

High-Need, High-Cost Segmentation Framework

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Step1_claims_based_frailty_index.sas

This program uses the frailty score code from <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/HM8DOI>. For a given year that you want to create the segments, claims files should be used from the previous year. So for 2017 segments, all claims from 2016 are used to compute a frailty index score. The years are included as macro variables &yr and &pyr and assigned at the beginning of the program.

The first section of code is to prep the claims files to be run through the frailty score code, and these will change based on the format of your data. You will need to create one diagnosis code file that has two fields: bene_id, dx; and one hcpcs/cpt file that has two fields: bene_id, hcpcs_cd.

The second section of code applies the frailty score code to those files, and does not need to be edited.

Step2_codes_majorcc_subpop.sas

This program uses the diagnosis code file from Step 1 to identify other chronic conditions by ICD-10. For each specific condition, the format of the indicator variable identifies the source (claims), the larger condition category, and the specific condition. For example, all autoimmune diseases have “ai” for autoimmune: clm_ai_rheumarth, clm_ai_ms, etc. This is for simplicity in summing across variables within a category.

Step3_add_ccw_and_combine.sas

The final program pulls in data from CMS’s CCW and other chronic conditions files, which uses claims from the year to identify certain chronic conditions. For samples that do not have this file available, it is possible to create the indicator variables for each condition using the ICD-10 codes and guidelines here: <https://www2.ccwdata.org/web/guest/condition-categories>

This data is merged with the datasets from Steps 1 and 2. Each beneficiary is then assigned to a subpopulation using the hierarchy in the table below.

Assignment to Final Category

Hierarchy of Assignment	Subpop ID #	Description	Details	Age Restriction
1	11	People living with HIV/AIDS	HIV/AIDS (CCW)	No
2	12	People with rare genetic disorders	Rare genetic disorder from claims (and not assigned to above category)	No
3	13	People with severe neurological disorders	Severe neurological disorder from claims (and not assigned to above categories)	No
4	1	Older adults with functional and cognitive impairment with major comorbidity burden	Frail + Major Comorbidity Burden + Alzheimers/Dementia (and not assigned to above categories)	65+
5	2	Older adults with functional impairment and major comorbidity burden	Frail + Major Comorbidity Burden (and not assigned to above categories)	65+
6	3	Older adults with functional impairment only	Frail (and not assigned to above categories)	65+
7	4	People with autoimmune disease	People without autoimmune disease from claims (and not assigned to above categories)	No
8	5	SMI and major comorbidity burden (w/ and without behavioral issues)	SMI and 3 or more major CCs (and not assigned to above categories)	No
9	6	SMI with a low comorbidity burden (w/ and without behavioral issues)	SMI and less than 3 major CCs (and not assigned to above categories)	No
10	7	People with behavioral health issues (w/ and without major cc)	Behavioral health issues from CCW (and not assigned to above categories)	No
11	8	Adults with multiple major chronic conditions	3 or more Major CCs from claims/CCW (and not assigned to above categories)	No
12	9	People with cancer	Cancer diagnosis from claims (and not assigned to above categories)	No
13	10	Adults with metabolic syndrome	Obesity + hyperlipidemia + hypertension (and not assigned to above categories)	No
14	14	Adults with Intellectual or Other Disability	Intellectual/other disability from claims (and not assigned to above categories).	No

Additional Definitions used above	
Frail	Top 25% of frailty index score from claims (among 65+, not assigned to subpop 11-13)
Major comorbidity burden	At least 3 of 9 Major CCs (From CCW: AMI/Ischemic Heart Disease, Chronic Kidney Disease, CHF, Diabetes, Stroke, Liver, PVD. From Claims: Lung Disease, Heart Arrhythmias)
Behavioral issues	From CCW files: Alcohol, Drug, or Opioid Use
SMI	From CCW Files: Depression, Bipolar disorder, Schizophrenia/Other Psychotic Disorders
Intellectual/Other Disability	From Claims: Intellectual Disabilities and Related Conditions, Learning Disabilities, Sensory Blindness and Visual Impairment

Final Segment & Subpopulations

Major Segment	Subpop ID #	Description of Subpopulation	Details
Frail Elders	1	Older adults with functional and cognitive impairment with major comorbidity burden	Frail + Major Comorbidity Burden + Alzheimers/Dementia (and not assigned to above categories)
	2	Older adults with functional impairment and major comorbidity burden	Frail + Major Comorbidity Burden (and not assigned to above categories)
	3	Older adults with functional impairment only	Frail (and not assigned to above categories)
People with major disability	12	People with rare genetic disorders	Rare genetic disorder from
	13	People with severe neurological disorders	Severe neurological disorder from claims
	14	Adults with Intellectual or Other Disability	Intellectual/other disability from claims (and not assigned to above categories).
People with serious mental illness	5	SMI and major comorbidity burden (w/ and without behavioral issues)	SMI and 3 or more major CCs (and not assigned to above categories)
	6	SMI with a low comorbidity burden (w/ and without behavioral issues)	SMI and less than 3 major CCs (and not assigned to above categories)
	7	People with behavioral health issues (w/ and without major cc)	Behavioral health issues from CCW (and not assigned to above categories)
People with complex multimorbidity	11	People living with HIV/AIDS	HIV/AIDS (CCW)
	8	Adults with multiple major chronic conditions	3 or more Major CCs from claims/CCW (and not assigned to above categories)
	9	People with cancer	Cancer diagnosis from claims (and not assigned to above categories)
People with moderate morbidity	n/a	People with 1 or 2 complex chronic conditions	People with 1 or 2 complex chronic conditions
People with minor morbidity	n/a	People with no complex chronic conditions (though presence of other chronic conditions)	No major complex chronic conditions present but have other chronic conditions
People with rising risk	10	Adults with metabolic syndrome	Obesity + hyperlipidemia + hypertension (and not assigned to above categories)
Relatively healthy	n/a	All other adults not assigned to any subpopulation above	People with no chronic condition burden or mental illness