Homework3 Submission3

https://github.com/modugbe/homework3

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#Question 1

```
Warning: Removed 51 rows containing missing values (`position_stack()`).
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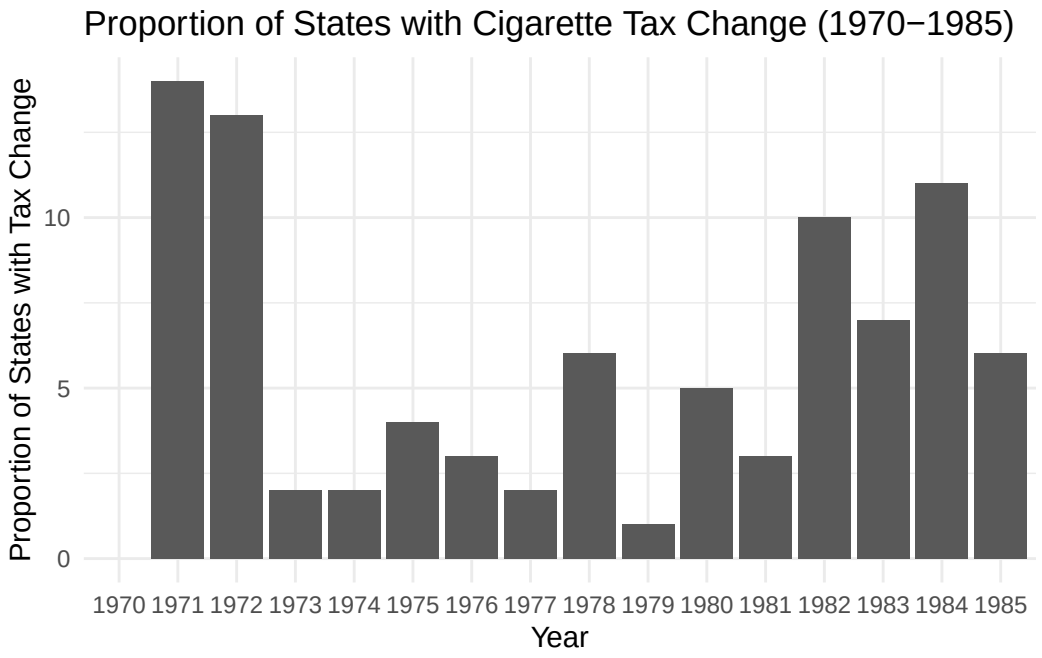
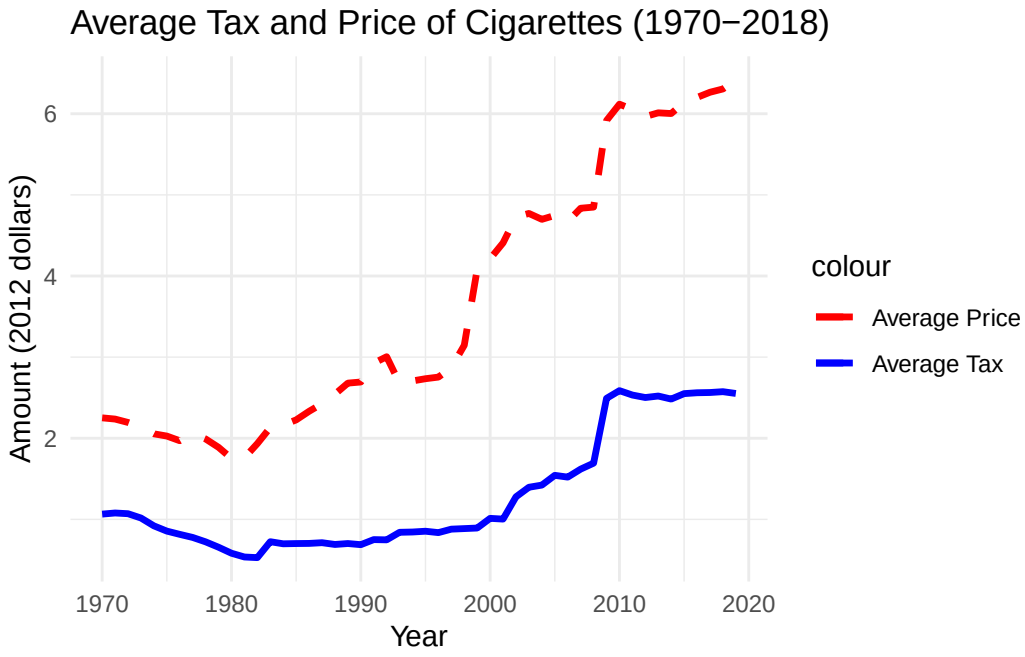
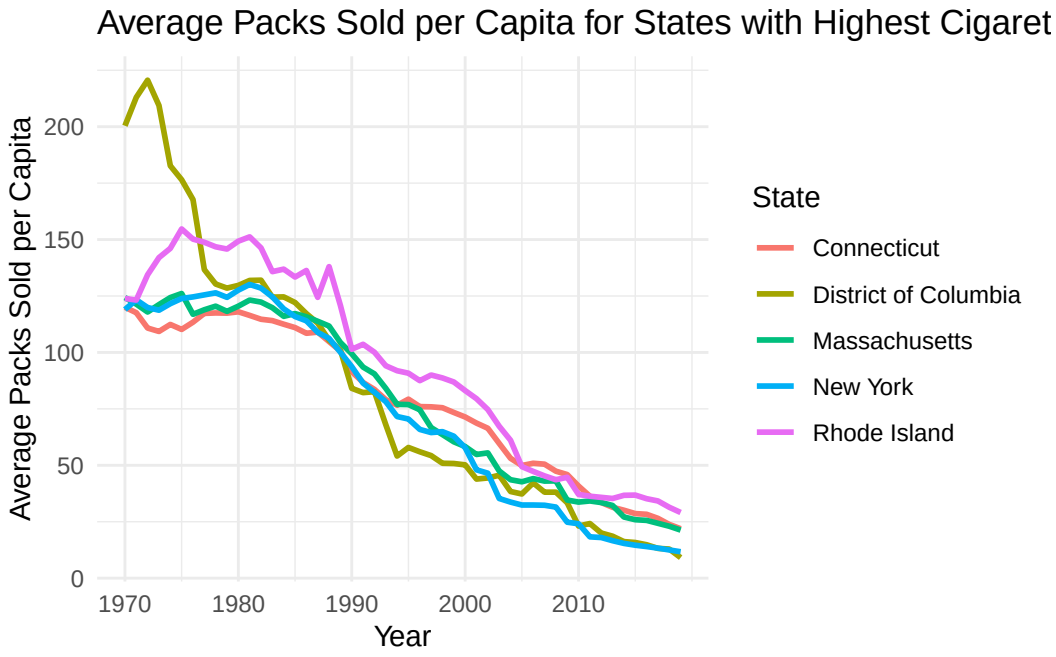


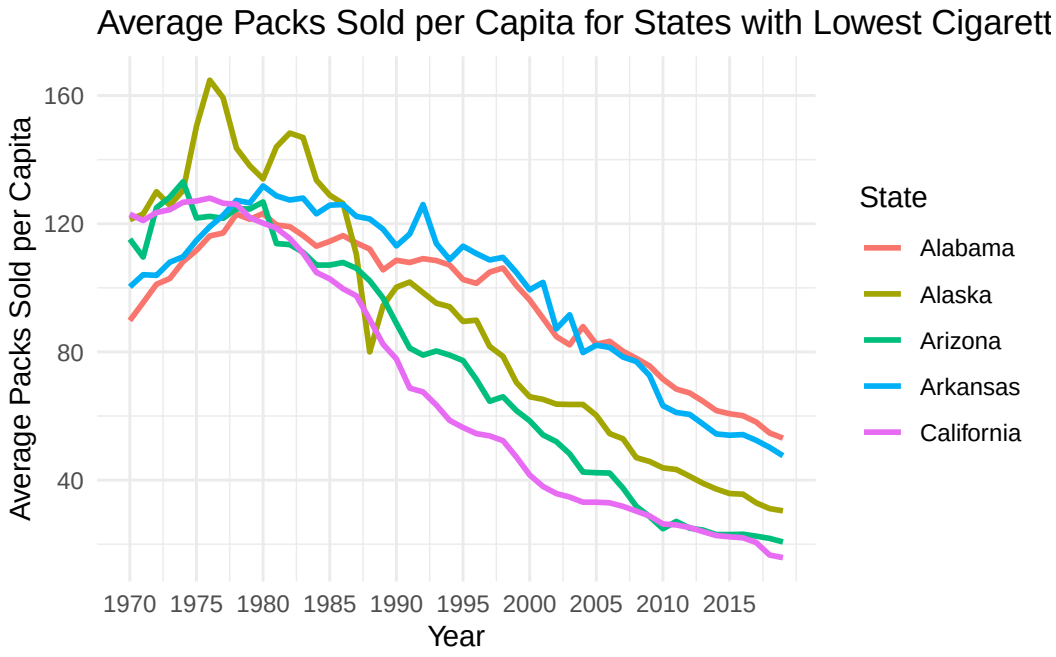
#Question 2


Average Tax and Price of Cigarettes (1970−2018)
Amount (2012 dollars)
6
4
2
1970
1980
1990
2000
2010
2020
Year
colour
Average Price
Average Tax

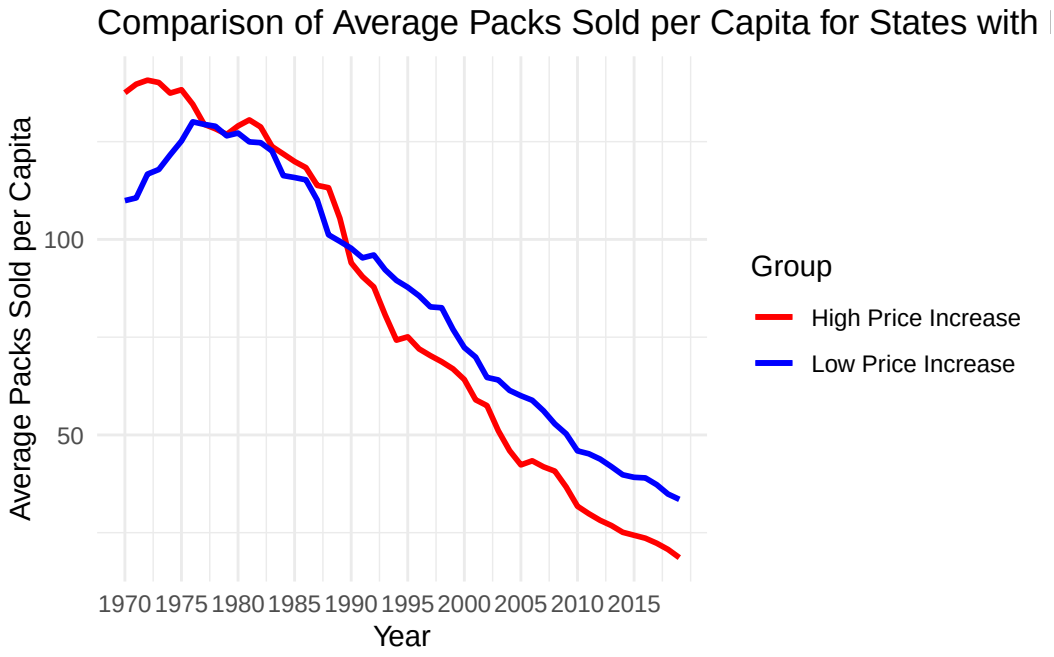
#Question 3


Average Packs Sold per Capita for States with Highest Cigaret
Average Packs Sold per Capita
200
150
100
50
0
1970
1980
1990
2000
2010
Year
State
Connecticut
District of Columbia
Massachusetts
New York
Rhode Island

#Question 4


Average Packs Sold per Capita for States with Lowest Cigarett
Average Packs Sold per Capita
160
120
80
40
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Year
State
Alabama
Alaska
Arizona
Arkansas
California

#Question 5



Both groups of states have similar sales on average that decrease as years or as the taxes increase. This somewhat uniform trend between the groups can be explained by the laws of demand. We expect demand to decrease as price increases.

#Question 6 See Table 1 The price elasticity of demand is estimated to be approximately -0.8. For every 1% increase in prices of cigarettes, there is a 0.8% decrease in the quantity of cigarettes demanded.

#Question 7 See Table 1

The price elasticity of demand is estimated to be approximately -0.8. For every 1% increase in prices of cigarettes, there is a 0.8% decrease in the quantity of cigarettes demanded. This estimate is not very different than the one with no instruments. But the R2 for the first stage is also very low which may indicate that the IV is not strongly correlated with the endogenous variable.

#Question 8 See Table 1

#Question 9 See Table 1

#Question 10

Table 1: Estimation results

	Period	Price_Elasticity	IV_Elasticity	First_Stage_R2	Reduced_Form_R2
log(price_cpi)	1970-1990	-0.8094384	-0.7955235	0.2901006	0.0823776
log(price_cpi)1	1991-2015	-0.9968136	-1.1500837	0.8121467	0.6069778

They are different. Cigarettes becomes a more elastic good where a 1% increase in price results in a higher % decrease in quantity demanded. This may be caused by shifting attitudes about the negative effects of cigarettes and the availabilities of alternatives like e-cigarettes. However, we can't say for sure because these are still relatively consistent.