

ACTUARIAL RESEARCH CLEARING HOUSE
1993 VOL. 3

Group Medical Pricing Trend

Projection Methodology

Wesley S. Carver, F.S.A., M.A.A.A.
David A. Shea, Jr., F.S.A., M.A.A.A.

At Blue Cross and Blue Shield of Virginia, pricing trends for group medical business are projected quarterly, approximately three months prior to the first effective date for which they will be used. Over the last two years, we have developed the methodology outlined below for this projection.

(1) Observation of Historical Trends by Trend Component:

In order for us to better understand the major influential factors behind medical claim trends, we developed Claims Analysis Reports (CARs), shown in Exhibit I (4 pages). These reports facilitate analysis of cost per unit and unit frequency components of claims costs. These components are currently examined separately for five major claims sources: inpatient hospital, outpatient hospital, inpatient physician, outpatient physician, and outpatient prescription drugs. Other minor sources of claims expense, e.g. durable medical equipment, are included with physician's expenses. In order to simplify the trend projection process, the inpatient and outpatient physician claims are considered on a combined basis.

Claims amounts are reported on a charge basis by including patient pay amounts (to normalize for benefit design), and by reporting claims prior to any network hospital discounts. (Such discounts are addressed outside of the trend projection process.)

Six 12-month periods of a pre-defined block of group experience were reported via CARS reports for our most recent trend projection for each of two network classifications, PAR and PPO. This allowed us to make three trend observations for each network.

We then had three trend observations for each of eight trend factor cells (two components x four claims sources), for each network. Each observation is based on the change in twelve months of claims, separated by a calendar quarter.

(2) Projection of Trend Factors:

Each of the eight trend factors was then projected forward to the rating period using:

- (a) the observations of historical trends for the eight factors;

(b) expectations of representatives from several areas of the company, with regard to the future economic and regulatory environments as they might pertain to medical care costs.

These eight projections were expressed as parameters of eight Triangular Probability Distributions, the parameters for each distribution being the lower bound, the upper bound, and the most likely annual trend value.

The Triangular Probability Distribution was selected to represent the probabilities underlying the trend factor distributions because the parameters necessary to define it (lower bound, upper bound, and most likely value) match well with the limited knowledge available with regard to future medical claims trends.

The three historical observations, along with the projected distribution parameters, for each of the eight trend factors are documented on Exhibit II for both the PAR and PPO networks.

(3) Modeling Composite Annual Trends:

Exhibit III illustrates the LOTUS spreadsheet model employed to composite the eight distinct trend factors into an overall annual medical trend assumption. The PAR and PPO networks are modeled separately.

@Risk software (from Palisade), which attaches to LOTUS, allows the four cost per unit trends and the four unit frequency trends to be represented in the spreadsheet model as the triangular distributions discussed above, rather than as point estimates. @Risk also allows us to build in a small negative correlation between cost per unit and unit frequency for each of the four claims sources. We have generally observed such a correlation in practice.

Factors for each source of claims trends are weighted in the model according to claims distributions from recent CARS reports. Deductible leveraging is represented through the use of linear equations, developed separately, having the products of the cost per unit and unit frequency trends as independent variables.

The @Risk software allows us to apply 1,000 Monte Carlo simulations to each of the two models. The total of the trended weights in each model is the Annual Trend Estimate.

The distribution of the Annual Trend Estimate variable, produced by the 1,000 passes through the model, is recorded by the software.

Hence, the result is that we obtain projected trend distributions rather than projected trend point estimates, for each network. The numbers appearing on the Exhibit III models as Annual Trend Estimates are actually the expected values of the distributions produced.

(4) Model Results:

@Risk also provides detailed statistics with regard to the distributions of each Annual Trend Estimate. Graphs of Annual Trend Estimate distributions for the PAR and PPO networks are included as Exhibit IV. The software also provides for calculation of probabilities associated with trend estimates in the distributions. This allows the user, in accordance with his or her risk tolerance, to select an Annual Trend Estimate with a known probability of being adequate -- given, of course, that the underlying distribution assumptions for the eight trend factors are accurate. Expected values and values with adequacy probabilities of 75% for each distribution are shown in the middle of the Exhibit II pages.

While the methodology described in the preceding discussion for estimating group medical pricing trends does not constitute the entire input into our quarterly trend projection process, it does play a major role.

We believe that this methodology provides three important and interrelated benefits:

- (1) a logical, structured method for representing the effects and interactions of a number of factors influencing medical claims trends;
- (2) a basis for discussion of the development of medical pricing trends which incorporates some measure of the risk associated with various trend assumptions and,
- (3) recognizes the uncertainty surrounding trend projection, by expressing trends in terms of falling within an anticipated range, rather than at a specific point.

As the claims experience emerges and corresponds to our projection periods, this methodology will also allow us to analyze the reasons why observed trends are different from pricing (expected) trends.

CLAIMS ANALYSIS REPORTING (CARS)

Exhibit I (1)

TRENDS

Incurred: 11/90 To: 10/91

PAR

Paid: 11/90 Thru: 04/92

FACILITY PD CLASS =

CHARGES (INCLUDING PATIENT PAY)

| INPATIENT FACILITY | SUB CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF TOTAL | DATE /1,000 | AMT /DAY | ADM /1,000 | PAID CLAIMS PER ADMISN | ALOS (DAYS) | TRENDS PAR | | |
|------------------------------------|----------------------|---------------------------|---------------|------------------|---------------------|-------------|------------------------|---------------------|-------------|------------------|------------------|
| | | | | | | | | | BNC /1,000 | AMT PER INCIDENT | AMT PER INCIDENT |
| Medical | \$106,090,685 | \$15.92 | 12.8% | 183 | \$1,044.53 | 37 | \$5,195 | 5.0 | | | |
| Surgical | 137,289,233 | 20.60 | 16.6% | 159 | 1,556.32 | 30 | 8,361 | 5.4 | | | |
| Alcohol & Drug Abuse | 7,074,232 | 1.06 | 0.9% | 25 | 515.95 | 2 | 6,125 | 11.9 | | | |
| Mental Health | 25,386,707 | 3.81 | 3.1% | 69 | 657.89 | 5 | 9,086 | 13.8 | | | |
| Maternity | 26,897,944 | 4.04 | 3.2% | 36 | 1,357.52 | 14 | 3,570 | 2.6 | | | |
| Other | 2,071,276 | 0.31 | 0.3% | 13 | 295.31 | 0 | 20,508 | 69.4 | | | |
| SUBTOTALS: | \$304,810,077 | \$45.74 | 36.8% | 484 | \$1,133.51 | 87 | \$6,294 | 5.6 | | | |
| OUTPATIENT FACILITY | SUB CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF TOTAL | DATE /1,000 | AMT PER INCIDENT | BNC /1,000 | AMT PER INCIDENT | EVALUATION SERVICES | PAID CLAIMS | BNC /1,000 | AMT PER INCIDENT |
| Medical | | | | | | | | | | | |
| Surgical | 43,925,210 | 6.59 | 5.3% | 59 | 1,335.84 | | | | | | |
| Alcohol & Drug Abuse | 299,325 | 0.04 | 0.0% | 1 | 485.13 | | | | | | |
| Mental Health | 314,251 | 0.05 | 0.0% | 2 | 246.09 | | | | | | |
| Maternity | 1,092,226 | 0.16 | 0.1% | 4 | 496.47 | | | | | | |
| Emergency/Accident | 23,583,725 | 3.54 | 2.8% | 177 | 239.48 | | | | | | |
| Xray/Lab | 29,779,687 | 4.47 | 3.6% | 319 | 167.94 | | | | | | |
| Therapy | 2,182,436 | 0.33 | 0.3% | 12 | 337.21 | | | | | | |
| Other | 2,256,604 | 0.34 | 0.3% | 15 | 275.33 | | | | | | |
| SUBTOTALS: | \$124,168,032 | \$18.63 | 15.0% | 697 | \$320.67 | | | | | | |
| PROFESSIONAL PROVIDER - INPATIENT | Encounters/1,000 = | Amt/Encounter | BNC /1,000 | AMT PER INCIDENT | EVALUATION SERVICES | PAID CLAIMS | BNC /1,000 | AMT PER INCIDENT | | | |
| Encounters/1,000 = | | | | | | | | | 634 | \$258.06 | |
| Surgery | \$42,411,257 | \$6.36 | 5.1% | 81 | \$947.65 | | | | | | |
| Maternity | 13,395,593 | 2.01 | 1.6% | 20 | 1,185.98 | | | | | | |
| * Evaluations | 13,052,492 | 1.96 | 1.6% | 295 | 79.65 | | | | | | |
| Rad, Path, Lab | 6,791,553 | 1.02 | 0.8% | 130 | 94.22 | | | | | | |
| Medicine | 5,546,087 | 0.83 | 0.7% | 39 | 256.94 | | | | | | |
| Diagnostic | 905,588 | 0.14 | 0.1% | 11 | 152.61 | | | | | | |
| Vision & Hearing | 52,161 | 0.01 | 0.0% | 1 | 160.99 | | | | | | |
| Psychiatric | 3,581,692 | 0.54 | 0.4% | 68 | 95.64 | | | | | | |
| Physical Therapy | 0 | 0.00 | 0.0% | 0 | ERR | | | | | | |
| Other | 5,093,241 | 0.76 | 0.6% | 32 | 286.43 | | | | | | |
| SUBTOTALS: | \$90,836,664 | \$13.63 | 11.0% | 676 | \$242.13 | | | | | | |
| PROFESSIONAL PROVIDER - OUTPATIENT | Encounters/1,000 = | Amt/Encounter | BNC /1,000 | AMT PER INCIDENT | EVALUATION SERVICES | PAID CLAIMS | BNC /1,000 | AMT PER INCIDENT | | | |
| Encounters/1,000 = | | | | | | | | | 4,670 | \$83.35 | |
| Surgery | \$48,796,846 | \$7.32 | 5.9% | 365 | \$240.47 | | | | | | |
| Maternity | 1,542,033 | 0.23 | 0.2% | 16 | 172.87 | | | | | | |
| * Evaluations | 49,899,116 | 7.49 | 6.0% | 2,275 | 39.51 | | | | | | |
| Rad, Path, Lab | 54,402,389 | 8.16 | 6.6% | 1,426 | 68.71 | | | | | | |
| Medicine | 9,690,024 | 1.45 | 1.2% | 437 | 39.93 | | | | | | |
| Diagnostic | 4,395,970 | 0.66 | 0.5% | 66 | 120.61 | | | | | | |
| Vision & Hearing | 2,705,826 | 0.41 | 0.3% | 86 | 56.48 | | | | | | |
| Psychiatric | 20,192,085 | 3.03 | 2.4% | 498 | 73.05 | | | | | | |
| Physical Therapy | 96,016 | 0.01 | 0.0% | 2 | 79.35 | | | | | | |
| Other | 24,461,428 | 3.67 | 3.0% | 647 | 68.08 | | | | | | |
| SUBTOTALS: | \$216,181,733 | \$32.44 | 26.1% | 5,818 | \$66.92 | | | | | | |
| ***** TOTALS ***** | | | | | | | | | | | |
| FACILITY | \$428,978,109 | \$64.38 | 51.8% | | | | | | | | |
| PROFESSIONAL PROVIDER | \$307,018,397 | \$46.07 | 37.1% | | | | | | | | |
| RX DRUGS | \$87,356,311 | \$13.76 | 11.1% | | | | | | | | |
| ***** TOTAL ***** | \$823,352,817 | \$124.21 | 100.0% | | | | | | | | |
| DENTAL | \$15,752,303 | \$10.85 | | | | | | | | | |
| ***** GRAND TOTAL ***** | \$839,105,120 | \$135.06 | | | | | | | | | |
| ENROLLED ENROLLMENT AVERAGE MONTHS | 13 | TOTAL | MATERNITY | DRUGS | DENTAL | | | | | | |
| EST. PARTICIPANTS: | 555,304 | 555,304 | 528,876 | 121,008 | | | | | | | |
| CONTRACTS: | 286,603 | 286,603 | 273,286 | 60,936 | | | | | | | |

ACTUARIAL DMSION
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CLAIMS ANALYSIS REPORTING (CARs)

TRENDS Incurred: 11/90 To: 10/91
 PPO Paid: 11/90 Thru: 04/92 FACILITY PD CLMS - CHARGES (INCLUDING PATIENT PAY)

| INPATIENT FACILITY | PAID | PD CLAIMS | % | DAYS | AMT | ADMITS | FACILITY | CHARGES | ALOS |
|----------------------|---------------------|----------------|--------------|------------|-------------------|-----------|----------|----------------|------------|
| | CLAIMS | PER PART. | OF | | | | | | |
| | AMOUNT | PER MONTH | TOTAL | /1,000 | /DAY | /1,000 | | PER ADMIT | (DAYS) |
| Medical | \$22,626,008 | \$17.26 | 12.2% | 199 | \$1,040.32 | 37 | | \$5,573 | 5.4 |
| Surgical | 31,936,604 | 24.36 | 17.3% | 191 | 1,527.48 | 32 | | 9,273 | 6.1 |
| Alcohol & Drug Abuse | 1,737,187 | 1.33 | 0.9% | 28 | 565.67 | 3 | | 5,714 | 10.1 |
| Mental Health | 6,714,721 | 5.12 | 3.6% | 81 | 761.48 | 6 | | 10,330 | 13.6 |
| Maternity | 6,614,671 | 5.05 | 3.6% | 43 | 1,418.54 | 16 | | 3,850 | 2.7 |
| Other | 652,369 | 0.50 | 0.4% | 6 | 959.37 | 0 | | 27,182 | 28.3 |
| SUBTOTALS: | \$70,281,560 | \$53.61 | 38.0% | 548 | \$1,173.53 | 93 | | \$6,890 | 5.9 |

| OUTPATIENT FACILITY | PAID | PD CLAIMS | % | DAYS | AMT PER ENCOUNTER |
|----------------------|---------------------|----------------|--------------|------------|-------------------|
| | AMOUNT | PER MONTH | TOTAL | | |
| | AMOUNT | PER MONTH | TOTAL | /1,000 | /1,000 |
| Medical | \$4,398,180 | \$3.36 | 2.4% | 102 | \$395.13 |
| Surgical | 11,149,617 | 8.51 | 6.0% | 67 | 1,513.45 |
| Alcohol & Drug Abuse | 25,662 | 0.02 | 0.0% | 1 | 420.69 |
| Mental Health | 35,696 | 0.03 | 0.0% | 1 | 274.58 |
| Maternity | 372,291 | 0.28 | 0.2% | 4 | 859.79 |
| Emergency/Accident | 4,842,955 | 3.69 | 2.6% | 178 | 249.21 |
| Xray/Lab | 6,915,957 | 5.28 | 3.7% | 316 | 200.13 |
| Therapy | 528,061 | 0.40 | 0.3% | 15 | 323.17 |
| Other | 668,069 | 0.51 | 0.4% | 32 | 189.90 |
| SUBTOTALS: | \$28,936,488 | \$22.07 | 15.6% | 716 | \$369.72 |

TRENDS PPO

| PROFESSIONAL PROVIDER - INPATIENT | PAID | PD CLAIMS | % | DAYS | AMT PER ENCOUNTER | EVALUATION SERVICES | PAID | DAYS | AMT PER ENCOUNTER |
|-----------------------------------|---------------------|----------------|-------------|------------|-------------------|-----------------------|--------------------|------------|-------------------|
| Encounters/1,000 = | AMT/ENCOUNTER | \$190.15 | B/C | | | | | | |
| Surgery | \$7,155,656 | \$5.46 | 3.9% | 84 | \$778.64 | Office/other optional | n/a | n/a | n/a |
| Maternity | 2,798,052 | 2.13 | 1.5% | 26 | 985.92 | Hospital inpatient | 1,833,494 | 298 | \$56.39 |
| * Evaluations | 2,572,205 | 1.96 | 1.4% | 360 | 65.45 | Consults | 405,321 | 39 | 96.07 |
| Rad, Path, Lab | 1,093,805 | 0.83 | 0.6% | 146 | 68.50 | Emergency Dept. | 0 | 0 | ERR |
| Medicine | 1,005,179 | 0.77 | 0.5% | 43 | 213.19 | Nursing Facility | 5,968 | 2 | 22.87 |
| Diagnostic | 232,414 | 0.18 | 0.1% | 15 | 143.55 | Home | n/a | n/a | n/a |
| Vision & Hearing | 10,309 | 0.01 | 0.0% | 1 | 96.35 | Case Management | 0 | 0 | ERR |
| Psychiatric | 815,116 | 0.62 | 0.4% | 102 | 73.36 | Preventive Medicine | 1,701 | 0 | 212.63 |
| Physical Therapy | 44 | 0.00 | 0.0% | 0 | 44.00 | Newborn Care | 133,451 | 18 | 69.25 |
| Other | 443,189 | 0.34 | 0.2% | 35 | 114.55 | Unlisted / Other | 192,270 | 3 | 515.47 |
| SUBTOTALS: | \$16,125,969 | \$12.30 | 8.7% | 812 | \$181.77 | SUBTOTALS: | \$2,572,205 | 360 | \$65.45 |

| PROFESSIONAL PROVIDER - OUTPATIENT | PAID | PD CLAIMS | % | DAYS | AMT PER ENCOUNTER | EVALUATION SERVICES | PAID | DAYS | AMT PER ENCOUNTER |
|------------------------------------|---------------------|----------------|--------------|--------------|-------------------|-----------------------|---------------------|--------------|-------------------|
| Encounters/1,000 = | AMT/ENCOUNTER | \$72.09 | B/C | | | | | | |
| Surgery | \$10,243,494 | \$7.81 | 5.5% | 447 | \$209.64 | Office/other optional | \$12,338,778 | 1,207 | \$35.22 |
| Maternity | 372,321 | 0.28 | 0.2% | 21 | 166.14 | Hospital inpatient | n/a | n/a | n/a |
| * Evaluations | 14,452,028 | 11.02 | 7.8% | 3,540 | 37.37 | Consults | 616,515 | 60 | 93.60 |
| Rad, Path, Lab | 11,069,500 | 8.44 | 6.0% | 1,967 | 51.51 | Emergency Dept. | 847,803 | 144 | 53.81 |
| Medicine | 2,564,080 | 1.96 | 1.4% | 621 | 37.81 | Nursing Facility | n/a | n/a | n/a |
| Diagnostic | 983,599 | 0.75 | 0.5% | 87 | 103.05 | Home | 39,618 | 4 | 95.01 |
| Vision & Hearing | 652,817 | 0.50 | 0.4% | 121 | 49.39 | Case Management | 0 | (0) | 0.00 |
| Psychiatric | 5,131,236 | 3.91 | 2.8% | 751 | 62.53 | Preventive Medicine | 447,579 | 121 | 33.86 |
| Physical Therapy | 48,914 | 0.04 | 0.0% | 1 | 525.96 | Newborn Care | 113 | 0 | 113.00 |
| Other | 4,599,577 | 3.51 | 2.5% | 706 | 59.66 | Unlisted / Other | 161,622 | 4 | 405.07 |
| SUBTOTALS: | \$50,117,566 | \$38.23 | 27.1% | 8,262 | \$55.53 | SUBTOTALS: | \$14,452,028 | 3,540 | \$37.37 |

| ***** TOTALS ***** | | | |
|-------------------------------------|----------------------|-----------------|---------------|
| FACILITY | \$99,218,048 | \$75.69 | 53.6% |
| PROFESSIONAL PROVIDER | \$66,243,535 | \$50.53 | 35.8% |
| RX DRUGS | \$19,578,791 | \$14.96 | 10.6% |
| ***** TOTAL ***** | \$185,040,374 | \$141.18 | 100.0% |
| DENTAL | \$5,036,177 | \$11.43 | |
| ***** GRAND TOTAL ***** | \$190,076,551 | \$152.61 | |
| ESTIMATED ENROLLMENT AVERAGE MONTHS | 12 | TOTAL | MATERNITY |
| EST. PARTICIPANTS: | 109,240 | 109,240 | 109,063 |
| CONTRACTS: | 60,283 | 60,283 | 60,111 |

ACTUARIAL DIVISION
18-May-93

CLAIMS ANALYSIS REPORTING (CARS)

TRENDS Incurred: 11/91 To: 10/92
 PAR Paid: 11/91 Trn: 04/93 FACILITY PD CLMS = CHARGES (INCLUDING PATIENT PAY)

| INPATIENT FACILITY | PAD | PD CLMS | % | DAVS | AMT | ADM | PAD | INC | AMT PER |
|----------------------|----------------------|----------------|--------------|------------|-------------------|-----------|----------------|------------|-----------|
| | \$1000 | PER MCH | OF | /DAY | /DAY | /1,000 | CLMS | 1,000 | ENCOUNTER |
| Medical | \$101,055,889 | \$17.66 | 13.6% | 181 | \$1,169.36 | 34 | \$6,250 | 5.3 | |
| Surgical | 119,017,649 | 20.80 | 16.1% | 152 | 1,644.50 | 28 | 8,912 | 5.4 | |
| Alcohol & Drug Abuse | 5,340,912 | 0.93 | 0.7% | 20 | 553.86 | 2 | 6,336 | 11.4 | |
| Mental Health | 17,821,520 | 3.11 | 2.4% | 57 | 651.28 | 4 | 8,792 | 13.5 | |
| Maternity | 20,857,393 | 3.65 | 2.8% | 30 | 1,475.06 | 11 | 3,966 | 2.7 | |
| Other | 4,879,365 | 0.85 | 0.7% | 24 | 420.20 | 1 | 7,721 | 18.4 | |
| SUBTOTALS: | \$268,972,728 | \$47.01 | 36.3% | 465 | \$1,214.04 | 80 | \$7,025 | 5.8 | |

| OUTPATIENT FACILITY | PAD | PD CLMS | % | DAVS | AMT | TRENDS PAR | |
|----------------------|----------------------|----------------|--------------|------------|-----------------|------------|-----------|
| | | | | | | INC | AMT PER |
| | \$1,000 | PER MCH | OF | /DAY | /DAY | 1,000 | ENCOUNTER |
| Medical | \$26,421,943 | \$4.62 | 3.6% | 137 | \$405.07 | | |
| Surgical | 40,265,128 | 7.04 | 5.4% | 56 | 1,497.46 | | |
| Alcohol & Drug Abuse | 235,990 | 0.04 | 0.0% | 1 | 537.56 | | |
| Mental Health | 301,762 | 0.05 | 0.0% | 2 | 289.88 | | |
| Maternity | 847,440 | 0.15 | 0.1% | 4 | 500.56 | | |
| Emergency/Accident | 19,440,768 | 3.40 | 2.6% | 150 | 272.04 | | |
| Xray/Lab | 30,605,339 | 5.35 | 4.1% | 362 | 177.47 | | |
| Therapy | 2,204,776 | 0.39 | 0.3% | 13 | 344.71 | | |
| Other | 528,109 | 0.09 | 0.1% | 3 | 408.12 | | |
| SUBTOTALS: | \$120,851,255 | \$21.12 | 16.3% | 728 | \$348.38 | | |

TRENDS PAR
 Ref Provider Encntr/1,000: 1020
 Amt / Encntr: .482
 1.002

PROFESSIONAL PROVIDER - INPATIENT

| Encounters/1,000 = | PAD | PD CLMS | % | DAVS | AMT | EVALUATION SERVICES | |
|--------------------|---------------------|----------------|--------------|------------|-----------------|-----------------------|---------------------------------|
| | | | | | | INC | AMT PER |
| | \$1,000 | PER MCH | OF | /DAY | /DAY | 1,000 | ENCOUNTER |
| Surgery | \$36,544,025 | \$6.39 | 4.9% | 77 | \$997.19 | Office/Other optional | n/a |
| Maternity | 10,657,944 | 1.86 | 1.4% | 18 | 1,260.40 | Hospital inpatient | \$8,060,976 264 \$64.11 |
| * Evaluations | 11,140,430 | 1.95 | 1.5% | 323 | 72.26 | Consults | 1,725,265 39 92.10 |
| Rad, Path, Lab | 5,494,071 | 0.96 | 0.7% | 124 | 92.85 | Emergency Dept. | 1,074 0 82.62 |
| Medicine | 4,939,218 | 0.86 | 0.7% | 38 | 275.24 | Nursing Facility | 52,430 2 45.32 |
| Diagnostic | 837,057 | 0.15 | 0.1% | 13 | 140.23 | Home | n/a n/a n/a |
| Vision & Hearing | 43,009 | 0.01 | 0.0% | 1 | 111.42 | Case Management | 0 0 ERR |
| Psychiatric | 2,381,437 | 0.42 | 0.3% | 53 | 94.55 | Preventive Medicine | 860 0 215.00 |
| Physical Therapy | 995 | 0.00 | 0.0% | 0 | \$995.00 | Newborn Care | 489,682 12 83.08 |
| Other | 2,840,412 | 0.50 | 0.4% | 13 | 460.94 | Unlisted / Other | 810,143 6 307.57 |
| SUBTOTALS: | \$74,918,598 | \$13.09 | 10.1% | 659 | \$238.45 | SUBTOTALS: | \$11,140,430 323 \$72.26 |

PROFESSIONAL PROVIDER - OUTPATIENT

| Encounters/1,000 = | PAD | PD CLMS | % | DAVS | AMT | EVALUATION SERVICES | |
|--------------------|----------------------|----------------|--------------|--------------|----------------|-----------------------|-----------------------------------|
| | | | | | | INC | AMT PER |
| | \$1,000 | PER MCH | OF | /DAY | /DAY | 1,000 | ENCOUNTER |
| Surgery | \$44,917,616 | \$7.85 | 6.1% | 361 | \$260.76 | Office/Other optional | \$37,770,516 2,174 \$36.43 |
| Maternity | 1,393,094 | 0.24 | 0.2% | 15 | 192.55 | Hospital inpatient | n/a n/a n/a |
| * Evaluations | 46,707,287 | 8.16 | 6.3% | 2,401 | 40.81 | Consults | 3,142,818 65 100.65 |
| Rad, Path, Lab | 40,519,778 | 7.08 | 5.5% | 1,368 | 62.13 | Emergency Dept. | 3,916,774 138 59.51 |
| Medicine | 9,144,930 | 1.60 | 1.2% | 459 | 41.79 | Nursing Facility | n/a n/a n/a |
| Diagnostic | 3,846,742 | 0.67 | 0.5% | 67 | 120.27 | Home | 32,709 1 57.38 |
| Vision & Hearing | 2,230,026 | 0.39 | 0.3% | 76 | 61.78 | Case Management | 58 (0) (11.60) |
| Psychiatric | 16,871,586 | 2.95 | 2.3% | 485 | 72.89 | Preventive Medicine | 211,345 11 40.50 |
| Physical Therapy | 17,925 | 0.00 | 0.0% | 1 | 53.67 | Newborn Care | 1,403 0 51.96 |
| Other | 23,540,425 | 4.11 | 3.2% | 670 | 73.68 | Unlisted / Other | 1,631,664 11 323.29 |
| SUBTOTALS: | \$189,189,409 | \$33.07 | 25.5% | 5,903 | \$67.22 | SUBTOTALS: | \$46,707,287 2,401 \$40.81 |

| ***** TOTALS ***** | | | |
|-------------------------|---------------|----------|-------------------------|
| FACILITY | PAD | PD CLMS | % |
| FACILITY | \$389,823,983 | \$68.13 | 52.6% |
| PROFESSIONAL PROVIDER | \$264,108,007 | \$46.16 | 35.6% |
| RX DRUGS | \$82,792,154 | \$15.24 | 11.8% |
| ***** TOTAL ***** | \$736,724,144 | \$129.53 | 100.0% |
| DENTAL | \$13,662,853 | \$10.69 | |
| ***** GRAND TOTAL ***** | \$750,386,997 | \$140.22 | |
| ***** ENROLLMENT ***** | | | |
| AVERAGE MONTHS | 12 | TOTAL | MATERNITY DRUG DENTAL |
| EST. PARTICIPANTS: | 859 | 476,800 | 476,800 452,653 106,537 |
| CONTRACTS: | 244,920 | 244,920 | 232,938 52,306 |

ACTUARIAL DIVISION
 18-May-93

CLAIMS ANALYSIS REPORTING (CARS)

Exhibit I (4)

TRENDS
PPO

Incurred: 11/91 To: 10/92
Paid: 11/91 Thru: 04/93

FACILITY PD CLAIMS - CHARGES (INCLUDING PATIENT PAY)

| INPATIENT FACILITY | PAID CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF DAYS | % | AMT /1,000 | ADMITTS /DAY | PAID CLAIMS PER ADMIT. | ALOS (DAYS) |
|----------------------|---------------------|---------------------------|------------|--------------|-------------------|--------------|------------------------|-------------|
| | | | | | | | | |
| Medical | \$30,918,578 | \$17.80 | 177 | 12.6% | \$1,203.76 | 31 | \$6,942 | 5.8 |
| Surgical | 41,435,928 | 23.85 | 161 | 16.9% | 1,783.19 | 29 | 10,011 | 5.6 |
| Alcohol & Drug Abuse | 1,789,458 | 1.03 | 20 | 0.7% | 632.99 | 2 | 6,192 | 9.8 |
| Mental Health | 5,471,897 | 3.15 | 51 | 2.2% | 744.17 | 4 | 8,484 | 11.4 |
| Maternity | 8,223,205 | 4.73 | 37 | 3.4% | 1,555.66 | 13 | 4,303 | 2.8 |
| Other | 3,060,671 | 1.76 | 26 | 1.3% | 821.00 | 2 | 10,554 | 12.9 |
| SUBTOTALS: | \$90,899,737 | \$52.32 | 471 | 37.1% | \$1,334.48 | 81 | \$7,751 | 5.8 |

| OUTPATIENT FACILITY | PAID CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF DAYS | % | AMT PER ENCOUNTER |
|----------------------|---------------------|---------------------------|------------|--------------|-------------------|
| Medical | \$7,553,991 | \$4.35 | 125 | 3.1% | \$418.85 |
| Surgical | 16,240,743 | 9.35 | 63 | 6.6% | 1,771.44 |
| Alcohol & Drug Abuse | 53,372 | 0.03 | 1 | 0.0% | 613.47 |
| Mental Health | 60,744 | 0.03 | 2 | 0.0% | 248.95 |
| Maternity | 448,053 | 0.26 | 4 | 0.2% | 874.54 |
| Emergency/Accident | 6,610,992 | 3.81 | 161 | 2.7% | 283.09 |
| Xray/Lab | 10,870,456 | 6.26 | 415 | 4.4% | 180.84 |
| Therapy | 743,604 | 0.43 | 15 | 0.3% | 343.15 |
| Other | 313,602 | 0.18 | 5 | 0.1% | 402.05 |
| SUBTOTALS: | \$42,895,557 | \$24.69 | 791 | 17.5% | \$374.78 |

TRENDS
PPO
Prof Provider: .918
Encounters/1,000: 1.050
Amt/Encounter: .964

| PROFESSIONAL PROVIDER - INPATIENT | PAID CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF DAYS | % | AMT PER INCIDENT |
|-----------------------------------|---------------------|---------------------------|------------|-------------|------------------|
| Encounters/1,000 = 631 | \$219.97 | \$5.67 | 79 | 4.0% | \$855.28 |
| Surgery | \$9,842,507 | \$5.67 | 79 | 4.0% | \$855.28 |
| Maternity | 3,534,519 | 2.03 | 22 | 1.4% | 1,107.65 |
| * Evaluations | 3,185,900 | 1.83 | 338 | 1.3% | 65.06 |
| Rad. Path. Lab | 1,223,065 | 0.70 | 121 | 0.5% | 69.81 |
| Medicine | 1,358,440 | 0.78 | 34 | 0.6% | 278.88 |
| Diagnostic | 204,059 | 0.12 | 11 | 0.1% | 131.91 |
| Vision & Hearing | 7,811 | 0.00 | 1 | 0.0% | 97.64 |
| Psychiatric | 499,475 | 0.29 | 45 | 0.2% | 76.76 |
| Physical Therapy | 0 | 0.00 | 0 | 0.0% | ERR |
| Other | 244,627 | 0.14 | 11 | 0.1% | 159.37 |
| SUBTOTALS: | \$20,100,403 | \$11.57 | 661 | 8.2% | \$269.98 |

| EVALUATION SERVICE | PAID CLAIMS | INCIDENTS | AMT PER INCIDENT |
|-----------------------|--------------------|------------|------------------|
| Office/other optional | n/a | n/a | n/a |
| Hospital inpatient | 2,281,854 | 268 | \$58.84 |
| Consults | 526,984 | 44 | 83.28 |
| Emergency Dept. | 64 | 0 | ERR |
| Nursing Facility | 10,061 | 3 | 20.33 |
| Home | n/a | n/a | n/a |
| Case Management | 0 | 0 | ERR |
| Preventive Medicine | 939 | 0 | 234.75 |
| Newborn Care | 204,501 | 18 | 80.10 |
| Unlisted / Other | 161,497 | 6 | 199.87 |
| SUBTOTALS: | \$3,185,900 | 338 | \$65.06 |

| PROFESSIONAL PROVIDER - OUTPATIENT | PAID CLAIMS AMOUNT | PD CLAIMS PER PART. MONTH | # OF DAYS | % | AMT PER INCIDENT |
|------------------------------------|---------------------|---------------------------|--------------|--------------|------------------|
| Encounters/1,000 = 5,926 | \$75.26 | \$8.02 | 411 | 5.7% | \$234.23 |
| Surgery | \$13,933,272 | \$8.02 | 411 | 5.7% | \$234.23 |
| Maternity | 485,878 | 0.28 | 19 | 0.2% | 173.28 |
| * Evaluations | 18,558,540 | 10.68 | 3,296 | 7.6% | 38.90 |
| Rad. Path. Lab | 13,702,584 | 7.89 | 1,682 | 5.6% | 56.27 |
| Medicine | 3,249,179 | 1.87 | 580 | 1.3% | 38.68 |
| Diagnostic | 1,258,611 | 0.72 | 80 | 0.5% | 108.19 |
| Vision & Hearing | 768,382 | 0.44 | 99 | 0.3% | 53.82 |
| Psychiatric | 5,845,256 | 3.36 | 631 | 6.3% | 63.97 |
| Physical Therapy | 3,228 | 0.00 | 0 | 0.0% | 129.12 |
| Other | 6,759,163 | 3.89 | 717 | 2.8% | 65.10 |
| SUBTOTALS: | \$64,564,093 | \$37.16 | 7,516 | 26.4% | \$59.34 |

| EVALUATION SERVICE | PAID CLAIMS | INCIDENTS | AMT PER INCIDENT |
|-----------------------|---------------------|--------------|------------------|
| Office/other optional | \$15,558,361 | 2,948 | \$36.46 |
| Hospital inpatient | 173.28 | n/a | n/a |
| Consults | 1,130,569 | 84 | 92.94 |
| Emergency Dept. | 1,136,862 | 148 | 52.98 |
| Nursing Facility | n/a | n/a | n/a |
| Home | 7,726 | 1 | 50.83 |
| Case Management | 0 | (0) | 0.00 |
| Preventive Medicine | 544,546 | 109 | 34.51 |
| Newborn Care | 439 | 0 | 439.00 |
| Unlisted / Other | 180,037 | 6 | 211.06 |
| SUBTOTALS: | \$18,558,540 | 3,296 | \$38.90 |

| | | | | | |
|--------------------------------|----------------------|-----------------|---------------|--------|----------|
| ***** TOTALS ***** | | | | | |
| FACILITY | \$133,795,294 | \$77.01 | 54.7% | | |
| PROFESSIONAL PROVIDER | \$84,664,496 | \$48.73 | 34.6% | 976 | 1.034 |
| RX DRUGS | \$25,908,982 | \$15.10 | 10.7% | 6,490 | \$27.92 |
| ***** TOTAL ***** | \$244,368,772 | \$140.85 | 100.0% | | |
| DENTAL | \$6,831,680 | \$10.43 | | 1,226 | \$102.09 |
| ***** GRAND TOTAL ***** | \$251,200,452 | \$151.28 | | | |
| EST. PARTICIPANTS: | 144,772 | 144,772 | 143,003 | 54,564 | |
| CONTRACTS: | 78,272 | 78,272 | 77,472 | 27,594 | |

ACTUARIAL DIVISION
18-May-83

COMPARISON OF OBSERVED AND PROJECTED TRENDS
PAR Network

| | Cost per Unit | | | Unit Frequency | | |
|--------------|---------------|--------|-------|----------------|--------|-------|
| | Lower | Most | Upper | Lower | Most | Upper |
| | Limit | Likely | Limit | Limit | Likely | Limit |
| Observed - A | | 13.3% | | | -3.9% | |
| Observed - B | | 10.9% | | | -4.4% | |
| Observed - C | | 7.1% | | | -3.9% | |
| Projected | 6.0% | 10.0% | 16.5% | -5.0% | -2.0% | -1.0% |

| | Cost per Unit | | | Unit Frequency | | |
|--------------|---------------|--------|-------|----------------|--------|-------|
| | Lower | Most | Upper | Lower | Most | Upper |
| | Limit | Likely | Limit | Limit | Likely | Limit |
| Observed - A | | 14.9% | | | 3.8% | |
| Observed - B | | 12.8% | | | 3.0% | |
| Observed - C | | 8.6% | | | 4.4% | |
| Projected | 10.0% | 15.0% | 25.0% | 2.0% | 4.0% | 8.0% |

| | Cost per Unit | | | Unit Frequency | | |
|--------------|---------------|--------|-------|----------------|--------|-------|
| | Lower | Most | Upper | Lower | Most | Upper |
| | Limit | Likely | Limit | Limit | Likely | Limit |
| Observed - A | | 1.8% | | | 6.0% | |
| Observed - B | | -1.7% | | | 3.9% | |
| Observed - C | | -1.8% | | | 2.0% | |
| Projected | -2.0% | 1.0% | 4.0% | 2.0% | 3.0% | 6.0% |

| | Cost per Unit | | | Unit Frequency | | |
|--------------|---------------|--------|-------|----------------|--------|-------|
| | Lower | Most | Upper | Lower | Most | Upper |
| | Limit | Likely | Limit | Limit | Likely | Limit |
| Observed - A | | 4.9% | | | 12.7% | |
| Observed - B | | 2.3% | | | 12.6% | |
| Observed - C | | -0.7% | | | 11.5% | |
| Projected | 1.0% | 2.5% | 6.0% | 10.0% | 12.0% | 15.0% |

| RESULTS | E(X) | Prob = 75% |
|-----------|-------|------------|
| Projected | 11.7% | 12.5% |

Notes:

- Observed trends were determined from "True Group" claims, for the following periods:
 Observed - A: Incurred twelve months ending 4/30/92 (paid through 10/31/92) over
 Incurred twelve months ending 4/30/91 (paid through 10/31/91).
 Observed - B: Incurred twelve months ending 7/31/92 (paid through 2/31/93) over
 Incurred twelve months ending 7/31/91 (paid through 2/31/92).
 Observed - C: Incurred twelve months ending 10/31/92 (paid through 4/30/93) over
 Incurred twelve months ending 10/31/91 (paid through 4/30/92).

2. Claims are prior to hospital discount and benefit design impacts.

3. Units of measurement used above are as follows:

- Hospital Inpatient - IP Days
- Hospital Outpatient - O/P Visits
- Physician Services - Visits
- Outpatient Rx Drugs - Prescriptions

Frequency is measured as units per 1,000 insureds.

4. Observed Cost per Unit trends for physician services reflect fee schedule impacts.

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COMPARISON OF OBSERVED AND PROJECTED TRENDS
PPO Network

| HOSPITAL INPATIENT | Cost per Unit | | | Unit Frequency | | |
|--------------------|---------------|-------------|-------------|----------------|-------------|-------------|
| | Lower Limit | Most Likely | Upper Limit | Lower Limit | Most Likely | Upper Limit |
| Observed - A | | 10.5% | | | -8.3% | |
| Observed - B | | 13.0% | | | -10.6% | |
| Observed - C | | 13.7% | | | -14.1% | |
| Projected | 8.0% | 15.0% | 20.0% | -8.0% | -4.0% | -2.0% |

| HOSPITAL OUTPATIENT | Cost per Unit | | | Unit Frequency | | |
|---------------------|---------------|-------------|-------------|----------------|-------------|-------------|
| | Lower Limit | Most Likely | Upper Limit | Lower Limit | Most Likely | Upper Limit |
| Observed - A | | 15.3% | | | 5.7% | |
| Observed - B | | 8.7% | | | 8.5% | |
| Observed - C | | 1.4% | | | 10.5% | |
| Projected | 5.0% | 10.0% | 20.0% | 3.0% | 5.0% | 10.0% |

| PHYSICIAN SERVICES | Cost per Unit | | | Unit Frequency | | |
|--------------------|---------------|-------------|-------------|----------------|-------------|-------------|
| | Lower Limit | Most Likely | Upper Limit | Lower Limit | Most Likely | Upper Limit |
| Observed - A | | 5.6% | | | -2.5% | |
| Observed - B | | 5.8% | | | -5.0% | |
| Observed - C | | 5.0% | | | -8.2% | |
| Projected | 1.5% | 4.0% | 5.0% | -6.0% | -2.0% | 2.5% |

| OUTPATIENT RX DRUGS | Cost per Unit | | | Unit Frequency | | |
|---------------------|---------------|-------------|-------------|----------------|-------------|-------------|
| | Lower Limit | Most Likely | Upper Limit | Lower Limit | Most Likely | Upper Limit |
| Observed - A | | 5.6% | | | 7.2% | |
| Observed - B | | 4.1% | | | 2.6% | |
| Observed - C | | 3.4% | | | -2.4% | |
| Projected | 1.0% | 2.5% | 6.0% | 5.0% | 7.0% | 10.0% |

| RESULTS | E(X) | Prob = 75% |
|-----------|------|------------|
| Projected | 8.6% | 9.6% |

Notes:

1. Observed trends were determined from "True Group" claims, for the following periods:

- Observed - A: Incurred twelve months ending 4/30/92 (paid through 10/31/92) over incurred twelve months ending 4/30/91 (paid through 10/31/91).
- Observed - B: Incurred twelve months ending 7/31/92 (paid through 2/31/93) over incurred twelve months ending 7/31/91 (paid through 2/31/92).
- Observed - C: Incurred twelve months ending 10/31/92 (paid through 4/30/93) over incurred twelve months ending 10/31/91 (paid through 4/30/92).

2. Claims are prior to hospital discount and benefit design impacts.

- 3. Units of measurement used above are as follows:
 - Hospital Inpatient - IP Days
 - Hospital Outpatient - O/P Visits
 - Physician Services - Visits
 - Outpatient Rx Drugs - Prescriptions

Frequency is measured as units per 1,000 insureds.

4. Observed Cost per Unit trends for physician services reflect fee schedule impacts.

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Actuarial Trend Model - PAR Network

4Q/93 Experience Projection: 1/ 1/93 to 6/ 1/94

Trend Component Annualized Estimates

| <u>Medical Costs</u> | <u>Starting Weights</u> | <u>Cost Per Unit</u> | <u>Unit Frequency</u> | <u>Deductible Leveraging</u> | <u>Trended Weights</u> | <u>Annual Component Trends w/o Leveraging</u> |
|------------------------------|-------------------------|----------------------|-----------------------|------------------------------|------------------------|---|
| Hospital Inpatient | 36% | 10.8% | -2.0% | 0.9% | 39.8% | 8.6% |
| Hospital Outpatient | 16% | 16.7% | 4.7% | 2.2% | 20.3% | 22.1% |
| Professional Services | 36% | 1.0% | 3.7% | 0.5% | 37.4% | 4.7% |
| Rx Drug Card | 12% | 3.2% | 12.3% | 3.2% | 14.1% | 15.9% |
| | 100% | | | | 111.7% | 10.3% |
| Annual Trend Estimate | | | | | 11.7% | |

NOTES:

- Starting Weights are based on "True Group" CARS reports prior to hospital discount and benefit design

- Hospital discount trend is not anticipated in the model.

- Cost/Unit includes the effects of "cost-shifting" and technology changes and is measured by:
 charges/IP day [Hosp IP]
 charges/visit [Hosp OP]
 allowances/visit [Prof svcs] ("allowances"=lower of charges and fee schedule)
 charges/prescription [Drug Card] (including Rx Alternatives network effects)

- Deductible Leveraging assumes a \$200 CY deductible for other than prescription drugs and a \$1,000/\$3,000 drug card deductible. Estimated leveraging impacts are linear functions of the combined trend from other components shown.

- Unit Frequency includes the effects of technology changes and is measured by:
 IP days/1000 [Hosp IP]
 OP visits/1000 [Hosp OP]
 Phys visits/1000 [Prof svcs]
 Prescriptions/insured [Drug Card]

Actuarial Trend Model - PPO Network

4Q/93 Experience Projection: 1/ 1/93 to 6/ 1/94

Trend Component Annualized Estimates

| <u>Medical Costs</u> | <u>Starting</u> | <u>Cost Per</u> | <u>Unit</u> | <u>Deductible</u> | <u>Trended</u> | <u>Annual</u> |
|------------------------------|-----------------|-----------------|------------------|-------------------|----------------|------------------------------|
| | <u>Weights</u> | <u>Unit</u> | <u>Frequency</u> | <u>Leveraging</u> | <u>Weights</u> | <u>Component</u> |
| | | | | | | <u>Trends w/o Leveraging</u> |
| Hospital Inpatient | 37% | 14.3% | -4.7% | 0.4% | 40.7% | 9.0% |
| Hospital Outpatient | 18% | 11.7% | 6.0% | 1.3% | 21.0% | 18.4% |
| Professional Services | 35% | 2.5% | -1.8% | -0.1% | 34.8% | 0.6% |
| Rx Drug Card | <u>11%</u> | 3.2% | 7.3% | 2.2% | <u>12.1%</u> | <u>10.7%</u> |
| | 100% | | | | 108.6% | 7.9% |
| Annual Trend Estimate | | | | | 8.6% | |

NOTES:

- Starting Weights are based on "True Group" CARS reports prior to hospital discount and benefit design

- Hospital discount trend is not anticipated in the model.

- Cost/Unit includes the effects of "cost-shifting" and technology changes and is measured by:
 charges/IP day [Hosp IP]
 charges/visit [Hosp OP]
 allowances/visit [Prof svcs] ("allowances" = lower of charges and fee schedule)
 charges/prescription [Drug Card] (including Rx Alternatives network effects)

- Deductible Leveraging assumes a \$200 CT deductible for other than prescription drugs and a \$10.00/\$3.00 drug card deductible. Estimated leveraging impacts are linear functions of the combined trend from the other components shown.

- Unit Frequency includes the effects of technology changes and is measured by:
 IP days/1000 [Hosp IP]
 OP visits/1000 [Hosp OP]
 Phys visits/1000 [Prof svcs]
 Prescriptions/insured [Drug Card]

Trend Package

Expected

Result=

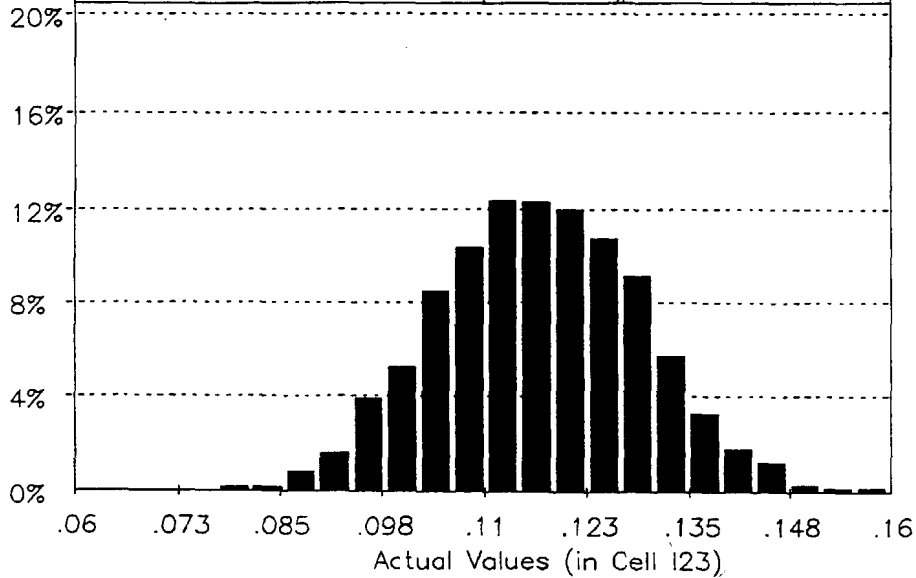
.1166851

@RISK Simulation

Sampling= Latin Hypercube

PAR TREND

#Trials=1000



Trend Package

Expected Result=

8.556525E-02

| | |
|------------------|---------------------------|
| @RISK Simulation | Sampling= Latin Hypercube |
| PPO TREND | #Trials=1000 |

