Homework 1

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Here is the link to my GitHub Repository: https://github.com/kpollard8/Homework1.

Here are my answers for Homework 1. I do the coding in a separate `R` script, but here is the cleaned-up version. I run the analysis separately, save the workspace with only the summary stats, figures, and tables that I need, and then load the workspace in the final qmd. My analysis file with answers and code to all the questions is available in the analysis folder.

Enrollment Data

Answer the following based on the enrollment data:

1. How many observations exist in your current dataset?

The answer to quesiton 1 is 13,276,162 total observations in the full dataset, which means there are 13,276,162 unique combinations of contract/plan/county/year.

2. How many different *plan_types* exist in the data?

The resulting table for question 2 is 18 rows, so there are 18 total plan types.

3. Provide a table of the count of plans under each plan type in each year.

See Table 1.

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resized.
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Table 1: Plan types by year

Plan Type	2010	2011	2012	2013	2014	2015
Medicare Prescription Drug Plan	893,609	771,694	815,223	826,907	1,122,209	991,457
HMO/HMOPOS	506,802	528,473	507,272	530,909	523,304	479,275
Local PPO	417,551	515,700	636,701	633,884	664,716	704,993
PFFS	385,733	45,781	36,423	31,919	24,905	13,658
Employer/Union Only Direct Contract PDP	28,700	28,697	28,669	25,526	25,528	25,630
Regional PPO	24,442	22,773	21,602	19,970	19,773	17,578
1876 Cost	6,035	6,851	7,633	7,731	7,069	7,157
HCPP - 1833 Cost	3,604	11	11	10	9	9
Employer/Union Only Direct Contract PFFS	3,332	3,329	3,323	0	0	0
National PACE	717	781	858	953	1,118	1,216
Continuing Care Retirement Community	142	0	0	0	0	0
MSA	135	6,421	6,416	6,431	6,449	6,518
PSO (State License)	123	176	171	0	0	0
ESRD I	117	0	0	0	0	0
Pilot	53	3	3	2	2	2
ESRD II	8	0	0	0	0	0
Medicare-Medicaid Plan HMO/HMOPOS	0	0	0	265	1,319	4,130

4. Remove all special needs plans (SNP), employer group plans (eghp), and all "800-series" plans. Provide an updated table after making these exclusions.

I remove the relevant plans just by applying the relevant filter to the full ma data and then creating the table of plan types. Counts of different plan types with these exclusions are presented in Table 2

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resized.
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Table 2: Revised plan types by year

Plan Type	2010	2011	2012	2013	2014	2015
Medicare Prescription Drug Plan	391,205	295,458	289,044	278,091	301,082	269,153
PFFS	54,119	22,038	17,449	12,945	6,053	4,232
HMO/HMOPOS	34,460	33,931	37,551	37,179	38,893	36,588
0	29,733	0	0	0	0	0
Local PPO	11,652	13,874	17,030	17,089	17,169	16,728
Regional PPO	10,659	10,995	11,279	9,660	10,420	8,531
1876 Cost	4,923	5,829	6,647	6,759	6,207	6,329
National PACE	717	781	858	953	1,118	1,216
ESRD I	117	0	0	0	0	0
PSO (State License)	97	141	143	0	0	0
MSA	68	131	132	145	163	232
Continuing Care Retirement Community	64	0	0	0	0	0
Medicare-Medicaid Plan HMO/HMOPOS	0	0	0	265	1,319	4,130

5. Merge the the contract service area data to the enrollment data and restrict the data only to contracts that are approved in their respective counties. Limit your dataset only to plans with non-missing enrollment data. Provide a graph showing the average number of Medicare Advantage enrollees per county from 2008 to 2015.

Now we can join that dataset to our MA data. I use an inner join, which means I'm only taking rows that match each other in both datasets. I then apply the filter to remove plans with missing enrollment data, from which we can form the graph of average enrollments per county, as reflected in Figure 1.

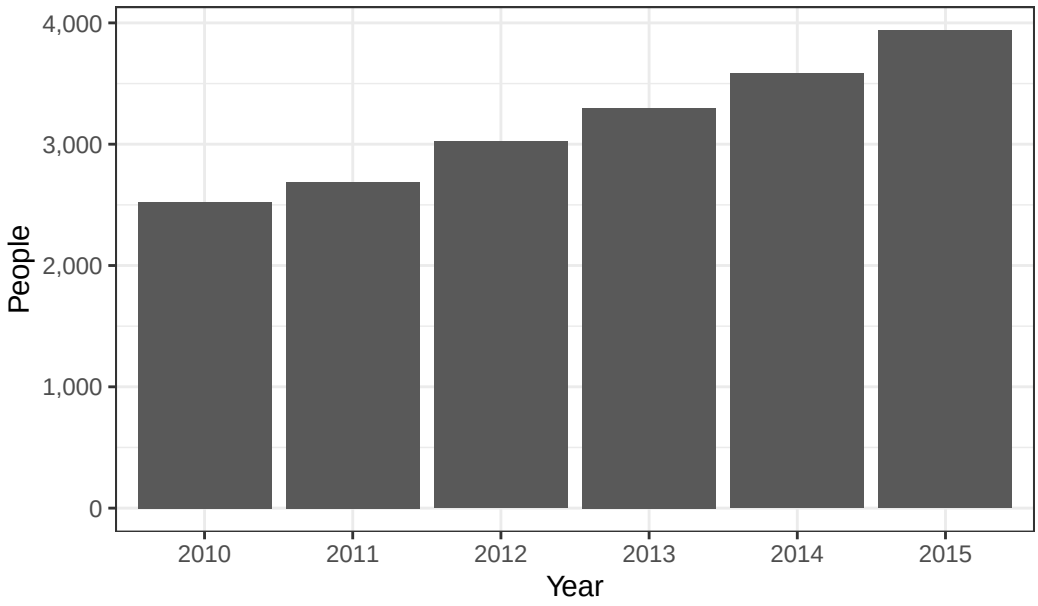

Figure 1: Average Enrollment

Premium Data

6. Merge the plan characteristics data to the dataset you created in Step 5 above. Provide a graph showing the average premium over time. Don't forget about formatting!

A graph of average premiums over time is in Figure 2.

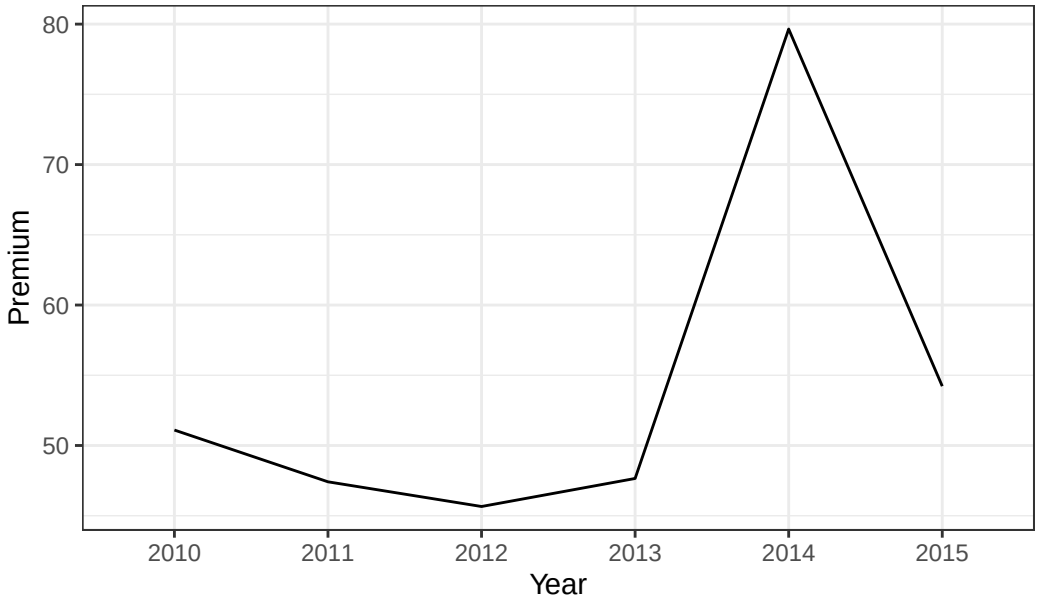

Figure 2: Average Premiums

7. Provide a graph showing the percentage of $0 premium plans over time. Also…remember to format things.

A graph of the percentage of $0 premium plans is in Figure 3. Consistent with Figure 2, we see a large drop (down to 0%) in the percentage of 0 premium plans in 2014. If we also look at the number of missing premium plans, we would see a big spike in 2014. Effectively, these premiums are 0 in some years but listed as missing in 2014.

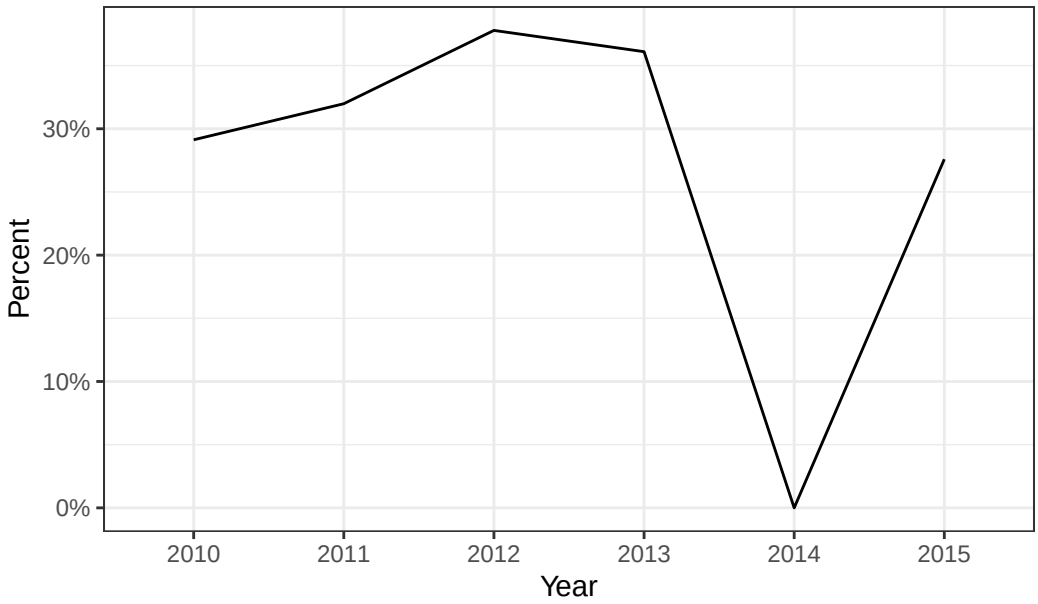

Figure 3: Share of 0 premium plans

Summary Questions

8. Why did we drop the "800-series" plans?

These plans, referred to as "Employer Group Waiver Plans", are not available to all people. Since not everyone has access to these plans, summaries including these plans aren't reflective of an average enrollee's experience in the Medicare Advantage program.

9. Why do so many plans charge a $0 premium? What does that really mean to a beneficiary?

The $0 premium charge is a little misleading because all it means is there is no addiitional premium, but they still have to pay Medicare Part B premiums.

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 you.

Figuring out how to link it to a GitHub repository was incredibly exhaus:ng – I had to start over 8x. The .gi:gnore wasn't working, so it would try to push all of the data files along with the code. I met with people in the class 4x this weekend. The thing that took the longest was sekng up how to even start answering the ques:ons. I ran out of :me for 5, 6, 7 for that reason. I learned how to connect it to GitHub eventually and ignore the data files aler mul:ple trial and error In the second a/empt, I learned how to use a .qdm file, I learned how to create a "_workspace" file that only has my answers, and I started trying to make it a PDF – this was really time consuming In my third submission, having the code really helped. I really like how I struggled through it for submissions 1 and 2, which ended up teaching me a lot about the code and how it runs. Now, for submission 3, I felt like I knew how to do everything but just had something to fall back on if I needed it. I loved this method!