdf

Atzema, C., Austin, P., Wu, L., Brzozowski, J., Feldman, M., McDonnell, M., & Mazurik, L. (2013). Speak fast, use jargon, and don't repeat yourself: A randomized trial assessing the effectiveness of on line videos to supplement emergency department discharge instructions. *PLoS ONE (Electronic Resource), 8*(11).

Austin, P., Matlack, R., Dunn, K., Kesler, C., & Brown, C. (1995). Discharge instructions: Do illustrations help our patients understand them? *Annals of Emergency Medicine, 25*(3).

Bell, E., Takhar, S., Beloff, J., Schuur, J., & Landman, A. (2013). Information technology improves emergency department patient discharge instructions completeness and performance on a national quality measure: A quasi-experimental study. *Applied Clinical Informatics, 4*(4): 499-514.

Biese, K., Lamania, M., Shofer, F., McCall, B., Roberts, E., Stearns, SC., Principe, S., Kizer, J., Caims, C., & Busby-Whitehead, J. (2014). A randomized trial exploring the effect of a telephone call follow-up on care plan compliance among older adults discharged home from the emergency department. *Academic Emergency Medicine, 21*(2): 188-95.

Brian, J., Chetty, V., Anthony, D., Greenwald, J., Sanchez, G., Johnson, A., Forsythe, S., O'Donnell, J., Paasche-Orlow, M., Manasseh, C., Martin, S., & Culpepper, L. (2009). A reengineered hospital discharge program to decrease rehospitalization. *Annals of Internal Medicine, 150*(3): 178-187.

Centers for Medicare & Medicaid Services. (2014). Accountable Care Organizations (ACO). Retrieved from the CMS website at www.CMS.gov

Colletti, R. (1986). Longitudinal evaluation of a statewide network of hospital programs to improve child passenger safety. *Pediatrics 77*: 523-529.

Gittelman, M., Pomerantz, W., & Laurence, S. (2006). An emergency department intervention to increase booster seat use for lower socioeconomic families. *Academic Emergency Medicine, 13*: 396-400.

Gentilello, L., Ebel, B., & Rivara, F. (2005). Alcohol interventions for trauma patients treated in emergency departments and hospitals, a cost benefit analysis. *Annals of Surgery, 241*(4): 541-550.

Haynes, R., Ackloo, E., & Sahola, N. (2008, April). Interventions for enhancing medication adherence. *Cochrane Database of Systematic Reviews, 16*;(2):CD000011. doi: 10.1002/14651858.CD000011.pub3

McQueen, J., Howe, T., Allan, L., Mains, D., & Harvey, V. (2011, August). Brief interventions for heavy alcohol users admitted to general hospital wards. *Cochrane Database of Systematic Reviews, 10*;(8):CD005191. doi: 10.1002/14651858.CD005191.pub3

Patel, P., & Vinson, D. (2013). Physician e-mail and telephone contact after emergency department visit improves patient satisfaction: A crossover trial. *Annals of Emergency Medicine, Vol. 61*(6), 631-637.

Quan, L., Bennett, E., Cummings, P., Henderson, P., & Del Beccaro, M. (2002). Do parents value drowning prevention information at discharge from the emergency department? *Annals of Emergency Medicine, 37*(4): 382-385.

Samuels-Kalow, M., Stack, A. & Porter, S. (2012). Effective discharge Communication in the Emergency Department. *Annals of Emergency Medicine, 60*(2): 152-159.

Schermer, C., Moyers, T., Miller, W., & Bloomfield, L. (2006). Trauma center brief interventions for alcohol disorders decrease subsequent driving under the influence arrests. *Journal of Trauma, 60*(1): 29-34.

Suffoletto, B., Kristan, J., Callaway, C., Kim, K., Chung, T., Monti, P., & Clark, D. (2014). *A text message alcohol intervention for young adult emergency department patients: A randomized clinical trial*. Injury Prevention/Original Research by the American College of Emergency Physicians.

Taylor, D., & Cameron, P. (2000). Discharge instructions for emergency department patients: what should we provide? *Journal of Accident & Emergency Medicine, 17*: 86-90.

Techspot (2015). 97 percent of young adults use text messaging. Retrieved from www.techspot.com/news/45543-97-percent-of-young-adults-use-text-messaging.html.

Zeng-Treitler, Q., Kim, H., & Hunter, M. (2008). Improving patient comprehension and recall of discharge instructions by supplementing free texts with pictographs. *AMIA Annual Symposium Proceedings. 849-853*.

Zonfrillo, M., Nelson, K., & Durbin, D. (2011). Emergency physicians' knowledge and provision of child passenger safety information. *Academic Emergency Medicine, 18*(2); 145-151.

Chapter 3: Targeted Online Advertising

Occupant Protection Strategy Objective: This strategy uses targeted Internet advertising, retargeting/remarketing, and social media to reach people who have a high likelihood of not wearing a seat belt with a relevant, compelling, and repeated message to buckle up. This strategy could potentially be combined with additional strategies, such as other types of media and enhanced law enforcement, to produce a variation of High-Visibility Enforcement.

Generic Strategy

The strategy involves delivering a timely Internet-based advertising message directly to people with a high likelihood of having a keen interest in the product or service it promotes based on their demographics, search behaviors, or Internet browsing history and at a time when they are actually thinking about the applicable subject area.

Rationale

The overarching principle involves targeting Internet users based on their online search or browsing behavior, or by using their profile/preferences information on a social media website, to determine if they are a prime candidate for the information the advertiser wishes to disseminate. It is expected that tailored advertising will grab and hold a prospect's attention, thereby resulting in a click-through on the ad to reach a website containing the more detailed sales or promotional information the advertiser wishes to deliver and the consumer (hopefully) desires to receive. The logic is relatively simple: the better the fit between the product or idea and the person, the more likely the viewer will attend to the information in an advertisement and accept a message.

Background

This chapter first addresses the general strategies of targeted and retargeted online advertising applicable to virtually any product or message. It then discusses some specific approaches applicable to advertising on social media sites and addresses how they can be applied to Facebook and YouTube, two of the most widely used social media destinations on the Internet. It closes with a discussion of applying the prevailing approach to disseminating a seat belt message.

As noted by Kantola (2014), the emergence of global online service and associated online advertising platforms and the development of advanced tracking and targeting solutions have generated major changes in the advertising industry. Lambrecht and Tucker (2013) note that major website providers such as Google have immense amounts of personal and behavior data that advertisers can use to target their messages with a level of accuracy never before seen.

In addition, the ability of websites to place small data files (cookies) on a consumer's computer to record browsing history greatly enhances the ability to target and "retarget," or "remarket" a focused message.

A variety of approaches to online advertising exists as a function of the type of website and the reason the Internet user visited it. Marketers have developed algorithms (many are proprietary and highly guarded) that make use of past browsing and purchase behavior to fit messages to a consumer's purchase patterns and thereby provide a highly appealing array of options.

Targeted Online Advertising and Retargeting/Remarketing. General run of network display advertising involves an advertiser placing ads on a variety of specialty news, blogging or other sites in the hope that the ads will be found when someone in the target audience visits the website to view its content. Given advances in technology, however, much more direct targeting is possible. For example, Google's Display Network can demographically target by age, gender, parental status, and more. Advertisers create character profiles (personas) from the data that are then used to focus the advertising. Advertisements designed to appeal specifically to their persona/character profile attract individuals browsing the Internet. Customizing messaging for each persona of interest to an advertiser enhances the effectiveness of an advertising campaign and facilitates the marketing and retargeting processes.

Such targeted display advertising on the Internet has proved its effectiveness for increasing conversions (sales) compared to run of network advertising that is applied generally across numerous websites without control of how the content is targeted (Beales, 2009). The initial targeting often takes place after a person conducts a search on a specific topic/product or when a person visits a website where the advertiser believes there will be user interest in a particular product based on the website's content. The assumption is that the user is worth targeting because they have expressed interest in a similar topic/product by conducting a search or have visited another website that the advertiser believes represents something of interest to the targeted population. In these instances, the advertiser pays the search provider to have an advertisement displayed on the search results page or pays the visited website for displaying an ad.

Retargeting (sometimes referred to as remarketing) takes place when an Internet user visits a website that places a cookie on the user's computer that allows the website operator to retarget the individual as he or she browses the Internet after leaving the website. As the individual browses, he or she is retargeted by showing highly specific ads that aim to get the user to return to the website that installed the cookie and make a purchase or shop further. Generic retargeting simply tries to get the user to click on a general ad and return to a website while dynamic retargeting involves displaying the exact product previously viewed (or several similar products) to attract the user back to the website (Lambrecht & Tucker, 2013).

Targeted advertising and retargeting are widely used by businesses of all sizes to increase brand awareness and generate more sales/leads online. Retargeting/remarketing is used to keep a brand in front of website visitors after they leave the website as a compelling reminder of the more detailed information they already received. Advertisers can use these Internet advertising approaches to target almost any population of interest for which there is a "profile" of the target

audience readily available along with information regarding topics or websites that generally attract that target audience.

Social Media Advertising. Along with the widespread use of the Internet has come the emergence of social media—websites and other online means of communication that are widely used to share information and to develop social and professional contacts. The business model for many of the most popular social media websites involves selling ads that are displayed before or during the retrieval of information. These ads represent another possible type of targeted Internet advertising to increase seat belt use.

The effectiveness of social media advertising is often difficult to quantify from a strict return on investment (ROI) perspective that focuses on revenues that can be directly attributed to the advertising campaign. Simply examining the costs of creating and implementing an advertising effort versus the measurable income (i.e., purchases made directly on a site as a result of a click-through) from the advertising may be misleading. It is also difficult to quantify the value of increased brand awareness and resulting sales that comes with the sharing of information on social media sites. As Hoffman and Fodor (2010) note, the measurement of the success of a social media campaign requires a new set of metrics where things such as number of likes, shares, video views, search rankings, Tweets and re-Tweets, and a wide variety of other outcomes must be taken into consideration. The dollar value of these metrics, however, can be difficult to estimate.

In spite of the limited current ability to assess the effectiveness of social media advertising, its relatively low cost, ability to reach large numbers of people, and message targeting capability make it an attractive option for advertisers. The sections below illustrate a social media-based approach using Facebook and YouTube, two of the most widely used social media sites, as examples.

Facebook. American computer users spend an average of 40 minutes per day on Facebook (Constine, 2014). Facebook's advertising function, Facebook Ads, allows advertisers to reach users while they are inputting or accessing information on the site. Facebook Ads are targeted according to Facebook profile information such as age, location, education, interests, and content of posts. These ads encourage users to share videos or content to drive traffic/visits to a custom website that provides the information of interest and expands on the original message. As an audience engages with these ads, Facebook can notify the user's friends about the ad content or pages the user liked or shared to help further expand reach. An effective ad or message can "go viral" and rapidly spread throughout the Facebook community.

Businesses of all sizes and types use Facebook advertising to increase brand awareness, generate leads, and build relationships with customers. The approach can be used to target anyone who uses Facebook and falls into a created persona/customer profile based on data captured by the site. Messages are then tailored for each persona of interest. Below is a table from the Pew Research Center (Duggan et al., 2015) that shows general demographic data about Facebook users:

Facebook users

Among online adults, the % who use Facebook

	2013	2014
All internet users	*71%*	*71%*
Men	66	66
Women	76	77
White, Non-Hispanic	71	71
Black, Non-Hispanic	76	67
Hispanic	73	73
18-29	84	87
30-49	79	73
50-64	60	63
65+	45	56*
High school grad or less	71	70
Some college	75	71
College+ (n=685)	68	74*
Less than $30,000/yr	76	77
$30,000-$49,999	76	69
$50,000-$74,999	68	74
$75,000+	69	72
Urban	75	71
Suburban	69	72
Rural	71	69

Government agencies already use Facebook advertising and have developed ways to maximize its effectiveness. For example, the Centers for Disease Control and Prevention (CDC, 2012) publication titled *Social Media Guidelines and Best Practices: Facebook* presents best practices for advertising CDC-related messages on Facebook (see www.cdc.gov/socialmedia/tools/guidelines/facebook-guidelines.html).

YouTube. Advertising on YouTube (a subsidiary of Google) typically involves showing video ads before the other videos sought by the user are played. With these ads the advertiser can show an engaging video that effectively communicates a customized message based on either predetermined user profiles or the likely characteristics of the viewer based on the video content searched for and viewed. This method of advertising is commonly used to increase brand awareness and generate more website traffic.

YouTube has more than 1 billion users, and more than a million advertisers, the majority of which are small businesses who use Google ad platforms to advertise on YouTube (YouTube, 2015). Every day people watch hundreds of millions of hours on YouTube and generate billions of views. YouTube has a variety of audience targeting options such as age, gender, location, and interests. YouTube users include 72% of "Millennials" age 18 to 34, 58% of "Generation X" 35 to 50, and 43% of "Baby Boomers" 51 to 69 years old (Netflix, Cable Battle for Millenial's Attention, 2015).

The CDC's *Social Media Guidelines and Best Practices: CDC YouTube Channel* (2012) lists the best practices for its employees and contractors using YouTube (see www.cdc.gov/SocialMedia/Tools/guidelines/pdf/onlinevideo.pdf).

Summary of Relevant Research

Lambrecht and Tucker (2013) conducted a study of retargeting in an attempt to determine if a dynamic retargeting approach was more effective than the generic retargeting approach. Their study showed that generic retargeting was more effective at directing users to a web site when the consumer was still in the early information seeking step of the decision making process. Dynamic retargeting proved highly effective, however, when the individual had narrowed his or her preferences and was nearing a decision on a purchase. This study suggested that consumers have a multi-stage decision process in which the relative effectiveness of the retargeting depends on where the consumer is in the decision making process. This implies that an advertisement that appears to link to general information regarding a product or topic will result in more click-throughs early in the decision process but that a dynamic retargeting approach may be more effective when a final decision to buy is near.

Targeted Internet advertising users report numerous success stories in which targeted display advertising and retargeting led to substantial increases in sales or click-throughs for the advertiser (Google, 2015; Facebook, 2015). For example, ResortQuest, one of the Nation's leading vacation rental companies, used this approach to achieve a 25% lower cost per customer and a 50% higher click-through rate by targeting people who, based on their calculated persona, were more likely to book one of their rentals. YouTube also claims its advertising is an effective method for branding and spreading an emotional/relatable message to a targeted audience. For example, LSTN Headphones used YouTube video advertising to reach and relate to new customers, which helped them to fund hearing restoration for over 20,000 people worldwide. Google provides a number of similar success stories in which targeted display advertising and retargeting led to substantial increases in sales or click-throughs (www.Google.com/ads/displaynetwork/success-stories.html).

Several documented examples suggest that Facebook advertising is an effective way to reach targeted audiences. The "truth campaign" used Facebook Ads to reach nearly half of all 13- to 19-year-olds in the U.S. with "ugly truths" about tobacco use. The ad effort resulted in more than a 92% increase in campaign awareness (Facebook for Business, 2015). In another example, Free the Children, a nonprofit organization, used Facebook Ads to drive awareness and action around its "We Day" movement, raising more than $2.4 million for its child-focused projects (Facebook for Business, 2015).

Researchers found no studies that specifically explored the individual impact of targeted Internet advertising, retargeting, or the use of social media, to increase seat belt use. NHTSA has created a number of online banner ads, YouTube videos, and other marketing material for States and local agencies to use as part of their *Click It or Ticket* campaigns (NHTSA, 2015). The agency also provides guidance to States on where to place the media buys based upon the nonuser

demographics. A number of States report using social media and Internet ads in an attempt to reach populations such as teens (Sprattler, 2014). While NHTSA designs the *Click It Or Ticket* media campaign to reach the demographic groups overrepresented among nonusers, it is not certain how many actual nonusers and part-time users are reached.

Targeted and Retargeted Advertising for Occupant Protection

Strategy Description

The proposed application of this strategy to the promotion of seat belt use would involve a multi-pronged media effort involving targeted basic display advertising and retargeting/remarketing.

Target Audience

A targeted seat belt encouragement program must focus on groups of nonusers or part-time users of seat belts. For the approach to be effective, the specific group being targeted must be well-defined and the personas carefully developed. This will require a detailed description of groups of nonusers and part-time users in order to develop and disseminate messages that will reach these target audiences and potentially convince them to wear seat belts more often. Once a target population has been defined (likely a homogeneous subgroup of all vehicle occupants with a high likelihood of non-use or part-time use of seat belts, e.g., young male pickup truck drivers), it is important to understand how they use the Internet, what they think about seat belts, and how they respond to the various targeted advertising approaches available.

Current Practice

NHTSA has created online materials, including banner ads, social media assets, and web videos, for use as part of their *Click It or Ticket* campaigns (NHTSA, 2015), and includes guidance in the National Media Work Plan on where to place buys based upon the target demographic. However, this does not currently include in-depth guidance on targeting or retargeting. Likewise, though some States may use social media and Internet ads in an attempt to reach populations such as teens (Sprattler, 2014), nothing as targeted as this proposed approach has been reported. By adding appropriate targeting, it should be possible to enhance the effectiveness of existing materials and to support the development and deployment of even more tightly targeted Internet-based advertising.

Key Features of an Effective Program

Successes with other programs suggest a description of how each of the types of Internet-based advertising described above might be used to promote wearing seat belts. The first step, regardless of the advertising approach, is to develop accurate profiles of nonuser and part-time user groups based on variables available about Internet users such as demographics and search behavior. A second step is to develop and test specific message contents for each group. With the availability of these profiles/persona and message contents, each approach, including creative message development and deployment strategy, can be tailored to a defined target group.

Targeted Display Advertisements. Using the developed message contents and profiles of the target audiences, display advertisements to promote belt use can be placed on websites they most frequently visit. Advertisements can also be placed on result pages of major search engines when targeted users search for terms that are associated with profiles of non- and part-time belt users or when results load pages that are frequented by people

meeting these profiles. The campaign must include some benefit or information of interest for the person to read and click on these types of display ads. General safety messages (e.g., "Buckle up," "Seat belts save lives") typically should be avoided. The message on the landing page must be attention-grabbing and encourage the target audience member to engage with the ad. As an example, an ad might inform a target audience of people afraid of receiving a citation, such as young drivers whose insurance rates might increase after receipt of a ticket, that the police will operate seat belt checkpoints in their area. To find exact locations, the target audience would have to click on the ad to visit a special website or web page.

Retargeting/Remarketing. Retargeting complements and enhances good targeted Internet display advertising. Continuing the hypothetical example above, once the display ad entices a person to visit the website containing the seat belt checkpoint locations and a cookie is placed, the safety advertiser can retarget them with a variety of seat belt messages as they continue browsing the Internet. Retargeting of seat belt messages can also be initiated from sites that seat belt violators must visit after receiving a citation. For example, if a person can go online to pay a fine, print out required paperwork, or complete a diversion course, they could be retargeted after visiting those web sites. Once a cookie is placed and retargeting begins, the delivered messages should not be overstimulating, should include a pertinent and acceptable behavioral change message, should link to information that will be important to the user, and must be timed in a manner that is persistent while not being annoying.

Time to Implement

An experienced developer can design and implement a program in 1 to 2 months (not including the development of graphics and detailed content).

Estimated Cost

Typical costs associated with the development and implementation of Internet display advertising depend somewhat on the Internet platform used. Typical cost categories include creation of landing webpages, video production, labor for creating and optimizing the campaign, and ad spend cost (based on a pay-per-click model). Costs vary substantially based on the size of the target audience and the quality of advertisement production. A relatively simple campaign aimed at a small audience can be implemented for a few thousand dollars; a more sophisticated and widespread campaign can run into millions of dollars.

Challenges

The techniques needed to implement a targeted Internet-based seat belt advertising program exist and are being used regularly by advertisers. Some of the needed input information, however, must be developed from focused research projects. Specific developmental needs include:

- Research to develop tight definitions of the target audiences of non- and part-time users of interest.
- Development of personas/profiles with the data available.
- Research to identify the main reasons why each persona/profile does not wear seat belts.
- Development of compelling messages to counter the specific reasons for non-use and to promote a change in behavior.
- Development of a media deployment plan and associated budget to disseminate the messages over the Internet.

Effectiveness

The effectiveness of targeted online advertising for increasing seat belt use is unknown at present. Research in domains other than occupant protection suggests that exposure to safety messages can likely be increased with good targeting, but it is unknown if this increase in exposure will lead to changes in awareness or actual increases in seat belt use.

What's Still Needed?

The targeted/retargeted display advertising strategy itself is ready for use. Its successful application will require the availability of accurate profiles of part-time and nonusers. In addition to these profiles, it will be vital to determine what will motivate the individuals to wear a seat belt. Once these precursors are established, materials can be developed and a campaign implemented with relative ease. Some level of evaluation of program effectiveness is needed, however, to determine how the approach impacts the opinions and behaviors of non- and part-time users of seat belts.

Targeted Social Media Advertising for Occupant Protection

Strategy Description

This strategy involves using social media such as Facebook or YouTube to create persona/customer profiles based on data captured by the sites. Messages are then tailored for each persona of interest and targeted/retargeted accordingly.

Target Audience

As with basic targeted Internet advertising, this approach can be used to target part-time and nonusers of seat belts once profiles are available. Facebook and YouTube ads can also be targeted to intermediaries (e.g., parents of teens, spouses, employers) who will pass along the information to the prime audience.

Current Practice

NHTSA and State Highway Safety Offices generally have Facebook pages and post videos to YouTube. A number of States report using social media in an attempt to target specific populations such as teens (Sprattler, 2014). It is not clear, however, how well these media efforts are targeted to part-time and total nonusers of seat belts. By adding appropriate targeting, it should be possible to enhance the effectiveness of existing materials and to support the development and deployment of even more tightly targeted Internet-based advertising.

Time to Implement

A developer experienced with Facebook can develop a quality program in 1-2 months. It takes an experienced developer 3-4 months to design and implement a quality YouTube-based program.

Estimated Cost

Costs vary substantially for Facebook and YouTube advertising based on the size of the target audience and the quality of advertisement production. Video production prices vary dramatically based on the complexity of the video and the special effects used. In addition, there are costs associated with having staff members maintain the site materials and respond to inquiries from the public, both of which are vital to the success.

Challenges

As with targeted/retargeted display advertising, the techniques needed to implement a Facebook and YouTube seat belt advertising campaign exist and are being used regularly by advertisers. Some of the needed input information, however, must be developed from focused research projects. Specific developmental needs include:

- Research to develop tight definitions of the targeted audiences of non- and part-time users of interest.
- Development of personas/profiles with the data available within the chosen social media.
- Research to identify the main reasons why each persona/profile does not wear seat belts.
- Development of compelling messages to counter the specific reasons for nonuse and to promote a change in behavior.
- Development of a media deployment plan and associated budget to disseminate the messages over the Internet.

Effectiveness

The true effectiveness of the approach of social media advertising for increasing seat belt use is unknown at present. To date, social media advertising has generally been only a small piece of larger enforcement and media efforts to increase belt use (Sprattler, 2014), and the appropriateness of the messages for the medium or extent of the effectiveness of the targeting are largely unknown. Some experts do, however, suggest that social media can be successfully used to increase teen seat belt use (Sprattler, 2014).

What's Still Needed?

This targeted social media strategy itself is ready for use. Its successful application will require the availability of accurate profiles of part-time and nonusers. In addition to these profiles, it will be vital to determine what will motivate the individuals to wear a seat belt. Once these precursors are established, materials can be developed and a campaign implemented with relative ease. Some level of evaluation of program effectiveness is needed, however, to determine how the approach impacts the opinions and behaviors of non- and part-time users of seat belts.

References

Beales, H. (2009). *The Value of Behavioral Targeting.* The Network Advertising Initiative (NAI) Retrieved from www.networkadvertising.org/pdfs/Beales_NAI_Study.pdf

Centers for Disease Control and Prevention. (2012). *Social Media Guidelines and Best Practices: Facebook*. Atlanta: Author. Available at http://www.cdc.gov/socialmedia/tools/guidelines/facebook-guidelines.html

CDC. (2012). *Social Media Guidelines and Best Practices: CDC YouTube Channel*. Atlanta: Author. Available at http://www.cdc.gov/socialmedia/tools/guidelines/pdf/onlinevideo.pdf

Constine, J. (2014). *American Users Spend An Average of 40 Minutes Per Day on Facebook*. Retrieved from http://techcrunch.com/2014/07/23/facebook-usage-time/

Duggan, M., Ellison, N., Lampe, C., Lenhart, A., & Madden, M. (2015). *Social Media Update 2014*. Washington, DC: Pew Research Center.

Facebook for Business (2015). *Real Businesses, Real Results* (Web page). Retrieved from www.facebook.com/business/success

Hoffman, D., & Fodor, M. (2010). Can you measure the ROI of your social media marketing? *MIT Sloan Management Review, 52*(1), 41-49.

Kantola, J. (2014). *The Effectiveness of Retargeting in Online Advertising.* Master's Thesis. Helsinki, Finland: Aalto University School of Science.

Lambrecht, A., & Tucker, C. (2013). *When Does Retargeting Work? Information Specificity in Online Advertising*. Retrieved from SSRN: http://ssrn.com/abstract=1795105 or http://dx.doi.org/10.2139/ssrn.1795105.

National Highway Traffic Safety Administration. (2015). *Click It or Ticket: National Seat Belt Enforcement Mobilization – May 2016* (Web page). Retrieved from www.trafficsafetymarketing.gov/ciot

Netflix, Cable Battle for Millennial's Attention (2015, March 15) (Web page). Retrieved from www.emarketer.com/Article.aspx?R=1012167

Sprattler, K. (2014, July). *Getting it to click: Connecting teens and seat belt use*. Washington, DC: Governor's Highway Safety Association. Available at www.ghsa.org/html/files/pubs/gitc.pdf

YouTube. (2015). *Statistics* (Web page). Retrieved from www.youtube.com/yt/press/statistics.html

Chapter 4: Online Learning/e-Learning

Occupant Protection Strategy Objective: This strategy involves developing online courses to inform and motivate use of seat belts by drivers who, based on prior research, are likely to not wear seat belts and can be encouraged to take the course (e.g., for insurance discount) or are compelled to take it (e.g., as part of a remedial program after receiving a citation).

Rationale

Online education programs are now an integral part of education and training in the United States. They have been used for K-12 education, college education, other adult learning, driver education, and by a wide variety of private and public organizations to deliver training to their workforces. However, no course has been developed specifically to educate individuals about the why and how of proper seat belt use. This strategy would make such a course available to teens and adults of all ages.

Background

An online, or e-learning, course presents educational content over the Internet rather than at a brick-and-mortar location using traditional methods such as textbooks or lectures. The content may be delivered by a standalone program accessed via the Internet or through a blended approach in which a live instructor guides the learner from a distant location. Many of these programs use simulations, videos, or other interactive tools to deliver the content. Some have an associated textbook or other printed material.

Online learning has seen unprecedented growth in the last 5 years, and that growth is expected to accelerate for the foreseeable future. As a result, more and more learners are beginning to expect it as an option for furthering their education. The worldwide market for self-paced e-learning reached $35.6 billion in 2011. The 5-year compounded annual growth rate is estimated at around 7.6%, and revenues should reach close to $51.5 billion by 2016 (Docebo, 2014).

These programs are targeted at anyone with Internet access. Programs have been developed for all ages and races. Content can be easily modified to address specific target groups of interest. The courses provide an attractive alternative to brick-and-mortar classes because of the flexible scheduling they allow and the potentially reduced cost from the absence of a need to maintain a physical location. Internet-based courses reduce the need to travel to a central location, which can be a major issue for people without reliable transportation or who live in rural areas. The programs also open up advanced content to populations who might not otherwise have exposure in the area surrounding their homes.

A variety of levels of courses can be produced, and each has its place and degree of effectiveness depending on the nature of the content being taught. The table below provides a brief description of three levels of courses and the time it takes to develop such courses (Chapman, 2010).

Description of Course Levels and Time to Develop

Level	Definition	Average Development Hours (per hour of course content)
Level 1	Content pages, text, graphics, perhaps simple audio, perhaps simple video, test questions. NOTE: PowerPoint-to-e-learning often falls into this category. Basically pages with assessment.	49 – 125 hours (2 – 5 ¼ days)
Level 2	Level 1 plus 25% (or more) interactive exercises (allowing learners to perform "try it" exercises), liberal use of multimedia (audio, video, animation).	127 – 276 hours (5 ¼ - 11 ½ days)
Level 3	Highly interactive, possibly simulation or serious game-based, custom interactions, award-winning caliber courseware.	217 – 715 hours (9 – 30 days)

The cost for creating an online occupant protection course varies depending on the level of e-learning selected. Cost estimates for a one hour course at the different levels of e-learning are: Level 1, $10,000; Level 2, $19,000, and Level 3, $50,000 (Chapman, 2010).

The same principles of effective learning can be applied to online instruction just as they are with face-to-face instruction. The table below presents Carnegie Mellon University's Seven Principles of Learning (Eberly Center for Teaching Excellence & Educational Innovation, 2015) and a summary of how these principles can be applied online.

Carnegie Mellon's Seven Principles of Learning and Online Learning

Principle of Learning	Application in Online Learning
Students' prior knowledge can help or hinder learning.	The online course should activate the learner's prior knowledge and provide the necessary information to build upon it.
How students organize knowledge influences how they learn and apply what they know.	The online course should present material in a logical order and make the content meaningful to the individual.
Students' motivation determines, directs, and sustains what they do to learn.	The online course should engage the learner. The purpose of the training should always be clear and be goal-oriented. Games, or gamification components, are a proven way to keep learners motivated. Also, using a variety of media (animations, videos, images, narration) where appropriate will keep the learner engaged.
To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.	The online course should not be passive. It should force the learner to interact and make decisions. Scenarios can help learners work through these decision processes.
Goal-directed practice coupled with targeted feedback enhances the quality of students' learning.	The online course should allow the learner to practice and apply what they have learned. Again, scenarios are a great way for learners to learn by doing. It should also provide immediate feedback to learners.

Principle of Learning	Application in Online Learning
Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning.	The online course should keep a positive tone, even when the content may not be positive itself. Language should be casual and inviting.
To become self-directed learners, students must learn to monitor and adjust their approaches to learning.	The online course should ideally be adaptive, adjusting to the learner's strengths and weaknesses, and allow the learner some freedom in how they explore the content.

Summary of Relevant Research

Numerous studies over the past decade have shown that online learning is as effective, if not more effective, than traditional face-to-face learning. One landmark study by the U.S. Department of Education (Means, Toyama, Murphy, Bakia, & Jones, 2010), *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies,* looked at more than a thousand empirical studies of online learning from 1996 to 2008. The results found that students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction. The abstract for that meta-analysis states:

> *Learning outcomes for students who engaged in online learning exceeded those of students receiving face-to-face instruction, with an average effect size of +0.24 favoring online conditions. The mean difference between online and face-to-face conditions across the 51 contrasts was statistically significant at the $p < .01$ level.* (Means, Toyama, Murphy, Bakia, & Jones, 2010).

Online learning is not just effective for increasing knowledge, but also has been shown to improve safety behaviors. For example, Ho and Dzeng (2010) evaluated the effectiveness of e-learning for construction safety training. Results showed that e-learning improved learning effectiveness and increased safe behaviors during construction operations. Also, there are numerous studies that show the powerful impact simulations and games can have on learning. In one study (Stitzman, 2011), meta-analytic techniques were used to examine the instructional effectiveness of computer-based simulation games relative to a comparison group. Consistent with theory, post-training self-efficacy was 20% higher, declarative knowledge was 11% higher, procedural knowledge was 14% higher, and retention was 9% higher for trainees taught with simulation games relative to a comparison group.

In another study (Wouters, van der Spek, & van Oostendorp, 2009), the authors reviewed 28 studies with empirical data from a learning outcome perspective to outline the effectiveness of serious games (compared to other learning approaches and specific game features). They concluded that serious games potentially improve the acquisition of knowledge, cognitive, and fine-grid skills and are also effective at accomplishing attitudinal change. However, the study points out that not all game features will increase effectiveness. The game developers must align the game mechanics and design to learning outcomes and the target audience.

One study conducted in Sweden (Wahlberg, 2013) showed that e-learning increased seat belt use. In the study, an e-learning course for drivers caught not wearing their seat belts was evaluated using an online questionnaire distributed before and three months after the course was delivered. Results indicated that the course produced the desired effect of increasing self-reported seat belt use. Oddly, it did not appear to change the learners' beliefs about wearing seat belts.

Online Learning Module on Occupant Protection: Level 2 Multimedia-Enriched e-Learning

Strategy Description

The Level 2 course content would be presented in an online/e-learning format and accessed via the Internet using a computer or mobile device or through a blended approach in which a live instructor guides the learner. Learners would initially log into the course after seeing some promotional material or being required to do so (e.g., by a judge after receipt of a seat belt ticket). Once logged in, they would be welcomed to the course and presented with an outline of the course topics. Ideally, the course would be broken up into short, 5-minute topics and total no longer than 1 hour. The content of the course would be presented through a mixture of text, narration, images, videos, and animations using an e-learning development platform such as Articulate Storyline or Adobe Captivate. The table below shows how the design of the e-learning course might incorporate Ruth and Clark's principles of effective e-learning (Clark & Mayer, 2011).

Application of Principles of Effective e-Learning to Occupant Protection

Principle	Description	How It Might Be Applied
Multimedia Principle	People learn better from a combination of words and visuals (graphics, animation, video), rather than from words or visuals alone.	All screens of the course will incorporate relevant visuals including graphics, animations or videos along with text and narration.
Contiguity Principle	People learn better when graphics and related text (or narration) is kept close together.	All graphics will include captions. Legends that define graphic elements in a manner that is separated from the graphic will be avoided. Will make use of hover capabilities for text descriptions of graphics to be compliant with the Americans with Disabilities Act. All assessment feedback will be provided immediately and in the same window as the questions.
Modality Principle	People learn better from animation and narration than from animation and on-screen text.	The course will include narration.
Redundancy Principle	People learn better when the same information is not provided simultaneously in multiple formats.	The course will avoid having text and narration together if the narration simply reads back the exact same text showing on screen

Coherence Principle	People learn better when extraneous words, pictures, and sounds are excluded rather than included.	All visuals will be relevant to the content being covered.
Personalization Principle	People learn better when the words are in conversational style rather than formal style.	The on-screen text will be written in a conversational style and the voice for narration will be casual.
Segmenting Principle	People learn better when e-learning is presented in learner-paced segments rather than as a continuous unit.	The course will be broken up into short topics of 5 minutes or less. Assessment questions will be included at the end of each topic.

The table below presents a list of possible course topics and approaches for addressing each. These represent one good example of a possible Internet-based course and a productive starting point for course development.

Possible Topics for Occupant Protection Course

Topic	Approach
The value of wearing your seat belt	Present images that show injuries from accidents where someone was not wearing a seat belt. The images should be graphic but not excessively gory. Explain how the outcome would have been different if they had been wearing a seat belt. Alternatively, provide interviews with people who either have been injured themselves or know someone who has been injured or died as a result of not wearing a seat belt. Provide examples that show how someone's choice to wear or not wear a seat belt impacts other people's decisions and can save their lives.
Penalties for seat belt violation	Present the laws and penalties for the State the learner is in (the State could be pulled from the profile they enter at initial log in). Explain enforcement efforts and the consequences for multiple offenses.
Common misconceptions about seat belt wearing	Present photographs of real people giving excuses for not wearing a seat belt. Explain why these excuses or misconceptions are not valid. Example: Woman saying "I'm only going down the street to visit a friend." Feedback might be "Actually, this is an important time to wear a safety belt since 80% of traffic fatalities occur within 25 miles of home and under 40 miles an hour."
The costs to society of not wearing your seat belt	Present interactive graphs that show data on deaths and hospitalizations from non-seat belt use. Discuss how tax dollars can be saved if these injuries/deaths were prevented.

Crash dynamics	Present videos or animations that depict what happens in a crash when you are not wearing a seat belt. Ideally, these would be presented from the point of view of someone in the driver or passenger seat (not from outside the car) so that the learner can more easily put themselves in their shoes.
Changing habits to incorporate seat belt use	Present practical tips for making seat belt use a habit. Present scenarios that might cause someone to forget to put a seat belt on (phone rings when they get in the car, talking to someone else in the car, etc.), and discuss strategies for preventing this.
Wearing your seat belt correctly	Present a series of images showing someone wearing a seat belt correctly and incorrectly. Discuss the injuries that can occur when someone is wearing them incorrectly.

Assessment questions would be provided at the end of each topic. Also, at the end of the course a series of simple scenarios would be presented, and the learner would be asked to make decisions that they think will produce the best outcome. The scenarios would be presented through a mixture of text, audio, images, video, and animation. The course would provide immediate feedback to the learner.

Target Audience

The target audience for this implementation is newly licensed drivers and all drivers who have received a citation as an unbelted driver or for carrying an unbelted passenger. If a smaller target group is necessary, it could be specifically targeted to a sub-group of this population such as all multiple offenders or all offenders in a selection of States with low seat belt use.

Current Practice

There currently are no online learning courses on occupant protection that are available at a national level. Texas has an online seat belt course that individuals can take when mandated by a court or to reduce fines. Texas has offered these courses, approved by the Texas Education Agency, for over a decade. Based on a review of one of these courses, there is room to apply some principles of learning in its design. The course was lengthy (6 hours) and mostly text-based with an occasional image or video. It did not make use of current learning technologies and strategies, and some of the content was not current. Also, no evaluations have been conducted to determine the effectiveness of these courses. A research-based model for courses of this type does not appear to exist.

Key Features of an Effective Program

- *Graphics* - a combination of stock photos, existing images, and custom graphics can be used.
- *Animations* - examples might include animations showing crash dynamics.
- *Interactions* - example might be an interactive graph that shows how increased seat belt use has led to lower death rates.
- *Videos* - example might be interviews with people who have been seriously injured as a result of not wearing a seat belt and/or with people whose lives were saved by a seat belt.
- *Scenarios* - course will include simple 2D scenarios where the learner must make a decision for the character involved and will be provided immediate feedback on their choice.
- *Assessment components* - questions will be included at the end of each topic as well as at the end of the course. Questions can include custom drag and drop and hotspot interactions.

Time to Implement

This course is a Level 2 course which should take 127 to 276 hours to develop. The actual time to develop and implement will depend on the length of the course. The development time estimate is based on a one-hour e-learning course and is exclusive of the time to conduct any enabling research.

Estimated Cost

On average, a 1-hour Level 2 course for a single State will cost approximately $19,000 to $50,000 depending on the complexity and developmental constraints. Costs might include:

- Cost for front end analysis,
- Cost to hire subject matter experts (SMEs),
- Cost to hire an instructional designer,
- Cost to storyboard the course,
- Cost to hire a developer to author the course,
- Cost for audio, graphics, animation and video production,
- Cost for project management,
- Cost for quality assurance testing, and
- Ongoing costs for hosting and maintaining the course.

Challenges

- Working with different State laws and infrastructures.
- Working with States that already have online seat belt courses.
- Working with law enforcement and courts in different States.
- Creating scenarios that are relevant to all learners taking the course.

Effectiveness

There are numerous studies that show the positive impact of e-learning in a wide variety of domains, but relatively little research has examined e-learning as it relates to occupant protection. Based on this background, a new course that followed the best current e-learning principles could be effective if people can be compelled or convinced to take it, but this would need to be tested.

What's Still Needed?

Some exploratory work needs to be carried out to gauge interest by States, their law enforcement and judiciary, and their approved insurance companies in using such an intervention as part of a diversionary program, for automobile insurance discounts, or as part of basic driver education. The best ways to get various target groups to take the course need to be identified. The e-learning course itself needs to be developed, piloted, and evaluated to determine how it affects user opinions and behaviors.

Online Learning Module on Occupant Protection: Level 3 Differentiated Game-Based e-Learning

Strategy Description

The Level 3 course would begin by asking the learner a few questions to get a better idea of who the learner is and what their attitudes and habits are regarding seat belt use coming into the course. Learners would then be presented with a series of scenarios that are customized based on their answers to these questions. In these scenarios, they would be asked to make decisions, and the system would provide immediate feedback on whether the choice they made was optimal. All of the content from the previous Level 2 course option would be presented, but it would be embedded within these scenarios. The content would be presented using a mixture of 2D and 3D environments overlaid with text, graphics, animation and narration.

Some game features that might be incorporated include:

- **Challenges:** Each scenario would be presented as a challenge or quest. Learners would learn by doing and then receiving feedback on their actions. The goal of each challenge would be to prevent as many injuries or causalities as possible.
- **Reward System**: A reward system would give users points or badges for successfully completing individual challenges.
- **Progress Bar:** A progress bar would show where the user is in the course and what levels they have completed.
- **Characters:** Users could have the option to select which character they want to be at the beginning of the course.
- **Scoreboard:** A scoreboard could be an optional component for those learners that are motivated by competition. Scoring would be based on how safely the player has responded to the challenges.

The course would incorporate the 36 learning principles identified by James Paul Gee (2004) in the book *What Video Games Have to Teach Us About Learning and Literacy*. Some of the principles include:

- **Active, Critical Learning Principle:** Every aspect of the learning environment is set up to encourage active and critical learning, instead of traditional, passive learning.
- **Achievement Principle:** Learners are given intrinsic rewards that are tailored to each learner's level, effort, and mastery of the content.
- **Multiple Routes Principle:** Learners are given a range of paths to pursue forward, which they can choose based on their strengths, weaknesses, and specific learning styles.
- **Discovery Principle:** Learners are told very little explicitly. Instead they are allowed to explore and discover on their own and learn through getting feedback on actions they take.

- **Transfer Principle:** Learners are given the opportunity to apply learning from earlier stages to later stages.

Below is a sample of the type of scenario that might be used:

> The screen starts off showing a crash happening with a driver and a passenger in the car. The 3D visuals are realistic, and the point of view is from the driver's seat looking out the front windshield. In the scenario, the driver is wearing a seat belt and only has minor injuries. The passenger is not wearing a seat belt and gets thrown from the car resulting in serious life-threatening injuries. Learners are told that they are the driver of the car. What could they have done differently to prevent the crash altogether and to prevent the injuries to himself and his friend? From there they go back in time to when the two friends first got into the car. Learners must observe the entire scenario until the crash and determine at what points they should have done something differently. They must figure out what they did incorrectly and readjust so no one gets injured.

Target Audience

The target audience for this implementation would be all adults who receive a citation for an unbelted driver or passenger and, possibly, teen drivers in a driver education course. The reason for not specifying an age range or gender for the implementation is that the stereotype of the gamer who is a boy 18 or younger is no longer accurate. According to data from the Entertainment Software Association (2014), 59 percent of Americans are playing games. Of those 59 percent, 48 percent are women, and the average game player age is 31.

Nevertheless, parts of the program could be targeted to specific sub-groups based on demographic information provided at login if those groups are overrepresented among nonusers of seat belts. For example, some scenarios could be targeted only to males or to people living in rural areas, two subgroups that continue to have low seat belt use. This customization would ensure that the scenarios are as relevant and impactful as possible to the individual taking the course.

Current Practice

There are currently no known online courses on occupant protection that make use of advanced simulation and gaming technologies. The application of these technological resources combined with appropriate learning principles could uniquely benefit the transfer of occupant protection knowledge to individuals most likely at risk of injury.

Key Features of an Effective Program

- *Game components* – game components such as a compelling storyline, badges, and scoreboards should be dispersed throughout thereby increasing user motivation and engagement.
- *Highly interactive* – the course should be multimedia rich using a mixture of 3D environments, custom interactions, audio, video, animations and images.
- *Active learning* – learners should learn by doing and getting feedback on their actions.
- *Differentiation* – scenarios should be tailored to learners based on their responses to an introductory survey. They should also be customized based on the learner's strengths and weaknesses as they progress through the course. Users who do poorly on one scenario should be presented with another similar scenario later on in the course.
- *Assessment questions* – a formal assessment should be included at the end of the course. Questions can include custom drag and drop and hotspot interactions in addition to more traditional question types such as multiple choice or true or false.

Time to Implement

This course would be a Level 3 course and would likely take 217 to 715 hours to develop and implement. The actual time to develop and implement will depend on the length and complexity of the course. The estimated development hours are based on a one-hour e-learning course.

Estimated Cost

On average, a one-hour Level 3 course will cost approximately $50,000 to $150,000 depending on the complexity and developmental constraints. Costs might include:

- Cost for front end analysis,
- Cost to hire subject matter experts (SMEs),
- Cost to hire an instructional designer,
- Cost to storyboard the course,
- Cost to hire a developer to author and program the course,
- Cost for audio, graphics, animation and video production,
- Cost for project management,
- Cost for quality assurance testing, and
- Ongoing costs for hosting and maintaining the course.

Challenges

- Working with different State laws and infrastructures,
- Working with States that already have online seat belt courses,

- Working with law enforcement and courts in different States, and
- Creating scenarios that are relevant to all learners taking the course.

Effectiveness

There are currently no known online courses on occupant protection that make use of advanced simulation and gaming technologies. By analogy, however, a well-designed course could be effective based on numerous studies that show the powerful impact simulations and games can have on learning in other domains, but this would need to be tested.

What's Still Needed?

Some exploratory work needs to be carried out to gauge interest by States, their law enforcement and judiciary, and their approved insurance companies in using such an intervention as part of a diversionary program, for automobile insurance discounts, or as part of basic driver education. The best ways to get various target groups to take the course need to be identified. The e-learning course itself needs to be developed, piloted, and evaluated to determine how it affects user opinions and behaviors and if this higher level course has a greater impact than the lower level courses.

References

Chapman, B. (2010). *How long does it take to create learning?* (PowerPoint presentation). Salt Lake City, UT: Chapman Alliance. Available at www.chapmanalliance.com/howlong/

Clark, R. C., & Mayer, R. E. (2011). *E-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (3rd Edition). San Francisco, CA: John Wiley & Sons.

Docebo S.p.A. [sic]. (March 2014) *E-Learning Market Trends & Forecast 2014 - 2016 Report*. Athens, GA: Author. Available at www.docebo.com/landing/contactform/elearning-market-trends-and-forecast-2014-2016-docebo-report.pdf

Eberly Center for Teaching Excellence & Educational Innovation. (2008, 2015). Principles of Learning: Theory and Research-based Principles of Learning (Web page). Pittsburgh, PA: Carnegie Mellon University. Available at http://www.cmu.edu/teaching/principles/learning.html

Entertainment Software Association. (2014). *2014 Sales, Demographic, and Usage Data: Essential Facts about the Computer and Video Game Industry.* Washington DC: Author. Available at www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf

Gee, J. P. (2004). *What video games have to teach us about learning and literacy.* New York: Palgrave Macmillan.

Ho, C-L., & Dzeng, R-J. (2010). Construction safety training via e-learning: Learning effectiveness and user satisfaction. *Computers and Education, 55*(2), 858-867.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation, and Policy Development. Available at www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

Sitzmann, T. (2011). A Meta-analytic Examination of the Instructional Effectiveness of Computer-based Simulation Games. *Personnel Psychology, 64*(2), 489-528.

Wahlberg, A. E. (2013) Evaluation of an e-learning seat belt wearing intervention. In T. Hamada, (Ed.). *E-learning New Technology, Applications and Future Trends.* Hauppauge, NY: Nova Science Publishers.

Wouters, P., van der Spek, E. D., & van Oostendorp, H. (2009). Current Practices in Serious Game Research: A Review from a Learning Outcomes Perspective. In T. Connolly, M. Stansfield, & L. Boyle (Eds.), *Games-Based Learning Advancements for Multi-Sensory Human Computer Interfaces: Techniques and Effective Practices* (pp. 232-250). Hershey, PA: Information Science Reference.

Chapter 5: Product/Message Placement (Embedded Marketing)

Occupant Protection Strategy Objective: This strategy applies product/message placement (embedded marketing) techniques to subtly and naturally insert the positive depiction and description of the use of occupant restraints within the normal flow of a movie, television program, or other medium to increase awareness and alter behaviors without blatantly indicating to the observer/user that the message placement is, in fact, a seat belt related advertisement. Product/message placement for occupant protection can be executed in almost all media including radio, video games, music, video/DVDs, magazines, books, musicals, mobile phone applications, and content on the Internet.

Rationale

The invention of the digital video recorder, on-demand television/movie services, and Internet media streaming services (including Internet radio) allows users to fast-forward or skip traditional commercials, or commercials are omitted altogether by the content provider if a pay-for-service model is used. As such, many advertisers increasingly rely on product placement to showcase their wares and influence consumer behaviors (Munger, 2009). NTHSA's high-visibility enforcement model relies heavily on traditional paid media about enforcement, primarily television and radio advertisements, which means public exposure to the safety messages may be decreasing as a function of the above mentioned advancements in technology and associated changes in consumer behaviors. Integrating highway traffic safety messages into the media content itself may be one way to reclaim some of the lost exposure and improve safety behaviors.

Background

General Product/Message Placement. Newell, Salmon, and Chang (2006) note that product placement was initially a way for movie studios and television networks to reduce the cost of production through borrowed props. The technique first appeared in Lumiere films in Europe in 1896. Williams, Petrosky, Hernandez, and Page (2011) provide an overview of product placement and why it is becoming more popular, cite a multitude of other authors who have written about the subject, and note:

> *Due to media fragmentation, media proliferation, and declining advertising efficacy, product placement increasingly is becoming an effective way to reach consumers and nonusers (Mackay, Ewing, Newton, [&] Windisch, 2009). It is estimated that two-thirds of TV viewers cut the sound during commercials, channel-surf, or skip them altogether because they are annoying or irrelevant*

(Kiley, 2006). Smit, van Reijmersdal, [&] Neijens (2009) have found that the industry considers brand placement and brand-integrated programs as the future of television advertising.

There are three primary product placement strategies (d'Astous & Sequin, 1999, and Panda, 2004, both in Williams, Petrosky, Hernandez, & Page, 2011):

1. *Implicit product placement strategy*: The brand, logo, the firm, or the product is presented passively with only clear visibility within the program without being expressed formally. This product placement is more contextual or part of the background with no clear demonstration of product benefits, for example, wearing clothes with the sponsor's name or a scene in front of the clothing store. A second type of implicit product placement strategy is when the product is used in a scene, but no spoken attention is given to the product.

2. *Integrated explicit product placement strategy*: In this strategy, the brand, logo, the firm, or the product plays an active role in the scene and is expressed formally within the program or plot, for example, pizza from a particular vendor delivered in a scene where everybody is starving and actually eats it. That is, the attribute and benefits are demonstrated clearly and mentioned by the main star. In general, explicit product placements are more effective than implicit placements (Panda, 2004).

3. *Non-integrated explicit product placement strategy*: In this strategy, the brand, logo, the firm, or the product is formally expressed but not integrated into the content of the program, for example, the program was sponsored by a particular company. This type of reference normally is included in a sponsorship deal.

Two other key features of strategies/programs that impact effectiveness include:

- A favored character or protagonist in the show must also promote the product for an audience member of a television show to purchase the product (Patton, 2014).

- A product that is prominent and highly connected to the plot in movies improves brand awareness, irrespective of other variables of a given placement (Cholinski, 2012).

Health Message Placement. Using message placement strategies to influence positive health decisions and improve health behaviors is a relatively new concept given how long the approach has been applied to influencing general consumer purchasing behaviors and brand awareness. The USC Annenberg Norman Lear Center's Hollywood, Health & Society (HH&S) division was created to provide the entertainment industry with access to both accurate and timely information regarding health topics for storylines (USC Annenberg Norman Lear Center, 2014b). Born out of a pilot project with the CDC and the need to provide the public with accurate information about HIV in the late 1990s, HH&S maintains a current database of health and safety information across a wide range of topics and actively works to educate directors, producers, writers, and others involved in media production.

According to the HH&S, between 2009 and 2012 the program worked with 91 television series on 35 different networks, influenced the health information content of shows that have millions of viewers, conducted 86 expert briefings, confirmed 565 air dates for storylines they have influenced, presented at over 70 professional conferences, and published 6 peer-reviewed journal articles (USC Annenberg Norman Lear Center, 2014a). In the past 5 years, HH&S has received more than 1,000 inquiries, consulted on television shows that have viewership reaching approximately 20 million, and has worked on topics ranging from cancer treatment in shows like *Breaking Bad* to the importance of wearing bicycle helmets in the cartoon *Doc McStuffins* (Mink, 2015).

The HH&S program is funded by several philanthropic and government agencies. The CDC, for example, provides funds to HH&S and maintains a set of quick facts developed for the program on its website (CDC, 2015).

Some media are specifically designed to educate but to do so in an entertaining way. This entertainment-education model (e-e) is not new. Its gold standard in the United States has been Sesame Street, whose childhood viewers have shown higher literacy scores than non-viewers (Mink, 2015). Some newer media programming has taken the e-e model beyond television to streaming Internet video that can be displayed on computers and hand-held devices (e.g., Netflix, Hulu, or Amazon Prime). In so doing, storytellers have engaged health and safety experts such as HH&S to improve the plausibility and accuracy of safety messages that are central to their stories. This increased level of message placement includes aligning the message with the audience and improving the fit between the audience and the message to improve message recognition, recall, and positive attitude. In a modern advertising approach that makes use of product placements, the method of delivery must be included in the assessment of fit between the audience and the brand.

Philanthropic organizations, such as the Gates Foundation, often seek to influence the content of television programs using only advice and prodding. They have promoted the collaboration of medical professionals with television production staff both to ensure the accuracy of program content and for the purpose of outreach. Sometimes these organizations offer funding to offset production costs in return for including a given message, but most times they seek to mold message content, placement, and outreach using only their influence without any financial incentive for the entertainment industry.

Summary of Relevant Research

It has been suggested that when a character in a television series says or does something that relates to a product or idea, it can be more effective than other forms of traditional advertising such as printed mailers and pamphlets (Arango & Stelter, 2009). Product and message placement are most effective if they are part of an integrative marketing approach that appropriately aligns the product or message with salient characteristics of the target audience (Belch & Belch, 2004). The better the fit between the two, the greater the product recognition (Brennan & Babin, 2004), recall, and creation of a positive attitude towards the product (Gupta & Gould, 1997). It is also essential, however, that the method of delivery is included in the assessment of fit (Guennemann

& Cho, 2014). If a product is placed in a media tool (e.g., radio, television, website, movie) that is not a good fit for the intended consumer audience, the effectiveness on brand awareness, familiarity, and message content will be degraded.

Market research consistently shows that product placement can be very successful for increasing sales or brand awareness as exemplified by the 65% increase in Reese's Pieces sales after its placement in *E.T. the Extra-Terrestrial*, or the 50% increase in Red Stripe sales after its placement in *The Firm* (Zimmerman, 2013). Compared to the other forms of advertising, product placement generally delivers a better return on investment and significantly increases brand awareness (Aydin & Soba, 2013). There is evidence that product placement can influence even large purchases such as for a new automobile. For example, it is estimated that BMW Z3 model sales increased substantially after it was included in the James Bond movie *Golden Eye* (Weithoff, 2004). Similarly BMW placed the R1200c motorcycle in *Tomorrow Never Dies* (Broccoli, Waye, Wilson, & Spottiswoode, 1997), and that model went on to be the best-selling motorcycle in 1998 (Falloon, 2015).

According to Guennemann and Cho (2014), there are multiple reasons why product placement can affect perception and action. These stem from the fact that product placement allows the seller or brand to place their product in a themed setting repeatedly with small variations, thereby enhancing the encoding and memory of the theme and also the product. Repetition of strategic product placement can create mnemonic cues in the mind of the consumer, and ultimately improve awareness of the message, product, or brand (Guennemann & Cho, 2014). As an example, Guennemann and Cho conducted a survey and found that BMW's substantial product placement efforts were paying off as the survey respondents were much more likely to recall BMW's brand than any other auto manufacturer, especially when movies were the media format. This increased recall, combined with the increases in sales of BMW vehicles, suggests that the approach is working not only to shape awareness, but also to affect purchase decisions.

Others point out that reasons for the effectiveness of product placement are not yet fully understood. Williams, Petrosky, Hernandez, and Page (2011) warn that the marketing industry does not yet thoroughly understand the complex relationships between the many antecedents and consequences of product placements. The authors suggest the importance of seamless product integration into the media tool and the proper amount of saliency for consumer recollection. Williams and colleagues note that when the product or message placement is good, the customer will attend to a message about a product, the client gets inexpensive marketing, media gets to use a product for free, or offsets some cost of production, and the product placement agency ultimately makes money for establishing the relationship between the parties.

Specific to health messages embedded in entertainment media, Brodie et al. (2001) found that viewers showed increased awareness of emergency contraception and human papilloma virus (HPV) after they watched episodes of *ER* that discussed the topics. It is important to note, however, that awareness tended to decrease back to or slightly above baseline levels a few months later. Over half of the *ER* viewers said they gained important health information from watching the show. The percentages that reported gaining important health information were higher among less educated and non-white respondents. In addition, 23% of the *ER* viewers surveyed said they had gone to other sources to find additional information on a topic after

seeing it on the show, and another 12 to 15% said they actually spoke to a doctor about a health issue after seeing it on the show (Brodie et al. 2001). In industrial safety training environments, this "backsliding" to prior poor behaviors is countered by repetition and reinforcement of the message. This reinforcement may be less feasible in a mass media environment in which the topic is constantly changing.

Cowan, Dubosh, and Hadley (2009) examined seat belt use in movies. In 48 of 50 movies with vehicle scenes (53% PG-13; 33% R; 10% PG; 4% G), 518 scenes were coded (82% car/truck; 7% taxi/limo; 7% motorcycle; 4% bicycle/skateboard). Overall, the seat belt use rate was 15.4%. No differences in seat belt use rates were noted for high-speed or unsafe vehicle operation. The injury rate for unbelted characters involved in crashes was 10.7%. The pattern was different for primetime television with seat belts being worn by 62% of individuals in television programs and 86% for automobile commercials (McGwinn et al., 2006). It is not clear at this point, however, how much effort has been put forth to increase seat belt use in movies and television through message placement. The low rates of use in the studies above suggest that either little is being done to promote seat belt use on the screen or the industry has not been receptive of efforts to date. In either case, there is room for improvement.

No research was identified that specifically focused on seat belt use message placement and its impacts on viewer awareness or actual seat belt use behaviors.

Product/Message Placement in Television and Film for Occupant Protection

Strategy Description

This strategy involves working with product placement specialists, media production companies, media distributors, and other stakeholders to increase the positive depiction of seat belt use in media. It includes maximizing the use of seat belts in movies, television, and other entertainment media and including a positive seat belt safety "spin" in dialogue and action when appropriate to the dramatic context.

Target Audience

The strategy itself targets product placement specialists, directors, producers, script writers, technical advisors, stunt coordinators, the talent, and others, including automobile manufacturers that place products, who have control over the actions of actors or the content of a given production. The ultimate target audience, however, is consumers of the media who may be influenced to wear seat belts because of the media portrayal of proper use and the presence of messages in the media that reinforce seat belt use.

Current Practice

Some children's shows such as *Peppa Pig* and *Dora the Explorer* include seat belt use by their characters and overt safety messages in an attempt to positively impact children. It is unknown at this point how much effort is being put into working with entertainment media organizations to increase adult seat belt use in movies and television in an attempt to impact viewers' awareness and safety behaviors. Likewise, the extent to which a product placement approach has been attempted with the print media, Internet content such as pictures and videos, and radio (both satellite and terrestrial) is unknown.

Key Features of an Effective Program

- Changes must be simple and incur minimal cost (or produce revenue).
- Character actions or message placement must integrate seamlessly into the scene and be dramatically appropriate.
- Results of use or non-use of seat belt during a crash must be realistic but not appear promotional or preachy.
- Producing or distributing organizations should obtain some benefit when possible
- Subject matter experts should be available to answer questions from the production organizations and provide continuity support during film/video production.
- High profile/influential supporters (e.g., Gates Foundation, famous actors) should be enlisted to assist with networking.
- Involvement of an intermediary organization that specializes in product/message placement can facilitate the process.

Time to Implement

Given that there are possible partner organizations such as HH&S that are already actively promoting health message placement in media, the time required to implement this strategy could be relatively short. Also, working with other partners such as auto manufacturers that are also already conducting product placement of their own would require little effort and time for implementation. An interested party would simply need to coordinate with their product placement specialists to coordinate plans for including appropriate seat belt messages/depictions when their vehicles appear in movies, television, programs, or commercials. If the effort must start from scratch as the CDC did regarding HIV messages, a panel meeting, planning, pilot testing, and full implementation could take a year or more to complete.

Estimated Cost

Costs will vary depending on the extent that pre-existing relationships or partnerships can be used. It is unknown how much funding would be needed to support an organization such as HH&S in order to specifically address seat belt use. It may be possible to use existing funding from other government or private entities to host panels and create tip sheets for writers. Alternatively, a contract could be let to develop a series of placement guides for the various media and to work with product placement specialists to get the guides distributed and used. An effort such as this might cost $200,000.

Challenges

- Identifying and working with people/organizations that already have the necessary contacts and infrastructure in place to work with content producers and distributors.
- Getting script writers, producers, product producers, etc. to buy in.
- Identifying the full range of possible placement opportunities so that producers "know it when they see it."
- Finding ways to repeat and reinforce the message.
- Creating and distributing a "guide" (tip sheet) to achieve seat belt product placement that will garner the attention of potential users and actually get used.

Effectiveness

Evidence from other domains suggests that viewers will attend to the embedded actions and messages contained in entertainment media and that these messages can impact behaviors (either positively or negatively). It is unknown, however, if more seat belt product placement will translate into increased awareness regarding seat belt safety and increased seat belt use by the viewing public. On the other hand, there is virtually no chance that the approach can be counterproductive, and its cost can be low.

What's Still Needed?

Although the generic approach itself is mature, more work is needed to develop the best methods for placing occupant protection messages. Specific recommendations and content as a function of medium, audience, and show/material genre (e.g., action, comedy, and youth) must be created and made available for distribution to media production and distribution organizations. Subject matter experts must be available to assist in script writing to ensure proper seat belt use is being employed and that the consequences of use and non-use are accurately displayed. The entire process can be accelerated if it is possible to team with an existing organization such as HH&S. Modeling their approach can save time and likely increase effectiveness. The approach should be evaluated when possible to determine if people are attending to the messages in the various media and how the messages impact their seat belt use opinions and behaviors.

References

Arango, T., & Stelter, B. (2009, April 1). Gates Foundation and Viacom team up to weave messages into TV shows. *The New York Times*. Retrieved from www.nytimes.com/2009/04/02/arts/television/02gates.html?_r=0

Aydin, M., & Soba, M. (2013). Product Placement Efficiency in Marketing Communication Strategy. *International Journal of Business and Management, 8* (12). 111-116.

Belch, G., & Belch, M. (2004). *Advertising and promotion – An integrated marketing communications perspective* (6th ed.). New York, NY: McGraw-Hill/Erwin.

Brennan, I., & Babin, L. A. (2004). Brand placement recognition: The influence of Presentation Mode and Brand Familiarity. *Journal of Promotion Management*, *10*(1), 185–202.

Broccoli, B., Waye, A., Wilson, M. G. (Producers) & Spottiswoode, R. (Director). (1997). Tomorrow Never Dies [Motion picture]. London: Eon Productions.

Brodie, M., Foehr, U., Rideout, V., Baer, C., Miller, C., Flournoy, R., & Altman, D. (2001). Communicating health information through the entertainment media. A study of the television drama ER lends support to the notion that Americans pick up information while being entertained. *Health Affairs. 20*(1): 192-199.

Centers for Disease Control and Prevention. (2015, April 23). Gateway to Health Communication & Social Marketing Practice (Web page). Atlanta: Author. Retrieved from the CDC website at https://www.cdc.gov/healthcommunication/

Cholinski, A. (2012). The effectiveness of product placement: A field quasi-experiment. *International Journal of Marketing Studies, 4* (5), 14-28.

Cowan, J. A., Dubosh, N., & Hadley, C. Seatbelt and helmet depiction on the big screen: Blockbuster injury prevention messages? *Journal of Trauma . 66(3):*912–917. doi: 10.1097/TA.0b013e318166d740.

Falloon, I. (2015). *The Complete Book of BMW Motorcycles: Every Model Since 1923.* Minneapolis, MN: Motorbooks International.

Guennemann, F., & Cho, Y. C. (2014). The effectiveness of product placement by media types: Impact of image and intention to purchase. *Journal of Service Science*, *7*(1), 29–42.

Gupta, P., & Gould, S. (1997). Consumers' perceptions of the ethics and acceptability of product placement in movies: Product categories and individual differences. *Journal of Current Issues and Research in Advertising*, *19*(1), 37–50.

McGwin, G. Jr., Modjarrad, K., Reiland, A., Tanner, S., & Rue, L.W. III. (2006). Prevalence of transportation safety measures portrayed in primetime US television programs and commercials. *Injury Prevention, 12*(6): 400–403.

Mink, C. (2015, April 21). *Entertaining the Facts: Hollywood Health And Society* (Web page, "Neon Tommy," USC online publication). Los Angeles: USC Annenberg School for Communication & Journalism. Retrieved from www.neontommy.com/news/2015/04/entertaining-facts-hollywood-health-and-society-0

Munger, D. (October 2009). Product placements in movies: When they work, and when they don't. *Science Blogs. Cognitive Daily.*

Newell, J., Salmon, C. T., & Chang, S. (2006). The hidden history of product placement. *Journal of Broadcasting & Electronic Media*, *50*(4), 575-594.

Patton, D. (2014). A Study of the Effect of Product Placement in Television Shows and Its Influence on Consumer Behavior. (Senior thesis for bachelor of arts degree). San Luis Obispo, CA: California Polytechnic State University.

USC Annenberg Norman Lear Center. (2014a). History/HH&S By the Numbers (Web page). Beverly Hills, CA: Author. Retrieved from the HH&S website at https://hollywoodhealthandsociety.org/about-us/history-hhs-numbers

USC Annenberg Norman Lear Center. (2014b). [No title] (Web page with no specific title). Beverly Hills, CA: Author. Retrieved from the HH&S website at https://hollywood-healthandsociety.org/

Weithoff, T. (2004, September 6). Product Placement: Hollywood tinny heroes. (Translated Spiegel Online webpage). Available at www.spiegel.de/auto/aktuell/product-placement-hollywoods-blecherne-helden-a-303380.html

Williams, K., Petrosky, A., Hernandez, E., & Page, R. (2011). Product placement effectiveness: Revisited and renewed. *Journal of Management & Marketing Research, 7*, 1-24.

Zimmerman, I. (2013, March 25). Product Placement can be a lot more powerful than we realize (Web page for *Psychology Today* magazine*).* Available at https://www.psychologytoday.com/blog/sold/201303/product-placement-can-be-lot-more-powerful-we-realize

APPENDIX: THIRTEEN STRATEGIES

1. Function-specific seat belt assurance system
2. Incentives
3. Partner with other formal safety programs
4. Computer-based interventions
5. Involve intermediaries within defined common interest group
6. Innovative seat belt design
7. Strategies modeled after workplace safety programs
8. Checklists
9. Enhance seat belt safety culture
10. Consequence and relative risk advertising
11. Classic advertising and marketing strategies
12. Non-belt user recognition system
13. Simulate implications of nonuse in crash

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