WHAT DO CONSUMERS CONSIDER BEFORE THEY CHOOSE?

Identification from Asymmetric Demand Responses

Replication Instructions

Section 5: Medicare Part D

Data Construction

Run code in the following order:

CREATE LISTS OF BENEFICIARIES AND CALCULATOR VARIABLES (oop, varcost, varcost_noclaims, costshare):

Each step to the right of a cell needs to be complete in order to run that step.

<table>
<tr><th>SET UP FILE</th><th>GATHER SAMPLE</th><th>CALCULATOR PREP, part I</th><th colspan="3">CALCULATOR PREP, part II</th><th>CALCULATOR FILES</th><th>COMBINE CALCULATOR RESULTS</th></tr>
<tr><td rowspan="2">CODE 01</td><td colspan="2">CODE 03</td><td colspan="3" rowspan="2">CODE 05</td><td rowspan="6">CODE 06</td><td rowspan="6">CODE 07</td></tr>
<tr><td colspan="2">CODE 04</td></tr>
<tr><td rowspan="2">CODE 00 (final LIS)</td><td rowspan="3">CODE 00 (100k)</td><td rowspan="4">CODE 00 (matched)</td><td colspan="3" rowspan="3">CODE 02</td></tr>
<tr><td colspan="2">CODE 10</td></tr>
<tr><td colspan="2" rowspan="2"></td><td colspan="2">CODE 11</td><td>CODE 12</td><td>CODE 13</td></tr>
<tr><td colspan="5">CODE 09</td></tr>
</table>

CREATE NON-CALCULATOR VARIABLES (annprem_net, annprem_gross, drug_deductible, donut, gencov, cov_in_hole, form100, normqual):

These steps can be done at the same time as the calculator variables.

COMBINE FINAL SAMPLES:

Run after all the above steps are completed. Three files for combining everything (calculator and non-calculator variables): **CODE 08**

FINAL TABLES

Files can be run in any order.

CREATE THREE FINAL SAMPLES:

Create final LIS sample

Do file: create_samples/00_final_LIS_sample.do

Goal: Create final LIS sample of beneficiaries who were auto-, facilitated-, or re-assigned and then stopped receiving the 100% subsidy.

Steps:

- Set age indicator at the beginning depending on if running for all beneficiaries or only above 64.
- Start with the five possible ways a beneficiary can be in the sample. (E.g.: Auto-assigned in 2006 and then not receiving 100% subsidy in 2007.)
- For each:
    - Start with all beneficiaries in that year.
    - Add criteria one-by-one, dropping beneficiaries who no longer meet the criteria.
- At the end, combine all the different ways.
- Drop beneficiaries who change plans between reassignment and active choice.
- Create subset who made an active choice prior to reassignment.

Files used:

- ben20_`year'_`i' (2009: bsf_2009_`i')
- list`year'
- bsfd`year'
- pln`year'
- elc`year'
- lis`year'

Files created:

- 00_assignment_reassignment_`year'
- 00_final_sample_all_`cdate'
- 00_final_sample_`cdate'
- 00_final_sample_subset_`cdate'

Create random 100k sample

Do file: create_samples/00_final_100k_sample.do

Goal: Create final sample of 100k random beneficiaries.

Steps:

- Start with list of all beneficiaries in 2007.
- Drop those who are in reassigned sample.
- Keep those who pass initial screen (no plan changes, etc. – done in Step 1)
- Keep 100,000 beneficiaries.

Files used:

- list`year'
- xwalkloc
- 00_final_sample_`cdate'
- 01_`year'_controlfile_all_`i'

Files created:

- 00_final_sample_100k_`cdate'

<u>Create matched sample</u>

Do file: create_samples/00_final_matched_sample.do

Goal: Create sample of beneficiaries who resemble the final LIS sample on age, total Part D spend, gender, and race.

Steps:

- Requires that final LIS sample code has run.
- Gather all beneficiaries for 2008 and 2009 who can be used in matched sample.
- Use mahapick to select for beneficiaries that are similar to LIS sample on demographic characteristics.

Files used:

- ben20_`year'_`i' (2009: bsf_2009_`i')
- xwalkloc
- 01_controlfile_all_`I'
- 10_ptnt_cell`year'

Files created:

- 00_final_sample_matched_`cdate'

CREATE CALCULATOR VARIABLES:

1) Create control files

Do file: calculator_variables/01_controlfile_exitenter.do

Goal: Start with raw claims and beneficiary information and impose several sample selection criteria. Specifically, mark beneficiaries with LIS coverage, those who change plans mid-year, etc.

Steps:

- Process raw beneficiary files.
    - Start with beneficiary info files.
    - Mark those who got LIS subsidies or changed status or plans during the year.
    - Create new beneficiary files to use later (01_ben20_`year').
- Process PDE (drug event) files.
    - Keep relevant variables.
    - Check contract and plan.
    - Create new PDE files to use later (01_pde_`i'_`j')
- Create control files for those with PDEs (non-LIS)
    - Keep individuals with PDPs who receive no subsidies and have no plan changes (01_`year'_controlfile_`i')
- Create control files for those with no claims (non-LIS)
    - Keep individuals with PDPs who receive no subsidies and have no plan changes – but have no PDEs (01_`year'_controlfile_all_`i')
- Create control files for those with PDEs (LIS)
    - Keep individuals with PDPs who receive no subsidies and have no plan changes (01_`year'_LIS_controlfile_`i')
- Create control files for those with no claims (LIS)
    - Keep individuals with PDPs who receive no subsidies and have no plan changes – but have no PDEs (01_`year'_LIS_controlfile_all_`i')

Files used:

- ben20_`year'_`i' (2009: bsf_2009_`i')
- pde20_`year'_`i'_`j'
- xwalk20174_16702

Files created:

- 01_ben20_`year'
- PDE files (01_pde20_`i'_`j')
- 01_`year'_controlfile_`i'
- 01_`year'_controlfile_all_`i'
- 01_`year'_LIS_controlfile_`i'
- 01_`year'_LIS_controlfile_all_`i'

2) Create list of plans for each beneficiary (based on state)

Do file: calculator_variables/02_makecalclist.do

Goal: Start with list of all beneficiaries and get their state location. For those beneficiaries who pass initial screen (in step 1), get all possible plan choices (based on state).

Steps:

- Keep plans we want (PDP plan, non-employer).
- Start with all beneficiaries in final samples.
- Get state of residence (drop non-US, etc.)
- Merge with plans and keep only relevant plans.
- Save calculator lists for all samples.

Files used:

- ben20_`year'_`i' (2009: bsf_2009_`i')
- pde20_`year'_`i'_`j'
- xwalk20174_16702
- pln`year'
- srv`year'
- ssacodes
- 00_final_sample_`cdate'
- 00_final_sample_100k_`cdate'
- 00_final_sample_matched_`cdate'

Files created:

- 02_`year'_final_calclist_`cdate'
- 02_`year'_matched_calclist_`cdate'
- 02_`year'_LIS_final_calclist_`cdate'

3) Superform claims

Do files: calculator_variables/03_mpd_superform_claims.do

Goal: This file creates a formulary for each plan from the PDE data. Specifically, we count the number of claims for each (contract, plan, tier, prdsrvid).

Files used:

- 01_pde20_`i'_`j'

Files created:

- 03_pde_ben_`year'_form_allguys

4) Copay claims

Do files: calculator_variables/04_mpd_copay_claims.do

Goal: This file audits tier assignments in the calculator using observed copay/coinsurances in the claims data.

SETTINGS:

- **actplanyear** (actual plan and claims)
- **charplanyear** (year for given plan's characteristics)
- **drug_id: gcn_gen**
- **inst_type: switching**

Files used:

- pde20_`year'_`i'_`j'
- pha20_`year'_1
- tie20_`year'_1
- 01_`year'_controlfile_all_`i'

Files created:

- 04_`year'_naclaims_match

5) Formulary

Do files: calculator_variables/05_mpd_superform.do

Goal: This file creates a formulary for each plan from the public use formulary data.

Files used:

- plnb`year'
- 04_`year'_naclaims_match
- 03_pde_ben_`year'_form_allguys

Public use files used:

- formulary file 20060926.txt
- basic formulary file 20070931.txt
- enhanced alternative formulary file 20070931.txt
- basic drugs formulary file 20080930.txt
- excluded drugs formulary file 20080930.txt
- basicdrugsformularyfile20090131.txt
- excludeddrugsformularyfile20090131.txt

Files created:

- 05_superform_`year'

6) Calculator

**** note: run non-LIS calculator first!***

Non-LIS:

Do files: calculator_variables/06_mpd_calc_new_07.do, calculator_variables/06_mpd_calc_new_08.do, calculator_variables/06_mpd_calc_new_09.do

Goal:

Settings:

- **runtype** (RE = rational expectations, PF = perfect foresight, run in RE)
- **version** (any_plan = run for any plan, own_plan = run for own plan, run in any_plan)
- **planyear** (plan year)
- **claimyear** (claim year)

Steps:

- First run drug crosswalk part once for each category of crosswalk.
- Then create formulary files (once for each category of crosswalk).
- Create beneficiary cost file (once for each year).
- Then run calculator loops.

Files used:

- 03_pde_ben_`year'_form_allguys
- 05_superform_`year'
- 13_`year'_combined_calclist
- tie20_`year'_1
- plnb`year'
- pln20_`year'_1
- pde20_`year'_`cf'_`grp'
- beneficiary cost files
- first databank files

Files created:

- calcfiles/calc_`i'/mini_`year'_RE_gcn_gen_est_annual_cost_`i'_`j'_any_plan_sample

LIS:

Do files: calculator_variables/06_run_LIScalc_07.do, calculator_variables/06_run_LIScalc_08.do, calculator_variables/06_run_LIScalc_09.do, calculator_variables/06_calcdofile_07.do, calculator_variables/06_calcdofile_08.do, calculator_variable/06_calcdofile_09.do

Goal: Begin calculating out of pocket and other calculator costs for LIS beneficiaries.

Steps:

- First, create input files for beneficiaries (to make calculator run faster).
- Then, run LIS calculator for each pde file.
- Create small output files with calculator results.

Files used:

- 09_ptntloc`year'
- 12_`year'_`costshare'_finalcalclist_LIS
- drug_crosswalk_gcn_seqno (created in non-LIS calculator step)
- `year'_formulary_file_ndc (created in non-LIS calculator step)
- `year'_formulaty_file_gcn_seqno (created in non-LIS calculator step)
- pln`year'

Files created:

- LIScalculator/`year'/input/LISinput_`year'_`x'_`i'_`j'
- LIScalculator/`year/output/LISoutput_`year'_x'_`i'_`j'

7) Compile calculator results

Do files (non-LIS calculator): calculator_variables/07_combinecalc_07.do, calculator_variables/07_combinecalc_08.do, calculator_variables/07_combinecalc_09.do

Do files (LIS calculator): calculator_variables/07_combinecalc_LIS_07.do, calculator_variables/07_combinecalc_LIS_08.do, calculator_variables/07_combinecalc_LIS_09.do

Goal: Compile the small calculator files created in Step 6 and calculator out of pocket costs, variance, and costshare.

Steps:

- First combine results from small calculator files (for non-LIS and LIS separately).
- Then bring in cell ids and calculator relevant numbers (out of pocket costs, variance, costshare).

Files used:

- calcfiles/calc_`i'/mini_`year'_RE_gcn_gen_est_annual_cost_`i'_`j'_any_plan_sample (created in Step 6 above)
- LIScalculator/`year'/output/LISoutput_`year'_`x'_`i'_`j'
- 11_nonLIS_cellids_`year'
- 11_LIS_`x'_cellids_`year'
- 11_LIS_`x'_cell2000guys_`year'

Files created:

- 07_`year'_nonLIS_celloopsd
- 07_`year'_LIS_celloopsd

9) Location Iterator

Do files: calculator_variables/09_partDiteratorloc.do, calculator_variables/09_makeptntloc`year'.do

Goal: Iterate through all the PDEs to see which beneficiary has PDEs in which file.

Files used:

- pde20_`year'_`i'_`j'

Files created:

- 09_ptntloc`year'

10) Cell Iterator

Do files: calculator_variables/10_partDiteratorcell.do, calculator_variables/10_makeptntcell`year'.do

Goal: Sum up total costs for beneficiaries.

Files used:

- pde20_`year'_`i'_`j'

Files created:

- 10_ptnt_cell`year'

11) Assign to cells and find 200 guys for each plan, cell

Do files: calculator_variables/11_make`cellsize'guys.do

Goal: Create files with cell assignments as well as list of 2000 guys for each cell, plan combination.

Steps:

- Save all the control files once (LIS and non-LIS).
- Start with all beneficiaries.
- Bring in cost share information (LIS status, etc.)
- Separate into:
    - Non-LIS (costshare: 09)
    - LIS, group 1 (costshare: 01)
    - LIS, group 2 (costshare: 02)
    - LIS, group 3 (costshare: 03, 04)
    - LIS, group 4 (costshare: 05, 06, 07, 08)
- For each of these groups, take the following steps:
    - Bring in last year's costs.
    - Create 10 bins (deciles) for those with claims last year.
    - Create bin for those with no claims last year.
    - Save cell id data for all beneficiaries.
    - Merge with control file to keep guys who have no plan or status changes.
    - Arrange in random order for each cell.
    - Keep a number of guys in each cell (cellsize, 200 or 2000).

Files used:

- ben20_`year'_`i' (2009: bsf_2009_`i')
- xwalk20174_16702
- 01_ben20_`year'
- 01_`year'_controlfile_all_`i'
- 01_`year'_LIS_controlfile_all_`i'

- 10_ptnt_cell`year'

Files created:

- 11_nonLIS_cellids_`year' (cell ids for all non-LIS beneficiaries)
- 11_nonLIS_cell`cellsize'guys_`year' (200 or 2000 guys for each cell)
- 11_LIS_`x'_cellids_`year' (cell ids for all LIS beneficiaries, where `x' is costshare group)
- 11_LIS_`x'_cell`cellsize'guys_`year' (200 or 2000 guys for each cell, where `x' is costshare group)

12) Create calculator lists

Do files: calculator_variables/12_makefinalcalclist_100k.do, calculator_variables/12_makefinalcalclist_LIS.do, calculator_variables/12_makefinalcalclist_matched.do

Goal: These three files creates the lists of (beneficiary, plan) that need to be run through the calculators for each of the samples (random, final LIS, and matched).

Steps:

- Start with list of beneficiaries (for each sample).
- Merge in cell ids (assigned in Step 11).
- Then merge in 2000 guys in that cell who will be run through the calculator.

Files used:

- 00_final_sample_100k_`cdate'
- 00_final_sample_all_`cdate'
- 00_final_sample_matched_`cdate'
- 01_`year'_controlfile_all_`i'
- 02_`year'_final_calclist_`i'
- 11_nonLIS_cellids_`year'
- 11_nonLIS_cell2000guys_`year'
- 11_LIS_`x'_cellids_`year'
- 11_LIS_`x'_cell2000guys_`year'
- ben20_`year'_`i' (2009: bsf_2009_`i')

Files created:

- 12_`year'_finalcalclist_100k
- 12_`year'_`x'_finalcalclist_LIS
- 12_`year'_finalcalclist_matched

13) Combine calculator lists for random and matched files

Do files: calculator_variables/13_combine_calclists.do

Goal: Combine calculator lists that need to be run through the same calculator (all non-LIS lists).

Files used:

- 12_`year'_finalcalclist_100k

- 12_`year'_`x'_finalcalclist_LIS
- 12_`year'_finalcalclist_matched

Files created:

- 13_`year'_combined_calclist

CREATE NON-CALCULATOR VARIABLES:

annprem_net, annprem_gross, drug_deductible, donut, gencov, cov_in_hole, form100, normqual

1) Create quality, donut hole, and deductible variables

Do file: other_variables/01_plan_variables.do

Goal: Gather non-calculator plan variables.

Files used:

- plnb`year'
- pln`year'
- plan quality variables (downloaded from https://www.cms.gov/medicare/prescription-drug-coverage/prescriptiondrugcovgenin/performancedata.html)

Files created:

- 01_`year'_noncalcvars

Note: The form100 variable was gathered for plans previously and added from previous results.

CREATE FINAL SAMPLES:

Combine final LIS sample:

Do file: combine/08_createfinalsample_LIS.do, combine/08_createfinalsample_LISunder65.do

Goal: Combine variables created in previous steps for the LIS sample (and the under65 sample).

Steps:

- Start with list of beneficiaries created in Step 0.
- Gather plan and other information on beneficiaries.
- Merge in previous year costs.
- Merge in cell ids.
- Merge in non-calculator plan variables, including annual premiums.
- Merge in calculator results (out of pocket costs, variance, etc.)
- Fix gap coverage variables.
- Fix deductible variable.
- Create form100 indicator variable (if form100 is missing).
- Keep only relevant year data.
- Label variables, clean up (get rid of unnecessary variables), create yearbene variable, and save.

Files used:

- 00_final_sample_LIS_`cdate'
- 02_`year'_final_calclist_`cdate'
- 07_`year'_LIS_celloopsd
- 07_`year'_nonLIS_celloopsd
- 10_ptnt_cell`year'
- 11_LIS_`x'_cellids_`year'
- 11_nonLIS_cellids_``year'
- 01_`year'_noncalcvars
- ben20_`year'_`i'
- bsfd`year'

Files created:

- 08_finalsample_LIS_`cdate'
- 08_finalsample_LISunder65_`cdate'

Combine 100k random sample:

Do file: combine/08_createfinalsample_100k.do

Goal: Combine variables created in previous steps for the matched sample.

Steps:

- Start with list of beneficiaries created in Step 0.
- Gather plan and other information on beneficiaries.

- Merge in previous year costs.
- Merge in cell ids.
- Merge in non-calculator plan variables, including annual premiums.
- Merge in calculator results (out of pocket costs, variance, etc.)
- Fix gap coverage variables.
- Fix deductible variable.
- Create form100 indicator variable (if form100 is missing).
- Keep only relevant year data.
- Label variables, clean up (get rid of unnecessary variables), create yearbene variable, and save.

Files used:

- 00_final_sample_100k_`cdate'
- 02_`year'_final_calclist_`cdate'
  07_`year'_nonLIS_celloopsd
- 10_ptnt_cell`year'
- 11_LIS_`x'_cellids_`year'
- 11_nonLIS_cellids_``year'
- 01_`year'_noncalcvars
- ben20_`year'_`i'
- bsfd`year'

Files created:

- 08_finalsample_100k_`cdate'

<u>Combine matched sample:</u>

Do file: combine/08_createfinalsample_matched.do

Goal: Combine variables created in previous steps for the matched sample.

Steps:

- Start with list of beneficiaries created in Step 0.
- Gather plan and other information on beneficiaries.
- Merge in previous year costs.
- Merge in cell ids.
- Merge in non-calculator plan variables, including annual premiums.
- Merge in calculator results (out of pocket costs, variance, etc.)
- Fix gap coverage variables.
- Fix deductible variable.
- Create form100 indicator variable (if form100 is missing).
- Keep only relevant year data.
- Label variables, clean up (get rid of unnecessary variables), create yearbene variable, and save.

Files used:

- 00_final_sample_matched_`cdate'
- 02_`year'_final_calclist_`cdate'
  07_`year'_nonLIS_celloopsd
- 10_ptnt_cell`year'
- 11_LIS_`x'_cellids_`year'
- 11_nonLIS_cellids_``year'
- 01_`year'_noncalcvars
- ben20_`year'_`i'
- bsfd`year'

Files created:

- 08_finalsample_matched_`cdate'

<u>Generate Experimental Data</u>

Do file: final_dofiles/create_samples/00_makeexperimentaldata.do

Goal: Create the experimental data

Files used:

- itemdesc040517.xlsx (in create_samples folder)

Files created:

- experiment`cdate'.csv

FINAL TABLES:

1) Demographic comparison table (TABLE 2)

Do file: final_tables/01_demog_table2.do

Goal: Create table in text showing summary statistics for Medicare Part D sample

Files used:

- 08_final_sample_100k_`cdate'
- ben20_`year'_`i' (2009: bsf_2009_`i')

2) Excess weight on default attributes regression (TABLE 3)

Do file: final_tables/02_excessdefault_table3.do

Goal: run the regression of switching on default good and rival good attributes to test for excess response to default attributes.

Files used:

- 08_final_sample_100k_`cdate'
- ben20_`year'_`i' (2009: bsf_2009_`i')

3) Conditional Logit Results (TABLE 4, Column 1)

Do file: final_tables/03_condlogit_table4.do

Goal: estimate the conditional logit model in the Part D data. Estimated coefficients are for standardized variables. To recover the coefficients in the table, divide by the standard deviations (reported in the log file) and adjust appropriately for units (e.g. multiply by 100 for premiums since it is reported in hundreds of dollars).

Files used:

- 08_final_sample_100k_`cdate'
- ben20_`year'_`i' (2009: bsf_2009_`i')

4) Overidentification Test Results (testing Heiss et. al.), (TABLE 10)

Do file: final_tables/04_overident_table10.do

Goal: estimate the overidentification tests reported in Table 10 for Heiss, McFadden, Winter, Wupperman and Zhou's model.

Files used:

- 08_final_sample_100k_`cdate'

- ben20_`year'_`i' (2009: bsf_2009_`i')

4) Hybrid Model Results

Do file: script_hybrid.m

Goal: estimate the hybrid version of the alogit model in the Part D data. Estimated coefficients are for standardized variables. To recover the coefficients in the table, divide by the standard deviations (reported in the log file) and adjust appropriately for units (e.g. multiply by 100 for premiums since it is reported in hundreds of dollars). WARNING: THIS FILE TAKES ~1 WEEK TO RUN.

5) Welfare Results

Do file: welfare_code_baseline.m

welfare_code_biggain.m

welfare_code_biggainqual.m

welfare_results.m

Goal: use estimated hybrid model to simulate impact of reassigning Medicare beneficiaries to alternative plans under different specifications of the reassignment rule. welfare_results.m brings the results together in the way reported in the final paper.

Section 4: Experimental Validation

Experimental Data Estimation Results (Table 1)

Do file: experiment_replication.do

Goal: process the experimental data and then estimate the attentive logit model on the experimental data by MLE.

Files used: experiment_data.dta

Do file: ii_code.m

Goal: process the experimental data and then estimate the attentive logit model on the experimental data by indirect inference.

Warning: THIS FILE TAKES AN INCREDIBLY LONG TIME TO RUN. WE RECOMMEND USING THE STATA CODE FOR ANY ANALYSIS.

Experimental Data Estimation Results (Table 8)

Do file: experiment_alogit.do

Goal: process the experimental data and then estimate the attentive logit model on the experimental data (table 8 is highlighted in log file).

Files used: experiment`cdate'.csv

Create elasticities from experiment (Figure B1)

Do file: makeelasticityfigure

Goal: set up the experimental data and make the elasticity figure (data for figure is labeled “Figure B1” in log file)

Files used:

- experiment`cdate’.csv