# The High Cost of a Cold One:
# The Link Between Beer Taxes and Traffic Fatalities

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Economics 203

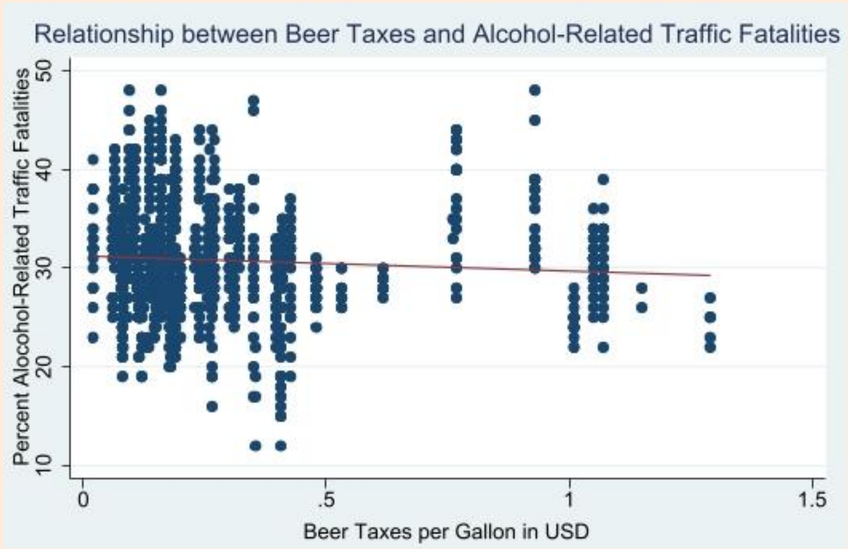
## Introduction

- Previous studies show overall negative relationship between fatalities and beer taxes (Chang et al., 2011)
- Alcohol-related traffic fatalities fallen 8% in last 20 years; represents **2,000 death decrease** per year
- Large shift in alcohol culture; harsher punishment for drunk-driving offenders
- **Research Question:** Do sin taxes levied on beer affect alcohol-related traffic fatalities?
- **Hypothesis:** Increase in beer taxes decreases fatalities

## Empirical Model

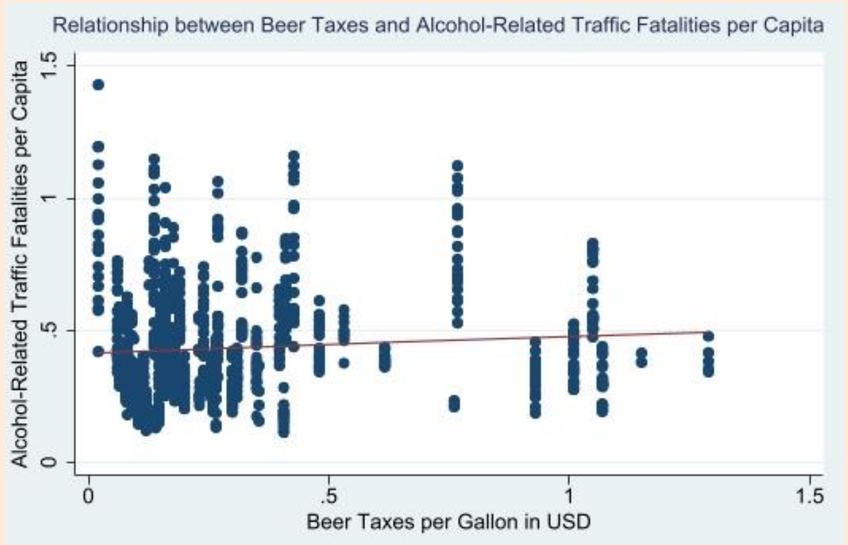
$$F = f(BT_{st}, D_{st}, V_{st}, A_{st})$$

- **Response variable:**
  - **F:** Drunk Driving Fatalities
    - Alcohol Traffic Fatalities as a Percentage of Traffic Fatalities
    - Alcohol Traffic Fatalities as a Percentage of the Population
- **Explanatory variable:**
  - **BT**: Beer Taxes
- **Control Variables:**
  - **D:** State Demographics
    - Unemployment Rate
    - Percentage of Population from 18-24 years old
    - Police per Capita
  - **V:** Driving Culture
    - Vehicle Miles driven on interstate
  - **A:** Alcohol Culture
    - Ignition Interlock laws
    - Scanner laws
    - Open Container laws
- **State Fixed Effects:** Control for state culture
- **Time Fixed Effects:** Control for country-wide time shifts




## Data

- Primarily collected from government sources
- Collected between **2000-2019**
- State budget deficits used as **instrumental variable** to solve reverse causality between fatalities and beer taxes
- Beer is more accessible than other alcohol, thereby making it more relevant for our study




## Results

| VARIABLES | (1) pctAlcFtl08 | (2) drunkPop |
|---|---|---|
| Beer Taxes | -64.33640*** | |
| | [17.170] | |
| Beer Taxes | | -2.02639*** |
| | | [0.404] |
| Ignition Interlock | 2.42884*** | 0.07796*** |
| | [0.744] | [0.017] |
| Police per Capita | 0.01031 | 0.08996 |
| | [3.861] | [0.091] |
| Vehicle Miles | 0.00015* | 0.00000** |
| | [0.000] | [0.000] |
| Scanner | -1.81611** | -0.04882** |
| | [0.813] | [0.019] |
| Open Container | -0.97650 | -0.09912*** |
| | [0.835] | [0.020] |
| Unemployment Rate | -0.45310** | -0.02758*** |
| | [0.185] | [0.004] |
| Percent 18-24 | 0.51360* | 0.04274*** |
| | [0.297] | [0.007] |
| Constant | 90.69692*** | 2.33383*** |
| | [15.594] | [0.367] |
| Observations | 913 | 913 |
| R-squared | 0.679 | 0.874 |
| Adj R-Squared | 0.650 | 0.863 |

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

- **Statistically significant** relationship between Beer Taxes and both measures of fatalities, magnitude differs based on differences in population size
- Unexpected sign for Ignition Interlock, attributed to reverse causality
- Second regression yields more significant results, likely due to **stronger relationship with population** (Police per Capita, Unemployment, etc.) than traffic fatalities

## Conclusion

- For policy, we recommend using beer taxes to decrease alcohol-related traffic fatalities
- **Limitation:** Our variables do not fully encapsulate driving culture, could affect results
- **Next Steps:** Investigate countries or regions with varying cultures related to drunk driving for strengthening empirical results