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Application Exercise #5

Title: The price of beer and automobile fatalities: using elasticity to determine appropriate public policy

Student learning outcome: Students will use the price elasticity of demand for beer to estimate the impact of a price increase on alcohol-impaired driving fatalities and then discuss policy options to prevent them.

Text that students see: Every 50 minutes. That’s how often one person in the United States dies due to a car crash involving an alcohol-impaired driver. The National Highway Traffic Safety Administration puts annual cost of alcohol-related crashes at more than $44 billion. The good news is that there are a variety of ways to prevent injury and death from alcohol-related crashes. One prevention method is to increase the price of alcohol by raising taxes.

Suppose the price elasticity of demand for beer among young adults age 18-20 is ED = |1.3|

And, assume that the number of alcohol-related motor vehicle fatalities is roughly proportional (same as) to beer consumption for these young adults.

1. If the state imposes a beer tax that increases the price of beer by 10% how would this affect the quantity demanded of beer, and therefore the number of alcohol-related motor vehicle fatalities among 18-20 year olds?

Reporting will be done by a selected representative from your group.

What is the federal government’s best policy option to reduce the number of alcohol-related motor vehicle crashes among 18-20 year olds?

1. Impose taxes on all alcohol, not just beer, to increase price and thus decrease consumption.
2. Pass legislation requiring that all bars and restaurants offer free non-alcoholic drinks to any designated driver.
3. Mandatory screening and brief intervention for alcohol problems among high school seniors and college freshman.
4. Strictly enforce the laws about the purchase and consumption of alcohol by anyone under age 21.
5. Requiring [ignition interlocks](https://www.cdc.gov/motorvehiclesafety/calculator/glossary.html#interlocks) for all offenders, including first-time offenders

Reporting will be done via simultaneous answer selection.

Resources: Textbook resources on calculating price elasticity of demand. Also, students can look through information presented here: https://www.cdc.gov/motorvehiclesafety/impaired\_driving/impaired-drv\_factsheet.html

Facilitation Guide:

While the first part of this exercise has a definitive answer (ceteris paribus, will decrease by 13%), most of the prevention methods choices have been studied and proven successful in reducing alcohol-related fatalities. Since there is likely to be a variety of responses chosen, good discussion should follow.

Prefatory remarks: Elasticity is a concept that does not just affect coffee shop managers (e.g., how much more coffee will they sell after a price cut). Elasticity can help inform public policy on such things as the legalization of illicit drugs and ways to reduce drunk driving. Today you will see how the concept of price elasticity of demand can be applied to decide the best way to reduce alcohol-related motor vehicle fatalities.

Just think, during the time of this one economics class, another person in the US has died from an alcohol-related motor vehicle accident. Close to 30% of all traffic-related deaths involve alcohol. This is a problem we can have an impact on as successful prevention strategies do exist.

https://www.cdc.gov/motorvehiclesafety/impaired\_driving/impaired-drv\_factsheet.html

Discussion questions:

Is the demand for beer among 18-20 year olds price elastic or price inelastic?

Is the price increase sure to have the projected change you estimated in #1? Why or why not?

If the price of alcohol increases substantially, what might people do? (substitute other stuff) What would happen to impaired motor vehicle fatalities as a result?

What else can have an impact on motor vehicle fatalities?

What might happen to total overall alcohol-related fatalities (not just for young adults)?

Do you expect to see a difference in price elasticity between the short term and long term?

Do you expect to see a difference in price elasticity between 18 – 20 year olds and older populations?

Explain your answers.

What do you think has happened to impaired-driving accidents in states that have legalized the recreational use of marijuana?

A recent study indicated that “stricter college alcohol polices, such as raising the price of alcohol or banning alcohol on campus, decrease the number of students who use marijuana.” Based on this information, do you think alcohol and marijuana are substitutes or complements? (Williams J, Pacula R, Chaloupka F and Wechsler H “Alcohol and Marijuana Use Among College Students: Economic Complements or Substitutes?” Health Economics 13:9 pp. 825-843.)

What problems, if any, are associated with your chosen prevention method?

Closing remarks:

Top 3 takeaways

1. Increasing the price of alcohol will decrease the consumption of alcohol but, as price rises, it is highly likely that people may substitute other goods for alcohol. One of the unintended consequences of the legalization of marijuana may be increases in accidents and deaths involving marijuana.
2. Just like many other economic concepts, elasticity can be applied to many real-world situations including how to solve some of society’s problems.
3. As is often the case, there are many ways to solve a problem and sometimes a combination of prevention strategies is called for as is the case in preventing injury and death from alcohol-impaired driving.