State of Missouri
Workers Compensation Insurance

Actuarial Review of
NCCI Voluntary Market Advisory Loss Cost Filing
Effective January 1, 2016

December 2015

Prepared by:

ACTUARIAL
SOLUTIONS

STATE OF MISSOURI
WORKERS COMPENSATION INSURANCE

ACTUARIAL REVIEW OF
NCCI VOLUNTARY MARKET ADVISORY LOSS COST FILING
EFFECTIVE JANUARY 1, 2016

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EXECUTIVE SUMMARY

A. Introduction/Scope

Actuarial Solutions has been engaged by the Missouri Department of Insurance, Financial Institutions and Professional Registration (the "Department") to conduct an independent actuarial review of the National Council on Compensation Insurance's (NCCI) Missouri workers compensation voluntary market advisory loss cost filing with a January 1, 2016 effective date.

We were asked by the Department to:

- review the NCCI's ratemaking data, methods and assumptions to determine if the proposed loss costs meet the requirements of Missouri law and are actuarially sound;

- identify the effect on the filed loss costs if the NCCI had excluded assigned risk loss experience;

- evaluate the impact on the filed loss costs if the loss adjustment expense (LAE) experience of Missouri Employers Mutual (MEM) is considered in selecting the LAE provisions; and

- conduct an independent analysis of the Missouri loss costs and recommend an alternative overall loss cost change, if warranted by our findings.

B. Summary of the NCCI Filing

The NCCI has filed an overall decrease in loss costs of 2.4% effective January 1, 2016. This decrease is slightly smaller than the 3.7% decrease filed effective January 1, 2015. These two consecutive decreases offset a large portion of the experience increase (+7.5%)[1] included in the loss costs effective January 1, 2014.

The 2.4% decrease filed by the NCCI is comprised of several items, including changes in experience, trend and LAE, as well as changes in Missouri workers compensation benefit levels. The NCCI's filed change in the Missouri LAE provision accounts for 0.3% of the overall decrease. The effect of the July 1, 2014 Missouri benefit change causes an increase of 0.2% in the loss costs. Roughly half of the remaining decrease of approximately 2.3% is caused by a decrease in the medical loss ratio trend, while the other half reflects changes due to the loss

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[1] The total filed increase effective January 1, 2014 was +11.6% of which +3.8% is attributed to the impact of Senate Bill 1 (SB1).

experience. Additionally, it is important to note that the NCCI's estimated effect of SB1[2] is reflected in this filing, however it will be several years before the actual effect of this law change fully manifests in insurers' historical experience. The NCCI noted to the Department that such effects appear to be taking longer to show up in the data than was expected.

In its presentation to the Department, the NCCI indicated that the large loss experience for the half-policy year 2014 as of December 31, 2014 is much higher than that observed for each of the five previous policy years at the same maturity. While this data does not directly impact the January 1, 2016 indication, it could be indicative of worsening severity for Missouri large claims, which will be quantified in future filings.

C. Overall Findings

We find the NCCI's calculations to be actuarially sound. Two areas in which we differ in judgment are trend and LAE.

We believe that the NCCI's calculation of the countrywide provision for loss adjustment expense (LAE) overstates the ultimate projections. More specifically, the NCCI's selections result in a Missouri LAE provision of 19.4%, while we recommend a Missouri LAE provision of 18.5%. Changing only the Missouri LAE provision decreases the indication by 0.7% from -2.4% to -3.1%.

With respect to trend, we would have selected -2.5% as compared to the NCCI's selected annual indemnity loss ratio trend of -3.0%; additionally, we would have selected an annual medical loss ratio trend of -0.2% as compared to the NCCI's selection of 0.0%. The impact of changing the annual trend factors is an increase in the loss cost indication of 0.5% (from -2.4% to -1.9%), all else equal. The combined impact of our LAE and trend selections is an indication of -2.6%.

As calculated by the NCCI, excluding data for the assigned risk market from the experience decreases the indicated loss cost change to -4.4%. However, we believe it is appropriate to include the assigned risk data and, therefore, would not modify the NCCI's January 1, 2016 Missouri filing to exclude the assigned risk market.

Including MEM's DCCE experience in the calculation of the LAE provision decreases the NCCI's indicated loss cost change from -2.4% to -3.0%, all else equal. However, we believe that if MEM's DCCE data is to be reflected, then consideration should also be given to MEM's AOE experience. Additionally, as the filed loss costs will be used by the commercial carriers who write voluntary business in Missouri and not by MEM, it would be reasonable to establish a proper LAE provision without consideration of MEM LAE experience. Given that MEM's combined DCCE and AOE ratios are not materially different than the countrywide combined LAE ratios used by the NCCI,

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[2] SB1 shifted a substantial portion of losses previously covered by the Second Injury Fund (SIF) to the insurance system. Its estimated effect is also reflected in the NCCI's January 1, 2014 and January 1, 2015 loss cost filings.

the impact of either including both the DCCE and the AOE experience for MEM or excluding MEM's LAE experience entirely should produce similar results.

Taking into consideration all elements reviewed, as discussed herein, we recommend an indicated Missouri voluntary market advisory loss cost change of -2.6% effective January 1, 2016.

ACTUARIAL REVIEW OF
NCCI VOLUNTARY MARKET ADVISORY LOSS COST FILING
EFFECTIVE JANUARY 1, 2016

REPORT

I. INTRODUCTION

Annually, the National Council on Compensation Insurance (NCCI) files workers compensation voluntary market advisory loss costs in Missouri to be effective January 1 of the upcoming year. These loss costs are available for use by carriers writing workers compensation policies with Missouri exposure under Missouri's file-and-use statute. Actuarial & Technical Solutions, Inc. (Actuarial Solutions) has been retained by the Missouri Department of Insurance, Financial Institutions and Professional Registration (the "Department") to review the Missouri workers compensation loss cost filing submitted by the NCCI to be effective on January 1, 2016.

This report serves as documentation of that review. Where appropriate, we have recommended changes and have calculated the impact of such recommendations on the loss cost indication. Additionally, as requested by the Department, we have: identified the effect on the filed indication of including Missouri Employers Mutual (MEM) loss adjustment expense experience, and considered whether it is appropriate to include data for the assigned risk market in determining the filed indication.

II. OVERVIEW OF FILING

The NCCI filed a -2.4% overall change in advisory loss costs to be effective January 1, 2016. The indicated change by industry group is as follows:
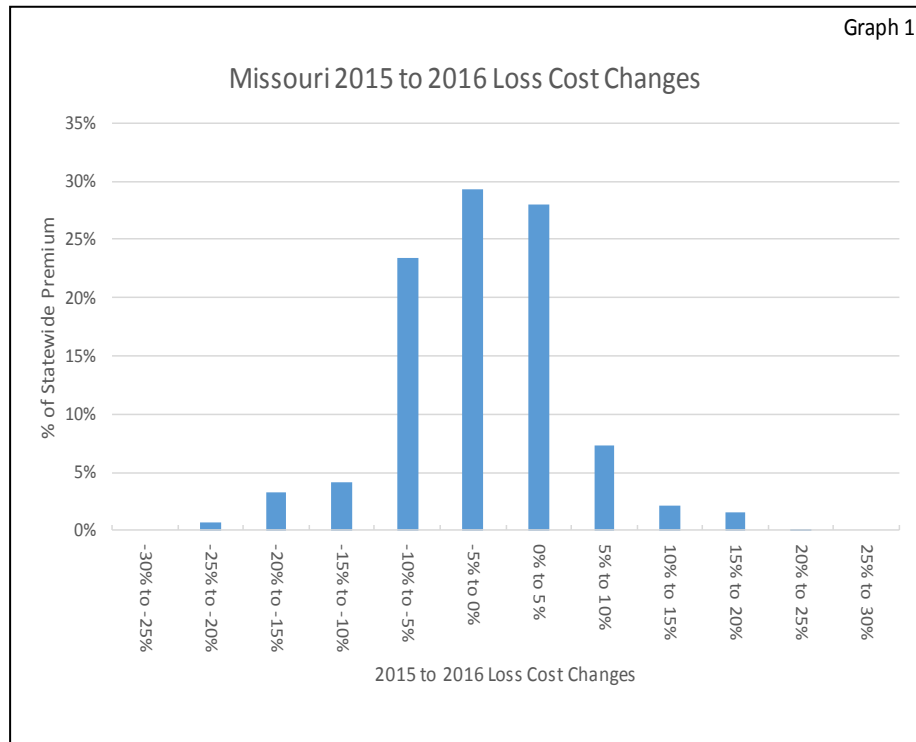
		Table 1
Loss Cost Change by Industry Group		
Industry Group	Loss Cost Change	Missouri Exposure Distribution*
Manufacturing	-2.3%	10.9%
Contracting	-4.9%	5.6%
Office & Clerical	-0.9%	59.7%
Goods & Services	-2.5%	18.9%
Miscellaneous	-0.5%	4.9%
TOTAL	-2.4%	100.0%
* Exposure distribution based on 7/1/12-13 payroll excluding F-classes.		

The largest changes in loss costs among the top twenty classifications (based on premium) are:

			Table 2
Largest Classes with an Increase in Loss Cost			
Class	Class Description	Size Rank Based on Premium*	Loss Cost Change
7228	Trucking - Local Hauling Only & Drivers	3	+3.4%
8833	Hospital: Professional Employees	9	+1.0%
8868	College: Professional Employees & Clerical	15	+2.6%
7600	Telecommunications Co. - Cable TV or Satellite - All Other Employees & Drivers	17	+2.8%
8835	Home, Public, and Traveling Healthcare - All Employees	20	+5.0%
* Rank based on 7/1/12-13 payroll x 1/1/2016 proposed loss cost.			

			Table 3
Largest Classes with a Decrease in Loss Cost of at least 5%			
Class	Class Description	Size Rank Based on Premium*	2016 Loss Cost Change
5645	Carpentry - Construction of Residential Dwellings Not Exceeding Three Stories in Height	5	-5.4%
8742	Salespersons or Collectors - Outside	6	-5.3%
8391	Automobile Repair Shop & Parts Department Employees, Drivers	10	-5.2%
5183	Plumbing NOC & Drivers	14	-5.7%
5190	Electrical Wiring-Within Buildings & Drivers	18	-17.2%
* Rank based on 7/1/12-13 payroll x 1/1/2016 proposed loss cost.			

As shown in Graph 1, the proposed loss cost changes result in decreases between -10% and -5% for 23.37% of statewide premium[3], decreases between -5% and 0% for 29.28% of statewide premium, and increases between 0% and 5% for 28.07% of statewide premium. 60.77% of statewide premium will see a decrease, and 3.79% of statewide premium will experience an increase in excess of 10%.

Graph 1

Missouri 2015 to 2016 Loss Cost Changes

The key factors selected by the NCCI in the determination of the advisory loss costs are shown in the tables below. There are no major changes from the January 1, 2015 filing to the January 1, 2016 filing.

Table 4

NCCI Factors Applied to Most Recent Policy Year

	1/1/15 Filing	1/1/16 Filing	% Change
Premium Development Factor	1.003	1.006	0.3%
Paid LDF - Indemnity	3.665	3.631 *	-0.9%
Incurred LDF - Indemnity	1.288	1.316 *	2.2%
Paid LDF - Medical	1.613	1.619	0.4%
Incurred LDF - Medical	1.101	1.116	1.4%
Indemnity Trend Factor	0.913	0.913	0.0%
Medical Trend Factor	1.015	1.000	-1.5%
Excess Loss Loading	1.013	1.011	-0.2%
Loss Adjustment Expense Factor	1.197	1.194	-0.3%

* The indemnity LDFs for policy year 2013 were adjusted by the NCCI to reflect the anticipated impact of SB1 which became effective on January 1, 2014 and thus affects loss for the second half of this policy year. The indemnity LDFs above remove the SB1 adjustment to be comparable to the LDFs contained in the January 1, 2015 filing.

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3   Premium equals July 1, 2012-2013 payroll x January 1, 2016 proposed loss cost.

	1/1/15 Filing	1/1/16 Filing	% Change
			Table 5
	NCCI Factors Applied to Prior Policy Year		
Premium Development Factor	0.999	0.999	0.0%
Paid LDF - Indemnity	2.003	2.024	1.0%
Incurred LDF - Indemnity	1.156	1.177	1.8%
Paid LDF - Medical	1.311	1.325	1.1%
Incurred LDF - Medical	1.054	1.069	1.4%
Indemnity Trend Factor	0.885	0.885	0.0%
Medical Trend Factor	1.020	1.000	-2.0%
Excess Loss Loading	1.013	1.011	-0.2%
Loss Adjustment Expense Factor	1.197	1.194	-0.3%

III. REVIEW OF THE NCCI FILING

The following presents a synopsis of the key components underlying the overall indicated loss cost level change filed by the NCCI effective January 1, 2016. We have reviewed the NCCI's general methodology as well as the calculations contained in the filing. The NCCI's approach to preparing state filings includes the incorporation of items which are state-specific (such as loss development and trend), as well as items which are based upon countrywide information and included in filings submitted in numerous states (such as adjusting and other expense). A consistent methodology is generally reflected across all states, with judgment applied more by the manner in which elements are selected rather than in the selection of each individual item. We discuss below how the NCCI's judgment comes into play within each of the following elements.

A. Loss Development Factors

The NCCI bases its experience indication upon loss and premium for policy years 2012 and 2013 evaluated as of December 31, 2014. Ultimate losses for Missouri are estimated by averaging the results of a paid loss development method and a paid plus case loss development method. With the exception of the January 1, 2014 filing,[4] the NCCI's approach to selecting loss development factors (LDFs) in recent years has been to use an average of the latest two observed paid LDFs when preparing the paid loss projection, and to utilize an average of the latest five paid plus case LDFs when projecting paid plus case loss to ultimate. Thus, the NCCI's judgment comes into play in the selection of the rules which are applied to LDFs at all maturities. We generally prefer to apply judgment in selecting LDFs by reviewing the available historical LDFs at each maturity and making a selection based upon our observations of factors within the given age-to-age period. In our analysis of the NCCI's January 1, 2016 Missouri filing, we reviewed the paid and the paid plus case age-to-age LDFs for each of indemnity loss and medical loss. For each set of factors, we applied our actuarial judgment to select an LDF for each age-to-age period; some selected LDFs were higher than those used by the NCCI, while others were lower. We then replaced the NCCI's rule-based LDFs with our LDF selections to test the impact on the loss cost indication. The indication produced by our selected LDFs, all other elements unchanged, is equal to the indicated loss cost change filed by the NCCI (see Exhibit 4). Thus, while we would have judgmentally selected different LDFs for a number of age-to-age maturities, we do not find that the use of LDFs based upon judgment (rather than the NCCI's LDFs which reflect selected rules) impacts the indicated loss cost change, and conclude that, overall, the selected LDFs used by the NCCI are not unreasonable.

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[4] The NCCI's approach for selecting paid LDFs in the January 1, 2014 filing differs in that it utilizes an average of the latest three observed LDFs.

B. Trend Analysis

In selecting indemnity and medical loss ratio trends, the NCCI reviewed Missouri-specific frequency, indemnity severity and medical severity information, as well as ultimate indemnity and medical loss ratios, for policy years 1999-2013. The NCCI selects minimum and maximum trend factors for frequency, indemnity severity and medical severity. Using a single frequency within their selected range, the NCCI then calculates implied minimum and maximum indemnity and medical loss ratio trend factors by multiplying the frequency and respective severity components. Finally, they select an annual indemnity loss ratio trend factor and an annual medical loss ratio trend factor within the respective indicated range. We have reviewed each of these components as well as the NCCI's selected loss ratio trends.

The NCCI reviewed the historical claims frequency for policy years 1999-2013 and selected a minimum frequency trend factor of 0.954[5] and a maximum frequency trend factor of 0.980. The NCCI's selected minimum frequency trend appears to be based upon a longer-term experience period for which a more pronounced average annual decrease is seen. The NCCI's selected maximum frequency trend seems to reflect the shorter-term, more recent experience, which is not declining as rapidly as the older historical years. Graph 2 presents the full experience period reviewed by the NCCI.

Graph 2

Frequency

* Frequency figures are based on wage adjusted on–level premium in milliions.
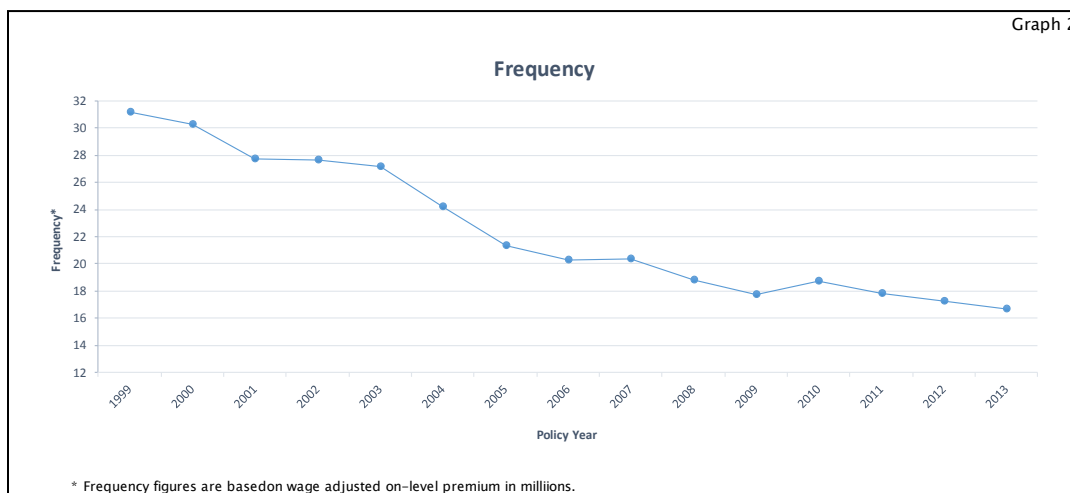
The NCCI then utilized a selected frequency trend factor of 0.975 (an annual frequency trend of -2.5%) in calculating the loss ratio trends (as discussed below). In reviewing the data presented by the NCCI, we observe that the frequency for the more recent policy years displays a trend which is less negative than that seen for the older years. After reviewing frequency trends for various combinations of policy years, we concur with the NCCI that an annual frequency trend of -2.5% is appropriate in the determination of the January 1, 2016 loss costs.

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[5]   A frequency trend factor of 0.954 is equal to an annual frequency trend of -4.6% (-0.046 = 0.954 – 1.000).

For indemnity severity, the NCCI calculated the ultimate cost per claim for each of policy years 1999 through 2013 based upon ultimate loss (which equals an average of the ultimate loss produced via the paid development and the paid plus case development projections) divided by projected ultimate claim counts. The NCCI selected a minimum annual indemnity severity trend factor of 0.992 which appears to reflect a long-term average annual indemnity severity trend. The NCCI's selected maximum indemnity severity trend factor is 1.003, which seems to consider experience over a shorter period. Graph 3 presents the 1999-2013 indemnity severities which were considered by the NCCI.

Graph 3

Indemnity Severity

* Severity figures are based on wage–adjusted on–level ultimate losses.
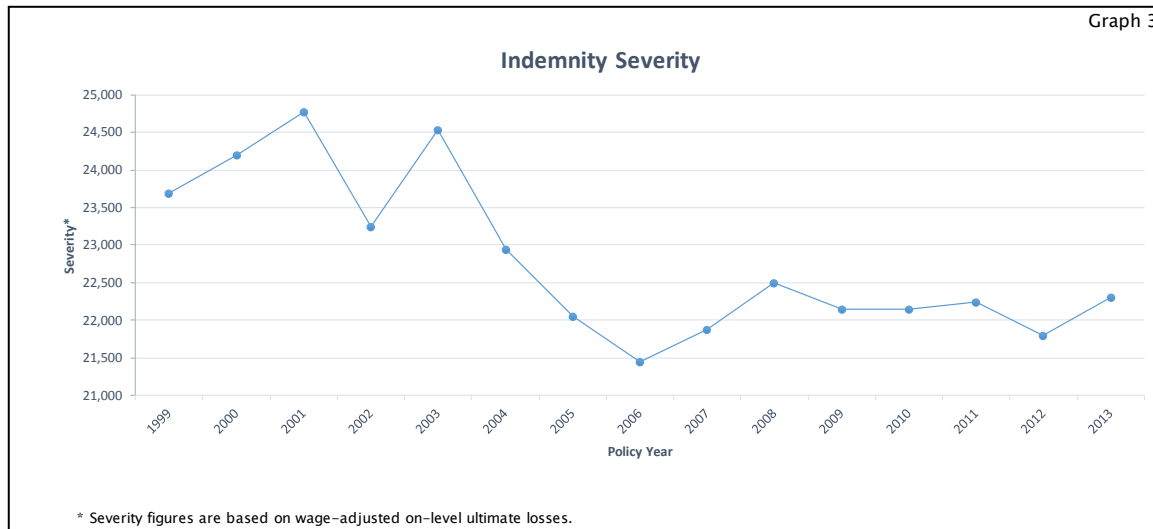
After fitting exponential curves to the severities[6] for various combinations of policy years, we believe the indemnity severity trend factor falls within a range of 0.997-1.003. Combining an average indemnity severity trend factor of 1.000 with a selected 0.975 frequency trend factor yields an indicated annual indemnity loss ratio trend of 0.975.

We now look directly at indemnity loss ratios. As mentioned above, the NCCI derived minimum and maximum loss ratio trend factors by multiplying a selected annual frequency trend factor of 0.975 by the minimum and maximum annual indemnity severity trend factors, respectively. This procedure produced a minimum indemnity loss ratio trend of 0.967 (0.975 x 0.992) and a maximum indemnity loss ratio trend of 0.978 (0.975 X 1.003) in the January 1, 2016 filing. The NCCI selected an annual indemnity loss ratio trend factor of 0.970 for 2016, which is equal to the factor selected in the 2015 filing.

In reviewing the historical indemnity loss ratios for policy years 1999-2013 (refer to Graph 4), we can see that while the loss ratios have continued to decrease over time, such annual decreases have slowed considerably. Over the shorter term, the year to year indemnity loss ratio changes fall within a much narrower range, indicating a smaller average annual decrease.

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[6]   Actuarial Solutions fit curves to indemnity severities which were calculated based upon ultimate indemnity loss which substitutes our judgment-based LDFs for the rule-based LDFs used by the NCCI.

Graph 4

Indemnity Loss Ratio

*Loss ratio figures are based on wage adjusted on-level losses and premium.
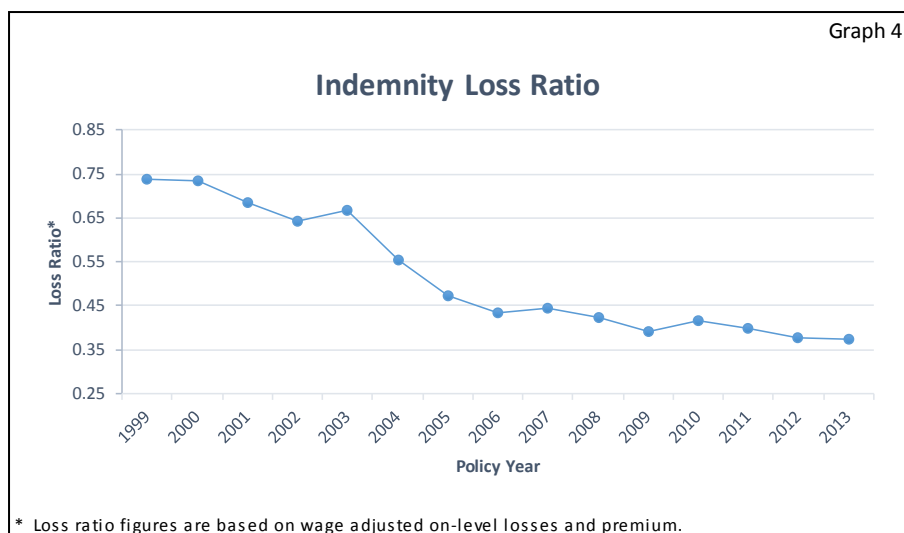
As noted above, the NCCI selects an annual indemnity loss ratio trend of -3.0%. Based upon a direct review of indemnity loss ratio trends,[7] we believe the 2006-2013 years to be most indicative of the indemnity loss ratio trend for 2016 and would have selected an indemnity loss ratio trend of -2.5% per year. This result is consistent with our findings under the separate analysis of frequency and severity. Therefore, we recommend an annual indemnity loss ratio trend factor of 0.975, which is slightly less negative than the NCCI's selected annual indemnity trend of 0.970 (-2.5% vs -3.0%).

A similar analysis was conducted for medical loss. The NCCI calculates ultimate medical severities based upon ultimate medical loss produced by using an average of the paid and the paid plus case LDF projection methods, divided by ultimate claim counts. The NCCI selected a minimum medical severity trend factor of 1.014 and a maximum medical severity trend factor of 1.043. The minimum trend appears to be based upon the more recent experience, while the maximum trend relies upon long-term medical severities. Graph 5 presents the historical medical severities for policy years 1999 through 2013.

Graph 5

Medical Severity

* Severity figures are based on wage–adjusted on–level ultimate losses.

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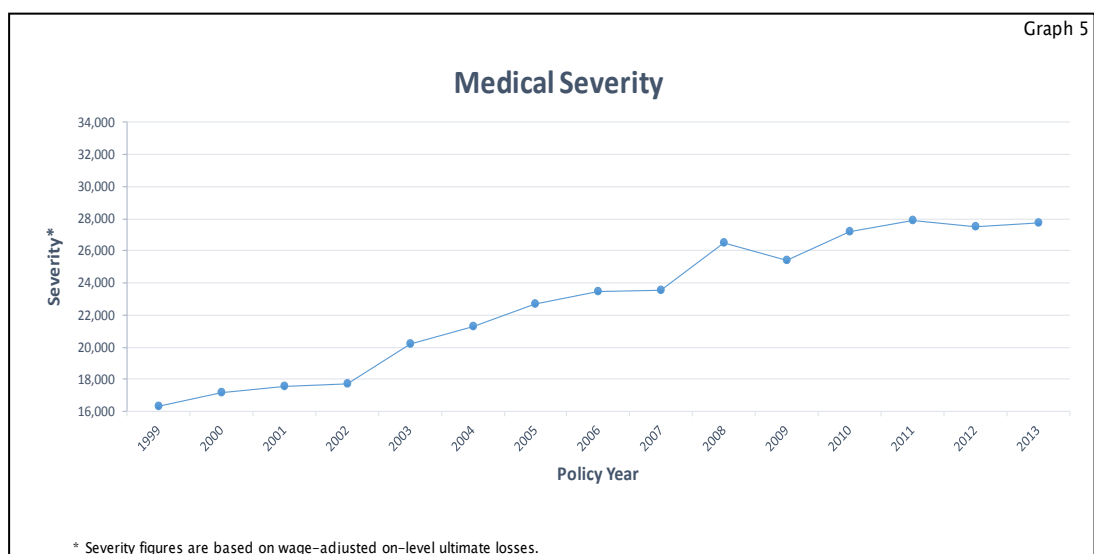
7   Actuarial Solutions fit curves to indemnity loss ratios which were calculated based upon ultimate indemnity loss which substituted our judgmentally-selected LDFs for the rule-based LDFs selected and utilized by the NCCI.

While the medical severities have continued to increase, in recent years this increase has flattened to temper the annual trend. We have fit various exponential curves to the medical severities[8] and reviewed the resulting medical trend indications. We believe that a medical severity trend factor in the range of 1.010 to 1.035 is reasonable. Combining the medical severity trend with the selected frequency trend of 0.975, discussed above, yields medical loss ratio trends of about 0.985 to 1.009.

With regard to medical loss ratio trends, based upon the selected frequency and severity components, the NCCI calculates a minimum medical loss ratio trend of 0.989 (0.975 x 1.014) and a maximum medical loss ratio trend of 1.017 (0.975 x 1.043). This led the NCCI to select an annual medical loss ratio trend factor of 1.000. Graph 6 presents the medical loss ratios for policy years 1999 through 2013. As can be seen in Graph 6, the historical medical loss ratios are more volatile than is the case for the indemnity loss ratios. For example, the policy year 2009 medical loss ratio is approximately 45%, while the prior two years average 49% and the subsequent two years average about 51%; over all policy years reviewed by the NCCI, the medical loss ratios fluctuate over a range from 45% to 55%.
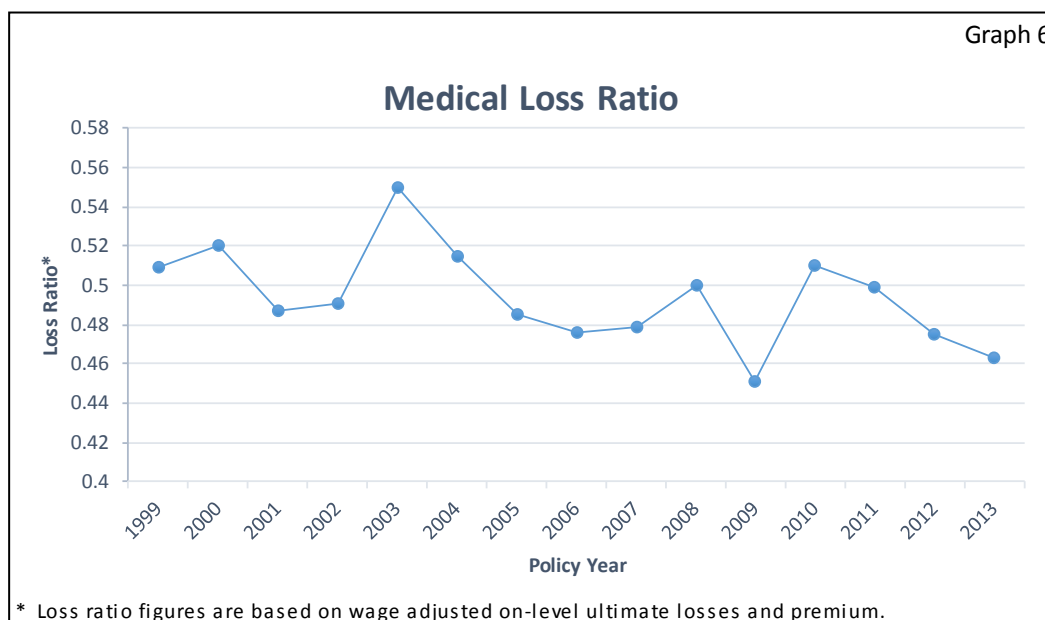
After reviewing the indicated medical trend results from fitting exponential curves directly to the medical loss ratios[9] as well as a review of the frequency and severity components, we believe a medical loss ratio trend factor in the range of 0.985 to 1.010 would be reasonable. We recommend an annual medical loss ratio trend factor of 0.998; this is slightly lower than the NCCI's selected trend factor of 1.000.

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8   Actuarial Solutions fit curves to medical severities which were calculated based upon ultimate medical loss which substituted our judgment-based LDFs for the rule-based LDFs used by the NCCI.

9   Actuarial Solutions fit curves to medical loss ratios which were calculated based upon ultimate medical loss which substituted our judgmentally selected LDFs for the rule-based LDFs used by the NCCI.

Replacing the NCCI's filed trend factors with an annual 0.975 indemnity loss ratio trend factor and an annual medical loss ratio trend factor of 0.998 produces an indicated loss cost change of -1.9% (as seen on Exhibit 5). Thus, our review of the trend components produces a slightly less negative indication (-1.9% versus -2.4%) all else equal.

C. LAE Provision

The Missouri loss costs include a provision for LAE. LAE has two components: Defense and Cost Containment Expense (DCCE) and Adjusting and Other Expense (AOE). DCCE includes items such as legal/defense expenses and medical exam costs. AOE encompasses general claims administration expenses such as salaries for claim adjusters. The NCCI analyzes the DCCE ratio to loss separately from the AOE ratio to loss. For DCCE, the NCCI develops each of countrywide ultimate loss and countrywide ultimate DCCE on an accident year basis; for each accident year, dividing the projected ultimate DCCE dollars by the dollars of projected ultimate loss produces ratios of ultimate DCCE to loss. Similarly, ultimate AOE to loss ratios are determined by dividing projected countrywide ultimate AOE by projected countrywide ultimate loss. Beginning with the 2015 filing, the NCCI selects the countrywide DCCE (and AOE) provision to be equal to the average ultimate DCCE (and AOE) ratio for the three latest accident years; recent prior filings reflected two-year averages.

To determine the LAE provision for a given state's filing, the NCCI considers each of the DCCE and AOE components. For AOE, for which collected data is countrywide in nature, the NCCI selects the countrywide AOE provision; the current countrywide AOE ratio of 7.1% has been selected by the NCCI as the AOE ratio for the January 1, 2016 Missouri filing. For DCCE, the NCCI first selects a countrywide DCCE ratio (currently 13.0%) and then calculates a state relativity.[10] This state relativity is applied to the NCCI's selected countrywide DCCE provision to generate a state-specific DCCE ratio. In Missouri, the relativity is 1.025 for the January 1, 2016 filing and is based upon data collected by the NCCI which excludes MEM experience; the resulting Missouri DCCE provision selected by the NCCI is 13.3% (13.0% x 1.025). Thus, the total indicated LAE provision for Missouri is 20.4%.[11] SB1, which took effect on January 1, 2014, is expected by the NCCI to reduce the LAE ratio by a factor of 0.992 (-0.8%). Application of this adjustment factor produces the LAE provision of 19.4%[12] filed by the NCCI in Missouri.

In reviewing the countrywide LAE information produced by the NCCI, we observed that the NCCI's estimates of the ultimate LAE ratio for a given accident year have fairly consistently decreased over time. For example, as presented in Graph 7, the NCCI's countrywide estimated ultimate LAE ratio for accident year 2009 referenced in the Missouri filing effective January 1, 2011 was 21.3%; the projected countrywide accident year 2009 LAE ratio

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[10] The DCCE state relativity is based upon a comparison of that state's calendar year DCCE to loss ratio to a countrywide calendar year DCCE ratio. Five calendar years of data are used to determine the state relativity for Missouri.

[11] 20.4% = 7.1%+13.3%.

[12] 19.4% = (1.0+20.4%) x 0.992-1.0.

contained in the Missouri filing effective January 1, 2012 was 19.6%. The projected countrywide accident year 2009 ultimate LAE ratio continued to decrease in each subsequent filing year, and currently is estimated to be 18.6%.

Graph 7

Accident Year 2009 Ultimate Countrywide LAE Ratio

* Represents the maturity of the actual LAE experience at the time the projection was made.
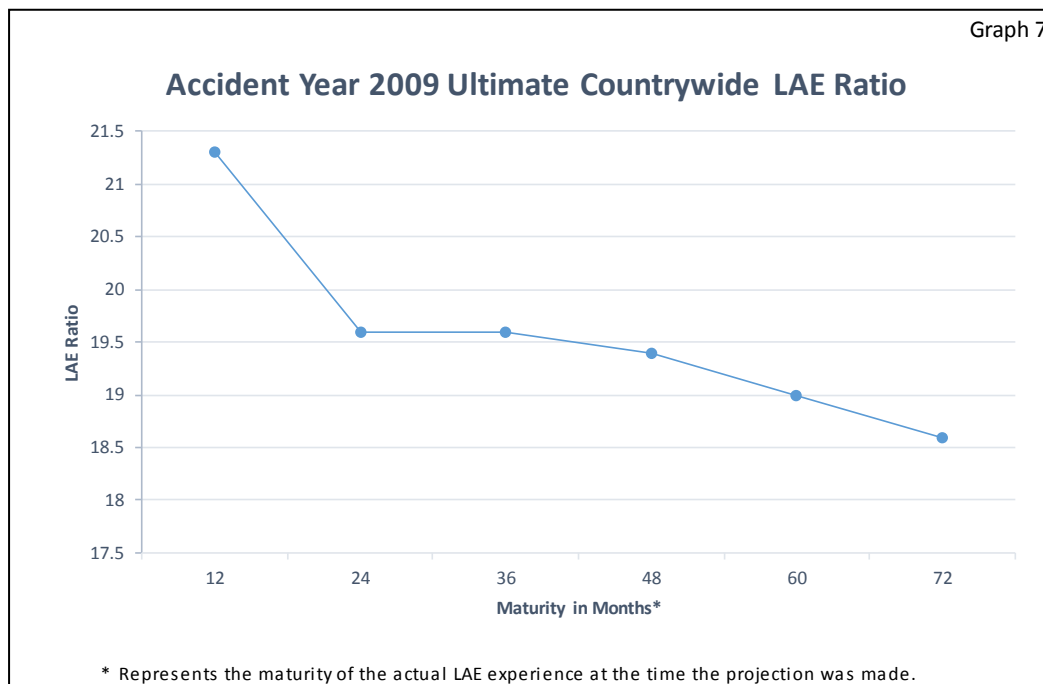
Each filing contains data accumulated through a particular evaluation date; as each subsequent filing is prepared, information stated at a more recent evaluation date is available and incorporated, thus reflecting more mature data. The accident year 2009 ultimate LAE ratio of 21.3% is produced in the 2011 filing by projecting actual LAE experience through December 31, 2009 to an ultimate basis. For the accident year 2009 ultimate LAE ratio determined in the 2012 filing (19.6%), actual LAE experience through December 31, 2010 is projected to ultimate. Thus, with each passing year, the LAE projection for accident year 2009 uses an ever-increasing amount of actual LAE experience, and decreases the time period for which projection to ultimate is required. Graph 7 demonstrates that the process used by the NCCI over-projects the ultimate LAE ratio for accident year 2009, as the ultimate LAE ratio decreases as more actual LAE experience is reflected. Similarly, as seen in Graph 8, the decreasing projection of the ultimate LAE ratio for accident year 2009 is not an isolated occurrence, as other accident years display an analogous pattern.

Graph 8

Accident Year Ultimate Countrywide LAE Ratios

* Represents the maturity of the actual LAE experience at the time the projection was made.
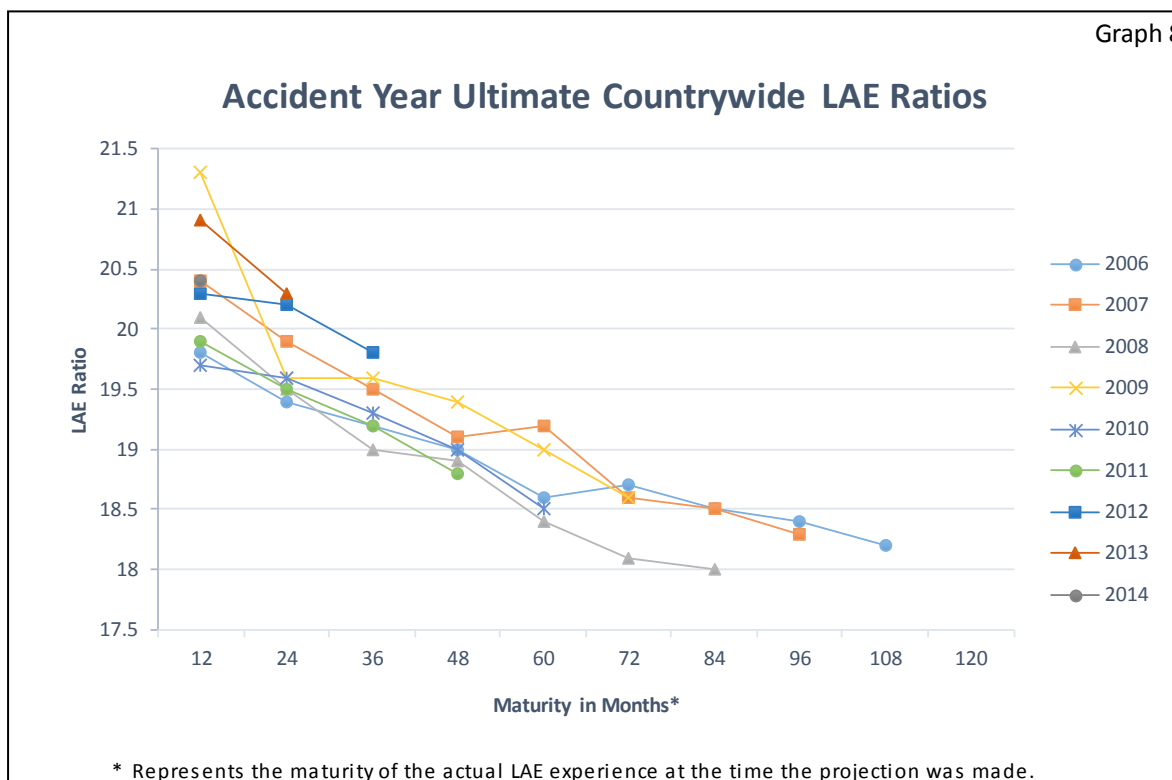
We raised our concern about the generally decreasing LAE ratios to the NCCI. Their response acknowledged that the ultimate LAE for given accident years decreases over time, but also pointed out that ultimate LAE ratios increase from accident year to accident year; we had noted this during our review of this filing. Although this second observation provides some mitigating effect, the NCCI's methodology has resulted in proposed countrywide LAE ratios that appear to be too large. The NCCI indicated that two changes have been recently implemented to help address this issue. First, during the prior filing cycle, the NCCI changed its methodology from using an average of the two latest accident years as the selected ultimate DCCE (and AOE) ratio, to reflecting a three-year average ultimate ratio as the selected countrywide DCCE (and AOE) provision. Additionally, the NCCI changed the manner in which it is selecting the 10th report-to-ultimate development factors used to generate ultimate DCCE to loss and AOE to loss ratios; namely, rather than using a rule-based average[13] for all age-to-age periods, the NCCI is now applying judgment to select the tail development factor.

We requested historical projections of countrywide DCCE and AOE ratios (to loss) from the NCCI. Table 6 presents the ultimate DCCE ratios for each of accident years 1996 through 2014 as presented in each of the January 1, 2007 through January 1, 2016 filings. Comparable information for AOE is contained in Table 7.

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[13]   In recent prior filings, the NCCI utilized an average of the latest five observations.

Projected Ultimate Countrywide DCCE Ratios

Accident Year	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14	1/1/15	1/1/16
1996	8.1									
1997	8.9	8.9								
1998	8.9	9.2	9.2							
1999	8.8	9.1	9.1	9.2						
2000	9.2	9.7	9.7	9.6	9.7					
2001	9.4	9.9	10.1	10.0	10.1	10.0				
2002	9.8	10.5	10.6	10.6	10.5	10.4	10.3			
2003	10.0	10.7	10.8	10.7	10.6	10.5	10.4	10.0		
2004	10.0	10.6	10.8	10.7	10.7	10.5	10.3	10.0	9.9	
2005	10.3	11.5	11.1	10.9	10.8	10.5	10.4	10.3	10.2	10.1
2006		11.9	11.3	11.1	10.8	10.6	10.4	10.7	10.6	10.5
2007			12.2	11.8	11.5	11.1	10.9	10.8	10.7	10.6
2008				12.5	11.9	11.6	11.3	11.3	11.1	11.1
2009					13.1	12.0	11.8	11.7	11.5	11.3
2010						12.3	12.1	12.0	11.8	11.5
2011							12.9	12.5	12.3	12.1
2012								12.9	12.9	12.8
2013									13.3	12.9
2014										13.4

Projected Ultimate Countrywide AOE Ratios

Accident Year	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14	1/1/15	1/1/16
1996	7.6									
1997	7.4	7.1								
1998	6.8	6.7	6.7							
1999	6.4	6.3	6.2	6.2						
2000	6.3	6.2	6.1	6.1	6.3					
2001	6.6	6.5	6.4	6.4	6.5	6.3				
2002	6.7	6.6	6.5	6.6	6.7	6.5	6.6			
2003	7.4	7.5	7.4	7.4	7.5	7.3	7.5	7.5		
2004	6.7	7.0	6.9	7.0	7.1	6.9	7.1	7.0	7.1	
2005	7.3	7.8	7.7	7.8	7.9	7.7	7.9	7.5	7.5	7.4
2006		7.9	8.1	8.1	8.1	8.0	8.3	7.8	7.8	7.7
2007			8.2	8.1	8.1	8.0	8.3	7.8	7.8	7.7
2008				7.6	7.5	7.4	7.6	7.1	7.0	6.9
2009					8.1	7.6	7.8	7.7	7.5	7.3
2010						7.4	7.5	7.3	7.2	7.0
2011							7.0	7.0	6.9	6.7
2012								7.4	7.3	7.0
2013									7.6	7.4
2014										7.0

Concentrating first on DCCE, we see in Table 6 that, like LAE in total, while it is true that the projected ultimate DCCE ratios increase from accident year to accident year, it is also true that the ultimate DCCE ratio for a given accident year decreases over time. Considering the DCCE information included in the filing effective on January 1, 2011, we can see, for example, that the accident year 2000 DCCE ratio was 9.7% and the DCCE ratio for each subsequent accident year is greater than or equal to the prior accident year's ratio. We can also consider the changes in DCCE ratio for each given accident year by reviewing Table 6. As was the case for total LAE discussed above, we note the DCCE ratio decreases over time as additional experience is reflected; using accident year 2009 for the purpose of illustration, the projected DCCE ratio is initially equal to 13.1% in the January 1, 2011 filing (containing data evaluated as of December 31, 2009), decreases from filing to filing and is currently projected to be 11.3% in the January 1, 2016 filing.

We have reviewed the historical changes in ultimate DCCE ratios for each accident year as it matures and have utilized this information to project adjusted ultimate countrywide DCCE ratios for individual accident years. We have estimated the future downward development of the DCCE ratios and have also considered the impact of the NCCI's recent methodology change which utilizes a three-year average to produce the selected DCCE ratio. This information, found in Exhibit 1, leads us to believe that a countrywide DCCE ratio in the range of 12.2% to 12.8% would be reasonable. Application of the Missouri DCCE relativity of 1.025 produces a range for the Missouri DCCE of 12.5% to 13.1%.

We have similarly reviewed the NCCI's countrywide AOE ratios (Exhibit 2). The AOE ratios also decrease over time for a given accident year, but do not increase from accident year to accident year to the same degree as the DCCE ratios. After considering the anticipated future decreases in the ultimate AOE ratios and the NCCI's recent adjustment to select an average of the latest three observed ratios, as well as the impact in the current filing of the NCCI's judgmental selection of the 10th report to ultimate development factor, we feel that an ultimate countrywide AOE ratio in the 6.4% to 7.0% range would be reasonable for the 2016 filing.

Thus, our range for LAE is 18.9% (12.5% + 6.4%) to 20.1% (13.1% + 7.0%). We have selected 19.5% as the Missouri LAE ratio prior to recognition of the impact of SB1. Reflecting the NCCI's SB1 adjustment factor of 0.992 causes our final LAE ratio to be 18.5%[14]. Substitution of our selected Missouri LAE provision for the LAE ratio included by the NCCI, causes the indicated loss cost change to decrease by an additional 0.7%.

Missouri Employers Mutual experience is not included in the NCCI's calculations. MEM's DCCE ratio is substantially lower than the DCCE ratio for the remainder of the insurance market in Missouri; for a number of years the Department has recommended loss costs which consider this difference in DCCE. Given the inclusion of MEM's DCCE experience in determining the Missouri DCCE ratio, it seems appropriate to consider similar information to reflect the impact of MEM's AOE experience. MEM's AOE ratio is substantially higher than the

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[14]   (1.0+19.5%) x 0.992-1.0

AOE ratio for the rest of the insurance industry. MEM's total LAE experience appears to fairly closely parallel overall industry LAE experience.

We have been requested by the Department to calculate the impact on the indication should MEM experience be considered in the determination of the Missouri LAE provision. As noted above, for each state in which the NCCI submits workers compensation filings, they calculate a relativity of state experience to countrywide experience which is applied to the countrywide DCCE provision to derive a state-specific DCCE ratio. Exhibit 3 presents the Missouri relativity and resulting DCCE ratio produced by the NCCI (Column A), as well as the indicated relativity and DCCE ratio which result from the inclusion of MEM data (Column C). Including MEM's DCCE experience in the calculation of the Missouri LAE ratio decreases the NCCI selected LAE ratio (after SB1) from 19.4% to 18.6%, resulting in an additional decrease in the loss cost indication of -0.6% due to the LAE factor. Thus, modifying the NCCI indication solely for the impact of MEM on the DCCE ratio would produce a decrease of 3.0% rather than the decrease of 2.4% filed by the NCCI.

In regard to considering MEM's AOE ratio and its potential impact on the NCCI's filing, we encounter a difficulty as Missouri-specific AOE ratios are not available. We note from Table 8 that over the eight calendar years 2007 through 2014, MEM's AOE ratio averages 11.5% of loss (on a paid basis). Based upon countrywide data, over the eight accident years 2007 through 2014, the average ultimate AOE ratio is 7.1%.

			Table 8
	AOE Ratios		
Calendar Year	MEM Paid	Accident Year	Countrywide Ultimate*
2007	12.3 %	2007	7.7 %
2008	12.0 %	2008	6.9 %
2009	12.3 %	2009	7.3 %
2010	11.6 %	2010	7.0 %
2011	11.7 %	2011	6.7 %
2012	12.1 %	2012	7.0 %
2013	10.5 %	2013	7.4 %
2014	9.6 %	2014	7.0 %
Average	11.5 %	Average	7.1 %
* As calculated by and included within the NCCI's 1/1/16 Missouri filing.			

Given that the MEM AOE ratio is, on average, about 62%[15] higher than the countrywide AOE ratio, any consideration of MEM's AOE experience should increase the indication, all else equal. Given that the impact of reflecting MEM's DCCE experience was a small reduction of 0.6%, we feel that had both the DCCE and AOE

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[15]   1.62 = 11.5/7.1

experience of MEM been considered, the NCCI LAE indication would reflect little or no change. Furthermore, we are aware that, in recent years, the market share for MEM has not fluctuated materially; this could be an indication that there is little movement of insureds from MEM to the commercial market and from the commercial market to MEM. An argument can, therefore, be made for not considering either the DCCE or AOE experience of MEM when selecting an LAE provision to include in the advisory loss costs for commercial insurers. Reflecting a 0.0% impact from the consideration of MEM's LAE experience, and ignoring MEM experience in determining the LAE ratio for the advisory filing, produce identical results.

D. Allocation of Loss Costs to Individual Classes

The NCCI's methodology for distributing the overall indication among the various classes is well documented and well supported. We do not take exception to the methodology used by the NCCI. Loss cost changes for individual classes in this filing range from -28.0% to +20.4%.

We did not review the NCCI's calculation of the effect of changes to the U.S. Longshore and Harbor Workers' Compensation Act.

E. Exclusion of Assigned Risk Experience

At our request, the NCCI calculated that exclusion of assigned risk data from the experience used in the filing would cause the indicated loss cost change to decrease to -4.4%. Given the current small market share of the Missouri assigned risk market, as well as the fact that risks shift between the voluntary and assigned risk market over time, we feel that it is not inappropriate to base the indicated loss costs upon combined voluntary and assigned risk experience at this time.

IV. LIMITATIONS AND DISTRIBUTION
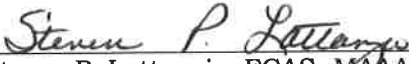
This report has been prepared solely for the use of and reliance by the Missouri Department of Insurance, Financial Institutions and Professional Registration in its review of the NCCI's Missouri advisory loss cost filing effective January 1, 2016. This report should be distributed only in its entirety. It is recommended that any party receiving a copy of this report request its own actuary to review the report to ensure an understanding of all assumptions, data, limitations and conclusions reached by the NCCI in its January 1, 2016 filing and by Actuarial Solutions in the review of the filing.

In our review, we relied solely upon information provided by the Department and by the NCCI. Appendix B of this report presents information supplied by the NCCI in addition to the filing documents. We have not audited this information; the NCCI's calculations have been reviewed for reasonability. If the underlying data or information is inaccurate or incomplete, then our observations and conclusions may likewise be inaccurate or incomplete.
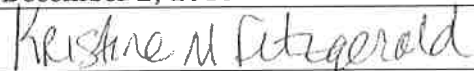
V. Signature Page

This review was prepared by Steve Lattanzio and Kristine Fitzgerald. Mr. Lattanzio is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries (MAAA). Ms. Fitzgerald is an Associate of the Casualty Actuarial Society and MAAA. Both individuals meet the Qualification Standards of the American Academy of Actuaries to render property/casualty actuarial opinions.

Date: December 2, 2015

Signature: *Steven P. Lattanzio*

            Steven P. Lattanzio, FCAS, MAAA, FCA
            Consulting Actuary

Date: December 2, 2015

Signature: *Kristine M Fitzgerald*

            Kristine M. Fitzgerald, ACAS, MAAA, FCA
            Consulting Actuary

VI. GLOSSARY OF TERMS

The following definitions are provided to give context to the terms used within this report and are tailored to the specifics of the filing under review.

Accident Year

A 12-month period of time for which dollars of loss are aggregated based upon those accidents occurring during the given time period. At a given moment in time the amount paid as well as the established reserves are known; the final value of all claims is not known until that time at which all such claims are closed. Loss is analyzed by accident year within some of the NCCI's calculations.

Policy Year

A policy year is comprised of all of the policies written during a particular calendar year; loss and premium is aggregated for all such policies. Since a policy written on January 1 expires December 31 of the same year, but a policy written on December 31 does not expire until the end of the following year, accidents associated with a single policy year occur over the course of two calendar years. Experience from the two most recent complete policy years (2012 and 2013) makes up the bulk of the NCCI's calculation of the indicated loss cost change for this filing.

Ultimate Loss

The estimated amount that will eventually be paid when all claims are closed.

Paid Loss

The dollars of indemnity and medical benefits paid to the injured worker or his/her dependents.

Case Reserve

An estimate made by the claims administrator of the amount which remains to be paid for each particular claim.

Incurred Loss

The sum of paid loss plus case reserves.

Loss Development

The observed change over time in the paid or incurred loss for a particular year.

Actuarial Central Estimate

An estimate that represents an expected value over a range of reasonably possible outcomes, not all conceivable outcomes.

Historical Development of Ultimate Countrywide DCCE Ratios

Section I: Historical Accident Year Countrywide Ultimate DCCE Ratios from NCCI filings

Accident Year	Evaluated as of…									
	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months
1994										
1995										
1996										8.1
1997									8.9	8.9
1998								8.9	9.2	9.2
1999							8.8	9.1	9.1	9.2
2000						9.2	9.7	9.7	9.6	9.7
2001					9.4	9.9	10.1	10.0	10.1	10.0
2002				9.8	10.5	10.6	10.6	10.5	10.4	10.3
2003			10.0	10.7	10.8	10.7	10.6	10.5	10.4	10.0
2004		10.0	10.6	10.8	10.7	10.7	10.5	10.3	10.0	9.9
2005	10.3	11.5	11.1	10.9	10.8	10.5	10.4	10.3	10.2	10.1
2006	11.9	11.3	11.1	10.8	10.6	10.4	10.7	10.6	10.5	
2007	12.2	11.8	11.5	11.1	10.9	10.8	10.7	10.6		
2008	12.5	11.9	11.6	11.3	11.3	11.1	11.1			
2009	13.1	12.0	11.8	11.7	11.5	11.3				
2010	12.3	12.1	12.0	11.8	11.5					
2011	12.9	12.5	12.3	12.1						
2012	12.9	12.9	12.8							
2013	13.3	12.9								
2014	13.4									

Section II: Development of Ultimate DCCE Ratios

Accident Year	12 – 24	24 – 36	36 – 48	48 – 60	60 – 72	72 – 84	84 – 96	96 – 108	108 – 120	120 – Ult
1994										
1995										
1996										
1997									1.000	
1998								1.034	1.000	
1999							1.034	1.000	1.011	
2000						1.054	1.000	0.990	1.010	
2001					1.053	1.020	0.990	1.010	0.990	
2002				1.071	1.010	1.000	0.991	0.990	0.990	
2003			1.070	1.009	0.991	0.991	0.991	0.990	0.962	
2004		1.060	1.019	0.991	1.000	0.981	0.981	0.971	0.990	
2005	1.117	0.965	0.982	0.991	0.972	0.990	0.990	0.990	0.990	
2006	0.950	0.982	0.973	0.981	0.981	1.029	0.991	0.991		
2007	0.967	0.975	0.965	0.982	0.991	0.991	0.991			
2008	0.952	0.975	0.974	1.000	0.982	1.000				
2009	0.916	0.983	0.992	0.983	0.983					
2010	0.984	0.992	0.983	0.975						
2011	0.969	0.984	0.984							
2012	1.000	0.992								
2013	0.970									
All Years	0.981	0.990	0.994	0.998	0.996	1.006	0.995	0.996	0.994	
Latest 7	0.965	0.983	0.979	0.986	0.986	0.997	0.989	0.990	0.992	
Latest 4	0.981	0.988	0.983	0.985	0.984	1.003	0.988	0.986	0.983	
Latest 2	0.985	0.988	0.984	0.979	0.983	0.996	0.991	0.991	0.990	
Mid 3/5	0.974	0.986	0.980	0.982	0.982	0.994	0.991	0.990	0.990	
Selected	0.980	0.990	0.985	0.982	0.985	1.000	0.991	0.990	0.990	1.000
Cumulative Selected	0.898	0.916	0.925	0.939	0.957	0.971	0.971	0.980	0.990	1.000

Adjusted Ultimate DCCE Ratios

Accident Year	(1) Ultimate DCCE Ratio from 1/1/16 Filing	(2) DCCE Ratio Development Factor	(3) Adjusted Ultimate DCCE Ratio (1) x (2)
2005	10.1	1.000	10.1
2006	10.5	0.990	10.4
2007	10.6	0.980	10.4
2008	11.1	0.971	10.8
2009	11.3	0.971	11.0
2010	11.5	0.957	11.0
2011	12.1	0.939	11.4
2012	12.8	0.925	11.8
2013	12.9	0.916	11.8
2014	13.4	0.898	12.0
		Average, All Years	11.1
		Average, Latest 6	11.5
		Average, Latest 3	11.9
		Average, Latest 2	11.9

Notes: Columns (1) and (2) are taken from Exhibit 1, Page 1,
       Sections I and II, respectively.

Ultimate Countrywide DCCE Ratios

Accident Year	NCCI Filing Effective...									
	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14	1/1/15	1/1/16
1994										
1995										
1996	8.1									
1997	8.9	8.9								
1998	8.9	9.2	9.2							
1999	8.8	9.1	9.1	9.2						
2000	9.2	9.7	9.7	9.6	9.7					
2001	9.4	9.9	10.1	10.0	10.1	10.0				
2002	9.8	10.5	10.6	10.6	10.5	10.4	10.3			
2003	10.0	10.7	10.8	10.7	10.6	10.5	10.4	10.0		
2004	10.0	10.6	10.8	10.7	10.7	10.5	10.3	10.0	9.9	
2005	10.3	11.5	11.1	10.9	10.8	10.5	10.4	10.3	10.2	10.1
2006		11.9	11.3	11.1	10.8	10.6	10.4	10.7	10.6	10.5
2007			12.2	11.8	11.5	11.1	10.9	10.8	10.7	10.6
2008				12.5	11.9	11.6	11.3	11.3	11.1	11.1
2009					13.1	12.0	11.8	11.7	11.5	11.3
2010						12.3	12.1	12.0	11.8	11.5
2011							12.9	12.5	12.3	12.1
2012								12.9	12.9	12.8
2013									13.3	12.9
2014										13.4
Average, Latest 5 Years	9.9	11.0	11.2	11.4	11.6	11.5	11.8	12.1	12.4	12.5
Average, Latest 3 Years	10.1	11.3	11.5	11.8	12.2	12.0	12.3	12.5	12.8	13.0
Average, Latest 2 Years	10.2	11.7	11.8	12.2	12.5	12.2	12.5	12.7	13.1	13.2
(1) NCCI Current Estimate	10.6	11.1	11.3	11.5	12.1	12.8	12.9	13.4		
(2) Adjusted Ultimate DCCE Ratio	10.4	10.8	11.0	11.0	11.4	11.8	11.8	12.0		
(3) Ratio of Adjusted Ultimate to Latest 3 Year Average	1.030	0.956	0.957	0.932	0.934	0.983	0.959	0.960		

Notes: Line (1) reflects NCCI's estimates of Ultimate DCCE Ratios for years 2007–2014.
Line (2) reflects Actuarial Solutions' estimates of Ultimate DCCE Ratios for years 2007–2014.
Line (3) is equal to Line (2) divided by the average of the latest 3 years.

Historical Development of Ultimate Countrywide AOE Ratios

Section I: Historical Accident Year Countrywide Ultimate AOE Ratios from NCCI filings

Accident Year	12 Months	24 Months	36 Months	48 Months	Evaluated as of... 60 Months	72 Months	84 Months	96 Months	108 Months	120 Months
1994										
1995										
1996										7.6
1997									7.4	7.1
1998								6.8	6.7	6.7
1999							6.4	6.3	6.2	6.2
2000						6.3	6.2	6.1	6.1	6.3
2001					6.6	6.5	6.4	6.4	6.5	6.3
2002				6.7	6.6	6.5	6.6	6.7	6.5	6.6
2003			7.4	7.5	7.4	7.4	7.5	7.3	7.5	7.5
2004		6.7	7.0	6.9	7.0	7.1	6.9	7.1	7.0	7.1
2005	7.3	7.8	7.7	7.8	7.9	7.7	7.9	7.5	7.5	7.4
2006	7.9	8.1	8.1	8.1	8.0	8.3	7.8	7.8	7.7	
2007	8.2	8.1	8.1	8.0	8.3	7.8	7.8	7.7		
2008	7.6	7.5	7.4	7.6	7.1	7.0	6.9			
2009	8.1	7.6	7.8	7.7	7.5	7.3				
2010	7.4	7.5	7.3	7.2	7.0					
2011	7.0	7.0	6.9	6.7						
2012	7.4	7.3	7.0							
2013	7.6	7.4								
2014	7.0									

Section II: Development of Ultimate AOE Ratios

Accident Year	12 – 24	24 – 36	36 – 48	48 – 60	60 – 72	72 – 84	84 – 96	96 – 108	108 – 120	120 – Ult
1994										
1995										
1996										
1997									0.959	
1998								0.985	1.000	
1999							0.984	0.984	1.000	
2000						0.984	0.984	1.000	1.033	
2001					0.985	0.985	1.000	1.016	0.969	
2002				0.985	0.985	1.015	1.015	0.970	1.015	
2003			1.014	0.987	1.000	1.014	0.973	1.027	1.000	
2004		1.045	0.986	1.014	1.014	0.972	1.029	0.986	1.014	
2005	1.068	0.987	1.013	1.013	0.975	1.026	0.949	1.000	0.987	
2006	1.025	1.000	1.000	0.988	1.038	0.940	1.000	0.987		
2007	0.988	1.000	0.988	1.038	0.940	1.000	0.987			
2008	0.987	0.987	1.027	0.934	0.986	0.986				
2009	0.938	1.026	0.987	0.974	0.973					
2010	1.014	0.973	0.986	0.972						
2011	1.000	0.986	0.971							
2012	0.986	0.959								
2013	0.974									
All Years	0.998	0.996	0.997	0.989	0.988	0.991	0.991	0.995	0.997	
Latest 7	0.984	0.990	0.996	0.990	0.989	0.993	0.993	0.998	1.003	
Latest 5	0.982	0.986	0.992	0.981	0.982	0.985	0.988	0.994	0.997	
Latest 2	0.980	0.973	0.979	0.973	0.980	0.993	0.994	0.994	1.001	
Mid 3/5	0.987	0.982	0.987	0.978	0.978	0.986	0.987	0.991	1.000	
Selected	0.985	0.990	0.987	0.980	0.985	0.994	0.992	0.998	1.000	1.000
Cumulative Selected	0.914	0.928	0.938	0.950	0.969	0.984	0.990	0.998	1.000	1.000

Adjusted Ultimate AOE Ratios

Accident Year	(1) Ultimate AOE Ratio from 1/1/16 Filing	(2) AOE Ratio Development Factor	(3) Adjusted Ultimate AOE Ratio (1) x (2)
2005	7.4	1.000	7.4
2006	7.7	1.000	7.7
2007	7.7	0.998	7.7
2008	6.9	0.990	6.8
2009	7.3	0.984	7.2
2010	7.0	0.969	6.8
2011	6.7	0.950	6.4
2012	7.0	0.938	6.6
2013	7.4	0.928	6.9
2014	7.0	0.914	6.4
		Average, All Years	7.0
		Average, Latest 7	6.7
		Average, Latest 3	6.6
		Average, Latest 2	6.7

Notes: Columns (1) and (2) are taken from Exhibit 2, Page 1,
Sections I and II, respectively.

Ultimate Countrywide AOE Ratios

Accident Year	NCCI Filing Effective…									
	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14	1/1/15	1/1/16
1994										
1995										
1996	7.6									
1997	7.4	7.1								
1998	6.8	6.7	6.7							
1999	6.4	6.3	6.2	6.2						
2000	6.3	6.2	6.1	6.1	6.3					
2001	6.6	6.5	6.4	6.4	6.5	6.3				
2002	6.7	6.6	6.5	6.6	6.7	6.5	6.6			
2003	7.4	7.5	7.4	7.4	7.5	7.3	7.5	7.5		
2004	6.7	7.0	6.9	7.0	7.1	6.9	7.1	7.0	7.1	
2005	7.3	7.8	7.7	7.8	7.9	7.7	7.9	7.5	7.5	7.4
2006		7.9	8.1	8.1	8.1	8.0	8.3	7.8	7.8	7.7
2007			8.2	8.1	8.1	8.0	8.3	7.8	7.8	7.7
2008				7.6	7.5	7.4	7.6	7.1	7.0	6.9
2009					8.1	7.6	7.8	7.7	7.5	7.3
2010						7.4	7.5	7.3	7.2	7.0
2011							7.0	7.0	6.9	6.7
2012								7.4	7.3	7.0
2013									7.6	7.4
2014										7.0
Average, Latest 5 Years	6.9	7.4	7.7	7.7	7.9	7.7	7.6	7.3	7.3	7.0
Average, Latest 3 Years	7.1	7.6	8.0	7.9	7.9	7.5	7.4	7.2	7.3	7.1
Average, Latest 2 Years	7.0	7.9	8.2	7.9	7.8	7.5	7.3	7.2	7.5	7.2
(1) NCCI Current Estimate	7.7	6.9	7.3	7.0	6.7	7.0	7.4	7.0		
(2) Adjusted Ultimate DCCE Ratio	7.7	6.8	7.2	6.8	6.4	6.6	6.9	6.4		
(3) Ratio of Adjusted Ultimate to Latest 3 Year Average	1.085	0.895	0.900	0.861	0.810	0.880	0.932	0.889		

Notes: Line (1) reflects NCCI's estimates of Ultimate AOE Ratios for years 2007–2014.
Line (2) reflects Actuarial Solutions' estimates of Ultimate AOE Ratios for years 2007–2014.
Line (3) is equal to Line (2) divided by the average of the latest 3 years.

Adjustment of LAE Ratio to Include MEM Experience

	[A]	[B]	[C]	[D]		[E]		[F]
	Based on NCCI Analysis			Actuarial Solutions Low Estimate		Actuarial Solutions High Estimate		Actuarial Solutions Recommended
	Excluding MEM	MEM	Including MEM	Excluding MEM	Including MEM	Excluding MEM	Including MEM	
(1) 5-Year Missouri Paid Losses	$1,982,455	$359,212	$2,341,667					
(2) 5-Year Missouri Paid DCCE	239,651	24,009	263,660					
(3) DCCE to Paid Ratio	12.1%	6.7%	11.3%					
(4) 5-Year Countrywide Paid Losses	$115,976,332	$359,212	$116,335,544					
(5) 5-Year Countrywide Paid DCCE	13,672,530	24,009	13,696,539					
(6) DCCE to Paid Ratio	11.8%	6.7%	11.8%					
(7) Indicated Missouri Differential	1.025		0.958					
(8) Countrywide DCCE Provision	13.0%		13.0%	12.2%	12.2%	12.8%	12.8%	
(9) Missouri DCCE Provision	13.3%		12.5%	12.5%	11.7%	13.1%	12.3%	
(10) Countrywide AOE Provision	7.1%		7.1%	6.4%	6.4%	7.0%	7.0%	
(11) Countrywide LAE Provision	20.1%		20.1%	18.6%	18.6%	19.8%	19.8%	19.2%
(12) Indicated Missouri LAE Provision	20.4%		19.6%	18.9%	18.1%	20.1%	19.3%	19.5%
(13) Adjustment Factor to reflect effect of SB1	0.992		0.992	0.992	0.992	0.992	0.992	0.992
(14) Indicated Missouri LAE Provision after SB1	19.4%		18.6%	17.9%	17.2%	19.1%	18.3%	18.5%
(15) Filed Missouri LAE Provision after SB1	19.4%							
(16) LAE Provision Effective 1/1/15	19.7%		19.7%	19.7%	19.7%	19.7%	19.7%	19.7%
(17) Selected LAE Provision effective 1/1/16	19.4%		18.6%	17.9%	17.2%	19.1%	18.3%	18.5%
(18) Indicated LAE Change	−0.3%		−0.9%	−1.5%	−2.1%	−0.5%	−1.2%	−1.0%

Notes: Column [A], Rows (1), (2), (4), (5), (8), (10), (13), and (15) are taken from Exhibit II of the 1/1/16 Loss Cost filing Techinical Supplement.
Column [B], Rows (1), (2), (4), and (5) have been provided by the Missouri Department of Insurance.
Column [C], Rows (1), (2), (4), and (5) is equal the sum of Columns [A] and [B] for the respective row.
Columns [D] and [E], Row (8) reflect low and high estimates, respectively, for Countrywide DCCE ratios, selected by Actuarial Solutions.
Columns [D] and [E], Row (10) reflect low and high estimates, respectively, for Countrywide AOE ratios, selected by Actuarial Solutions.
Row (3) = Row (2) / Row (1).
Row (6) = Row (5) / Row (4).
Row (7) = Row (3) / Row (6).
Row (9) = Row (7) x Row (8).
Row (11) = Row (8) + Row (10).
Row (12) = Row (9) + Row (10).
Row (14) = [1 + Row (12)] x [Row (13)] − 1.
Row (16) is taken from the 1/1/15 Loss Cost filing Technical Supplement.
Row (17) = Row (14).
Row (18) = [1 + Row (17)] / [1 + Row (16)] − 1.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors
Policy Year 2013

Exhibit 4
Page 1

	[A]	[B]	[C]
	Paid	Paid + Case	Combined
Premium			
(1) Standard Earned Premium Valued as of 12/31/14	$546,152,621	$546,152,621	$546,152,621
(2) Factor to Develop Standard Earned Premium	1.007	1.007	1.007
(3) Developed Standard Earned Premium = (1) x (2)	$549,975,689	$549,975,689	$549,975,689
(4) Factor to Adjust Premium to Current Level	1.070	1.070	1.070
(5) Premium Adjusted to Current Level = (3) x (4)	$588,473,987	$588,473,987	$588,473,987
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (First Report)	$55,589,609	$138,516,526	
(7) Factor to Develop Indemnity Benefit Cost	3.812	1.399	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$211,907,590	$193,784,620	$202,846,105
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.078	1.078	1.078
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.290	1.290	1.290
(12) Adjusted Indemnity Cost = (8) x (11)	$273,360,791	$249,982,160	$261,671,475
(13) Indemnity Cost Ratio = (12) / (5)	0.465	0.425	0.445
(14) Trend Length	3.001	3.001	3.001
(15) Application of Proposed Indemnity Trend Factor = .970 ^ (14)	0.913	0.913	0.913
(16) Projected Limited Indemnity Cost Ratio = (13) x (15)	0.425	0.388	0.406
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.430	0.392	0.410
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.436	0.397	0.415
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (First Report)	$166,664,714	$245,853,818	
(22) Factor to Develop Medical Benefit Cost	1.623	1.115	
(23) Developed Medical Benefit Cost = (21) x (22)	$270,496,831	$274,127,007	$272,311,919
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$323,784,707	$328,130,027	$325,957,367
(28) Medical Cost Ratio = (27) / (5)	0.550	0.558	0.554
(29) Trend Length	3.001	3.001	3.001
(30) Application of Proposed Medical Trend Factor = 1.000 ^ (29)	1.000	1.000	1.000
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.550	0.558	0.554
(32) Factor to Adjust Medical Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.556	0.564	0.560
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.556	0.564	0.560
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2013 = (20) + (35)	0.992	0.961	0.975

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (1), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (1), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been taken from the Technical Supplement of the Missouri 1/1/16 Voluntary Market Loss Cost Filing.
Row (22), Column [A] is taken from Row (1), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (1), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been taken from the Technical Supplement of the Missouri 1/1/16 Voluntary Market Loss Cost Filing.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors
Policy Year 2012

Exhibit 4
Page 2

	[A]	[B]	[C]
Premium	Paid	Paid + Case	Combined
(1) Standard Earned Premium Valued as of 12/31/14	$531,791,433	$531,791,433	$531,791,433
(2) Factor to Develop Standard Earned Premium	0.999	0.999	0.999
(3) Developed Standard Earned Premium = (1) x (2)	$531,259,642	$531,259,642	$531,259,642
(4) Factor to Adjust Premium to Current Level	1.079	1.079	1.079
(5) Premium Adjusted to Current Level = (3) x (4)	$573,229,154	$573,229,154	$573,229,154
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (Second Report)	$95,194,960	$156,770,645	
(7) Factor to Develop Indemnity Benefit Cost	2.005	1.185	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$190,865,895	$185,773,214	$188,319,555
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.145	1.145	1.145
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.371	1.371	1.371
(12) Adjusted Indemnity Cost = (8) x (11)	$261,677,142	$254,695,076	$258,186,110
(13) Indemnity Cost Ratio = (12) / (5)	0.456	0.444	0.450
(14) Trend Length	4.001	4.001	4.001
(15) Application of Proposed Indemnity Trend Factor = .970 ^ (14)	0.885	0.885	0.885
(16) Projected Indemnity Cost Ratio = (13) x (15)	0.404	0.393	0.398
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.408	0.397	0.402
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.413	0.402	0.407
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (Second Report)	$204,629,619	$256,258,495	
(22) Factor to Develop Medical Benefit Cost	1.326	1.072	
(23) Developed Medical Benefit Cost = (21) x (22)	$271,338,875	$274,709,107	$273,023,991
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$324,792,633	$328,826,801	$326,809,717
(28) Medical Cost Ratio = (27) / (5)	0.567	0.574	0.570
(29) Trend Length	4.001	4.001	4.001
(30) Application of Proposed Medical Trend Factor = 1.000 ^ (29)	1.000	1.000	1.000
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.567	0.574	0.570
(32) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.573	0.580	0.576
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.573	0.580	0.576
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2012 = (20) + (35)	0.986	0.982	0.983

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (2), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (2), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been taken from the Technical Supplement of the Missouri 1/1/16 Voluntary Market Loss Cost Filing.
Row (22), Column [A] is taken from Row (2), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (2), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been taken from the Technical Supplement of the Missouri 1/1/16 Voluntary Market Loss Cost Filing.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

<u>Average Cost Ratio</u>

(1) Change in Experience, Trend and Benefits	0.979	(−2.1%)
(2) Change In Loss Adjustment Expense	0.997	(−0.3%)
(3) Overall Loss Cost Level Change: (1) x (2)	0.976	(−2.4%)

Notes: Row (1) is the average of Row (36), Column [C] of Exhibit 4, Pages 1 and 2.
Row (2) is taken from Row (18), Column [A] of Exhibit 3.

NCCI – Missouri January 1, 2016 Filing   Exhibit 5
Indication Using Actuarial Solutions Selected Development Factors and Trend Factors   Page 1
Policy Year 2013

	[A]	[B]	[C]
	Paid	Paid + Case	Combined
Premium			
(1) Standard Earned Premium Valued as of 12/31/14	$546,152,621	$546,152,621	$546,152,621
(2) Factor to Develop Standard Earned Premium	1.007	1.007	1.007
(3) Developed Standard Earned Premium = (1) x (2)	$549,975,689	$549,975,689	$549,975,689
(4) Factor to Adjust Premium to Current Level	1.070	1.070	1.070
(5) Premium Adjusted to Current Level = (3) x (4)	$588,473,987	$588,473,987	$588,473,987
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (First Report)	$55,589,609	$138,516,526	
(7) Factor to Develop Indemnity Benefit Cost	3.812	1.399	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$211,907,590	$193,784,620	$202,846,105
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.078	1.078	1.078
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.290	1.290	1.290
(12) Adjusted Indemnity Cost = (8) x (11)	$273,360,791	$249,982,160	$261,671,475
(13) Indemnity Cost Ratio = (12) / (5)	0.465	0.425	0.445
(14) Trend Length	3.001	3.001	3.001
(15) Application of Proposed Indemnity Trend Factor = .975 ^ (14)	0.927	0.927	0.927
(16) Projected Limited Indemnity Cost Ratio = (13) x (15)	0.431	0.394	0.413
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.436	0.398	0.418
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.442	0.403	0.423
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (First Report)	$166,664,714	$245,853,818	
(22) Factor to Develop Medical Benefit Cost	1.623	1.115	
(23) Developed Medical Benefit Cost = (21) x (22)	$270,496,831	$274,127,007	$272,311,919
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$323,784,707	$328,130,027	$325,957,367
(28) Medical Cost Ratio = (27) / (5)	0.550	0.558	0.554
(29) Trend Length	3.001	3.001	3.001
(30) Application of Proposed Medical Trend Factor = .998 ^ (29)	0.994	0.994	0.994
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.547	0.555	0.551
(32) Factor to Adjust Medical Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.553	0.561	0.557
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.553	0.561	0.557
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2013 = (20) + (35)	0.995	0.964	0.980

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (1), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (1), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been selected by Actuarial Solutions.
Row (22), Column [A] is taken from Row (1), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (1), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been selected by Actuarial Solutions.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors and Trend Factors
Policy Year 2012

Exhibit 5
Page 2

	[A]	[B]	[C]
	Paid	Paid + Case	Combined
Premium			
(1) Standard Earned Premium Valued as of 12/31/14	$531,791,433	$531,791,433	$531,791,433
(2) Factor to Develop Standard Earned Premium	0.999	0.999	0.999
(3) Developed Standard Earned Premium = (1) x (2)	$531,259,642	$531,259,642	$531,259,642
(4) Factor to Adjust Premium to Current Level	1.079	1.079	1.079
(5) Premium Adjusted to Current Level = (3) x (4)	$573,229,154	$573,229,154	$573,229,154
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (Second Report)	$95,194,960	$156,770,645	
(7) Factor to Develop Indemnity Benefit Cost	2.005	1.185	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$190,865,895	$185,773,214	$188,319,555
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.145	1.145	1.145
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.371	1.371	1.371
(12) Adjusted Indemnity Cost = (8) x (11)	$261,677,142	$254,695,076	$258,186,110
(13) Indemnity Cost Ratio = (12) / (5)	0.456	0.444	0.450
(14) Trend Length	4.001	4.001	4.001
(15) Application of Proposed Indemnity Trend Factor = .975 ^ (14)	0.904	0.904	0.904
(16) Projected Indemnity Cost Ratio = (13) x (15)	0.412	0.401	0.407
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.417	0.405	0.411
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.422	0.410	0.416
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (Second Report)	$204,629,619	$256,258,495	
(22) Factor to Develop Medical Benefit Cost	1.326	1.072	
(23) Developed Medical Benefit Cost = (21) x (22)	$271,338,875	$274,709,107	$273,023,991
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$324,792,633	$328,826,801	$326,809,717
(28) Medical Cost Ratio = (27) / (5)	0.567	0.574	0.570
(29) Trend Length	4.001	4.001	4.001
(30) Application of Proposed Medical Trend Factor = .998 ^ (29)	0.992	0.992	0.992
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.562	0.569	0.565
(32) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.568	0.575	0.571
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.568	0.575	0.571
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2012 = (20) + (35)	0.990	0.985	0.987

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (2), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (2), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been selected by Actuarial Solutions.
Row (22), Column [A] is taken from Row (2), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (2), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been selected by Actuarial Solutions.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors and Trend Factors

Exhibit 5
Page 3

<u>Average Cost Ratio</u>

(1) Change in Experience, Trend and Benefits	0.984	(−1.6%)
(2) Change In Loss Adjustment Expense	0.997	(−0.3%)
(3) Overall Loss Cost Level Change: (1) x (2)	0.981	(−1.9%)

Notes: Row (1) is the average of Row (36), Column [C] of Exhibit 5, Pages 1 and 2.
Row (2) is taken from Row (18), Column [A] of Exhibit 3.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors, Trend Factors, and LAE Provision
Policy Year 2013

Exhibit 6
Page 1

	[A]	[B]	[C]
	Paid	Paid + Case	Combined
Premium			
(1) Standard Earned Premium Valued as of 12/31/14	$546,152,621	$546,152,621	$546,152,621
(2) Factor to Develop Standard Earned Premium	1.007	1.007	1.007
(3) Developed Standard Earned Premium = (1) x (2)	$549,975,689	$549,975,689	$549,975,689
(4) Factor to Adjust Premium to Current Level	1.070	1.070	1.070
(5) Premium Adjusted to Current Level = (3) x (4)	$588,473,987	$588,473,987	$588,473,987
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (First Report)	$55,589,609	$138,516,526	
(7) Factor to Develop Indemnity Benefit Cost	3.812	1.399	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$211,907,590	$193,784,620	$202,846,105
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.078	1.078	1.078
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.290	1.290	1.290
(12) Adjusted Indemnity Cost = (8) x (11)	$273,360,791	$249,982,160	$261,671,475
(13) Indemnity Cost Ratio = (12) / (5)	0.465	0.425	0.445
(14) Trend Length	3.001	3.001	3.001
(15) Application of Proposed Indemnity Trend Factor = .975 ^ (14)	0.927	0.927	0.927
(16) Projected Limited Indemnity Cost Ratio = (13) x (15)	0.431	0.394	0.413
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.436	0.398	0.418
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.442	0.403	0.423
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (First Report)	$166,664,714	$245,853,818	
(22) Factor to Develop Medical Benefit Cost	1.623	1.115	
(23) Developed Medical Benefit Cost = (21) x (22)	$270,496,831	$274,127,007	$272,311,919
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$323,784,707	$328,130,027	$325,957,367
(28) Medical Cost Ratio = (27) / (5)	0.550	0.558	0.554
(29) Trend Length	3.001	3.001	3.001
(30) Application of Proposed Medical Trend Factor = .998 ^ (29)	0.994	0.994	0.994
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.547	0.555	0.551
(32) Factor to Adjust Medical Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.553	0.561	0.557
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.553	0.561	0.557
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2013 = (20) + (35)	0.995	0.964	0.980

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (1), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (1), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been selected by Actuarial Solutions.
Row (22), Column [A] is taken from Row (1), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (1), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been selected by Actuarial Solutions.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

	[A]	[B]	[C]
	Paid	Paid + Case	Combined
Premium			
(1) Standard Earned Premium Valued as of 12/31/14	$531,791,433	$531,791,433	$531,791,433
(2) Factor to Develop Standard Earned Premium	0.999	0.999	0.999
(3) Developed Standard Earned Premium = (1) x (2)	$531,259,642	$531,259,642	$531,259,642
(4) Factor to Adjust Premium to Current Level	1.079	1.079	1.079
(5) Premium Adjusted to Current Level = (3) x (4)	$573,229,154	$573,229,154	$573,229,154
Indemnity Benefit and LAE Cost			
(6) Indemnity Benefit Cost Valued as of 12/31/14 (Second Report)	$95,194,960	$156,770,645	
(7) Factor to Develop Indemnity Benefit Cost	2.005	1.185	
(8) Developed Indemnity Benefit Cost = (6) x (7)	$190,865,895	$185,773,214	$188,319,555
(9) Factor to Adjusted Indemnity Benefit Cost to Current Benefit Level	1.145	1.145	1.145
(10) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(11) Composite Adjustment Factor = (9) x (10)	1.371	1.371	1.371
(12) Adjusted Indemnity Cost = (8) x (11)	$261,677,142	$254,695,076	$258,186,110
(13) Indemnity Cost Ratio = (12) / (5)	0.456	0.444	0.450
(14) Trend Length	4.001	4.001	4.001
(15) Application of Proposed Indemnity Trend Factor = .975 ^ (14)	0.904	0.904	0.904
(16) Projected Indemnity Cost Ratio = (13) x (15)	0.412	0.401	0.407
(17) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(18) Projected Indemnity Cost Ratio = (16) x (17)	0.417	0.405	0.411
(19) Proposed Change in Indemnity Benefits	1.013	1.013	1.013
(20) Projected Indemnity Cost Ratio Including Benefit Change = (18) x (19)	0.422	0.410	0.416
Medical Benefit and LAE Cost			
(21) Medical Benefit Cost Valued as of 12/31/14 (Second Report)	$204,629,619	$256,258,495	
(22) Factor to Develop Medical Benefit Cost	1.326	1.072	
(23) Developed Medical Benefit Cost = (21) x (22)	$271,338,875	$274,709,107	$273,023,991
(24) Factor to Adjusted Medical Benefit Cost to Current Benefit Level	1.000	1.000	1.000
(25) Factor to Include Loss Based Expenses	1.197	1.197	1.197
(26) Composite Adjustment Factor = (24) x (25)	1.197	1.197	1.197
(27) Adjusted Medical Cost = (23) x (26)	$324,792,633	$328,826,801	$326,809,717
(28) Medical Cost Ratio = (27) / (5)	0.567	0.574	0.570
(29) Trend Length	4.001	4.001	4.001
(30) Application of Proposed Medical Trend Factor = .998 ^ (29)	0.992	0.992	0.992
(31) Projected Limited Medical Cost Ratio = (28) x (30)	0.562	0.569	0.565
(32) Factor to Adjust Indemnity Cost Ratio to an Unlimited Basis	1.011	1.011	1.011
(33) Projected Medical Cost Ratio = (31) x (32)	0.568	0.575	0.571
(34) Proposed Change in Medical Benefits	1.000	1.000	1.000
(35) Projected Medical Cost Ratio Including Benefit Change = (33) x (34)	0.568	0.575	0.571
Total Benefit and LAE Cost			
(36) Adjusted Cost Ratio of Policy Year 2012 = (20) + (35)	0.990	0.985	0.987

Notes: Row (2) has been selected by Actuarial Solutions.
Row (7), Column [A] is taken from Row (2), Column [A] of Appendix A, Page 2.
Row (7), Column [B] is taken from Row (2), Column [A] of Appendix A, Page 1.
The trend factor reflected in Row (15) has been selected by Actuarial Solutions.
Row (22), Column [A] is taken from Row (2), Column [B] of Appendix A, Page 2.
Row (22), Column [B] is taken from Row (2), Column [B] of Appendix A, Page 1.
The trend factor reflected in Row (30) has been selected by Actuarial Solutions.
Rows (1), (4), (6), (9), (10), (14), (17), (19), (21), (24), (25), (29), (32), and (34) have been taken from the Technical Supplement of
the Missouri 1/1/16 Voluntary Market Loss Cost Filing.

NCCI – Missouri January 1, 2016 Filing
Indication Using Actuarial Solutions Selected Development Factors, Trend Factors, and LAE Provisior

Exhibit 6
Page 3

Average Cost Ratio

(1) Change in Experience, Trend and Benefits	0.984	(−1.6%)
(2) Change In Loss Adjustment Expense	0.990	(−1.0%)
(3) Overall Loss Cost Level Change: (1) x (2)	0.974	(−2.6%)

Notes: Row (1) is the average of Row (36), Column [C] of Exhibit 6, Pages 1 and 2.
Row (2) is taken from Row (18), Column [F] of Exhibit 3.

Paid Plus Case Reserve
Selected Loss Development Factors

	Age-to-Age Period	Type of Factor	[A] Indemnity	[B] Medical
(a)	1st – 2nd	Paid Plus Case LDF	1.118	1.040
(b)	2nd – 3rd	Paid Plus Case LDF	1.053	1.010
(c)	3rd – 4th	Paid Plus Case LDF	1.035	1.000
(d)	4th – 5th	Paid Plus Case LDF	1.023	0.998
(e)	5th – 6th	Paid Plus Case LDF	1.022	1.000
(f)	6th – 7th	Paid Plus Case LDF	1.004	1.000
(g)	7th – 8th	Paid Plus Case LDF	1.005	1.003
(h)	8th – 9th	Paid Plus Case LDF	1.002	1.010
(i)	9th – 10th	Paid Plus Case LDF	1.007	1.004
(j)	10th – 11th	Paid Plus Case LDF	1.001	1.004
(k)	11th – 12th	Paid Plus Case LDF	1.001	1.006
(l)	12th – 13th	Paid Plus Case LDF	1.003	1.004
(m)	13th – 14th	Paid Plus Case LDF	1.001	1.002
(n)	14th – 15th	Paid Plus Case LDF	1.000	0.998
(o)	15th – 16th	Paid Plus Case LDF	1.000	1.001
(p)	16th – 17th	Paid Plus Case LDF	1.000	1.003
(q)	17th – 18th	Paid Plus Case LDF	1.001	1.000
(r)	18th – 19th	Paid Plus Case LDF	1.002	1.002
(s)	19th Report Paid Plus Case to Ultimate LDF		1.012	1.025
(1)	1st to Ultimate LDF *		1.399	1.115
(2)	2nd to Ultimate LDF		1.185	1.072

Notes: Line (1) is produced by multiplying the factors in Lines (a) through (s).
      Line (2) is produced by multiplying the factors in Lines (b) through (s).
  * Indemnity first to ultimate development factor includes a 5.6% adjustment to account for the impact of
     Missouri Senate Bill (SB) 1, applicable to accidents occuring on or after 1/1/14. This adjusts the second
     half of Policy Year 2013, which does not include an impact from SB1 in the benefit on-level factors.
     These historical triangles are adjusted for the Policy Year 2013 to account for expected future
     development from claims impacted by SB1.

Paid Loss
Selected Loss Development Factors

			[A]	[B]
	Age-to-Age Period	Type of Factor	Indemnity	Medical
(a)	1st – 2nd	Paid LDF	1.800	1.224
(b)	2nd – 3rd	Paid LDF	1.293	1.059
(c)	3rd – 4th	Paid LDF	1.150	1.035
(d)	4th – 5th	Paid LDF	1.090	1.020
(e)	5th – 6th	Paid LDF	1.047	1.017
(f)	6th – 7th	Paid LDF	1.034	1.012
(g)	7th – 8th	Paid LDF	1.024	1.015
(h)	8th – 9th	Paid LDF	1.016	1.008
(i)	9th – 10th	Paid LDF	1.012	1.009
(j)	10th – 11th	Paid LDF	1.008	1.007
(k)	11th – 12th	Paid LDF	1.007	1.007
(l)	12th – 13th	Paid LDF	1.007	1.007
(m)	13th – 14th	Paid LDF	1.006	1.007
(n)	14th – 15th	Paid LDF	1.006	1.005
(o)	15th – 16th	Paid LDF	1.004	1.004
(p)	16th – 17th	Paid LDF	1.004	1.004
(q)	17th – 18th	Paid LDF	1.004	1.004
(r)	18th – 19th	Paid LDF	1.002	1.004
(r')	Paid to Paid Plus Case Ratio at 19th Report		0.978	0.964
(s)	19th Report Paid Plus Case to Ultimate LDF		1.012	1.025
(1)	1st to Ultimate LDF*		3.812	1.623
(2)	2nd to Ultimate LDF		2.005	1.326

Notes: Line (1) is produced by multiplying the factors in Lines (a) through (r), dividing by Line (r') and multiplying
         by Line (s).
       Line (2) is produced by multiplying the factors in Lines (b) through (r), dividing by Line (r') and multiplying
         by Line (s).
   * Indemnity first to ultimate development factor includes a 5.6% adjustment to account for the impact of
       Missouri Senate Bill (SB) 1, applicable to accidents occuring on or after 1/1/14. This adjusts the second
       half of Policy Year 2013, which does not include an impact from SB1 in the benefit on-level factors.
       These historical triangles are adjusted for the Policy Year 2013 to account for expected future
       development from claims impacted by SB1.

Appendix B

NCCI Interrogatories

Request 1:

What is the 1/1/16 indication if you exclude all assigned risk experience?

Response:

Excluding the assigned risk experience from the indication but utilizing the same development factors and trend selections would results in a voluntary-only indication of - 4.4%.

Request 2:

Please provide supporting workpapers which reflect voluntary-only data and document the underlying components of the excluding-ARM indication, such as premium development, loss development, on-level factors, LAE and trend.

Response:

NCCI's analysis is based on statewide data. Attachment 2 contains premium development triangles calculated using voluntary-only data, and Attachment 3 contains loss development triangles calculated using voluntary-only data.

The on-level factors applied in the statewide filing are calculated based on historical voluntary loss cost level changes, so no change to the on-level factors is needed for the voluntary-only indication.

NCCI's methodology is to calculate a loss adjustment expense (LAE) provision using its countrywide (CW) LAE analysis. The defense and cost containment expense (DCCE) is adjusted via the Missouri DCCE relativity while the adjusting and other expense (AOE) component is the calculated CW value. Since the reported data utilized for the LAE analysis is based on the CW data, NCCI is unable to quantify the impact to LAE excluding assigned risk experience.

NCCI selects loss ratio trends based on the statewide loss ratio data. Given the small size of the assigned risk market share in Missouri, the impact of excluding assigned risk experience on the selected loss ratio trends is expected to be negligible.

Missouri

Premium Development Factors - Voluntary Only Data

PY	1/2	2/3	3/4	4/5
2007				1.000
2008			0.999	1.000
2009		1.000	1.000	1.000
2010	1.004	0.999	1.000	
2011	1.012	0.999		
2012	1.007			

Request 3:

For voluntary-only experience, please provide extended triangles which present 10 diagonals of loss data for each of indemnity loss and medical loss.

Response:

Attachment 3 contains voluntary-only development factor triangles with 10 diagonals, out to a 19th report, for limited indemnity and medical paid and paid + case losses. Please note that the development factors provided do not contain any adjustment to account for the impact of Missouri Senate Bill 1, applicable to accidents occurring on or after 1/1/2014.

Missouri

Indemnity Paid Development Factors
Voluntary Losses Only

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.002
1987																	1.002	1.002
1988																1.001	1.001	1.002
1989															1.004	1.005	1.000	1.000
1990														1.002	1.002	1.003	1.003	1.000
1991													1.006	1.002	1.002	1.002	1.002	1.002
1992												1.002	1.004	1.003	1.001	1.001	1.005	1.004
1993											1.004	1.004	1.002	1.003	1.002	1.007	1.003	1.005
1994										1.007	1.006	1.003	1.006	1.003	1.007	1.006	1.005	1.002
1995									1.008	1.008	1.005	1.005	1.004	1.008	1.004	1.007	1.003	1.002
1996								1.013	1.011	1.006	1.006	1.008	1.005	1.004	1.004	1.004	1.003	
1997							1.017	1.009	1.008	1.007	1.006	1.006	1.005	1.004	1.002	1.003		
1998						1.031	1.023	1.011	1.011	1.007	1.007	1.007	1.005	1.005	1.004			
1999					1.054	1.028	1.028	1.019	1.013	1.015	1.006	1.005	1.008	1.007				
2000				1.071	1.046	1.037	1.020	1.011	1.008	1.008	1.003	1.013	1.006					
2001			1.124	1.062	1.052	1.033	1.023	1.010	1.008	1.011	1.007	1.004						
2002		1.261	1.103	1.072	1.043	1.029	1.029	1.019	1.008	1.010	1.008							
2003	1.851	1.268	1.119	1.070	1.059	1.035	1.024	1.017	1.016	1.005								
2004	1.762	1.254	1.137	1.072	1.052	1.033	1.021	1.020	1.013									
2005	1.764	1.287	1.146	1.080	1.047	1.036	1.021	1.013										
2006	1.794	1.269	1.118	1.068	1.039	1.033	1.027											
2007	1.831	1.274	1.125	1.079	1.054	1.036												
2008	1.793	1.249	1.157	1.092	1.048													
2009	1.797	1.291	1.142	1.095														
2010	1.871	1.290	1.151															
2011	1.788	1.293																
2012	1.799																	

Missouri

Indemnity Paid+Case Development Factors
Voluntary Losses Only

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.000
1987																	1.001	1.000
1988																1.001	1.001	1.002
1989															1.001	1.001	0.998	1.000
1990														1.000	1.002	1.004	1.001	1.000
1991													1.002	0.999	1.001	1.001	1.001	1.001
1992												0.999	0.997	1.003	1.001	1.001	1.005	1.003
1993											0.998	1.004	1.002	1.003	1.002	1.001	1.004	1.005
1994										0.998	1.001	1.002	0.998	1.001	1.007	0.999	0.999	1.001
1995									1.002	1.003	0.997	1.000	1.001	0.997	1.000	1.000	1.001	1.001
1996								1.003	1.002	1.000	1.000	1.006	0.995	0.999	1.000	1.001	1.000	
1997							1.004	0.998	1.001	1.003	1.005	1.001	0.999	0.998	0.998	0.998		
1998						1.006	0.994	1.000	1.000	0.999	1.002	1.005	1.001	1.006	1.000			
1999					1.016	1.015	0.993	0.998	0.995	1.001	0.998	1.002	1.003	0.999				
2000				1.011	1.005	1.002	0.998	1.004	0.998	1.003	1.004	1.004	1.001					
2001			1.016	1.003	1.011	1.005	1.008	1.001	1.006	0.997	1.004	1.001						
2002		1.040	1.021	0.999	1.001	0.997	1.005	1.006	1.005	1.002	0.997							
2003	1.118	1.022	1.036	1.016	0.999	1.016	1.008	1.006	1.007	1.001								
2004	1.084	1.035	1.025	1.021	1.015	0.995	1.002	1.001	1.007									
2005	1.091	1.047	1.040	1.014	1.017	1.005	1.005	0.999										
2006	1.099	1.022	1.024	1.013	1.017	1.005	1.008											
2007	1.117	1.044	1.024	1.008	1.020	1.002												
2008	1.120	1.038	1.055	1.030	1.029													
2009	1.119	1.068	1.026	1.040														
2010	1.125	1.061	1.042															
2011	1.094	1.050																
2012	1.134																	

Missouri

Medical Paid Development Factors
Voluntary Losses Only

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.004
1987																	1.010	1.008
1988																1.002	1.002	1.001
1989															1.002	1.001	1.002	1.001
1990														1.002	1.001	1.001	1.001	1.001
1991													1.001	1.001	1.000	1.000	1.000	1.000
1992												1.001	1.002	1.001	1.005	1.000	1.004	1.002
1993											1.001	1.002	1.002	1.001	1.002	1.002	1.001	1.001
1994										1.006	1.007	1.006	1.006	1.005	1.005	1.010	1.004	1.005
1995									1.006	1.002	1.000	1.001	1.001	1.004	1.004	1.002	1.002	1.002
1996								1.002	1.006	1.001	1.001	1.001	1.005	1.001	1.000	1.002	1.001	
1997							1.008	1.009	1.013	1.010	1.007	1.008	1.005	1.007	1.004	1.007		
1998						1.012	1.011	1.007	1.008	1.005	1.011	1.013	1.012	1.003	1.003			
1999					1.022	1.011	1.010	1.008	1.012	1.007	1.008	1.007	1.010	1.006				
2000				1.024	1.016	1.013	1.012	1.008	1.012	1.006	1.007	1.007	1.004					
2001			1.035	1.011	1.011	1.011	1.007	1.004	1.007	1.009	1.007	1.004						
2002		1.065	1.026	1.019	1.014	1.008	1.013	1.011	1.006	1.004	1.005							
2003	1.248	1.062	1.026	1.023	1.014	1.014	1.014	1.008	1.007	1.004								
2004	1.229	1.065	1.034	1.023	1.010	1.015	1.012	1.007	1.012									
2005	1.224	1.064	1.040	1.025	1.025	1.019	1.014	1.006										
2006	1.235	1.052	1.033	1.017	1.014	1.009	1.016											
2007	1.237	1.063	1.036	1.009	1.011	1.011												
2008	1.224	1.064	1.033	1.023	1.021													
2009	1.225	1.059	1.036	1.017														
2010	1.243	1.060	1.036															
2011	1.220	1.059																
2012	1.228																	

Missouri

Medical Paid+Case Development Factors
Voluntary Losses Only

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.005
1987																	1.007	1.010
1988																0.996	1.015	1.017
1989															1.002	1.003	1.004	1.005
1990														1.001	1.001	1.002	1.000	1.001
1991													1.002	1.000	1.000	1.001	0.999	0.997
1992												1.002	1.000	1.000	1.002	1.003	1.004	1.004
1993											1.000	1.002	1.006	1.003	1.002	1.000	1.001	1.001
1994										1.000	1.004	1.001	1.002	1.000	0.994	1.003	0.999	1.010
1995									1.002	0.997	0.996	1.002	1.000	1.001	1.004	1.003	0.999	1.001
1996								0.997	0.999	1.000	1.001	1.000	0.999	0.997	1.006	1.001	1.000	
1997							1.015	0.998	1.015	1.002	1.000	1.002	0.993	1.002	0.990	0.999		
1998						1.006	0.992	1.001	1.008	0.984	1.013	1.012	1.005	0.989	1.008			
1999					1.005	1.002	1.003	1.001	1.002	1.000	1.002	0.999	1.005	1.007				
2000				1.003	1.011	1.006	1.007	1.006	1.012	1.003	1.014	1.005	1.003					
2001			0.999	0.990	1.010	0.991	1.001	1.010	1.001	1.017	1.007	1.002						
2002		1.011	0.995	1.010	1.013	0.999	1.004	1.001	1.008	1.003	0.999							
2003	1.037	1.006	0.989	1.020	1.006	1.009	1.001	0.997	0.996	1.005								
2004	1.027	1.004	1.009	1.000	0.994	1.005	1.000	1.042	0.999									
2005	1.020	1.016	1.011	1.009	0.987	1.002	1.004	1.001										
2006	1.034	0.985	0.996	0.998	1.002	0.984	1.006											
2007	1.040	1.011	1.002	1.000	0.996	0.998												
2008	1.076	1.028	1.009	0.982	1.011													
2009	1.043	1.014	0.999	1.003														
2010	1.050	1.001	0.995															
2011	1.024	1.000																
2012	1.027																	

<u>Request 4:</u>

On Exhibit II of the Technical Supplement, please provide the accident year developed LAE ratios for 2005-2009.

<u>Response:</u>

Attachment 4 contains the requested ratios. Please note that the "Missouri Selected" values at the bottom of the exhibit are prior to the application of the Senate Bill 1 adjustment, shown in Exhibit II Section C of the Technical Supplement.

MISSOURI

EXHIBIT II

Workers Compensation Loss-based Expense Provision

Section A - Determination of Loss Adjustment Expense Provision

NCCI has computed the loss adjustment expense allowance on an accident year basis using data obtained from the NCCI Call for Loss Adjustment Expense. For this filing, NCCI proposes a 19.4% loss adjustment expense allowance as a percentage of incurred losses.

Accident Year	Accident Year Developed LAE Ratio	Accident Year Developed DCCE Ratio	Accident Year Developed AOE Ratio
2005	17.5%	10.1%	7.4%
2006	18.2%	10.5%	7.7%
2007	18.3%	10.6%	7.7%
2008	18.0%	11.1%	6.9%
2009	18.6%	11.3%	7.3%
2010	18.5%	11.5%	7.0%
2011	18.8%	12.1%	6.7%
2012	19.8%	12.8%	7.0%
2013	20.3%	12.9%	7.4%
2014	20.4%	13.4%	7.0%
Countrywide selected:	20.1%	13.0%	7.1%
Missouri selected:	20.4%	**13.3%**	**7.1%**

 (13.3% = 13.0% x 1.025)

NATIONAL COUNCIL ON COMPENSATION INSURANCE
MISSOURI VOLUNTARY LOSS COST FILING
AVAILABLE FOR USE EFFECTIVE 1/1/2016
REQUEST FROM SELECT ACTUARIAL SERVICES
DATED SEPTEMBER 18 & 23, 2015

<u>Request 5:</u>

Please supply payroll by class so that we may complete the tables required for our report.

<u>Response:</u>

Attachment 5 contains the requested information.

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
0005	14,793,382
0008	6,601,781
0016	1,634,464
0034	27,992,201
0035	15,923,741
0036	9,537,292
0037	48,741,332
0042	54,077,457
0050	12,284,870
0059	-
0065	-
0066	-
0067	-
0079	2,068,082
0083	36,535,588
0106	58,898,397
0113	1,139,927
0170	7,840
0251	837,839
0400	-
0401	6,931,224
0771	-
0790	-
0908	2,421
0913	2,951
0917	12,733,735
1005	2,502,246
1016	-
1164	66,751,634
1165	624,474
1320	1,299,621
1322	3,438
1430	34,935,262
1438	60,173,525
1452	1,822,622
1463	11,626,590
1472	16,995,605
1624	63,816,701
1642	29,861,845
1654	2,340,871
1655	9,705,860

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
1699	3,029,146
1701	66,295,476
1710	670,401
1741	1,794,709
1747	10,525,575
1748	-
1803	11,277,677
1852	-
1853	-
1860	2,779,273
1924	11,697,644
1925	22,518,771
2002	31,370,910
2003	59,670,594
2014	67,087,666
2016	11,920,030
2021	6,143,254
2039	48,635,201
2041	6,699,199
2065	1,191,556
2070	103,725,019
2081	2,708,692
2089	136,695,115
2095	101,744,765
2105	529,095
2110	87,745
2111	19,744,027
2112	241,860
2114	-
2121	74,166,575
2130	8,423,023
2131	8,697,394
2143	10,011,482
2157	103,226,256
2172	338,646
2174	-
2211	18,304
2220	986,831
2286	-
2288	2,244,476
2300	-
2302	-

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
2305	3,095,800
2361	292,294
2362	108,790
2380	248,569
2386	-
2388	7,662,472
2402	665,503
2413	706,193
2416	-
2417	1,317,265
2501	91,038,970
2503	1,919,032
2534	1,639,749
2570	1,615,817
2585	83,646,670
2586	5,751,243
2587	3,236,176
2589	22,074,315
2600	-
2623	14,334,324
2651	8,462,961
2660	23,934,952
2670	2,385,193
2683	1,764,621
2688	7,014,642
2701	428,262
2702	1,589,672
2709	114,514
2710	11,022,046
2714	-
2731	34,566,093
2735	2,827,997
2747	3,099,719
2759	20,812,484
2790	4,054,790
2791	510,286
2797	1,075,297
2799	2,737,808
2802	21,518,407
2835	1,460,348
2836	136,405
2841	2,300,722

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
2881	15,132,767
2883	96,889,030
2913	35,288
2915	33,333
2916	1,797,019
2923	858,662
2942	-
2960	3,010,324
3004	7,627,235
3018	2,728,839
3022	10,197,985
3027	1,279,900
3028	36,682,933
3030	53,925,008
3040	23,406,291
3041	1,503,640
3042	623,031
3064	10,328,662
3076	379,107,732
3081	13,442,691
3082	4,689,529
3085	8,589,842
3110	6,859,749
3111	119,227
3113	137,524,219
3114	3,588,953
3118	821,940
3119	832,712
3122	-
3126	7,032,687
3131	-
3132	55,463
3145	12,115,116
3146	34,556,729
3169	9,205,143
3175	63,729
3179	166,023,457
3180	12,725,642
3188	19,194,228
3220	23,306,187
3223	8,679,654
3224	360,500

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
3227	6,593,674
3240	277,206
3241	26,984,214
3255	122,581
3257	31,127,350
3270	10,104,971
3300	29,749,818
3303	8,080,775
3307	7,480,270
3315	2,835,710
3334	11,487,218
3336	7,814,912
3365	16,441,787
3372	21,961,690
3373	4,592,650
3383	2,948,352
3385	1,658,541
3400	70,174,949
3507	84,256,140
3515	167,806
3548	3,738,074
3559	3,434,944
3574	162,222,672
3581	6,354,377
3612	72,571,470
3620	50,530,785
3629	93,626,861
3632	289,910,196
3634	47,870,020
3635	4,636,724
3638	26,153,117
3642	13,882,631
3643	181,580,406
3647	90,236,793
3648	9,823,109
3681	214,867,581
3685	94,518,065
3719	424,884
3724	215,095,865
3726	20,520,183
3803	15,807,914
3807	22,005,225

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
3808	43,222,631
3821	19,635,047
3822	741,472
3824	74,646,425
3826	16,688,174
3827	1,749,359
3830	963,208,128
3851	39,556,225
3865	2,181,851
3881	16,992,287
4000	7,772,049
4018	13,527,071
4021	961,571
4034	32,110,836
4036	3,808,719
4038	1,248,051
4053	248,204
4061	205,423
4062	1,108,102
4101	4,337,497
4109	526,699
4110	252,396
4111	8,488,391
4113	187,050
4114	26,900,606
4130	11,889,676
4131	218,629
4133	641,437
4149	21,289,022
4206	11,300
4207	-
4239	9,830,041
4240	4,934,791
4243	66,740,101
4244	56,598,790
4250	43,777,550
4251	28,881,410
4263	1,616,805
4273	39,596,362
4279	20,231,657
4282	143,152
4283	15,884,012

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
4299	240,803,061
4304	19,763,172
4307	5,881,425
4351	2,244,701
4352	4,099,203
4360	3,192,670
4361	77,072,474
4410	125,688,986
4420	1,230,935
4431	1,638,463
4432	-
4439	8,242,278
4452	41,264,120
4459	41,412,030
4470	398,388
4484	301,366,153
4493	719,669
4511	327,010,989
4557	22,890,051
4558	23,987,032
4568	2,281,762
4581	1,295,106
4583	28,017,348
4597	46,967
4611	285,998,472
4635	27,228,815
4653	305,727
4665	2,425,645
4670	10,000
4683	1,600,508
4686	10,095,901
4692	25,167,963
4693	95,998,148
4703	13,964,450
4716	291,609
4717	5,619,068
4720	83,849,298
4740	3,531,506
4741	9,968,401
4751	-
4771	29,501,550
4777	1,055,317

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
4825	257,464,180
4828	61,310,949
4829	157,722,486
4902	7,699,219
4923	20,254,941
4940	-
5020	6,683,336
5022	95,424,055
5037	1,105,542
5040	11,211,942
5057	20,513,191
5059	1,780,205
5067	1,725,404
5069	631
5102	30,657,852
5146	29,359,487
5160	32,959,583
5183	339,813,676
5188	41,456,413
5190	402,588,286
5191	335,363,999
5192	45,279,126
5213	101,848,475
5215	35,561,554
5221	185,545,129
5222	23,447,882
5223	10,818,558
5348	41,530,232
5402	1,063,019
5403	214,320,024
5437	89,080,450
5443	481,332
5445	129,612,740
5462	28,169,053
5472	7,197,463
5473	9,907,976
5474	148,775,261
5478	51,954,105
5479	11,760,900
5480	5,136,061
5491	1,758,579
5505	1,064,665

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
5506	152,413,022
5515	16,251,667
5535	87,780,693
5537	257,408,957
5551	72,955,784
5606	369,154,075
5610	5,666,148
5645	199,064,938
5703	120,963
5705	81,974
5951	9,962,498
6003	1,085,085
6005	78,581
6045	1,120,352
6204	11,746,613
6206	131,690
6213	564,589
6214	-
6216	827,093
6217	161,348,311
6229	8,140,427
6233	66,676,692
6235	663,879
6236	-
6237	-
6251	405,304
6252	1,960,843
6260	-
6306	27,392,926
6319	41,411,119
6325	45,389,643
6400	11,853,945
6503	3,214,250
6504	323,367,128
6702	-
6703	-
6704	-
6834	50,951,363
6835	-
6836	11,091,067
6882	166,308
6884	-

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
7016	-
7024	1,937,511
7038	-
7046	-
7047	-
7050	-
7090	123,337
7098	-
7099	-
7133	8,130,238
7151	-
7152	-
7153	-
7222	142,377
7228	441,400,153
7229	539,448,622
7230	19,868,134
7231	31,920,288
7232	22,827,913
7250	7,579,081
7333	-
7335	204,554
7337	-
7360	13,847,263
7370	11,952,852
7380	407,881,963
7382	110,632,816
7390	25,806,485
7394	-
7395	105,729
7398	-
7402	922,397
7403	137,673,042
7405	135,031,641
7420	297,183
7421	26,288,539
7422	7,962,928
7425	25,864,448
7431	13,322,173
7445	-
7453	-
7502	39,772,735

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
7515	30,668,900
7520	81,255,683
7538	29,943,557
7539	47,121,678
7540	15,325
7580	29,641,638
7590	7,192,059
7600	345,332,826
7605	87,800,168
7610	270,364,381
7704	-
7705	91,477,436
7710	81,442,916
7711	13,367,679
7720	315,340,626
7855	16,524,092
8001	34,899,215
8002	54,716,955
8006	207,651,352
8008	350,946,473
8010	220,039,291
8013	115,010,552
8015	35,822,758
8017	1,799,645,950
8018	437,632,565
8021	35,047,127
8031	13,778,550
8032	21,334,948
8033	494,691,531
8034	16,102,643
8037	3,093,548
8039	129,660,574
8044	139,219,995
8045	153,642,182
8046	182,317,843
8047	36,964,787
8058	142,995,365
8061	165,194,424
8072	33,625,751
8102	11,006,896
8103	2,729,115
8105	-

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
8106	35,714,919
8107	127,248,826
8111	54,020,508
8116	73,422,210
8203	6,298,167
8204	2,173,810
8209	200,679
8215	83,450,604
8227	87,615,093
8232	223,458,220
8233	2,441,152
8235	11,323,099
8263	2,990,959
8264	23,893,812
8265	37,575,645
8279	6,901,453
8288	15,468,506
8291	18,072,823
8292	96,983,889
8293	93,658,849
8304	21,983,202
8350	61,720,071
8353	25,350,457
8370	38,677,266
8381	37,262,872
8385	43,248,536
8387	155,072,959
8391	646,505,787
8392	32,141,019
8393	144,836,726
8500	10,184,307
8601	834,662,249
8602	21,717,079
8603	376,864,789
8606	28,881
8719	87,211
8720	88,712,702
8721	23,894,397
8723	1,254,249,696
8725	398,591
8728	67,274,408
8734	-

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
8737	-
8738	-
8742	5,195,969,756
8745	1,605,899
8748	254,920,074
8755	56,357,814
8799	21,570,158
8800	38,925,413
8803	1,348,253,007
8805	-
8810	21,904,779,005
8814	-
8815	-
8820	1,108,570,752
8824	95,441,594
8825	37,419,000
8826	60,237,862
8829	658,137,651
8831	183,902,952
8832	3,294,979,206
8833	1,496,682,856
8835	465,676,178
8855	2,369,472,814
8856	26,922,559
8861	452,569,598
8868	3,315,333,686
8869	290,133,545
8871	111,434,351
8901	923,337,475
9012	352,895,142
9014	376,037,614
9015	312,553,421
9016	23,697,696
9019	244,480
9033	30,610,097
9040	84,353,899
9044	241,037,912
9052	340,703,654
9058	108,228,007
9060	127,978,307
9061	30,749,093
9062	27,412,516

Missouri
1/1/2016 Loss Cost Filing

Payroll by Industrial Class Code

Class Code	Payroll for 7/1/2012 - 6/30/2013
9063	165,540,609
9082	1,307,302,965
9083	948,542,424
9084	52,193,283
9089	218,736
9093	19,675,250
9101	256,129,261
9102	167,817,463
9110	72,746,970
9154	80,324,474
9156	26,452,964
9170	6,169,795
9178	7,677,313
9179	10,397,987
9180	9,907,929
9181	-
9182	36,521,042
9186	2,149,487
9220	13,450,701
9402	26,949,351
9403	105,353,956
9410	17,223,446
9501	19,412,796
9505	3,682,616
9516	63,948,748
9519	38,789,345
9521	14,518,095
9522	29,415,841
9534	13,662,303
9554	15,212,304
9586	132,569,325
9600	317,144
9620	48,987,284

Missouri
1/1/2016 Loss Cost Filing

Payroll by Federal Class Code

Class Code	Payroll for 1/1/2012 - 12/31/2012
6824	348,683
6825	29,157,871
6826	79,699
6872	1,354,948
6874	-
7309	489,302
7313	1,107,852
7317	3,034,590
7327	-
7350	20,257
8709	77,330
8726	507,290
9077	-

<u>Request 6:</u>

For total experience (voluntary plus ARM as reflected in the filed indication), please provide extended triangles which present 10 diagonals of loss data for each of indemnity loss and medical loss (i.e., policy year paid and paid plus case reserve loss development from a first through a 19th report for indemnity vs. medical).

<u>Response:</u>

Attachment 6 contains the requested triangles. Please note that the development factors provided do not contain any adjustment to account for the impact of Missouri Senate Bill 1, applicable to accidents occurring on or after 1/1/2014.

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Indemnity Paid Development Factors

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.002
1987																	1.000	1.002
1988																1.002	1.002	1.002
1989															1.004	1.004	1.002	1.001
1990														1.002	1.002	1.003	1.002	1.001
1991													1.005	1.002	1.003	1.003	1.002	1.003
1992												1.002	1.003	1.003	1.003	1.003	1.004	1.004
1993											1.006	1.004	1.003	1.003	1.005	1.005	1.002	1.004
1994										1.008	1.007	1.003	1.006	1.004	1.005	1.004	1.004	1.001
1995									1.008	1.008	1.006	1.006	1.005	1.008	1.004	1.007	1.004	1.002
1996								1.012	1.011	1.007	1.006	1.008	1.005	1.004	1.005	1.005	1.004	
1997							1.017	1.009	1.008	1.007	1.006	1.006	1.004	1.004	1.002	1.003		
1998						1.031	1.022	1.013	1.011	1.007	1.007	1.007	1.005	1.005	1.004			
1999					1.055	1.028	1.028	1.019	1.013	1.015	1.006	1.006	1.008	1.007				
2000				1.072	1.047	1.039	1.020	1.011	1.008	1.008	1.003	1.013	1.006					
2001			1.123	1.061	1.052	1.034	1.024	1.010	1.010	1.010	1.007	1.004						
2002		1.260	1.104	1.073	1.044	1.027	1.028	1.018	1.008	1.009	1.008							
2003	1.848	1.263	1.120	1.069	1.057	1.034	1.024	1.016	1.016	1.005								
2004	1.769	1.254	1.132	1.071	1.050	1.032	1.021	1.020	1.014									
2005	1.757	1.286	1.141	1.081	1.046	1.036	1.022	1.012										
2006	1.792	1.268	1.117	1.068	1.040	1.032	1.026											
2007	1.825	1.271	1.125	1.077	1.054	1.036												
2008	1.793	1.248	1.159	1.092	1.047													
2009	1.799	1.292	1.142	1.094														
2010	1.873	1.292	1.150															
2011	1.789	1.295																
2012	1.799																	

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Medical Paid Development Factors

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.003
1987																	1.007	1.006
1988																1.002	1.002	1.004
1989															1.003	1.003	1.002	1.002
1990														1.002	1.003	0.999	1.001	1.001
1991													1.001	1.001	1.001	1.002	1.002	1.002
1992												1.001	1.001	1.001	1.004	1.001	1.002	1.001
1993											1.003	1.003	1.003	1.006	1.004	1.003	1.004	1.004
1994										1.007	1.005	1.004	1.004	1.004	1.004	1.008	1.004	1.004
1995									1.007	1.003	1.003	1.002	1.003	1.005	1.005	1.003	1.004	1.003
1996								1.003	1.007	1.001	1.003	1.002	1.006	1.004	1.000	1.002	1.003	
1997							1.008	1.008	1.013	1.010	1.006	1.007	1.005	1.006	1.004	1.006		
1998						1.011	1.011	1.007	1.008	1.005	1.011	1.012	1.012	1.003	1.003			
1999					1.023	1.011	1.009	1.008	1.012	1.007	1.008	1.007	1.010	1.006				
2000				1.025	1.016	1.011	1.007	1.008	1.012	1.006	1.007	1.007	1.004					
2001			1.035	1.011	1.011	1.012	1.007	1.004	1.007	1.009	1.007	1.004						
2002		1.066	1.025	1.018	1.014	1.009	1.012	1.011	1.006	1.007	1.005							
2003	1.244	1.062	1.027	1.023	1.014	1.015	1.014	1.008	1.009	1.005								
2004	1.226	1.066	1.033	1.023	1.010	1.015	1.012	1.007	1.012									
2005	1.222	1.067	1.041	1.028	1.026	1.022	1.016	1.009										
2006	1.235	1.055	1.032	1.017	1.014	1.009	1.015											
2007	1.233	1.062	1.036	1.009	1.012	1.011												
2008	1.221	1.064	1.033	1.023	1.022													
2009	1.226	1.059	1.036	1.017														
2010	1.243	1.060	1.036															
2011	1.218	1.058																
2012	1.226																	

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Indemnity Paid+Case Development Factors

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.000
1987																	0.999	0.999
1988																1.000	1.001	0.999
1989															1.001	1.001	0.999	1.000
1990														1.001	1.001	1.002	1.001	1.000
1991													1.002	0.999	1.000	1.001	1.001	1.002
1992												1.000	0.999	1.002	1.001	1.002	1.002	1.002
1993											0.999	1.003	1.001	0.999	0.999	1.001	1.002	1.003
1994										1.001	0.998	1.002	0.999	1.000	1.001	1.000	1.000	1.001
1995									1.000	1.002	0.999	1.000	1.001	0.998	1.000	1.000	1.000	1.001
1996								1.004	1.001	1.000	1.001	1.005	0.996	1.000	1.001	1.002	1.001	
1997							1.004	0.998	1.001	1.002	1.005	1.001	0.999	0.999	0.998	0.998		
1998						1.008	0.995	1.000	1.001	0.999	1.002	1.005	1.001	1.006	0.999			
1999					1.017	1.015	0.993	0.998	0.995	1.001	0.999	1.002	1.003	0.999				
2000				1.011	1.005	1.004	0.995	1.004	0.998	1.003	1.003	1.004	1.001					
2001			1.016	1.004	1.010	1.006	1.008	1.002	1.007	0.997	1.004	1.001						
2002		1.041	1.026	0.997	1.002	0.997	1.004	1.006	1.005	1.002	0.995							
2003	1.116	1.026	1.034	1.013	1.001	1.016	1.006	1.005	1.007	1.000								
2004	1.084	1.035	1.026	1.019	1.014	0.997	1.001	1.001	1.008									
2005	1.087	1.049	1.039	1.015	1.017	1.005	1.005	1.000										
2006	1.098	1.022	1.027	1.013	1.017	1.004	1.009											
2007	1.117	1.045	1.024	1.009	1.021	1.001												
2008	1.116	1.041	1.055	1.028	1.028													
2009	1.119	1.068	1.027	1.040														
2010	1.125	1.060	1.042															
2011	1.095	1.051																
2012	1.135																	

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Medical Paid+Case Development Factors

PY	1/2	2/3	3/4	4/5	5/6	6/7	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
1986																		1.003
1987																	0.997	1.009
1988																0.999	1.006	1.012
1989															1.005	1.006	0.998	1.003
1990														1.001	1.000	1.002	1.002	1.001
1991													1.010	0.999	1.000	1.000	1.000	0.997
1992												1.001	1.000	0.998	1.003	1.002	1.003	1.002
1993											1.001	1.006	1.009	1.005	1.003	1.001	1.003	1.000
1994										1.003	1.007	1.002	1.002	0.997	0.996	1.002	0.996	1.006
1995									0.999	1.004	1.000	1.004	1.002	1.001	1.004	1.003	0.999	1.001
1996								1.000	1.002	1.002	1.005	1.001	0.999	0.991	1.004	1.009	1.001	
1997							1.014	0.998	1.014	1.002	1.000	1.002	0.993	1.002	0.990	0.999		
1998						1.006	0.993	1.001	1.008	0.984	1.014	1.012	1.004	0.989	1.008			
1999					1.005	1.003	1.003	1.001	1.002	1.000	1.002	1.000	1.005	1.005				
2000				1.004	1.011	1.005	0.997	1.006	1.011	1.003	1.013	1.005	1.003					
2001			1.001	0.992	1.009	0.989	1.001	1.009	1.001	1.017	1.007	1.002						
2002		1.013	0.997	1.012	1.013	0.997	1.002	1.001	1.008	1.002	0.999							
2003	1.050	1.008	0.990	1.017	1.005	1.009	1.001	0.999	0.995	1.004								
2004	1.032	1.007	1.010	0.996	0.995	1.005	1.001	1.039	1.005									
2005	1.026	1.019	1.010	1.008	0.989	1.002	1.004	1.001										
2006	1.032	0.972	0.996	0.997	1.002	0.985	1.006											
2007	1.039	1.010	1.001	1.000	0.997	0.998												
2008	1.071	1.027	1.010	0.983	1.011													
2009	1.044	1.013	0.999	1.002														
2010	1.050	1.002	0.995															
2011	1.022	1.000																
2012	1.031																	

Request 7:

For the 1/1/15 Missouri voluntary loss cost filing, you based the selected LDFs on the latest two LDFs (versus three LDFs in the 1/1/14 filing). Please identify whether your reasoning for continuing to use two diagonals of development in the 1/1/16 filing is consistent with the explanation given in Request 5 associated with the 1/1/15 filing; if not, please provide additional information explaining your rationale for doing so.

Response:

Our reasoning with continuing to use two diagonals of development in the 1/1/16 filing is consistent with the response given for the 1/1/15 filing.

<u>Request 8:</u>

Did you consider any other basis for selecting loss development factors than those shown in the filing?

<u>Response:</u>

NCCI considered various approaches for selecting loss development factors for paid and paid + case losses, including 2-year, 3-year, 5-year, and 5-year-ex-high-low averages. Ultimately, there were no compelling reasons for deviating from the selections used in the 1/1/2015 filing. Therefore, we elected to maintain a 2-year average for paid losses and a 5-year average for paid + case losses.

Request 9:

Related to the patterns, or shifts of experience in loss development, please provide ratios of policy year paid to paid plus case data at all available evaluations for indemnity vs. medical, for as many calendar years as possible. If available, open and closed claim counts with corresponding paid (on closed claims) and case reserves would be helpful to review; policy year data alone is fine.

Response:

Attachment 9a contains ratios of paid to paid plus case data for indemnity and medical, for both policy year and accident year. NCCI collects losses on a policy year and accident year basis and do not have loss information by calendar year.

Attachment 9b contains a triangle with open claims to total claims by policy year. NCCI collects paid and case reserves data on all claims and no longer collects paid or case reserves on closed claims; therefore, we are unable to provide open and closed claim counts with corresponding paid (on closed claims) and case reserves.

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Indemnity Paid to Indemnity Paid+Case Ratios

PY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1984														0.960	0.966	0.972	0.974	0.978	0.980
1985													0.969	0.970	0.971	0.971	0.969	0.974	0.975
1986												0.954	0.955	0.960	0.965	0.965	0.965	0.969	0.970
1987											0.960	0.965	0.969	0.973	0.977	0.977	0.977	0.978	0.981
1988										0.956	0.962	0.967	0.967	0.966	0.968	0.971	0.972	0.973	0.975
1989									0.948	0.955	0.961	0.965	0.969	0.971	0.971	0.973	0.976	0.978	0.979
1990								0.955	0.958	0.964	0.966	0.971	0.972	0.977	0.978	0.979	0.980	0.981	0.982
1991							0.934	0.943	0.946	0.956	0.961	0.965	0.966	0.968	0.971	0.974	0.976	0.977	0.976
1992						0.920	0.931	0.940	0.947	0.958	0.956	0.966	0.969	0.973	0.974	0.976	0.977	0.978	0.980
1993					0.891	0.916	0.940	0.951	0.947	0.951	0.956	0.963	0.963	0.964	0.968	0.973	0.977	0.977	0.979
1994				0.845	0.877	0.908	0.927	0.934	0.936	0.939	0.945	0.954	0.954	0.961	0.965	0.968	0.973	0.977	0.977
1995			0.767	0.836	0.878	0.898	0.903	0.918	0.924	0.931	0.937	0.944	0.950	0.954	0.962	0.966	0.972	0.976	0.977
1996		0.620	0.736	0.821	0.873	0.894	0.910	0.919	0.926	0.935	0.942	0.946	0.948	0.955	0.959	0.964	0.968	0.971	
1997	0.413	0.635	0.767	0.837	0.879	0.905	0.924	0.935	0.946	0.952	0.956	0.956	0.959	0.964	0.969	0.972	0.976		
1998	0.401	0.619	0.736	0.804	0.852	0.877	0.896	0.921	0.932	0.942	0.948	0.955	0.956	0.959	0.959	0.963			
1999	0.382	0.597	0.714	0.789	0.825	0.856	0.867	0.896	0.917	0.931	0.941	0.948	0.951	0.956	0.963				
2000	0.380	0.594	0.734	0.801	0.849	0.884	0.914	0.938	0.944	0.952	0.957	0.958	0.967	0.972					
2001	0.355	0.589	0.720	0.796	0.842	0.878	0.904	0.917	0.922	0.924	0.940	0.943	0.946						
2002	0.361	0.600	0.726	0.784	0.843	0.879	0.905	0.923	0.934	0.935	0.942	0.953							
2003	0.358	0.593	0.731	0.792	0.835	0.881	0.897	0.913	0.922	0.931	0.936								
2004	0.360	0.586	0.710	0.784	0.824	0.854	0.884	0.899	0.916	0.921									
2005	0.367	0.593	0.729	0.800	0.852	0.876	0.902	0.917	0.929										
2006	0.367	0.600	0.744	0.809	0.853	0.874	0.899	0.914											
2007	0.366	0.598	0.728	0.799	0.854	0.881	0.912												
2008	0.380	0.610	0.731	0.803	0.853	0.869													
2009	0.376	0.604	0.731	0.813	0.855														
2010	0.363	0.603	0.735	0.811															
2011	0.369	0.602	0.742																
2012	0.383	0.607																	
2013	0.401																		

MISSOURI
Policy Year - Private Carrier + State Fund - Limited Statewide
Medical Paid to Medical Paid+Case Ratios

PY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1984														0.956	0.957	0.958	0.965	0.967	0.968
1985													0.984	0.984	0.984	0.983	0.980	0.981	0.978
1986												0.986	0.987	0.986	0.987	0.980	0.981	0.978	0.978
1987											0.915	0.920	0.946	0.945	0.945	0.945	0.956	0.965	0.962
1988										0.962	0.958	0.960	0.958	0.956	0.955	0.961	0.963	0.959	0.950
1989									0.985	0.986	0.988	0.982	0.969	0.969	0.971	0.969	0.965	0.969	0.968
1990								0.979	0.982	0.987	0.985	0.985	0.975	0.979	0.980	0.984	0.981	0.981	0.979
1991							0.935	0.964	0.970	0.970	0.974	0.975	0.974	0.966	0.967	0.968	0.969	0.971	0.974
1992						0.970	0.975	0.980	0.979	0.976	0.976	0.977	0.977	0.978	0.980	0.980	0.980	0.979	0.978
1993					0.941	0.951	0.959	0.970	0.958	0.957	0.960	0.962	0.959	0.954	0.955	0.952	0.953	0.954	0.958
1994				0.927	0.925	0.937	0.927	0.927	0.915	0.925	0.928	0.927	0.928	0.930	0.933	0.939	0.944	0.951	0.950
1995			0.925	0.890	0.893	0.899	0.920	0.945	0.945	0.953	0.952	0.955	0.953	0.953	0.955	0.956	0.956	0.961	0.962
1996		0.811	0.861	0.924	0.947	0.934	0.945	0.939	0.942	0.946	0.945	0.943	0.944	0.949	0.962	0.958	0.951	0.953	
1997	0.719	0.814	0.878	0.896	0.902	0.911	0.915	0.909	0.918	0.917	0.924	0.929	0.932	0.942	0.945	0.958	0.965		
1998	0.691	0.818	0.870	0.893	0.926	0.914	0.919	0.935	0.940	0.940	0.963	0.959	0.959	0.966	0.979	0.975			
1999	0.694	0.809	0.846	0.874	0.902	0.918	0.926	0.932	0.940	0.951	0.957	0.962	0.969	0.974	0.974				
2000	0.720	0.860	0.882	0.890	0.909	0.914	0.920	0.929	0.929	0.927	0.931	0.923	0.925	0.925					
2001	0.716	0.832	0.878	0.907	0.925	0.927	0.946	0.952	0.945	0.951	0.944	0.944	0.946						
2002	0.712	0.839	0.884	0.909	0.915	0.917	0.927	0.933	0.942	0.938	0.942	0.947							
2003	0.694	0.822	0.866	0.899	0.904	0.912	0.916	0.928	0.935	0.948	0.949								
2004	0.678	0.807	0.854	0.874	0.898	0.914	0.923	0.932	0.903	0.909									
2005	0.658	0.783	0.820	0.845	0.861	0.894	0.911	0.922	0.929										
2006	0.656	0.785	0.851	0.882	0.899	0.910	0.933	0.941											
2007	0.702	0.834	0.876	0.906	0.915	0.928	0.940												
2008	0.676	0.771	0.799	0.817	0.851	0.860													
2009	0.719	0.845	0.883	0.916	0.929														
2010	0.690	0.816	0.863	0.898															
2011	0.661	0.788	0.834																
2012	0.672	0.799																	
2013	0.678																		

MISSOURI
Accident Year - Private Carrier + State Fund - Limited Statewide
Indemnity Paid to Indemnity Paid+Case Ratios

AY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1984															0.958	0.963	0.971	0.973	0.975
1985														0.969	0.971	0.972	0.972	0.974	0.975
1986													0.953	0.955	0.958	0.963	0.963	0.967	0.967
1987												0.964	0.967	0.973	0.974	0.976	0.976	0.980	0.980
1988											0.959	0.966	0.969	0.970	0.970	0.971	0.974	0.975	0.976
1989										0.940	0.947	0.954	0.958	0.962	0.964	0.964	0.966	0.969	0.972
1990									0.965	0.967	0.973	0.974	0.979	0.980	0.983	0.984	0.986	0.988	0.989
1991								0.932	0.937	0.939	0.948	0.954	0.958	0.962	0.964	0.967	0.967	0.970	0.971
1992							0.936	0.951	0.955	0.962	0.970	0.968	0.975	0.976	0.977	0.980	0.982	0.982	0.983
1993						0.907	0.922	0.942	0.950	0.949	0.954	0.959	0.967	0.970	0.970	0.970	0.972	0.975	0.975
1994					0.863	0.883	0.916	0.931	0.930	0.934	0.939	0.941	0.949	0.951	0.960	0.968	0.973	0.975	0.978
1995				0.809	0.866	0.893	0.913	0.925	0.938	0.945	0.952	0.954	0.960	0.964	0.968	0.971	0.975	0.980	0.981
1996			0.698	0.790	0.855	0.891	0.907	0.914	0.915	0.924	0.933	0.936	0.940	0.942	0.952	0.956	0.962	0.968	0.970
1997		0.509	0.680	0.801	0.862	0.882	0.907	0.919	0.933	0.945	0.951	0.956	0.955	0.959	0.964	0.970	0.972	0.977	
1998	0.239	0.516	0.696	0.773	0.831	0.866	0.893	0.905	0.923	0.932	0.937	0.946	0.951	0.954	0.956	0.959	0.963		
1999	0.232	0.480	0.667	0.760	0.820	0.851	0.875	0.893	0.915	0.932	0.941	0.945	0.950	0.952	0.956	0.963			
2000	0.234	0.474	0.667	0.764	0.816	0.856	0.878	0.909	0.929	0.943	0.953	0.957	0.958	0.964	0.968				
2001	0.213	0.470	0.664	0.765	0.824	0.863	0.890	0.917	0.924	0.930	0.938	0.948	0.954	0.957					
2002	0.206	0.486	0.677	0.773	0.823	0.867	0.898	0.914	0.931	0.938	0.945	0.949	0.957						
2003	0.186	0.464	0.645	0.742	0.805	0.847	0.892	0.904	0.918	0.927	0.933	0.941							
2004	0.203	0.486	0.677	0.764	0.812	0.852	0.876	0.897	0.907	0.919	0.928								
2005	0.205	0.480	0.654	0.753	0.806	0.851	0.869	0.888	0.907	0.913									
2006	0.210	0.477	0.672	0.777	0.825	0.869	0.896	0.918	0.928										
2007	0.211	0.491	0.679	0.776	0.826	0.865	0.884	0.907											
2008	0.222	0.494	0.673	0.778	0.842	0.886	0.906												
2009	0.213	0.490	0.655	0.744	0.809	0.846													
2010	0.217	0.489	0.678	0.768	0.836														
2011	0.206	0.487	0.679	0.773															
2012	0.212	0.508	0.687																
2013	0.209	0.509																	
2014	0.207																		

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Accident Year - Private Carrier + State Fund - Limited Statewide
Medical Paid to Medical Paid+Case Ratios

AY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1984															0.952	0.954	0.952	0.961	0.964
1985														0.991	0.991	0.991	0.989	0.983	0.983
1986													0.980	0.980	0.981	0.982	0.980	0.983	0.983
1987												0.975	0.978	0.985	0.992	0.988	0.986	0.978	0.978
1988											0.914	0.913	0.913	0.924	0.922	0.926	0.949	0.957	0.955
1989										0.976	0.982	0.986	0.977	0.965	0.959	0.957	0.958	0.952	0.941
1990									0.979	0.978	0.983	0.980	0.982	0.980	0.981	0.981	0.984	0.987	0.984
1991								0.936	0.965	0.971	0.971	0.974	0.967	0.970	0.962	0.965	0.964	0.966	0.968
1992							0.983	0.988	0.985	0.981	0.980	0.979	0.980	0.980	0.980	0.980	0.982	0.983	0.983
1993						0.954	0.957	0.963	0.967	0.959	0.960	0.961	0.964	0.965	0.963	0.961	0.957	0.957	0.958
1994					0.937	0.942	0.957	0.957	0.949	0.936	0.944	0.945	0.938	0.939	0.943	0.947	0.948	0.948	0.955
1995				0.920	0.881	0.883	0.889	0.912	0.939	0.945	0.946	0.945	0.947	0.947	0.945	0.952	0.958	0.958	0.955
1996			0.899	0.924	0.942	0.957	0.946	0.946	0.947	0.957	0.961	0.959	0.961	0.961	0.965	0.977	0.974	0.977	0.978
1997		0.741	0.815	0.904	0.923	0.911	0.922	0.914	0.905	0.916	0.919	0.922	0.927	0.930	0.934	0.937	0.931	0.939	
1998	0.523	0.776	0.841	0.873	0.889	0.920	0.927	0.942	0.955	0.958	0.955	0.957	0.954	0.960	0.966	0.982	0.977		
1999	0.476	0.775	0.831	0.873	0.889	0.895	0.900	0.917	0.917	0.927	0.950	0.954	0.956	0.961	0.975	0.977			
2000	0.492	0.789	0.856	0.881	0.901	0.921	0.919	0.929	0.937	0.943	0.951	0.957	0.958	0.953	0.952				
2001	0.520	0.817	0.877	0.889	0.904	0.917	0.919	0.927	0.932	0.919	0.926	0.917	0.922	0.926					
2002	0.533	0.788	0.860	0.900	0.919	0.929	0.941	0.944	0.951	0.956	0.952	0.955	0.955						
2003	0.489	0.779	0.842	0.869	0.890	0.898	0.918	0.916	0.928	0.928	0.935	0.939							
2004	0.505	0.786	0.866	0.895	0.898	0.908	0.922	0.926	0.936	0.939	0.941								
2005	0.508	0.752	0.823	0.853	0.878	0.893	0.908	0.915	0.901	0.909									
2006	0.478	0.741	0.799	0.835	0.852	0.886	0.907	0.926	0.932										
2007	0.498	0.766	0.845	0.881	0.904	0.912	0.922	0.932											
2008	0.509	0.769	0.817	0.851	0.865	0.897	0.907												
2009	0.530	0.789	0.838	0.859	0.885	0.896													
2010	0.531	0.783	0.850	0.883	0.905														
2011	0.521	0.768	0.846	0.878															
2012	0.494	0.733	0.808																
2013	0.495	0.767																	
2014	0.485																		

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Policy Year - Open Claims to Total Claims

PY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1979																			0.001
1980																		0.003	0.002
1981																	0.001	0.001	0.001
1982																0.002	0.001	0.001	0.001
1983															0.002	0.002	0.001	0.001	0.001
1984														0.002	0.002	0.001	0.002	0.001	0.001
1985													0.002	0.002	0.001	0.001	0.001	0.001	0.001
1986												0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001
1987											0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1988										0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
1989									0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.001
1990								0.005	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
1991							0.008	0.005	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002
1992						0.014	0.008	0.004	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
1993					0.034	0.015	0.010	0.007	0.006	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
1994				0.059	0.029	0.018	0.011	0.007	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002
1995			0.118	0.057	0.036	0.022	0.015	0.009	0.006	0.006	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.002
1996		0.231	0.119	0.067	0.038	0.022	0.013	0.009	0.007	0.006	0.005	0.005	0.004	0.003	0.003	0.003	0.002	0.002	
1997	0.450	0.230	0.124	0.065	0.036	0.020	0.013	0.010	0.007	0.006	0.005	0.004	0.003	0.003	0.003	0.002	0.002		
1998	0.471	0.255	0.134	0.074	0.038	0.024	0.017	0.012	0.008	0.007	0.006	0.004	0.004	0.003	0.003	0.002			
1999	0.519	0.260	0.132	0.067	0.043	0.026	0.018	0.012	0.009	0.007	0.006	0.005	0.004	0.003	0.003				
2000	0.512	0.254	0.127	0.070	0.040	0.025	0.015	0.010	0.008	0.007	0.006	0.005	0.004	0.004					
2001	0.510	0.243	0.129	0.072	0.042	0.027	0.016	0.010	0.008	0.008	0.006	0.005	0.005						
2002	0.508	0.244	0.127	0.069	0.041	0.025	0.016	0.012	0.009	0.008	0.007	0.005							
2003	0.524	0.256	0.127	0.070	0.041	0.028	0.018	0.013	0.011	0.009	0.007								
2004	0.514	0.246	0.125	0.067	0.040	0.026	0.020	0.016	0.012	0.010									
2005	0.501	0.238	0.120	0.067	0.040	0.027	0.019	0.015	0.011										
2006	0.504	0.236	0.118	0.064	0.041	0.028	0.020	0.015											
2007	0.501	0.235	0.114	0.068	0.041	0.027	0.020												
2008	0.486	0.227	0.120	0.067	0.039	0.027													
2009	0.499	0.241	0.128	0.068	0.044														
2010	0.498	0.234	0.123	0.070															
2011	0.493	0.227	0.118																
2012	0.496	0.234																	
2013	0.502																		
2014																			

Request 10:

For policy year data, please forward as many calendar years of tail development (19th to ultimate) as possible, separately for indemnity vs. medical loss. Please also provide the NCCI's rationale for the selections made in this filing.

Response:

Attachment 10 contains ten years of tail development, for indemnity and medical losses separately.

NCCI's selections were made such that the proposed tail factors are responsive to the latest available data, while maintaining stability relative to the tail factors underlying the 1/1/15 filing and also giving consideration to historical tail factor data.

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Determination of Premium and Losses Developed to an Ultimate Report

Determination of Policy Year Loss Development Factors (19th-to-Ultimate Report)

Indemnity Paid+Case Data for Matching Companies

(1)	(2)	(3)	(4)	(5)	(6)	(7)
					Factor to	Indicated
Policy	Losses for Policy Year		Losses for All Prior Policy Years		Adjust Losses	19th-to-Ult Development
Year	19th Report	20th Report	Previous	Current	for Prior Policy Years	for Policy Year
1985	137,352,070	137,546,431	884,527,350	884,348,136	0.548	0.999
1986	152,026,801	151,709,928	1,021,894,567	1,021,628,806	0.546	0.995
1987	177,391,067	177,684,170	1,215,087,422	1,215,769,527	0.529	1.009
1988	198,474,709	198,715,575	1,391,269,271	1,391,761,184	0.519	1.006
1989	218,972,637	219,010,945	1,574,118,975	1,573,978,893	0.509	0.999
1990	227,070,139	227,101,992	1,740,222,671	1,741,179,800	0.551	1.008
1991	225,355,332	225,327,519	1,968,281,792	1,970,265,933	0.630	1.014
1992	200,549,303	200,679,586	2,195,087,537	2,198,064,275	0.787	1.020
1993	183,188,006	183,535,361	2,399,277,237	2,401,159,473	0.934	1.013
1994	164,000,954	164,145,266	2,575,187,385	2,577,398,341	1.096	1.013

Selected Indemnity 19th-to-Ultimate Loss Development Factor   1.015

Medical Paid+Case Data for Matching Companies

(8)	(9)	(10)	(11)	(12)	(13)	(14)
					Factor to	Indicated
Policy	Losses for Policy Year		Losses for All Prior Policy Years		Adjust Losses	19th-to-Ult Development
Year	19th Report	20th Report	Previous	Current	for Prior Policy Years	for Policy Year
1985	92,696,743	94,357,906	549,220,884	550,424,536	0.564	1.041
1986	105,414,458	105,378,013	644,782,442	646,244,303	0.549	1.025
1987	139,363,096	140,099,498	789,685,781	792,692,987	0.465	1.052
1988	152,223,902	152,633,519	930,808,865	933,287,965	0.480	1.037
1989	167,635,672	167,926,896	1,074,596,290	1,079,600,293	0.479	1.064
1990	182,510,617	182,123,647	1,210,755,402	1,209,584,537	0.502	0.985
1991	191,573,815	192,847,310	1,391,708,184	1,391,806,331	0.551	1.008
1992	165,486,131	165,432,240	1,584,603,674	1,590,881,650	0.723	1.052
1993	169,737,364	170,485,300	1,756,367,002	1,757,043,235	0.775	1.010
1994	151,020,897	149,363,054	1,920,214,880	1,921,166,657	0.936	0.996

Selected Medical 19th-to-Ultimate Loss Development Factor   1.030

(7) = 1 + [(3)-(2) + ((5)-(4)) / (6)] / (2)
(14) = 1 + [(10)-(9) + ((12)-(11)) / (13)] / (9)
Columns (4) and (11) are valued as of the date at which the given policy year is at a 19th report.
Columns (5) and (12) are valued as of the date at which the given policy year is at a 20th report.

Request 11:

Regarding the selected annual indemnity and medical trend factors as included in Appendix A-III of the Technical Supplement, please provide the supporting calculations underlying the components of the minimum and maximum trend factors presented for frequency/severity and loss ratio trends. If more than one method was considered to arrive at the figures included in the filing, please share each. Please include the on-level adjustments made for the severity trends. For the frequency trends, please include the underlying claim counts and the adjustments made for wage growth. Please also provide the rationale for your trend selections.

Response:

The minimum and maximum loss ratio trends in Appendix A-III of the Technical Supplement are calculated by multiplying a selected 0.975 (-2.5%) frequency trend by the minimum and maximum severity trends contained within the exhibit.

The minimum and maximum frequency trend factors are selected by fitting an exponential curve to the most recent available frequencies by policy year, where the number of policy years used to fit each curve varies from 5 to 15. The minimum and maximum trend factors are based on the range of annual trend factors implied by the fitted curves.

A similar approach is used to calculate the minimum and maximum severity trend factors: a number of curves are fit to the severities by policy year, where again the number of points used to fit each curve varies from 5 to 15. Note that the minimum and maximum severity trend factors shown in Appendix A-III are based on severities calculated using an average of paid and paid plus case losses.

The Supplemental Loss Development and Trend Information exhibit for the 1/1/16 filing is included as Attachment 11. Pages 4 and 5 of this attachment contain the derivation of the frequencies and severities used in the calculation of the minimum and maximum trend factors discussed above. The loss on-level factors are shown in columns (34) and (46). The ultimate claim counts underlying the policy year frequencies are shown in column (15), and the wage adjustments applied to policy year premium are displayed in column (21).

The loss ratio trends for the 1/1/16 filing were selected while giving consideration to both the frequency and severity trends. In Missouri, large frequency declines were observed between policy years 2003 and 2005; however, these decreases are not

expected to continue when projecting Missouri's frequency changes. The more moderate frequency declines observed since that time period are more indicative of future frequency changes in the state. Therefore, we expect the appropriate frequency trend factor to be closer to the higher range provided in Appendix A-III than the minimum, which includes the large decreases.

Indemnity severity has been relatively flat in recent years; therefore the decrease in indemnity loss ratios is driven mostly by the decrease in frequency. The selected indemnity loss ratio is heavily made up of the frequency declines since severity is flat. The current approved indemnity loss ratio was maintained based on this year's analysis.

Medical severity has been increasing steadily for many years, but the rate of increase has moderated in recent years. This year, based on the moderated severity trend, the selected medical loss ratio trend was decreased by 0.5%.

Supplemental Loss Development and Trend Information
Missouri January 1, 2016 Filing
Introduction

Supplemental Loss Development and Trend Information provides the data underlying the frequency and severity trend graphs shown in the filing document. The data included (i.e., policy year or accident year, limited or unlimited, etc.) is consistent with the data used in the filing and can vary by state. All of the data shown is as of the latest valuation date, December 31, 2014.

The development and on-level factors shown in the **Supplemental Loss Development and Trend Information** exhibit can be found in the filing's technical supplement. The frequency and severity values provided have been adjusted to the current wage level.

Note: The information shown in the **Supplemental Loss Development and Trend Information** exhibit is provided for informational purposes only. NCCI makes no warranty that any of the loss development factors, on-level factors, wage adjustment factors or any other information provided is suitable for application to an individual carrier's data.

Supplemental Loss Development and Trend Information
Missouri January 1, 2016 Filing
Definitions

Accident Year (AY)—A loss accounting definition in which experience is summarized by the calendar year in which an accident occurred.

Calendar Year (CY)
1. The 12-month period beginning January 1 and ending December 31.
2. Method of accounting for all financial transactions occurring during a specific year.

Case Reserves—Reserves that an insurance company establishes for specific (known) claims.

DSR Premium (commonly referred to as DSR Level Premium)—The standard earned premium that would result if business were written at a common benchmark level known as the designated statistical reporting level (e.g., NCCI state-approved loss costs or rates).

Frequency—The number of workplace injuries resulting in lost-time claims per million dollars of on-leveled, wage-adjusted premium.

Incurred Claim Count—The total of all claims reported, whether open or closed, as of a given valuation date. An indemnity claim is associated with a payment or case reserve for an indemnity loss (i.e., lost work time-related benefits) and excludes claims closed without an indemnity payment.

Limited Losses—Losses that result after the application of NCCI's individual large loss procedure (in which individual large claims are limited to state- and year-specific large loss thresholds).

On-Level Factor—Applied to historical policy and accident year premiums and losses to adjust the historical experience to reflect approved loss cost and rate level changes as well as statutory benefit level changes implemented since that time period.

Paid+Case Losses—The sum of paid losses and case reserves. Also known as case-incurred losses.

Paid Losses—Losses that an insurance company has paid as a result of claim activity.

Supplemental Loss Development and Trend Information
Missouri January 1, 2016 Filing
Definitions

Policy Year

1. The one-year period beginning with the effective date or anniversary of a policy.

2. A premium and loss accounting definition in which experience is summarized for all policies with effective dates in a given calendar year period.

Severity—The average indemnity or medical cost per lost-time claim.

Ultimate Development Factor—For an aggregation of data, an estimate of the development that will occur between the data's current valuation date and the time period when all claims are closed. For example, an ultimate loss development factor applied to Policy Year 2000 reported losses represents an estimate of the Policy Year 2000 ultimate losses.

Unlimited Losses—Losses that have not been adjusted to reflect NCCI's large loss procedure (see **Limited Losses**).

Valuation Date—The date that premiums and losses are valued for reporting purposes. Premiums and losses change over time from initial estimates to final values (other than calendar year statistics). Therefore, interim snapshots have associated valuation dates.

Wage Level Adjustment Factor—Ratio of the average workers' wage during the most recent policy or accident year period to the average workers' wage during a historical time period.

Supplemental Loss Development and Trend Information
Missouri January 1, 2016 Filing
Limited–Statewide–Private Carrier + State Fund–Policy Year

Lost-Time Claim Frequency and Severity–Based on Data in Excess of Wage Inflation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Claim Freq Per Million On-level	Indemnity Severity			Medical Severity		
Policy Year	Premium	Paid	Paid + Case	Average Pd/P+C	Paid	Paid + Case	Average Pd/P+C
1999	31.175	23,614	23,761	23,687	16,491	16,150	16,321
2000	30.254	24,319	24,091	24,205	16,968	17,378	17,173
2001	27.691	24,637	24,919	24,778	17,621	17,551	17,586
2002	27.653	23,280	23,213	23,247	17,836	17,684	17,760
2003	27.164	24,427	24,639	24,533	20,294	20,096	20,195
2004	24.199	22,731	23,155	22,943	20,928	21,613	21,270
2005	21.367	22,059	22,055	22,057	22,644	22,714	22,679
2006	20.264	21,413	21,479	21,446	23,598	23,397	23,497
2007	20.331	22,027	21,724	21,876	23,797	23,311	23,554
2008	18.850	22,432	22,561	22,497	25,746	27,303	26,524
2009	17.735	22,263	22,048	22,155	25,855	24,904	25,380
2010	18.764	22,433	21,878	22,156	27,543	26,852	27,197
2011	17.865	22,650	21,835	22,243	27,710	28,110	27,910
2012	17.278	22,275	21,332	21,804	27,380	27,664	27,522
2013	16.670	23,444	21,179	22,312	27,534	27,997	27,765

(9)	(10)	(11)
Annual Percentage Change		
Claim Frequency	Indemnity Severity (Avg Pd/P+C)	Medical Severity (Avg Pd/P+C)
-3.0%	2.2%	5.2%
-8.5%	2.4%	2.4%
-0.1%	-6.2%	1.0%
-1.8%	5.5%	13.7%
-10.9%	-6.5%	5.3%
-11.7%	-3.9%	6.6%
-5.2%	-2.8%	3.6%
0.3%	2.0%	0.2%
-7.3%	2.8%	12.6%
-5.9%	-1.5%	-4.3%
5.8%	0.0%	7.2%
-4.8%	0.4%	2.6%
-3.3%	-2.0%	-1.4%
-3.5%	2.3%	0.9%

Notes: (2) = (15) / [(22) / 1,000,000]
(3) = (27) / (15)
(4) = (31) / (15)
(5) = (33) / (15)

(6) = (39) / (15)
(7) = (43) / (15)
(8) = (45) / (15)

(9) is based on (2)
(10) is based on (5)
(11) is based on (8)

Claim Counts

(12)	(13)	(14)	(15)
Policy Year	Incurred Lost-Time Claim Count	Ultimate Development Factor	Ultimate Incurred Lost-Time Claim Count
1999	15,782	1.000	15,782
2000	15,651	1.000	15,651
2001	14,791	1.000	14,791
2002	14,735	1.000	14,735
2003	14,707	1.000	14,707
2004	13,826	1.000	13,826
2005	12,625	1.000	12,625
2006	12,468	1.000	12,468
2007	13,145	1.000	13,145
2008	11,455	1.000	11,455
2009	10,368	1.000	10,368
2010	11,110	1.000	11,110
2011	10,563	0.999	10,552
2012	9,971	1.008	10,051
2013	9,307	1.053	9,800

Notes: (15) = (13) x (14)

Premium

(16)	(17)	(18)	(19)	(20)	(21)	(22)
Policy Year	DSR Level Premium	Ultimate Development Factor	Ultimate Premium	On-level Factor	Factor to Adjust to 2013 Wage Levels	Wage-Adj On-level Ult. Prem
1999	411,235,958	1.000	411,235,958	0.862	1.428	506,231,464
2000	421,615,021	1.000	421,615,021	0.896	1.369	517,321,631
2001	450,371,951	1.000	450,371,951	0.890	1.333	534,141,134
2002	466,590,316	1.000	466,590,316	0.874	1.307	532,846,141
2003	546,329,406	1.000	546,329,406	0.777	1.275	541,412,441
2004	590,855,397	1.000	590,855,397	0.783	1.235	571,357,169
2005	621,965,756	1.000	621,965,756	0.794	1.196	590,867,468
2006	656,636,762	1.000	656,636,762	0.812	1.154	615,268,646
2007	712,833,397	1.000	712,833,397	0.819	1.107	646,539,891
2008	620,718,136	1.000	620,718,136	0.904	1.083	607,683,055
2009	555,177,627	1.000	555,177,627	0.971	1.084	584,602,041
2010	564,983,690	1.000	564,983,690	0.985	1.064	592,102,907
2011	553,032,778	1.000	553,032,778	1.029	1.038	590,639,007
2012	531,791,433	0.999	531,259,642	1.079	1.015	581,729,308
2013	546,152,621	1.006	549,429,537	1.070	1.000	587,889,605

(19) = (17) x (18)
(22) = (19) x [(20) x (21)]

Supplemental Loss Development and Trend Information
Missouri January 1, 2016 Filing
Limited–Statewide–Private Carrier + State Fund–Policy Year

Limited Indemnity Losses

(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
	Paid				Paid + Case				Average Pd/P+C		
Policy Year	Losses	Ultimate Development Factor	Ultimate Losses	Wage-Adj On-level Ult. Losses	Losses	Ultimate Development Factor	Ultimate Losses	Wage-Adj On-level Ult. Losses	Ultimate Losses	Wage-Adj On-level Ult. Losses	Loss On-level Factor
1999	186,963,539	1.048	195,937,789	372,673,675	194,244,220	1.015	197,157,883	374,994,293	196,547,836	373,833,984	1.332
2000	200,953,391	1.054	211,804,874	380,613,359	206,719,868	1.015	209,820,666	377,047,737	210,812,770	378,830,548	1.313
2001	201,559,484	1.061	213,854,613	364,408,261	213,103,130	1.015	216,299,677	368,574,650	215,077,145	366,491,455	1.278
2002	195,899,273	1.071	209,808,121	343,036,278	205,504,944	1.018	209,204,033	342,048,594	209,506,077	342,542,436	1.251
2003	210,260,200	1.080	227,081,016	359,242,167	224,786,254	1.019	229,057,193	362,368,479	228,069,105	360,805,324	1.241
2004	189,792,237	1.088	206,493,954	314,283,798	206,221,488	1.020	210,345,918	320,146,487	208,419,936	317,215,143	1.232
2005	172,069,982	1.104	189,965,260	278,489,071	185,298,080	1.025	189,930,532	278,438,160	189,947,896	278,463,616	1.226
2006	169,964,619	1.122	190,700,303	266,980,424	186,079,501	1.028	191,289,727	267,805,618	190,995,015	267,393,021	1.213
2007	190,046,190	1.149	218,363,072	289,549,433	208,473,691	1.033	215,353,323	285,558,506	216,858,198	287,553,971	1.198
2008	169,511,246	1.188	201,379,360	256,960,063	195,120,778	1.038	202,535,368	258,435,130	201,957,364	257,697,596	1.178
2009	146,788,569	1.249	183,338,923	230,823,704	171,611,792	1.058	181,565,276	228,590,682	182,452,100	229,707,194	1.161
2010	147,724,048	1.365	201,643,326	249,231,151	182,090,899	1.080	196,658,171	243,069,499	199,150,749	246,150,326	1.162
2011	127,453,980	1.564	199,338,025	239,006,292	171,881,770	1.118	192,163,819	230,404,419	195,750,922	234,705,355	1.155
2012	95,194,960	2.024	192,674,599	223,887,884	156,770,645	1.177	184,519,049	214,411,135	188,596,824	219,149,509	1.145
2013	55,589,609	3.834	213,130,561	229,754,745	138,516,526	1.390	192,537,971	207,555,933	202,834,266	218,655,339	1.078

Notes: (26) = (24) x (25) (30) = (28) x (29) (32) = [0.50 x (26)] + [0.50 x (30)]
(27) = (26) x [(34) x (21)] (31) = (30) x [(34) x (21)] (33) = (32) x [(34) x (21)]

Limited Medical Losses

(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)
	Paid				Paid + Case				Average Pd/P+C		
Policy Year	Losses	Ultimate Development Factor	Ultimate Losses	Wage-Adj On-level Ult. Losses	Losses	Ultimate Development Factor	Ultimate Losses	Wage-Adj On-level Ult. Losses	Ultimate Losses	Wage-Adj On-level Ult. Losses	Loss On-level Factor
1999	170,584,425	1.079	184,060,595	260,261,681	175,175,513	1.029	180,255,603	254,881,423	182,158,099	257,571,552	0.990
2000	180,797,405	1.084	195,984,387	265,558,844	195,451,039	1.027	200,728,217	271,986,734	198,356,302	268,772,789	0.990
2001	180,818,174	1.092	197,453,446	260,638,549	191,305,999	1.028	196,662,567	259,594,588	197,058,007	260,116,569	0.990
2002	184,809,220	1.099	203,105,333	262,818,301	195,123,023	1.032	201,366,960	260,568,846	202,236,147	261,693,574	0.990
2003	213,838,812	1.106	236,505,726	298,470,226	225,400,493	1.039	234,191,112	295,549,183	235,348,419	297,009,705	0.990
2004	212,570,333	1.113	236,590,781	289,350,525	234,034,130	1.044	244,331,632	298,817,586	240,461,207	294,084,056	0.990
2005	213,186,061	1.125	239,834,319	285,882,508	229,554,520	1.048	240,573,137	286,763,179	240,203,728	286,322,844	0.997
2006	224,825,251	1.134	254,951,835	294,214,418	238,928,348	1.058	252,786,192	291,715,266	253,869,014	292,964,842	1.000
2007	245,290,170	1.152	282,574,276	312,809,724	260,893,051	1.061	276,807,527	306,425,932	279,690,902	309,617,829	1.000
2008	233,951,803	1.164	272,319,899	294,922,451	272,179,622	1.061	288,782,579	312,751,533	280,551,239	303,836,992	1.000
2009	208,862,551	1.184	247,293,260	268,065,894	224,713,579	1.060	238,196,394	258,204,891	242,744,827	263,135,392	1.000
2010	238,076,305	1.208	287,596,176	306,002,331	265,011,007	1.058	280,381,645	298,326,070	283,988,911	302,164,201	1.000
2011	225,169,632	1.251	281,687,210	292,391,324	270,090,951	1.058	285,756,226	296,614,963	283,721,718	294,503,143	1.000
2012	204,629,619	1.325	271,134,245	275,201,259	256,258,495	1.069	273,940,331	278,049,436	272,537,288	276,625,347	1.000
2013	166,664,714	1.619	269,830,172	269,830,172	245,853,818	1.116	274,372,861	274,372,861	272,101,517	272,101,517	1.000

Notes: (38) = (36) x (37) (42) = (40) x (41) (44) = [0.50 x (38)] + [0.50 x (42)]
(39) = (38) x [(46) x (21)] (43) = (42) x [(46) x (21)] (45) = (44) x [(46) x (21)]

<u>Request 12:</u>

Were countrywide trends considered in the selection of trend factors for Missouri? Please explain.

<u>Response:</u>

The selection of trend factors in Missouri focused exclusively on Missouri data. While NCCI is mindful of countrywide trends, we believe that the data in Missouri is sufficiently credible and provides a more appropriate trend estimate for the state than a countrywide trend.

NATIONAL COUNCIL ON COMPENSATION INSURANCE
MISSOURI VOLUNTARY LOSS COST FILING
AVAILABLE FOR USE EFFECTIVE 1/1/2016
REQUEST FROM SELECT ACTUARIAL SERVICES
DATED SEPTEMBER 29, 2015

Request 13:

Please supply the derivation of the 0.819 factor to adjust the 19th-to-ultimate LDF to a limited basis, as presented in Appendix A-II of the Technical Supplement.

Response:

Attached is an exhibit which shows the calculations for the standard (nearest million dollar) thresholds, along with the interpolated figure for Missouri's $10,056,330 threshold. The final factor $F_T = 0.819$ is derived from the countrywide factors ULDF and $CLDF_T$, the latter which is calculated from ULDF, $ELDF_T$, and (Missouri-specific) ELF_T.

ULDF -19th-ultimate factor selected from 5 years of unlimited countrywide paid+case data.

$ELDF_T$ – Countrywide factor for a particular threshold that now comes from the "Large Loss and Catastrophe" Financial Data Call, rather than external data.

ELF_T – Excess ratio for a particular threshold that uses countrywide per claim excess ratio curves with entry ratios based on Missouri severities and weights by injury type (Fatal, Permanent Total, Permanent Partial, Temporary Total, and Medical Only).

Calculation of Tail Adjustment Factors (F$_T$) by Threshold
Rate Filing Season 2015 - 2016
ULDF = 1.038

Threshold	ELF$_T$	ELDF$_T$	CLDF$_T$	F$_T$
10,000,000	0.01130	2.51103	1.03109	0.818
11,000,000	0.00968	2.57268	1.03198	0.842
10,056,330				**0.819**

Notes:

(1) ULDF = Uncapped 19th to ultimate tail factor (weighted average of state ULDFs)

(2) ELF$_T$ = Excess ratio for threshold T

(3) ELDF$_T$ = Excess paid+case tail factor, 19th to ultimate, for threshold T

(4) CLDF$_T$ = Capped paid+case tail factor = ULDF((1-ELF)/(1-(ULDF/ELDF)ELF))

(5) F$_T$ = Factor to apply to state-specific ULDF = (CLDF-1)/(ULDF-1)

Request 14:

Given that the current filing is applicable strictly to voluntary business, and given that the voluntary-only indication provided in response to Request #1 produces a different indicated loss cost change from the filed indication (based upon voluntary plus ARM data), please explain the NCCI's rationale for basing the filing upon voluntary plus ARM data.

Response:

One of NCCI's primary objectives is to foster a healthy workers compensation system. Having a healthy benchmark that is calculated consistently from year to year helps the market function as efficiently as possible. To achieve a competitive market, the loss costs in effect must be sufficient to cover the losses of the state's workers compensation system. In establishing loss costs that are appropriate for Missouri's workers compensation system, NCCI uses the statewide data as the basis for the loss costs filings. This results in loss costs that are appropriate for the average employer in the state. If voluntary-only data were used for determining the indicated voluntary loss cost level, the resulting loss costs would decrease as the size of the assigned risk (A/R) market increases.

There are other advantages to basing the filing upon voluntary plus ARM data. First, it utilizes the largest volume of credible and usable data in setting the benchmark level of loss costs. Second, it promulgates these benchmarks consistently from year to year, without making them dependent on the size of the A/R market, which regularly fluctuates as business moves back and forth between the A/R and voluntary markets. Third, it encourages an actively competitive voluntary market that allows insurance carriers to write as much business as possible voluntarily.

<u>Request 15</u>

Is it possible for NCCI to produce an indication which reflects assumptions as to development and trend which are based upon voluntary-only data?

<u>Response</u>:

Using loss and premium development factors that are based on voluntary-only data does not change the indication provided in response to Request 1 (-4.4%).

NCCI selects indemnity and medical loss ratio trends by analyzing the historical loss ratio experience. Using voluntary-only data has minimal impact on the loss ratio trends. Based on our analysis, the voluntary-only trend selections would not differ from the selected loss ratio trends in the filing. Therefore, the indication of -4.4% did not change when we reflected the voluntary-only data for both development and trend.

Request 16:

Please provide ten years of countrywide accident year developed LAE ratios which supported each of the 1/1/07 through 1/1/14 Missouri filings, in the format of Attachment 4 supplied in response to Request #4 (i.e., separately displaying total LAE, DCCE and AOE).

Response:

Attachment 16 contains DCCE, AOE and LAE triangles with the requested values.

NCCI Annual Loss Adjustment Expense Review
Summary of DCCE and AOE Projections by AY and Evaluation
Selected Ratios of LAE/Loss

				Selected DCCE Ratios Supporting:				
Year	1/1/14 Filing	1/1/13 Filing	1/1/12 Filing	1/1/11 Filing	1/1/10 Filing	1/1/09 Filing	1/1/08 Filing	1/1/07 Filing
1996								8.1%
1997							8.9%	8.9%
1998						9.2%	9.2%	8.9%
1999					9.2%	9.1%	9.1%	8.8%
2000				9.7%	9.6%	9.7%	9.7%	9.2%
2001			10.0%	10.1%	10.0%	10.1%	9.9%	9.4%
2002		10.3%	10.4%	10.5%	10.6%	10.6%	10.5%	9.8%
2003	10.0%	10.4%	10.5%	10.6%	10.7%	10.8%	10.7%	10.0%
2004	10.0%	10.3%	10.5%	10.7%	10.7%	10.8%	10.6%	10.0%
2005	10.3%	10.4%	10.5%	10.8%	10.9%	11.1%	11.5%	10.3%
2006	10.7%	10.4%	10.6%	10.8%	11.1%	11.3%	11.9%	
2007	10.8%	10.9%	11.1%	11.5%	11.8%	12.2%		
2008	11.3%	11.3%	11.6%	11.9%	12.5%			
2009	11.7%	11.8%	12.0%	13.1%				
2010	12.0%	12.1%	12.3%					
2011	12.5%	12.9%						
2012	12.9%							

				Selected AOE Ratios Supporting:				
Year	1/1/14 Filing	1/1/13 Filing	1/1/12 Filing	1/1/11 Filing	1/1/10 Filing	1/1/09 Filing	1/1/08 Filing	1/1/07 Filing
1996								7.6%
1997							7.1%	7.4%
1998						6.7%	6.7%	6.8%
1999					6.2%	6.2%	6.3%	6.4%
2000				6.3%	6.1%	6.1%	6.2%	6.3%
2001			6.3%	6.5%	6.4%	6.4%	6.5%	6.6%
2002		6.6%	6.5%	6.7%	6.6%	6.5%	6.6%	6.7%
2003	7.5%	7.5%	7.3%	7.5%	7.4%	7.4%	7.5%	7.4%
2004	7.0%	7.1%	6.9%	7.1%	7.0%	6.9%	7.0%	6.7%
2005	7.5%	7.9%	7.7%	7.9%	7.8%	7.7%	7.8%	7.3%
2006	7.8%	8.3%	8.0%	8.1%	8.1%	8.1%	7.9%	
2007	7.8%	8.3%	8.0%	8.1%	8.1%	8.2%		
2008	7.1%	7.6%	7.4%	7.5%	7.6%			
2009	7.7%	7.8%	7.6%	8.1%				
2010	7.3%	7.5%	7.4%					
2011	7.0%	7.0%						
2012	7.4%							

NCCI Annual Loss Adjustment Expense Review
Summary of DCCE and AOE Projections by AY and Evaluation
Selected Ratios of LAE/Loss

Year	Selected LAE Ratios Supporting:							
	1/1/14 Filing	1/1/13 Filing	1/1/12 Filing	1/1/11 Filing	1/1/10 Filing	1/1/09 Filing	1/1/08 Filing	1/1/07 Filing
1996								15.6%
1997							16.1%	16.2%
1998						15.9%	15.9%	15.7%
1999					15.4%	15.3%	15.3%	15.2%
2000				16.0%	15.8%	15.8%	15.9%	15.6%
2001			16.3%	16.6%	16.4%	16.4%	16.4%	16.0%
2002		16.9%	16.9%	17.2%	17.1%	17.1%	17.1%	16.6%
2003	17.5%	17.9%	17.8%	18.2%	18.1%	18.2%	18.2%	17.4%
2004	17.0%	17.4%	17.4%	17.8%	17.7%	17.7%	17.6%	16.7%
2005	17.8%	18.3%	18.2%	18.7%	18.7%	18.8%	19.2%	17.5%
2006	18.5%	18.7%	18.6%	19.0%	19.2%	19.4%	19.8%	
2007	18.6%	19.2%	19.1%	19.5%	19.9%	20.4%		
2008	18.4%	18.9%	19.0%	19.5%	20.1%			
2009	19.4%	19.6%	19.6%	21.3%				
2010	19.3%	19.6%	19.7%					
2011	19.5%	19.9%						
2012	20.3%							

Request 17

We have observed that the projected ultimate countrywide LAE ratios appear to be decreasing over time for a given accident year. For example, the ultimate LAE included for accident year 2009 in the 1/1/11 filing was 21.3%, but is now 18.6% in the current (1/1/16) filing; other accident years present a similar pattern. This could be causing an overstatement of the filed LAE provision. Please explain why we should not consider the filed DCCE and AOE provisions to be too high.

Response:

For several years, NCCI observed a general downward pattern in the loss adjustment expense (LAE) to loss ratios from the initial evaluation of any particular accident year to subsequent evaluations of that same accident year—primarily in the observed DCCE ratios. Despite this pattern observed across valuation dates, the DCCE ratios within any individual valuation show an upward trend from the older to the more recent accident years. We do not believe the filed DCCE and AOE provisions to be too high. Please refer to Exhibit II in the Missouri filing for the "Accident Year Developed LAE Ratios." An upward trend is apparent in these values. As can be seen, the indicated Accident Year 2014 LAE provision is 20.4%, although NCCI selected 19.9% in the 2014 filing.

NCCI revised its countrywide LAE methodology a few years ago by moving from a two-year to a three-year experience period in order to add stability to the approach. In addition, the methodology was further refined this year to improve year-to-year stability in the indicated LAE values going forward by applying actuarial judgment in the selection of the 10th-to-utlimate expense ratio tail factors. NCCI regularly monitors its ratemaking methodologies and incorporates improvements to them over time, as appropriate, to address the stability and accuracy of the results.

Request 18:

In reviewing Attachment 10 of your response to Request #10, we note that the indicated indemnity 19-to-ultimate tail factors for policy years 1985-1990 are, on average, lower than for policy years 1991-1994; the medical 19-to-ultimate factors show an opposite pattern, with 1985-1989 producing a much higher average than the 1990-1994 policy years. Do you know what has caused the indemnity tail factors to increase and the medical tail factors to decrease?

Response:

Experience in the tails is inherently volatile and the tail factors in any given year tend to be driven by unexpected development on a relatively small number of large claims. We do not have a clear explanation for what is causing the patterns noted above.

Request 19:

For each of the 1/1/07 through 1/1/16 Missouri filings, please provide:

a. The historical countrywide 10:ultimate development factors for each of DCCE, AOE and loss, for the various accident years considered in a given filing, which were available and considered in the selection of the 10:ultimate development factors at the time the filing was made. We are looking for the factors used to generate the DCCE and AOE ratios (if different sets of loss development were reflected to match to DCCE versus AOE, please supply each).

b. The selected countrywide 10:ultimate development factors for each of DCCE, AOE and loss, based upon whatever methodology the NCCI was using in each filing.

c. What the NCCI's selected countrywide 10:ultimate development factors would have been for each of DCCE, AOE and loss if, at the time a given prior filing was made, the NCCI had utilized an approach similar to that employed in the current 1/1/16 filing (i.e., the application of judgment).

Response:

a. Please see pdf file Attachment19

b. Please see pdf file Attachment19

c. Each year NCCI files what it believes is the most actuarially appropriate LAE indication. The requested info is not available.

Countrywide LAE Analysis—Evaluated as of 12/31/2014—10th:Ult Factors Underlying 1/1/2016 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
2000	1.163	1.167	0.997	1.051	1.033	1.017
2001	1.178	1.208	0.975	1.035	1.042	0.993
2002	1.137	1.176	0.967	1.015	1.018	0.997
2003	1.168	1.198	0.975	1.045	1.028	1.017
2004	1.195	1.187	1.007	1.034	1.029	1.005
Selected	---	---	0.985	---	---	1.000

Underlying 10th - Ult. Tail Factors and Selected Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
2000	1.134	1.169	0.970	1.109	1.043	1.063
2001	1.170	1.245	0.940	1.112	1.047	1.062
2002	1.169	1.228	0.952	1.115	1.030	1.083
2003	1.121	1.252	0.895	1.047	1.037	1.010
2004	1.084	1.232	0.880	1.026	1.032	0.994
Selected	---	---	0.915	---	---	1.000

Countrywide LAE Analysis—Evaluated as of 12/31/2013—10th:Ult Factors Underlying 1/1/2015 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1999	1.165	1.167	0.998	1.049	1.026	1.022
2000	1.163	1.167	0.997	1.051	1.033	1.017
2001	1.178	1.208	0.975	1.035	1.042	0.993
2002	1.151	1.185	0.971	1.028	1.031	0.997
2003	1.203	1.183	1.017	1.075	1.016	1.058
Sel.—(5 year avg)	1.172	1.182	0.992	1.048	1.030	1.017

Underlying 10th - Ult. Tail Factors and Selected Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1999	1.044	1.204	0.867	1.021	1.061	0.962
2000	1.134	1.169	0.970	1.109	1.043	1.063
2001	1.170	1.245	0.940	1.112	1.047	1.062
2002	1.167	1.222	0.955	1.116	1.029	1.085
2003	1.110	1.249	0.889	1.041	1.036	1.005
Sel.—(5 year avg)	1.125	1.218	0.924	1.080	1.043	1.035

Countrywide LAE Analysis—Evaluated as of 12/31/2012—10th:Ult Factors Underlying 1/1/2014 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1998	1.193	1.194	0.999	1.129	1.058	1.067
1999	1.165	1.167	0.998	1.049	1.026	1.022
2000	1.163	1.167	0.997	1.051	1.033	1.017
2001	1.161	1.198	0.969	1.043	1.041	1.002
2002	1.134	1.180	0.961	1.030	1.032	0.998
Sel.—(5 year avg)	1.163	1.181	0.985	1.060	1.038	1.021

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1998	1.100	1.214	0.906	1.051	1.056	0.995
1999	1.044	1.204	0.867	1.021	1.061	0.962
2000	1.134	1.169	0.970	1.109	1.043	1.063
2001	1.169	1.244	0.940	1.112	1.050	1.059
2002	1.163	1.220	0.953	1.110	1.030	1.078
Sel.—(5 year avg)	1.122	1.210	0.927	1.081	1.048	1.031

Countrywide LAE Analysis—Evaluated as of 12/31/2011—10th:Ult Factors Underlying 1/1/2013 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1997	1.175	1.210	0.971	1.142	1.094	1.044
1998	1.193	1.194	0.999	1.129	1.058	1.067
1999	1.165	1.167	0.998	1.049	1.026	1.022
2000	1.163	1.167	0.997	1.051	1.038	1.013
2001	1.169	1.202	0.973	1.047	1.041	1.006
Sel.—(5 year avg)	1.173	1.188	0.987	1.084	1.051	1.031

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1997	1.118	1.242	0.900	1.077	1.096	0.983
1998	1.100	1.214	0.906	1.051	1.056	0.995
1999	1.044	1.204	0.867	1.021	1.061	0.962
2000	1.134	1.169	0.970	1.109	1.043	1.063
2001	1.155	1.261	0.916	1.095	1.049	1.044
Sel.—(5 year avg)	1.110	1.218	0.911	1.071	1.061	1.009

Countrywide LAE Analysis—Evaluated as of 12/31/2010—10th:Ult Factors Underlying 1/1/2012 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1996	1.173	1.201	0.977	1.094	1.054	1.038
1997	1.175	1.210	0.971	1.142	1.094	1.044
1998	1.193	1.194	0.999	1.129	1.058	1.067
1999	1.165	1.167	0.998	1.049	1.026	1.022
2000	1.163	1.169	0.995	1.051	1.038	1.013
Sel.—(5 year avg)	1.174	1.188	0.988	1.093	1.054	1.037

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1996	1.053	1.239	0.850	1.017	1.085	0.937
1997	1.118	1.242	0.900	1.077	1.096	0.983
1998	1.100	1.214	0.906	1.051	1.056	0.995
1999	1.044	1.204	0.867	1.021	1.061	0.962
2000	1.127	1.192	0.945	1.066	1.037	1.028
Sel.—(5 year avg)	1.088	1.218	0.893	1.046	1.067	0.980

Countrywide LAE Analysis—Evaluated as of 12/31/2009—10th:Ult Factors Underlying 1/1/2011 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1995	1.167	1.142	1.022	1.097	1.035	1.060
1996	1.173	1.201	0.977	1.094	1.054	1.038
1997	1.175	1.210	0.971	1.142	1.094	1.044
1998	1.193	1.194	0.999	1.129	1.058	1.067
1999	1.171	1.162	1.008	1.052	1.019	1.032
Sel.—(5 year avg)	1.176	1.182	0.995	1.103	1.052	1.048

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1995	1.087	1.185	0.917	1.058	1.044	1.013
1996	1.053	1.239	0.850	1.017	1.085	0.937
1997	1.118	1.242	0.900	1.077	1.096	0.983
1998	1.100	1.214	0.906	1.051	1.056	0.995
1999	1.059	1.187	0.892	1.014	1.029	0.985
Sel.—(5 year avg)	1.083	1.213	0.893	1.043	1.062	0.982

Countrywide LAE Analysis—Evaluated as of 12/31/2008—10th:Ult Factors Underlying 1/1/2010 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1994	1.147	1.186	0.967	1.067	1.072	0.995
1995	1.167	1.142	1.022	1.097	1.035	1.060
1996	1.173	1.201	0.977	1.094	1.054	1.038
1997	1.175	1.210	0.971	1.142	1.094	1.044
1998	1.193	1.195	0.998	1.129	1.058	1.067
Sel.—(5 year avg)	1.171	1.187	0.987	1.106	1.063	1.040

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1994	1.055	1.196	0.882	1.030	1.065	0.967
1995	1.087	1.185	0.917	1.058	1.044	1.013
1996	1.053	1.239	0.850	1.017	1.085	0.937
1997	1.118	1.242	0.900	1.077	1.096	0.983
1998	1.096	1.214	0.903	1.052	1.075	0.979
Sel.—(5 year avg)	1.082	1.215	0.891	1.047	1.073	0.976

Countrywide LAE Analysis—Evaluated as of 12/31/2007—10th:Ult Factors Underlying 1/1/2009 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1993	1.168	1.173	0.996	1.090	1.058	1.030
1994	1.147	1.186	0.967	1.067	1.072	0.995
1995	1.167	1.142	1.022	1.097	1.035	1.060
1996	1.173	1.201	0.977	1.094	1.054	1.038
1997	1.175	1.211	0.970	1.142	1.095	1.043
Sel.—(5 year avg)	1.166	1.183	0.986	1.098	1.063	1.033

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1993	1.023	1.188	0.861	1.006	1.01	0.996
1994	1.055	1.196	0.882	1.030	1.065	0.967
1995	1.087	1.185	0.917	1.058	1.044	1.013
1996	1.053	1.239	0.850	1.017	1.085	0.937
1997	1.099	1.253	0.877	1.049	1.095	0.958
Sel.—(5 year avg)	1.063	1.212	0.877	1.032	1.060	0.974

Countrywide LAE Analysis—Evaluated as of 12/31/2006—10th:Ult Factors Underlying 1/1/2008 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1994	1.147	1.186	0.967	1.067	1.072	0.995
1995	1.167	1.142	1.022	1.097	1.035	1.060
1996	1.178	1.205	0.978	1.076	1.066	1.009
Sel.—(3 year avg)	1.164	1.178	0.988	1.080	1.058	1.021

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1994	1.055	1.196	0.882	1.030	1.065	0.967
1995	1.087	1.185	0.917	1.058	1.044	1.013
1996	1.051	1.242	0.846	1.016	1.086	0.936
Sel.—(3 year avg)	1.064	1.208	0.881	1.035	1.065	0.972

Countrywide LAE Analysis—Evaluated as of 12/31/2005—10th:Ult Factors Underlying 1/1/2007 Missouri Filing

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid DCCE	(2) Paid Loss	(3) = (1)/(2) Paid DCCE to Loss Ratio	(1) Incur. DCCE	(2) Incur. Loss	(3) = (1)/(2) Incur. DCCE to Incur. Loss Ratio
1993	1.172	1.173	0.999	1.090	1.052	1.036
1994	1.141	1.185	0.963	1.058	1.070	0.989
1995	1.164	1.154	1.009	1.088	1.031	1.055
Sel.—(3 year avg)	1.159	1.171	0.990	1.079	1.051	1.027

Underlying 10th - Ult. Tail Factors and Selected Tail Factor Ratios

AY	(1) Paid AOE	(2) Paid Loss	(3) = (1)/(2) Paid AOE to Loss Ratio	(1) Incur. AOE	(2) Incur. Loss	(3) = (1)/(2) Incur. AOE to Incur. Loss Ratio
1993	1.031	1.187	0.869	1.000	1.014	0.986
1994	1.054	1.194	0.883	1.019	1.064	0.958
1995	1.090	1.191	0.915	1.049	1.034	1.015
Sel.—(3 year avg)	1.058	1.191	0.888	1.023	1.037	0.986

Request 20:

If the NCCI had not changed its methodology to reflect judgment in the selection of 10:ultimate development factors in deriving the LAE components for the latest filing cycle, what 10:ultimate countrywide DCCE, AOE and loss factors would have been reflected in the 1/1/16 Missouri filing?

Response:

This year we did not calculate LAE values using last year's approach, so the requested info is not available.