



Module 3: Medicare Advantage Quality and Regression Discontinuity

Part 1: MA Data and Quality Measurement

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Econ 470 & HLTH 470

What is Medicare Advantage

- Private provision of health insurance for Medicare beneficiaries
- Medicare "replacement" plans
- It's just private insurance for Medicare folks

Medicare Advantage History

- Existed since 1980s, formalized in the 1990s, expanded in 2000s
- Medicare+Choice as part of Balanced Budget Act in 1997
- Largest expansion: Medicare Modernization Act in 2003 (also brought Medicare Part D)

Medicare Advantage Details

In its current form...

- Insurers submit plan details and a price needed to cover traditional Medicare ("bid")
- If approved, Medicare pays risk-adjusted bid *or* benchmark
- Bid < benchmark, insurer gets a rebate
- Bid > benchmark, insurer charges premium
- Seperate bidding for Part D

Medicare Advantage in Real Life

Let's take a look at the Medicare Advantage plan options...

Medicare Plan Finder

Medicare Advantage Quality Ratings

- Initial MA Star Ratings (2007)
- Overall rating introduced in 2009
- Complicated formula...

key point: ratings from several domains are averaged and then rounded

- Recall the Medicare Advantage repository, [Medicare Advantage GitHub repository](#)
- Now we need to work with the **final** dataset

Final MA Data

```
ma.data ← read_rds(here("data/final_ma_data.rds"))
```

Summary stats

Focus on enrollments and star ratings:

```
stargazer(as.data.frame(ma.data %>% select(avg_enrollment, avg_eligibles, Star_Rating)), type="html")
```

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
planid	895,495	35.849	69.789	1	4	41	999
avg_enrollment	204,173	397.404	1,578.641	11.000	31.250	231.667	63,234.080
avg_eligibles	749,267	42,587.920	98,741.840	11.571	3,798.000	37,116.570	1,355,734.000
Star_Rating	448,793	3.307	0.783	1.500	2.500	4.000	5.000

Clean the data

Limit to plans with:

- Observed enrollments, > 10
- First year of star rating (2009)
- Observed star rating

```
ma.data.clean <- ma.data %>%  
  filter(!is.na(avg_enrollment) & year==2009 & !is.na(partc_score))
```

Calculate raw average rating

```
ma.data.clean <- ma.data.clean %>%
  mutate(raw_rating=rowMeans(
    cbind(breastcancer_screen,rectalcancer_screen,cv_cholscreen,diabetes_cholscreen,
          glaucoma_test,monitoring,flu_vaccine,pn_vaccine,physical_health,
          mental_health,osteo_test,physical_monitor,primaryaccess,
          hospital_followup,depression_followup,nodelays,carequickly,
          overallrating_care,overallrating_plan,calltime,
          doctor_communicate,customer_service,osteo_manage,
          diabetes_eye,diabetes_kidney,diabetes_bloodsugar,
          diabetes_chol,antidepressant,bloodpressure,ra_manage,
          copd_test,betablocker,bladder,falling,appeals_timely,
          appeals_review),
    na.rm=T)) %>%
  select(contractid, planid, fips, avg_enrollment, first_enrollment,
         last_enrollment, state, county, raw_rating, partic_score,
         avg_eligibles, avg_enrolled, premium_partic, risk_ab, Star_Rating,
         bid, avg_ffscost, ma_rate)
```