MISSOURI DEPARTMENT OF INSURANCE
Review Of The
National Council On Compensation Insurance
Workers' Compensation Insurance
Advisory Loss Cost Filing
Effective January 1, 2005

The David Cox Company

The David Cox Company

Consulting Actuary

December 6, 2004

The Honorable Scott B. Lakin
Director of Insurance
Missouri Department of Insurance
P.O. Box 690
Jefferson City, MO 65102-0690

RE: Review of Advisory Loss Cost Filing Submitted By
National Counsel on Compensation Insurance (NCCI)

Dear Director Lakin:

I am pleased to provide this report relating to the 1/1/2005 Workers' Compensation Advisory Lost Costs. This report describes the data, methods and assumptions used in my analysis and sets forth my findings and recommendations.

Thank you for the opportunity to assist the Missouri Department of Insurance. I am pleased to respond to any questions you may have about the report.

Very Truly Yours,

David B. Cox, FCAS, MAAA
Consulting Actuary

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Missouri Workers' Compensation Advisory Loss Costs
Effective 1/1/2005
Independent Actuarial Review

Purpose and Scope

The Missouri Department of Insurance (MDI) retained The *David Cox Company* (Cox) to perform an independent actuarial review of workers' compensation advisory loss costs filed on behalf of the insurance industry by the National Council on Compensation Insurance, Inc. (NCCI). These loss costs will become effective in Missouri on January 1, 2005.

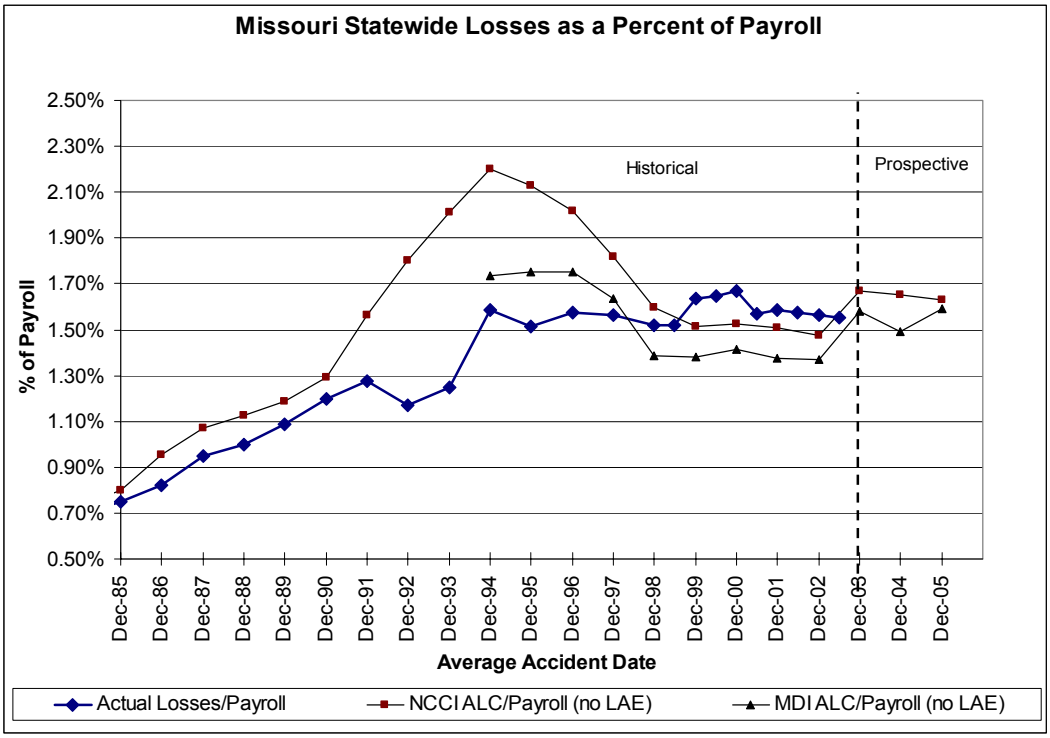
The purpose of this study is to provide employers, insurers, self-insurers and other interested parties with an analysis of the NCCI's advisory loss costs and to set forth the MDI's own recommended advisory loss costs.

Background

Loss costs are used by insurers and self-insurers to establish final workers' compensation insurance premium rates. "Loss costs" represent the portion of final premiums that will pay the injured workers' expected medical benefits, indemnity (i.e., wage-loss) benefits and associated loss adjustment expenses.

When setting final premium rates, insurers consider these loss costs, as well as their own past experience, overhead expenses, investment income and a competitive profit provision. In Missouri loss costs are "advisory" in nature, meaning there is no requirement that they be adopted by insurers. However, insurers typically use advisory loss costs in calculating their final premium rates, usually by applying a "loss cost multiplier" to those advisory loss costs to achieve their final "base" premium rates. Licensed insurers then file these final premium rates with the MDI, but these filed rates can be further modified by an insurer based on an individual policyholder's past experience and the policyholder's individual risk characteristics. Loss costs are determined for each of the 600+ business job classification codes recognized in Missouri, and apply prospectively to policies issued during 2005.

The following analysis focuses on the aggregate statewide expected loss costs for 2005. The chart below compares historical statewide losses as a percent of payroll to past and prospective NCCI statewide advisory loss costs and to past and prospective MDI advisory loss costs.



Prior to 1997, NCCI advisory loss costs exceeded the actual loss percentage, sometimes by a very large margin. MDI also overestimated losses from 1994 to 1996 but to a lesser degree. From 1999 to 2002 both NCCI and MDI underestimated the loss percentage. For the 2005 forecast there is only a slight difference between the NCCI and MDI (Cox) estimates. Expressed in terms of a percentage of payroll, NCCI estimates that statewide loss costs for 2005 needs to be $1.63 per $100.00 of payroll, while the MDI (Cox) analysis estimates statewide loss costs needs to be at $1.59 per $100.00.

The Missouri workers' compensation market has several distinct sectors with varying rate level considerations. Two large sectors that are not considered by NCCI when establishing loss costs are self-insured employers and employers insured by insurance companies under "large deductible" insurance policies ($100,000 or greater). Several smaller segments are also excluded from the NCCI's analysis: self-insured excess policies, national defense projects, F-classes (longshoremen), and underground coal mining. In addition, insurers that have become insolvent do not report their experience to NCCI.

One sector whose data *is* included in the NCCI's development of advisory loss costs is the assigned risk pool, which is a sector that has been growing in size. The pool is the mechanism employers resort to when they are required by law to purchase workers' compensation insurance but cannot obtain it from private insurance companies. The pool's rates are set by the MDI and are significantly higher on average than those of the so-called "voluntary market," in large part to reflect the relatively higher losses in the pool.

The voluntary market is a primary user of advisory loss costs. The voluntary market plus the assigned risk pool is called the "statewide" market by NCCI and in this report. NCCI prepares advisory loss costs on a statewide basis. Because the pool's experience is not representative of the voluntary market, its data should not be included in the development of advisory loss costs necessary to cover expected losses in the voluntary market. To do so would unnecessarily inflate the loss costs in the voluntary market. Therefore, my analysis includes an adjustment to convert statewide loss costs to levels appropriate for the voluntary market.

Qualifications

My name is David B. Cox and I conducted the analysis with no other actuaries participating. I am an independent consulting actuary, a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries. I meet the qualification requirements of the American Academy of Actuaries to practice in the area of workers' compensation insurance and self-insurance rate making. My professional experience spans twenty-six years.

Findings and Recommendations

NCCI's filing proposes a -1.3% overall decrease in statewide advisory loss costs. I have reviewed the 2005 NCCI workers' compensation loss cost filing and make the following findings and recommendations:

1. The filing and supplemental information provide adequate information and data with which to render an opinion and recommendation.

2. The 2005 NCCI statewide advisory loss costs fail to fully recognize Missouri's favorable loss experience and do not fully recognize lower LAE costs of local insurers. NCCI's 2005 statewide advisory loss costs should be reduced by an additional 3.2 percentage points, resulting in a total reduction of advisory loss costs of -4.5% below 2004 levels. My findings are summarized below:

Summary of Major Differences in Assumptions Statewide Basis	
NCCI proposed loss cost change	-1.3%
Effect of trend provision	-2.5%
Effect of LAE provision	-0.7%
Total = Cox's recommended change	-4.5%

3. The 2005 NCCI advisory loss costs are intended for statewide use, including the assigned risk pool. To convert statewide advisory loss costs to levels appropriate for the policies written in Missouri's voluntary market, the statewide advisory loss costs should be reduced by -4.6%. In other words, even if insurers adopt the NCCI's analysis of advisory loss costs for 2005, these loss costs still need to be reduced by an additional 4.6% to delete the experience in Missouri's assigned risk pool.

4. NCCI assumes that indemnity loss ratio trends will be zero through 2005. Actual past indemnity trends have been declining and I assume that indemnity loss ratios will continue to decline at a -1.5% annual rate. NCCI's medical loss ratio trend of +2.0% per year is appropriate. NCCI estimates that combined loss costs will increase at an annual rate of +1.0% while I estimate the rate of increase to be +0.3%. Because trends apply for several years, NCCI's loss costs are over-stated by 2.5%.

5. NCCI somewhat overestimates the provision in its advisory loss costs for loss adjustment expenses. NCCI relies heavily on countrywide experience and excludes Missouri Employers Mutual's more favorable experience. As a result, NCCI's loss costs are over-stated by 0.7%.

6. The combined reduction to 2005 NCCI loss costs necessary to obtain MDI loss costs appropriate for the voluntary market is -7.7%. See Exhibit 1.

Reliances

In preparation of this report, I relied on information provided by NCCI, the MDI, EPIC Actuaries LLC, Richard Hofmann ACAS, Travelers' actuary Jonathan Hale FCAS, the National Association of Insurance Commissioners, *Best's Aggregates and Averages* and other publicly available information. Although the above information was used without audit or verification on my part, I have reviewed it for reasonableness and believe it to be reliable.

Distribution and Use

This report is for the use of the MDI and I have no objection to further distribution. The user is requested to use the report in its entirety. Any questions about the report should be directed to David B. Cox, FCAS, MAAA.

Limitations

Loss Cost filings contain forecasts of expected future workers' compensation insurance payroll, losses and loss adjustment expenses. These forecasts depend upon such factors as changing judicial attitudes, law changes, litigation trends, medical inflation, claim settlement practices, economic conditions, and safety trends. Although the estimates discussed herein reflect my best professional

judgment, substantial variance of actual results from the projections contained in this report is possible.

Discussion and Analysis

Data Methods and Assumptions

I have reviewed NCCI data methods and assumptions and find them to be reasonable except for their trending and LAE assumptions, to be discussed below. The results of my analysis are provided in Exhibit 1. Exhibit 2 is an analysis of loss trends, Exhibit 3 analyzes LAE and Exhibit 4 analyzes assigned risk experience.

All experience used by NCCI is for Missouri workers' compensation insurance. The following was excluded from consideration by the NCCI for the 2005 loss costs:

- Large deductible experience has been excluded from consideration. Large deductible net premiums were approximately $86 million in 2003 but would be much larger on a standard premium basis.
- Other miscellaneous segments excluded from consideration include self-insured excess policies, national defense projects, F-classes, and coal mining. These constituted less than 1% of premium.
- Some insurers' data was not reported to NCCI. About $8 million in direct written premium for calendar year 2002, or about 1% of "NCCI statewide" was not used. About $13 million in direct written premium for calendar year 2001, or about 2% of "NCCI statewide" was not used.

This year NCCI introduced a new large loss limitation method, the purpose of which is to address the impact individual large claims may have on aggregate loss cost level indications. According to NCCI, the rate change indication would have been -1.6% without the large loss limitation instead of -1.3%. The limitation is $11 million per claim and the limit is adjusted downward for historical data based on wage inflation. The losses subject to limitation are replaced by an expected value based largely upon countrywide data and derivative distributions. The new large loss limitation method applies primarily to expected loss development for claims that are anticipated to be open for at least 20 years. NCCI's new large loss limitation methodology is reasonable and I have incorporated it in my estimates.

Trend Analysis

There are unavoidable delays in collecting and compiling insurance data. A primary cause for delay is the time it takes to process claims and accumulate credible volumes of loss experience upon which to make an assessment of the projected ultimate losses. NCCI's loss data consists of cumulative payments through year-end 2003 and loss reserves set on a case-by-case basis as of year-end 2003. The 2005 loss costs are for policies issued during 2005 and these policies do not fully expire until year-end 2006. There is a time lapse of

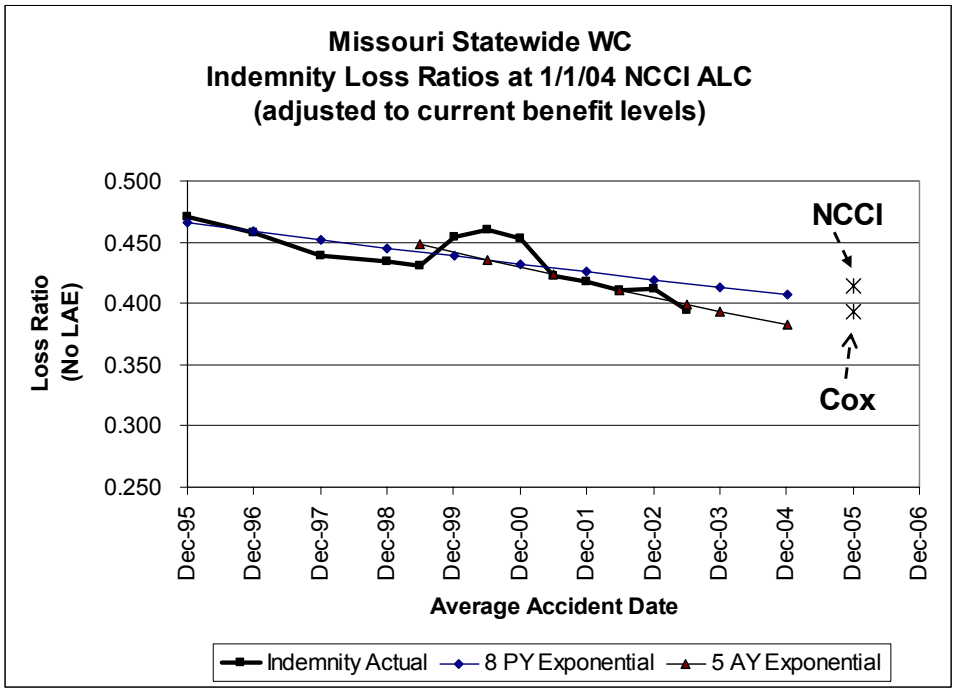
approximately two and one-half years between the most recently available data (accident year 2003) and the loss projection period.

The purpose of trending procedures is to bridge the time between historical experience and the time that the loss costs will be in effect. Estimated future expected loss ratios are determined by applying trending procedures that appropriately reflect projected changes in such components as claim costs, claim frequencies, exposures, and premiums over the trending period.

In the selection of trends, actuarial judgment is needed in order to assess the future safety, wage, judicial, economic and claims environment. A summary of trend indications follows:

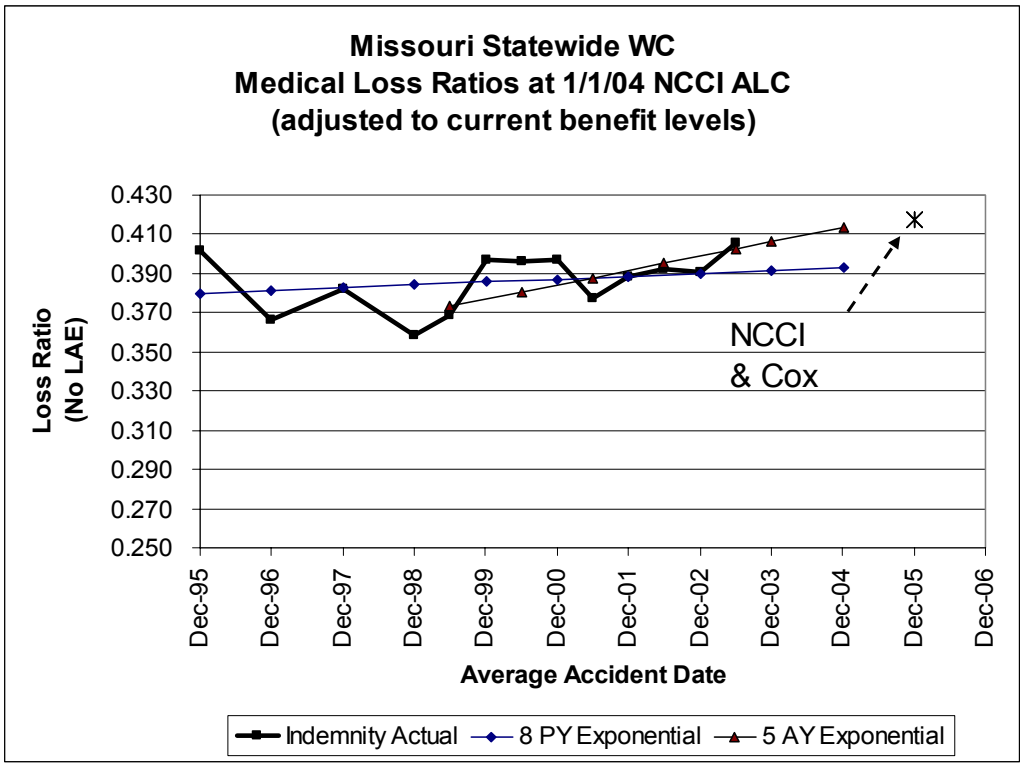
Trend Indications (Annual Rates)			
	Indemnity	Medical	Combined
Cox Recommended	-1.5%	+2.0%	+0.3%
NCCI This Year	0.0%	+2.0%	+1.0%
NCCI Last Year	0.0%	+2.0%	+1.0%
Using 8 Policy Years	-1.5%	0.4%	-0.6%
Using 5 Accident Years	-2.8%	1.9%	-0.5%

The following graph shows historical statewide indemnity losses as a ratio to NCCI advisory loss costs. Losses are adjusted to current benefit levels and advisory loss costs are adjusted to 1/1/2004 NCCI levels.



Indemnity loss ratios have been declining due to favorable trends in claim frequencies, as shown by the bold curve above. Loss ratios based on 8 policy years of experience indicate a -1.5% annual rate of change and loss ratios based on 5 accident years of experience indicate a -2.8% annual rate of change. NCCI forecasts no change in indemnity loss ratios while I assume indemnity loss ratios will continue to decline at a -1.5% annual rate. My estimate is judgmentally selected to fall in the upper range of the various indications.

The following graph shows historical statewide medical losses as a ratio to NCCI advisory loss costs. Losses are adjusted to current benefit levels and advisory loss costs are adjusted to 1/1/2004 NCCI levels.



Falling accident rates have not been sufficient to fully offset medical inflation as can be seem by the bold curve above. Loss ratios based on 8 policy years of experience indicate a +0.4% annual rate of change and loss ratios based on 5 accident years of experience indicate a +1.9% annual rate of change. Both NCCI and I forecast that medical loss ratios will increase at a 2.0% annual rate. My estimate is judgmentally selected to fall in the upper range of the various indications.

See Exhibit 2 for a more detailed analysis of trend selections.

Loss Adjustment Expense Provision

When NCCI assessed LAE levels, they excluded the state's largest insurer, Missouri Employers Mutual (MEM). MEM has LAE costs that are significantly lower than those estimated by NCCI. My analysis includes the loss adjustment data of MEM, and as a result, uses a statewide provision for LAE of 1.162 while NCCI uses 1.170. See Exhibit 3 for more details.

Assigned Risk Adjustment

NCCI prepares advisory loss costs on a statewide basis. My analysis includes an adjustment to convert statewide loss costs to levels appropriate for the voluntary market (statewide excluding assigned risk). The details of this adjustment are provided in Exhibit 4.

The assigned risk loss cost multiplier is estimated to be 1.95 based on a comparison of assigned risk standard loss costs at current NCCI levels to assigned risk standard premium at 7/1/2004 assigned risk rates. This means that 2004 NCCI advisory loss costs must be increased an average of 95% in order to equal the current assigned risk rates. The assigned risk expected loss ratio underlying the rates of 67.5% is taken from the Travelers Commercial Casualty Company filing in support of the 7/1/2004 rates. Assigned risk loss costs underlying current assigned risk rates are approximately 32% higher than statewide 2004 NCCI loss costs. Assigned risks are estimated to be 7.1% of the statewide NCCI loss costs in 2005. The projected assigned risk 7/1/2004-05 premium volume of $82 million is from Travelers.

Exhibit 1

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Statewide and Voluntary Indicated Change

		NCCI Indication	Cox Indication	
1.	Statewide Experience Period Loss Ratio at NCCI 1/1/2004 ALC	0.807	0.807	
2.	Excess Provision	1.009	1.009	
3.	Trend Adjustment Factor	1.035	1.008	
4.	Loss Adjustment Expense Factor	1.170	1.162	
5.	Statewide Projected L&LAE Ratio (1)*(2)*(3)*(4)	0.987	0.955	
6.	Indicated Statewide Loss Cost Change (5)-1	-1.3%	-4.5%	SW change in NCCI ALC
7.	Statewide Indicated Deviation to NCCI 1/1/2005 ALC [(5) / (1 - .013)] -1		-3.3%	Convert '05 NCCI ALC to SW MDI
8.	Adjustment to Remove Assigned Risk	Convert from SW to Voluntary	-4.6%	
9.	Voluntary Projected L&LAE Ratio (5)*[1 - (8)]		0.911	
10.	Indicated Voluntary Loss Cost Change (9)-1		-8.9%	
11.	Voluntary Indicated Deviation to NCCI 1/1/2005 ALC [(9) / (1 - .013)] -1	Convert '05 NCCI ALC to Vol MDI	-7.7%	

Notes:
Row (1) See Exhibit 2.
Row (2) from NCCI filing.
Row (3) See Exhibit 2.
Row (4) See Exhibit 3.
Row (8) See Exhibit 4.

Exhibit 2

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Trend Analysis - Missouri Statewide

1. Limited Loss Ratios At Present Voluntary Advisory Loss Costs & Benefits

Policy Year	Indemnity Loss Ratio	Medical Loss Ratio	Total
1995	0.471	0.402	0.873
1996	0.458	0.367	0.824
1997	0.439	0.382	0.821
1998	0.435	0.359	0.793
1999	0.455	0.397	0.852
2000	0.454	0.397	0.851
2001	0.418	0.388	0.806
2002	0.412	0.391	0.803

2. Two year Average	0.415	0.390	0.804
3. Expected 7/1/04 Indemnity Benefit Change	1.008	1.000	1.004
4. Experience Period Loss Ratio (2)*(3)	0.418	0.390	0.807
5. Missouri Statewide Exponential Trend			
a. Policy Year 8 Points	-1.5%	0.4%	-0.6%
b. Policy Year 5 Points	-1.9%	1.5%	-0.2%
c. Accident Year 5 Points	-2.8%	1.9%	-0.5%
6. NCCI Countrywide Trend	-0.5%	1.9%	0.7%
7. a. NCCI Selected Trend	0.0%	2.0%	1.0%
b. Trended Projected Loss Ratio	0.418	0.417	0.836
c. Effect of Trend (7b)/(4) - 1	0.0%	7.2%	3.5%
8. a. Cox Selected Trend	-1.5%	2.0%	0.3%
b. Trended Projected Loss Ratio	0.397	0.417	0.814
c. Effect of Trend (8b)/(4) - 1	-5.2%	7.2%	0.8%

Loss ratios are from NCCI. They are the average of 2-year paid loss development and 3-year paid+case loss development.

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Loss Adjustment Expenses
Summary

		LAE Factor	Percent of Loss
		(1)	(2)
A.	Voluntary Private Carrier (NCCI Filing)	1.170	76%
B.	Missouri Employers Mutual (Ex 3, Sheet b)	1.136	24%
C.	Statewide Weighted Average Based on (2)	1.162	100%
D.	NCCI Used in Filing	1.170	
E.	Cox Selected	1.162	

The percent of loss is based on the latest 2 policy years paid loss plus case reserves.

10191 - Missouri Employers Mutual Insurance Company
2003 Annual Statement Schedule P Part D
Direct Plus Assumed

Accident Year	Undiscounted Incurred Loss	Incurred Defense Expense	Incurred Adjusting Expense	Total Loss Adjustment Expense
	(1)	(2)	(3)	(4)
	-	-	-	-
1994	-	-	-	-
1995	29,851	1,607	1,933	3,540
1996	56,931	4,092	4,434	8,526
1997	46,578	3,543	5,956	9,499
1998	45,786	3,064	5,622	8,686
1999	58,479	3,372	6,588	9,960
2000	97,934	4,739	9,421	14,160
2001	103,874	4,800	11,094	15,894
2002	98,449	3,440	12,108	15,548
2003	108,007	3,314	9,974	13,288

Factor to Include LAE

Accident Year	Undiscounted Incurred Loss	Incurred Loss & Defense Expense	Incurred Loss & Adjusting Expense	Total Loss & Loss Adjustment Expense
	(5)	(6)	(7)	(8)
1994				
1995	1.000	1.054	1.065	1.119
1996	1.000	1.072	1.078	1.150
1997	1.000	1.076	1.128	1.204
1998	1.000	1.067	1.123	1.190
1999	1.000	1.058	1.113	1.170
2000	1.000	1.048	1.096	1.145
2001	1.000	1.046	1.107	1.153
2002	1.000	1.035	1.123	1.158
2003	1.000	1.031	1.092	1.123
Cox Selected		1.030	1.106	1.136

Reserve discount is from the Parts 1D & 2D of the Annual Statement.

Exhibit 4
Sheet a

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Adjustment of Statewide Loss Costs To Voluntary Loss Costs

Policy Year	A/R Pure Premium at NCCI ALC Levels	Present Rate Factor To 1/1/04 NCCI ALC	A/R Standard Premium At A/R Rates	Present Rate Factor To 7/1/04 A/R Rates	Assigned Risk Loss Cost Multiplier [(1)*(2)]/[(3)*(4)]
	(1)	(2)	(3)	(4)	(5)
1996	25,866,612	0.868	37,316,559	1.186	1.97
1997	15,337,589	0.951	26,292,409	1.101	1.98
1998	7,714,620	1.084	14,884,150	1.078	1.92
1999	5,422,487	1.112	10,807,557	1.082	1.94
2000	6,428,209	1.153	13,586,557	1.055	1.93
2001	13,445,415	1.143	28,965,374	1.050	1.98
2002	24,257,242	1.125	52,493,626	1.003	1.93
				7 Yr Average	1.95
				5 Yr Average	1.94
				3 Yr Average	1.95
				2 Yr Average	1.95
				Selected	1.95

(6)	Assigned Risk Expected Loss Ratio Underlying 7/1/04 Rates	0.675
(7)	Expected A/R Loss Ratio at 1/1/04 NCCI ALC	1.316
(8)	Expected Statewide Loss Ratio at 1/1/04 NCCI ALC	0.821
(9)	Expected A/R Market Share	7.1%
(10)	Expected Voluntary Pure Premium Ratio at 1/1/04 NCCI ALC	0.783
(11)	Expected Ratio of Voluntary Pure Premium to Statewide	0.954 -4.6%

Notes
(1) & (3) From Assigned Risk Call Sheets
(2) From NCCI
(4) From Exhibit 4, Sheet b
(5) = (1)*(2) / (3)*(4)
(6) From Travelers' 2004 Assigned Risk rate filing =(1-0.211)/1.169
(7) = (5) * (6)
(8) From Exhibit 1 = .807 * 1.009
(9) See Exhibit 4, Sheet c
(10) = [(8) - (9)*(7)] / [1 - (9)]
(11) = (10) / (8)

Exhibit 4
Sheet b

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Assigned Risk Present Rate Factors

Effective Date	Rate Change	Rate Change Index	Policy Year	Present Rate Factor To 7/1/04 A/R Rates
		1.000		
07/01/1995	0.4%	1.004		
07/01/1996	5.9%	1.063	1996	1.186
07/01/1997	9.4%	1.163	1997	1.101
07/01/1998	-4.5%	1.111	1998	1.078
07/01/1999	4.0%	1.155	1999	1.082
07/01/2000	1.0%	1.167	2000	1.055
07/01/2001	0.0%	1.167	2001	1.050
07/01/2002	9.5%	1.278	2002	1.003
07/01/2003	-0.4%	1.273		
07/01/2004	-3.7%	1.225		

Rate change history is from the Travelers filing.
Assumes policies are written evenly during the year.

Exhibit 4
Sheet c

Missouri Workers Compensation Insurance Advisory Loss Costs
Effective January 1, 2005

Estimated Assigned Risk Loss Costs Market Share
NCCI Advisory Loss Costs

	Calendar Year	Statewide Standard Pure Premium at NCCI ALC (1)	Assigned Risk Standard Pure Premium at NCCI ALC (2)	Assigned Risk Pure Premium Market Share (2)/(1) (3)
	2001	545,698,770	9,518,193	1.7%
	2002	543,782,087	21,141,506	3.9%
	2003	564,427,861	31,748,320	5.6%
(4)	Premium Trend Factor	1.047		
(5)	2005 Projected	590,690,125	42,051,282	7.1%

Notes
(1) & (2) From NCCI
(3) = (2) / (1)
(4) The statewide payroll trend is assumed to be 2.3% per year.
(5) The Travelers' Assigned Risk rate filing estimates premium to be $82 million for 7/1/2004-05. The loss cost multiplier is estimated to be 1.95.
42,05,1282 = 82,000,000 / 1.95