

INCREASING TEEN SAFETY BELT USE: A PROGRAM AND LITERATURE REVIEW



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16. Abstract A comprehensive review of the scientific literature, State and Federal Government reports, and other sources of information was conducted to determine the magnitude of the problem of teen safety belt use and to identify and summarize programs, interventions, and strategies that can potentially increase safety belt use by teens. Nearly 270 documents were reviewed. Proven effective strategies that increase safety belt use in the general population may have the most immediate and greatest potential for increasing teen safety belt use. These include upgrading State safety belt laws to primary enforcement and conducting highly publicized enforcement of safety belt use laws. With regard to strategies targeting teens, graduated driver licensing laws that explicitly include requirements for safety belt use in all three phases of licensure and provide sanctions that prohibit "graduation" to the next licensing phase if there is a safety belt citation, may be very effective. 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. Technological solutions hold promise for the future. Enhanced safety belt reminder systems appear to be effective for the general population. The effects of reminders, safety belt use monitoring devices, interlock devices, and improvements in comfort and convenience on teen belt use need to be explored. Interlock systems, such as not allowing the radio or cassette/CD player to turn on until all passengers are wearing safety belts, also hold promise and could be very effective in increasing safety belt use, particularly for teens. Combinations of strategies seem to work better than one strategy alone. A community program including education, diversity outreach, highly publicized enforcement, and parental involvement would likely have a substantial effect on teen belt use. However, these strategies would probably need to be sustained for the effect to last over time. While each strategy is not without barriers, careful planning, implementation and evaluation can result in effective programs and add greatly to our knowledge of teen safety belt use.					
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Executive Summary

A comprehensive review of the scientific literature, State and Federal Government reports, and other sources of information was conducted to determine the magnitude of the problem of teen safety belt use and to identify and summarize programs, interventions, and strategies that can potentially increase safety belt use by teens. Nearly 270 documents were reviewed for this report.

It is clear from the statistical data, a comprehensive review of the literature, and discussions with various officials concerned with this issue, that the most promising strategies available to increase safety belt use by teens are likely to be those strategies that have proven to increase safety belt use in the general population. These include the following and are tailored, where appropriate, to the youth situation:

Legislation

Primary safety belt laws, if highly publicized, have been shown to increase safety belt use in the general population. The National Highway Traffic Safety Administration (NHTSA) recently estimated that adopting primary safety belt laws raises safety belt use by 11 percentage points. Teen belt use is also higher in States with primary safety belt laws. From 1998-2002, teen driver belt use was significantly higher in crashes in states allowing primary enforcement (49%) than in crashes in states allowing only secondary enforcement (30%).¹¹⁴ The evidence suggests that passing primary safety belt laws probably would have the greatest and most immediate effect on teen safety belt use.

A majority of States have adopted graduated driver licensing (GDL) laws with three phases of licensure. Many of the GDL laws either include safety belt use as a provision, and some provide for sanctions if a safety belt violation occurs. However, most teens and most parents are not aware of this requirement in GDL. Most are aware of nighttime restrictions and passenger restrictions, but not the consequences of a safety belt violation. For example, in a recent North Carolina study, 92 percent of the parents and 96 percent of the teens were aware of the nighttime restriction in the GDL, and 82 percent of the parents and 86 percent of the teens were aware of the passenger restriction. However, only 5 percent of the parents and 3 percent of the teens were aware of a safety belt requirement in the GDL law, and that a safety belt violation would affect their graduation to the next phase.⁵⁶ If safety belt requirements and consequences for safety belt violations are publicized and enforced, this element of GDL could substantially increase safety belt use by teens in the future.

Safety belt violations result in points on the license in only one known jurisdiction in the United States (the District of Columbia). While there is no solid research on this provision to date, the potential for increasing safety belt use rates, especially for teens, is likely if this sanction is adopted, publicized, and enforced by the States.

Enforcement

Highly publicized and visible increased enforcement of safety belt laws has been shown to increase safety belt use in the general population. It is reasonable to assume that teen belt use would increase concomitantly. The highly publicized mobilizations using the *Click It or Ticket* (CIOT) theme have demonstrated that safety belt use will increase even in secondary enforcement States. If CIOT enforcement is tailored to young drivers (e.g., near high

schools, colleges, and recreational facilities) and is publicized over youth-oriented radio and television stations, safety belt use by teens could be substantially increased.

Combined Efforts (comprehensive approaches including two or more strategies)

Four NHTSA Teen Demonstration Projects and other research of strategies that affect teen behavior indicate that combined approaches, such as strengthening safety belt laws, educating the public, publicizing the new or existing law, enforcing the law, and working with community organizations to provide outreach to the public, have good potential to increase safety belt use. Most of the research shows that it takes combined strategies involving education, publicity, visible enforcement, and community outreach to affect behavior in the traffic safety arena.

There are other strategies, which if aimed specifically towards teens, appear to have the potential to increase safety belt use for that population. These include:

Technological Approaches

While enhanced safety belt reminders such as buzzers, lights, and messages on the dashboard are aimed at the general population, they may be particularly effective for teens. Several factors contribute to this assumption, including that teens have a lower safety belt use rate to begin with, they tend to “forget” to buckle up in the car, and they are probably less likely than adults to disengage such systems. Some parents may want to buy cars for their teens equipped with reminder systems to ensure or enhance safety belt use. As more cars are equipped with enhanced reminder systems, the potential for their effect on youth increases.

In-vehicle computer systems already exist to record and monitor safety belt use, speed, and other behaviors. It remains to be seen if parents will purchase vehicles for their teens equipped with these monitors; if so, use of the systems could increase teen safety belt use substantially.

Peer-Led Approaches

Peer-led educational and awareness approaches hold promise in changing youth norms and attitudes about safety belt use. Whether this translates to sustained high-use rates is unclear. There is some evidence that youth-initiated monitoring of safety belt use may have a modest effect on teen belt use. A large program needs to be demonstrated, such as the Mothers Against Drunk Driving (MADD) Youth in Action programs that perform compliance checks on underage purchase of alcohol, to determine if this peer-to-peer strategy could be effective in the safety belt arena.

MADD and other organizations have developed multimedia shows for schools that attempt to persuade youth to wear safety belts and not engage in underage drinking. Some of these shows, which are based on a peer-to-peer message, are in the process of being evaluated for their effectiveness. Thus far, self-reported safety belt use has increased for students exposed to these shows, but it remains to be seen if observational surveys will verify that result.

Counseling

At least one study showed that brief counseling in a medical setting may increase self-reported safety belt use by teens. If brief interventions in medical settings are used more frequently to reduce abusive drinking and impaired driving, they might also be effective in increasing safety belt use, especially by youth.

Parental Involvement

Parents simply talking to teens about safety belt use, without supporting activities, probably will not be effective. However, parental communication combined with close monitoring and supervision of teen behavior could have an effect. Teens report that their parents have more influence over them than parents think. For example, one State observational survey showed that youths 5 to 15 wore safety belts 72 percent of the time; however, when an adult driver was restrained, the age-5-to-15 passenger was restrained 85 percent of the time. In contrast, another observational survey of older teens (high school age 14 to 18) showed that teens were buckled up only 50-60 percent of the time when an adult dropped them off at school in the morning. While the above study results are inconsistent, other public health areas have indicated that parents can have an influence on risk-taking behavior (e.g., smoking). Therefore, it appears this strategy does have potential for increasing safety belt use by teens.

Summary

In summary, proven effective strategies that increase safety belt use in the general population will likely have the most immediate and greatest potential for increasing teen safety belt use. These include upgrading State safety belt laws to primary enforcement and highly publicized enforcement of safety belt use laws. GDL laws that explicitly include requirements for safety belt use in all three phases, and sanctions that prohibit “graduation” to the next licensing phase if there is a safety belt citation, could increase teen belt use substantially. Community programs that combine education, peer-to-peer persuasion, publicized enforcement, and parental monitoring have some potential for increasing teen belt use.

Technological solutions hold promise for the future as well. Enhanced safety belt reminders appear to be effective for all age groups. Safety belt use recorders could allow parents to monitor teens’ behavior, if accepted by the public. Interlock systems, such as not allowing the radio or CD player to turn on until all passengers are wearing safety belts, also hold promise and could be very effective for teens.

Combinations of strategies seem to work better than one strategy alone. A community program including education, diversity outreach, highly publicized enforcement, and parental involvement would likely have a substantial effect on teen belt use. However, these strategies would probably need to be sustained for the effect to last over time. While each strategy is not without barriers, careful planning, implementation, and evaluation can result in effective programs and add greatly to our current knowledge of teen safety belt use.

I. Introduction

A. The Leading Cause of Death for Teens—Motor Vehicle Crashes

The leading cause of death for young people 16 to 20 years old is motor vehicle crashes.¹⁶² The teen traffic crash death rate – more than 5,000 teen deaths per year – is high no matter how it is calculated (per 100,000,000 vehicle miles traveled by teens; per 100,000 licensed teen drivers; or per 100,000 teens in the population).²⁵⁹ The teen population in the United States has increased 12 percent since 1993 and is expected to increase another 7 percent by 2005.¹⁶⁷ Unless effective measures are implemented, it can be expected that teen deaths will increase commensurately.

B. Safety Belt Use Among Teens and Contributing Factors

One of the major reasons teens are killed or seriously injured when involved in traffic crashes is lack of safety belt use. A recent safety belt use survey (for 2002) indicates that only 69 percent of 16- to 24-year-olds use safety belts, compared to 82 percent of children and 76 percent of adults 25 to 69.⁶² The Fatality Analysis Reporting System (FARS)²⁵⁹ shows that more than two-thirds of teen occupants killed in crashes are not wearing safety belts. An observational survey conducted at high school parking lot entrances found that almost half (46%) of high school students were not belted when riding with an adult, even when half of the adults they were driving with were belted.⁹⁰

C. Effectiveness of Safety Belts in Reducing Injury and Fatalities in Motor Vehicle Crashes

The wearing of safety belts saved an estimated 14,164 lives in 2002. If 85 percent of passenger vehicle occupants older than age 4 wore safety belts, an additional 2,701 lives could have been saved in 2002,²⁶⁸ totaling 16,865 lives. Unbelted drivers account for 75 percent of impaired-driving fatalities. Safety belts reduce the chances of being killed or seriously injured in a motor vehicle crash by almost 50 percent,²⁶⁸ because they prevent ejection from the vehicle, spread forces from the crash over a wide area of the body, allow the body to slow down gradually, and protect the head and spinal cord from serious injury. Most teens are taught this in driver's education classes and are well aware of the benefits of wearing safety belts.

D. Economic Costs of Not Wearing Safety Belts

Almost 85 percent of all medical costs for crash victims fall on society, and not on the individuals involved. Medical costs for unbelted crash victims are 50 percent higher than for those who are belted. Employer health care spending on crash injuries is nine billion dollars annually. Another nine billion dollars is spent on sick leave and life and disability insurance for crash victims.²⁵⁵

E. Attitudes of Teens Regarding Safety Belt Use

According to the 2003 Motor Vehicle Occupant Safety Survey (MVOSS) sponsored by NHTSA, teen drivers are less likely to wear a safety belt “all the time” (79%) than older drivers (84%).¹⁵ About one-half (47%) of 16-20-year-olds reported they agreed that safety belts “were as likely to harm as to help,” compared to 34 percent of those 21-64. Teens were also more likely to agree that a crash close to home was usually “not as serious” (30%), that wearing a safety belt makes them “worry more about being in an accident” (27%), and that they would feel “self-conscious if they were going against the group norm in wearing safety belts” (30%) than older drivers, according to the MVOSS.

Research also shows that when a driver of a motor vehicle wears a safety belt, a toddler in that vehicle also is restrained 86 percent of the time. However, when the driver is not restrained, toddlers in that vehicle are only restrained 24 percent of the time.⁶⁴ Thus, parents play an important role in conditioning youth to wear safety belts. The percentage of teens who say in surveys that they “rarely or never wore safety belts” ranges from 8 to 27 percent, depending upon the State.²⁷ This generation of teenagers mostly have been brought up in child safety and booster seats, and have been exposed to safety belt use laws and education. More teens are subject to GDL laws and policies concerning safety belt use than ever before. Yet teens do not wear safety belts at adult rates.

F. Socioeconomic Impact of Non-Belt Use Among Teens

While it is important that people of all ages wear safety belts, it is especially important for teenagers because their crash rate is extremely high. Every 9 seconds, someone is injured in a traffic crash and every 13 minutes, someone is killed in a traffic crash. Safety belts presently save about 11,000 lives a year in America. Wearing a safety belt is the best protection against drunk, tired, or aggressive drivers. As safety belt use increases from 70 to 85 percent, 5,300 lives will be saved and 100,000 injuries prevented each year. This would save society almost \$7 billion dollars each year in direct costs.²⁶⁸

G. The Problem Presented by Teenage Failure to Buckle Up

Teenage safety belt wearing rates from observational and crash-involvement studies consistently show lower wearing rates compared to older adults. Surveys indicate from observations that teens wear safety belts at rates 5-15 percent less often than most older adult age groups. The FARS²⁵⁹ indicates that 63 percent of fatally injured teens in crashes were not wearing safety belts, compared to 55 percent for older adult (21 and older) occupant fatalities.

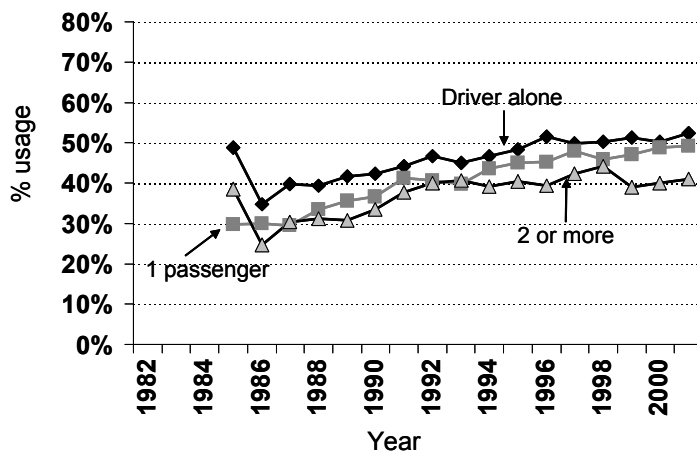
H. Theories on Why Teens Fail to Buckle Up

There are many theories presented in the scientific literature^{5181 133} on why teens have low safety belt use rates and high traffic-crash rates. Briefly, among the most frequently cited theories are the following:

- *Inexperience*: It takes time to learn how to drive a vehicle, how to drive under various circumstances and conditions, and how to react in emergency situations. Thus, the high crash involvement rate for teens. Many teens who don't wear safety belts have not been in a crash yet and have not experienced the forces and energy involved firsthand.

- *Immaturity:* Teens lack the maturity of most adults. Studies show that youth are more likely to engage in riskier behaviors while driving.
- *Immortality:* Teens tend to underestimate risks of driving and crashing, and exhibit an “optimistic bias.” They do not think they will get into a crash, so they do not think they need protection if they are involved in a crash.
- *Emotionality:* This trait is sometimes termed as “raging hormones.” Teen emotions affect their thinking and subsequent behavior, such as “forgetting” to wear safety belts.
- *Sensation Seeking:* Many teens are adventurous and tend to seek out excitement. Not wearing a safety belt is a thrill to some of them.
- *Risk Taking:* Many teens take greater risks in all areas of life than their adult counterparts. Because teens do not yet understand the risks involved in certain behaviors, nor the potential consequences, they often tend to act impulsively.
- *Power of Friends:* Teens, especially high school students, are greatly influenced by their peers. If peers do not wear safety belts, they probably will not either. If peers chastise them for wearing a safety belt, many teens will unbuckle it.
- *Power of Parents:* Parental permissiveness or strictness could be a factor related to changing teens’ behavior. Teens with parents who are persistent and monitor teen belt use are more likely to buckle up.
- *Distractions:* There is some evidence that teens are more easily distracted while driving, especially when they have other teen passengers. Note the lower teen safety belt use rates when they are accompanied by passengers (figure 1).

Figure 1: Safety Belt Use and Number of Passengers in the Vehicle – States with Secondary Laws (Source: FARS)

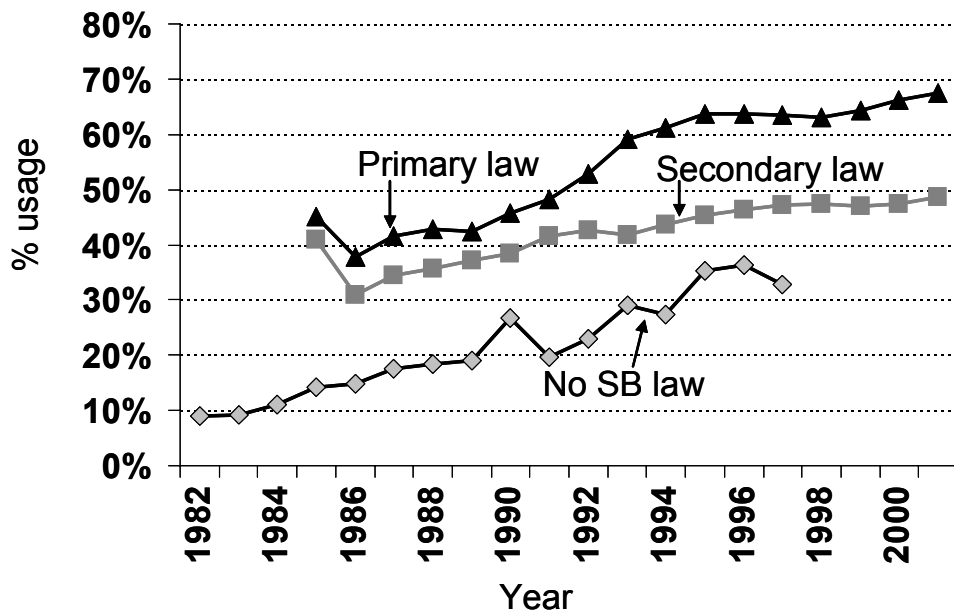


I. Key Programs and Interventions

NHTSA’s Integrated Project Teams Report (IPT) on Initiatives to Address Safety Belt Use²⁶¹ discusses various approaches to increasing safety belt use in general. The following strategies described in that report and other reports all have potential for increasing teen safety belt use.

Safety belt use laws. Primary and secondary enforcement laws and the strengthening of other components of the laws (e.g., types of vehicles, locations and ages of occupants covered by laws, the use of fines, and points on the license, etc.) can all have an effect on teen safety belt use^{e.g.32}. Note the effect of teen wearing rates as a function of their States’ safety belt laws (figure 2).

Figure 2: Safety Belt Use by 16- to 20-Year-Old Drivers in Fatal Crashes as a Function of State Safety Belt Laws (FARS)



High-visibility enforcement. Special Traffic Enforcement Programs (STEPs), *Click It or Ticket* mobilizations, and other enforcement programs have been shown to increase safety belt use by teens.

Increased sanctions. Increased sanctions for safety belt violations including increased fines and points on the driver’s license have significant potential to increase teen safety belt use.

Incentive programs. Rewarding teens for buckling up via high school reward programs and insurance incentives have been shown to increase teen safety belt use.

Parental management. Programs for parents to monitor teens more closely and establish restrictions on teen driving, including safety belt use, number of passengers, and curfews also have potential for increasing teen belt use^{e.g.146}.

School and employer policies. The effects of school and employer policies on safety belt use by teens have not been evaluated, but could have some limited effect.

Vehicle strategies. The effects of reminders, safety belt use monitoring devices, ignition interlock devices, and improvements in comfort and convenience on teen belt use need to be explored.

Other public health interventions. Information on the effects of other public health interventions that have worked to change the risky behavior of teens, such as antismoking campaigns, safe sex, and zero tolerance for drinking and driving, may be important to increasing teen safety belt use.

With this as background, there is an urgent need for an accurate definition of the teen safety belt use problem, a summary of the various programs and approaches that have been conducted to increase safety belt use by teens, and recommendations for future research and programs that have the potential to increase safety belt use by teens.

II. Objectives

The objectives of this project were as follows:

1. To determine the magnitude of the problem of teens and safety belt use based on data from research reports, surveys, crash data, and other relevant information.
2. To conduct a comprehensive literature review of available research, programs, and strategies aimed at increasing safety belt use by teens, and collect relevant information.
3. To identify from the above any effective or model programs, interventions, or strategies that have the potential to increase safety belt use by teens.

III. Methodology

A. Statistical Data

Various sources of statistical data and information on safety belt wearing rates and crash data were examined to formulate a concise statement of the problem concerning teens and safety belt use. NHTSA's National Occupant Protection Usage Survey (NOPUS) was examined for national observational data on teen safety belt use. NHTSA's Motor Vehicle Occupant Safety Survey (MVOSS) was examined for what teens report as their use in this telephone survey, and also reasons why they do not wear safety belts. The Youth Risk Behavior Surveillance System (YRBSS) survey, conducted by the Centers for Disease Control and Prevention (CDC) via telephone, was used to explore trends of reported use by teens and other related behaviors. NHTSA's Fatality Analysis Reporting System was analyzed for use in fatal crashes by teens compared to other age groups.

B. Literature Review and Collection of Relevant Information

A comprehensive literature review was conducted, and relevant information and data was collected. The sources for this data collection and literature review are described below.

1. Interviews

A project staff member conducted in-person interviews with NHTSA staff at NHTSA offices in Washington, DC. The purpose of these interviews was to identify past or current programs and research deemed relevant to this study, as well as to identify additional sources of information on appropriate projects and research.

NHTSA staff included representatives from occupant protection programs, alcohol programs, distracted-driver programs, GDL programs, and the research, enforcement, and communication offices. A total of nine NHTSA staffers were interviewed. These interviews provided information that led to interviews with several additional people. A copy of the interview guideline is included as Appendix A.

2. Literature Reviews

NHTSA Literature

Key NHTSA officials were interviewed at their headquarters office to obtain any relevant NHTSA reports on this subject and to gather information on recommended data sources for the review. Each NHTSA Regional Office was contacted to determine the existence and availability of any relevant reports of programs or surveys pertaining to teen safety belt use.

Program Reports from State Highway Safety Offices

Potentially, many survey reports (and teen safety belt use programs) at the State level have never been published and do not appear in the formal literature. Therefore the Governor's Highway Safety Association (GHSA) conducted a short survey of State Highway Safety Offices (SHSOs) to determine if any surveys or reports at the State level on teen safety belt use would be available for review. Similar GHSA surveys in the past⁴⁷ have been successful using this strategy. Each SHSO was asked about the existence of any surveys, reports, programs, interventions, or strategies dealing with teen safety belt use. Copies of all relevant reports and data were obtained. A copy of the GHSA survey questions is contained in Appendix B. A total of 27 States (plus Guam) responded to this survey. Some provided relevant new reports on the teen safety belt issue.

Scientific Literature

A formal literature review was conducted using key words such as teenagers, safety belt use, risky behavior, and motor vehicle crashes. The Dialog databases that were examined are listed in Appendix C. In addition to these, other potential sources of information recommended by NHTSA were examined. These included the following:

- Indian Health Service
- American Driver and Traffic Safety Education Association
- National Indian Education Association
- Transportation Research Board
- AAA, formerly known as the American Automobile Association
- Centers for Disease Control and Prevention
- Automotive Occupant Restraint Council
- Traffic Safety Digest (publication of NHTSA)
- National Organization for Youth Safety
- Crash Injury Research and Engineering Network
- National Automotive Sampling System

Safety belt programs that were identified through the literature review and interviews were organized in the following six categories: (1) programs targeted to increase teen safety belt use with some evidence of program effectiveness; (2) programs targeted to increase safety belt use in general with some evidence of effectiveness; (3) programs targeted to increase teen safety belt use - no evidence of effectiveness provided; (4) programs targeted toward other teen health behaviors that could provide insights for teen safety belt interventions; (5) programs to increase safety belt use in general with no evidence of effectiveness; and (6) documents providing evidence that some programs are not effective. In the search for effective teen safety belt programs, the scientific quality of the evaluations were classified under six headings, using the following criteria:

Table 1. Identification of Effective Teen Safety Belt Programs

Evaluation Categories	
A.	Informative only. Information on teen safety belt use, e.g., descriptions of the problem, rates, reporting of existing information.
B.	Program description only. It is expected that the majority of program documentation will consist only of the program description with some favorable comments by those involved. Where these are innovative and of particular interest, they may be included in the report, perhaps along with suggestions for what would be needed to evaluate them.
C.	Program description with pre-post knowledge/attitude tests. School programs and those presented to specific groups of teens are likely to be evaluated through pre/post tests. Some of these may strengthen the study by including a control group. However, the major weakness of such evaluations is that such self-reports can overstate actual safety belt wearing rates.
D.	Program description with pre/post self-report surveys on safety belt use. Random telephone surveys provide stronger evidence of the probable impact of a program because the responses are not directly contiguous with the training or the message and because they should better reflect communitywide behavior. However, like all self-report measures, they may overstate use rates.
E.	Program description with pre/post observational surveys of safety belt use. Observational surveys, if properly conducted, provide the best evidence for the effectiveness of safety belt programs, particularly if comparison sites are included. However, increased wearing rates do not necessarily prove that the crash injury rate has been reduced. A special problem for the proposed study is that occupant age must be estimated and, as a practical matter, the age range that can be reliably observed in surveys such as NOPUS is 16 to 24.
F.	Program description with pre/post data on safety belt use of occupants involved in crashes and crash severity reduction analysis. Crash data provide the ultimate evidence of the cost-effectiveness of a safety belt program. However, crash severity is affected [impact is not a verb] by many factors that must be controlled before a change can be attributed to changes in safety belt wearing rates.

CRITERIA	Rating					
	0	1	2	3	4	N/A
Clarity of article (methods clearly identified and explained)						
Quality (science-based, data-driven)						
Relevance to Teens (behavior change; belt use)						
Evidence of Effectiveness (some pre/post analyses)						

DESCRIPTION
1-2-sentence description of the study or report.

The following key issues were examined during this review of the studies:

- the potential for the intervention to reduce the burden of injury or death (due to motor vehicle crashes and nonbelt use);
- the potential for the intervention to increase healthy behaviors (safety belt use by teens) and reduce unhealthy behaviors (nonuse of safety belts by teens);
- the potential to phase out widely used but less effective interventions in favor of more effective and or more cost-effective options;
- the current level of interest among providers and decision makers;
- the currently accepted models of risk behaviors that are relevant to traffic safety in our population of interest;
- the potential barriers to buckling up, such as vehicle type, air bag perceptions, seating positions, and comfort.

IV. Results

A. Magnitude of the Problem

According to NHTSA-sponsored safety belt surveys from various States and national surveys, young people 16 to 24 are observed wearing safety belts at rates 5 to 15 percent below rates for older people.⁶² Numerous surveys conducted in high school parking lots indicate typical teen belt use at about 50 to 60 percent, depending upon the State and the school. Thus, it can be concluded that young people, especially teens, have lower safety belt use rates than average for older people.

The Youth Risk Behavior Surveillance System was developed by the CDC in 1990 to monitor priority health risk behaviors that contribute to the leading causes of death, disability, and social problems among youth in the United States. These behaviors include: tobacco use; unhealthy dietary behaviors; inadequate physical activity; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; and behaviors that contribute to unintentional injuries and violence (including safety belt use, helmet use, driving after drinking, and riding with a driver who had been drinking alcohol).

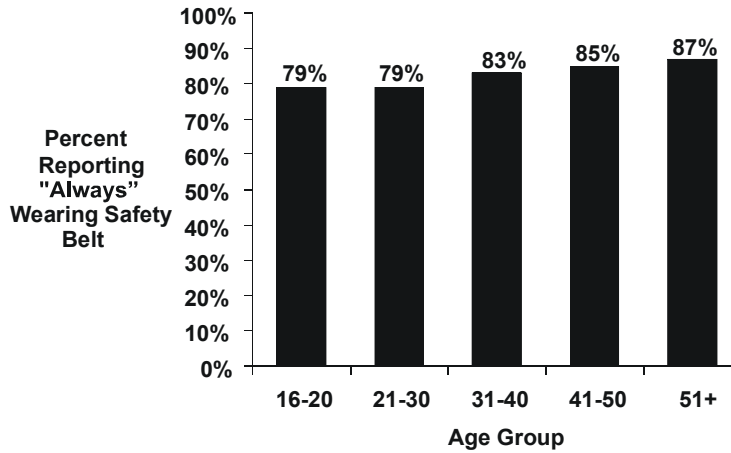
The YRBSS includes national, State, and local surveys of representative samples of students in grades 9–12. These surveys are conducted every two years, usually during the spring semester. The national survey, conducted by the CDC, provides data representative of high school students in public and private schools in the United States. The State and local surveys, conducted by departments of health and education, provide data representative of the State or local school district.

According to the 2001 YRBSS, the most recent report (which summarizes results from the national survey, 34 State surveys, and 18 local surveys conducted among students in grades 9–12 during February–December 2001), “Priority health-risk behaviors, which contribute to the leading causes of mortality and morbidity among youth and adults, often established during youth, extend into adulthood, are interrelated, and are preventable.”⁶⁹

Three-fourths of all deaths among people 10 to 24 years old in the United States result from only four causes: motor vehicle crashes, other unintentional injuries, homicide, and suicide. According to the YRBSS, many high school students engage in behaviors that increase their likelihood of death. Of particular interest in this report are the 14.1 percent of students who reported they had “rarely” or “never” worn a safety belt during the 30 days preceding the survey. Male students (18.1%) were significantly more likely than female students (10.2%) to have rarely or never worn safety belts. This significant sex difference was found in white and Hispanic students in all the grade subpopulations. Prevalence of rarely or never wearing safety belts varied from 7.5 to 27.4 percent across State surveys, and varied from 6.7 to 38.2 percent across local surveys.

According to the Motor Vehicle Occupant Safety Survey, teens also reported that they used safety belts “all the time” at a lower rate than older adults.²⁶⁸ While 79 percent of teens or adults 21 to 30 reported “always” wearing a safety belt, 85 percent of adults 41 to 50 reported “always” wearing a safety belt, and the overall reported rate for “always” wearing a safety belt (all ages) was 84 percent (figure 3).

Figure 3: Respondents Reporting They “Always” Use Safety Belts by Age Group (Source: MVOSS, 2002) (N=5186)



NHTSA’s FARS indicates consistently lower safety belt use rate for fatally injured teen occupants compared to rates for fatally injured occupants of all ages, and especially lower than rates for adults 55 and older (figure 4). Additionally, teen safety belt use for fatally injured front-seat occupants is twice that of fatally injured teen rear-seat occupants (figure 5). This difference also applies to older people, but to a lesser extent.

Figure 4: Safety Belt Use for Occupant Fatalities by Age (FARS, 1975-2002)

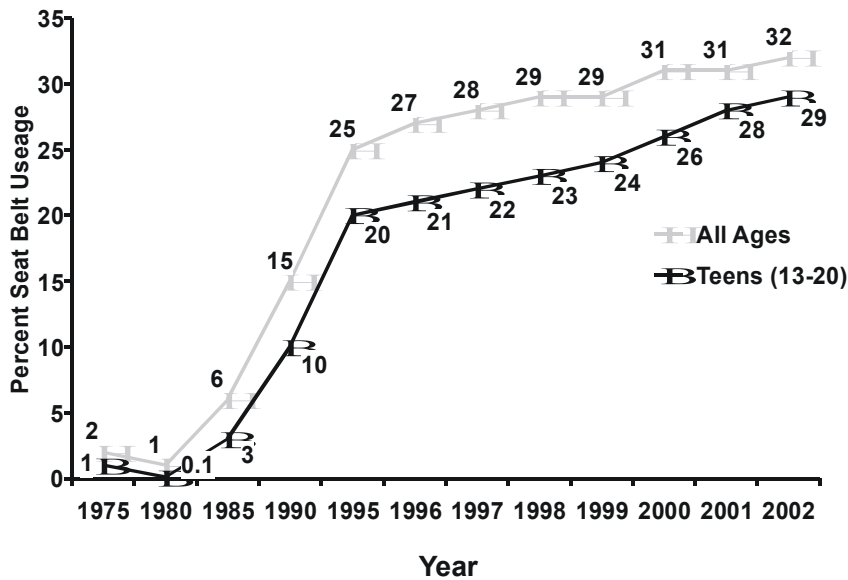
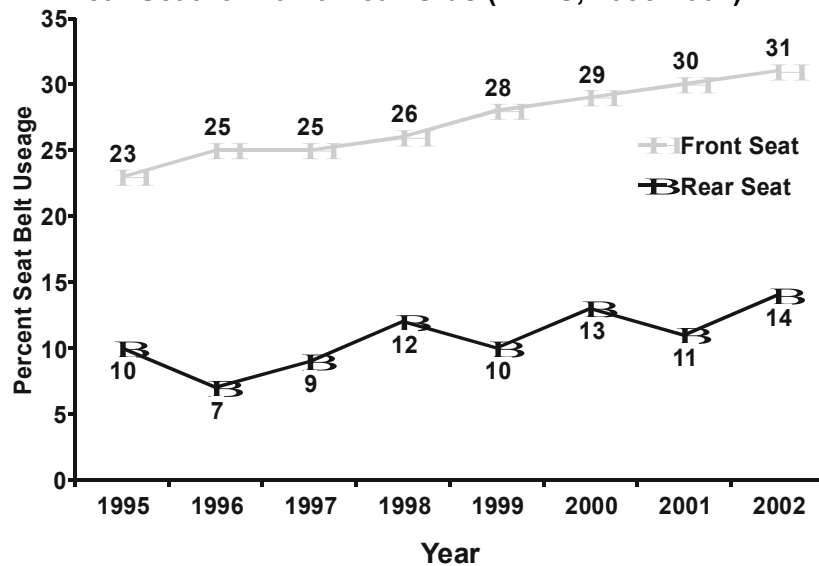


Figure 5: Safety Belt Use for Occupant Fatalities, Front Seat vs. Rear Seat for 16-20-Year-Olds (FARS, 1995-2002)



B. Literature Review

Two hundred and sixty-nine documents were reviewed for this project. These included peer-reviewed journal articles, non-reviewed articles, NHTSA reports, other Federal reports, State reports, reports from private foundations, newspaper articles, online articles, and other various sources of information such as intervention guidebooks, instructional videos, educational pamphlets, and program brochures. NHTSA reports constituted the majority of documents in this review. These ranged from one-page fact sheets to comprehensive reviews of empirical studies.

A wide range of sources was used in an attempt to gather a thorough account of the prevalence of teen-focused safety belt programs. Results of the review indicate that teen-specific safety belt programs are relatively scarce, and empirical evaluations of some programs are lacking. Despite the paucity of these programs, some have been implemented and their success has been empirically documented. Documents that contain information regarding these empirically evaluated programs constitute the first of six categories of information that were derived from the review. The categories will be discussed in order of ascending relevance and importance to this project.

Category 1: Programs Targeted to Increase Teen Safety Belt Use with Some Evidence of Program Effectiveness

Twenty-one documents were found within this first category established for the review; that is, discussing safety belt programs specifically targeted toward teenage drivers and providing at least some evidence of program effectiveness.

McCartt and Shabanova¹⁴ examined the effects of primary safety belt laws on the safety belt use of teenagers. Primary laws (also known as standard safety belt laws) allow police officers to pull over and ticket drivers solely for a safety belt violation, while secondary laws assert that police can ticket drivers for belt violations only after pulling them over for another (primary) offense such as speeding or running a red light. McCartt and Shabanova reviewed nationwide crash data and found that teens 16 to 19 used safety belts to a higher degree in

States with primary belt laws. Through regression analysis, they also found that one of the strongest predictors of teen safety belt use was whether the State had a primary enforcement law. This suggests that one promising approach to increasing safety belt use among teen drivers is through more stringent legislation.

A study by Preusser, Williams, and Lund¹³⁴ found that New York's primary safety belt law, when first enacted, increased observed safety belt use among teen drivers in high school parking lots. The increase was dramatic, from 14 to 63 percent, indicating that mandatory safety belt laws have been very successful at increasing the safety belt use of teenagers, not just adult drivers.

NHTSA provided a report on a comprehensive program in Minnesota titled *Teens Driving Safe*, which also has been shown to effectively increase safety belt use among teen drivers.²⁶⁷ This program used both enforcement and education strategies. Analysis of crash data, police records, and observational surveys indicated that the program increased 16-18-year-old teens' safety belt use from 74 to 78 percent. This program is described in more detail later in this report in the section titled "Review of Four State Programs."

A comprehensive teen driving safety program called MAKUS was implemented in Chattanooga, Tennessee.⁴² The acronym stands for "Michael Appleby Keeping Us Safe." The program, named after a teenager who was killed in a car crash, incorporates educational approaches and involvement from school administrations, parents, and students. Some activities involved within the program are units on driving safety within high-school physics and wellness classes, safety belt checks, rewards in the form of food coupons for safety belt compliance, and a mentorship program in which high school upperclassmen mentor younger students about driving safety. The document that was reviewed reported a 95 percent safety belt compliance rate after the program was implemented, which was "well above the national average for adults, and more than double the rate for teens".

Another comprehensive program in Spokane, Washington, titled *Driving for Life*, was shown to be an effective intervention strategy as well.²⁵⁷ This program combined education and awareness activities, strict enforcement, media efforts, peer education, and community involvement. The increased enforcement led to more citations issued for safety belt violations, but more importantly, observed safety belt use increased by 10 to 16 percent at three area high schools. Further, self-reported belt use of "always" using a safety belt increased from 46 to 71 percent. This project is also described in more detail later in this report.

A program implemented in Illinois, called *Operation Cool*, also used a comprehensive approach. *Operation Cool* used incentive-based contests, safety belt contracts, education, and normative feedback to increase the safety belt use of high school students.²²⁸ The program increased observed teen safety belt use from 55 to 70 percent, and showed rates of up to 90 percent in many schools.

In Nebraska, the *Youth on the Move* program²⁴² and the *Holt County Citizens for Safe Driving* program²⁵² both reported increased safety belt use among teens. The *Youth on the Move* program included youth-initiated safety belt checks, safety messages, incentives, visual reminders, and drug-free parties. Results showed an increase in observed safety belt use from 40.5 to 49.1 percent. A goal of the *Holt County* comprehensive traffic safety program was to increase safety belt use of high-school drivers. Observational surveys showed an increase in safety belt use from 21 to 31 percent.

In Illinois, Operation SCORE (Student Concentrated Occupant Restraint Efforts)²¹³ included a zero-tolerance enforcement and an educational component. Observational surveys showed that safety belt use increased from an average of 43 percent to as much as 70 percent in some high schools.

An educational project titled “Highways or Dieways” in Minnesota was created as a component of the Teen Occupant Protection Program.¹¹⁷ This project included police presentations at high schools which provided teens with traffic safety facts, gave rewards to drivers observed wearing safety belts, conveyed personal stories about traffic accidents, and provided a rollover simulator to educate teens on the dynamics of traffic crashes. Short-term analysis revealed that, on the day after the program, safety belt use increased by 18.6 percent, and a one-month follow-up showed a sustained 9.3 percent increase over the baseline rate.

Also in Minnesota, an educational program titled Operation Educate Teens effectively increased observed safety belt use among teens 15 to 18 years old by 19 percent.²⁵¹ This program encouraged teens to conduct educational activities that increased safety belt use among their peers. Analysis of crash data indicated that teen crash rates also declined after the program was implemented.

A peer-led educational campaign in Soda Springs, Idaho, aimed to reduce teen impaired driving and increase teen safety belt use.²³⁷ The program also included a safety belt promotion contest. Observational surveys showed a substantial increase in teen (15–19) safety belt use, from 27 to 71 percent.

North Carolina created educational youth safety programs to increase teens’ safety belt use rate,¹⁹⁹ awarding grants to schools participating in peer-led educational campaigns. The student-led awareness activities were successful in increasing safety belt use rates by 22 percent in 1993 (coincident with their first CIOT program), 14 percent in 1994, and 9 percent in 1996.

The Buckle Down and Buckle Up educational and motivational program in South Carolina increased the safety belt use of drivers younger than 21.²³¹ This program incorporated visual displays of the number of teen fatalities (such as a “ribbon tree” hung with ribbons representing lives lost in traffic accidents), to remind students of traffic safety issues. The program increased teen safety belt use by 11.6 percent, although the method for obtaining this figure was not specified within the document.

The St. Lucie County Youth Traffic Safety Program in Florida was an educational campaign designed to increase awareness of the dangers of driving while impaired and to increase teen safety belt use.¹⁹⁵ This campaign included several programs such as “Strides for Safety,” “Ghost Out,” “Prom Promise,” “Buckle Up America!” and “Take the Lead.” Although the observational surveys “indicated a marked increase in the use of safety belts by middle and high school students...,” no statistics regarding the effectiveness of the program were included.

Nebraska created an educational Youth Driver Training Program encouraging parental involvement to increase safe driving among teens.²³⁰ Although the results were modest at best, self-reports showed that students who “always” wear their safety belts increased from 34.4 to 36.5 percent, and those who “never” wear their safety belts dropped from 17.1 to 14.5 percent.

A program called “Checkpoints” in Connecticut promoted parental management of teen driving behaviors.¹⁴⁶ This program targeted parents with persuasive messages and

educational materials to influence them to adopt driving restrictions for their teens. The program included videos, newsletters, and other materials, and also included a behavioral contract for parents and teens to sign. Although no empirical evidence was provided regarding safety belt use specifically, Simons-Morton, et al.,¹⁴⁶ cite previous research showing that more frequent parental supervision is associated with a higher likelihood of teen safety belt use. Further, they offer evidence that this program increased parental supervision of teen driving. The National Institutes of Health¹²⁴ also found that the Checkpoints program reduces teens’ risky driving behaviors.

A program implemented in Maryland to increase safety belt use among the students evoked a healthy competition between five area high schools. The “Battle of the Belts” program also included an educational component, and increased student drivers’ safety belt use by 5.8 percent and student occupants’ belt use by 10.4 percent.²¹⁶

In Indiana, a youth-led intervention program created by the South Decatur Safety Group showed some success.¹⁸⁸ This program encouraged teens to work together to design a safe driving promotion program with the goal of changing fellow students’ driving behaviors and attitudes. The document that was reviewed did not specify what intervention strategies were involved with the promotion programs, but it did state that observational surveys showed an increase in safety belt use from 32 to 50 percent.

Johnston, Rivara, Droesch, Dunn, and Copass⁹⁴ assessed the effectiveness of Behavior Change Counseling (BCC) in reducing risky behaviors among adolescents. Counseling was provided to teens following an accident that led to an emergency room visit. While at the emergency room, young people 12 to 20 were provided with a brief counseling session intended to change risky behavior. One behavior addressed within the counseling session was safety belt use, and the researchers found that the counseling was effective in increasing self-reported safety belt use later on.

Other research indicated that economic incentives could prove useful in promoting safety belt use. In a study by Campbell, Hunter, and Stutts,²⁰ student drivers who wore safety belts were given coupons worth five dollars in North Carolina high school parking lots. The drivers were also entered into a lottery for \$300. These incentives coincided with an educational campaign. This combined intervention raised observed belt use from 21 to 55 percent. Follow-up observations showed a slip to 36 percent, although this was still above pretest baseline levels.

Table 2. Summary of Programs Targeted to Increase Teen Safety Belt Use with Some Evidence of Program Effectiveness

Author	Year	Program	Results
McCartt & Shabanova	2002	Primary Safety Belt Laws	Teen belt use was higher in primary law States One of the strongest predictors of teen belt use was whether the State had a primary enforcement law
Preusser, Williams, & Lund	1987	Primary Safety Belt Laws	New York’s primary safety belt law increased observed teen belt use from 14% to 63%
Plymouth Police Department	2003	Teens Driving Safe	Observations, crash data, and police records showed increased teen belt use from 74% to 78%
Erie Insurance	2002	MAKUS	Teen belt used increased to 95%, “more than double the national average for teens”

Spokane Regional Health District	2003	Driving for Life	Observed teen belt use increased by as much as 16% and reports of “always wearing a safety belt” increased from 46% to 71%
NHTSA	2000	Operation Cool	Observed teen belt use increased from 55% to 70% (as much as 90% in some areas)
NHTSA	2001	Youth On The Move	Observed teen belt use increased from 40.5% to 49.1%
NHTSA	2002	Holt County Citizens for Safe Driving	Observed high school belt use increased from 21% to 31%
NHTSA	1999	Operation SCORE	Observed belt use increased from 43% to as much as 70% in some high schools
State of Minnesota	2002	TOPP’s Highways or Dieways	Teen belt use increased by 18.6%, and follow-up showed a sustained 9.3% increase over baseline
NHTSA	2002	Operation Educate Teens	Observed teen belt use increased by 19%, and teen crash rates declined
NHTSA	2001	Soda Springs Youth Driver Education Project	Observed teen belt use increased from 27% to 71%
NHTSA	1997	North Carolina’s Youth Safety Programs	Observed teen belt use increased by 22% in 1993, 14% in 1994, and 9% in 1996
NHTSA	2000	Buckle Down and Buckle Up	Teen safety belt use increased by 11.6%
NHTSA	1997	St. Lucie County Youth Traffic Safety Program	Teen safety belt use increased “markedly”
NHTSA	2000	Youth Driver Training Program	Teen reports of “always wearing a safety belt” increased from 34.4% to 36.%, and “never wearing a belt” decreased from 17.1% to 14.5%
Simons-Morton & Hartos	2002	Checkpoints	Parental supervision is associated with increased teen belt use, and the program increased parental supervision
NHTSA	1999	Battle of the Belts	Observed teen belt use increased by 10.4%
NHTSA	1996	South Decatur Safety Group	Observed teen belt use increased from 32% to 50%
Johnston, Rivara, Droesch, & Dunn	2002	Behavior Change Counseling	Self-reported teen safety belt use increased upon follow-up
Campbell, Hunter, & Stutts	1984	Economic Incentives	Observed teen belt use increased from 21% to 55% and was sustained at 36% upon follow-up

Category 2: Programs Targeted to Increase Safety Belt Use in General with Some Evidence of Effectiveness

This category included documents that provided evidence for the effectiveness of safety belt programs in general that could be applied to teens, or evaluated in reference to teens. The documents included information on overarching strategies that were applied to everyone—including teens—and strategies targeted toward other groups that could be applied to teens. This was the most abundant category, with over 45 documents describing effective safety belt

interventions. Future research could apply these interventions to teens, or focus analyses on teens, to determine the effects.

Our review of the literature indicated that the most empirically supported safety belt promotion strategy is the passage of primary safety belt laws. Although little research has examined the direct effect these laws have on teens (see McCartt and Shabanova¹¹⁴ for an exception), an abundance of research has indicated a more general effectiveness of primary laws. Although detailed descriptions of the specific studies and their findings are beyond the scope and purpose of this paper, a brief listing of the reviewed documents is presented.

Engstrom, Gregersen, Hernetkoski, Keskinen, and Nyberg,⁴⁰ the Center for Disease Control and Prevention,²⁵ and Dihn-Zarr, et al.,³² have conducted their own reviews, each of which concluded that primary safety belt laws effectively increase general safety belt use and are more effective than secondary laws.

Other research has empirically demonstrated the effectiveness of primary laws on safety belt use with several methodologies, including:

- Observational surveys;^{61 63 29 39 154}
- Archival crash data analysis;^{63, see also 25}
- Self-reports;^{43 32 25}
- Police reports;^{32 25}
- Focus group reports.¹⁸⁴

Some reviewed documents cited evidence from previous research when asserting the effectiveness of primary laws.^{67 126 258 6} Other sources presented statistics indicating that primary laws are effective, and more effective than secondary laws, but the method for arriving at the given statistics was not provided.^{126 266 256}

Another strategy demonstrated to have an impact on safety belt use was enhanced enforcement. Again, a detailed description of the studies on enforcement is outside of the scope of this report, but a brief mention of the reviewed documents is appropriate.

The previously cited reviews by Engstrom, et. al.,⁴⁰ the CDC,²⁵ and Dihn-Zarr, et. al.,³² offer conclusions regarding enforcement strategies in addition to their primary law conclusions. These researchers determined that enhanced enforcement is effective in increasing overall safety belt use.

Several enforcement strategies have been examined and shown to be effective in the documents reviewed for this project. These strategies include:

- STEPs;^{95 153 258 241 193 233}
- *Click It or Ticket*;^{155 16 264 227}
- DayCAP;²⁶²
- Safe and Sober Communities;¹⁸⁹
- Operation Blue Talon;²⁵³
- Buckle Up! New York;²¹⁸
- Other various enforcement programs.^{243 239 210}

The methods used to investigate these enforcement programs included:

- Observational surveys;^{155 95 262 243}
- Crash statistics;²⁵³
- Self-reports;^{95 243}
- Other non-specified methods.

Another strategy to increase safety belt use in general incorporates in-car technology to prompt drivers to buckle their safety belts. Ford Motor Company developed a new sound-and-light reminder system with a longer duration, which is more effective than the current brief reminder systems that are standard in most vehicles.¹⁶⁶ The cited document that was reviewed stated that the new Ford system increased safety belt use by 7 percent, although it is unclear how this figure was obtained. Other research by Williams and Wells¹⁸³ used interviews and showed that 46 percent of individuals reported that this new reminder system increased their safety belt use. Further, reactions to the new system were positive, with 78 percent of respondents indicating that they liked the system.

Other safety belt promotion strategies that have gained some empirical support are:

- Educational/informational approaches;^{178 211 198 190}
- Incentive based strategies;^{59 31 139 220}
- Comprehensive approaches that incorporate several strategies, primarily enforcement and education, to effectively increase overall safety belt use.^{152 208 204 202 197}

Table 3. Summary of Programs Targeted to Increase Safety Belt Use in General with Some Evidence of Effectiveness

Author	Year	Program	Results
Engstrom, Gergerson, Hernetkoski, & Keskinen	2003	Primary Safety Belt Laws	Literature review suggested that primary safety belt laws effectively increase general safety belt use and are more effective than secondary laws
Centers for Disease Control and Prevention	2001	Primary Safety Belt Laws	Literature review suggested that primary safety belt laws are more effective than secondary laws; crash data analysis, police reports, and self-reports suggested the same
Dihn-Zarr, Sleet, Shults, & Zasa	2001	Primary Safety Belt Laws	Literature review suggested that primary safety belt laws are more effective than secondary laws; self-reports and police reports suggested the same
Glassbrenner (NHTSA)	2002, 2003	Primary Safety Belt Laws	Primary safety belt laws increased observed safety belt use
Eby, Vivoda, & Fordyce	2002	Primary Safety Belt Laws	Primary safety belt laws increased observed safety belt use
Solomon, Preusser, & Nissen	2001	Primary Safety Belt Laws	Primary safety belt laws increased observed safety belt use
Chaudary	2003	Primary Safety Belt Laws	Archival crash data analysis showed primary laws increased safety belt use; primary laws increased observed safety belt use
Escobedo, Chorba, Remington, & Anda	1992	Primary Safety Belt Laws	Primary safety belt laws increased self-reported safety belt use
Womack, et al.	1997	Primary Safety Belt Laws	Focus group research suggested that primary laws increased safety belt use

Greene	2003	Primary Safety Belt Laws	Cited previous research supporting the effectiveness of primary safety belt laws
NHTSA	2003	Primary Safety Belt Laws	Cited previous research supporting the effectiveness of primary safety belt laws
Associated Press	2003	Primary Safety Belt Laws	Cited previous research supporting the effectiveness of primary safety belt laws
National Safety Council	2003	Primary Safety Belt Laws	Cited previous research supporting the effectiveness of primary safety belt laws, other methods were unclear
NHTSA	2003	Primary Safety Belt Laws	Primary safety belt laws increased observed safety belt use, methods unclear
NHTSA	2002	Primary Safety Belt Laws	Primary safety belt laws increased observed safety belt use, methods unclear
Engstrom, Gergerson, Hernetkoski, & Keskinen	2003	Enforcement Programs	Literature review suggested that enforcement programs effectively increase general safety belt use
Center for Disease Control	2001	Enforcement Programs	Literature review suggested that enforcement programs effectively increase general safety belt use
Dihn-Zarr, Sleet, Shults, & Zasa	2001	Enforcement Programs	Literature review suggested that enforcement programs effectively increase general safety belt use
Jonah, Dawson, & Smith	1982	Selective Traffic Enforcement Programs (STEPS)	STEPS programs were shown to effectively increase safety belt use
Solomon, Nissen, & Preusser	1999	Selective Traffic Enforcement Programs (STEPS)	STEPS programs were shown to effectively increase safety belt use
NHTSA,	1996, 2001, 2003, No Date	Selective Traffic Enforcement Programs (STEPS)	STEPS programs were shown to effectively increase safety belt use
Solomon, Ulmer, & Preusser	2002	<i>Click It or Ticket</i> (enforcement)	Program increased general safety belt use
Buckle Up America	2003	<i>Click It or Ticket</i> (enforcement)	Program increased general safety belt use
NHTSA	2000, 2003	<i>Click It or Ticket</i> (enforcement)	Program increased general safety belt use
NHTSA	2003	DayCap Program (enforcement)	Program increased general safety belt use
NHTSA	1996	Safe & Sober communities (enforcement)	Program increased general safety belt use
NHTSA	2002	Operation Blue Talon (enforcement)	Program increased general safety belt use
NHTSA	1999	Buckle Up! New York zero-tolerance campaign (enforcement)	Program increased general safety belt use
NHTSA	1999	Enforcement program	Program increased general safety belt use
NHTSA	2001	Enforcement program	Program increased general safety belt use
NHTSA	2001	Enforcement program	Program increased general safety belt use
Transportation Research Board	No Date	In-Car Technology	Ford Motor Company's new enhanced reminder system increased safety belt use

Williams and Wells	2003	In-Car Technology	Ford Motor Company's new enhanced reminder system increased safety belt use
Weinstein, Grubb, & Vautier	1986	Educational/ Informational Strategies	Program increased general safety belt use
NHTSA	1996, 1997, 1999	Educational/ Informational Strategies	Program increased general safety belt use
Geller, Kalsher, Rudd, & Lehman	1989	Incentive Strategies	Program increased general safety belt use
Cope, Smith, & Grossnickle	1986	Incentive Strategies	Program increased general safety belt use
Robert, Fanurick, & Wilson	1988	Incentive Strategies	Program increased general safety belt use
Solomon, Leaf, & Nissen	2001	Comprehensive/ Combined Strategies	Program increased general safety belt use
NHTSA	1997, 1998, 1998, 1999	Comprehensive/ Combined Strategies	Program increased general safety belt use

Category 3: Programs Targeted to Increase Teen Safety Belt Use - No Evidence of Effectiveness Provided

The third category of documents reviewed included articles describing safety belt interventions tailored toward teenagers. These articles, however, did not provide evidence of the programs’ effectiveness; thus, further investigation would be necessary to evaluate the programs’ value. Twenty-seven documents that were reviewed fit this category.

The University of Michigan Transportation Research Institute¹⁷¹ evaluated Streetwise, a teen driving safety intervention in the form of a video game. Although no data was provided, the authors stated that after playing the game, teens 15 to 17 were more likely to report wearing their safety belts. Also, teens in focus groups reported that they liked the game and found it to be helpful.

Another qualitative, focus-group study¹⁸⁴ suggested that advertising campaigns containing realism, visual consequences, and peer involvement would be most effective in encouraging safety belt use among teens. Teenagers 15 to 19 in the focus groups said that they disliked cartoonish ads because they do not deal with the issue seriously enough. The results from the focus groups also suggest that primary belt laws with strict enforcement are an effective strategy to increase teen belt use.

Ferguson⁴⁸ reviewed literature on GDL laws to determine the impact on teen risky behaviors. The author suggests that GDL programs could increase teen safety belt use, but did not give evidence of this effect. The author suggests that passing and enforcing primary laws may be the best way to increase teen belt use (see also McCartt and Shabanova¹¹⁴ as mentioned earlier).

A news article¹⁵⁶ described a new electronic device that, when installed in motor vehicles, continuously monitors teen driving behaviors and gives corrective feedback to the teen driver. The device detects speeding, aggressive driving, safety belt use, and unsafe backing. It also

acts as a tracking device for parents. There is no evidence provided about its effectiveness in increasing safety belt use.

Volkswagen of America, Inc., issued a press release describing its youth safety program called “Fasten Your Seat Belt... Go Far!”¹⁷³ The program includes educational kits for teachers, contests for students to create their own television advertisements, and substantial rewards for contest winners. No evidence of the program’s effectiveness was provided.

A traffic safety project titled Buckle Up or Eat Glass was created by Farm Safety 4 Just Kids.⁴⁵ This project targeted young drivers and passengers in rural communities to increase their awareness of roadway hazards and also increase their safety belt use. The project included educational programs, safety belt checkups, radio public service announcements, news releases, and posters. The description of the project provided by Farm Safety 4 Just Kids lists post-intervention rates of teen safety belt use across several States, but no pretest or comparison group rates are provided; thus the effectiveness of the program remains uncertain.

A flyer⁴⁴ produced by the Family, Career, and Community Leaders of America provides a brief description of their FACTS program (Families Acting for Community Traffic Safety). This is a youth peer-education program with some projects that promote safety belt use. No evidence of the program’s effectiveness was included.

The Network of Employers for Traffic Safety created a guidebook¹²⁷ for parents to help them teach and guide their teenagers to drive safely. “The Novice Driver’s Roadmap: A Guide for Parents” addresses safety belt issues and includes a behavioral contract for parents and teens to sign. A promise to use a safety belt is part of the behavioral contract. The guidebook states that it has been reviewed by experts and field tested to determine that it is effective, but no evidence or references are provided.

A grant report for NHTSA described the Frederick County Teen Safe Driving Initiative.²⁴⁹ This program’s purpose was to increase safety belt use and decrease underage drinking and impaired driving among 15- to 20-year-olds in Frederick County, Maryland. Strategies included increased enforcement, targeted enforcement operations, community consciousness interventions, media involvement and education, and interactive youth involvement. The report suggested, qualitatively, that the program had positive outcomes, but no empirical evidence was provided. Further details on this report can be found in the section titled “Review of Four Community Demonstration Programs Aimed at Teens” included later in the report.

The American School Health Association described some teen safety belt intervention strategies in a brief informational pamphlet.² These strategies addressed social norms, provided interpersonal skills training, encouraged youth collaboration in safety belt promotion projects, addressed the faulty logic behind safety belt nonuse, and integrated traffic safety materials in school health education. Although the document provided no evidence of effectiveness, it cited studies investigating the effects of social norm interventions in general.

Jack and Jill of America created several programs⁹² addressing health behaviors of teens and children. Some teen programs specifically target the issue of safety belt use. One such program includes a safety belt pledge, but no evidence of the effectiveness of these programs was provided within the reviewed document.

The National Organization for Youth Safety implemented a program called Speak Out and Make NOYS¹²⁵ that included several teen-initiated projects promoting healthy teen behaviors,

some of which are safety-belt-specific. The NOYS items reviewed for this project included a project manual, a project organizer, and a video. None of these items included evidence of the projects' effectiveness.

A program⁴² titled Lookin' Out was created in Pennsylvania by Erie Insurance to educate teens and promote awareness of driving safety issues. This program recruited teens to lead safe driving campaigns targeted at their peers. These campaigns included televised public service announcements created by teens to promote safety belt use. There was no evidence of the program's effectiveness provided in the document.

Several brief summaries (*Traffic Safety Digests*) provided by NHTSA give shortened descriptions of teen safety belt programs, but many of these do not provide evidence in support of the programs [The database for Traffic Safety Digests can be searched by date at www.nhtsa.dot.gov/people/outreach/safetydige/]. In one NHTSA report,¹⁹¹ New Hampshire's "Fatal Reality" program was described. This educational program was created to increase safety belt use and decrease drinking and driving among teenagers. This program included a 30-minute video and a mock trial about drunk driving with teenagers serving as jury members. No evidence of the program's effectiveness was provided.

Another brief NHTSA report²³⁶ described a program titled Ground Zero. This educational program used high-energy multimedia presentations at 18 Idaho high schools to promote safety belt use and to reduce impaired driving. Again, no evidence was provided regarding the effectiveness of the program.

Delaware's TEARS (Troopers Educating About Roadway Safety) project was also described.²³⁴ This was a teen educational program to increase awareness of the dangers of impaired driving, speeding, and not wearing a safety belt. Within this program State police gave presentations at high schools about recent fatal accidents involving teens in the area. The description of the program said that it "has not been formally evaluated," thus no evidence of its effectiveness was included.

Several other programs were described in the NHTSA's *Traffic Safety Digests*, all of which were intended to promote teen safety belt use, but none were accompanied by any evidence. These programs included:

- South Dakota's Join the Winning Team program;²⁴⁴
- The Distributive Education Club of America (DECA) Traffic Safety Project in Colorado;²²⁵
- The "UbucklUp" program in Illinois;²¹⁴
- The CRASH (Communities for Responsible Automobile Safety Habits) Force in Texas;²²³
- The Buckle Up America! challenge in Texas;²²²
- The Celebrate Graduation project in Idaho;²²⁶
- The Frederick County Teen Safe Driving Initiative in Maryland;²⁴⁹
- The Teen Court programs in Oregon¹⁹² and Illinois;¹⁹⁶
- The Chick-Fil-A Safe Driving Program in Georgia;²⁴⁸
- The Teen Rally program in Alaska;²⁴⁷
- The Smart, Safe, and Sober program in Virginia.²⁰⁷

Further evaluations of the programs could be valuable in assessing their effectiveness in promoting teen safety belt use.

Category 4: Programs Targeted Toward Other Teen Health Behaviors That Could Provide Insights for Teen Safety Belt Interventions

The 32 documents within this category described programs that were intended to address teen health behaviors other than safety belt use. Some of these strategies could be applied to the problem of teen safety belt nonuse. Some of the documents provided evidence of program effectiveness, while others would require further examination to determine their value. The most relevant programs in this category addressed teen safe driving, although they did not specifically target safety belt use.

GDL laws can have safety belt use provisions, but most research on GDL laws that was reviewed for this project did not present evidence for safety belt use. However, GDL laws have been shown to have an impact on other teen safe driving behaviors. As previously mentioned, Ferguson⁴⁸ reviewed literature on GDL programs and suggested they could increase safety belt use, but did not provide evidence. Other authors have investigated GDL effects on other behaviors. Molnar¹¹⁸ provided empirical evidence of positive GDL law effects on overall crash rates, evening crashes, night crashes, single-vehicle crashes, multi-vehicle crashes, and several other types of crashes. Along with Molnar and Shope's empirical evaluation of GDL laws (in Michigan),¹⁴⁵ these authors also conducted a literature review that strongly suggested GDL laws' effectiveness in reducing crash rates.¹⁴⁴ This review determined that every State with a GDL program showed reduced teen crash rates. Another document that was reviewed was a news article that cited the aforementioned Michigan study and provided a quick summary of some of its results.⁹⁸

Research presented by the Insurance Institute for Highway Safety^{87 89} has shown GDL laws to be effective in reducing crash rates in Nova Scotia as well. Some review articles and secondary sources examined for this review cited studies that have evidence of GDL laws' effects on driving safety.^{30 258 88} Williams¹⁸² also reviewed literature and, although he did not present statistical evidence, he suggested that GDL laws could reduce teen risky driving. GDL laws with safety belt provisions could be further evaluated in regard to their effects on teen safety belt use.

Research by Glendon and Cernecca⁶⁵ showed that enforcement-based persuasive messages were effective in reducing teens' self-reported behavioral intentions to speed (messages similar in format to street signs designed to reduce speeding by emphasizing the enforcement of safety belt laws). They found no difference in the effectiveness of attitude-based, behavior-based, or attitude-and-behavior based messages. They also found that anti-speeding messages were more effective than anti-drunk-driving messages.

Some documents in this category provided information about teen driving safety programs (not safety-belt-specific), but offered no evidence of their effectiveness. Although some of these programs may have had safety belt promotion components, these components were not mentioned in the documents reviewed.

Although it is unclear whether some of following programs have strategies targeted to teen safety belt use, many of them may provide suggestions for strategies specific to teen belt use.

- A DaimlerChrysler Web site¹³⁸ was reviewed which described the corporation's Road

Ready Teens program. This program included a guide for parents to help set limits on teen's driving, a behavioral contract for parents and teens to sign, and an online video game called "StreetWise." From the information on the Web site, it was unclear whether the program addressed safety belt use specifically, and there was no evidence of the program's effectiveness provided;

- A program called Gotcha Covered was created by Erie Insurance⁴¹ and offered insurance discounts to teenagers with safe driving records. The program also incorporated an educational component. The reviewed document suggested that the program was effective, but provided no evidence;
- The Absent Student Assistance Program (ASAP) in Texas²²¹ had a teen traffic safety component in which deputies patrolled school zones and enforced traffic laws. There was no evidence of effectiveness provided;
- The "Young and the Reckless" teen driver program in Stanislaus County, California;¹⁹⁴
- The Youth of Virginia Speak Out About Traffic Safety program;²⁵⁶
- MADD's multimedia school assemblies;¹²⁰
- The Think First program in Louisiana.²⁴⁰

Other documents described teen programs that were not targeted toward driving but toward other teen health issues. One document described strategies for promoting youth mental health and suggested that these are most effective when they are coordinated and systemic, and they enhance social-emotional competence.¹⁷⁹ Many documents discussed programs for reducing teen substance abuse, including alcohol, tobacco products, and illicit drugs.

Examples of these include:

- The "All-Stars" program;^{116 74 71}
- Normative education strategies;^{33 72 73}
- Multi-component strategies;⁹⁹
- The "Safe Teens Empowerment Project in Salinas" project;²⁰¹
- Integrated strategies targeting teen tobacco use;¹⁹
- Advertising campaigns such as the "Truth" anti-smoking ads;^{151 1}
- Several underage drinking prevention strategies;¹⁰¹
- "Selective" and "universal" prevention approaches;¹²¹
- Attitude change interventions.⁴⁶

Although not all of the programs mentioned within this category are directly relevant to teen safety belt use, insights could be drawn for future teen safety belt promotion strategies.

Category 5: Programs to Increase Safety Belt Use in General with No Evidence of Effectiveness.

This category included documents describing general safety belt programs that could be applied to teens, but did not provide any evidence of effectiveness. A total of 26 documents fit in this category. Many of these documents were brief reports mentioning intervention programs, but not providing sufficient detail to evaluate the programs' effectiveness. Although detailed descriptions of all of these programs would exceed the scope of this report,

a brief mention of the programs can provide further indication of the breadth of efforts that have been expended to address safety belt problems in general.

Several documents described comprehensive safety belt promotion programs. These included:

- Preusser, Williams, and Lund,¹³⁵ who mentioned the Thruway Buckle Up program in New York, which included road signs, toll reminders, special police enforcement, and public education through pamphlets and radio. However, evidence of the program's effectiveness is not provided.
- A NHTSA document,²⁶¹ "Initiatives to address safety belt use," described several strategies, such as primary belt laws, high-visibility enforcement, ad campaigns, employer regulations for belt use, insurance industry collaboration, vehicle reminder systems, and efforts to improve safety belt comfort and convenience. However, evidence of how effective the strategies are is not included.
- A project titled Dead or Alive,²¹⁹ containing an educational software program allowing drivers to experience a motor vehicle crash and a pledge card commitment system to encourage drivers to buckle up, has also been described but not evaluated.
- The Buckle up Badlands program in South Dakota²⁶⁵ incorporated education and awareness campaigns with enforcement strategies, and resulted in a safety belt use rate of 84 percent. However, the document provided no baseline or comparison by which to evaluate this rate.

Some documents within this category described safety belt laws such as primary enforcement,²³⁸ and a proposal to change the legal driving age from 16 to 17 in Georgia,⁵² but offered no evidence for the effectiveness of the laws.

Other documents described enforcement strategies. For example:

- Operation ABC in Michigan;²²⁹
- The Metropolitan Columbia Traffic Safety Program in South Carolina;²⁰⁰
- *Click It or Ticket* enforcement efforts in Michigan.²⁵⁰

Many documents described educational strategies. However, none of these documents provide evidence of effectiveness. These included:

- The Traffic Safety on the Move program in New Jersey²⁶⁹ used a transit bus that was converted into a portable educational classroom to teach individuals about traffic safety.
- The Department of Transportation in Wyoming²⁴⁶ created online public service announcements regarding traffic safety, in playable video format.
- The Maryland Vehicle Dealers Safety Alliance Initiative²⁰³ enlisted car dealerships in Maryland to provide educational materials to new car buyers.
- The Highway Safety Radio Network²⁰⁶ created half-hour radio programs relating to traffic safety in an effort to increase driving safety behaviors, including safety belt use.
- A rollover simulator was created in Connecticut²¹² to educate individuals on the dynamics involved in motor vehicle crashes.

Several other types of interventions were described in documents within this category. These included incentive/reinforcement strategies such as:

- The Safety Belts and Pizza program in which the Pizza Hut provided more than 600,000 coupons for police to distribute to belted drivers;²⁰⁵
- The Buckle Up for Bucks program in Arkansas;²⁰¹
- Buckle Up Kentucky Challenge.²¹⁵

A work site safety campaign, Do Buckle, Don't Booze, was also described.²⁵⁴

Interesting advertising strategies were also mentioned, such as Maryland's "Tray liners for traffic safety";²¹⁷ and New Jersey's Buckle Up paint stencil project.²⁶³

Other documents described strategies aimed at African Americans,⁹² at children,¹⁸⁷ and at "pre-drivers" 12 to 15 years old.^{245 232}

Remaining documents briefly mentioned safety belt programs, but did not provide adequate information to fully determine the strategies involved.^{122 235 224}

Again, none of the documents within this category provided evidence of effectiveness, but further evaluation of these programs could determine their utility in addressing the problem of teen nonuse of safety belts.

Category 6: Documents Providing Evidence that Some Programs Are Not Effective

An interesting category emerged during our review of literature. Some documents provided evidence that several safety belt strategies are not effective. Some of these documents raise challenges to previously cited studies. Further evaluation may be necessary to resolve these conflicts in evidence. Eleven documents fit this category.

The most controversial of these articles suggested safety belt laws have not effectively reduced crash rates. Richens, Imrie, and Copas¹³⁶ reviewed literature and used evidence from previous studies in several countries to demonstrate that the passage of safety belt use laws has had no appreciable decrease in traffic fatalities beyond that achieved in countries without safety belt laws. These authors also claim safety belt laws in England have not reduced road deaths, and Sweden showed no benefit from safety belt laws as well. The findings are explained via a risk-compensation perspective, in which the authors suggest that drivers who wear safety belts feel safer and, thus, drive faster and more carelessly. Virtually every other State in the peer-reviewed literature shows safety belts to be effective in reducing injuries and fatalities in crashes.

A larger group of documents called into question the effectiveness of education strategies when used in isolation from other strategies. Some documents provided evidence or cited studies showing that traditional teen drivers' education programs do not decrease crash rates,^{7 80 91 89 86} but rather they can lead to an increase in teen traffic crashes because they often have early licensure provision in which younger teens are getting behind the wheel.^{91 89 86} The Insurance Institute for Highway Safety⁹¹ further suggested that these drivers' education programs are ineffective because they do not influence teens' attitudes, which are a strong determinant of driving behavior. Some authors suggested that teen driver education programs should not be used alone; rather, they should only be incorporated into more comprehensive approaches.⁷

The Transportation Research Board of the National Academies¹⁶⁶ suggested that the minimal safety belt reminder systems currently used in passenger vehicles, which are limited to eight

seconds in duration, are ineffective. The authors suggest that a new system developed by Ford is preferable to the current industry standard (see category 2).

Other research has shown that a clinical intervention at pediatric medical practices incorporating an “office systems approach” was ineffective in promoting safety belt use.¹⁶⁰ The intervention included clinicians’ messages that promoted family rule setting, and quarterly newsletters to reiterate the clinicians’ messages.

Other, somewhat relevant research suggested that some persuasive messages promoting driver safety can have an adverse impact with some teens (particularly males) in that they showed a reaction against the messages and increased their behavioral intentions for negative behavior. In a study investigating the effectiveness of different message types in reducing speeding and drink-driving intentions it was revealed that some anti-drink-driving messages actually increased intentions to drink-drive. This occurred for both males and females. Furthermore, there was a similar increase in intentions to speed following an anti-speeding message, but this only occurred for males. The authors suggested that this finding might be explained by reactance theory, although the theory does not account for the gender difference in the anti-speeding finding. They also suggested that the finding might have been due to some type of response bias in which the responses on the behavioral intentions questions may have been more of a reported opinion about the message's effectiveness rather than a true report of intentions to drink and drive. The authors, however, ultimately concluded that “some anti-drink-driving messages could have negative effects on drink-driving behavior for some drivers.”⁶⁵

Last, and not quite as relevant, Donaldson, Piccinin, Graham, and Hansen³⁴ found that resistance skills training in substance abuse could have negative outcomes because it can increase teens’ estimations of their peers’ substance abuse, which can have an impact on their own substance abuse decisions. This is somewhat relevant to the safety belt issue in that it indirectly suggests that messages describing safety belt nonuse as a “popular” behavior could negatively influence teens to adopt such a behavior. Further research on these noneffective strategies could add new insights into the battle to promote teen safety belt use.

The remaining documents reviewed for this report did not fall within any of the aforementioned categories. Thus, they were lumped together as “unspecified” and were determined to be less important for the purpose of this review. However, some relevant information was contained within the documents, such as usage rate statistics, other teen traffic safety statistics, characteristics of teen drivers, demographic factors relevant to belt use, and other teen health issues. These documents had no mention of any safety belt intervention programs. Thus, they were not centrally important for this literature review section and their descriptions were omitted.

C. Review of Four Community Demonstration Programs Aimed at Teens

In addition to the literature review described in the previous section, NHTSA provided preliminary reports from four recent State/community programs initiated in 2001 that have potential to specifically increase teen safety belt use. In an ongoing effort to reduce teen vehicle-related fatalities and injuries, NHTSA provided funding for four regional enforcement

programs that aimed to increase safety belt use and also reduce the incidence of impaired driving, underage drinking, and speeding among youth populations.

These demonstration projects were planned to reduce teen alcohol and speed related traffic fatalities as well as increase teen safety belt use through strict enforcement of existing laws, combined with a public information/education component geared to promoting awareness of the enforcement activities, as well as emphasizing the need for enforcement to generate positive traffic safety habits. The education campaigns used peer-to-peer communications that empower youth to participate in the education process.

In this section, the key findings from these programs are summarized and synthesized. The following technical documents were reviewed:

- **Frederick County, Maryland:** Frederick County Teen Safe Driving Initiative, October 2001- June 2003, Final Report of Grant Outcomes, September 10, 2003;²⁶⁰
- **Plymouth/Maple Grove/Minnetonka, Minnesota:** Teens Driving Safe Final Report, September 2003 and Highlights;²⁶⁷
- **Allentown/Bethlehem/Easton, Pennsylvania:** Teen Safe Driving Initiative, Evaluation Report, October 2003;¹²⁹
- **Spokane, Washington:** Driving for Life Final Report, September 2003 and Highlights.²⁵⁷

Four Community Demonstration Programs: Descriptions and Timelines

Table 4. Summary of Site Program Elements

Location and Dates	Youth Activities	Type of Media and PR Activities	Type of Enforcement	Evaluation
Frederick County, Maryland Oct. 2001 – June 2003	8 major events: 2 Youth Safety Days, 2 mall Back-to-School Days, 2 Frederick fairs, short film clip on underage drinking parties, law enforcement luncheon skit, Task force meetings, seatbelt T-shirt development, Paint-a-Wreck contest, Teens Driving Safe Sober Concert featuring Big Wu, Grim Reaper actors in schools, contracts between teen driver & parent.	Safety belt and speeding PSAs aired until November. Movie theater advertisements Conducted many presentations to students in schools and to civic groups. Developed good relationship with local newspaper.	Multi-agency enforcement: underage compliance checks, party patrols, “Cops in Shops”, used school feeder roads for speeding and safety belt enforcement. Conducted 8-hour school checkpoints. Trained 90% of sworn officers in county. Conducted sobriety checkpoints until legal rules changed.	None provided by evaluator.
Plymouth/ Maple Grove/ Minnetonka, Minnesota Oct. 2001 – June 2003	Main program element was the establishment of a Traffic Diversion School for 16-18-year-olds with traffic citations	Movie theater ads, three police chiefs media events, local cable-TV coverage of Teens Driving Safe & Sober Concert, posters opposing parent-sponsored parties allowing drinking.	Special patrols for juvenile parties, 132 multi-agency saturation patrols in locations where teens congregate, 107 school patrols before and after school and at sporting events, bike patrols	Teen drivers involved in crashes in first quarter of grant compared to numbers in last quarter. Numbers of violations/citations during grant, belt use rate as measured outside 6 high schools: 74% at start of project vs. 78% at end.

<p>Allentown/ Bethlehem/ Easton, Pennsylvania (Lehigh Valley)</p> <p>October 2001 – October 2003</p>	<p>Safety Bug (modified VW driven through obstacle course, simulating DUI), youth conference, prom graduation forum, health expos, "Every 15 Minutes" (demonstrated impact of a DUI fatality), Red Ribbon Week (sponsored by SADD), Drink Mix-Off, SADD Leadership Awards Banquet, over 500 keys with SADD logo distributed</p>	<p>Approx. 3 press releases or op-ed pieces appeared each month in area papers. Held 2 press conferences, youth developed PSAs aired on youth radio station.</p>	<p>Approx. 173 special enforcement details: speed enforcement, roving patrols, saturation patrols, sobriety checkpoints, Cops in Shops, and safety belt checks (PA is a secondary enforcement state)</p>	<p>Underage drinking arrests increased from 2000 to 2001 by approximately 100 in Lehigh and 100 in Northampton. Belt use per year for teens increased over 10 percentage points from 2000 to 2002</p>
<p>Spokane, Washington</p> <p>Oct. 2001 – June 2003</p>	<p>Nestle Crunch bars distributed at safety belt observations; 248 crosses representing fatalities posted at schools, "Dying to Drive" 2-day class, Car Smash. Held 11 "So Your Teen Is Driving" presentations to parents, presentation by Washington State Police Corporal to 1,500+ youth, anti-street racing logo T-shirts designed and given away, phone cards passed out by officers, poster contest, obstacle course instruction at local raceway, among others.</p>	<p>6 TV and radio PSAs aired on 3 major networks. Had partnership with 2 local radio stations. Aired PSAs and radio interviews, dispatched radio personnel to special activities, and "Driving for Life" personnel at radio broadcast activities. Purchased 2 ads in independent weekly paper, and received one article on street racing issue. Used movie theater ads, featured winning poster from poster contest. 11 press releases sent out, resulting in estimated 8 printed articles, 9 radio interviews and 22 TV news features. On 3 occasions, radio hosts consumed alcohol beverages and Spokane police officers breath tested the host as a demonstration of the impairing effects of alcohol consumption.</p>	<p>Special Saturation Patrols used in locations where teens drive, 8 party patrols, swing shift patrol added 9 to staff for traffic enforcement, new equipment: tint meters to detect and cite for illegally tinted windshields, radar reader board for schools and other zones, 16 portable breath testing devices and special enforcement vehicle.</p>	<p>Safety belt observations conducted at schools. (Of the 3 schools with pre/post data, found a 10-16 percentage point increase in belt use.) Teen focus groups held to assess project activities. Numbers of citations for various teen offences presented for 2000 – 2003 by age group. (Safety belt citations increased from 506 in '01-02 to 815 in '02-03.)</p> <p>NOTE: A primary safety belt law was passed in June 2002 most likely affecting the belt use in the state during the grant period. 3 teen focus groups held to assess project activities. Numbers of citations for various teen offences presented for 2000 – 2003 by age group.</p>

Due to the multiple objectives and the variety of program components, it would be very difficult to tease out the efforts that were the most successful in increasing teen belt use.

The Frederick, Maryland, project did not report safety belt use rates. The Minnesota project, which conducted observations outside six high schools, reported a small increase in teen safety belt use rate from a base of 75 percent to a final rate of 78 percent. The Lehigh Valley, Pennsylvania, project reported a 10-percentage-point increase in teen belt use from 2000 to 2002, although the observation methodology and timeframe were not specified. The Spokane, Washington, project, which did observations outside three high schools, reported a 10- to 16-percentage-point increase in teen safety belt use from baseline to the end of the project.

In summary, it appears from these four demonstration projects that a *combined approach* including education, publicized enforcement of safety belt laws, and peer-to-peer programs will have at least a modest effect on safety belt use by teens. It is unknown whether this effect will last over time without sustaining all the components.

D. Other Promising Public Health Approaches Aimed at Risky Youth Behaviors

Prevention efforts targeted at youth traditionally rely on education and persuasion approaches. Because schools are the primary institutions with access to youth under the age of 20, the most common prevention strategy has been education—especially school-based prevention.^{36 13} This approach focuses on changing knowledge and beliefs, teaching new skills, and/or modifying other individual-level factors (e.g., increase self-esteem, stress management, or personal commitment).

Much research has been conducted to determine the effectiveness of school-based strategies.¹³¹^{164 70 14 99 66} According to Caulkins, Pacula, Paddock, and Chiesa,²¹ the benefits of school-based drug prevention are several times greater than the costs. They estimate that society benefits by \$840 on an average student's participation in drug prevention, compared with a program cost of \$150 per participating student.

Researchers now contend that educational approaches—especially those in schools—do not provide an answer to the problem. Young people are affected by a broad range of societal influences, such as peers, family, media, and the government. Thus, environmental approaches, particularly those focused on policy development, have been considered promising. However, these two seemingly polar approaches—educational and environmental—are perhaps best when paired together. Goodstadt examined the effectiveness of both approaches and determined that (1) neither traditional alcohol, tobacco, and other drug (ATOD) education curricula nor school policies by themselves can effectively prevent ATOD abuse, and (2) education and school policies must incorporate the norms of the community into planning and implementation.

1. Prevention Principles and Practices

In reviewing literature on high-risk adolescent behaviors (generally ATOD), several themes emerge:

(1) effective prevention programs integrate several strategies into their design. These strategies include factors relating to not only the individual at risk (i.e., adolescent), but to the family, school, community, and the surrounding environment; and

(2) sound prevention practice is based on proven theory and effective testing.

One framework that has received considerable attention is the theory of risk reduction and protective factors. Risk factors include biological, psychological/behavioral, and social/environmental characteristics. One often tested and supported hypothesis derived from this framework is that the more risk factors a youth experiences, the more likely it is that the youth will experience ATOD use and related problems in adolescence or young adulthood. The more the risk in a child's life can be reduced, the less vulnerable that child will be to subsequent health and social problems. Protective factors, such as solid family bonds and the capacity to succeed in school, have the potential to safeguard youth from ATOD use. Research on protective factors examines positive characteristics and circumstances in a person's life and attempts to find ways to strengthen and sustain them. The domains in which risk and protective factors exist are at every level of which an individual interacts with others and the society (i.e., individual, peers, family, school, community, or society).

In a recent *Prevention Researcher* publication,¹³⁰ Cheryl Perry of the University of Minnesota notes that models driven by social psychology and empirical findings on antecedents of drug use generally identify three levels of risk factors critical to the development of effective prevention programs. These include: (a) environmental, (b) personality, and (c) behavioral. The author continues to discuss that longitudinal research increasingly supports a broad-based, multi-level, three-factor prevention approach rather than concentrating on a single factor or subset of risk factors. The social influence model suggests that primary prevention programs are most effective when (1) the target behavior of the intervention has received increasing societal disapproval, such as cigarette smoking, (2) multiple years of behavior health education are planned, and (3) community-wide involvement or mass media complement a school-based, peer-led program.

With respect to school-based prevention programming, Hansen⁷⁰ found that successful programs tended to include social influence approaches. In other words, most programs included a variation of tactics that were aimed at not just the student, but the environment around the student. Specifically, he identified that effective school-based prevention programs included some combination of normative beliefs, personal commitment, information, and resistance skills strategies. Affective approaches (e.g., self-esteem, decision making, stress management, and goal setting) were least likely to be successful.

Bosworth's recent examination into prevention programs¹³ found evidence that some strategies are actually ineffective. These include scare tactics, providing only information on drugs and their effects, self-esteem building, values clarification, large assemblies, and didactic presentation of materials. Bosworth notes that ATOD prevention needs to target all students and that because risk factors are present years before initiation, prevention activities must start early, in elementary school, and be periodically reinforced as students encounter new social situations and pressures to use substances. Further, programs designed to meet the developmental needs of the students also should be offered at each grade level with care not to over-saturate students to the point where they discount the information. Content areas that were identified as necessary for an effective curriculum include: normative education, social skills, social influences, perceived harm, protective factors, and refusal skills. These principals can certainly be applied to the teen safety belt issue. Normative education and positive peer pressure, along with environmental strategies (e.g., enforcement) may be more effective than scare tactics, for example.

2. Tobacco Control Programs, Interventions, and Strategies That May Be Relevant to the Teen Safety Belt Use Problem

Most smokers begin to smoke at an early age and are smoking on a regular basis by 18.^{168 169} While there are some health risks at early ages (e.g., to pregnant women), most of the major health risks, such as for lung cancer and heart disease, occur after age 40. However, because of the addictive qualities of cigarettes, smokers have difficulty quitting. Relative to teen safety belt use, the health risks are probably larger, but in the more distant future.

The effect of tobacco control policies on smoking behavior may provide guidance in the type of policies that might encourage teen safety belt use. An array of strategies has been adopted in attempts to stem smoking behaviors. Interventions will be considered in two categories: (1) those directed at youth, and (2) those directed at the general population. In a concluding section, general lessons that may apply to teen safety belt use will be given.

a. Strategies Aimed at Youth

Three types of strategies have been directed at youth: media campaigns, school education strategies, and youth enforcement or access policies. Each of these policies alone has yielded limited success.

National, State and local community media campaigns have been directed at decreased smoking and/or increased health-enhancing attitudes among minors.^{103 177 83 57} Following implementation of a comprehensive State campaign in Florida, Bauer, Johnson, Hopkins, and Brooks⁹ found that cigarette use among middle schoolers declined by 40 percent and among high schoolers by 16 percent over a two-year period. School education programs and community programs accompanied the media campaign in Florida. However, some studies of State- and community-level youth campaigns have shown less promising results.^{57 157}

The success of media campaigns has been found to depend on the content, other policies in effect, and the intensity of ads.^{106 108 53} Studies of the Massachusetts and California media campaigns report that different contents proved successful. The more successful campaigns employ a social-marketing approach in which multiple themes are directed at specific demographic groups (e.g., Hispanics, African Americans, etc.), followed by consumer testing and feedback, and responsiveness to that feedback.^{104 111} Those campaigns, which are part of more comprehensive programs, such as those in California, Florida, and Massachusetts, also tend to be more successful. The media attention from other tobacco control policies reinforces the message of the tobacco control media campaigns. Campaigns of greater intensity (e.g., expenditures per capita, or advertisement per person) and of longer duration also tend to be more successful.

Like early mass media campaigns, early school education programs were often geared toward educating students about the harms of smoking. More recent programs have focused with somewhat greater success on teaching life skills, and about the socio-political climate surrounding tobacco use.

The studies of school education policies yield mixed results.^{23 85 103 168 169} Some studies find reductions in prevalence rates as high as 50 percent, and effects sustained as long as 5 years, but many of the better studies fail to find any long-term beneficial effect.¹³² Those that indicate success generally find that they affect attitudes and lead to some short-term change in use. Most of the studies that find success examine younger students (age 12–15) and do not examine later smoking behaviors, such as those after graduating from high school.

Youth access policies aim to enforce laws that prohibit the sale of cigarettes to minors. Enforcement by States and local communities may involve some combination of compliance checks, penalties, publicity, and bans on self-service displays and/or vending machines.

Reviews by Levy and Friend¹⁰⁹ and Forster and Wolfson⁵⁴ report consistent evidence from a large number of studies that youth access policies reduced the percentage of stores selling to youth. Studies indicate greater retail compliance rates when there are self-service and vending machine bans, sufficient compliance checks, strict penalties, merchant awareness programs, and community mobilization. However, the studies provide limited evidence that youth access policies are effective in terms of reducing smoking prevalence,^{109 159 50} except in some cases when retail compliance is high (i.e., above 90 percent). Two of the studies^{93 55} reporting reductions in smoking rates involved programs with heavy community participation, suggesting the need for supportive tobacco policies. Studies indicate that youth generally obtain cigarettes from non-retail sources, such as theft, older peers, and parents.⁵⁷ As retail

sales to youth are reduced, youth further switch to non-retail sources,^{107 58 50} suggesting the need for other policies to also target these other sources.

Youth access policies are usually directed at retailers selling to youth, and hence the application to teen safety belt use is less clear. However, an important lesson from these policies is that, like media campaigns and school education programs, they are more successful when part of a broader campaign. This suggests that there are synergies from multiple policies. A higher intensity of individual programs also appears to improve their success at reducing risky behaviors.

b. Strategies Aimed at the General Population

Young people not only obtain cigarettes from adults, they are also influenced by adult role models. Studies indicate that children are more likely to smoke if their parents smoke,^{168 169} and that communities that sanction smoking may encourage smoking. Consequently, policies that discourage adult smoking may also indirectly affect youth smoking. An example would be media policies that have been found to reduce smoking in the general population.^{83 168 169 106}

Another policy found to reduce smoking is clean air laws.^{83 169 109} By limiting smoking in public places, clean air laws reduce opportunities to smoke. They also reduce smoking by reinforcing social norms against smoking. While clean air laws do not have a direct analogue in safety belt campaigns, they both can be considered parts of broader campaigns to reinforce social norms against unhealthy behaviors; policies that encourage safety belt use are part of a broader strategy to encourage traffic safety.

One of the policies most consistently found to be effective in efforts to reduce smoking in the general population is raising cigarette taxes.^{123 185 28 83 105 169} Tax increases generally yield at least commensurate increases in cigarette price,^{97 163} which, in turn, reduces the quantity smoked per smoker and induces some smokers to quit. Studies also indicate that youth are particularly sensitive to price increases. This result follows from economic theory, which suggests greater effects, because cigarettes costs are a larger portion of youth's disposable income.

While taxes also do not have a direct analogue to strategies to increase safety belt use, tax studies suggest the importance that economic factors can have in influencing risky behaviors. This tendency would suggest that more severe and more certain fines or differential insurance rates may be an effective strategy, especially among youth, in encouraging safety belt use by imposing higher costs on non-users.

Some States (e.g., Arizona, California, Massachusetts, and Oregon) have had large impacts on adult smoking rates through comprehensive campaigns.^{22 24 26} The campaigns involved increased taxes, clean air laws, media campaigns, and cessation treatment programs, again suggesting the importance of multiple approaches. This suggests that through role modeling and increased attention to traffic safety, general safety belt use campaigns may be an effective way of reaching youth.

c. General Lessons

Three types of youth-oriented tobacco control policies were considered: media campaigns, school education strategies, and youth enforcement or access policies. Experience in the tobacco field indicates that while each may have a limited impact, a combination of policies is likely to be needed to have a significant impact. The content of information/education policies and the intensity of policies can also make a difference. Experience from tobacco control also indicates that adult-oriented policies may be important, and may even have as large or a larger impact than youth-oriented policies. Because adults serve as role models for youth, and

societal norms may be changed as smoking is reduced, policies that increase the general level of safety belt use may increase teen safety belt use.

3. Underage Drinking

a. Model Programs, Interventions, and Strategies That Have Potential Application to Increase Teen Safety Belt Use

In general, two policy orientations to preventing and reducing alcohol-related problems among youth are commonly advocated: (1) the public health approach, and (2) the harm reduction approach. The purpose of public health policies is to reduce alcohol-related problems by targeting the overall consumption in the general population. Based on the distribution of consumption model,^{143 148} the public health approach assumes that reductions in overall or per capita consumption result in decreases in drinking not only among light- and moderate drinkers, but also among heavier drinkers and in risky situations. As a result, decreases in overall consumption should also lead to reductions in alcohol-related problems. Further, by targeting overall consumption, the public health approach explicitly recognizes that many alcohol-related problems result not from problematic drinkers, but rather from moderate or social drinkers.^{e.g. 149} Traditionally, public health policy approaches to reducing drinking among youth have focused on reducing access to alcohol, generally either by deterring young drinkers themselves or those who provide alcohol to them. The purpose of such policies is to increase the “full price” of alcohol to young people by increasing resources necessary to obtain it, or the potential costs for possessing or consuming it. Some public health policies rely on persuasion or education and attempt to increase perceptions of the negative consequences of possessing or consuming alcohol. Many public health policies have both access and deterrence functions. Thus, minimum-drinking-age laws make it more difficult for young people to buy alcohol, and may also include penalties for possession or consumption of alcohol by those who are underage.

Although there is some disagreement about what exactly constitutes a harm-reduction approach to drug and alcohol use,^{e.g. 84} generally, harm-reduction policies are intended to prevent alcohol-related problems by targeting heavy (risky) drinking, drinking in risky situations, or the relationship between drinking and problem outcomes, without necessarily affecting overall consumption.^{137 147} As with public health policies, some harm-reduction policies may rely on deterrence. However, the focus of the deterrence is on specific problematic drinking behaviors (e.g., drinking and driving, or intoxication). Other harm-reduction policies may not depend on deterrence, but rather provide the means for young people to avoid risky drinking situations (e.g., safe rides programs). Traditionally, drinking prevention for youth has relied largely on educational and persuasional approaches. Such approaches focus on changing knowledge and beliefs, teaching new skills, or modifying other individual-level mediating factors. However, educational and persuasional approaches cannot provide a complete answer to the problem of drinking by young people. This limitation arises, in part, because people are immersed in a broader social context in which alcohol is readily available and glamorized.¹¹³ In contrast, policy approaches address: (a) formal legal and regulatory mechanisms, rules, and procedures for reducing the consumption of alcohol or risky drinking behaviors; and (b) enforcement of these measures.^{68 165} Policy approaches to prevention have considerable promise for addressing the harms associated with drinking and other risk behaviors by changing the environment. In particular, policy strategies can be used to reduce alcohol availability, directly deter drinking by increasing the personal costs

associated with it, and communicate norms regarding acceptable and unacceptable drinking practices.

Although often presented as two distinct approaches to reducing and preventing youth alcohol problems, clearly distinguishing between public health and harm-reduction policies is often difficult. Some policies are implemented to reduce overall consumption, but may also reduce heavy drinking or drinking in risky situations. Similarly, policies based on a harm-reduction approach may also lead to a decrease in overall consumption. In attempting to place policies into this typology, it is necessary to focus on the primary target of a specific policy. Hence, for the purpose of this report focusing on teens, policies implemented to reduce availability of alcohol to young people or deter young people from drinking in order to reduce overall consumption are considered public health approaches, whereas policies specifically targeting risky drinking, drinking in specific risky situations, or specific drinking-related risky behaviors are considered harm-reduction approaches.

In addition to problems of distinguishing between public health and harm-reduction policies, there is no consensus as to what constitutes alcohol policy. In this paper, alcohol policy is used only to refer to (a) formal legal and regulatory mechanisms, rules, and procedures for reducing the consumption of alcohol or risky drinking behaviors, and (b) enforcement of these measures.^{68,165} Alcohol policies may be implemented at the national level, State or provincial level, local level, or even at the institutional level.

b. Policy Strategies for Reducing Alcohol-Related Problems That May Be Relevant to Safety Belt Use

Warning Labels and Signs

Warning labels on beverage containers, on alcohol advertising, and in the form of point-of-sale signage constitutes a harm-reduction strategy that targets risky drinking. The purpose of alcohol warning labels is to inform and educate consumers about the dangers of heavy consumption and drinking in risky situations. The underlying assumptions are that the public is uninformed about the dangers of alcohol use and that providing information will correct this lack of information and, ultimately, affect drinking behaviors. An early evaluation of warning labels on alcohol beverage containers in the United States found that about one-fifth of respondents to a national survey remembered seeing the warnings six months after their introduction.⁹⁶ Although somewhat greater proportions of key target groups (e.g., heavy drinkers and young men at risk for drunk driving) remembered seeing the labels, no changes in knowledge of the targeted health risks could be detected. Similarly, a study of U.S. adolescents found that there were increases in awareness, exposure to, and memory of the labels after they were required, but no substantial changes in alcohol use or beliefs about the risks targeted by the warning.¹¹⁰ Overall, then, there is little evidence that alcohol beverage warning labels have any discernable effect on drinking or on attitudes or knowledge of the risks of drinking. This lack of effect may be a result, in part, of inadequate implementation (e.g., using small inconspicuous labels and weak warnings). It may also be the case that the underlying assumption that simply providing information can affect behavior is erroneous.

In the context of safety belt use by young people, warning labels could be required in advertising for motor vehicles, in the driver's compartment of all motor vehicles, and on roadside signs. To some extent, this approach is already being taken. Safety belt use reminders, for example, are now used on some highway and freeway on ramps. Stronger messages indicating that safety belt use can reduce serious injuries and death could be

designed and required, particularly in advertising for motor vehicles. The effectiveness of such warnings, however, is doubtful given the experiences with alcohol.

Zero Tolerance

Zero-tolerance laws are a special case of minimum-drinking-age laws that apply a lower legal blood alcohol concentration (BAC) to underage drivers. Overall, these laws have been found to be very effective in reducing underage drinking and driving and related car crashes. For example, a study in the United States⁷⁷ found a 17-percent net decline in nighttime fatal crashes involving young drivers in States instituting lower blood alcohol levels for young people. A review¹⁸⁶ of six studies on the effects of zero tolerance found that all of them showed a reduction in injuries and crashes after the implementation of the law. In three of the studies, however, the reductions were not statistically significant, possibly because of a lack of statistical power. More recent empirical studies have provided additional evidence for the effectiveness of zero-tolerance laws. A 19-percent reduction in self-reported driving after any drinking and a 24-percent reduction in driving after five or more drinks was found using “Monitoring the Future” survey data from 30 States.¹⁷⁵ Interestingly, this latter study found that zero-tolerance laws had no effect on overall consumption or on riding with drinking drivers, but rather were specific to driving after drinking. Differences in enforcement of zero tolerance laws have been identified as a key issue in understanding why some programs are less successful than others,⁴⁹ as has lack of awareness on the part of young people.⁸⁷⁷

Impediments to the enforcement of these laws include (a) requiring that zero tolerance citations be supported by evidential BAC testing, (b) undue costs to police (e.g., paperwork, time, court appearances), and (c) lack of behavioral cues for stopping young drivers at very low BACs. It has been suggested that the most effective zero-tolerance laws are those that allow passive breath testing, are implemented in combination with DUI checkpoints or random breath testing, and involve streamlined administrative procedures.⁴⁹ In addition, the use of media campaigns to increase young peoples’ awareness of reduced BAC limits and of enforcement efforts can significantly increase the effectiveness of zero-tolerance laws.¹¹

Safety belt use by young and novice drivers could be mandated even more strongly than for adults. For example, a zero-tolerance program for nonuse of safety belts by youth could be implemented, with immediate loss of license or other administrative penalties resulting for non-compliance. As with zero-tolerance drinking-and-driving programs, enforcement and strategic media campaigns to increase young peoples’ awareness of the law and of its enforcement efforts could significantly increase the effectiveness of zero-tolerance safety belt laws.

Graduated Driver Licensing

Studies of GDL laws also routinely show that they are associated with reductions in car crashes among young people,^{10 12 102 144 150 170} self-reported drinking and driving,¹¹² and alcohol-related crashes¹² among young people. In Connecticut, for example, a graduated licensing program led to a 14-percent net reduction in crash involvement among the youngest drivers.¹⁷⁰ Similarly, in New Zealand, a 23-percent reduction in car crash injuries among novice drivers was found after implementation of a graduated licensing system.¹⁰² In Ontario Canada, a 25-percent reduction in self-reported drinking and driving was found following the introduction of graduated licensing.¹¹² A 27-percent reduction in alcohol-related crashes involving new drivers was also found in that province following implementation of the program.¹² Among the youngest drivers (16-19-year-olds) the reduction in alcohol-related crashes was somewhat smaller (19 percent). Evaluations of lowered BAC levels for new drivers in three Australian

States (South Australia, Tasmania, and Western Australia) indicated that GDL laws reduced injury crashes among these drivers by as much as 40 percent.¹⁵⁰ Other evaluations of the Australian graduated licensing program, however, have been less optimistic.⁷⁶ A study from New Zealand using data from 1984-1998 indicated that graduated licensing reduced total traffic crashes, nighttime crashes, crashes with passengers, and alcohol-involved crashes among young people.¹⁰ Other evidence, however, suggests that GDL may have limited effects on alcohol use and alcohol-related crashes, above and beyond that of zero-tolerance provisions within them.¹⁴⁵ Nonetheless, GDL is useful on its own terms apart from its effects on drinking and driving and may be an important adjunct to zero-tolerance laws, for example, providing cause for stopping young drivers who may be drinking.

Safety belt provisions could also be incorporated into GDL laws. As with zero tolerance, such provisions could require stricter penalties for nonuse among young and novice drivers. In addition, as with alcohol, GDL laws could be used to provide cause for stopping young drivers and ascertaining compliance with safety belt laws.

Random Breath Testing/Sobriety Checkpoints

In Random Breath Testing (RBT) programs, motorists can be stopped without cause and required to take a breath test to establish BAC levels. In Australia, RBT programs have been found to result in as much as a 24-percent reduction in nighttime crashes, especially in metropolitan areas.^{e.g. 17 18 35} Results from Finland^{37 38} show an even more striking decrease of 50 percent in drinking and driving rate and a reduction in the rates of death and injury from alcohol-related traffic crashes after implementation of RBT.

Enforcement and public awareness seem to be key to the success of these programs. Moore, Barker, Ryan, and McLean¹¹⁹ found that men and those under 30 years old perceived it was unlikely they would be apprehended for drinking and driving despite RBT programs. However, the perceived likelihood of apprehension increased with exposure to RBT, notably when that exposure was recent. Additional studies^{4 76 82 115 158} discuss the reasons for differing results in different areas of Australia after the implementation of RBT laws. They conclude that lack of enforcement in areas showing low effect was one reason for the observed differences. In contrast, however, there is also some evidence that drinking drivers may change their driving patterns and use minor and relatively less safe roads when enforcement of RBT is intense and publicity is high, thus increasing their chances of a crash.¹⁸ Generally, these results suggest that random breath testing is a promising strategy if it is well advertised and enforced. However, studies specifically focusing on the impact of RBT on young drivers apparently do not exist. Still, there is reason to believe that when enforced, the efficacy of this approach also applies to young people.

Sobriety checkpoints in the United States can be implemented under proscribed circumstances as determined by State laws, often involving pre-notification about when and where they will be implemented. Breath tests at such checkpoints can usually be given only if there is probable cause to suspect that a driver has been drinking.¹²⁸ Even under these restricted circumstances there is some evidence that they reduce drinking and driving and related traffic crashes. An evaluation of a Tennessee checkpoint program,¹⁰⁰ for example, found a 20 percent decrease in alcohol-related fatal crashes and a 6 percent reduction in single-vehicle nighttime crashes that were maintained up to 21 months after implementation of the program. Sobriety checkpoints can potentially be used to help detect safety belt nonuse among young drivers and motivate use. In this case, checking for safety belt use could be incorporated into standard procedures implemented at such checkpoints.

Enforcement

Enforcement appears to be a key element in the effectiveness of most policies to prevent alcohol-related harm. The deterrent effect of alcohol policies is affected by their severity, the probability of their imposition, and the swiftness with which they are imposed.^{e.g. 142} Although in most cases penalties are severe, many alcohol-related offenses are seldom enforced and thus generate only a modest deterrent effect. Arrests of minors for possession of alcohol, for example, are rare, in part, because of the burden of prosecuting them as a criminal violation and a reluctance on the part of law enforcement and courts to enforce criminal penalties in such cases. Moreover, because criminal proceedings are often lengthy and removed in time from the infraction, the punishment is seldom swift or certain. Hingson, Howland, and Levenson⁷⁸ found in their review of interventions to reduce drinking and drinking-related traffic fatalities that higher legal drinking age and “per se” legislation can result in reductions in fatal crashes. However, absence of enforcement compromises any long-term effects. Another review,⁷⁹ indicates that legislation or policies alone do not produce change. The authors found a decline in alcohol-related fatal traffic crashes after an increase in minimum legal drinking age, but after a few years, media coverage declined and the number of fatal traffic crashes rose again. Finally, a report by Voas, Lange, and Tippetts¹⁷² on the enforcement of the zero-tolerance law in California found only a small increase in enforcement intensity and no change among the target group members in the perceived risk of arrest, despite efforts to make the enforcement of the law easy. The study also found no reduction in involvement of young drinking drivers in fatal crashes. Once again, enforcement seems to play a major role in the efficacy of the law. This is also indicated by studies focusing on compliance with minimum drinking age laws.

A similar situation probably exists with regard to safety belt use. That is, the difficulty of enforcing even primary safety belt laws for young people may undermine their effectiveness.

c. Conclusions and Implications for Youth Safety Belt Use

Policies aimed at reducing physical and social availability of alcohol to young people probably have little relevance to the promotion of safety belt use among youth. Other policies, however, may have greater relevance. Zero-tolerance laws and graduated licensing laws, for example, could be applied to this area. Primary safety belt laws focusing especially on youth may be valuable preventive measures. For example, driving without a safety belt could be linked to loss or delay of driver’s license among young or novice drivers. Implementation of warning labels and increased media targeting safety belt use may be useful, although the evidence is more equivocal.

Based on the available evidence, the most effective alcohol policies appear to be:

- taxation or price increases;
- increases in the minimum drinking age;
- zero tolerance;
- graduated licensing.

Implementation, enforcement, and public awareness are essential to the success of any policy approach to preventing youth drinking problems. The case for safety belt use is likely to be similar. No policy can be effective unless it is adequately implemented and enforced, and there is awareness of both the policy and the enforcement efforts on the part of the intended targets.^{e.g. 68 78 79 172} Awareness and knowledge of policies on the part of those charged with enforcement is also important for effective implementation.⁵¹

Another potentially important element in effective policy is public support. The difficulty of implementing effective policies in the face of public opposition may be considerable given perceptions on the part of law enforcement officers and community leaders that there is little community support for such activities.^{174 176} Public support for policies may be greater for those policies that are least effective in reducing underage drinking and drinking problems. Surveys in Canada and the United States, for example, indicate that public support may be strongest for interventions such as reducing service to intoxicated patrons and treatment.^{e.g. 3 60140} There is also considerable public support for policies targeting promotion such as providing warning labels and banning or restricting alcohol advertising. These surveys indicate that there may be less support for more demonstrably effective policies targeting access such as increasing the drinking age or increasing taxes. Nonetheless, other recent research shows considerable support for policies targeting underage drinking.⁷⁵ Thus, a majority of Americans favor increasing taxes to fund prevention programs, and limiting drinking in public places. The difficulty of implementing effective policies in the face of public opposition—or perceived public opposition on the part of policymakers—may be considerable. The strategic use of media, however, can help overcome such resistance and elicit public support for effective environmental interventions.^{e.g. 81} These lessons can be transferred to the safety belt issue for teens by building public pressure to enforce use laws and changing teen norms on this behavior.

4. Science-Based Prevention Resources

To help professionals in the field become better consumers of prevention programs, the Substance Abuse Mental Health Services Administration (SAMHSA), Center for Substance Abuse Prevention (CSAP), created the Models Program directory, which is reviewed by the National Registry of Effective Prevention Programs (NREPP). NREPP reviews and identifies science-based prevention programs. All the programs included on the NREPP list are theoretically driven by the risk and protective factors framework. The rating criteria for inclusion into the NREPP directory include: intervention fidelity, process evaluation, sampling strategy and implementation, attrition, outcome measures, missing data, data collection, analysis, other plausible threats to validity, replications, dissemination capability, cultural and age appropriateness, integrity, and utility. The list currently includes nearly 50 programs. Each program identifies its target population and the domains in which the program is appropriate (i.e., individual, school, peer, community, etc.). Additionally, program activities and key findings are listed to assist in the learning and selection of programs. The 2003 Model Program list is included in Appendix D.

The CDC has also responded to the need for information concerning successful ways to improve public health. The CDC convened an independent, nonfederal Task Force on Community Preventive Services to examine existing scientific studies and make recommendations. The topics that are reviewed include: Alcohol; Cancer; Diabetes; Mental Health; Motor Vehicle Occupant Injury; Nutrition; Oral Health; Physical Activity; Sexual Behavior; Socio-cultural Environment; Substance Abuse; Tobacco; Vaccine Preventable Diseases, and; Violence Prevention. The Task Force completes systematic reviews of the available literature and provides recommendations on use or nonuse of interventions based on the strength of the evidence. The findings and recommendations are published in the Morbidity and Mortality Weekly Report Recommendations and Reports series and the American Journal of Preventive Medicine; the recommendations are also posted on the Community Guide Web site (www.thecommunityguide.org).

V. Conclusions and Recommendations

Programs, Interventions and Strategies That Have Potential to Increase Safety Belt Use by Teens

It is clear from the statistical data, a comprehensive review of the literature, and discussions with various officials in the safety belt arena that the most promising strategies available to increase safety belt use by teens are likely to be the proven strategies that increase safety belt use in the general population. These include the following and are tailored, where appropriate, to the youth situation:

Legislation

Primary Safety Belt law

Primary safety belt laws have been shown to increase safety belt use in the general population. NHTSA recently estimated that adopting primary safety belt laws raises safety belt use by 11 percentage points. Teen belt use is also higher in states with primary safety belt laws. The evidence suggests that this strategy probably would have the greatest and most immediate effect on teen safety belt use.

Graduated Driver Licensing Law

A majority of States have adopted graduated driver licensing laws with three phases of licensure. Many of the laws either include safety belt use as a provision, or provide for sanctions if a safety belt violation occurs. The problem is that most teens and most parents are not aware of this requirement in GDL. They tend to be cognizant of nighttime restrictions and passenger restrictions, but not the consequences of a safety belt violation. For example, in a recent study in North Carolina, 92 percent of the parents and 96 percent of the teens were aware of the nighttime restriction in the GDL, and 82 percent of the parents and 86 percent of the teens were aware of the passenger restriction. However, only 5 percent of the parents and 3 percent of the teens were aware of a safety belt requirement in the GDL law and that a safety belt violation would affect their graduation to the next phase.⁵⁶ If safety belt requirements and consequences for safety belt violations are publicized, this element of GDL could substantially increase safety belt use by teens.

Unique Legislatively/Administratively Mandated Penalties

Safety belt violations result in points on the license in only one known jurisdiction in the United States (the District of Columbia). While there is no solid research on this provision to date, the potential for increasing safety belt use rates, especially for teens, is likely if such mandated penalties are adopted, publicized, and enforced.

Enforcement

Increased Enforcement

Increased enforcement of safety belt laws, if highly publicized and visible, has been shown to increase safety belt use in the general population. It is reasonable to assume teen belt use

would increase concomitantly. The highly publicized *Click It or Ticket*-themed mobilizations have demonstrated that safety belt use will increase even in secondary enforcement States. If CIOT enforcement is tailored to young drivers (e.g., near high schools, colleges, recreational facilities; publicized on youth-oriented radio stations and television channels), it could substantially increase belt use by teens – but it must be frequent, consistent, and sustained.

Combined Efforts (Comprehensive Approaches Including Two or More Strategies)

The four NHTSA Teen Demonstration Projects, and other research of strategies that affect teen behavior, indicate that combined approaches, such as strengthening safety belt laws, educating the public, publicizing the law, enforcing the law, and working with community organizations to provide outreach to the citizens, have good potential to increase safety belt use. Most of the research shows that it takes combined strategies involving education, publicity, visible enforcement, and community outreach to affect behavior.

There are other strategies, which if aimed toward teens, appear to have potential to increase safety belt use for that population. These include:

Technological Approaches

Reminder Devices

Safety belt reminders, such as buzzers, lights, and messages on the dash board have shown some effectiveness for increasing belt use in the general population. The specific effectiveness of these devices for increasing teen belt use has not yet been tested but is now being explored by NHTSA.

Black Box

In-vehicle computer systems already exist whereby safety belt use, speed, and other behaviors can be recorded and monitored. Specific evidence of the effectiveness of these devices for changing teen driving behaviors is not available. It remains to be seen if parents will purchase vehicles for their teens equipped with these monitors.

Peer-Led Approaches

Education/Awareness

Peer-led educational and awareness approaches hold promise in changing youth norms and attitudes about safety belt use. Some States reported that peer-to-peer programs increased teen safety belt use slightly. Whether this translates to sustained use remains unclear.

Youth-Initiated Safety Belt Checks

There is some evidence that youth-initiated monitoring of safety belt use will have a modest effect on teen belt use. A large program needs to be demonstrated, such as the MADD Youth in Action program, which perform “compliance checks” on the frequency of underage purchases of alcohol, to determine if this type of approach translates to the safety belt arena.

Education

Information

We know education alone, and information by itself, probably will not affect teen belt use. However, education coupled with enforcement and other strategies may be effective.

Counseling

At least one study showed that brief counseling in a medical setting may increase self-reported belt use by teens. If brief interventions are used more frequently to reduce abusive drinking and impaired driving, they might also be effective in increasing belt use, especially by youth.

Media**Safety Awareness Messages**

Safety belt use messages by themselves probably will not affect teen belt use. However, messages concerning increased enforcement of safety belt laws in the community, coupled with actual enforcement, have been shown to be effective in the CIOT mobilizations.

Multimedia Shows

MADD and other organizations have developed high-tech multimedia shows for schools that attempt to persuade youth to wear safety belts and not engage in underage drinking. Some of these shows, which are based on peer-to-peer messaging, are in the process of being evaluated for their effectiveness. Thus far, self-reported seat belt use has increased for students exposed to these shows, but it remains to be seen if observational surveys will verify that result.

Parental Involvement**Communication**

Merely talking to teens about safety belts probably will not be effective. However, communication and close monitoring by parents could have an effect. Certainly, parents can set an example by always wearing their safety belts. For example, one State observational survey showed that youth 5 to 15 wore safety belts 72 percent of the time; however, when an adult driver was restrained, the passengers 5 to 15 were restrained 85 percent of the time.

Supervision

Close supervision and monitoring of teen behavior, including safety belt use, may have an effect on belt use. Teens report their parents have more influence over them than their parents think.

Incentives/ Promotion Programs**Competitions/Contests**

There is some limited data indicating that competitions and contests with incentives will increase teen safety belt use around high schools. However, there is no indication that those increases will be sustained.

Contracts/Pledges

The research indicates that contracts or pledges to wear safety belts must be accompanied with follow-up incentives or enforcement to have any effect at all.

Normative Feedback/Education

There is mixed research on how social norming affects underage drinking. While this area has potential for teen safety belt use, there have been no proven demonstrations of its effectiveness on this issue to date.

Interpersonal Skill Building/Social Emotional Competence Building

There is some evidence in the literature that these strategies can change behavior; however, there is very little information on its application to teen safety belt use.

Summary

In summary, proven effective strategies that increase safety belt use in the general population will likely have the most immediate and greatest potential for increasing teen safety belt use. These include upgrading State safety belt laws to primary enforcement and highly publicized enforcement of safety belt use laws. GDL laws that explicitly include requirements for safety belt use in all three phases, and sanctions that prohibit “graduation” to the next licensing phase if there is a safety belt citation, could increase teen safety belt use substantially. Community programs that combine education, peer-to-peer persuasion, publicized enforcement, and parental monitoring have some potential for increasing teen belt use.

Technological solutions also hold promise. Enhanced safety belt reminders appear to be effective for all age groups. Safety belt use recorders could allow parents of teens to monitor teen behavior, if accepted by the public. Interlock systems, such as not allowing the radio or compact disk player to turn on until all passengers are wearing safety belts, also hold promise and could be very effective, especially for teens.

Combinations of strategies seem to work better than one strategy alone. A community program including education, diversity outreach, highly publicized enforcement, and parental involvement would likely have a substantial effect on teen belt use. However, these strategies would probably need to be sustained for the effect to last over time. While each strategy is not without barriers, careful planning, implementation and evaluation can result in effective programs and add greatly to our current knowledge of teen safety belt use.

IX. References/Footnotes

All references to documents and material from the National Highway Traffic Safety Administration are listed separately at the end, beginning with reference number/footnote 187.

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Appendix A

Teen Belt NHTSA Interview Guidelines

PIRE researcher Scott McKnight talked to NHTSA staff to gain information about safety belt programs for teens, as well as any other pertinent information. The discussion was open and touched on the following items:

- past and current programs that deal specifically with increasing safety belt use among teens, particularly programs that seem to be particularly innovative and/or successful;
- past or current programs that deal with changing general safety behavior of teens;
- any research that has generated statistics on the effectiveness of safety belt programs with respect to teens;
- theories on why teens fail to buckle up;
- ideas for approaches to teen safety belt programs that may not yet have been tried; and
- contacts in States or other agencies who might be of further assistance.

Past and current programs that will be discussed include, but are not limited to, the following areas:

- safety belt use laws;
- high-visibility enforcement;
- increased sanctions;
- incentive programs;
- parental management;
- school and employer policies;
- vehicle strategies; and
- other public health interventions.

Appendix B

Teen Safety Belt Use Study

The National Highway Traffic Safety Administration is sponsoring a study to gather information on teenaged safety belt use and programs that are designed to increase teenaged safety belt use. The Pacific Institute for Research and Evaluation (PIRE) is conducting this study. In order to gather all of the relevant data and information possible on this study, PIRE would like each State Highway Safety Office to respond to the following questions:

1. Do you have any data, research, or reports that show the percentage of teens who use safety belts? This could include information from telephone or other self-report surveys, data from observational surveys, data from crashes, or data from various studies.

If so, could you briefly describe the information you have below?

Could PIRE obtain a copy of the information?

2. Do you have any reports or other documentation describing research, programs or strategies aimed at increasing safety belt use by teens?

If so, can you briefly describe the information you have?

Could PIRE obtain a copy of the report or information you have?

3. Are you aware of any ongoing research, projects, or strategies that are intending to increase safety belt use by teens or have the potential to do so?

If so, can you briefly describe the project?

Could PIRE obtain a copy of any information on the project?

PIRE intends to conduct a thorough literature review of articles in peer-reviewed journals, the various Dialog databases, TRIS, MEDLINE, government Web sites, private/non-profit Web sources, Lexis-Nexis, and other sources recommended by NHTSA to uncover any literature on this issue. When the project is completed, a final report will be produced containing information on teen safety belt use, reasons why teens do and do not buckle up, strategies and interventions that change the behavior of teens, descriptions of programs designed to increase teen safety belt use (and their effectiveness), promising or emerging approaches, other public health interventions that have worked on teens, conclusions and recommendations.

PIRE will also produce a one- to two-page synopsis/fact sheet that concisely states the teen safety belt use problem, briefly describes what is known about the reasons teens do not buckle up, and describes effective/model programs or strategies that have good potential to increase teen safety belt use in the future.

Your help in providing information for this project is vital to the success. Please e-mail, fax, mail, or phone in your responses to these questions and any information you have on this issue to:

Jim Fell

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Thank you very much.

Appendix C

Sources for Literature

Law Enforcement Databases

- Criminal Justice Periodicals Index [Dialog file #171]
- Gale Group Business A.R.T.S. [Dialog file #88]
- Gale Group Legal Resource Index [Dialog file #150]
- NCJRS [Dialog file #21]
- PAIS International [Dialog file #49]
- Periodical Abstracts PlusTex [Dialog file #484]

Social Science, Psychology, and Medicine Databases

- American Medical Association Journals [Dialog file #442]
- Dissertation Abstracts Online [Dialog file #35]
- ERIC [Dialog file #1]
- Gale Group Health and Wellness Database [Dialog file #149]
- General Science Abstracts/Fulltext [Dialog file #98]
- MEDLINE® (1966-present) [Dialog file #155]
- MEDLINE® (1990-present) [Dialog file #154]
- NCJRS [Dialog file #21]
- NTIS - National Technical Information Service [Dialog file #6]
- New England Journal of Medicine [Dialog file #444]
- Newsweek [Dialog file #482]
- PAIS International [Dialog file #49]
- PsycINFO [Dialog file #11]
- Social SciSearch [Dialog file #7]
- Wilson Humanities Abstracts Full Text [Dialog file #436]

Transportation and Safety Databases

- Occupational Safety and Health (NIOSH/TIC) [Dialog file #161]
- Wilson Social Sciences Abstracts [Dialog file #142]
- Wilson Applied Science and Technology Abstracts [Dialog file #99]

Other databases were also examined, some examples of which include:

- Lexis-Nexis

- Academic Emergency Medicine Coverage
- Emergency Medicine Journal References – MEDLINE
- IAC Transportation
- Transportation Law Journal

Web Databases/Library Catalogs

- SafetyLit.org
- TRIS Online
- DOT Online Library
- Northwestern University Transportation Library

U.S. Government Web Sources

- National Highway Traffic Safety Administration
- National Transportation Safety Board
- Air Bag and Safety Belt Safety Campaign
- US Department of Transportation/ Safety John A. Volpe National Transportation Systems Center
- Bureau of Transportation Statistics
- Child Transportation Safety Tips

Private/Nonprofit Web Sources

- AAA Foundation for Traffic Safety
- National Safety Belt Coalition
- National Safety Council's Air Bag and Safety Belt Safety Campaign
- The Injury Prevention Web
- GMability.com
- School Transportation News Online

Web Bibliographies

- Insurance Institute for Highway Safety, Highway Loss Data Institute

Peer-Reviewed Journals

- Accident Analysis & Prevention
- Injury Control and Safety Promotion
- Injury Prevention
- Journal of Safety Research
- Prevention Science
- Traffic Injury Prevention

Appendix D

SAMSHA's Model Programs

(Available at: modelprograms.samhsa.gov/template_cf.cfm?page=matrix)

- Across Ages
- Al's Pals: Kids Making Healthy Choices
- All Stars
- ATLAS (Athletes Training and Learning to Avoid Steroids)
- Border Binge-Drinking Reduction Program
- Brief Alcohol Screening and Intervention for College Students
- Brief Strategic Family Therapy
- CASASTART (Center on Addiction and Substance Abuse Striving Together to Achieve Rewarding Tomorrows)
- Challenging College Alcohol Abuse
- Child Development Project
- Children in the Middle
- Cognitive Behavioral Therapy for Child Sexual Abuse
- Communities Mobilizing for Change on Alcohol
- Community Trials Intervention to Reduce High-Risk Drinking
- Creating Lasting Family Connections
- DARE To Be You
- Early Risers Skills for Success
- Families and Schools Together
- Family Effectiveness Training
- Family Matters
- Guiding Good Choices
- Healthy Workplace
- High/Scope Perry Preschool Program
- Incredible Years
- Keep A Clear Mind
- Leadership and Resiliency Program
- LifeSkills Training
- Lions-Quest Skills for Adolescence
- MPowerment
- Mutisystemic Therapy
- Nurse-Family Partnership
- Olweus Bullying Prevention
- Parenting Wisely
- Positive Action
- Project ACHIEVE
- Project ALERT
- Project Northland
- Project SUCCESS
- Project Toward No Drug Abuse
- Project Towards No Tobacco Use
- Prolonged Exposure Therapy for Post-Traumatic Stress Disorders
- Promoting Alternative Thinking Strategies
- Protecting You/Protecting Me
- Reconnecting Youth
- Residential Student Assistance Program
- Responding in Peaceful and Positive Ways
- Schools and Families Educating Children (SAFE Children)
- Second Step
- Start Taking Alcohol Risks Seriously (STARS) for Families
- Strengthening Families Program
- Strengthening Families Program: For Parents and Youth 10-14
- Students Managing Anger and Resolution Together (SMART) Team
- Team Awareness
- Too Good For Drugs
- Trauma Focused Cognitive Behavior Therapy

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