

**ECO 150, Winter 2022, Required Homework Assignment #2**  
**Due by the start of class on February 15**

This assignment asks you to consider a potential market failure in the market for gasoline. It also asks you to continue to do some data work.

Gasoline taxes are a source of revenue for both the U.S. Federal government and state governments. Higher fuel taxes have been suggested as a [way of paying for](#) higher infrastructure spending.

1. Most U.S. states impose gasoline taxes as a way to collect revenue. Assume that there are no market failures in this market. Show how a gasoline tax will create deadweight loss and reduce efficiency.
2. Now suppose that gasoline consumption entails a negative externality through greenhouse gas emissions. Show how a properly designed gasoline tax could improve efficiency given this externality.
3. What would you need to know to determine the efficient size of a state's gasoline tax?
4. True or False? If a state's gasoline tax is higher than the amount needed to restore efficiency, it is clear evidence of a policy failure.
5. Using a spreadsheet program (*e.g.* Excel, Google docs), find data on gasoline taxes by state. Provide your source.
6. What is the average tax by state. Which state has the lowest tax? Which has the highest?
7. Using a spreadsheet program (*e.g.* Excel, Google docs), find data on gasoline prices by state. Provide your source.
8. What is the average price by state. Which state has the lowest price? Which has the highest?
9. Make a scatterplot graph of gasoline prices and gasoline taxes.
10. Calculate the correlation between prices and taxes. What does this number mean?
11. Do your answers to #10-11, by themselves, prove a relationship between gasoline taxes and prices?
12. Now considering both your analysis of the data and understanding of the supply and demand model, how do you think higher gasoline taxes affect quantity and price?
13. In addition to state taxes, the Federal Government also taxes gasoline. This [report](#) from the Department of Transportation estimates the impacts of taxes. Based on this report, how much of gasoline taxes are paid by producers versus consumers?