Expanding the National Health Expenditure Accounts (NHEA) Technical Documentation

Chapter 8. Calibration processes: institutionalized population.

Indicators of calibrated disease groups in the community population were used to calibrate disease groups in the institutionalized sample. After the calibration/imputation of the disease groups $D_j, j = 1,2,\cdots,105$ in MCBS as described in Chapter 7 for the community dwelling population, the same 105 disease groups were calibrated/imputed for institutionalized subjects in the MCBS. At this step, the imputed data on community dwelling subjects in MCBS were appended to the un-imputed data on institutionalized subjects. Define $I = 1$, for institutionalized subjects and 0 for community dwelling subjects. The following steps describe the iterative process for calibrating claim based disease groups for institutionalized subjects:

1. For disease groups j, define the covariates as $(X, D_{(-j)})$ and fit a propensity score model for institutionalization through a logistic regression model with I as the dependent variable. Let $p_j = \Pr(I = 1 \mid X, D_{(-j)})$.

2. Define $\Pr(C_j = 0, D_j = 1 | p_j) = \frac{P(p_j|C_j=0,D_j=1)P(C_j=0,D_j=1|I=0)}{\sum_{k=0}^{1} P(p_j|C_j=0,D_j=k)P(C_j=0,D_j=k|I=0)}$ as the probability of disease j without the presence of a claim for that disease group given the similarity of the institutionalized subjects to the community dwelling subjects.

3. Estimate the probability on the right hand side of the equation in step two by assuming $P(p_j | C_j = 0, D_j = k) \sim N(\mu_k, \sigma_k^2)$ and evaluating this density as the logit of the propensity score.

4. Draw a uniform random variable and impute new claims for the institutionalized subject with $C_j = 0$, if $\Pr(C_j = 0, D_j = 1 | p_j) > U(0,1)$.

This process was repeated for each year. Resulting claim-based and calibrated disease prevalence for community and institutionalized populations are provided in Appendices 7_8a-k.