Homework 4

Research in Health Economics, Spring 2025

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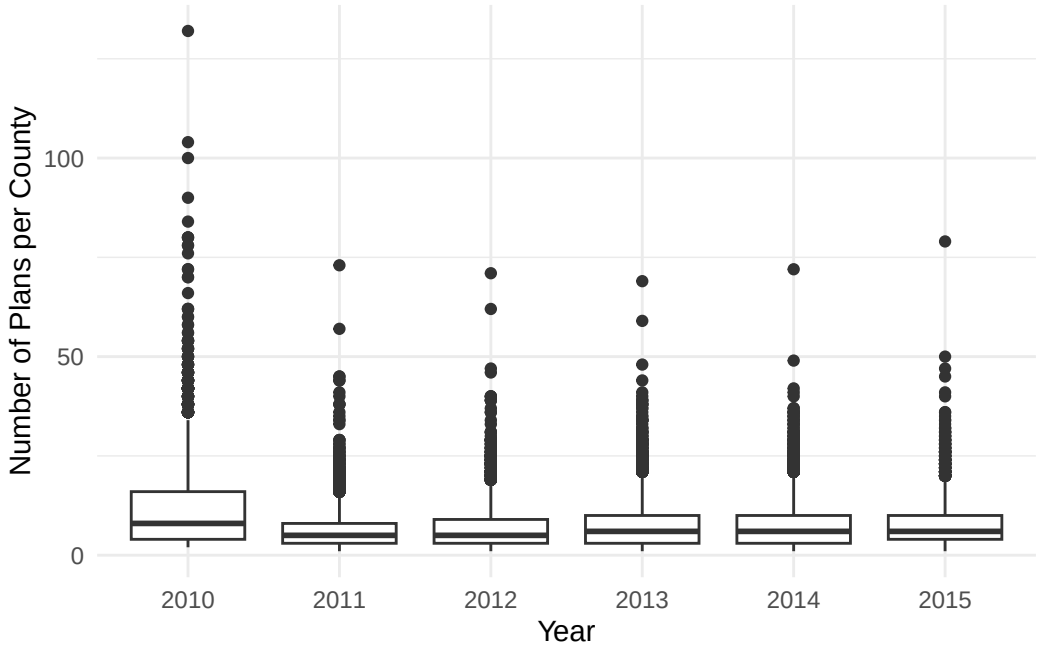
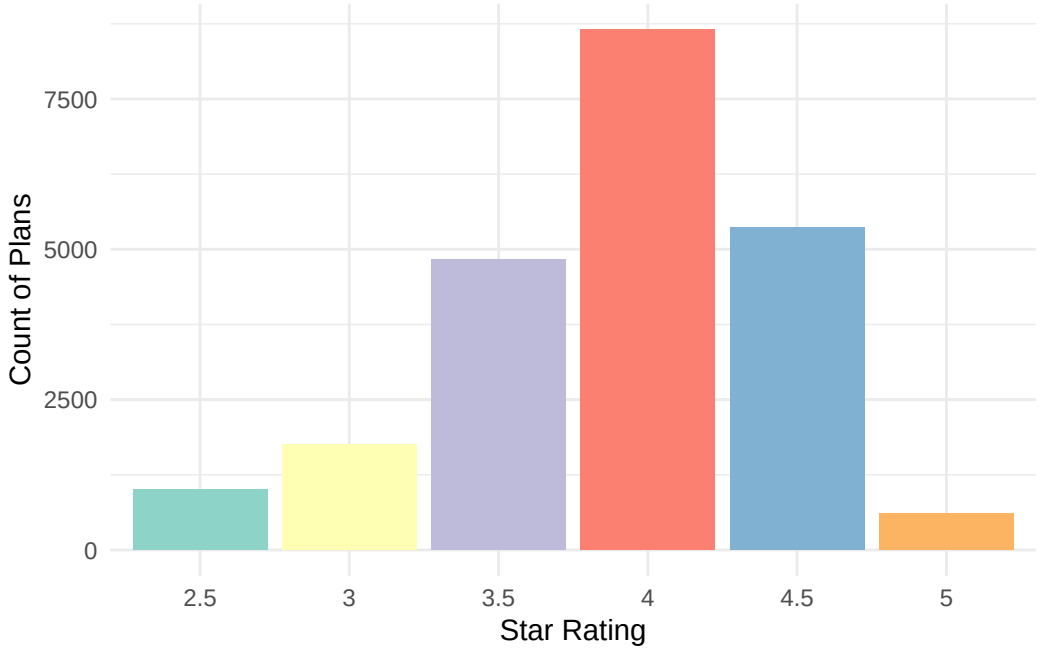
The GitHub repository for this work is available here.

Summarize the Data

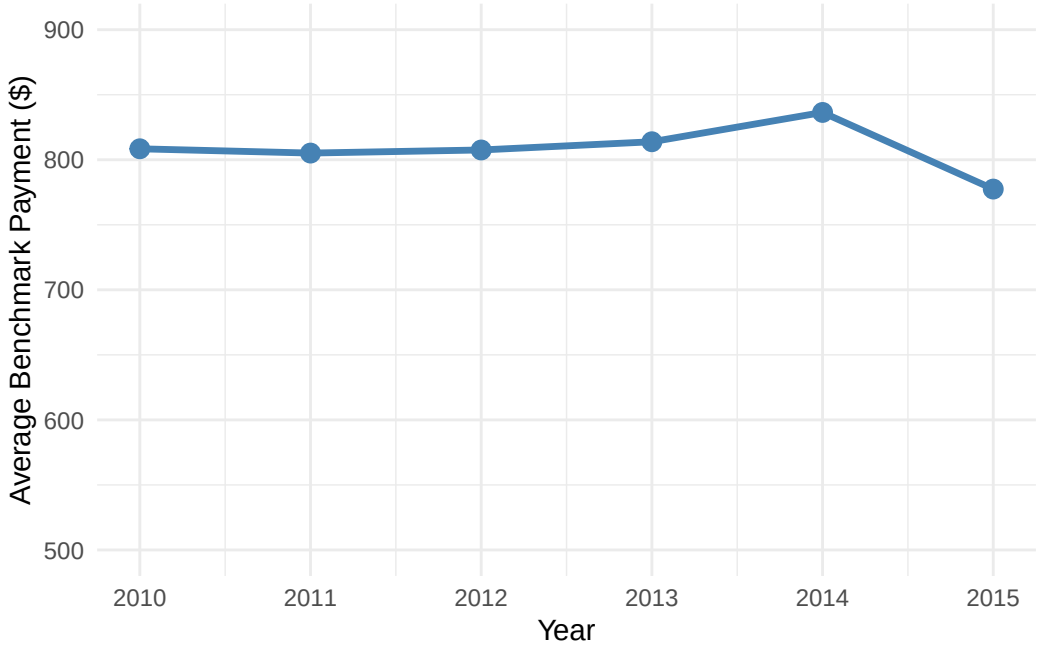
Question 1. Remove all SNPs, 800-series plans, and prescription drug only plans (i.e., plans that do not offer Part C benefits). Provide a box and whisker plot showing the distribution of plan counts by county over time. Do you think that the number of plans is sufficient, too few, or too many?



Question 2. Provide bar graphs showing the distribution of star ratings in 2010, 2012, and 2015. How has this distribution changed over time?



Question 3. Plot the average benchmark payment over time from 2010 through 2015. How much has the average benchmark payment risen over the years?



Quesiton 4. Plot the average share of Medicare Advantage (relative to all Medicare eligibles) over time from 2010 through 2015. Has Medicare Advantage increased or decreased in popularity? How does this share correlate with benchmark payments?

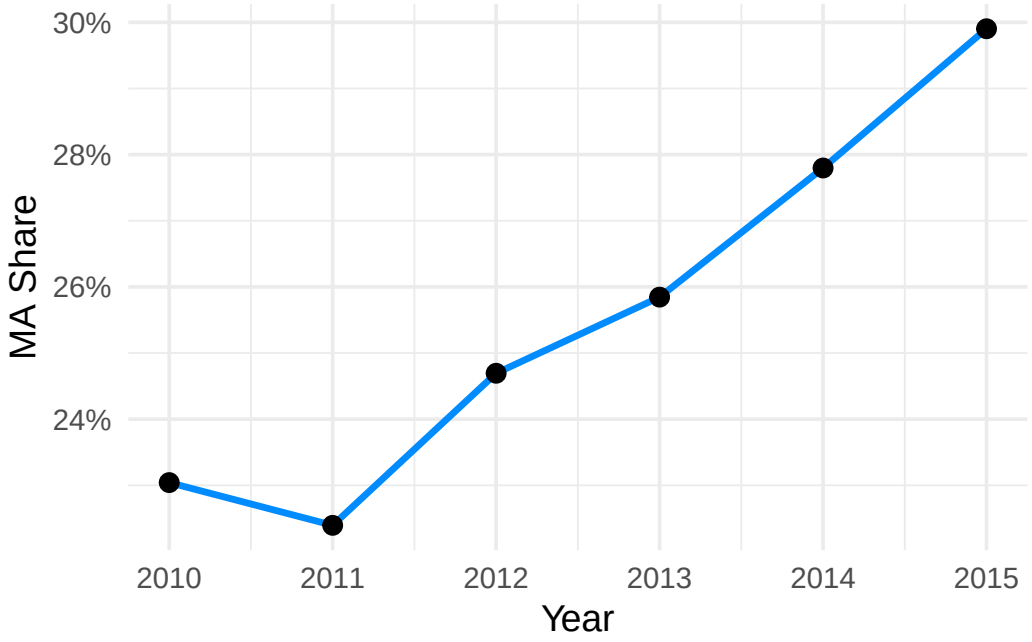


Figure 1: Average Medicare Advantage Share of Medicare Eligibles (2010–2015)

Question 5. Calculate the running variable underlying the star rating. Provide a table showing the number of plans that are rounded up into a 3-star, 3.5-star, 4-star, 4.5-star, and 5-star rating.

Table 1: Count of Rounded Star Ratings in 2010

Star Rating	Count
3.0	1304
3.5	1547
4.0	1399
4.5	176
5.0	26

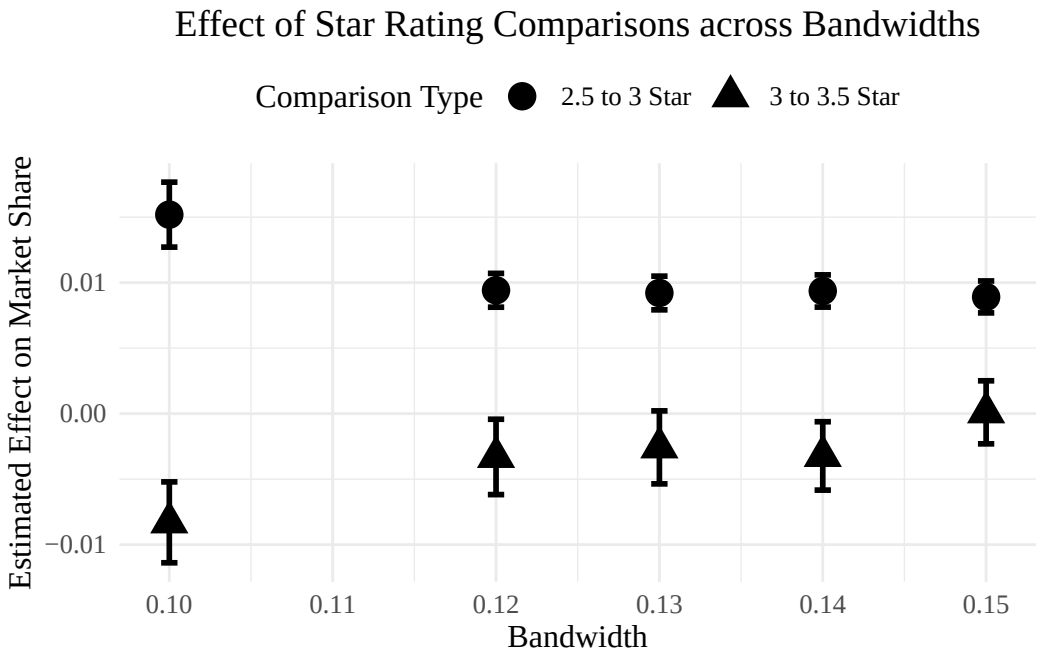
Figure 2: Number of Plans by Rounded Star Rating

Question 6. Using the RD estimator with a bandwidth of 0.125, provide an estimate of the effect of receiving a 3-star versus a 2.5 star rating on enrollments. Repeat the exercise to estimate the effects at 3.5 stars, and summarize your results in a table.

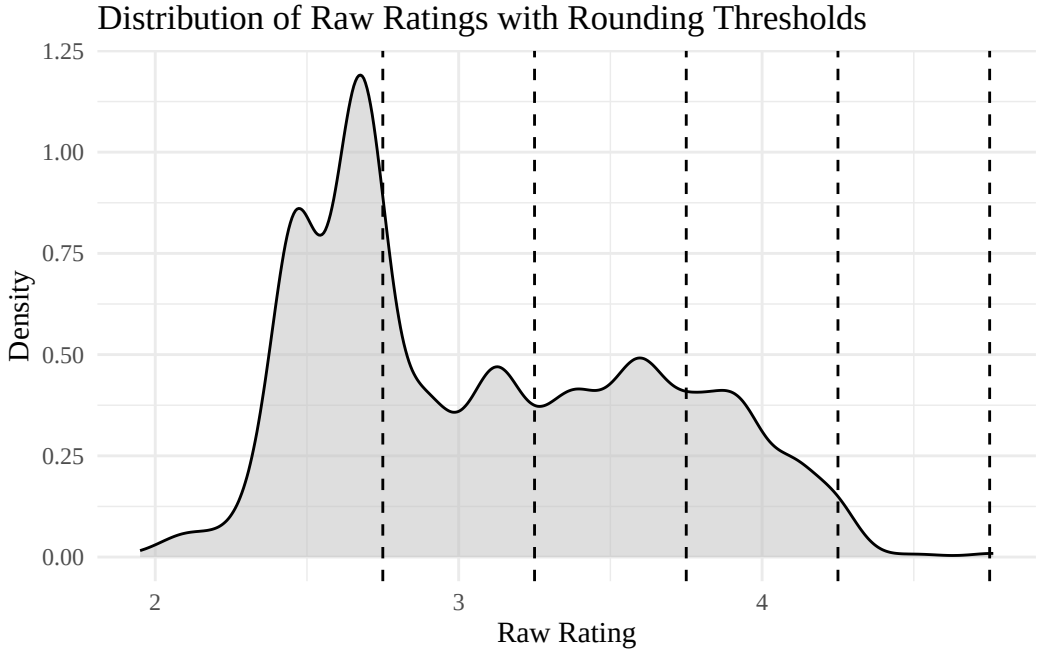
Table 2: Effect of Star Rating on Enrollment Near Thresholds

	2.5–3	3–3.5	3.5–4
Rounded	0.009	−0.003	−0.006
	(0.001)	(0.003)	(0.002)
Running Score	−0.022	0.022	0.075
	(0.007)	(0.017)	(0.011)
Num.Obs.	4039	1656	1609
R2	0.019	0.001	0.028

Question 7. Repeat your results for bandwidhts of 0.1, 0.12, 0.13, 0.14, and 0.15 (again for 3 and 3.5 stars). Show all of the results in a graph. How sensitive are your findings to the choice of bandwidth?



Question 8. Examine (graphically) whether contracts appear to manipulate the running variable. In other words, look at the distribution of the running variable before and after the relevent threshold values. What do you find?



Question 9. Similar to question 4, examine whether plans just above the threshold values have different characteristics than contracts just below the threshold values. Use HMO and Part D status as your plan characteristics.

Table 3: Plan Characteristics Around Star Rating Thresholds

Star Rating	Percent HMO Plans	Percent with Part D	Number of Plans
3.5	48%	87%	2849
4.5	85%	69%	1162