Homework 3

ECON 470, Spring 2025

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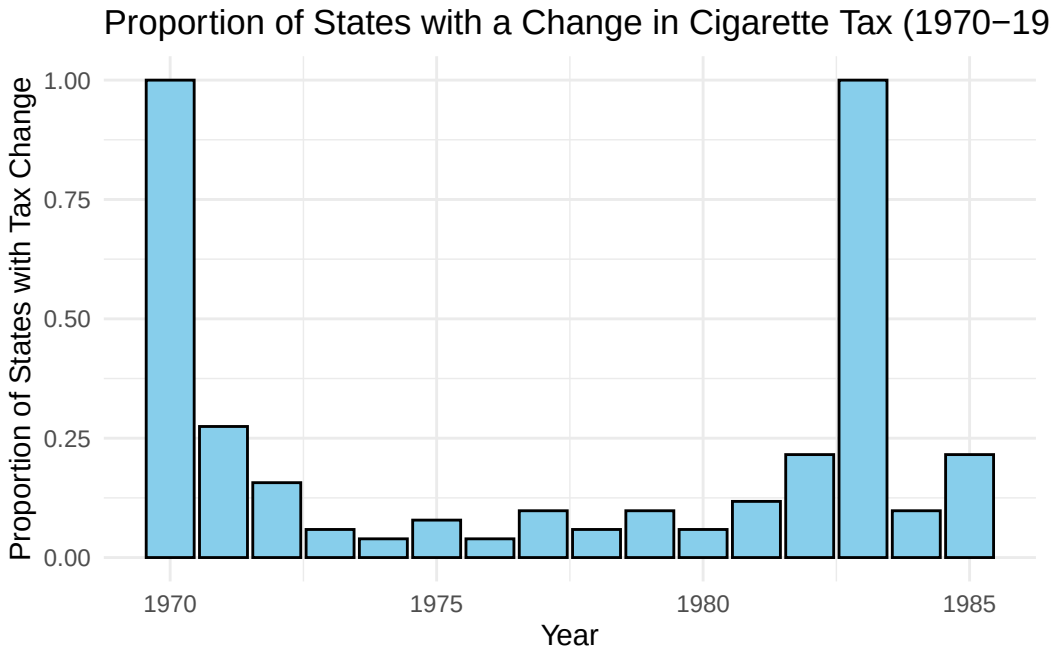
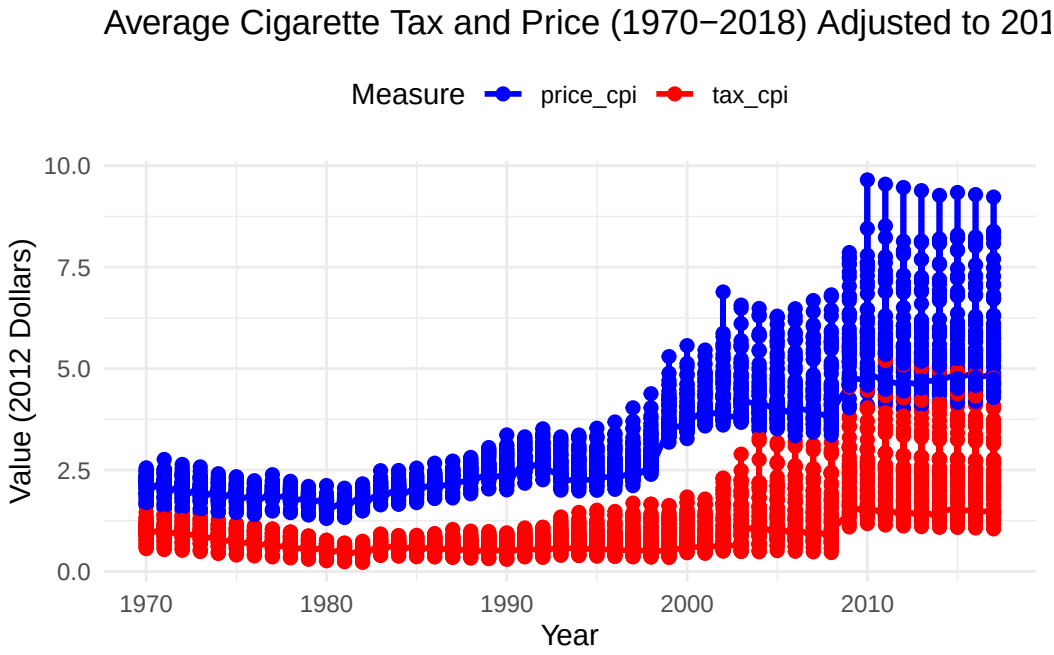
Here is a link to my repository: {https://github.com/mollyjc02/Homework_3.git}

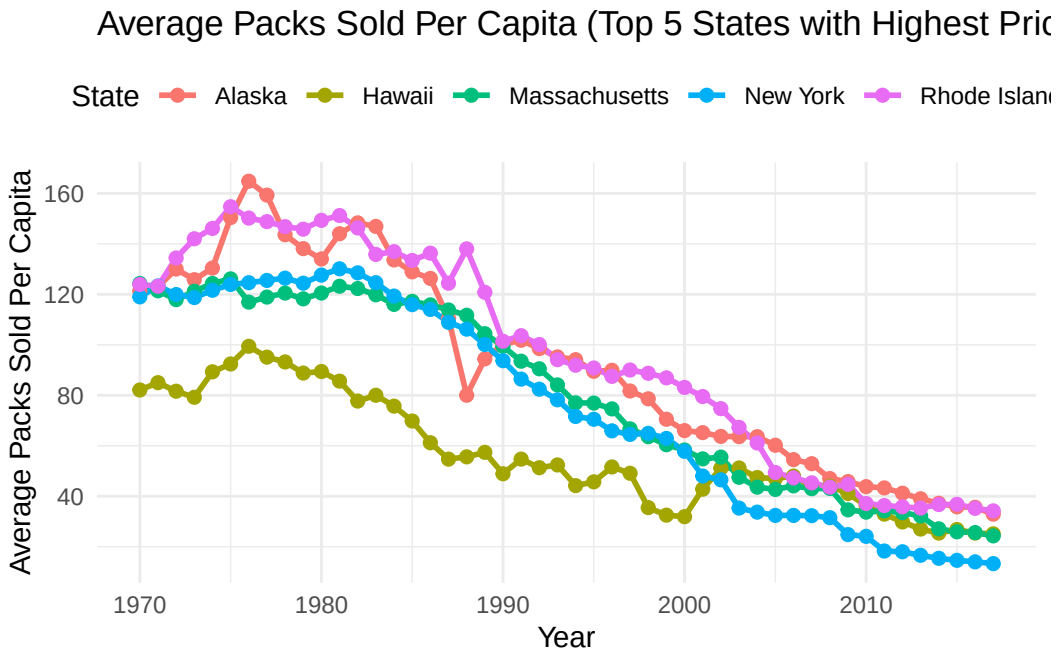
1. Present a bar graph showing the proportion of states with a change in their cigarette tax in each year from 1970 to 1985.



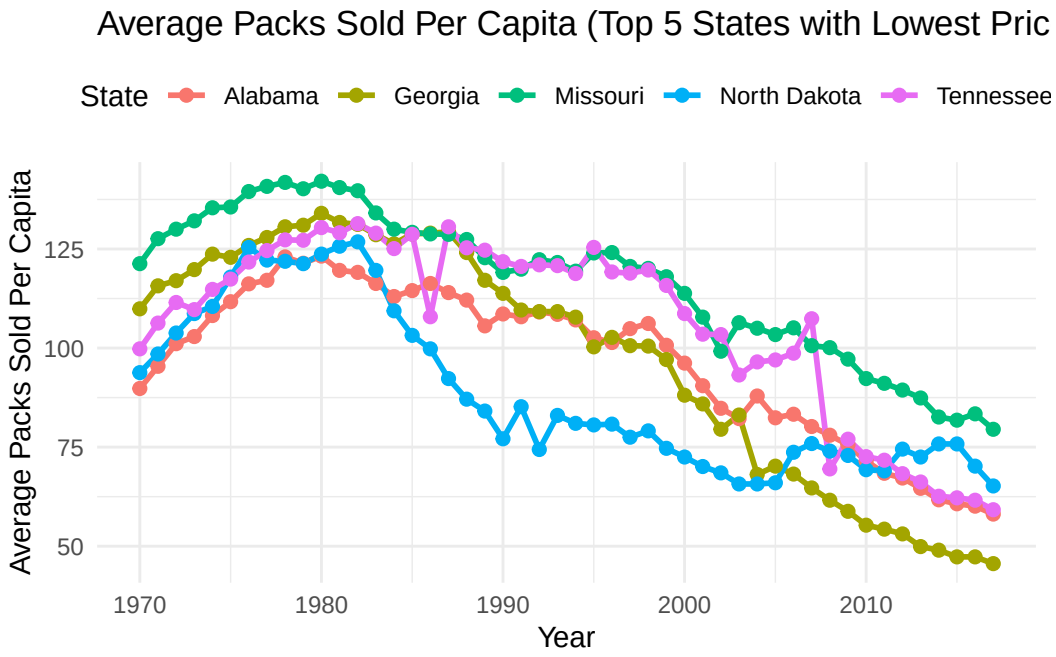
2. Plot on a single graph the average tax (in 2012 dollars) on cigarettes and the average price of a pack of cigarettes from 1970 to 2018.



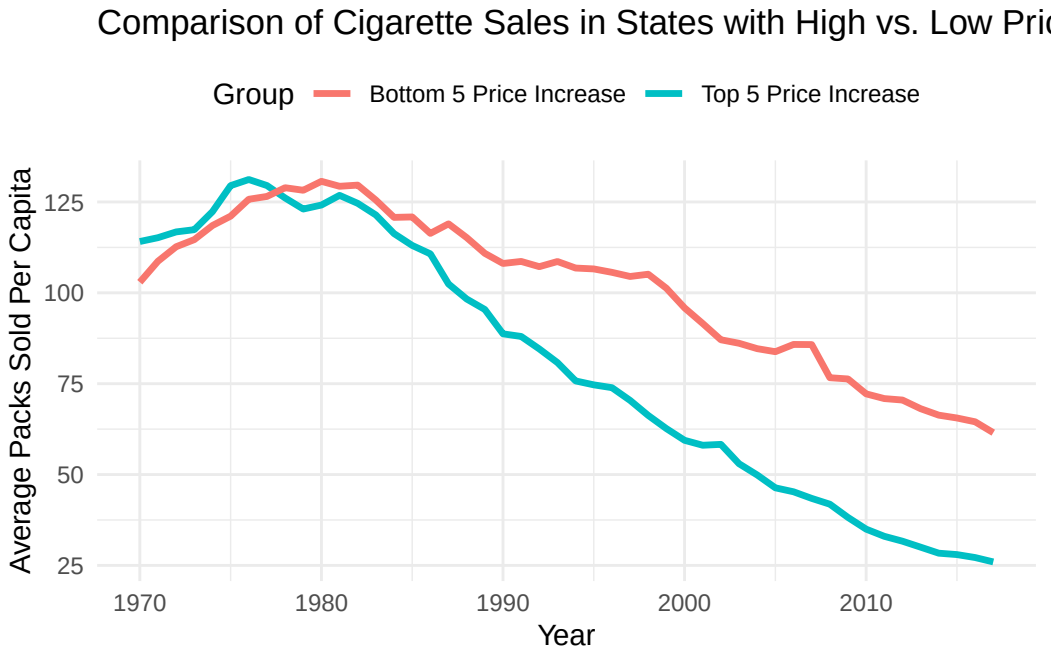
3. Identify the 5 states with the highest increases in cigarette prices (in dollars) over the time period. Plot the average number of packs sold per capita for those states from 1970 to 2018.



4. Identify the 5 states with the lowest increases in cigarette prices over the time period. Plot the average number of packs sold per capita for those states from 1970 to 2018.



5. Compare the trends in sales from the 5 states with the highest price increases to those with the lowest price increases.



1970-1990

6a. Focusing only on the time period from 1970 to 1990, regress log sales on log prices to estimate the price elasticity of demand over that period. Interpret your results.

```
Installing package into 'C:/Users/Molly/AppData/Local/R/win-library/4.4'
(as 'lib' is unspecified)
```

```
package 'broom' successfully unpacked and MD5 sums checked
```

```
The downloaded binary packages are in
    C:\Users\Molly\AppData\Local\Temp\Rtmp6xTbpd\downloaded_packages
```

```
Warning: package 'broom' was built under R version 4.4.3
```

Table 1: Regression Results: Log Sales on Log Price

term	estimate	std.error	statistic	p.value	conf.low	conf.high
(Intercept)	5.385	0.028	193.692	0	5.331	5.440
log_price	-0.809	0.038	-21.098	0	-0.885	-0.734

7a. Regress log sales on log prices using the total (federal and state) cigarette tax (in dollars) as an instrument for log prices. Interpret your results and compare your estimates to those without an instrument. Are they different? If so, why?

Table 2: Regression Results: Log Sales on Log Price Using Total Cigarette Price

term	estimate	std.error	statistic	p.value	conf.low	conf.high
(Intercept)	5.385	0.028	193.692	0	5.331	5.440
log_price	-0.809	0.038	-21.098	0	-0.885	-0.734