

Dear Educators,

Attitudes about the use of marijuana have shifted in recent years. Marijuana is now prescribed for medicinal purposes and the legalization or decriminalization of recreational marijuana in many states has resulted in greater societal acceptance of the drug's use. ***Shifting Gears: The Blunt Truth About Marijuana & Driving E-learning Module*** is designed to educate high school students on the risks of driving while impaired by marijuana. This e-learning module also intends to correct misconceptions about marijuana's potential risks to teenagers.

Additionally, vaping and e-cigarettes have become popular among young people, increasing the potential for the vaping of many substances including nicotine and THC. According to the 2017 Youth Risk Behavior Survey conducted by the CDC, among the 64.5% of students nationwide who drove a car or other vehicle during the 30 days before the survey, 13% had driven a vehicle when they had been using marijuana. The prevalence of driving under the influence of marijuana was highest among 12th-grade male students (20.1%).

There is no doubt that impairment impacts one's ability to drive safely, and for that reason, all roadway users must be aware of the implications of marijuana and driving. AAA Northeast's ***Shifting Gears: The Blunt Truth About Marijuana & Driving E-learning Module*** provides evidence-based information about the dangers of marijuana impairment on driving abilities. Additionally, it addresses state health standards. This e-learning module:

- Provides evidence-based information about preconceived ideas about marijuana use
- Explains the physical and cognitive processes that are affected by marijuana
- Explains the effect of marijuana on the brain.
- Discusses alternate methods of transportation.
- Demonstrates a driver's susceptibility to this impairment and potential severe consequences that can occur related to driving

We hope you will find the following materials a useful accompaniment to the e-learning module.

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Connecticut Comprehensive Health Education Standards

By Grade 12:

H.1.1. Analyze how behaviors can affect health maintenance and disease prevention

H.1.3. Evaluate the impact of personal health behaviors on the functioning of body systems

H.1.4. Evaluate how families, peers and community members can influence the health of individuals

H.1.6. Use and evaluate appropriate strategies to promote well-being, delay onset and reduce risks of potential health problems during adulthood

H.1.7. Assess how public health policies and government regulations can influence health promotion and disease prevention

H.3.1. Assess the importance of assuming responsibility for personal health behaviors

H.3.2. Analyze personal health status to determine needs

H.3.3. Distinguish between safe, risky or harmful behaviors affecting themselves and others in the community

H.3.4. Apply and assess strategies to improve or maintain personal, family and community health by examining influences, rules and legal responsibilities that affect decisions

H.4.3. Evaluate how information from family, school, peers and the community influences personal health

H.5.2. Apply and evaluate characteristics needed to be a responsible individual within their peer group, school, family, and community

H.6.1. Demonstrate various strategies when making decisions to enhance health

H.6.2. Demonstrate the ability to make health-enhancing decisions using the collaborative decision-making process

H.6.3. Predict the immediate and long-term impact of health decisions on the individual, family and community

Massachusetts Comprehensive Health Curriculum Frameworks

Grades 9-12:

Tobacco, Alcohol, & Substance Use/Abuse Prevention

10.9 Describe the relationship between multi-drug use and the increased negative effects on the body, including the stages of addiction, and overdose.

10.11 Explain the consequences of driving under the influence of alcohol and other drugs including the effects on passengers when the driver is impaired.

10.13 Demonstrate the ability to make informed decisions regarding the use of tobacco, alcohol, and other drugs.

10.14 Describe the influence of drug abuse on family members.

10.15 Apply promotion skills to encourage healthy behaviors (such as identifying and evaluating initiatives and opportunities for promotion, collecting and disseminating information, and modeling.

Community and Public Health

14.e. (Health Statistics. Connects with Mathematics: Statistics & Probability)
Learn to evaluate local, national, and international health related statistics.

New Jersey State Health Standards

By Grade 12:

Safety:

2.1.12.D.3 Analyze the relationship between alcohol and drug use and the incidence of motor vehicle crashes

2.1.12.D.4 Develop a rationale to persuade peers to comply with traffic safety laws and avoid driving distractors

2.1.12.D.5 Summarize New Jersey motor vehicle laws and regulations and determine their impact on health and safety (e.g., organ/tissue donation, seatbelt use, and the use of hand-held devices)

Alcohol, Tobacco, and Other Drugs:

2.3.12.B.1 Compare and contrast the incidence and impact of commonly abused substances (such as tobacco, alcohol, marijuana, inhalants, anabolic steroids, and other drugs) on individuals and communities in the United States and other countries

Dependency/Addiction and Treatment:

2.3.12.C.1 Correlate duration of drug abuse to the incidence of drug-related injury, illness, and death.

2.3.12.C.2 Analyze the effectiveness of various strategies that support an individual's ability to stop abusing drugs and remain drug-free.

2.3.12.C.3 Analyze the societal impact of substance abuse on the individual, family, and community.

New York State Health Standards

Standard 1—Personal Health and Fitness

Students will understand human growth and development and recognize the relationship between behaviors and healthy development. They will understand ways to promote health and prevent disease and will demonstrate and practice positive health behaviors.

Students will:

- demonstrate the necessary knowledge and skills to promote healthy development into adulthood.
- apply prevention and risk reduction strategies which can delay the onset or reduce the risk of potential health problems into adulthood.
- evaluate how the multiple influences which affect health decisions and behaviors can be altered.

This is evident, for example, when students:

- ▲ identify the consequences associated with engaging in high risk behaviors which compromise health, such as driving under the influence of alcohol/drugs.
- ▲ evaluate how marijuana impacts the developing brain, learning and memory.
- ▲ identify how marijuana distorts visual information, impairs reaction time and useful field of vision.

Standard 2—A Safe and Healthy Environment

Students will demonstrate personally and socially responsible behaviors. They will care for and respect themselves and others. They will recognize threats to the environment and offer appropriate strategies to minimize them.

Students will:

- recognize hazardous conditions in the home, school, workplace, and community and propose solutions to eliminate or reduce them.
- recognize how individual behavior affects the quality of the environment.

This is evident, for example, when students:

- ▲ evaluate the negative impact impaired driving has on the self and the public.
- ▲ demonstrate how marijuana can impact planning, navigating and accomplishing a task.
- ▲ recognize laws that are designed to keep drivers and the public safe on the road.

Standard 3—Resource Management

Students will understand the influence of culture, media, and technology in making decisions about personal and community health issues. They will know about and use valid health information, products, and services. Students will advocate for healthy families and communities.

Students will:

- identify characteristics of valid health information and health-promoting products and services and know where to locate them.

This is evident, for example, when students:

- ▲ identify public health campaigns, such as NHSTA's, "If You Feel Different, You Drive Different", which promotes healthy and safe living.

Rhode Island Health Standards

Grades 9-10

1.3 Analyze the impact of substance abuse on the functioning of body systems. (effect on performance, concentration, communication, effects of chemical substances on brain function...)

1.4 Examine how the family, peers, community, and environment influence substance use behaviors of individuals. (peer pressure)

3.1 Analyze the role of individual responsibility for healthy behaviors. (choices and consequences, effects of drugs on other aspects of behavior, judgement, and reason)

3.3 Analyze the short-term and long-term consequences of risky and harmful behaviors. (drug laws and their purpose, effects of alcohol and other drugs on judgement, driving, personal feelings and attitudes about substance use)

4.4 Analyze how community and peer norms influence substance use behaviors. (socially accepted/non-accepted uses of various substance)

5.4 Communicate care, consideration and respect of self and others. (not using substances, not pressuring others to use)

6.2 Analyze substance use concerns that require individuals to work together. (substance abuse prevention and treatment)

6.3 Predict immediate and long-term impact of substance use decisions on the individual, family, and community. (factors and steps in decision making, on-going nature of decision making through life)

7.1 Discuss accurate information and express opinions about substance abuse. (effects of substance use on individual, family and society)

7.5 Work cooperatively when advocating for healthy communities. (laws to control access and use of drugs, identifying community resources)

Rhode Island Health Standards

Grades 11-12

- 1.1 Analyze the impact of substance use on the interrelationships of mental, emotional, social, and physical health throughout life (maturation, impact of substance use on each stage of human growth and development)
- 1.2 Analyze how family, peers, community, and environment influence the use of chemical substances. (youth access)
- 1.3 Describe how to delay onset and reduce risks of potential life-long health problems relating to substance use.
- 3.3 Design a plan with recommended strategies to address a substance abuse issue in the local community which presents a threat to health. (driving under the influence)
- 7.1 Discuss accurate information and express opinions about substance use/abuse issues.
- 7.4 Work cooperatively when advocating for substance abuse prevention issues.

I. Lesson Plan

Shifting Gears E-Learning Module

TOPIC

Substance Use and Driving

UPDATED

3/2020

OVERVIEW

This e-learning module should be utilized to enhance individuals’ understanding of the effects of marijuana on motor skills, executive function, field of vision, perception, reaction time, and short-term memory. Students will also consider planning for alternate transportation such as calling on a “designated driver” or ride-hailing service. Each of these topics will be covered by an engaging and informative activity that will demonstrate the potential impairments that occur under the influence of marijuana.

TEACHER GUIDE

<p>OBJECTIVES</p>	<ul style="list-style-type: none"> • Show the potentially severe consequences that can occur related to impaired driving • Provide evidence-based facts to address preconceived ideas about marijuana use • Explain the physical and cognitive processes that are affected by marijuana • Compare and contrast the effects of marijuana impairments to that of alcohol • Discuss alternate methods of transportation
<p>REQUIREMENTS</p>	<p>Laptop, smartphone, or tablet to view online module.</p>
<p>DIRECTIONS</p>	<p>Teachers should send students the E-learning module to review, and then direct students to complete student activity worksheets.</p> <p>Indicate any specific guideline beyond the ones given in the student directions and set appropriate due dates for completed work as well as the method of delivery.</p>
<p>RESOURCES</p>	<ul style="list-style-type: none"> • Marijuana and Driving: The Dangers of Driving High • Post-Program Reflective Questions • Article Analysis Activity • Graph Analysis Worksheet

TEACHER GUIDE

CITATIONS

- Lubman, Dan, et al. Effects of Cannabis on the Teenage Brain NCPIC + Turning Point. Effects of Cannabis on the Teenage Brain, Cannabis Information and Support, 18 Aug. 2014
- Banta-Green, Caleb, and Jason Williams. "Overview of Major Issues Regarding the Impacts of Alcohol and Marijuana on Driving ." AAA Foundation for Traffic Safety, Mar. 2016, pp. 1–4., www.aaafoundation.org/sites/default/files/OverviewOfMajorIssuesRegardingAlcoholCannabisImpacts.pdf.
- Logan, Barry, et al. "An Evaluation of Data from Drivers Arrested for Driving Under the Influence in Relation to Per Se Limits for Cannabis." AAA Foundation for Traffic Safety, May 2016, www.aaafoundation.org/evaluation-data-drivers-arrested-driving-influence-relation-per-se-limits-cannabis/.
- Tefft, Brian C., et al. "Prevalence of Marijuana Involvement in Fatal Crashes: Washington, 2010-2014." AAA Foundation for Traffic Safety, May 2016, pp. 1–15., www.aaafoundation.org/prevalence-marijuana-use-among-drivers-fatal-crashes-washington-2010-2014/.
- Innocorp, Ltd. Fatal Vision Goggles®: Marijuana Simulation Experience.

II. Supplemental Materials

How to Implement the Effects of Marijuana of Driving Optional Quiz:

Teachers can use this Effects of Marijuana on Driving optional quiz to ascertain a student's understanding of this topic after going through the e-learning module.

- Students should be directed to read each sentence and choose true or false in response to the statement.

Effects of Marijuana on Driving

True False



1. Low doses of marijuana can affect driving abilities. **T**



2. Some people drive better when high on marijuana. **F**



3. The effects of marijuana wear off after one hour. **F**



4. THC (the active chemical present in marijuana) can be detected 2 weeks after marijuana use. **T**



5. Marijuana usage enhances peripheral vision. **F**



6. Drivers have difficulty maintaining attention after using marijuana. **T**



7. Depth perception is not improved by marijuana usage. **T**



8. Drivers who have ingested marijuana may swerve between lanes. **T**



9. Motorists who have used marijuana are able to quickly identify dangerous situations. **F**



10. Research shows that marijuana usage can increase the risk of collision. **T**

How to Implement Video Activity:

- Students should answer the pre-video questions.

- After viewing the video, the students can work on the post-video questions referring to the information presented in the video.

- Answers should be detail and reflect an accurate understanding of the information on marijuana's impact on the teenage brain.

PRE-VIDEO QUESTIONS:

1. What do you know about how the brain develops?

Answers may vary.

2. What do you know about THC? What do you think it is?

Answers may vary. The chemical compound in marijuana responsible for causing the high in the brain.

3. What do you think are some of the effects of marijuana on brain development?

Answers may vary.

Please watch the video [Effects of cannabis on the teenage brain NCPIC + Turning Point](#) through the provided link.

POST-VIDEO QUESTIONS:

1. What are the three main areas of brain function and development that THC interferes with in the developing brain?

Learning and memory, motivation, and mood.

2. How could this interference impact safe driving abilities? Describe in detail.

Answers may vary but could include planning a route, learning new traffic patterns, slower reflexes and motor skills, etc.

3. How could ingesting marijuana affect a person's ability to successfully study for an important exam?

Answers may vary but could include information related to learning and memory issues (i.e. short-term memory loss)

4. How could marijuana use affect a person's relationships based on the information presented in the video?

Answers may vary.

5. Describe how improper brain development could cause issues with future success.

Answers may vary but could include drops in school grades and job opportunities.

How to Implement Article Analysis Activity:

- Students should be directed to actively read the article.
- After reading, the students can work on the questions referring back to the article.

DRIVING UNDER THE INFLUENCE OF MARIJUANA: MORE DANGEROUS THAN YOU THINK!

Adapted from Herrman & Herrman, P.L.L.C. on September 14, 2016

- 1 After decades of public and private campaigns to educate the public about the dangers of driving while under the influence of alcohol, it's safe to say that every driver in America should know that drinking and driving don't mix. At the same time, however, there have often been contradictory reports about potential dangers associated with driving while under the influence of marijuana. After all, marijuana advocates have been claiming for years that their drug of choice is much safer than alcohol, and many have suggested that drugged driving is relatively safe too. The facts, however, indicate that the combination of marijuana use, and driving is more dangerous than many people believe.

DOES MARIJUANA IMPAIR DRIVING SKILLS?

- 2 Contrary to what many cannabis advocates claim, there is scientific evidence that demonstrates that marijuana use can seriously impair driving skills. In one study that directly addressed the subject, researchers concluded that the [risk of being in an accident after smoking cannabis is doubled](#). The study noted the increased risk in those who had elevated THC levels in their blood, while acknowledging other research that found no increased risk when only urine samples were used to test those levels. This study was notable for focusing attention on those who had recently smoked cannabis, rather than relying on test subjects who simply had THC in their systems.
- 3 Researchers found that drivers were impaired in a number of ways:
 - Reaction times were affected
 - Many drivers slowed their vehicles to compensate for their impairment
 - They veered into other lanes more frequently
 - They failed tests involving critical tracking – tests that assess distraction levels
 - Many demonstrated impaired cognitive function

THE NUMBERS ARE ALARMING

- 4 In addition to scientific studies, there is also growing statistical evidence that marijuana impairment is a serious concern. For example, about [7% of drivers involved in fatal automobile accidents](#) are found to have THC in their systems. The problem could be even worse with our younger drivers, as a generation of teenagers seem to be growing up under the delusion that marijuana either has no impact on driving skills or – and hold on to your seat for this one – actually makes you a better driver! That's from a [2013 survey of teen drivers](#), in which 34% of those youngsters actually said that they believed marijuana improves driving skills. Another 41% asserted that it had no impact on driving.

- 5 Those perceptions matter too, especially when you consider that the CDC has identified automobile crashes as the number one cause for teen deaths, with thousands of teens dying each year on the nation's roads and highways, and many tens of thousands more suffering injuries. If the nation's teens are growing up with the belief that they can use marijuana and drive without increasing their risk of being in a crash, those numbers may look even worse in the decades to come.

WHAT CANNABIS PROPONENTS CLAIM

- 6 It is interesting to note that many of the groups committed to legalizing cannabis everywhere take issue with the studies that indicate driving impairment, and even minimize the actual risks. NORML (The National Organization for the Reform of Marijuana Laws) , for example, chooses to [minimize the types of impairment](#) that have been identified – swerving into other lanes and reduced reaction times, for example – by citing researchers who suggest that such impairments don't necessarily affect performance.
- 7 The fact is, however, that an inability to remain in your own lane is a performance failure by any objective standard. It's one of the first things we teach young drivers: stay in your lane unless you're intentionally changing lanes. As for the notion that reduced reaction times are not indicative of impairment of performance, that too is absurd. If THC causes slow reaction times, that is impairment and can lead to poor driving performance.

THE BOTTOM LINE

Marijuana advocates are free to argue in favor of legalization of their favorite drug and can claim that THC is harmless when it comes to drivers. They have that right. Logic, and the weight of scientific evidence and traffic studies, however, tell a different story. Facts are stubborn things, after all. And what the facts suggest in this instance is that drugged driving puts drivers and others on the road at increased risk of crashes that can cause injury or even death.

Name:

Date:

Article Analysis Worksheet

1. What is the headline of the article?

Driving Under the Influence of Marijuana: More Dangerous Than You Think

2. Does the headline effectively summarize the article and grab the reader’s attention? Why or why not?

Answers may vary

3. Fill in the following information about the article.

What was the topic being discussed?	Marijuana’s impairment on driving. Answers may vary.
Why is the information important?	Answers may vary.
How is this issue problematic?	Answers may vary.

4. What age group are the article’s authors most concerned about? Why?

Teenagers, young drivers. Answers may vary.

5. What differing point do the authors note in the sixth paragraph? Why does this point fall short according to the authors in paragraph seven?

Groups that support the legalization of marijuana argue that the impairments of marijuana have minimal impact on driving skills. They say the impairments “don’t necessarily affect performance”. The authors note that the impairments on reaction time and the ability to drive straight in their lane are significant and can become dangerous.

6. What was the most important fact or detail the stuck out to you? Why did you find it important?

Answers may vary.

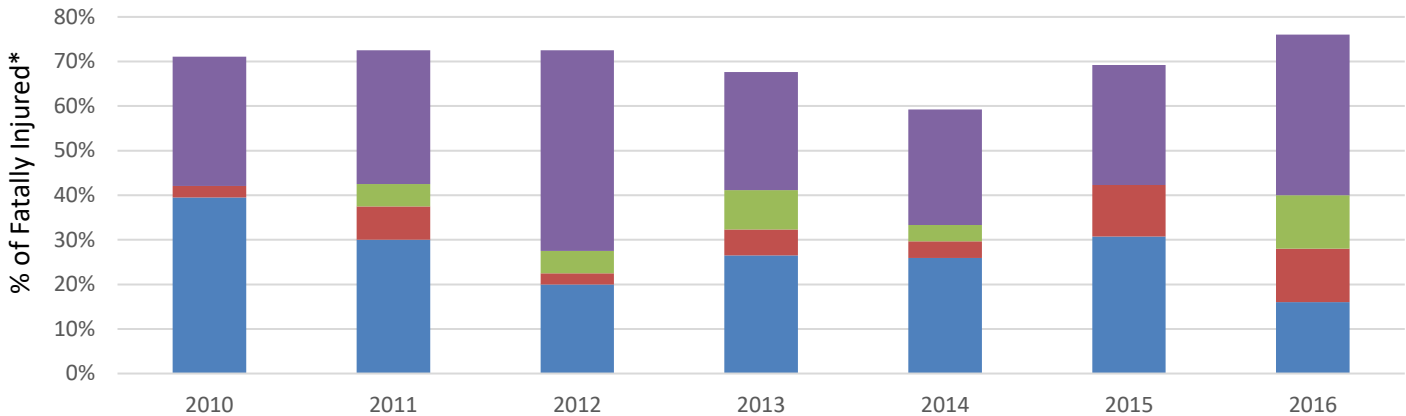
How to Implement the Graph Analysis Activity:

Teachers can use this the graph analysis activity to engage the students with statistics on drug and alcohol impaired fatalities.

- Students should be directed to read and analyze each graph and answer the following questions.

Each of the following graphs display the statistics on the **fatal crashes related to drugged driving** in one US state from 2010-2016. Use the graphs and charts to answer the following questions.

Graph A: Positive Alcohol and Drug Tests in Fatally Injured Drivers

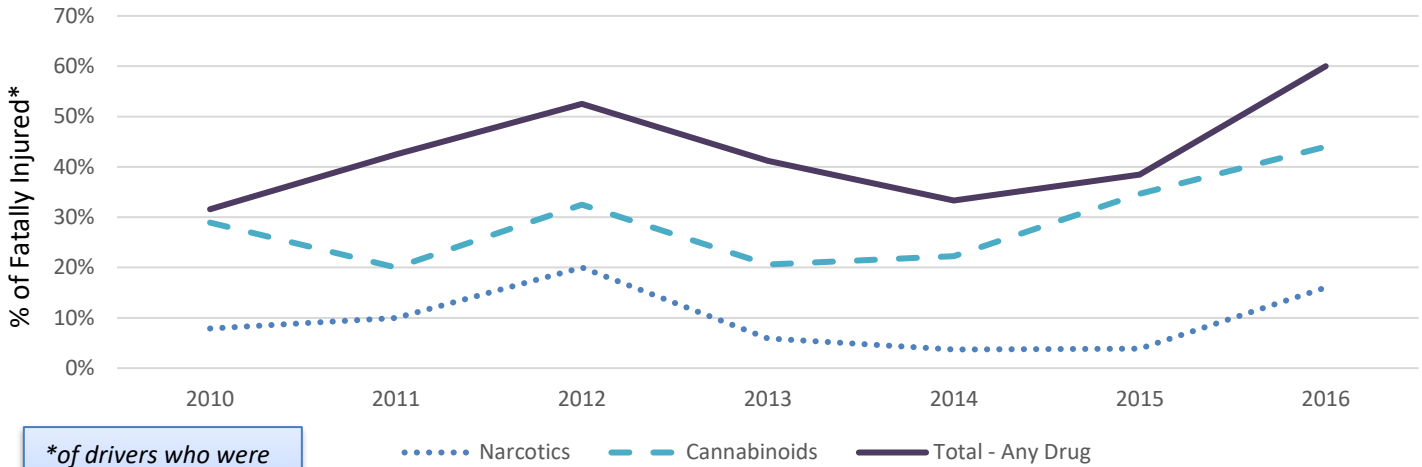


**of drivers who were tested for both alcohol and drugs*

- Poly-drug (alcohol+drug or two different drugs)
- One drug (not cannabinoids) only
- Cannabinoids only
- Alcohol only

1. According to Graph A, which year showed the largest percentage of alcohol only drug-tested drivers? Write down the approximate percentage.
2010, approximately 40%
2. Summarize what appears to be happening to the percentage of alcohol only drug-tested drivers between 2010-2016.
The percentage appears to be decreasing.
3. How has the number of cannabinoids only drivers changed from 2010-2016?
The number appears to have increased.
4. Based on the statistics presented, what do you find most concerning? What is one of the biggest problems?
Answers can vary.
5. What could help solve the problem you identified in the last question?
Answers can vary.

Graph B: Drugs Involved Crash Fatalities



**of drivers who were tested for both alcohol and drugs*

1. In 2016, what percentage of the fatally injured drivers tested positive for drugs?
60%
2. Using to Graph B, describe the fluctuation of the percentage of drug-tested drivers who tested positive for cannabinoids between 2012-2016.
The percentage has increased by about 10%.
3. Based on the statistics presented, what do you find most concerning? What is one of the biggest problems?
Answers can vary.
4. What could help solve the problem you identified in the last question?
Answers can vary.

How to Implement the Peer Pressure Activity:

Teachers can use this the graph analysis activity to engage the students with statistics on drug and alcohol impaired fatalities.

- Students should be directed to read and analyze each scenario and respond appropriately.

-Answers will vary for each scenario.

Directions: Please write thoughtful, detailed answers to the following realistic scenarios. Describe how you could respond to each situation and why you would respond in the way you indicated. Your answers should show careful consideration of the problems presented in the scenarios. Use the information you have learned in the module to support your responses.

1. You're at a party and the friend who was supposed to give you a ride home vaped THC and is currently high. She insists that she's fine and tells you to get in. You know that getting in the car with her would put your life at risk - and hers -- but you don't want to make a big scene. What can say/do to keep you and your friend safe?

2. You are hanging out with your soccer team after a game. The team captain offers the players marijuana to help the team relax after the big game. The team captain says that everyone should use marijuana so they can all have fun together. You remember you are supposed to pick up your little brother at his sports practice. How could respond to the team captain?

3. One of your friends tells you that they believe they drive better when they are high. They explain that they drive very slowly and are more relaxed when they are high. How could you encourage your friend to make safer decisions? How would you convince them they are driving impaired?

4. You are talking with a fellow student in your criminal justice class discussing marijuana-impaired driving. The student states that "No one could prove that a someone was driving high. I know people who do it all the time. They don't have any consequences. What's the big deal?" How could respond to them about the severity of the issue of marijuana-impaired driving?

5. You are at a good friend's house one Friday night and she pulls out a joint of marijuana that her older sister gave her. She wants you to smoke it with her. You don't want to. How could you respond?

Real-World Applications Project

Directions: You are the Director of Public Health for your city/town. Two years ago, your state legalized recreational marijuana for individuals 21 years of age or older. After reviewing the available statewide vehicle crash data, you realize that the amount of fatal car crashes that involved the driver recently using marijuana have doubled. You are tasked with creating a community-based plan of action to help prevent marijuana-impaired crashes.

- Please complete **one** activity from **each** of the following sections.

Health Promotion Strategies:

Create 10 different social media posts about the dangers of marijuana-impaired driving from the perspective of the Department of Public Health.

Compile 3 PSAs (Public Service Announcements) about the dangers of marijuana and driving that you think could be shared with your citizens. Create an email to the mayor including the links of the PSAs you selected, and then describe why you think they should be used to influence your citizens and what elements of each PSA are persuasive.

Health Policy Recommendations:

Look up your own state's impaired driving laws, then create an informational document that consolidates the impaired driving laws and describes why they are important for citizens know. Evaluate what may be missing from the state's laws that could improve safety and reduce impaired driving.

Look up your own state's impaired driving laws, then write an advocacy letter to one of your state's senators or representatives stressing why they should change or enforce the current impaired driving laws. Describe what specific elements are important to enforce, and what elements could be strengthened to assist in better enforcement.

Best Practices:

Create a document that describe at least 3 alternatives to driving impaired (i.e. designated driver). Describe why each option is a good alternative with at least 3 bullet points per option.

Create a list of 10 strategies for teens to help them confront substance abuse-related peer pressure. Describe each strategy, so it could be presented easily and thoroughly to high school students.

Upon completion, please send one document with each typed activity to your instructor. Make sure to have a correct heading and proofread the typed activities carefully for spelling and grammar errors.