State of Missouri – Department of Insurance, Financial Institutions, and Professional Registration

Review of Workers' Compensation Loss Cost Filing by National Council on Compensation Insurance effective January 1, 2008

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Date: December 4, 2007

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Purpose & Scope

The State of Missouri Department of Insurance, Financial Institutions, and Professional Registration (the "Department" or "DIFP") engaged Expert Actuarial Services, LLC ("EAS") to perform an actuarial review of the Missouri workers' compensation loss costs filed by the National Council on Compensation Insurance ("NCCI") effective January 1, 2008.

The engagement called for:

- An examination of calculations and assumptions used by NCCI in the filing and in related or supplemental information provided by NCCI (or other parties) – listed in the Data section of this report,
- An independent assessment of certain components of the loss cost filing (determined during the analysis) that influence indicated loss cost levels,
- Quantification of the impact on loss costs where changes in NCCI's methods or assumptions were warranted,
- Compilation of such elements into an overall loss cost indication, and
- Production of a report indicating and supporting findings from the analysis.

Among the components of NCCI's loss cost filing that are ***included within the scope*** of my review are loss development, frequency and severity trend, impact of benefit level and relevant law changes, data segregation (e.g., medical versus indemnity, policy-year versus accident year, and number of years of experience), and the actuarial methods and parameter selections adopted by NCCI. Each of these components contributes to the overall indicated loss cost levels.

Other components of the loss cost filing were considered ***outside the scope*** of my review. Examples include: Allocation of the overall loss cost change to various categories of risks (e.g. industry groups such as manufacturing, contracting, office & clerical); Setting of loss costs for individual class codes; and Identification of indicated loss costs for special groups such as F-Classifications or Coal Mine workers.

Distribution and Use

This report and the opinions and conclusions contained herein were prepared for the use of the Department for the purpose of evaluating Missouri workers' compensation loss cost levels effective January 1, 2008 as derived by the National Council on Compensation Insurance and developing independently-derived loss costs and may not be suitable for any other purpose.

This document presents my findings and analysis. The exhibits and other documents attached in support of my analysis and findings are integral parts of this report. This report has been prepared so that my actuarial assumptions and judgments are documented. Judgments about the conclusions drawn in this report should be made only after considering the report in its entirety. I remain available to answer any questions that may arise, and I assume that the user of this report will seek such explanation on any matter in question.

Findings & Conclusions

Results

Based on my review of NCCI's loss cost filing and technical supplement and various other related documents, communications with NCCI personnel, and my review of NCCI's responses to my requests and inquiries, I believe that NCCI's loss costs effective January 1, 2008 meet the standards of Missouri law and are based on generally appropriate data, methods, and assumptions. However, as shown in Table 1 below, there are four areas where I believe alternative assumptions (and an alternative data-set selection) are more appropriate and which yield different indicated loss cost level results. These four areas are listed below in *"Key Findings"* and are discussed in detail within the Analysis section of this report.

In total, my findings combine to yield indicated loss costs that are 10.0% below NCCI's *proposed* January 1, 2008 advisory loss costs ("ALC"). Alternative trend rate selections are the largest single contributor to the different results derived herein, accounting for 7.3% of the 10.0% total difference. The following is extracted from **Exhibit 1**.

Table 1. Estimated Impact on Indicated Loss Cost Levels of Alternative Assumptions

Item	Estimated Impact
Indemnity and Medical Trend	-7.3%
Senate Bill 1 Impact	-0.5%
Use of Voluntary-Market Data	-1.5%
Missouri DCCE Relativity (Defense & Cost Containment Expense)	-0.7%
Total = Indicated Change to NCCI proposed January 1, 2008 ALC	**-10.0%**

The advisory loss costs derived by NCCI are just one of three sets of loss costs required by Missouri Statute to be distributed by NCCI. A second loss cost set is also produced by NCCI, but the calculations are required to exclude the impact of changing cost levels or "trend". A third set are loss costs resulting from a review performed by or on behalf of the Department. The results derived herein lead to the generation of this third set. Within this report, however, identified differences are expressed relative to NCCI's proposed January 1, 2008 loss costs including trend and to the elements of NCCI's analysis underlying those proposed loss costs.

Another perspective is to look at proposed costs relative to *current* NCCI advisory loss costs – those effective January 1, 2007. Since NCCI's January 1, 2008 ALC are reported by NCCI as being 10.1% below existing ALC, the proposed loss costs stemming from my review are 20.1% below the NCCI ALC that became effective January 1, 2007.

Table 2. Estimated Impact on Indicated Loss Cost Levels of Alternative Assumptions

Item	Estimated Impact
Total = Indicated Change to NCCI proposed January 1, 2008 ALC	**-10.0%**
NCCI proposed change	-10.1%
Total = Indicated Change to existing January 1, 2007 NCCI ALC	**-20.1%**

Key Findings

While I believe that most of the assumptions, methods, and segregations of data employed by NCCI in their derivation of advisory loss costs are reasonable, four areas where I believe alternative assumptions or approaches are more appropriate include the following:

- Trend Rates – Recent experience indicates more favorable trend than used by NCCI.
- Senate Bill 1 – NCCI uses a conservative estimate of the impact of this legislation.
- Statewide versus Voluntary Data – NCCI's use of data that includes assigned risk market experience drives higher results than that based on voluntary-only experience.
- Loss Adjustment Expense – NCCI overestimates Missouri defense and cost containment expense costs.

Each of the above findings involve elements where I believe NCCI's analysis generates advisory loss costs that are too high. While each of the above points are fully discussed below in Analysis Section D, "Key Findings", provided here are aspects pertaining to the apparent high bias underlying NCCI's analysis.

- Trend Rates – Accident-year trend experience, considered as part of last year's filing, was omitted in this year's filing. After obtaining the omitted data, I see that it provides additional and stronger evidence of downward cost trends than that based on the policy-year data included in NCCI's current filing.[1] No reason was provided by NCCI regarding their decision to change the data upon which they base their trend analysis.

An alternative approach to that used by NCCI, and one that I advocate, would have been to show all the trend data that has been provided historically rather than just that used in this filing. Actuarial methods that derive results based on historical experience are merely indications of future cost levels, and it is up to the actuary to use professional judgment in evaluating the various indications and to select supportable results stemming therefrom. If NCCI's actuarial judgment is that results that would be generated by the omitted experience are inappropriate, then the filing should discuss such, supporting NCCI's chosen approach for 2008 and why it is believed to be a more reasonable approach than that used as part of last year's filing.

- Statewide versus Voluntary Data – NCCI's loss costs are intended solely for use by the voluntary market and are called "Voluntary Loss Costs" by NCCI. NCCI continues to use data that includes the higher-cost assigned risk market experience to derive loss costs for the voluntary market. The Department and I do not agree with NCCI's reasons for their inclusion of this assigned risk market data. The NCCI is able to produce loss costs using voluntary-only data as shown in response to EAS's request for such. NCCI's use of data that includes the higher-cost residual market experience has served to lower the reduction in ALC.

- Loss Adjustment Expense – NCCI's calculation of Missouri-specific loss adjustment expense costs reflects two decisions that each drive up the indicated costs. First, they use the combined result of the three latest year's countrywide and state LAE ratios. This approach camouflages the apparently anomalistic effect of a single high expense year (2006) in Missouri. In the past, NCCI has noted outlier experience and adjusted for such[2]. Here, where the outlier drives higher results, they used it without making adjustments for it.[3]

  Second, NCCI excludes in their calculation the loss adjustment expense experience of one large Missouri writer whose expense costs are relatively low. The exclusion of this insurer's

[1] NCCI referenced both accident-year and policy-year trend experience as part of last year's filing, but only policy-year experience this year. I show and consider both sets of trend data within this report.
[2] See, for example, last year's EAS report, Appendix 1, Response 7.
[3] On a positive note, while the apparently anomalistic 2006 year is included within NCCI's experience period, they have tempered its effect slightly by changing the experience period from two years as used in the prior filing to three years in the current filing. (See attached Appendix 1, Response 1, bulletpoint 4.)

experience in the analysis of loss adjustment expense is in contrast to its inclusion in all other aspects of NCCI's ALC analysis.

Revised calculations herein that consider several years of consistent results (before 2006) and which include that single omitted large writer suggest that Missouri's loss adjustment expense (actually, defense and cost containment expense to be specific) costs are actually 1.5% lower than countrywide levels rather than 6.7% higher as used by NCCI[4].

[4] Derived in Exhibit 6.

Analysis

A. Background

Loss Costs. The following description is extracted from last year's Loss Cost Filing review[5].

> "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 (Department), 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"

Assignment Background. NCCI's January 1, 2008 Loss Cost filing includes the following language which describes well NCCI's and the Department's roles as regards loss costs and the Missouri filing.

> "The Missouri Insurance Department (MDOI) has designated the National Council on Compensation Insurance, Inc. (NCCI) to collect, validate, and analyze workers' compensation data from insurance companies.
>
> "NCCI collects an extensive amount of information regarding the workers' compensation system in Missouri. Using this information, NCCI develops prospective advisory voluntary loss costs to be effective on January 1st of each year. The NCCI proposal consists of two major components: 1) determination of the overall statewide premium change needed and 2) revision of the classification relativities and assurance that the proposed loss costs do in fact achieve the overall statewide change.
>
> "Based upon the NCCI proposal and supporting information, the MDOI also determines what it believes to be the appropriate loss cost level. Specifically the MDOI makes a recommendation as to the appropriate overall statewide premium change. The MDOI must rely on NCCI to develop the loss costs by classification since NCCI houses the data by classification..."

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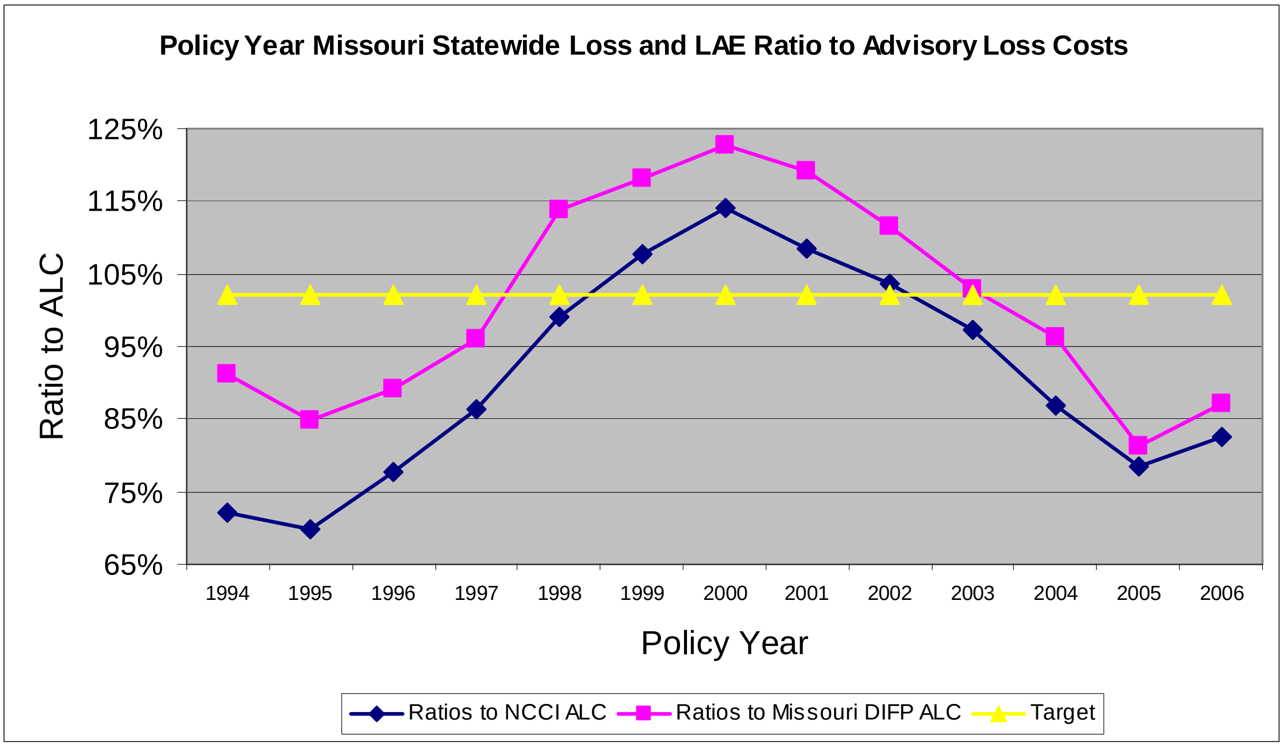
[5] Originally from the review of 1/1/2006 loss costs prepared by the Department's property/casualty actuary, David B. Cox, FCAS, MAAA and available at http://www.insurance.mo.gov/reports/2006/MO_WC_1.1.06.pdf. The 1/1/2007 review is available at http://insurance.mo.gov/reports/2006/workcomp-NCCIlosscost2007.pdf.

History of Results. NCCI and the Missouri DIFP each derive advisory loss cost levels on a prospective basis. It may be of interest to consider also how well these two sources of advisory loss costs have fared in the past. That is, how close have the historical advisory loss costs come to matching the actual loss and LAE experienced by the Missouri workers' compensation market? The chart below, extracted from attached **Exhibit 7**, Sheet 1, provides a rough scorecard based on data through December 31, 2006.[6]



The following observations may be gleaned from the above chart:

- Loss and LAE ratios relative to advisory loss costs have varied in apparent cyclical fashion, peaking in policy year 2000.

[6] Ratios referenced in this analysis are of loss and LAE (in the numerator) to voluntary-market advisory loss costs (in the denominator). If overall loss costs were established exactly on target, then the target ratio would result which would typically be 100%. Due to the nature of the data referenced, the historical loss and LAE in the numerator is based on statewide rather than voluntary-only experience. As a result, the target ratio is slightly higher than 100%, judgmentally selected to be 102% as shown in the chart.

- Ratios to Missouri DIFP advisory loss costs are consistently higher than the ratios to NCCI ALC. This is logical since the Department's advisory loss costs have been consistently lower than NCCI's as revealed by the relativities appearing in **Exhibit 7**, Sheet 1, column (m).
- Looking at the latest 4 policy years (2003 through 2006), Missouri DIFP advisory loss costs have yielded ratios that seem closer to the target 102%[7] than are the ratios stemming from NCCI's advisory loss costs.[8]
- During the prior 5 policy years (1998 through 2002), when loss and LAE ratios to both sets of loss costs were near to or above 100%, NCCI's advisory loss costs yielded results closer to the target. Before that, the situation was reversed.

Another way of evaluating the historical ALC is to compare the ALC changes indicated by NCCI and Missouri DIFP with an ALC change derived with the benefit of hindsight. Such an analysis appears in **Exhibit 7**, Sheet 2, results from which are summarized in the chart below. For example, NCCI developed advisory loss costs for 2003 that were 14% higher than in 2002, but it turns out that the 2003 ALC yielded a loss and LAE ratio of 97%. Thus, NCCI's indicated ALC turned out to have been a bit too high. As per footnote 6 above, the target ratio of statewide loss and LAE to voluntary loss costs should be about 102%. To achieve that target ratio, 2002 ALC should have been changed by +9% rather than by NCCI's +14%. Similar information for DIFP and for other years is included in the table below.

Table 3. Actual and Hindsight Indicated Advisory Loss Cost Changes

Policy Year	NCCI	DIFP	Hindsight
1995	-4%	-21%	-34%
1996	-5%	-18%	-28%
1997	-10%	-19%	-24%
1998	-12%	-24%	-15%
1999	-5%	-13%	1%
2000	-2%	-9%	9%
2001	-1%	-9%	6%
2002	0%	-8%	1%
2003	14%	8%	9%
2004	-1%	-11%	-16%
2005	-1%	-5%	-24%
2006	0%	-5%	-19%
2007	-1%	-6%	
2008	-10%	-20%	

[7] See footnote 6.
[8] Policy year 2006 results are based on incomplete partial-year data that has limited credibility at this point.

B. Inquiry and Response

During my examination of NCCI's loss cost filing, technical supplement, and other materials provided for my review, I developed several questions and identified the need for additional information[9]. **Appendix 1** lists inquiries and requests and shows NCCI's responses to each. This question and answer dialog represents an important part of my review.

C. Analysis Overview

In performing my analysis, I concluded that, for the most part, NCCI's selected parameters, methods, etc., were reasonable. Examples include NCCI's selected loss development factors, the experience period used to derive indications[10], the segregation of the analysis into indemnity versus medical, the procedures used to derive trend factors and policy year on-level factors, and many other facets of NCCI's analysis. For all of these areas, I have adopted NCCI's methods and assumptions while deriving my own estimate of indicated loss costs.

In instances where I found NCCI's methods or assumptions to be unclear, I inquired further and/or requested additional information. Following from my review of responses to these inquiries, I either determined that NCCI's approach, as clarified, was reasonable, or I concluded that alternative assumptions were more appropriate than those employed by NCCI. Four areas of difference are described in detail in the next section. Quantification of the impact of adopting these alternative assumptions appears in the attached exhibits.

D. Key Findings

Finding 1. Trend Rates – Recent experience indicates a more favorable trend than used by NCCI. In NCCI's Technical Supplement submitted with their loss cost filing, Appendix A-III shows its selection of annual trend factors for indemnity and medical costs based on the latest 5 and latest 8 policy years' data. The historical frequency and severity trend factors shown by NCCI are combined into pure premium trend factors in attached **Exhibit 3** from which the numbers in the table below

[9] Items provided for my review are listed in the "Data" section of this report.
[10] Except for the experience period used in deriving Missouri's DCCE relativity – See Finding 4.

were extracted. NCCI's selected annual trend factors are 0.960 for indemnity and 1.020 for medical. Both amounts appear somewhat high relative to the historical experience.

Table 4. Annual Trend Factors
(from Exhibit 3)

	Indemnity	Medical
Policy-year pure premium trend factors (see Exhibit 3 for details)	0.926 0.932 0.940 0.943	1.003 1.027 1.002 1.008
NCCI Selected	**0.960**	**1.020**

Last year's NCCI loss cost filing included additional historical trend data, for which updated data was omitted in this year's filing but which was provided by NCCI upon request (See Appendix 1, page 4, R1). This supplemental data is accident-year (as opposed to policy-year) frequency and severity trend information. Combining these components into pure premium trend factors produces a more complete set of historical trend factors as shown in the table below:

Table 5. Annual Trend Factors
(from Exhibit 3)

	Indemnity	Medical
Policy-year pure premium trend factors (see Exhibit 3 for details)	0.926 0.932 0.940 0.943	1.003 1.027 1.002 1.008
Accident-year pure premium trend factors (see Exhibit 3 for details)	0.897 0.907 0.909 0.914	0.967 0.995 0.975 0.985
NCCI Selected	**0.960**	**1.020**
EAS Selected	**0.930**	**1.000**

Including the accident-year trend data provides clearer evidence of annual trend experience that is more favorable (i.e., lower), than implied by the factors selected by NCCI. EAS's selected factors appear to be only a little lower than NCCI's selected factors. However, the factors used in the indicated loss cost calculation are highly leveraged and thus very important. Using the lower selected factors corresponds to indicated loss costs that are 7.3% lower than those derived by NCCI.

The note at the bottom of **Exhibit 3** shows and explains the derivation of this impact. For information purposes, and to demonstrate the sensitivity of trend factor selection, the impact of using other slightly different sets of trend factors is also shown in the **Exhibit 3** note.

Factors that are based directly on the selected trend factors are shown in **Exhibit 3** lines (d) and (e). These flow into **Exhibit 2** lines (j) (for indemnity) and (v) (for medical). **Exhibit 2** shows how the selected trend factors and other components of NCCI's analysis combine together to create a bottom line indication – i.e., the final indicated change in loss costs. The first two columns of numbers in the Exhibit shows NCCI's values and calculations which culminate in a result of 0.899 (corresponding to NCCI's –10.1% filed change) shown in **Exhibit 2** row (ae). EAS's calculations using alternative values for trend and other elements appear in the rightmost two columns. These calculations combine to create an indicated change of 0.812 or 0.087 lower than NCCI's indicated change.[11]

<u>Finding 2. Senate Bill 1 – NCCI uses a conservative estimate of the impact of this legislation.</u>

<u>2a. SB1 Impact.</u> The quantification of Missouri Senate Bill 1 was addressed at some length in each of the last two years' reviews of NCCI's loss cost filings and in correspondence between the Department and NCCI. No new analysis was performed regarding Senate Bill 1 as part of this year's loss cost filing and analysis, either by NCCI or by EAS. Rather, within NCCI's indicated loss cost calculations, they have maintained their previously estimated SB1 impact of -1.0%, and I have maintained the estimate I used last year of -2.0%.

As shown in **Exhibit 4**, the impact of my larger (i.e., more downward) estimated impact on indicated loss costs is relatively small at -0.5%. This is shown in the footnote at the bottom of **Exhibit 4**. The factors derived in **Exhibit 4** row (i) feed into **Exhibit 2**, rows (e) and (q).

Note that as the actual impact of Senate Bill 1 affects the claims underlying the experience analyzed as part of the loss cost analysis, the role of its estimated impact becomes less important in the derivation of loss costs. Rather, claims arising and paid under the new environment created by Senate Bill 1 will be what directly drives future loss costs. With this year's filing, the transition has just begun. Senate Bill 1 went into effect in the latter part of 2005, and key experience referenced in the loss cost analysis is that stemming from policy years 2004 and 2005.

[11] Finding 3, relates to NCCI's inclusion of Assigned Risk experience in their analysis. This element is separately calculated and not reflected in Exhibit 2 but is included in Exhibit 1.

2b. Prior Discussion Regarding Differing SB1 Impact Estimates. For completeness, the discussion from last year's report regarding Senate Bill 1 is repeated here with only slight modification. No new information is presented, so the rest of this text section (Finding 2) can be skipped by those familiar with last year's report.

The following summarizes the status leading up to the January 1, 2007 loss cost filing.

- As part of the January 1, 2006 filing, NCCI's estimated impact of SB1 was -1.0%.
- Little information was available to assess SB1's expected impact.
- The Department's review included additional analysis of certain provisions and concluded with an estimated impact of -3.6%.
- The Department's review indicated that the NCCI does not typically revisit or reconsider law change estimates. Rather the actual impact is captured later when the new law's provisions are reflected in the loss experience data included within NCCI's loss cost analysis (i.e., several years later).
- The Department recommended that NCCI revisit its SB1 analysis so that the expected impact could be more appropriately reflected in January 1, 2007 loss costs.
- The NCCI responded in a January 13, 2006 letter to the Department's request reiterating its position but saying that it would review its analysis of SB1. Excerpts from NCCI's letter follow.

> "NCCI maintains that additional future impact analysis can not be done in any reliable manner due to the nature of the changes in Missouri Senate Bill 1/130. The impacts associated with this legislation will be dependent on interpretations and decisions that result after disputes make their way through the system. As indicated in our analysis, more savings may be realized as cases work their way through the legal and benefits systems. However, the changes to the compensability language, statute interpretation language and the operations of the administrative system are not quantifiable from a data perspective. In other words, there is no actuarial method that could be expected to accurately predict the effect of these changes given the subjectivity involved in the statute interpretation process." ...
>
> "We realize that others may expect greater savings and may wish to use other methodologies to estimate those savings. At this time, NCCI maintains that the appropriate action for establishing NCCI Missouri loss costs is to allow any savings realized by this legislation to emerge in subsequent claims data and thereby be reflected in future loss costs. However, in light of your request, we will review our analysis to determine if any additional actions could be taken to further develop our impact estimation."

NCCI's January 1, 2007 filing did not include or reference any additional analysis and still reflected an estimated impact of –1.0%. I inquired about this, asking if NCCI had revisited the analysis and what is NCCI's opinion of the Department's –3.6% estimate. In NCCI's response, they:

- List again SB1's most notable provisions,
- Describe the timing of when data reflecting the impact of law changes will begin to affect NCCI's analyses,
- Present results of a survey of Missouri workers' compensation practitioners regarding SB1's influence seen so far, and
- Comment on the Department's analysis and –3.6% estimate.

NCCI's practitioner's survey directly addressed matters that were potentially affected by SB1 and that may affect workers' compensation costs. Extracted from Appendix 2, NCCI's summary of the survey results includes:

> "In general, the respondents indicated that SB1 brings increased fairness to the Missouri workers' compensation benefit system and is expected to produce cost savings. However, all respondents agree that it is too early to tell how much of an impact SB1 will have because there has not been enough time for disputed claims to move through the system. Respondents indicated that costs began dropping prior to the enactment of SB1 and it is difficult to attribute how much of any observed cost reductions post SB1 have resulted from the SB1 changes in the statutes. They also indicated that most of the changes in the statutes affect a very small percent of claims."
>
> The respondents observed that nearly all the judges are adhering to the provisions of SB1 and are operating more consistently and conservatively."

NCCI maintains that the actual cost impact resulting from SB1 will be reflected in future loss cost filings (by being reflected in the loss experience examined then). This is true. But, if the actual cost savings are meaningfully greater than 1.0%, then recognizing this in future filings will not offset the missed savings that could be included in the current and past loss costs (and ultimately the rates and premiums that are developed therefrom). That being said, I understand NCCI's contention that quantification of SB1's anticipated impact is difficult.

EAS's -2.0% selection is based on:

- NCCI's estimate (-1.0%),
- The belief that NCCI's 1.0% estimate is conservative (i.e., pessimistic and low) as is its position of waiting until the impact permeates the experience period data,

- The Department's prior estimate (-3.6%),
- NCCI's comments regarding the Department's prior analysis, and
- NCCI's Updated Analysis and Survey.

Finding 3. Statewide versus Voluntary Data – NCCI's use of data that includes assigned risk market experience drives higher results than that based on voluntary-only experience.

3a. Current Situation and Impact on Loss Costs. Like the prior finding, this topic is also a holdover from last year's analysis. NCCI continues to develop its voluntary market indicated loss costs based on statewide data, which includes both voluntary and assigned risk business. Note that assigned risk rates are separately calculated (by a different entity) using assigned risk experience. So, the higher-cost assigned risk experience is being double counted within the Missouri workers' compensation marketplace, once in the derivation of rates for the assigned risk market, and again in the derivation of loss costs for the voluntary market. This seems obviously wrong to me, and so my derivation of indicated voluntary market loss costs excludes assigned risk experience.

The estimated impact of excluding assigned risk experience in the derivation of Missouri voluntary market loss costs is a decrease in loss costs of 1.5% as shown in **Exhibit 5**, Sheet 1. This number was provided by NCCI after they recalculated their own number using voluntary rather than statewide data. In past loss cost reviews, this impact had been estimated using information regarding the relative cost levels between assigned risk and voluntary market business and the relative size of the two markets. As I transition from using the estimated impact to NCCI's calculated impact, for comparison purposes, I still show the estimation process in **Exhibit 5**, Sheets 1 through 3. The estimation process yielded an impact of -2.1%, slightly larger than the -1.5% actual difference provided by NCCI and used herein.

The –1.5% impact of removing the assigned risk market experience from the indicated loss cost calculation is carried forward from **Exhibit 5** to **Exhibit 1** where it is combined with the estimated impact of the other findings presented herein.

3b. Prior Discussion Regarding Statewide versus Voluntary Data. For completeness, the discussion from last year's report regarding NCCI's use of statewide data is repeated here with only slight modification. No new information is presented, so the rest of this text section (Finding 3) can be skipped by those familiar with last year's report.

As discussed within NCCI's loss cost filing:

> "Employers unable to secure coverage in the voluntary market can apply for such coverage in the assigned risk market. In Missouri, the Travelers Commercial Casualty Company serves as the Assigned Risk Plan Administrator and develops the assigned risk rates. Statewide experience, both voluntary and assigned risk, is included in this filing. The statewide premiums have been adjusted to the latest approved voluntary market loss cost level in order to produce loss costs that are appropriate for all employers in the state."

NCCI's decision to include assigned risk (or "involuntary market" or "residual market") experience within the data base it reviews to derive voluntary market loss costs is important because insureds within the assigned risk market are more costly to insure. In fact, that characteristic – anticipated high costs – is what causes voluntary market workers' compensation insurers to decline coverage for certain employers causing them to need to seek cover through the assigned risk market.

While individual employers may be covered in either the voluntary or involuntary market, perhaps varying between the two over the course of years, at any given time, the Missouri market can be segregated into those two distinct categories. Of course, Travelers Commercial Casualty Company, the insurer of the Missouri residual workers' compensation market, includes the assigned risk experience in their review when setting assigned risk workers' compensation rates. In developing voluntary loss costs, NCCI's election to review statewide (voluntary plus involuntary) experience rather than just the voluntary market data causes these higher-cost insureds to be included in the development of rates (or loss costs) for both portions of the Missouri market. This inclusion of the involuntary market experience in both the assigned risk and voluntary market ratemaking data seems inappropriate. It produces voluntary market loss costs that are too high.

NCCI's comments regarding this matter followed by my perspective follows.

> NCCI: *"The use of voluntary and AR data is consistent with prior filings in Missouri."*

Consistency is good, but not a compelling argument if such is incorrect.

> NCCI: *"This methodology determines voluntary loss costs that are adequate for the average risk, not just those risks that were written voluntarily at that time. This should promote competition and enhance depopulation of the assigned risk market, leading to lower costs."*

More competition is spurred not by the inclusion of assigned risk experience in the reviewed data, but by the higher loss costs and rates that such generates. Prices that are artificially high will cause more insurers to bid for the subject business since greater opportunity for profit exists. However, I see the role of the actuary in establishing the loss costs as not to develop such that will be attractive to insurers due to profit opportunity, but rather to establish loss costs that properly reflect anticipated costs of providing coverage. The competition should occur due to natural market forces, to the desire of certain insurers to grow market share, and by favoring those insurers who can deliver their product in a more cost effective manner, or at least who believe they can do so.

Depopulation of the assigned risk market and lower costs are laudable goals, however accomplishing such by artificially raising costs to the voluntary market is equivalent to a subsidization of assigned risks by the voluntary market.

> NCCI: *"This method also eliminates the fluctuations in voluntary loss cost levels due solely to risks shifting into and out of the assigned risk market. Thus, more stability is achieved in the marketplace in the long term."*

Market stability may also be a good objective. However, the contribution to market stability that is provided by using combined statewide data is not very evident. And, since the size of Missouri's assigned risk market has remained fairly small over the last several years[12], the market stability objective would seem to be less important than is the objective of establishing appropriate loss cost levels for voluntary market risks.

Finding 4. Loss Adjustment Expense – NCCI overestimates Missouri defense and cost containment expense costs.

There are two aspects of NCCI's LAE calculation that I contend should be handled differently: (1) NCCI's exclusion of one large insurer from their calculation and (2) The influence of calendar-year 2006 LAE experience on that calculation. Changes to each serve to lower indicated loss costs.

4a. NCCI's LAE Calculation and Method Change. NCCI derives the loss adjustment expense component of loss costs by first examining countrywide LAE to loss ratios in two pieces: DCCE (defense and cost containment expense) and AOE (adjusting and other expense). Missouri experience is built into the equation by measuring and adjusting for how Missouri's DCCE to loss ratio compares to the countrywide ratio. The Missouri-adjusted DCCE ratio plus the countrywide AOE ratio produces the LAE ratio reflected in the proposed loss costs. NCCI's LAE calculations appear in their Technical Supplement Exhibit II.

[12] Over the last ten years, assigned risk market share, measured using standard premium at NCCI voluntary loss costs, has varied from a low of just over 1% in policy year 1999 to a high of approximately 6.5% in 2003.

NCCI mentions in its Technical Supplement that it has adopted a change in methodology as pertains to its computation of LAE. Specifically, with this year's filing, NCCI is using only private carrier data in the calculation of countrywide LAE ratios, excluding state fund experience from the calculation for the first time. NCCI quantified the impact of this change as being a 1.1% increase in indicated loss costs. That is, had NCCI maintained its prior method for calculating countrywide LAE ratios, their indications would have been for a loss cost level change of -11.2% instead of the -10.1% change actually filed. (See attached Appendix 1, page 2, bulletpoint 3).

I believe that excluding state funds from the countrywide portion of the LAE calculation is appropriate in the case where such funds are either the exclusive workers' compensation writer in their state or where they are the carrier of last resort, e.g., the state's assigned risk carrier. Other state funds, which are competitive participants in the voluntary workers' compensation market, should be included in NCCI's countrywide LAE calculations. I have not attempted to measure the impact of NCCI excluding only certain state funds from the countrywide portion of the LAE calculation, but I do not believe the impact on indicated loss costs of such a change (from NCCI's excluding *all* state funds) would be significant.

4b. NCCI's Exclusion of MEM. NCCI's methodology change note mentions that, in comparing Missouri and Countrywide DCCE-to-loss ratios, the Missouri DCCE experience referenced continues to be based on private carrier data. During discussions with NCCI, I came to understand that their exclusion of state fund data from the Missouri experience really means that they have excluded the DCCE experience of Missouri Employers Mutual ("MEM"), a large private insurer of Missouri workers' compensation business.[13]

The exclusion of MEM's experience from NCCI's calculation of Missouri's DCCE-to-loss ratio is significant and, I believe, incorrect. It is significant because MEM is by far the largest single writer of workers' compensation in the state[14] and MEM has a much lower than average DCCE-to-loss ratio. For the five calendar-year period 2002 through 2006, MEM's DCCE to expense ratio is only 5.8% while other Missouri workers' compensation insurers had a 10.6% ratio.

[13] Assigned risk business is also excluded from the LAE calculations.
[14] According to the Department's website (at http://insurance.mo.gov/reports/mktshr.htm), 2006 premium volume for individual companies shows MEM as the largest Missouri workers' compensation writer with 14.35% of the market, much higher than the number two writer that had only a 6.34% market share. If multiple companies from a single group are combined, then American International Group's companies have a slightly higher combined market share than MEM.

NCCI's exclusion of MEM data is incorrect since MEM operates competitively within Missouri's voluntary workers' compensation market. Historically, state funds included only entities that were either the exclusive writers of workers' compensation in their states or they operated as the states' insurers of last resort. Those characteristics still define many state funds. Unlike those types of state funds, MEM competes for business with other carriers, selectively underwrites its business, and is not Missouri's carrier of last resort[15]. MEM's loss experience is otherwise included in NCCI's loss cost calculation, and due to the nature of the Company, it should be included fully in the derivation of loss costs including the derivation of Missouri's DCCE relativity.

4c. Missouri Historical DCCE Experience and Relativities. NCCI's calculation of Missouri's DCCE-to-loss ratio and comparison of such to a countrywide ratio is based on experience for calendar years 2004 through 2006. The Missouri DCCE-to-loss ratio during that time was 11.2% compared to a 10.5% countrywide ratio leading NCCI to use a DCCE relativity of 1.067. This relativity was multiplied by the separately derived countrywide accident-year DCCE ratio of 11.7% to produce the Missouri DCCE ratio of 12.5%. All this appears in NCCI's Exhibit II.

My calculation, portrayed in attached **Exhibit 6**, includes additional calendar years of experience (2002 through 2006), shows information separately by year, and also shows Missouri information both including and excluding MEM. Key numbers extracted from **Exhibit 6** are shown in the table below.

[15] Missouri's assigned risk business is written by Travelers Commercial Casualty Company.

Table 6. Missouri DCCE Relativity
(from Exhibit 6)

Calendar Year	Country-wide DCCE%	MO excluding MEM		MO including MEM	
		DCCE%	Relativity to CWide	DCCE%	Relativity to CWide
2002	9.1%	9.4%	1.025	8.6%	0.942
2003	9.8%	10.0%	1.019	9.0%	0.910
2004	10.0%	10.0%	1.001	9.2%	0.914
2005	10.5%	10.9%	1.036	10.3%	0.984
2006	11.0%	**12.9%**	**1.171**	**12.3%**	**1.115**
Subtotal 2004-2006	10.5%	11.2%	**1.067 (used by NCCI)**	10.5%	1.002
Total 2002-2006	**10.1%**			**9.8%**	**0.974**
EAS Selected					**0.985**

The table reveals that the 1.067 combined 3-year average Missouri DCCE relativity used by NCCI is significantly affected by the high Missouri DCCE-to-loss ratios for calendar year 2006. I suspect that Missouri's 2006 year DCCE results were artificially and temporarily influenced by changes introduced by Senate Bill 1 in late 2005. On the other hand, it is possible that the high 2006 Missouri DCCE ratio is due to suddenly lower losses in 2006, which amounts serve as the denominator for the DCCE ratio. If so, then the 2006 high DCCE ratio is real and not an anomaly. However, since calendar-year 2006 *loss* results are only partially included in the loss experience base (which uses data from policy years 2004 and 2005), using a high DCCE ratio without the corresponding low 2006 losses will also lead to overstated estimated DCCE costs making reliance on and use of the high 2006 DCCE ratio incorrect.

Missouri experience, including that for MEM, produced a DCCE relativity of 1.115 for calendar-year 2006, meaning that Missouri's DCCE-to-loss ratio was 11.5% higher than the countrywide ratio for that year. Each of the earlier calendar years, however, demonstrated DCCE relativities below 1.000, meaning that Missouri incidence of DCCE has been regularly lower than countrywide levels. I used this information to select a relativity of 0.985, higher than all years before 2006, but much lower than the 2006 relativity.

Using my selected 0.985 relativity rather than NCCI's 1.067 factor corresponds to a lower total LAE provision (19.3% as compared to 20.3%) as shown in line (p) in **Exhibit 6**. The bottom line effect on indicated loss cost levels of selecting the lower DCCE relativity is -0.7%. **Exhibit 6** also shows the effect of other possible DCCE relativity selections. The -0.7% effect appears along with the impact of other assumption differences in **Exhibit 1** where also shown is the total -10.0% difference between the indicated loss costs derived herein and those derived by NCCI.

E. Minor Items & Notes

Nature of Calculations

Within this report and the attached exhibits, the estimated impacts of various changes are calculated in additive fashion in order to simplify the presentation of results. This approach is consistent with NCCI's own approach, lends itself to the most straightforward communication of results, and produces a bottom-line result that is not materially different than would be a more complex but technically correct application of the mathematics.

Abbreviations

Abbreviations used within this report and/or exhibits include:

ALC	Advisory Loss Costs
ALAE	Allocated Loss Adjustment Expense
AOE	Adjusting and Other Expense
AR	Assigned Risk (aka Alternative Residual Market)
DCCE	Defense and Cost Containment Expense
DIFP	(State of Missouri) Department of Insurance, Financial Institutions, and Professional Registration
LAE	Loss Adjustment Expense
NCCI	National Council on Compensation Insurance
Statewide	Voluntary PLUS AR business
SB1	Senate Bill 1

Data

For my analysis, NCCI and the Department provided me with data and information including, but not necessarily limited to, the items listed below, not all of which were used directly in my review.

A) NCCI Missouri Loss Cost Filing presented as a bound report labeled "Missouri / Voluntary Loss Costs / Effective January 1, 2008" and starting with a August 31, 2007 letter from Roy Wood to Missouri Director of Insurance

B) Separately bound Technical Supplement to the January 1, 2008 loss cost filing

C) NCCI responses to my questions and requests (included here as Appendix 1)

D) Supplemental data provided together with the loss cost filing including countrywide workers' compensation insurance expense exhibit, private carrier accident year LAE loss development, and other items

E) Travelers March 29, 2007 workers' compensation rate filing for Missouri Alternative Residual Market effective July 1, 2007

Some information regarding Missouri's assigned risk market (insured by Travelers Commercial Casualty Company) was provided by Travelers. This includes:

F) Average loss cost multiplier for Missouri residual market rates that became effective on July 1, 2007

G) Residual market policy year premiums through September 30, 2007.

In addition to the above, all materials provided for last year's review and listed in last year's report were again available for reference.

Reliances & Limitations

For a few specific areas where I deemed appropriate assumptions or methods different than those employed by NCCI, my review of Missouri workers' compensation loss costs involved my independent analysis as described and presented herein. While my independent analysis drives the quantitative results and dominates the discussion above, most of my analysis involved, and was substantially limited to, an examination of the Missouri workers' compensation loss cost filing and technical supplement prepared by NCCI along with other information listed in the Data section. As such, my review is subject to the following:

Second Opinion Review. For the most part, my review included neither my performing extensive calculations nor my checking in detail all the calculations that underlie NCCI's analysis. While I have carefully examined the loss cost filing and supporting documents, evaluated the methodology, and assessed the assumptions, I have also relied extensively on the accuracy of NCCI's own calculations and the manner in which available data was incorporated into the analysis.

Accuracy of Data. In performing my analyses, I have relied upon data supplied by the Department and by NCCI as listed above. This information was relied upon without independent audit or verification. Since my results depend on the accuracy and completeness of the underlying data, any material discrepancies in the data should be reported to EAS, and, if warranted, this report should be amended.

Risk and Uncertainty. Since the ultimate value of claims and claim expense is subject to the outcome of events yet to occur, projections are subject to economic and statistical variation from expected values. Accordingly, these ultimate values will likely differ, perhaps significantly, from their corresponding estimates. However, I believe the methods used and assumptions employed are appropriate, and that the results are reasonable given the information currently available.

Missouri -- NCCI Loss Cost Filing Review **Exhibit 1**

Indicated Change to NCCI Advisory Loss Costs of January 1, 2008
Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs

Highlighted Differences between NCCI and EAS Analyses

Item	Item Location in NCCI Documents	NCCI Estimate or Approach	EAS Estimate or Approach	Estimated Impact	Where in EAS Analysis
Indemnity and Medical Trend	Tech. Supplement Appendix A-III	Indemnity: 0.960 Medical: 1.020	0.930 1.000	**-7.3%**	Exhibit 3
Senate Bill 1 Impact	Tech. Supplement Appendix A-I, Sections B, C, E, & F	0.990	0.980	**-0.5%**	Exhibit 4
Use of Statewide vs. Voluntary Data	Discussed in Loss Cost Filing Page 2	Use Statewide Data (including assigned risk)	Use Voluntary-only data	**-1.5%**	Exhibit 5
Missouri DCCE Relativity	Tech. Supplement Exhibit II-C	1.067	0.985	**-0.7%**	Exhibit 6

Total Change versus NCCI filed change (i.e. compared to NCCI 1/1/2008 advisory loss costs)	**-10.0%**
NCCI filed change to existing 1/1/2007 advisory loss costs	**-10.1%**
EAS Indicated Change to NCCI 1/1/2007 advisory loss costs	**-20.1%**

Compares to NCCI filed change of –10.1%

Missouri -- NCCI Loss Cost Filing Review **Exhibit 2**

Determination of Pure Premium Level Change (excludes consideration of using voluntary market versus statewide data)

Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs

			NCCI Filing (from Exhibit 1)		**EAS Values**	
			Policy Yr 2004	Policy Yr 2005	Policy Yr 2004	Policy Yr 2005
Premium:						
(a)	Standard Earned Premium Developed to Ultimate		$609,101,130	$631,283,987	$609,101,130	$631,283,987
(b)	Premium On-level Factor		0.964	0.977	0.964	0.977
(c)	Premium Available for Benefits Costs	[a × b]	$587,173,489	$616,764,455	$587,173,489	$616,764,455
Indemnity Benefit Cost:						
(d)	Limited Indemnity Paid+Case/Paid Losses Developed to Ultimate		$210,397,332	$187,132,064	$210,397,332	$187,132,064
(e)	Indemnity Loss On-level Factor	**[Exhibit 4]**	1.016	1.012	**1.006**	**1.009**
(f)	Factor to Include Loss-based Expenses		1.173	1.173	1.173	1.173
(g)	Composite Adjustment Factor	[e × f]	1.192	1.187	1.180	1.184
(h)	Adjusted Limited Indemnity Losses	[d × g]	$250,793,620	$222,125,760	$248,268,852	$221,564,364
(i)	Adj. Ltd. Indemnity Cost Ratio excluding Trend and Benefits	[h / c]	0.427	0.360	0.423	0.359
(j)	Factor to Reflect Indemnity Trend	**[Exhibit 3]**	0.849	0.885	**0.748**	**0.804**
(k)	Projected Limited Indemnity Cost Ratio	[i × j]	0.363	0.319	0.316	0.289
(l)	Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis		1.016	1.016	1.016	1.016
(m)	Projected Indemnity Cost Ratio	[k × l]	0.369	0.324	0.321	0.294
(n)	Factor to Reflect Proposed Changes in Indemnity Benefits		1.021	1.021	1.021	1.021
(o)	Projected Indemnity Cost Ratio including Benefit Changes	[m × n]	0.377	0.331	0.328	0.300
Medical Benefit Cost:						
(p)	Limited Medical Paid+Case/Paid Losses Developed to Ultimate		$247,851,107	$247,222,419	$247,851,107	$247,222,419
(q)	Medical Loss On-level Factor	**[Exhibit 4]**	0.990	0.997	**0.980**	**0.994**
(r)	Factor to Include Loss-based Expenses		1.173	1.173	1.173	1.173
(s)	Composite Adjustment Factor	[q × r]	1.161	1.169	1.150	1.166
(t)	Adjusted Limited Medical Losses	[p × s]	$287,755,135	$289,003,008	$285,028,773	$288,261,341
(u)	Adj. Ltd. Medical Cost Ratio excluding Trend and Benefits	[t / c]	0.490	0.469	0.485	0.467
(v)	Factor to Reflect Medical Trend	**[Exhibit 3]**	1.082	1.061	**1.000**	**1.000**
(w)	Projected Limited Medical Cost Ratio	[u × v]	0.530	0.498	0.485	0.467
(x)	Factor to Adjust Medical Cost Ratio to an Unlimited Basis		1.016	1.016	1.016	1.016
(y)	Projected Medical Cost Ratio	[w × x]	0.538	0.506	0.493	0.474
(z)	Factor to Reflect Proposed Changes in Medical Benefits		1.000	1.000	1.000	1.000
(aa)	Projected Medical Cost Ratio including Benefit Changes	[y × z]	0.538	0.506	0.493	0.474
Total Benefit Cost:						
(ab)	Indicated Change Based on Experience, Trend and Benefits	[o + aa]	0.915	0.837	0.821	0.774
Reflecting Change in LAE to Derive Overall Indicated Pure Premium Level Change:						
(ac)	Average Indicated Change for 2 policy years	[2004(ab)/2 + 2005(ab)/ 2]	0.876		0.798	
(ad)	Change in Loss Adjustment Expense	**[Exhibit 6]**	1.026		1.017	
(ae)	Indicated Change Modified to Reflect Change in LAE	[ac × ad]	**0.899**		**0.812**	

Differences:

-7.3%	Indemnity Trend (Exhibit 3)
-0.5%	SB1 Impact (Exhibit 4)
-0.7%	Missouri LAE Ratio (Exhibit 6)
-0.2%	Rounding
-8.7%	Total

NCCI Filing numbers are from Technical Supplement Exhibit 1.

Missouri -- NCCI Loss Cost Filing Review **Exhibit 3**
Policy Year Trend Factors
Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs

Section A – Annual Trend Factors

	Indemnity		Medical	
Countrywide Average Trend Factor		0.979		1.020
Missouri Policy Year Trend Data [from NCCI Filing Technical Supplement]				
Frequency based on 8 policy years	0.952		0.952	
	Severity	Pure Premium (Freq. x Sev.)	Severity	Pure Premium (Freq. x Sev.)
Severity based on 5 PY of paid losses	0.973	0.926	1.054	1.003
Severity based on 5 PY of paid + case losses	0.979	0.932	1.079	1.027
Severity based on 8 PY of paid losses	0.987	0.940	1.052	1.002
Severity based on 8 PY of paid + case losses	0.991	0.943	1.059	1.008

From NCCI Appendix A-III, Section A

	Indemnity		Medical	
Missouri Calendar-Accident Year Trend Data [provided by NCCI -- see Appendix 1, page 4, R1]				
Frequency based on 5 policy years	0.926		0.926	
	Severity	Pure Premium (Freq. x Sev.)	Severity	Pure Premium (Freq. x Sev.)
Severity based on 5 AY of paid losses	0.969	0.897	1.044	0.967
Severity based on 5 AY of paid + case losses	0.979	0.907	1.075	0.995
Severity based on 8 AY of paid losses	0.982	0.909	1.053	0.975
Severity based on 8 AY of paid + case losses	0.987	0.914	1.064	0.985

	Indemnity	Medical
NCCI Selected Annual Trend Factor	0.960	1.020
EAS Selected Annual Trend Factor	**0.930**	**1.000**

Section B – Derivation of Trend Factors

		NCCI Filing (From NCCI Appendix A-III, Section B) Indemnity	NCCI Filing Medical	EAS Values Indemnity	EAS Values Medical
(a)	Selected annual trend factor	0.960	1.020	**0.930**	**1.000**
(b)	Length of trend period from the midpoint of policy year 2005 to the midpoint of the effective period	3.001	3.001	3.001	3.001
(c)	Length of trend period from the midpoint of policy year 2004 to the midpoint of the effective period	4.001	4.001	4.001	4.001
(d)	Effect on Policy Year 2005 = (a) ^ (b)	0.885	1.061	0.804	1.000
(e)	Effect on Policy Year 2004 = (a) ^ (c)	0.849	1.082	0.748	1.000
		to Exh. 2, line (j)	to Exh. 2, line (v)	to Exh. 2, line (j)	to Exh. 2, line (v)

Section C - Impact of Alternative Trend Rate Selections

The use of EAS' selected trend factors in row (a) above (0.930 and 1.000) contribute to the bottom line result in Exhibit 2, line (ae), of 0.812. Had NCCI's row (a) selected factors (0.960 and 1.020) been kept (but other EAS-identified changes maintained), then the Exhibit 2, line (ae) result would have been 0.885. In other words, the revised selected trend rates correspond to indicated loss costs that are 7.3% lower than had NCCI's trend factors been maintained.*

Alternative Selected Medical Trend Rates

Alternative Selected Indemnity Trend Rates	0.990	1.000	1.010	1.020	1.030
0.920	0.782	0.799	0.817	0.834	0.861
0.925	0.788	0.805	0.824	0.841	0.867
0.930	0.794	**0.812**	0.829	0.846	0.873
0.935	0.799	0.817	0.835	0.852	0.878
0.940	0.805	0.823	0.841	0.858	0.884
0.945	0.812	0.829	0.847	0.864	0.891
0.950	0.819	0.836	0.854	0.872	0.898
0.955	0.826	0.843	0.861	0.879	0.905
0.960	0.832	0.849	0.868	0.885	0.911
0.965	0.839	0.856	0.874	0.891	0.918

EAS Selected

NCCI Selected

Alternative Selected Indemnity Trend Rates	0.990	1.000	1.010	1.020	1.030
0.920	-10.3%	-8.6%	-6.8%	-5.1%	-2.4%
0.925	-9.7%	-8.0%	-6.1%	-4.4%	-1.8%
0.930	-9.1%	**-7.3%**	-5.6%	-3.9%	-1.2%
0.935	-8.6%	-6.8%	-5.0%	-3.3%	-0.7%
0.940	-8.0%	-6.2%	-4.4%	-2.7%	-0.1%
0.945	-7.3%	-5.6%	-3.8%	-2.1%	0.6%
0.950	-6.6%	-4.9%	-3.1%	-1.3%	1.3%
0.955	-5.9%	-4.2%	-2.4%	-0.6%	2.0%
0.960	-5.3%	-3.6%	-1.7%	0.0%	2.6%
0.965	-4.6%	-2.9%	-1.1%	0.6%	3.3%

* Calculation of -7.3% as per above note and other similar calculations herein are simplified. For additional information, see text (Analysis Section E).

Senate Bill 1 Impact

			NCCI Appendix A-I		NCCI Appendix A-I	
			Section B	Section C	Section E	Section F
			2005 Indemnity	2005 Medical	2004 Indemnity	2004 Medical
(a)	Change 8/28/05 (Senate Bill 1) Impact per NCCI	[NCCI col. (1)]	0.9900	0.9900	0.9900	0.9900
(b)	Cumulative Index	[NCCI col. (2)]	1.0150	0.9900	1.0230	0.9900
(c)	Average Benefit Level During Policy Year	[NCCI col. (4)]	1.0030	0.9930	1.0070	1.0000
(d)	Adjustment Factor using NCCI SB1 estimate	[b / c = NCCI col. (5)]	1.012	0.997	1.016	0.990

EAS uses -2.0% instead of NCCI's -1.0% as estimated impact of Senate Bill 1.

(e)	Senate Bill 1 -- EAS Estimated Impact	[EAS judgment]	0.9800	0.9800	0.9800	0.9800
(f)	Cumulative Index using (e) vs. (a)	[b × e / a]	1.005	0.980	1.013	0.980
(g)	Weight applied to 8/28/05 and subsequent changes	[NCCI col. (3)]	0.713	0.713	0.037	0.037
(h)	Revised Average Benefit Level During Policy Year	[c + (g × (f – b))]	0.9959	0.9859	1.0066	0.9996
(i)	Adjustment Factor using EAS SB1 estimate	[f / h]	1.009	0.994	1.006	0.980
			to Exhibit 2 line (e)	to Exhibit 2 line (q)	to Exhibit 2 line (e)	to Exhibit 2 line (q)

Notes:

NCCI Filing numbers are from Technical Supplement Appendix A-I.

(e) The use of 0.980 as EAS' estimated impact of SB1 contributes to the bottom line result in Exhibit 2, line (ae), of 0.812. Had NCCI's estimate of 0.990 been maintained, the line (ae) result would have been 0.817. In other words, EAS's estimated SB1 impact of 0.980 corresponds to indicated loss costs that are 0.5% lower than had NCCI's estimate of the impact been maintained.

	Alternative SB1 Impact Estimates	Associated Change in Indicated Loss Costs
	0.950	-2.1%
	0.960	-1.6%
	0.970	-1.1%
EAS selected →	**0.980**	**-0.5%**
NCCI estimate →	0.990	0.0%
	1.000	0.5%
	1.010	1.1%
	1.020	1.5%
	1.030	2.1%

<u>Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs</u>

A. EAS Estimate of Impact

			Source: Travelers 7/1/2007 AR rate filing	Source: NCCI 1/1/2008 tech. supplement
(a)	AR Trended On-Level Loss + ALAE Ratio to Premium before 7/1/07 rate change	71.2%	Sec. II, p.2, line 1	
(b)	AR Rate change implemented 7/1/07	0.3%	Sec. II, p.2, bottom	
(c)	AR Trended On-Level Loss + ALAE Ratio to Premium after 7/1/07 rate change	71.0%	[a / (1 + b)]	
(d)	Assigned Risk average loss cost multiplier underlying 7/1/07 AR rates relative to 1/1/07 NCCI advisory loss costs	1.792	per corres. with Travelers	
(e)	Trended On-Level AR Loss + ALAE Ratio to 1/1/07 NCCI ALC	127.2%	[c × d]	
(f)	1/1/08 NCCI Indicated Statewide ALC change from 1/1/07 NCCI ALC	89.9%		Exh. 1-D
(g)	Expected AR market share	5.3%	Estimated by EAS in Sheet 3	
(h)	Estimated Voluntary Loss + ALAE Ratio to 1/1/07 NCCI ALC	87.8%	[(f – e×g) / (1 – g)]	
(i)	Indicated change when data includes AR	-10.1%	[f – 1]	
(j)	Indicated change when data excludes AR	-12.2%	[h – 1]	
(k)	**Estimate of Impact of excluding AR data**	**-2.1%**	[j – i]	

B. NCCI Calculation of Impact

(l)	NCCI indication derived using voluntary-only data	-11.6%	NCCI Response 2 to EAS
(m)	**NCCI Calculated Impact**	**-1.5%**	[l – i]

C. Used Impact

(n)	**EAS Selected Impact**	$\boxed{\textbf{-1.5\%}}$	[selected from k and m]

<u>Notes:</u>
(a) - (k) Another approach and the logic underlying these formulae appear on sheet 2

Missouri -- NCCI Loss Cost Filing Review
Logic Underlying Assigned Risk Impact Formula

Exhibit 5
Sheet 2

Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs

Sought is: $V = \dfrac{\text{Expected Voluntary Market Loss Cost}}{\text{Expected Statewide Loss Cost}} = \dfrac{\text{EVLC}}{\text{ESLC}}$

AR% = Percentage of statewide market that is Assigned Risk, using loss costs as measurement
Vol% = 1 - AR%
1/1/07 NALC = January 1, 2007 NCCI Advisory Loss Costs
ESLC = Expected Statewide Loss Costs
EVLC = Expected Voluntary Market Loss Costs
EARLC = Expected Assigned Risk Loss Costs

Explanation of Formula **(X)** used to help derive V
AR.ELR = Assigned Risk Expected Loss Ratio
AR.ALCM = Assigned Risk Average Loss Cost Multiplier underlying 7/1/07 Assigned Risk Rates
Since assigned risk rates were filed at actuarially indicated levels, AR.ALCM corresponds to Assigned Risk costs (including expenses) relative to 1/1/07 NALC.

AR.ALCM is a measure of how much higher is AR premium using 7/1/07 AR rates than if 1/1/07 NALC were what was charged as AR rates. And, if we take out AR expenses, then we would get how much higher than 1/1/07 NALC are AR loss costs. In formula terms, this equates to:

(X) $\text{AR.ALCM} \times \text{AR.ELR} = \dfrac{\text{EARLC}}{\text{1/1/07 NALC}}$

Expected statewide loss costs are comprised of expected assigned risk loss costs (times the assigned risk market share) and expected voluntary loss costs (times its market share).

$[\,\text{EVLC} \times (1-\text{AR\%})\,] + [\,\text{EARLC} \times \text{AR\%}\,] = \text{ESLC} \times 100\%$

$\dfrac{[\,\text{EVLC} \times (1-\text{AR\%})\,]}{\text{1/1/07 NALC}} + \dfrac{[\,\text{EARLC} \times \text{AR\%}\,]}{\text{1/1/07 NALC}} = \dfrac{\text{ESLC} \times 100\%}{\text{1/1/07 NALC}}$

but: rightmost term is NCCI filed change of: -10.1%
so rightmost term = 0.899

and: middle term calls for use of Formula **(X)**
The middle term equals AR.ALCM × AR.ELR × AR%

and we know each of those:
AR.ALCM = 1.792
AR.ELR = 71.0%
AR% = 5.3%

so: middle term = 0.067

so, we get:

$\dfrac{[\,\text{EVLC} \times 94.7\%\,]}{\text{1/1/07 NALC}} + 0.067 = 0.899$

thus:

$\dfrac{\text{EVLC}}{\text{1/1/07 NALC}} = \dfrac{.899 - .067}{94.7\%} = 0.878$

V= $\dfrac{\text{EVLC}}{\text{ESLC}} = \dfrac{\text{EVLC / (1/1/07 NALC)}}{\text{ESLC / (1/1/07 NALC)}} = \dfrac{0.878}{0.899} =$ **0.977**

Also: 0.878 minus 0.899 equals **(0.021)** matching the result from Sheet 1.

Assigned Risk Inclusion in Data used to derive Voluntary Loss Costs

	Standard Earned Premium Developed to Ultimate		
	(a)	(b)	(c)
Policy Year	Statewide	Voluntary	Assigned Risk Market Share
			1 - b/a
2004	609,101,130	571,800,539	6.1%
2005	631,283,987	602,458,977	4.6%

EAS selected Assigned Risk market share during experience period:	5.3%
	to Sheet 1, line (g)

Alternative Assigned Risk Market Share Estimates and their Impact on Exhibit 5, Sheet 1, Line (k) Result

	4.5%	-1.8%
	4.6%	-1.8%
	4.7%	-1.8%
	4.8%	-1.9%
	4.9%	-1.9%
	5.0%	-2.0%
	5.1%	-2.0%
	5.2%	-2.0%
Selected	**5.3%**	**-2.1%**
	5.4%	-2.1%
	5.5%	-2.2%
	5.6%	-2.2%
	5.7%	-2.3%
	5.8%	-2.3%
	5.9%	-2.3%
	6.0%	-2.4%
	6.1%	-2.4%
	6.2%	-2.5%
	6.3%	-2.5%
	6.4%	-2.6%
	6.5%	-2.6%

<u>Notes:</u>

(a) from 1/1/08 NCCI Filing Technical Supplement, Exhibits I-B (2004) and I-A (2005)

(b) information provided by NCCI analogous to that in technical supplement, but including only voluntary market data rather than statewide data.

Loss Adjustment Expense Provision

A. Missouri DCCE Relativity (Missouri DCCE Ratio compared to Countrywide DCCE Ratio)

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Countrywide			Missouri **ex**cluding MEM				Missouri **in**cluding MEM			
Calendar Year	Paid DCCE [provided by NCCI]	Paid Loss	DCCE / Loss [a / b]	Paid DCCE [provided by NCCI]	Paid Loss	DCCE / Loss [d / e]	DCCE/Loss ratio for MO vs. CWide [f / c]	Paid DCCE [provided by NCCI]	Paid Loss	DCCE / Loss [h / i]	DCCE/Loss ratio for MO vs. CWide [j / c]
2002	$1,859,624	$20,368,241	9.1%	$34,239	$365,962	9.4%	1.025	$38,239	$444,807	8.6%	0.942
2003	2,000,296	20,324,908	9.8%	37,764	376,619	10.0%	1.019	41,185	459,826	9.0%	0.910
2004	2,004,261	19,991,541	10.0%	39,726	395,955	10.0%	1.001	43,828	478,230	9.2%	0.914
2005	2,068,896	19,756,348	10.5%	42,031	387,257	10.9%	1.036	47,217	458,257	10.3%	0.984
2006	2,128,950	19,308,107	11.0%	47,228	365,831	12.9%	**1.171**	52,144	424,212	12.3%	1.115
2002-2006	$10,062,027	$99,749,145	10.1%	$200,988	$1,891,624	10.6%	1.053	$222,613	$2,265,332	9.8%	0.974
2004-2006	$6,202,107	$59,055,996	10.5%	$128,985	$1,149,043	11.2%	1.069	$143,189	$1,360,699	10.5%	1.002
2004-2006 with rounding			10.5%			11.2%	**1.067** used by NCCI				**0.985** EAS Selected

B. LAE Provision Calculation

	NCCI used	EAS selected	
(l) Countrywide Accident Year DCCE Ratio [NCCI Filing]	11.7%	11.7%	
(m) Missouri Relativity used by NCCI [from above]	**1.067**	**0.985**	
(n) Missouri DCCE Ratio used by NCCI [l x m]	12.5%	11.5%	
(o) Countrywide Accident Year AOE Ratio [NCCI Filing]	7.8%	7.8%	
(p) Total LAE Provision [n + o]	20.3%	19.3%	
(q) LAE provision underlying current rates [NCCI Filing]	17.3%	17.3%	
(r) Effect of change in LAE provision [(1+p) / (1+q)]	1.026	1.017	to Exh. 2, line (ad)

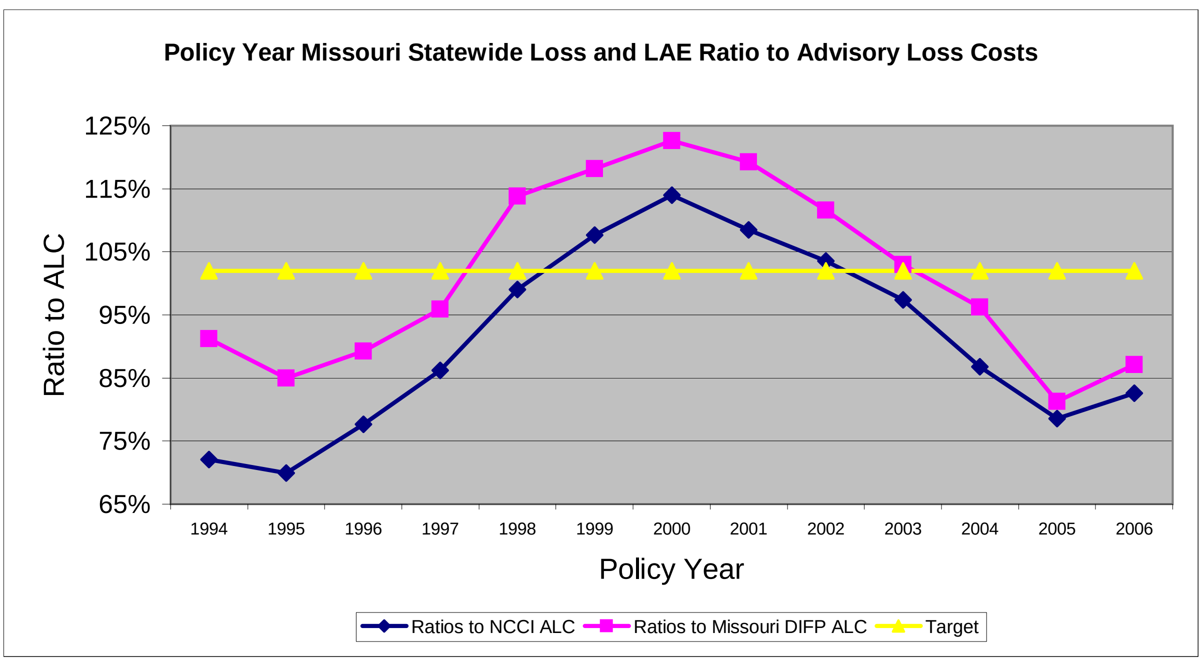
Impact of Alternative Relativity Selections

	Alternative Missouri to CWide Relativities	Associated Change in Indicated Loss Costs
	0.955	-1.0%
	0.970	-0.9%
EAS selected →	**0.985**	**-0.7%**
	1.000	-0.6%
	1.015	-0.5%
	1.030	-0.3%
	1.045	-0.3%
	1.060	-0.1%
NCCI selected →	**1.067**	**0.0%**
	1.075	0.0%
	1.090	0.1%

Although selected Missouri relativity varies considerably from that used by NCCI, impact on loss costs is only -0.7%.

Policy Year	(a) Premium (ALC)	(b) Prem. Dev. Factor	(c) Indemnity Paid Losses	(d) Indemnity LDF	(e) Medical Paid Losses	(f) Medical LDF	(g) LAE Factor	(h) Excess Provision
	[		From NCCI Missouri 1/1/2007 Filing -- Trend Analysis					]
1998	474,845,068	1.000	191,208,972	1.087	166,854,708	1.119	1.173	1.016
1999	467,739,836	1.000	194,946,595	1.109	182,654,552	1.130	1.173	1.016
2000	479,308,810	1.000	205,951,925	1.142	195,344,488	1.142	1.173	1.016
2001	515,831,404	1.000	197,468,807	1.200	199,733,311	1.165	1.173	1.016
2002	517,000,742	1.001	173,620,050	1.280	191,815,067	1.186	1.173	1.016
2003	581,545,346	0.999	159,559,898	1.426	202,406,018	1.222	1.173	1.016
2004	610,321,774	0.998	112,683,419	1.800	185,200,086	1.300	1.173	1.016
2005	629,395,800	1.003	55,957,102	3.254	145,714,821	1.607	1.173	1.016
½yr 2006	352,806,567	1.866	11,491,200	16.150	45,565,553	5.941	1.173	1.016

Policy Year	(i) Estimated Ultimate Premium (ALC) [a × b]	(j) Estimated Ultimate Losses and LAE: Indemnity [c×d×g×h]	(k) Medical [e×f×g×h]	(l) Total [j + k]	(m) Missouri DIFP relativity to NCCI ALC [see note]	(n) Missouri Statewide Loss & LAE Ratio to: NCCI ALC [l / i]	(o) Missouri DIFP ALC [n / m]
1994					0.790	72.1%	91.2%
1995					0.823	69.9%	84.9%
1996					0.870	77.6%	89.2%
1997					0.899	86.2%	95.9%
1998	474,845,068	247,702,010	222,515,502	470,217,512	0.870	99.0%	113.8%
1999	467,739,836	257,655,205	245,980,491	503,635,696	0.911	107.7%	118.2%
2000	479,308,810	280,300,376	265,863,664	546,164,039	0.929	113.9%	122.7%
2001	515,831,404	282,404,406	277,311,670	559,716,077	0.910	108.5%	119.2%
2002	517,517,743	264,850,969	271,118,484	535,969,453	0.928	103.6%	111.6%
2003	580,963,801	271,165,851	294,772,081	565,937,931	0.946	97.4%	103.0%
2004	609,101,130	241,726,487	286,930,197	528,656,684	0.902	86.8%	96.2%
2005	631,283,987	217,002,373	279,068,825	496,071,198	0.967	78.6%	81.3%
2006	658,337,054	221,171,738	322,617,497	543,789,235	0.948	82.6%	87.1%
2007					0.946		
2008					0.900		



Notes:

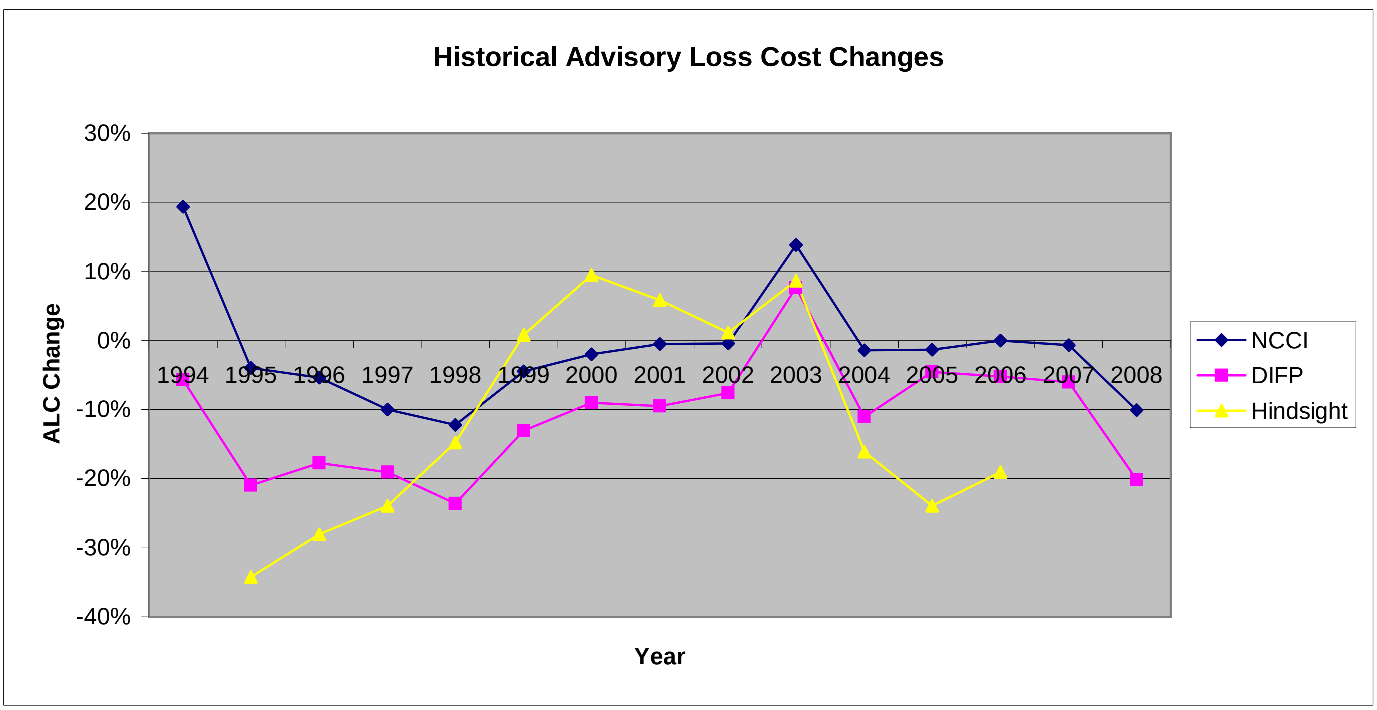
(m) 2008 relativity of 0.90 is 1.000 plus -10.0% from Exhibit 1. Earlier year relativities are from earlier years' analyses.

(n) 1994 through 1997 ratios to NCCI ALC are from last year's history analysis.

Graph Target loss ratio is slightly above 100% since the available loss data is from statewide rather than voluntary-only experience.

Policy Year	(a) Voluntary Advisory Loss Cost Change NCCI [see note]	(b) Voluntary Advisory Loss Cost Change DIFP	(c) Missouri Statewide L&LAE Ratio to NCCI ALC [Exh. 7, (n)]	(d) Hindsight ALC Change = Change that Would Have Yielded Target L&LAE Ratio [a x c / 102%]	(e) Rate Changes Expressed as Percentages NCCI [a - 1]	(f) Rate Changes Expressed as Percentages DIFP [b - 1]	(g) Rate Changes Expressed as Percentages Hindsight [d - 1]
1994	1.194	0.943	72.1%		19%	-6%	
1995	0.960	0.790	69.9%	0.658	-4%	-21%	-34%
1996	0.946	0.823	77.6%	0.720	-5%	-18%	-28%
1997	0.900	0.809	86.2%	0.761	-10%	-19%	-24%
1998	0.878	0.764	99.0%	0.852	-12%	-24%	-15%
1999	0.955	0.870	107.7%	1.008	-5%	-13%	1%
2000	0.980	0.910	113.9%	1.095	-2%	-9%	9%
2001	0.995	0.905	108.5%	1.058	-1%	-9%	6%
2002	0.996	0.924	103.6%	1.011	0%	-8%	1%
2003	1.138	1.077	97.4%	1.087	14%	8%	9%
2004	0.986	0.889	86.8%	0.839	-1%	-11%	-16%
2005	0.987	0.954	78.6%	0.760	-1%	-5%	-24%
2006	1.000	0.948	82.6%	0.810	0%	-5%	-19%
2007	0.993	0.939			-1%	-6%	
2008	0.899	0.799			-10%	-20%	

Notes:
(a) 1994-2006 NCCI ALC change obtained from 2006 DIFP review documents.
(b) based on NCCI change and DIFP relativity in Exhibit 7, column (m)
(d) Column (c) ratios are of loss and LAE (in the numerator) to advisory loss costs (in the denominator). Due to the nature of the data referenced, the historical loss and LAE is based on statewide rather than voluntary-only experience. As a result, the target ratio is slightly higher than 100%, judgmentally selected to be 102%.



Appendix 1 -- NCCI Responses to EAS Questions & Requests

Note: The following is excerpted from two separate sets of responses. For brevity, not included here are attachments referenced within the response text; however, the Department has full copies of the responses including all attachments.

NCCI Missouri WC Loss Cost Filing
Proposed Effective January 1, 2008
Request for Information

Information Set 1
Provided September 10, 2007

Request 1:

Identify and explain changes in data, assumptions and methodology. Identify the impact on the final NCCI pure premium level change of each.

Response 1:

- In determining the estimated ultimate loss ratio in the 1/1/2007 filing, NCCI used 5-year average paid + case development with the exception of the 1st to 2nd indemnity paid + case link ratio where a 3-year average was selected. In the 1/1/2008 filing, NCCI again used a 5-year average, except on the 1st to 2nd indemnity paid + case link ratio, where a 4-year average was selected. If a 3- year average had been used again this year, the overall indication would be the same as the filed -10.1%.

- In the 1/1/2008 filing, NCCI lowered the selected annual indemnity trend from -1.0% to -4.0%. If the -1.0% indemnity trend had been used again this year, the overall indication would be -6.0% rather than the filed -10.1%.

- In the 1/1/2008 filing, NCCI used private carrier data only in the calculation of the countrywide accident year LAE provision. The Missouri-specific LAE analysis continues to be based on private carrier data only—consistent with the approach used in previous years in this state (please see the explanatory memorandum in the technical supplement for more information.) If the Countrywide LAE analysis had included state funds again this year, the Countrywide LAE provision would be 18.2% rather than 19.5%. Using the filed Missouri DCCE relativity of 1.067, this would result in an LAE provision 18.9% rather than 20.3% which would reduce the overall indication from -10.1% to -11.2%.

- In determining the LAE provision in the 1/1/2007 filing, NCCI used a 2-year average DCCE relativity. In the 1/1/2008 filing, NCCI used a 3-year average DCCE relativity. If a 2-year average had been used again this year, the overall indication would be -9.8% rather than the filed -10.1%.

Request 2:

Please quantify the impact of excluding Assigned Risk data from the indication.

(a) What would be the indicated loss cost change if Assigned Risk data were excluded from the calculation?
(b) What is the Assigned Risk average loss cost multiplier?

Response 2:

(a) The indicated loss cost change based on voluntary data only is -11.6%. This indication utilizes the same development, trend, benefit changes and LAE selections proposed by NCCI in the 1/1/2008 Missouri loss cost filing. Please see the attached Response 2 Exhibit I for details.

(b) From NCCI's financial call data, an average assigned risk multiplier can be estimated. The ratio of Column 2 Company Level Premium to Column 1 NCCI DSR Level Premium is shown below for the most recent five policy years:

Policy Year 2005	1.914
Policy Year 2004	1.831
Policy Year 2003	2.032
Policy Year 2002	2.160
Policy Year 2001	2.155

Since Travelers files its own residual market rates, the deviation could vary by class code, which would cause the implied multiplier to change over time if the mix of business changes.

Data Requests:

Copies of the following have been attached:

Response 3 - Countrywide worker's compensation insurance expense exhibit
Response 4 - Private Carrier Accident Year LAE loss development
Response 5 - Statewide Policy Year and Accident Year limited loss development triangles
Response 6 - Statewide Policy Year and Accident Year claim count development triangles
Response 7 – Policy Year limited claims
Response 8 – Accident Year as of 19th limited claims
Response 9 – Average deviation, average schedule rating modification and average experience modification for the most recent five policy years
Response 10 – A hard-copy of the Annual Statistical Bulletin will be mailed to you

Request 11:

Please provide the Missouri LAE calculation including data for both private carriers and Missouri Employers Mutual (MEM).

Response 11:

Based on information from page 4 of NCCI financial call data, the 3-year average CAY DCCE ratio is 7.4% for MEM. The filed DCCE ratio based on private carrier data only is 12.5%. A loss-weighted average of these two ratios results in an average DCCE ratio of 11.7%.

Information Set 2
Provided September 26, 2007

Q1. Policy Year Trend Factors - In last year's filing, trend factors in Appendix A-III were shown using both policy-year and accident-year data. This year's analogous exhibit references only policy-year experience. Please provide accident-year frequency and severity trend factors based on 5 and 8 years of experience (like that shown based on policy-year data).

R1. The five Calendar-Accident year frequency and severity trends are shown below. Note that carriers are only required to report premium for the most recent 5 Calendar years on the financial calls. Because of this, we do not produce an 8 Calendar year frequency trend. However, the 8 year severities are included below.

	Indemnity	Medical
Frequency based on 5 calendar years	0.926	
Severity based on 5 accident years of paid losses	0.969	1.044
Severity based on 5 accident years of paid+case losses	0.979	1.075
Severity based on 8 accident years of paid losses	0.982	1.053
Severity based on 8 accident years of paid+case losses	0.987	1.064

Q2. Statewide Trend Data and Assigned Risk Data - I request updated data like that sent last year.

R2. Please see attached exhibits, labeled as Response 2.

Q3. LAE Calculation – DCCE relativities - Please provide the last 5 individual calendar-year paid losses and paid DCCE for (a) Missouri excluding MEM (as used in Exhibit II), (b) Missouri Including MEM, and (c) Countrywide. I expect that if I sum the data for (a) and (c) for Cal. Years 2004 to 2006, I'll get the numbers that appear in the technical supplement Exhibit II. I'd like to see how the Missouri's DCCE and its relativity to countrywide varies by year.

R3. Please see attached exhibit, labeled as Response 3.

Q4. Policy Year 2004 vs. 2005 for other states in region - During the meeting, I noted that Missouri's Exhibit 1 showed an indicated change of 0.915 for PY 2004 and 0.837 for PY 2005. Please provide analogous numbers for other states in Missouri's region.

R4. Please see attached exhibit, Response 4. Note that since filings have not yet been made in Arkansas or Nebraska, we are unable to provide the indicated changes for Policy Years 2004 and 2005. However, we did provide the indicated changes for Policy Years 2003 and 2004, which are from the most recent available filings in those states.