Appendix C

RETROSPECTIVE SAMPLING

The purpose of retrospective sampling is to improve precision by stratifying cases by dollar value of claims.

Sample Selection

Draw an initial oversized sample each month. Select each sample from the universe of cases which were eligible in the fourth month prior to the sample month; (e.g., samples selected in October will be for cases reviewed for eligibility in June; thus, June is the "service" (or eligibility review) month, and October is the "sample" month). Determine paid claims for each case in the oversized sample and include all payments for services rendered in the "service" month and paid anytime during that month up to and including the "sample" month. Assign each case to one of the three strata. These cases then constitute the sample frames for selecting three samples within three dollar based strata. Insure that the initial monthly oversized sample is large enough to provide an adequate sampling frame so that the prescribed number of cases within each stratum is provided. Review retroactive eligibles but exclude them from the error rate computations. Do not count retroactive eligibles toward satisfying the minimum sample completion requirement.

Stratum Boundaries

Recommended Approach for Determining Strata and Sample Sizes

Accumulate MAO stratum sample cases for the last three 6-month reporting periods for which data are available. Partition these cases by paid claim dollar values into incremental categories of $100. Count the number of cases in each category and establish strata boundaries.

Let the jth $100 category = Cj=1,...K, and the number of cases in the jth $100 category = nj j=1,...,K.

Also, let zk=nj j=1,..,K be the total sum of the square roots of the number of cases in the K $100 dollar categories.

Then the optimal $100 dollar value boundaries (upper values) for the first two strata are:

1st stratum-the Cj which corresponds to the first Zj > Zk/3

2nd stratum-the Cj which corresponds to the first Zj > 2/3 Zk

Example

State X will test retrospective sampling in the October 1995-March 1996 review period. MEQC data for the October 1993-March 1994, April 1994-September 1994, and October 1994-March 1995 review periods are available, and the number of cases by $100 category are as follows:

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Number of Cases

Paid Claim

j $Category 10/93-3/94 4/94-9/94 10/94-3/95 Total (nj)

1 0-100 571 568 555 1,694

2 101-200 64 62 69 195

3 201-300 21 28 30 79

4 301-400 10 12 15 37

5 401-500 8 8 13 29

6 501-600 14 13 17 44

7 601-700 15 17 26 58

8 701-800 43 38 30 111

9 801-900 41 43 31 115

10 901-1000 40 40 37 117

11 1001-up 48 53 54 155

875 882 877 2,634

j zj= nj Cj

\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_

1 41 0-100

2 55 101-200

3 64 201-300

4 70 301-400

5 75 401-501

6 82 501-600

7 90 601-700

8 100 701-800

9 111 801-900

10 122 901-1000

11 134 1001 up

and, Zk = 134.25 Zk/3 = 44.752 2Zk/3 = 89.50

and the 1st stratum upper boundary is j=2 since

Z2=55 is the first Zj  >  Zk/3

and the 2nd stratum upper boundary is j=7, since

Z7=90 is the first Zj  > 2/3 Zk.

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Thus, for State X, dollar value boundaries for the three strata are:

Cases With Claims Between

Stratum 1 $0-$200

Stratum 2 $201-$700

Stratum 3 $701 up

Strata Sample Sizes

Determine stratum sample sizes by the following formula utilizing the same data:

nh = n NhSh

 NhSh

Where n = required 6-month MAO sample size

nh = strata sample sizes

Nh = number of cases in stratum h for the three periods

Sh = standard deviation of stratum h eligibility and liability error dollars

Example

For State X:

N1 = 1,889 N2 = 247 N3 = 498

S1 = 16.6 S2 = 48.3 S3 = 300.1

Where Sh =  (Xjh - Xh)2

Nh - 1

Thus:

NhSh = (1,889)(16.6) - (247(48.3) - (498)(300.1)

= 192,737.3

and the required sample sizes for the strata for the 6-month period are:

Stratum 1 = (875)N1S1 = (875)(1,889)(16.6)

192,737.3 192,737.3

= 142

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Stratum 2 = (875)(247)(48.3)

192,737.3

= 54

Stratum 3 = (875)(498)(300.1)

192,737.3

= 678

Initial Oversized Sample

Draw the initial oversized sample large enough to insure that it represents an adequate sampling frame for the final strata samples.

Example

For State X, the strata for paid claim dollar values larger than $701 must be at least 678 cases. However, only 18.9 percent of all cases, (111 + 115 + 117 + 155)/2,634 on average, have at least $701.

Therefore, the initial oversized sample must be at least:

678 = 3,588 cases not accounting for drops, etc.

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Use of Standard Sampling Methodology

Once the initial oversized sample and the strata sample sizes are established, use standard sampling procedures for each stratum.

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