Homework 2

ECON 470 — Research Methods, Spring 2026

Luis Contreras

Summarize the data (2014–2019)

1. Plan counts by county over time

After removing SNPs, 800-series plans, and prescription-drug-only plans, the distribution of plan counts varies across counties and years.

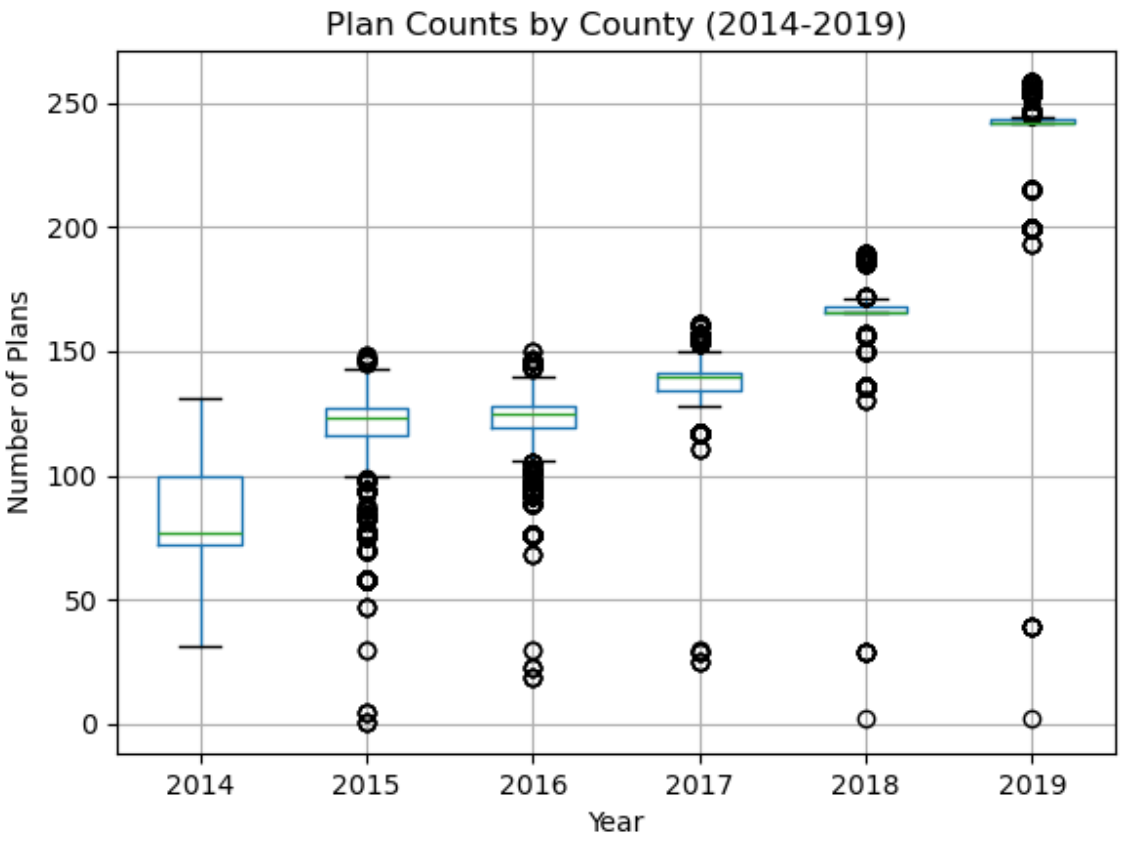

Figure 1. Distribution of plan counts by county over time.

Interpretation: In most counties there are multiple plan options, but some counties have fewer. Overall, plan availability looks generally sufficient, with some areas showing limited choice.

2. Bid distributions (2014 vs 2018)

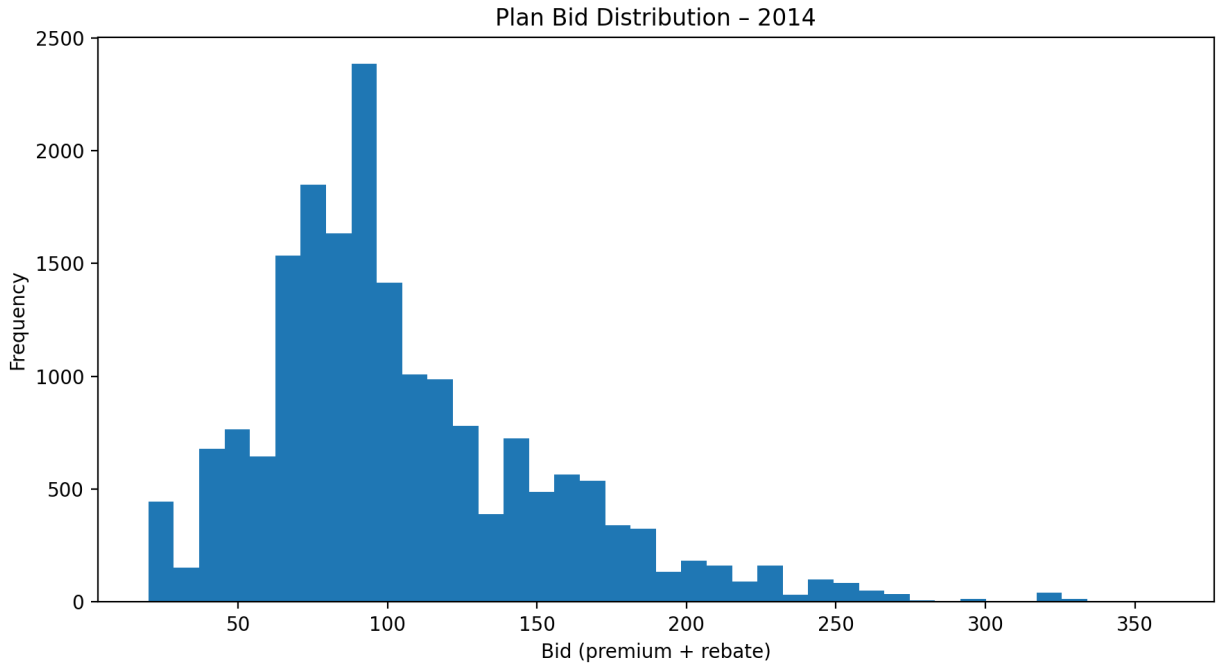

Figure 2A. Bid distribution (2014).

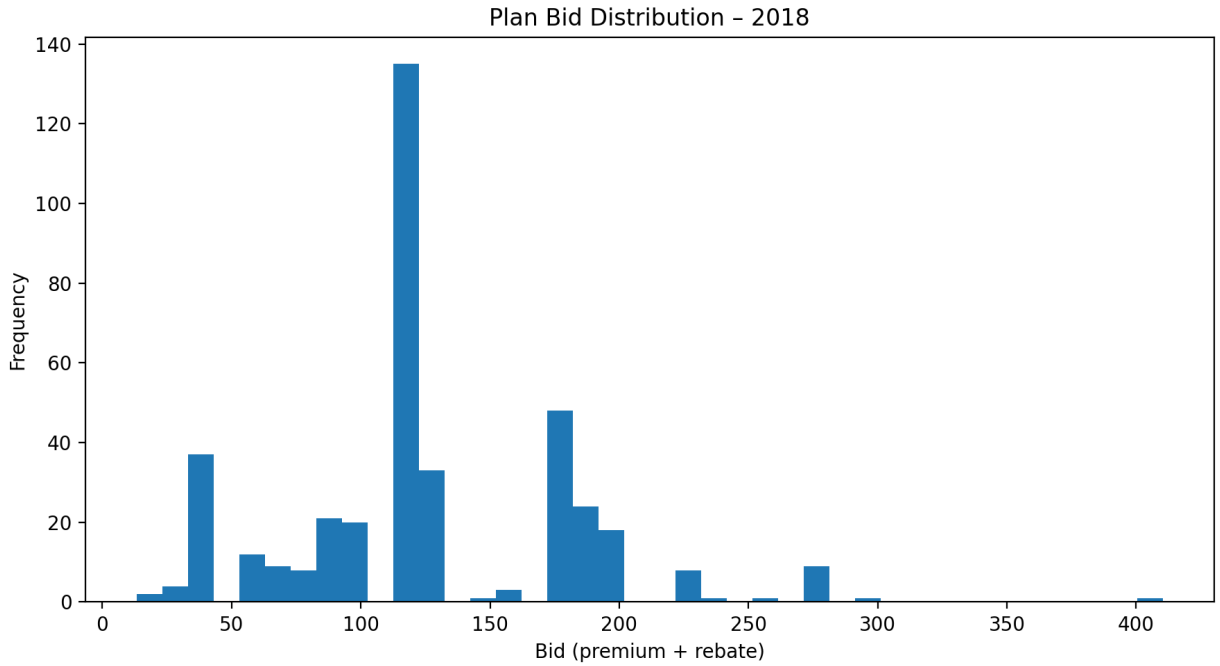

Figure 2B. Bid distribution (2018).

Interpretation: The 2018 distribution is more spread out, with a heavier right tail, while 2014 is more concentrated.

3. Average HHI over time

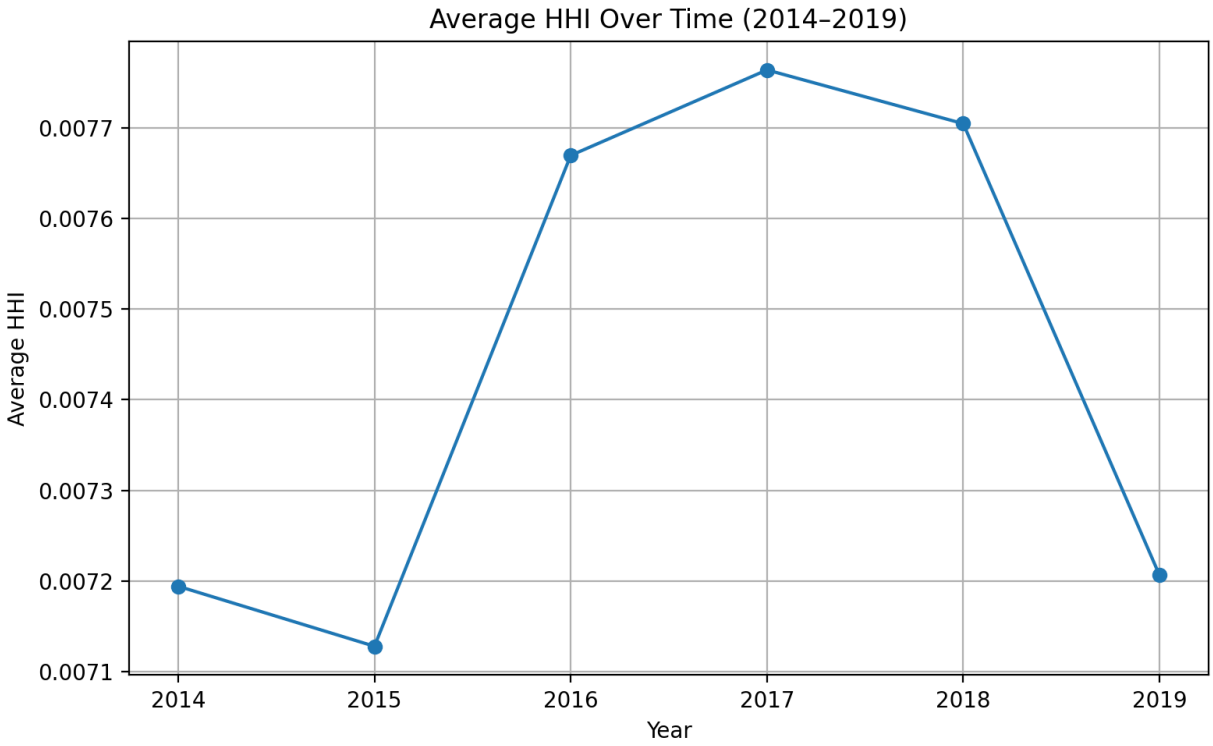

Figure 3. Average HHI over time (2014–2019).

Interpretation: Average HHI moves modestly over time, suggesting competition changes year-to-year.

4. Medicare Advantage share over time

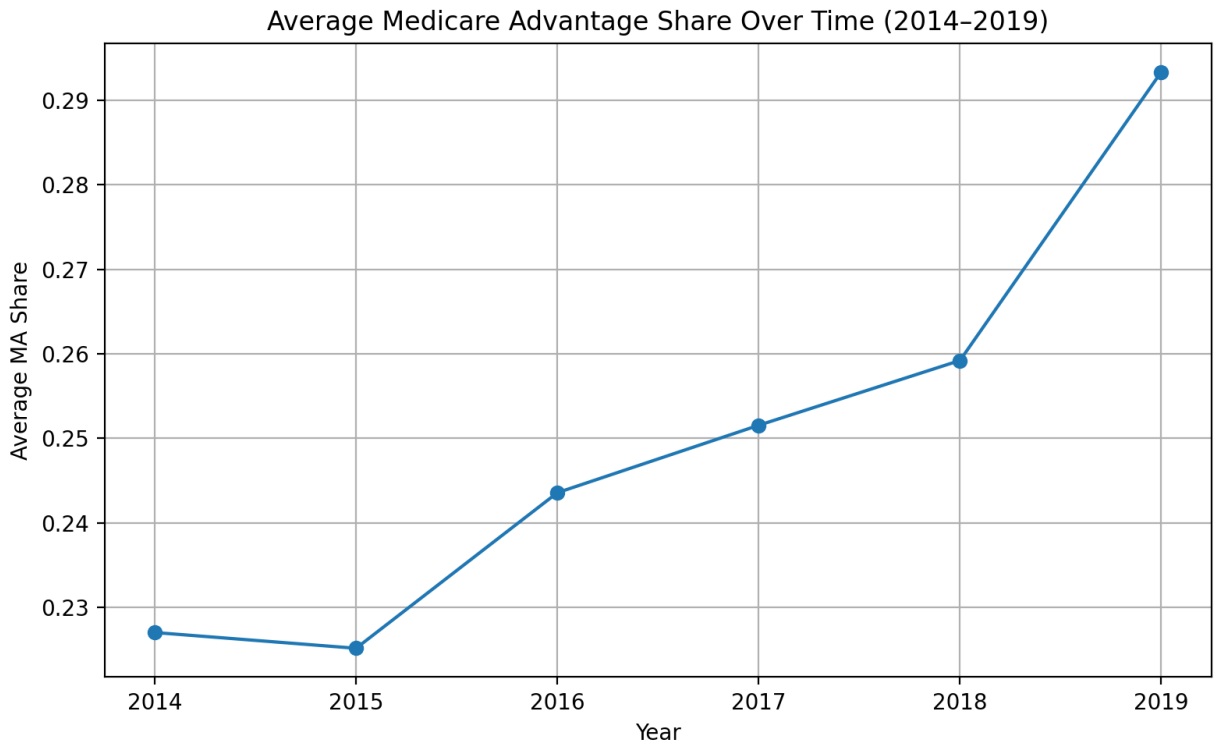

Figure 4. Average Medicare Advantage share over time (2014–2019).

Interpretation: MA share increases over time, indicating Medicare Advantage became more popular.

Estimate ATEs (2018 only)

Competitive markets are counties in the bottom 33rd percentile of HHI, and uncompetitive markets are counties in the top 66th percentile of HHI.

5. Average bid in competitive vs uncompetitive markets

group	avg_bid_proxy
competitive (bottom tercile HHI)	827.966
uncompetitive (top tercile HHI)	816.351

Table 5. Average bid (proxy) by competitive vs uncompetitive counties (2018).

6. Average bid by FFS-cost quartile and treatment/control

ffs_quartile	avg_bid_competitive	avg_bid_uncompetitive	diff_uncomp_minus_comp	n_counties
1	799.186	787.907	-11.279	483
2	828.662	823.199	-5.463	482
3	834.31	821.078	-13.231	482
4	850.88	833.801	-17.079	482

Table 6. Average bid (proxy) by treatment/control within FFS quartiles (2018).

7. ATE estimates using different estimators

Estimator	ATE
NN 1-to-1 (Inverse Variance distance on FFS quartiles)	-13.586
NN 1-to-1 (Mahalanobis distance on FFS quartiles)	-27.789
IPW (propensity from FFS quartiles)	-11.763
Linear regression (quartiles + interactions)	-11.763

Table 7. ATE estimates using matching, IPW, and regression (2018).

8. Are the estimators similar?

They are similar in sign but not identical in size. IPW and regression are almost the same, while matching varies more depending on the distance metric.

9. Preferred estimator with continuous covariates

Using regression as my preferred method, the estimate stays negative and similar in size when switching from quartiles to continuous covariates. The conclusion does not change.

10. Reflection

I learned how important identifiers and merges are in applied work. The most frustrating part was how long it took to download and organize all the files from OneDrive, especially with inconsistent formats.