

Submission3-HW4

Research Methods, Spring 2024

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<https://github.com/carolinezhansen/medicare1/tree/main>

Answers for Homework 4: Submission 1

Problem 1

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? @problem1

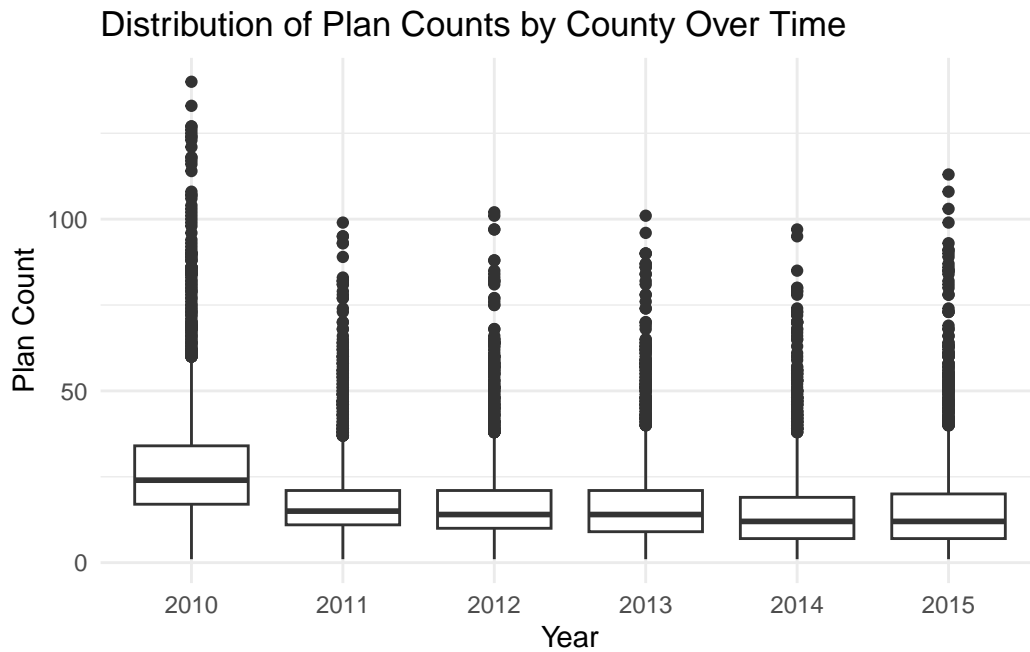


Figure 1: Distribution of Plan Counts By County Over time

Problem 2

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

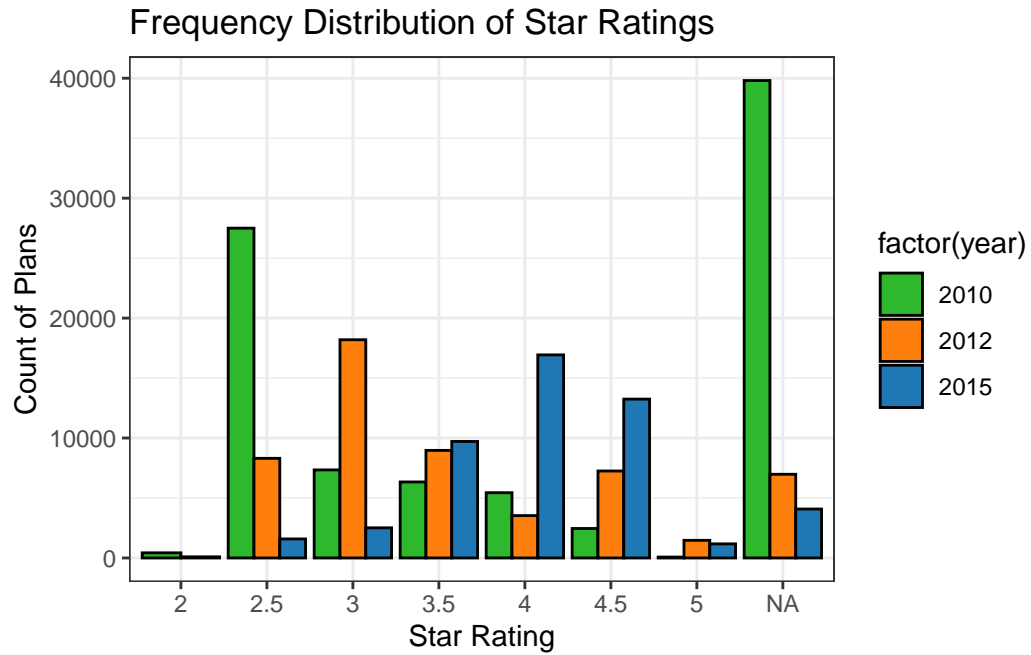


Figure 2: Frequency Distribution of Star Ratings

Problem 3

3. Plot the average benchmark payment over time from 2010 through 2015. How much has the average benchmark payment risen over the years? @problem3

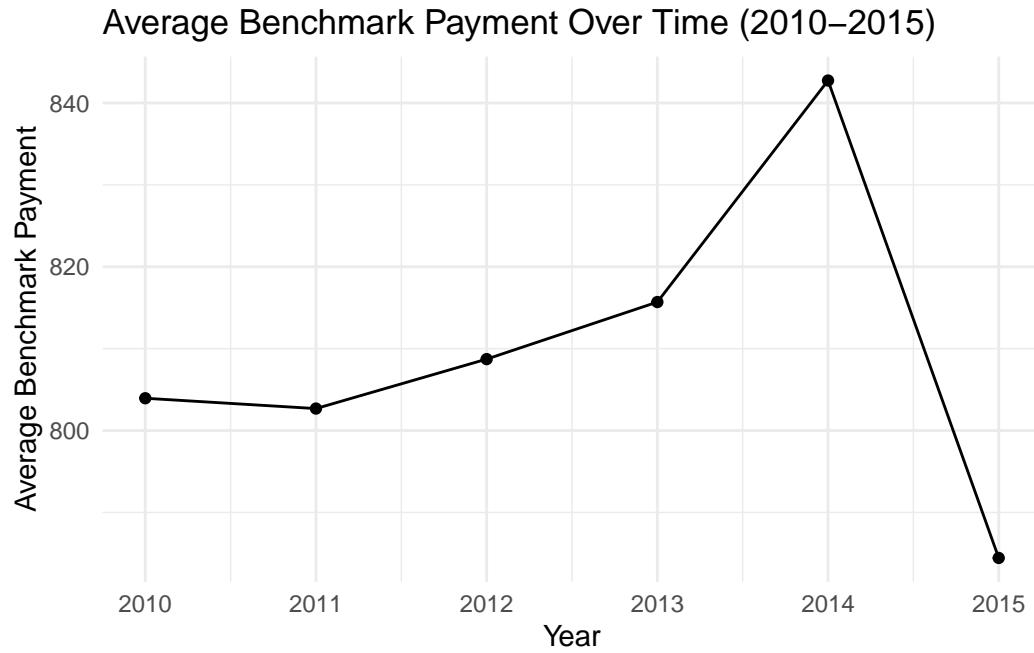


Figure 3: Average Benchmark Payment Over time

Problem 4

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? @problem4

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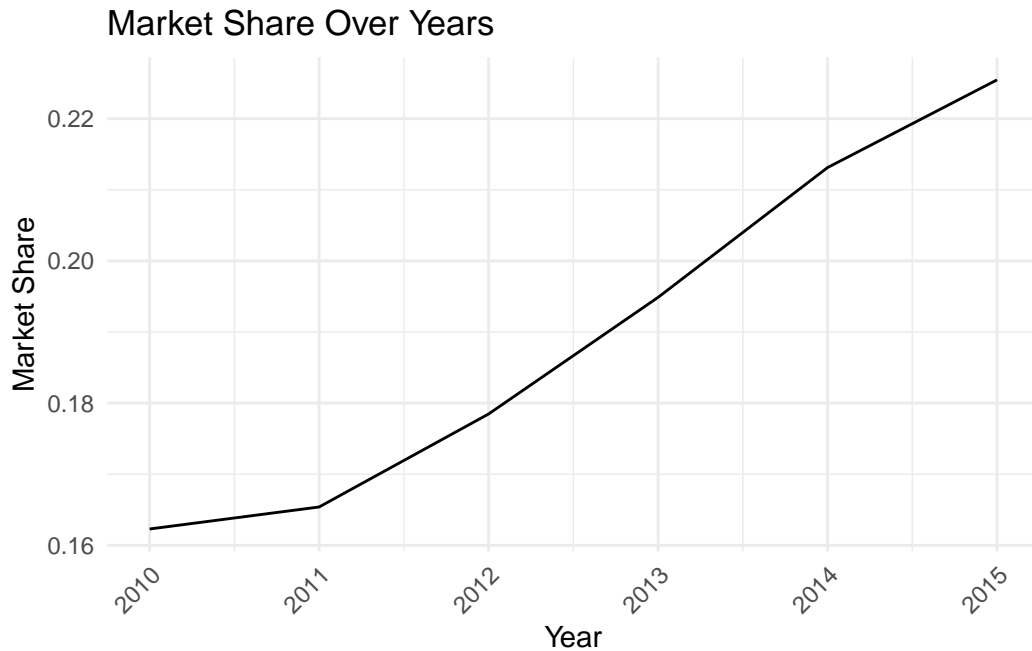


Figure 4: Average Medicare Advantage Share

Problem 5

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.

3-star	3.5-star	4-star	4.5-star	5-star
1,734	1,815	606	0	0

Number of Plans Based on Star Rating

Problem 6

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.

	Rating	Coeff	Std..Err.	z	P.Value
Conventional	3 vs 2.5	-0.0049040	0.0033526	-1.462718	1
Bias-Corrected	3 vs 2.5	-0.0337209	0.0033526	-10.058014	1
Robust	3 vs 2.5	-0.0337209	0.0055193	-6.109645	1

RD1

	Rating	Coeff	Std..Err.	z	P.Value
Conventional	3 vs 3.5	0.0013883	0.0029540	0.4699752	1
Bias-Corrected	3 vs 3.5	-0.0106484	0.0029540	-3.6047154	1
Robust	3 vs 3.5	-0.0106484	0.0049341	-2.1581298	1

RD1

Problem 7

Repeat your results for bandwidths 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?

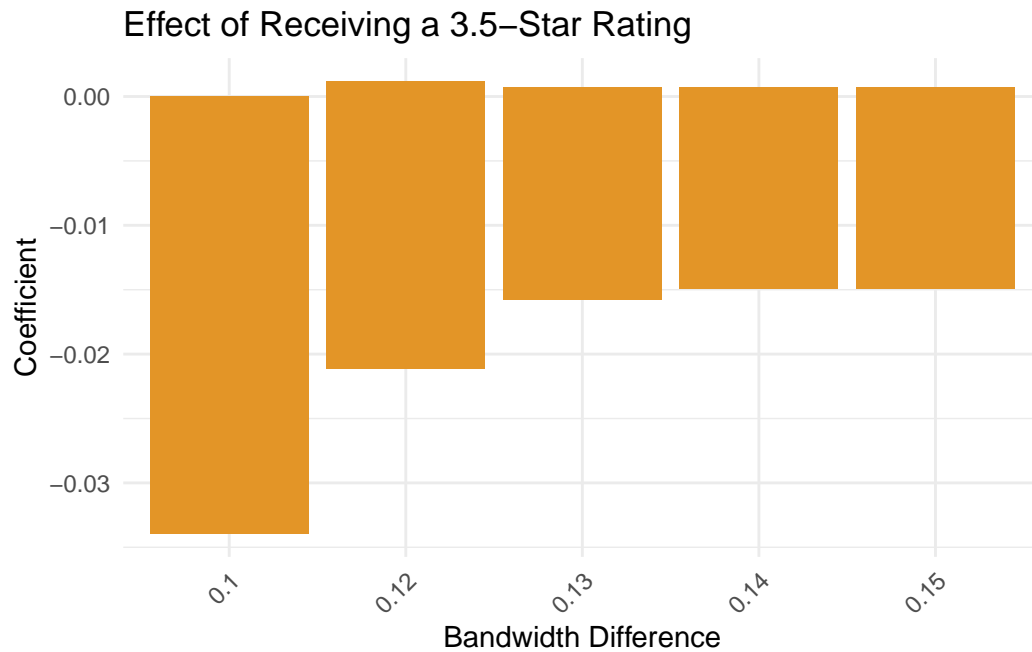


Figure 5: distribution of the running variable before and after the relevant threshold values

Problem 8

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 relevant threshold values. What do you find?

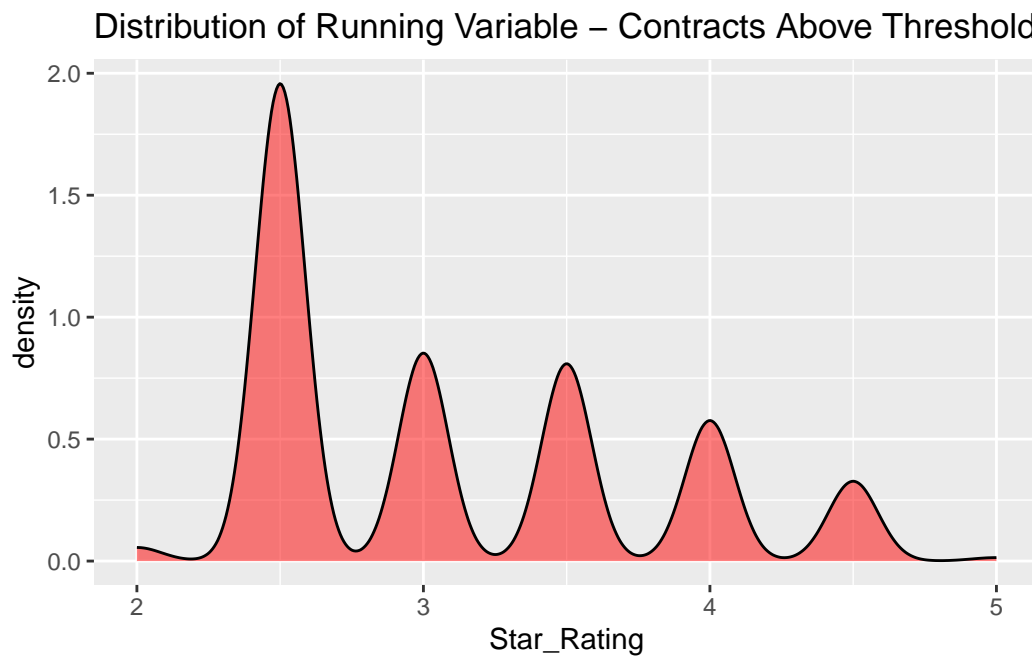


Figure 6: distribution of the running variable before and after the relevant threshold values

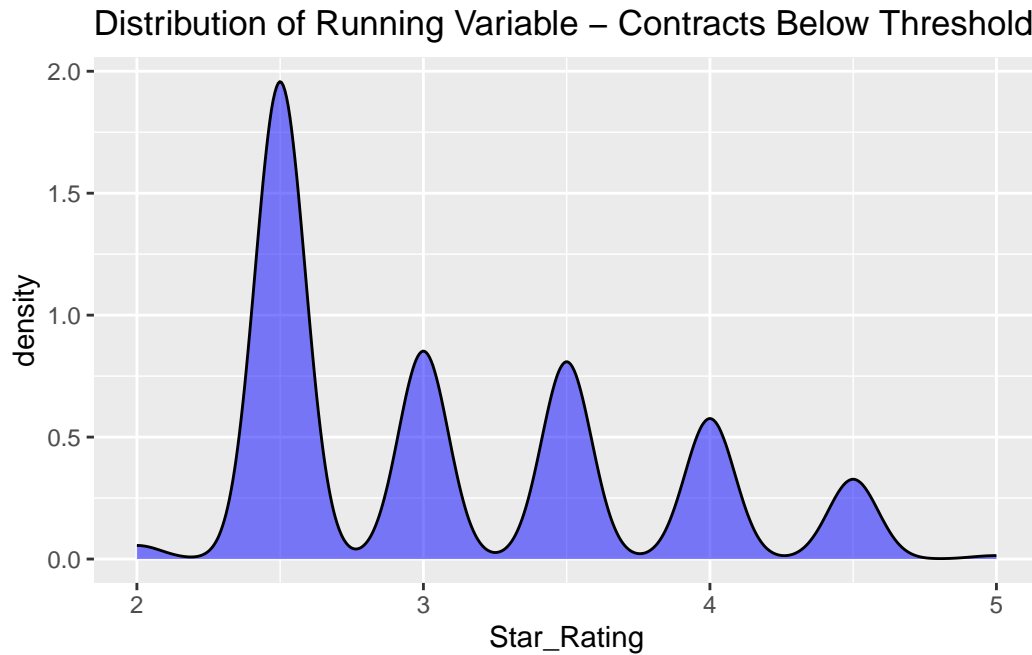


Figure 7: distribution of the running variable before and after the relevant threshold values

Problem 9

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.

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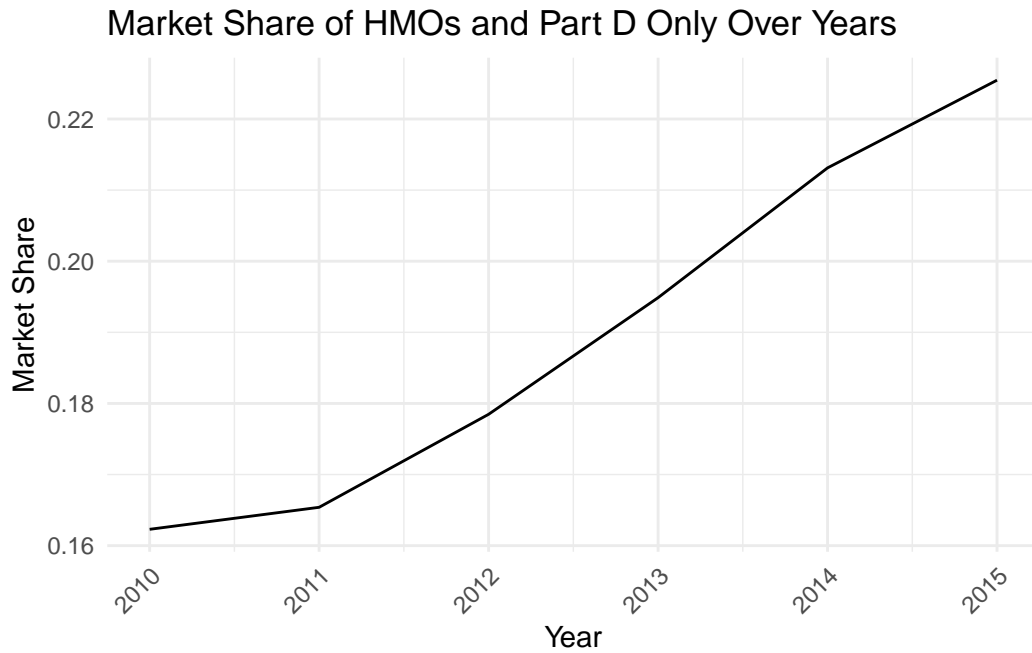


Figure 8: Market Share of HMOs and Part D Only Over Years

10.

Star ratings were mainly around the 2-3 star range which is low in comparison to other industries. It was also interesting to see that lower rating plans have more enrollees per eligible person, which shows a negative coorelation between enrollee rate and star rating.