Historical Perspective on Medical Malpractice Results

Presented By:
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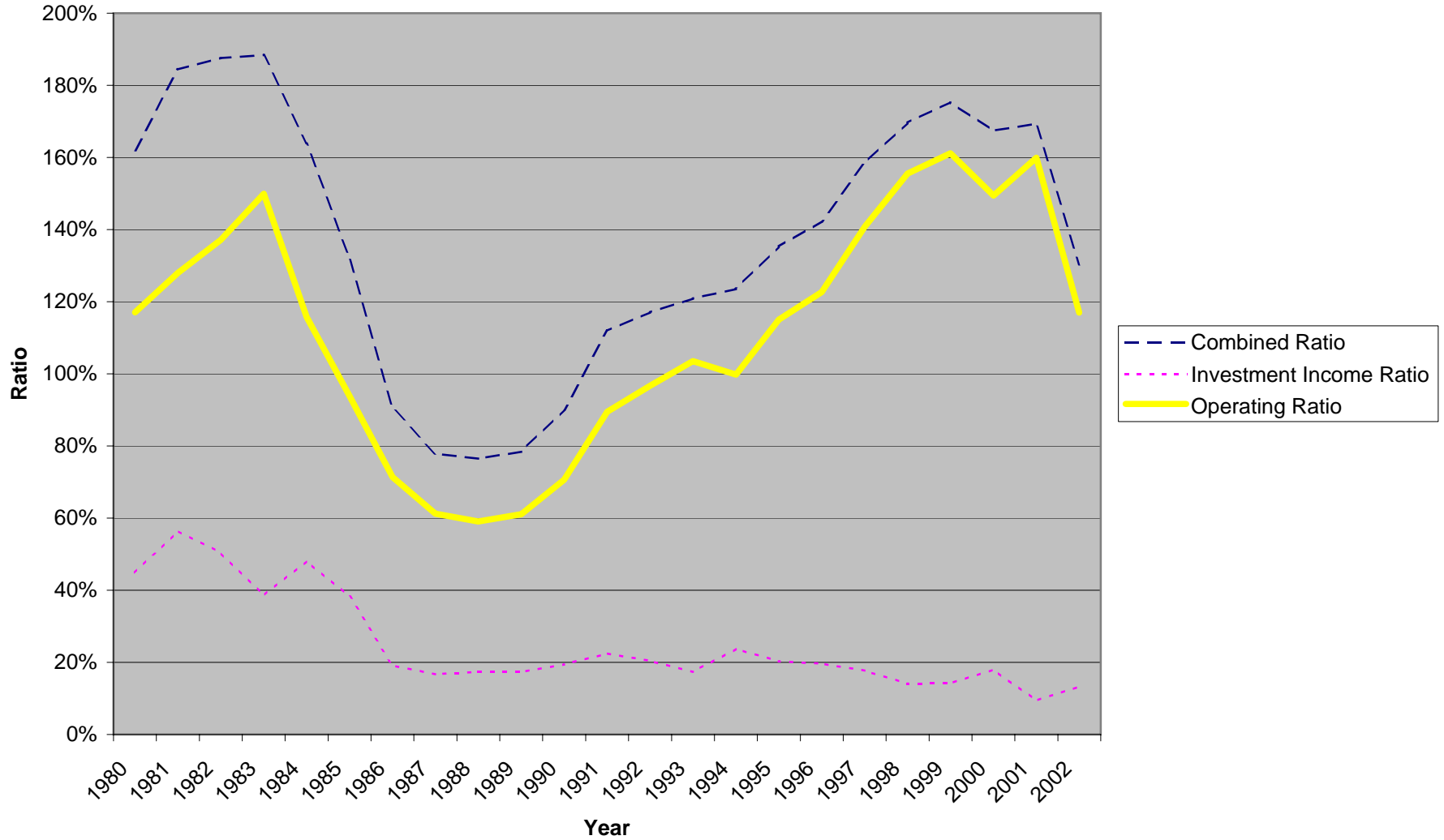**Philadelphia, PA**
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With Editing As of 6/4/2004
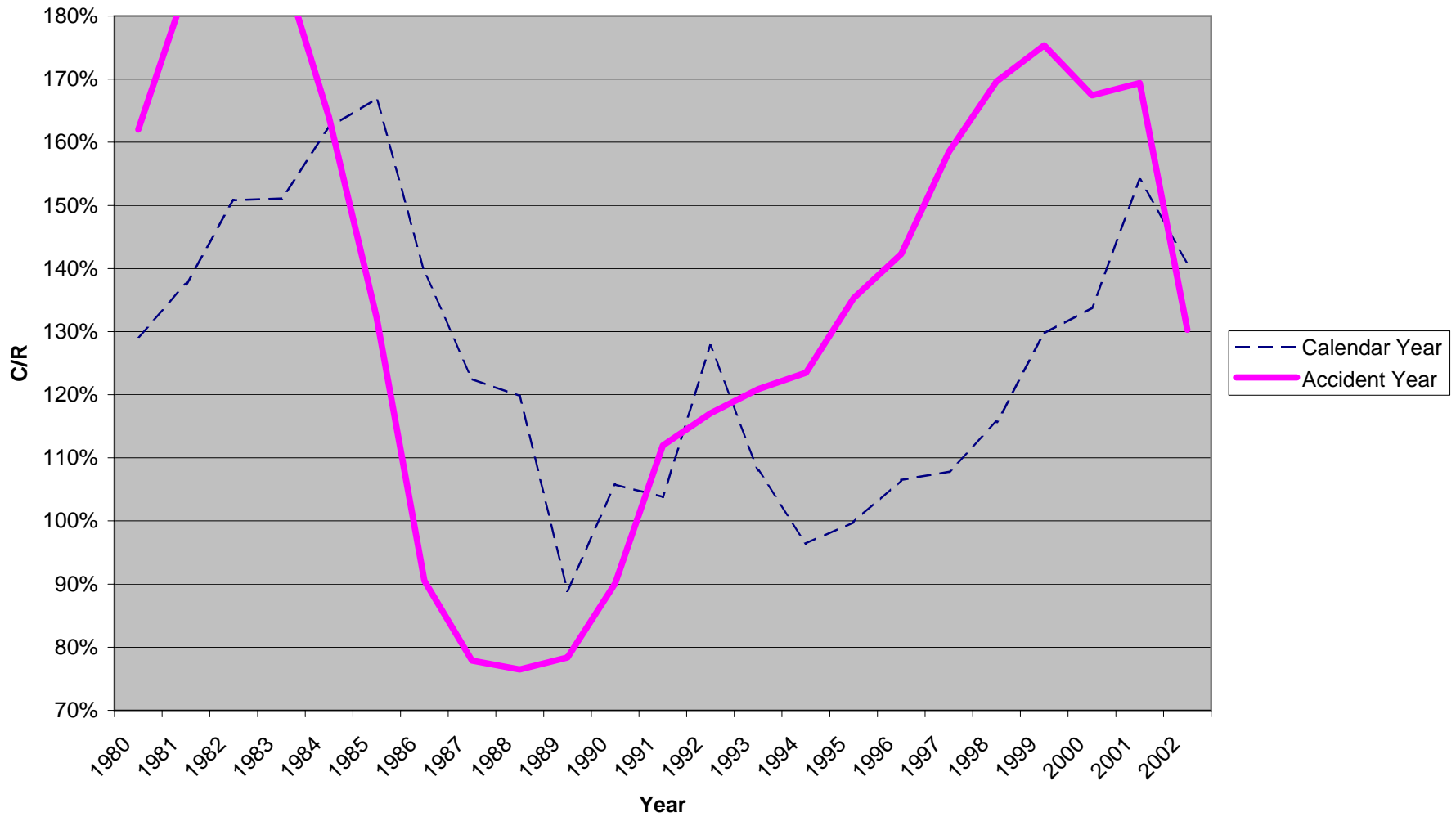**Contact at: 609-896-2940**
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Chart 1: Medical Malpractice Accident Year Results
Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary

Legend:
- Combined Ratio
- Investment Income Ratio
- Operating Ratio

Y-axis: Ratio (0% to 200%)
X-axis: Year (1980 to 2002)
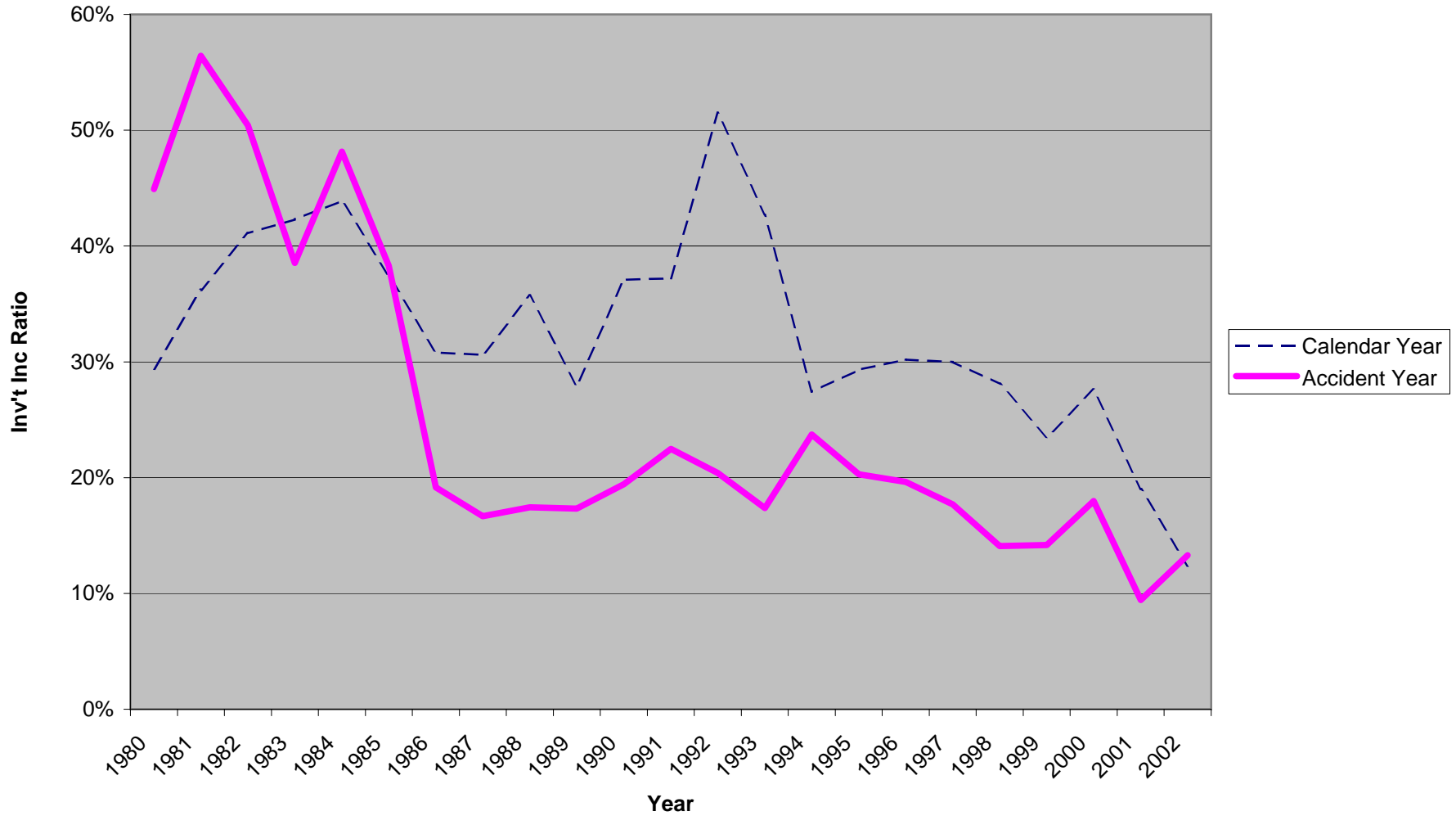
Chart 2: Medical Malpractice Combined Ratio (C/R)
Calendar Year Versus Accident Year
Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary

Chart 3: Medical Malpractice Investment Income Ratio To Earned Premium
Calendar Year Versus Accident Year
Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary

Chart 4: Medical Malpractice Operating Ratio (O/R)
Calendar Year Versus Accident Year
Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary

Table5_data_medmal_by_year2
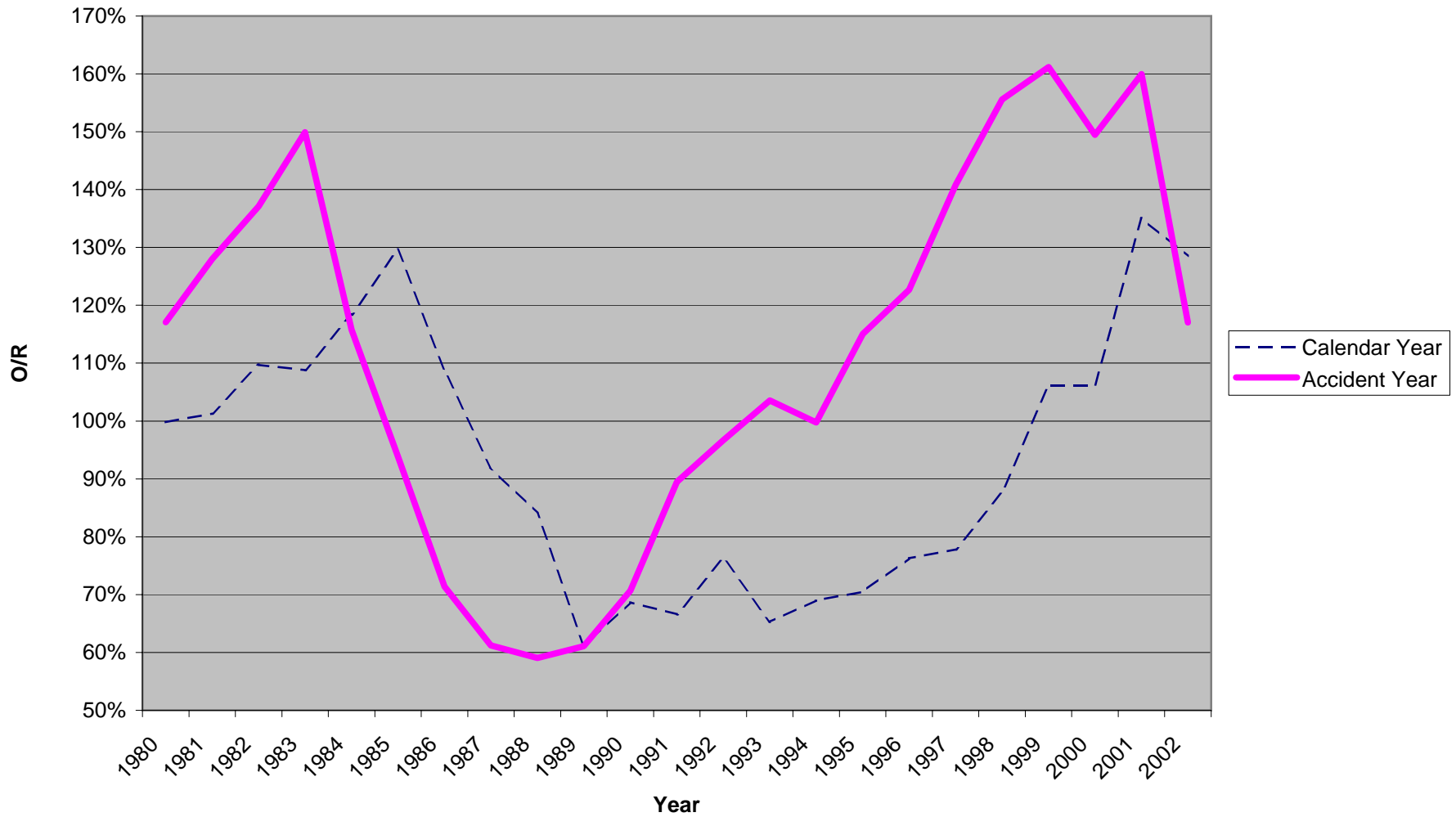
Table 5: Medical Malpractice Data

Cal Year	Calendar Year			Accident Year			Difference Acc Yr Vs Cal Yr		
	C/R	Inv Inc	O/R	C/R	Inv Inc	O/R	C/R	Inv Inc	O/R
1980	129%	29%	100%	162%	45%	117%	33%	16%	17%
1981	138%	36%	101%	184%	56%	128%	47%	20%	27%
1982	151%	41%	110%	188%	50%	137%	37%	9%	27%
1983	151%	42%	109%	188%	39%	150%	37%	-4%	41%
1984	162%	44%	118%	164%	48%	116%	2%	4%	-3%
1985	167%	37%	130%	132%	38%	94%	-35%	1%	-36%
1986	140%	31%	109%	91%	19%	71%	-49%	-12%	-37%
1987	123%	31%	92%	78%	17%	61%	-45%	-14%	-31%
1988	120%	36%	84%	76%	17%	59%	-43%	-18%	-25%
1989	89%	28%	61%	78%	17%	61%	-11%	-11%	0%
1990	106%	37%	69%	90%	19%	71%	-16%	-18%	2%
1991	104%	37%	67%	112%	22%	89%	8%	-15%	23%
1992	128%	52%	76%	117%	20%	97%	-11%	-31%	20%
1993	108%	43%	65%	121%	17%	104%	13%	-25%	38%
1994	96%	27%	69%	123%	24%	100%	27%	-4%	31%
1995	100%	29%	71%	135%	20%	115%	36%	-9%	45%
1996	107%	30%	76%	142%	20%	123%	36%	-11%	46%
1997	108%	30%	78%	158%	18%	141%	51%	-12%	63%
1998	116%	28%	88%	170%	14%	156%	54%	-14%	68%
1999	130%	24%	106%	175%	14%	161%	46%	-9%	55%
2000	134%	28%	106%	167%	18%	149%	34%	-10%	43%
2001	154%	19%	135%	169%	9%	160%	15%	-10%	25%
2002	141%	12%	129%	130%	13%	117%	-11%	1%	-11%

Calendar Year   Accident Year

	Calendar Year			Accident Year			Difference Acc Yr Vs Cal Yr		
	CY	Inv Inc	O/R	CY	Inv Inc	O/R	C/R	Inv Inc	O/R
80-84	146%	39%	108%	177%	48%	130%	31%	9%	22%
85-90	124%	33%	91%	91%	21%	70%	-33%	-12%	-21%
91-94	109%	40%	69%	118%	21%	97%	9%	-19%	28%
95-01	121%	27%	94%	160%	16%	144%	39%	-11%	49%
2002	141%	12%	129%	130%	13%	117%	-11%	1%	-11%

Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary
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C/R is the combined ratio
Inv Inc is the investment income earned on policyholder supplied funds as a percent of premium.
AY - Inv Inc - is an estimate of th present value of investment income earned on policyholder funds.
O/R - is the operating ratio which equals the combined ratio plus the investment income ratio

Table 6_Case Reserve Adequacy

Table 6: Change in Case Reserve Adequacy for Medical Malpractice Claims Made

Industry Aggregate

	Base Period 1992 to 1998	Latest Period 2001 Data	Difference
Paid to Incurred Ratio	56%	59%	5%
Next Year's Paid to Current Case O/S	30%	40%	32%
This Year's Case O/S To Latest Year's Paid	427%	339%	26%

Table 6_Detail

Table 6 (Detail): Medical Malpractice Claims Made

* Industry Aggregate *

Accident Year Evaluated As of Years of Development

Paid / Incurred	1	2	3	4	5	6	7	Average	Average	
Current	8%	30%	53%	69%	80%	87%	91%		59%	105%
Average	7%	28%	50%	66%	78%	85%	89%			
Average, Ex Last 3	6%	27%	49%	65%	77%	84%	88%		56%	
Current/Avg, Ex L3	**117%**	**111%**	**108%**	**106%**	104%	104%	103%	**108%**	108%	

Next Yr's Pd / OS	1	2	3	4	5	6	7	Average	Average	
Current	40%	43%	42%	43%	41%	31%			40%	132%
Average	34%	39%	37%	35%	33%	28%				
Average, Ex Last 3	31%	35%	34%	32%	26%	24%			30%	
Current/Avg, Ex L3	**129%**	**123%**	**122%**	**133%**	**162%**	**130%**		**133%**	133%	

OS / Prior Yr's PD	1	2	3	4	5	6	7	Average	Average	
Current	1224%	289%	174%	166%	152%	156%	214%		339%	126%
Average	1381%	316%	201%	189%	189%	214%	251%			
Average, Ex Last 3	1486%	332%	213%	202%	204%	269%	284%		427%	
Current/Avg, Ex L3	**82%**	**87%**	**82%**	**82%**	**75%**	**58%**	**75%**	77%	77%	
Inverse	**121%**	**115%**	**122%**	**122%**	**134%**	**173%**	**133%**	**131%**	131%	

Sample Company

Accident Year Evaluated As of Years of Development

Paid / Incurred	1	2	3	4	5	6	7	Average	Average	
Current	11%	38%	58%	81%	85%	91%	95%		66%	100%
Average	8%	34%	62%	78%	89%	95%	96%			
Average, Ex Last 3	7%	33%	62%	77%	90%	95%	97%		66%	
Current/Avg, Ex L3	**170%**	**115%**	93%	105%	94%	97%	98%	**110%**	110%	

Next Yr's Pd / OS	1	2	3	4	5	6	7	Average	Average	
Current	48%	60%	56%	58%	39%				52%	150%
Average	34%	47%	42%	42%	49%					
Average, Ex Last 3	28%	41%	37%	37%	30%				35%	
Current/Avg, Ex L3	**173%**	**147%**	**150%**	**154%**	**127%**			**150%**	150%	

OS / Prior Yr's PD	1	2	3	4	5	6	7	Average	Average	
Current	781%	205%	133%	91%	111%	186%			251%	153%
Average	1255%	245%	132%	145%	115%	111%				
Average, Ex Last 3	1484%	258%	133%	162%	120%	146%			384%	
Current/Avg, Ex L3	**53%**	**79%**	100%	**56%**	**92%**	127%		84%	84%	
Inverse	**190%**	**126%**	100%	**179%**	**108%**	79%		**130%**	130%	

Source:
Industry: Bests Aggregates and Averages, data as of Dec 2001.
Sample Company: Onesource, data as of December 2002

Table7 Growth-Loss Per Doctor

Table 7: Medical Malpractice Versus All Lines
Growth in Ultimate Losses Per Exposure Unit (Pure Premium)
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Cal Year	Medical Malpractice NEP	Acc Yr Ultimate Loss/LAE Amount	Change	Ratio	Exposure Proxy: Doctors	Ultimate Loss Per Doctor	SEE NOTES BELOW Change	All Lines, Ex Cat NEP	Acc Yr Ultimate Loss/LAE Amount	Change	Ratio	Exposure Proxy: GDP 1996$	All Lines Loss As % of 1996$ GDP	Change	Difference Med Mal Vs All Lines
1980	1.2	1.8		147%	435,545	4,044		89	70		78%	4,901	1.4%		
1981	1.3	2.1	20%	168%	444,899	4,769	18%	95	75	8%	79%	5,021	1.5%	5%	13%
1982	1.4	2.3	9%	170%	462,947	5,000	5%	100	85	13%	85%	4,919	1.7%	15%	-10%
1983	1.5	2.6	12%	171%	479,440	5,386	8%	104	94	11%	90%	5,132	1.8%	7%	1%
1984	1.7	2.5	-3%	147%	511,090	4,893	-9%	113	108	14%	95%	5,505	2.0%	7%	-16%
1985	2.4	2.9	14%	118%	514,000	5,547	13%	132	116	8%	88%	5,717	2.0%	4%	9%
1986	3.3	2.5	-11%	77%	519,411	4,871	-12%	167	122	4%	73%	5,912	2.1%	1%	-13%
1987	3.9	2.5	-2%	64%	534,692	4,620	-5%	188	131	8%	70%	6,113	2.1%	4%	-9%
1988	3.9	2.4	-1%	63%	549,160	4,452	-4%	199	144	10%	72%	6,368	2.3%	6%	-9%
1989	4.2	2.6	8%	62%	559,988	4,713	6%	207	157	9%	76%	6,592	2.4%	5%	1%
1990	4.0	2.8	7%	71%	572,660	4,913	4%	213	165	5%	78%	6,708	2.5%	4%	1%
1991	4.0	3.7	30%	92%	594,697	6,152	25%	220	163	-1%	74%	6,676	2.4%	-1%	26%
1992	4.1	3.9	7%	96%	605,685	6,470	5%	225	156	-4%	69%	6,880	2.3%	-7%	12%
1993	4.4	4.4	13%	100%	619,751	7,136	10%	233	164	5%	71%	7,063	2.3%	3%	8%
1994	4.8	4.9	11%	103%	632,121	7,773	9%	242	175	7%	73%	7,348	2.4%	2%	6%
1995	4.8	5.5	12%	115%	646,022	8,520	10%	251	182	4%	73%	7,544	2.4%	1%	8%
1996	4.9	5.9	8%	121%	663,943	8,912	5%	262	199	9%	76%	7,813	2.5%	5%	-1%
1997	4.9	6.6	11%	134%	684,605	9,615	8%	270	204	3%	75%	8,160	2.5%	-2%	10%
1998	5.1	7.5	13%	145%	707,000	10,546	10%	276	217	6%	79%	8,509	2.5%	2%	8%
1999	5.2	7.8	5%	150%	720,900	10,810	3%	283	233	8%	82%	8,859	2.6%	3%	-1%
2000	5.5	7.9	1%	144%	735,000	10,738	-1%	297	257	10%	87%	9,191	2.8%	6%	-7%
2001	5.6	8.3	5%	147%	750,000	11,009	3%	317	257	0%	81%	9,215	2.8%	-1%	3%
2002	6.6	7.5	-9%	114%	765,000	9,819	-11%								
						4.9%							3.3%		

Source: AM Best Aggregates & Averages; AY Estimates by Richard A. Lino, Consulting Actuary
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$ Billions

Notes:
1 **Exposure is not adjusted for self-insurance which is greater for Med Mal than other lines and will be significant for 2002.**
2 **Year to Year Loss Per Exposure Unit is not adjusted for companies no longer reporting Schedule P data.**

Notes To Charts

Chart 1:
Only 8 years in the last 22 have produced an operating ratio below 100%, exclusive of investment income on surplus.
These years occurred after the start of the last hard market.
The operating ratio reached approximately 150% for the soft market in the early 1980s and late 1990s.
While accident years are an estimate, the peril of using calendar year data can be seen in Charts 2 to 4.

Footnotes:
The estimate for accident year 2001 is the "least mature" estimate based on accident year data as of December 2001.
    That is, the industry has only paid 3% of the ultimate losses selected and case incurred (including case reserves for known claims)
    is only 40% of the ultimate. For 1992 and prior, ultimate equals the actual industry booked number as of the tenth evaluation,
    which was published in Best's Aggregates and Averages in 2001 for 1992, 2000 for 1991, etc. For 1992, over 90% of ultimate has been paid.

The investment income ratio is an estimate as well using current 5 year treasury yields rather than imbedded actual yields, and using current cash
    flow for accident year results and charging operations for loans if ultimate losses must be funded out of surplus.
    Loan charge is 2 points above the investment yield.
Chart 2:
Only 1990 and 1992 had calendar year combined ratios above accident year. Although not shown, 1986 to 1989 would also have the same relationship.
    So, from 1986 to 1992, casual observers believed results were worse than they actually were, thereby creating a barrier to entry.
Since 1993, accident year ratios have been significantly above calendar year which means that business written during those years was less
    profitable than one might expect just looking at industry calendar year results. The more favorable Calendar year results may have
    generated additional competition.

Chart 3:
Calendar Year Investment Income is significantly greater than Accident Year throughout this period. This has occurred because:
    Investment yields have declined below the imbedded yield.
    Actual investments may have longer duration or lower quality raising calendar year yields relative to the accident year use of matched treasuries.
    The accident year model reflects the current mix of claims made (shorter tail) and occurrence policies.
    The accident year model does not reflect the yield in the tail - after 10 years.
    Calendar year numbers assume that reserves are funded from surplus anytime operating results are above 100 (that is, an operating loss)
    The accident year numbers count investment income only on net cash flow: premiums received plus investment income less losses and expenses paid.
    When cash flow is negative, the accident year number charges for the "borrowed" surplus funds at a rate of 2% annually.
    Accident Year model uses T-bill rates for matched duration. Calendar year yields are actual numbers from AM Best and may reflect
        some investment in stocks and tax-exempt bonds (although percentages are negligible).

Chart 4:
The accident year operating ratio is significantly below the calendar year operating ratio for all years from 1990 to 2001.

Table 5:
Contains the data used to produce the charts.

Table 6:

This table contains diagnostics intended to identify changes in case reserve adequacy.

    All else equal, changes in factors, highlighted in gold on the chart, suggest a change in case reserve adequacy.

    Methods (see table below for an example)

        1 Paid to Incurred - at a given evaluation point, cumulative paid divided by cumulative incurred

        2 Next Year's Paid to Outstanding Cases Reserves - at a given evaluation point, next year's paid divided by current outstanding reserve

        3 Case Outstanding Reserve to Prior Year's Paid - at a given evaluation point, current outstanding reserve by payments in last year

    On Table 6, Method 1 suggests industry case outstanding reserves weakened over a three year period about 10% (highlighted in green)

        Method 1 is the traditional method for assessing case reserve adequacy.

    However, Methods 2 and 3 suggest a 30% case reserve weakening over a three year period.

Accident Year Developed Through Year (Example of calculation, not actual)						
	1	2	3	4	5	6
Paid	25	50	70	80	85	89
Incurred	60	80	90	95	98	100
Outstanding (O/S)	35	30	20	15	13	11
1 Paid / Incurred	42%	63%	78%	84%	87%	89%
2 Next Yr's Pd / OS	71%	67%	50%	33%	31%	
3 OS / Prior Yr's PD	140%	120%	100%	150%	260%	275%

Table 7

    This table represents work in progress. Need some self-insurance data for this to be meaningful.