TKA HRR Analysis

1. Confounding by race

Use Model 1 results. Display range of SMRs. For top 10 and bottom 10 SMRs, list location and % composition by race

Show correlations of SMR with % white/black/Hisp/Asian/Other

This motivates the race-specific analysis.

2. White specific analysis

A. Use white specific Model 1 results. Display range of SMRs. Create map.

Then use Model 3 results, display range of SMRs, and create map.

Calculate the reduction in variation achieved by adjustment from model 1 to model 3.

Comment on most important variables in Model 3 (present table of betas in supplement).

B. Show correlations of SMR with HRR-level variables: percent rural, Medicare Advantage, number of outpatient visits, Ortho per 1000. Some substitution of inpt for outpt care; some pos association with number of surgeons.

C. Are the high (low) SMRs due to across the board increases in surgery (ie lower threshold) or expanded use in selected patient subgroups (either very sick or very healthy)?

Divide population into quintile of expected probability. Among each quintile, compute SMR by HRR. If the SMR remains the same across quintiles, would favor the notion that there are across the board increases in surgery. If the SMR is very high in the lowest prob quintile and shrinks/converges in the highest prob quintile, then points to selected patient subgroups.

Compute absolute rates of surgery in each HRR for subsets of sick and healthy. In each HRR, isolate patients with dementia, CHF, PVD, ulcers, and healthy (65-69 + no comorbidity). Also create a poor-risk factor group that combines those with dementia, CHF, PVD, and ulcers. Compute rate of TKA per 1000 patients with dementia, CHF, etc. Correlate rate with SMR. By comparing absolute rates, this will tell how much of the “excess” in the high group is due to expanded TKA use in the healthy versus poor prognosis groups.

D. Is the SMR driven by a few outliers or is it a community standard?

Compute volume per surgeon per HRR.

Within HRRs, look at the absolute rates per surgeon. If we think of the HRR-specific rates as the summary of a set of stratum-specific rates, the surgeon-specific rate is the stratum. For the high SMRs, how much variability is there in rates in the healthy subgroup and poor-risk factor subgroup among different surgeons? Is the range of variability comparable to that seen in HRRs with SMRs near 1.0?

3. Black, Hispanic specific analysis

Compute expected probabilities based on race-specific models for HRR with populations > 15000. Compute SMRs based on Model 3. Map. Correlate each with the white SMR of these HRRs.