This is an overview of SAS programs used in the analysis for “Longitudinal analysis of dementia diagnosis and specialty care among racially diverse Medicare beneficiaries,” by Emmanuel Fulgence Drabo, Douglas Barthold, Geoffrey Joyce, Patricia Ferido, Helena Chang Chui, and Julie Zissimopoulos.

**Harmonize Part A, B and D Claims**

partABlib.mac

* sets up raw data file libnames for Parts A and B claims

partDlib.mac

* sets up raw data file libnames for Part D claims

setup.inc

* sets up directories for Medicare claims data project work

sascontents.mac

* Macro that runs contents on data set and outputs to specified folder

renvars.mac

* Macro that renames variables in list

pdeplan\_dts.sas

* Source data: Medicare Part D Events files
* Get all Part D plan information by bene\_id and plan

bene\_pdeplan\_dts.sas

* Source data: Cleaned Part D Plans data from pdeplan\_dts.sas
* Summarize Part D plan information on beneficiary level

claim\_dates.sas

* Source data: Medicare RIF claims files
* Extract claim dates from claim segment for all claim types

clmids.sas

* Source data: Claim dates data from claims\_dates.sas
* Creates a beneficiary level file that flags whether the beneficiary has a type of claim

claimfile\_set\_nseg.inc

* Sets number segments for claim types and years that have been broken up into smaller segment files

extractfrom1.mac, extprocs1.mac, extprocs1\_xwseg.mac

* macros to loop through years of claims files and extract and rename variables

xwalk0205.mac

* Source data: EHIC and beneficiary ID crosswalk
* crosswalk 2002-2005 EHIC ids to beneficiary ids

diag\_pta.sas

* Source data: Medicare Part A RIF claims files
* Extracts diagnoses information form Part A claims

diag\_ptb.sas

* Source data: Medicare Part B RIF claims files
* Extracts diagnoses information from Part B claims

provider\_id.sas

* Source data: Medicare Part A and B RIF claims files
* Extracts provider information from Part A and B claims

p2egwp.sas

* Source data: Part D plan information
* Creates a format of Part D plan information

**Harmonize raw MBSF files**

bsf\_allyrs.sas

* Source data: Medicare Beneficiary Summary Files
* merges bsfab and bsfd files together after 2006

bene\_demog2014.sas, verold.fmt

* Source data: Medicare beneficiary summary files and harmonized files from bsf\_allyrs.sas
* creates a file of beneficiary non-time-varying demographics across all years of available data

bene\_status.fmt, bene\_status\_year.sas

* Source data: Medicare beneficiary summary files and harmonized files from bsf\_allyrs.sas and bene\_demog2014.sas
* summarizes enrollment data.sas, HMO status.sas, dual eligibility.sas, Part D plan by year

bene\_geo.sas, ssa2fips\_state.fmt, ssa\_statenm.fmt, fips\_statenm.fmt, ssa2fips\_county.fmt, ssa\_countynm.fmt, fips\_countynm.fmt

* Source data: Medicare beneficiary summary files
* extracts geographic identifiers from bsf files and crosswalks other geographic identifiers

**Pull Dementia Diagnoses**

dementia\_dx

* Source data: Diagnosis extracts
* pull dementia diagnoses from Part A and B files

dementia\_dxdt\_typ

* Source data: Dementia diagnosis claims pulled from ‘dementia\_dx’ program
* build beneficiary, date-level files from dementia diagnoses

dementia\_dxdate

* Source data: Dementia date claims pulled from ‘dementia\_dxdt\_typ’ program
* combines all Part A and B dementia date files

dementia\_providers, dementia\_providers\_carmrg

* Source data: Dementia diagnosis claims from ‘dementia\_dx’ program, provider extracts from RIF claims
* merge dementia diagnoses to provider information on the claim level

read\_in\_taxonomy\_xw\_2017

* Source data: Medicare provider crosswalk <https://data.cms.gov/Medicare-Enrollment/CROSSWALK-MEDICARE-PROVIDER-SUPPLIER-to-HEALTHCARE/j75i-rw8y>
* Read in Medicare provider/supplier crosswalk

clean\_taxonomy\_xwlk

* Source data: Medicare provider crosswalk data, Medicare NPPES data
* Clean taxonomy crosswalk, identifying dementia specialists among provider specialties

dementia\_upin\_npixw

* Source data: NPI to UPIN crosswalk from NBER <https://www.nber.org/data/npi-upin-crosswalk.html>, dementia claims merged with provider information from ‘dementia\_providers’ program
* Merge provider NPI to UPINs on the claim

dementia\_phys\_specialty

* Source data: NPI dictionary from ‘clean\_taxonomy\_xwlk,’ dementia diagnosis claims with NPI information from ‘dementia\_upin\_npixw’
* Merge taxonomy information to NPI and merge all claim types together

dementia\_inc\_spec

* Source data: All dementia diagnosis claims with specialist information merged from ‘dementia\_phys\_specialty’ program
* Identify claims where care was given by a dementia specialist

**Build Analytical Data Set**

sample\_selection

* Source data: Cleaned bene status data sets
* Select sample from harmonized beneficiary summary files

access\_measures

* Source data:Area Resource File
* Pull variables related to number of doctors and specialists from the Area Resource File

confirmation\_analytical\_geo

* Source data: Sample characteristics data set, Area Resource File, dementia diagnoses with specialist information
* Bring together dementia diagnosis claims, dementia specialist information, sample information and zip code level information from Area Resource File to create base analytical data set

build\_cohort\_analysis

* Source data: Base analytical data with geographic information, dementia diagnoses with specialist information
* Identify cohort for study – those with incident diagnosis in 2008-2009 and create variables summarizing 5-year follow-up

examine\_nonfollows\_dxpull

* Source data: Cohort data set, diagnosis claim extracts
* Pull all diagnoses for cohort members who never have a follow-up

**Analysis**

sample\_exclusions

* Source data: Sample characteristics data set, base analytical data with geographic information
* Quantify sample restrictions from base sample

cohort\_sample\_characteristics

* Source data: analytical cohort data set
* Get race, sex, age distribution and other characteristics of base cohort sample

cohort\_dxchange

* Source data: analytical cohort data set
* Analysis how often diagnoses changes depending on type of specialist care

figures\_byyear

* Source data: analytical cohort data set
* Descriptive analysis on follow-up and specialist visits

indexdx\_physspecialty

* Source data: analytical cohort data set, dementia diagnoses with specialist information
* Analysis on which specialists give dementia incidence diagnosis

cohort\_analysis\_incidence

* Source data: analytical cohort data set, base analytical data with geographic information
* Analyze ADRD incidence for cohort sample

examine\_nonfollows\_analysis

* Source data: base analytical data with geographic information, diagnoses pulled for those without second dementia diagnosis
* Identifying most common diagnoses for those in cohort who never had dementia visit follow-up