PERM Error Rate Calculation Process

October 2013

Calculating State Claims Error Rates

- Stratification is employed prior to sampling
  - The fee-for-service (FFS) universe is divided into strata based on service types
  - The managed care universe is divided into strata based on payment amounts
- The sample of payments is drawn from each of the strata
- The sampled items are reviewed for payment errors
- The component error rate for each program is estimated as projected dollars in error across all of the strata divided by projected payments across all of the strata

Calculating State Error Rates

- The State program component rate calculation (Medicaid/CHIP, FFS/managed care) consists of the following steps:
  - Create weights for sampled units (line level records, header level records, or fixed payments) within each of the strata
  - Multiply payments and errors by the weights for the sampled unit, creating projected observations
  - Add up all projected errors and projected payments
  - Divide total projected errors by total projected payments for each component

Sampling Frequency and Weights

- Records are sampled from a known universe of items
- For each stratum in the universe, there is a sampling frequency that indicates the proportion of records in the universe that are sampled
  - For example, in the first stratum, perhaps 1 in 100 items are sampled
  - This ratio, 1/100, is the sampling frequency
  - If there are $200 dollars in error in the sample for a stratum and the sampling frequency is 1/100 for that stratum, then $20,000 dollars is projected to be in error

State Rate Example

- The PERM FY 2012 payment error rates cover four quarters of data
- Within each quarter, there are ten strata for the State program component

State Rate Example – Universe & Weights

- The number of universe line items within each stratum and quarter are shown in the first table, followed by their conversion to weights in the second table

Number of Line Items by Quarter and Stratum				
	Quarter			
Stratum	1	2	3	4
1	7,728	7,156	7,322	6,769
2	27,591	24,693	25,271	27,946
3	46,016	44,642	45,035	41,627
4	53,382	52,934	52,974	48,067
5	62,605	63,270	62,668	61,991
6	116,943	123,325	109,242	167,162
7	513,419	569,720	510,115	636,740
8	1,459,207	1,521,230	1,462,579	1,436,812
9	2,734,612	2,813,631	2,746,078	2,624,908
10	24,459,438	25,848,892	26,102,800	26,970,484

Sample Weights by Quarter and Stratum*				
	Quarter			
Stratum	1	2	3	4
1	594	550	563	521
2	2,122	1,899	1,944	2,150
3	3,540	3,434	3,464	3,202
4	4,106	4,072	4,075	3,697
5	4,816	4,867	4,821	4,769
6	8,996	9,487	8,403	12,859
7	39,494	43,825	39,240	48,980
8	112,247	117,018	112,506	110,524
9	210,355	216,433	211,237	201,916
10	1,881,495	1,988,376	2,007,908	2,074,653

* Weights are equal to the number of records in each universe quarter/stratum divided by the number of sampled units in each quarter/stratum (normally divided by 13 for FFS and by 7 for MC).

State Rate Example – Projected Values

- Next, the weights are used to project both universe totals and payment error totals. The two rightmost columns show the projected values for Total Payments and for Total Payments in Error, respectively

Obs	Payment	Error	Quarter	Strata	Weight	Payment*Weight	Error*Weight
1	45,357.28	0.00	1	1	594.46	26,963,158	0.00
2	3,574.11	55.50	1	2	2,122.38	7,585,636	117,792.35
3	2,565.97	0.00	2	3	3,434.00	8,811,541	0.00
4	1,556.46	0.00	2	4	4,071.85	6,337,666	0.00
5	1,257.10	0.00	2	5	4,866.92	6,118,209	0.00
6	962.85	962.85	3	6	8,403.23	8,091,051	8,091,050.75
7	665.24	0.00	3	7	39,239.62	26,103,762	0.00
8	200.19	0.00	4	8	110,524.00	22,125,800	0.00
9	96.55	0.00	4	9	201,916.00	19,494,990	0.00
10	18.25	2.00	4	10	2,074,652.62	37,862,410	4,149,305.23
					Totals	169,494,222.25	12,358,148.32

State Rate Example – Error Rate Calculation

- The previous table showed two totals on the bottom row
  - The total for projected payments was $169,494,222.25
  - The total for projected error payments was $12,358,148.32
- Divide the total amount projected in error by the total payment amount projected for the universe
  - $12,358,148.32 / $169,494,222.25 = 0.0729
- Multiply the result by 100
- Example State's payment error rate is 7.29% for this program component

Payment Weighted Eligibility Rate

- For eligibility, state can elect to stratify their active case universe (Applications, Redeterminations, and All other cases) or sample from a single active case universe in each sample month
  - For states stratifying, there are 36 strata (3 strata * 12 sample months)
  - For states that are not stratifying, there are 12 strata (12 sample months)
- For each stratum, the yearly error rate is calculated as a summation of dollars in error associated with the sampled case, weighted by its sampling weight, divided by total dollars paid for each case, weighted by the sampling weight

Payment Weighted Eligibility Rate Example

- There are 2,000 redetermination cases in the universe for month one and 2,500 cases in month two, and 10 cases are sampled from each month
- The sampling weight for sampled redeterminations is 2,000/10=200 for month one and 2,500/10=250 for month two
- Let the total error for 10 cases in month one be $150 and total payment be $1,000
- Let the total error for 10 cases in month two be $100 and total payment be $1,000

Payment Weighted Eligibility Rate Example

- Total weighted error for redetermination cases is $150 * 200 + $100 * 250 = $55,000
- Total weighted payment is $1,000 * 200 + $1,000 * 250 = $450,000
- Error rate for the redetermination cases is 55,000/450,000 = 0.1222 (12.2%)

State Claims Payment Error Rate

- The Medicaid (or CHIP) combined claims payment error rate for a State consists of the weighted average of the FFS error rate for that program and the MC error rate for that program
- The weights for this step are the proportionate shares of FFS and MC expenditures in the combined program

$$R_{FFs+Mc} = S_{FFS} R_{FFS} + (1 - S_{FFS}) R_{MC}$$

- Where
  - R is rate
  - FFS and MC are Fee-For-Service and Managed Care, respectively
  - S is the proportionate share of expenditures

State Combined Payment Error Rate

- A State's overall error rate is computed as:

$$R = R_{FFs+Mc} + R_E - R_{FFs+Mc} * R_E$$

- Where
  - R is a payment error rate
  - FFS, MC, and E stand for Fee-For-Service, Managed Care, and Eligibility, respectively.
  - The final element in the equation (" – RFFS + MC * RE") is a statistical adjustment to remove the potential overlap between the claims and the eligibility reviews processes.

Combined Payment Rate - Example

- Step 1: Combine FFS and managed care to get claims rate
  - The Medicaid FFS error rate is 7.29%
    - Expenditures of $8.6B, or 71.6247% of total Medicaid expenditures
  - The Medicaid managed care rate is 1.08%
    - Expenditures of $3.4B, or 28.3753% of total Medicaid expenditures
  - Then the combined FFS and managed care rate is

    (.0729 * .716247) + (0.0108 * .283753) = .0553 = 5.53%
- Step 2: Combine claims and eligibility rates
  - The Medicaid eligibility error rate is 1.62%
  - Then the total error rate is

    .0553 + .0162 – (.0553 * .0162) = .0706 = 7.06%

National Error Rates

- Using the 17 States as a sample, the program's FFS, managed care, and eligibility rates are projected to the national level
  - The 17 states are sampled from 4 "state strata" of the 51 states
  - Using the sampled states for each "state stratum," we calculate the error rate for the stratum
  - The weights for each state stratum is the share of payments for all the states in the stratum for the component
  - Example: Total Medicaid FFS is $36 billion. There are 17 states in state stratum 3, having a total of $3.6 billion Medicaid FFS expenditures. Therefore, the weight for state stratum 3 is 3.6/36 = 0.1
  - National error rate for a component is the weighted rate of each "state-stratum" for the component

National Error Rates

- The component error rates (FFS, managed care, eligibility) are then combined into one, overall program rate, in the same manner as each State's rates are combined