Homework 2: Health Economics

Nikhita Gandhe
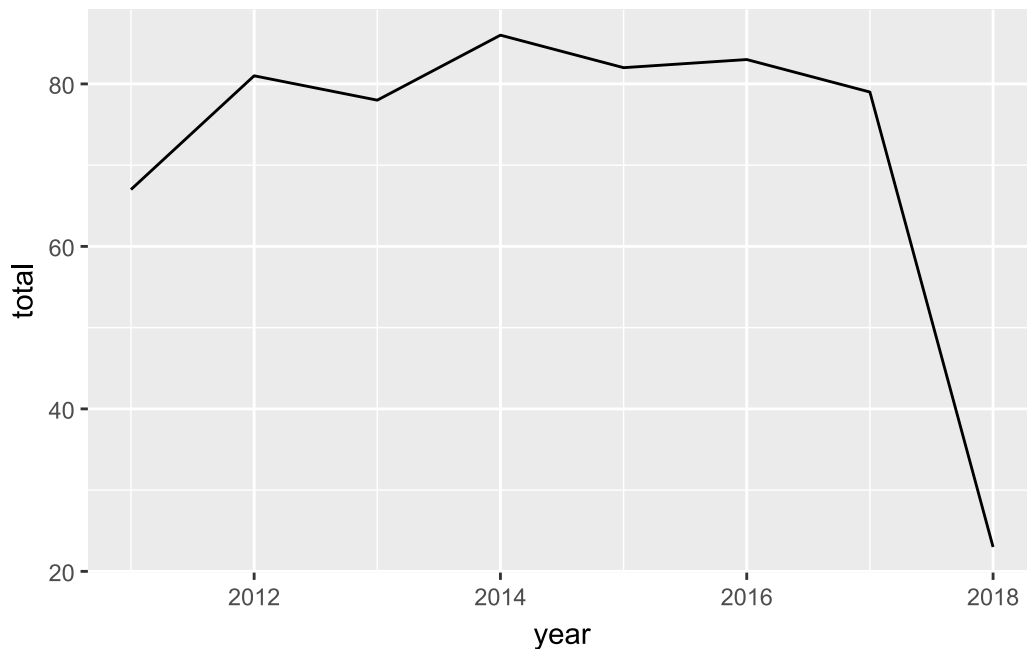
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Please Find my GitHub Repository Link Here:

https://github.com/nsgand2/ECON-470-HW2.git

Question 1: Number of Hospitals Filing Multiple Reports

How many hospitals filed more than one report in the same year? Show your answer as a line graph of the number of hospitals over time.

Question 2: Unique Hospital IDs

After removing/combining multiple reports, how many unique hospital IDs (Medicare provider numbers) exist in the data?
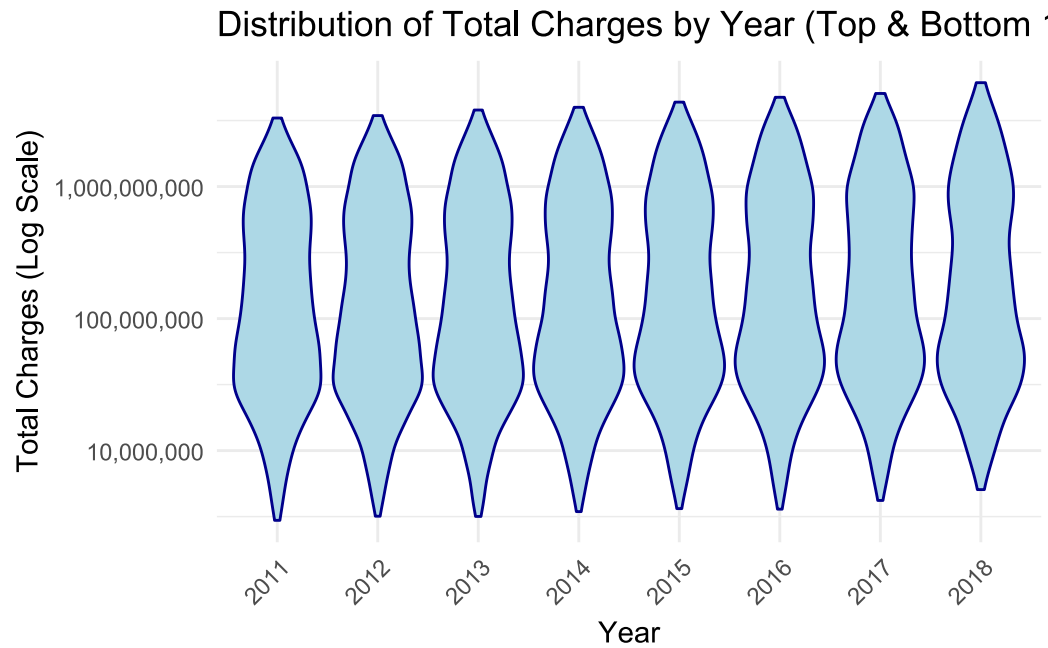
```
# A tibble: 1 × 1
  unique_hospital_ids
```

```
                <int>
1               9323
```
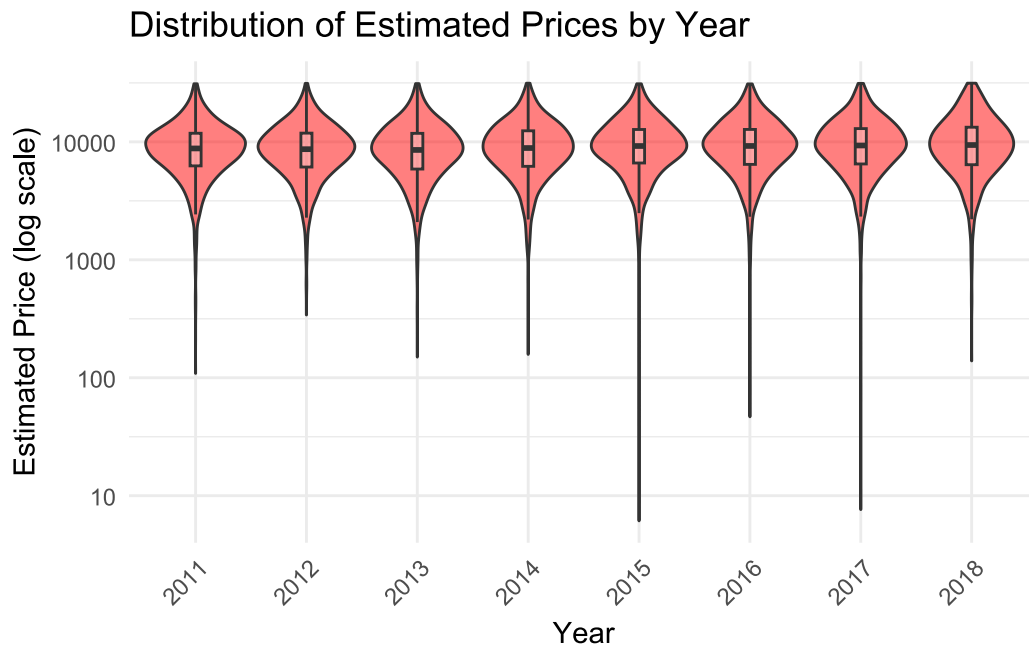
Question 3: Distribution of Total Charges by Year

What is the distribution of total charges in each year? Show your results with a violin plot.

Question 4: Distribution of Estimated Prices by Year

What is the distribution of estimated prices in each year? Show your results with a violin plot.

Distribution of Estimated Prices by Year

Question 5: Average Price for Penalized vs. Non-Penalized Hospitals

Calculate the average price among penalized versus non-penalized hospitals.

```
[1] "Average Price by Penalty Status (2012):"
```

```
# A tibble: 2 × 2
  penalty avg_price
  <lgl>       <dbl>
1 FALSE       9560.
2 TRUE        9896.
```

Question 6 Split hospitals into quartiles based on bed size.

Provide a table of the average price among treated/control groups for each quartile.

Bed Quartile	Avg Price (Non-Penalized)	Avg Price (Penalized)
1	7678.757	8355.043
2	8694.693	8733.540
3	9779.087	10247.470
4	12473.489	12101.188

Question 7 Find the average treatment effect using each of the following estimators, and present your results in a single table:

Method	ATE
Nearest Neighbor (Inv. Var)	354.4741
Nearest Neighbor (Mahalanobis)	−560.3558
Inverse Propensity Weighting	−230.8361
Linear Regression	−111.4190

Question 8 With these different treatment effect estimators, are the results similar, identical, very different?

The results are very different between the different treatment effect estimators.

Question 9 Do you think you've estimated a causal effect of the penalty? Why or why not? (just a couple of sentences)

Due to a high variance in between the estimates, I was unable to estimate a causal effect for the penalty.

Question 10 Briefly describe your experience working with these data (just a few sentences). Tell me one thing you learned and one thing that really aggravated or surprised you.

I learned that I can easily work on a r file in VS Code and then move everything to a qmd file if I just load it using this line of code which I run in the r file and in the beginning of the qmd file, load("C:/Users/Nikhita Gandhe/Documents/GitHub/ECON-470-HW2/submission3/hw_workspace.Rdata"). One thing that really aggravated me was that despite using the same code as other classmates, the estimates we obtained had a very high variance.