Bhasin-S-hwk3-3

Sachi Bhasin

2023-03-15

Question 1

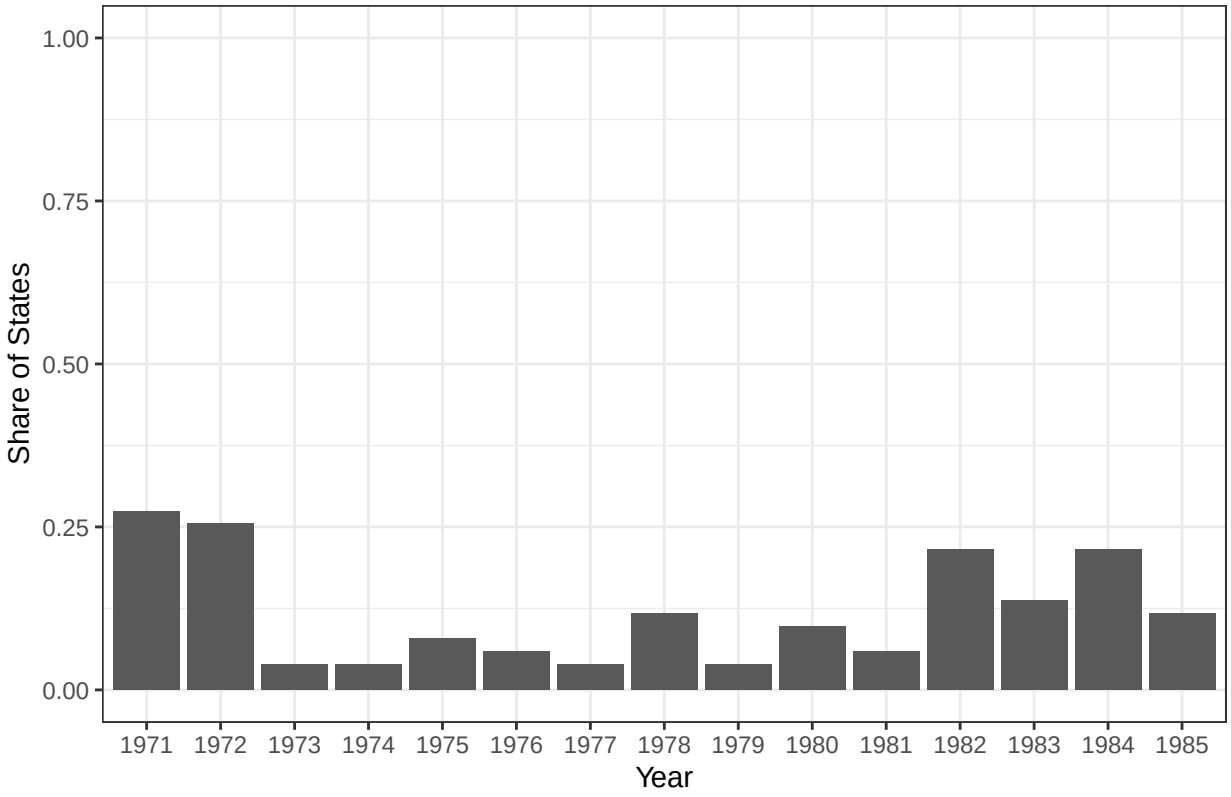

Figure 1: Proportion of States with Change in Cigarette Tax in Each Year from 1970 to 1985

Question 2

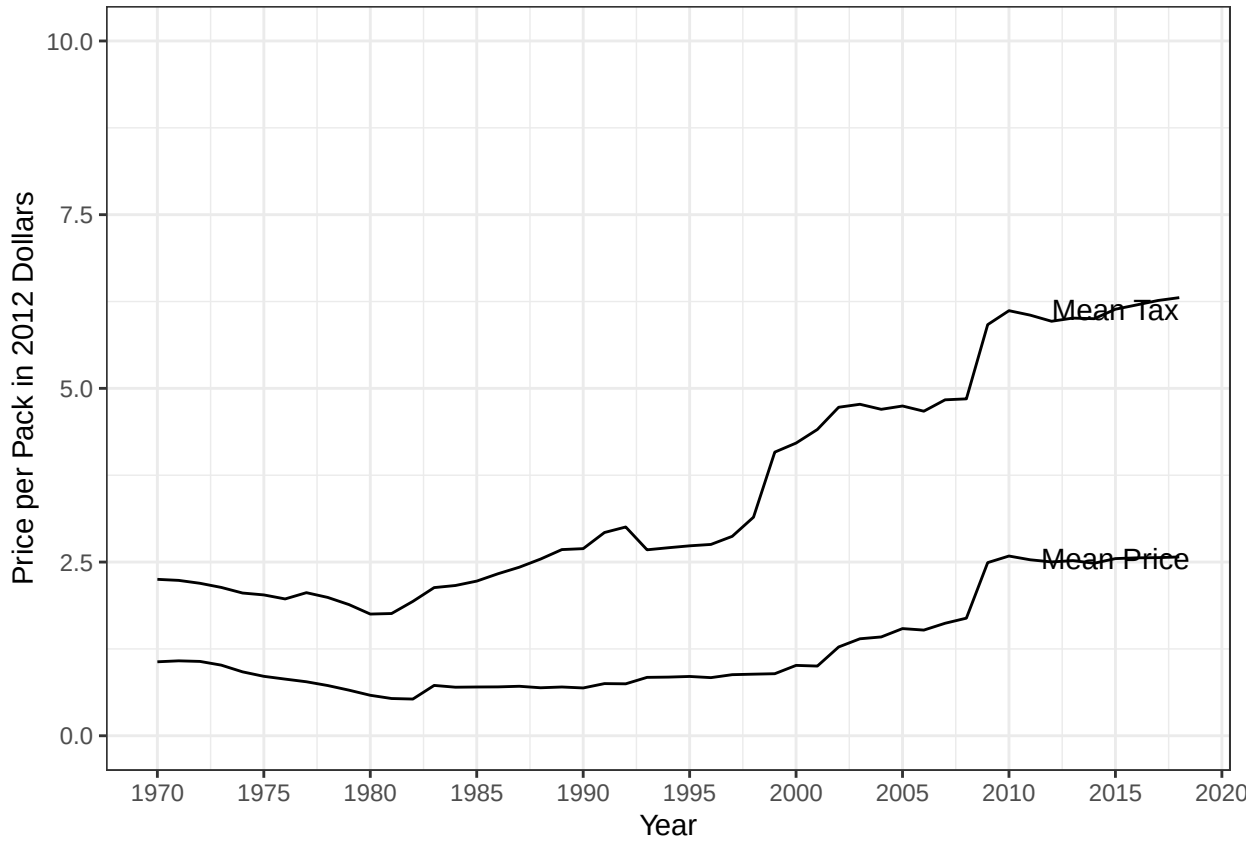

Figure 2: Average Tax (in 2012 dollars) on Cigarettes and Average Price of a Pack of Cigarettes

Question 3

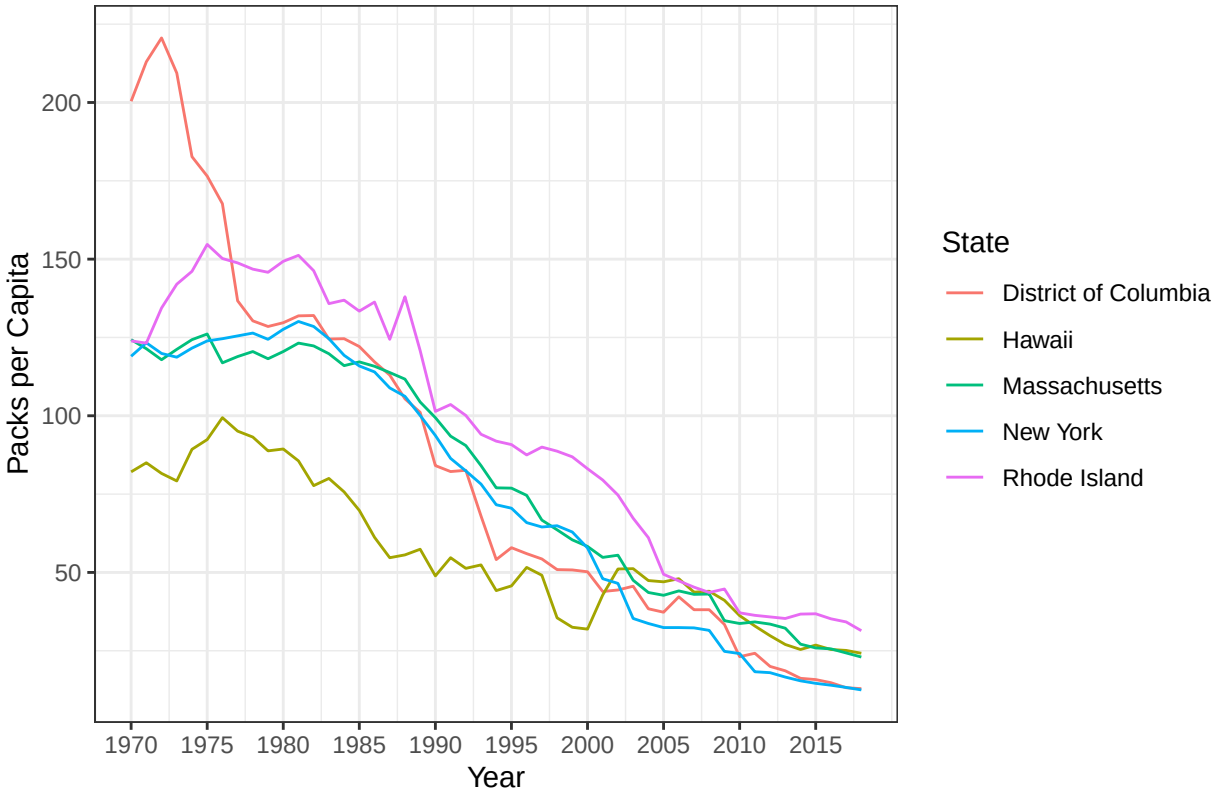

Figure 3: Five States with the Highest Increase in Cigarette Prices (in dollars)

Question 4

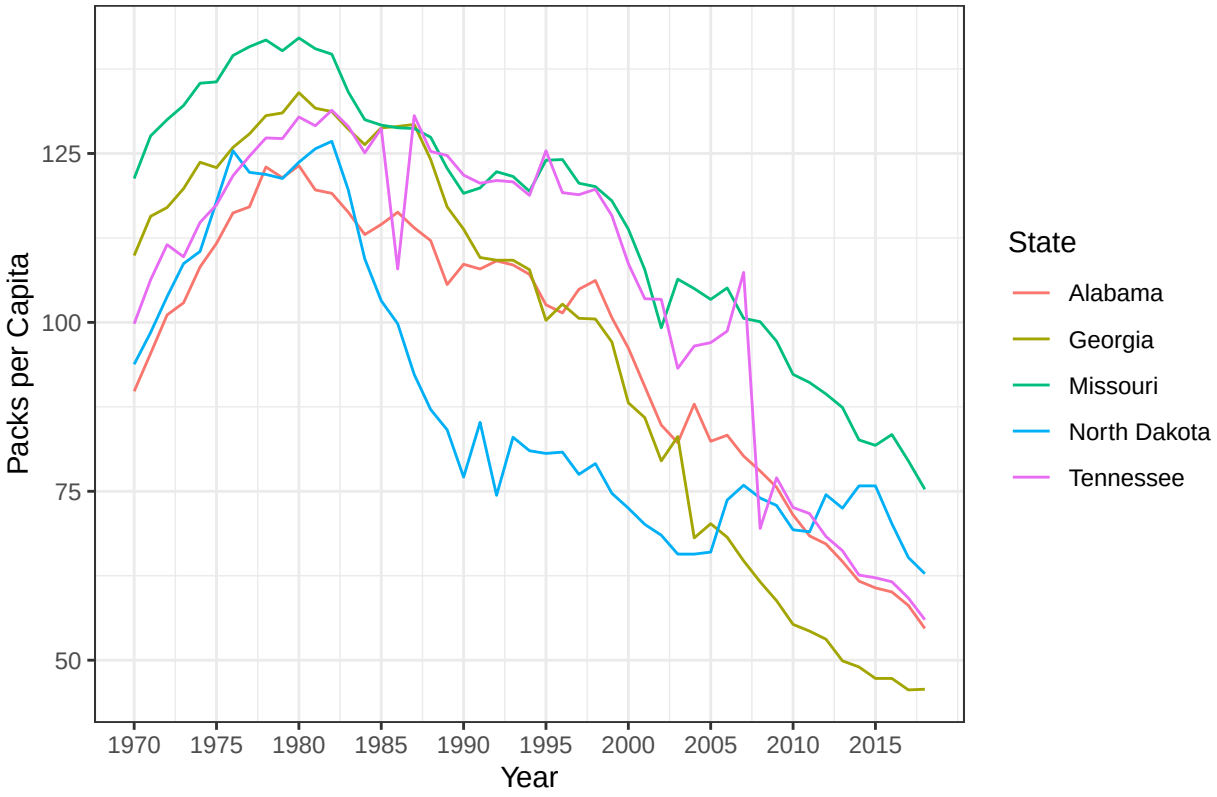

Figure 4: Five States with the Lowest Increase in Cigarette Prices (in dollars)

Question 5

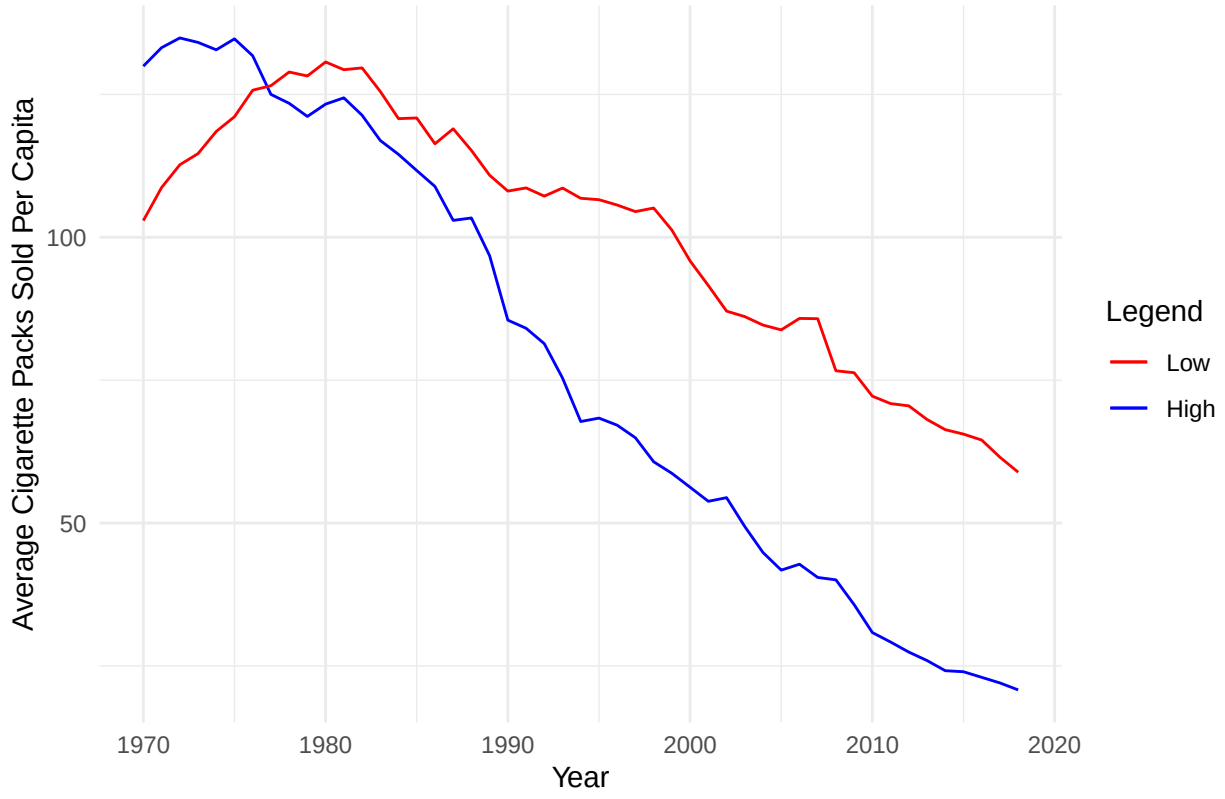

Figure 5: Five States with the Highest Price Increase versus Five States with the Lowest Price Increase

Sales from the 5 states with the highest price increase had a steeper decline in average cigarette packs sold per capita compared to the 5 states with the lowest price increase. After 1973 till 2018, the five states with the largest price increase had an average lower sales per capita compared to five states with the lowest price increase.

Question 6

Table 1: Price Elasticity of Demand from 1970 to 1990

	OLS
Log Price	−0.809
	(0.038)
Num.Obs.	1071
R2	0.294

An 1% increase in the cost of a cigarette pack is estimated to decrease sales per capita by 0.80 percent on average. It is an inelastic relationship.

Question 7

Table 2: Price Elasticity of Demand from 1970 to 1990 (Instrumental Variables)

	IV
Log Price	−0.736
	(0.075)
Num.Obs.	1071
R2	0.292

An 1% increase in the cost of a cigarette pack is estimated to decrease sales per capita by 0.74%. The estimates of those with an instrument are different and show that a change in cost has a slightly smaller impact on sales, making it slightly less elastic. This is because the estimates with an instrument are accounting for the total cigarette tax has on the cost of cigarette packs.

Question 8

Table 3: Point Estimates (1970-1990)

	First Stage	Reduced Form
Cigarette Tax	0.327	−0.241
	(0.017)	(0.028)
Num.Obs.	1071	1071
R2	0.262	0.064

Question 9

Table 4: Elasticity Estimates from 1991 to 2015

	OLS	IV
Log Price	−0.997	−1.164
	(0.025)	(0.029)
Num.Obs.	1275	1275
R2	0.561	0.546

An 1% increase in the cost of a cigarette pack is estimated to decrease sales per capita by 0.997 percent on average. It is an inleastic relationship but very close to an elastic relationship.

An 1% increase in cost per cigarette pack is estimated to decrease sales per capita by 1.17%. The estimates of those with an instrument are different and show that a change in cost has a greater impact on sales, making it more elastic. This is due to the fact that the cigarette tax is accounted for in the regression and its influence on the cost per pack.

Table 5: Point Estimates (1991 to 2015)

	First Stage	Reduced Form
Cigarette Tax	0.308	−0.358
	(0.005)	(0.008)
Num.Obs.	1275	1275
R2	0.764	0.585

Question 10

Yes, they are different. The estimates from 1991 to 2015 are more elastic compared to those from 1970 to 1990. This may be because taxes on cigarette packs increased and the Center for Disease Control emphasized the harmful health effects of smoking, making people more sensitive to the price changes on cigarettes.