

LOSS COSTS – INFORMATION

FEBRUARY 6, 2019

COMMERCIAL PROPERTY

LI-CF-2019-006

## MISSOURI COMMERCIAL FIRE AND ALLIED LINES LOSS COST LEVEL ANALYSIS FURNISHED FOR INFORMATION

---

### KEY MESSAGE

This analysis is provided for your information. We are NOT revising the current loss costs based on this analysis.

---

### BACKGROUND

In circular [LI-CF-2019-002](#), we provided you with information about the Commercial Fire and Allied Lines loss cost level experience review.

---

### ISO ACTION

We are NOT implementing any changes, at this time, to the current Commercial Fire and Allied Lines advisory prospective loss costs for this jurisdiction.

---

### SUPPLEMENTARY INFORMATION

We are including the following supplementary information:

- An Actuarial Analysis Supplement which provides discussion and analysis of changes in the experience and adjustments used to derive the loss cost level analysis.
- The loss cost exhibits contained in the loss cost level analysis in a Microsoft® Excel workbook.

NOTE: This supplementary information is not part of the loss cost level analysis.

---

### COMPANY ACTION

You may wish to evaluate your rate level needs.

Some calculations included in the attached analysis involve areas of ISO staff judgment. You should carefully review and evaluate your own experience in order to determine whether the indications are appropriate for your use.

If you decide to independently file a rate or loss cost revision based on this analysis, you must:

- Comply with the applicable regulatory filing requirements; and
- Advise your production forces about implementation of your revised rates or loss cost adjustments.

---

### REFERENCE(S)

[LI-CF-2019-002](#) (01/15/2019) Commercial Fire And Allied Lines Experience Level Indications Reviewed By ISO Staff

---

## ATTACHMENT(S)

- Loss Cost Level Analysis
- Actuarial Analysis Supplement
- Excel Workbook

---

## FILES AVAILABLE FOR DOWNLOAD

To download all files associated with this circular, including attachments in the full circular PDF and/or any additional files not included in the PDF, search for the circular number on [ISOnet Circulars](#). Then click the Word/Excel link under the Full Circular column on the Search Results screen.

Please note that in some instances, not all files listed in the Attachment(s) block (if applicable) are included in the PDF.

---

## COPYRIGHT EXPLANATION

The material distributed by Insurance Services Office, Inc. is copyrighted. All rights reserved. Possession of these pages does not confer the right to print, reprint, publish, copy, sell, file, or use same in any manner without the written permission of the copyright owner. Permission is hereby granted to members, subscribers, and service purchasers to reprint, copy, or otherwise use the enclosed material for purposes of their own business use relating to that territory or line or kind of insurance, or subdivision thereof, for which they participate, provided that:

- (A) Where ISO copyrighted material is reprinted, copied, or otherwise used **as a whole**, it must reflect the copyright notice actually shown on such material.
- (B) Where ISO copyrighted material is reprinted, copied, or otherwise used **in part**, the following credit legend must appear at the bottom of each page so used:  
Includes copyrighted material of Insurance Services Office, Inc., with its permission.

---

## ACKNOWLEDGMENT OF ACTUARIAL QUALIFICATIONS

The American Academy of Actuaries' "Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States" requires that an actuary issuing a Statement of Actuarial Opinion should include an acknowledgment with the opinion that he/she has met the qualification standards of the AAA. ISO considers this loss cost document a Statement of Actuarial Opinion; therefore we are including the following acknowledgment:

I, Rimma Maasbach, am an Actuarial Consultant in Actuarial Operations for ISO and I, Bei Zhou, am an Actuarial Product Director for Commercial Property for ISO. We are jointly responsible for the content of this Statement of Actuarial Opinion. We are both members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

---

**XACTWARE SOLUTIONS, INC.**

This filing incorporates the use of pricing data from Xactware Solutions, Inc., to estimate trends in building costs for commercial properties. Xactware provides computer software solutions for professionals involved in estimating all phases of building construction and repair. The company has been providing building cost data, estimate tracking and data trending to the insurance repair market since 1986. Insurance carriers using Xactware data are responsible for settlement of the majority of property claims in the USA and Canada.

For more information concerning Xactware Solutions, Inc., please see the Contact Information block.

---

**CONTACT INFORMATION**

If you have any questions concerning:

- The actuarial content of this circular, please contact:  
Alice Xiang  
Actuarial Operations  
201-469-3343  
[Alice.Xiang@verisk.com](mailto:Alice.Xiang@verisk.com)  
[propertyactuarial@verisk.com](mailto:propertyactuarial@verisk.com)
- The non-actuarial content of this circular, please contact:  
William Jones  
Production Operations, Compliance and Product Services  
201-469-2815  
[productionoperations@verisk.com](mailto:productionoperations@verisk.com)
- PCS catastrophe information, please contact:  
Joe Louwagie  
Property Claim Services  
201-469-3126  
[Joseph.Louwagie@verisk.com](mailto:Joseph.Louwagie@verisk.com)
- Xactware Solutions, Inc., please contact:  
Xactware Solutions, Inc.  
1100 West Traverse Parkway  
Lehi, UT 84043  
801-764-5900  
[www.xactware.com](http://www.xactware.com)  
[xsales@xactware.com](mailto:xsales@xactware.com)

- Other issues for this circular, please contact Customer Support:

E-mail: [info@verisk.com](mailto:info@verisk.com)

Phone: 800-888-4476

Callers outside the United States, Canada, and the Caribbean may contact us using our global toll-free number (International Access Code + 800 48977489). For information on all ISO products, visit us at [www.verisk.com/iso](http://www.verisk.com/iso). To keep abreast of the latest Insurance Lines Services updates, view [www.verisk.com/ils](http://www.verisk.com/ils).

## MISSOURI

### COMMERCIAL FIRE AND ALLIED LINES INSURANCE PROSPECTIVE LOSS COST LEVEL INFORMATION EXECUTIVE SUMMARY

#### PURPOSE

This document:

- provides advisory prospective loss cost information. The indicated loss cost level represents a +8.0% statewide change from the current ISO level.
  - provides the analyses used to derive the prospective loss costs based on experience through calendar/accident year ending 12/31/2017, evaluated as of 01/31/2018.
- 

#### DEFINITION OF THE ISO PROSPECTIVE LOSS COST

Advisory prospective loss costs in this document are the expected value of that portion of a rate that does not include provisions for expenses (other than loss adjustment expenses) or profit, and are based on historical aggregate losses and loss adjustment expenses adjusted and projected through trending to a future point in time.

---

#### LOSS COST LEVEL CHANGES

The statewide monoline prospective loss cost level changes are:

Coverage	Indicated
Basic Group I	+0.5%
Basic Group II	+14.7%
Special Causes of Loss	+7.3%
Total	+8.0%

Indicated loss cost level changes are changes from the current loss cost level.

---

PRIOR ISO  
REVISIONS

The latest revisions in this state are:

<u>Reference Document or Filing</u>	CF-2018-RLA1	CF-2014-RLA1
<u>Rates/ Loss Costs</u>	Loss Costs	Loss Costs
<u>Dates Implemented</u>	8/1/2018	07/01/2014
<u>Changes</u>		
Basic Group I	-6.3%	-3.9%
Basic Group II	+0.7%	+14.5%
Special Causes of Loss	+3.9%	+5.4%
Total	-1.2%	+5.2%

---

HISTORICAL  
SOURCE DATA

The data used in this review is:

- Voluntary experience for ISO reporting companies.
  - Five calendar/accident years ending 12/31/2017 for Basic Group I and Special Causes of Loss.
  - Ten calendar/accident years ending 12/31/2017 for Basic Group II.
- 

DISTRIBUTION  
OF STATEWIDE  
MONOLINE  
LOSS COST  
CHANGES

ISO has distributed the statewide monoline prospective loss cost changes as follows:

- by rating group and territory (where applicable) for Basic Group I.
- by category (building coverage and occupancy type) for Special Causes of Loss.

This has been done based on the experience of each rating group and territory (where applicable), or category for Basic Group I and Special Causes of Loss. Therefore, the resulting changes will vary by rating group and territory (where applicable) for Basic Group I and by category for Special Causes of Loss.

---

TREND AND  
OTHER  
ADJUSTMENTS

Loss Trend

For trend purposes, the period of use for this revision is assumed to begin on 07/01/2019. To adjust the loss experience to the levels expected to prevail while the revised loss costs are in effect, trend factors have been applied to the historical incurred losses. These trend factors are based on:

- external cost indices published by the U.S. Government and information provided by Xactware Solutions, Inc.
- changes in multistate average claim costs through fourth quarter 2017.

The "historic" trend factors based on the external indices, i.e. the factors based on historic changes in the indices, vary by year. The latest annual rates of change based on these indices are:

<u>Coverage</u>	<u>Annual Rate of Change</u>
Buildings	2.8%
Contents	1.5%
Time Element	0.9%

Incurred losses are also multiplied by loss trend adjustment factors (LTA's) to reflect trends in claim frequency and claim costs that are different from those exhibited by the external indices. The annual loss trend adjustments are:

<u>Line of Business</u>	<u>Buildings</u>	<u>Contents</u>	<u>Time Element</u>
Basic Group I	-0.3%	0.7%	2.8%
Basic Group II	0.2%	0.6%	2.6%
Special Causes of Loss	0.2%	0.0%	2.8%

This produces a total annual loss trend of:

<u>Line of Business</u>	<u>Buildings</u>	<u>Contents</u>	<u>Time Element</u>
Basic Group I	2.5%	2.2%	3.7%
Basic Group II	3.0%	2.1%	3.5%
Special Causes of Loss	3.0%	1.5%	3.7%

Premium Trend

Over time, insureds tend to purchase increased amounts of insurance in order to compensate for inflation, which results in increased premium revenue.

TREND AND  
OTHER  
ADJUSTMENTS  
(cont'd)

In order to reflect this increase in revenue, ISO uses a premium trend procedure. The premium trend factors are based on observed changes in the annual amount of insurance written for BG I renewal policies for a group of selected companies. The selected annual trends in the amount of insurance are:

Buildings	2.6%
Contents	1.9%
Time Element	0.6%

Other Adjustments

Standard actuarial procedures have been used in calculating the loss costs including loss development and the reflection of all loss adjustment expense. In addition, smoothing procedures have been applied to stabilize the effects of large or excess losses.

---

TEN LARGEST  
COMPANY  
GROUPS IN  
ISO DATA BASE

COMMERCIAL MULTIPERIL - NON-LIABILITY (ASLOB 51)

1. Travelers Indemnity Company
2. Cincinnati Insurance Company
3. Tokio Marine Companies
4. Hartford Accident & Indemnity Company
5. Columbia Insurance Group
6. Zurich American Insurance Company
7. AMCO Insurance Company
8. Acuity Mutual Insurance Company
9. State Auto Mutual Insurance Company
10. Illinois Casualty Company

Insurers are listed in descending order based on the percent of statewide written premium volume from Annual Statement Page 15 for year ending 12/31/2017 for Annual Statement Line of Business (ASLOB) 51, Commercial Multiperil - Non-liability.

Although ASLOB 51 includes coverages in addition to commercial fire and allied lines, e.g., crime, inland marine, fidelity, the largest percentage of premium volume is due to fire and allied lines (Basic Group I, Basic Group II, and Special Causes of Loss coverages). ASLOB 51 does not include data reported under monoline fire and allied lines (ASLOBs 10 and 21), which includes both commercial and personal property experience.

---

SIZE OF ISO  
DATA BASE

The market share of all insurers reporting to ISO in this state and included in the ratemaking experience underlying this review as measured by Annual Statement Page 15 written premium for year ending 12/31/2017 is:

Commercial Multi-peril - Non-liability (ASLOB 51) - 34.4%

---



COMPANY  
DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the loss costs contained herein are appropriate for its use. We have included within this document the information upon which ISO relied in order to enable companies to make such independent judgments.

The data underlying the enclosed material comes from companies reporting to Insurance Services Office, Inc. Therefore, the ISO experience permits the establishment of a much broader statistical ratemaking base than could be employed by using any individual company's data. A broader data base enhances the validity of ratemaking analysis derived therefrom. At the same time, however, an individual company may benefit from comparison of its own experience to the aggregate ISO experience, and may reach valid conclusions with respect to the manner in which its own costs can be expected to differ from ISO's projections based on the aggregate data.

Some calculations included in this document involve areas of ISO staff judgment. Each company should carefully review and evaluate its own experience in order to determine whether the ISO selected loss costs are appropriate for its use.

This material has been developed exclusively by the staff of Insurance Services Office, Inc.

---

COPYRIGHT  
EXPLANATION

The material distributed by Insurance Services Office, Inc. is copyrighted. All rights reserved. Possession of these pages does not confer the right to print, reprint, publish, copy, sell, file or use same in any manner without the written permission of the copyright owner.

---

MISSOURI  
COMMERCIAL PROPERTY INSURANCE

SECTION A - SCOPE OF REVISION

Summary of Monoline Prospective	
Loss Cost Changes (Table 1) .....	A2
Prospective Loss Cost Changes by	
Rating Group and Territory for Basic Group I (Table 2).....	A3-4
Special Causes of Loss Prospective Loss Cost	
Changes by Category (Table 3) .....	A5
Potential Impact of BG I, BG II and SCL Monoline	
Approvals on Commercial Package Policy (Table 4) .....	A6

SECTION B - CALCULATION OF PROPOSED CHANGES

Overview of Actuarial Procedures -	
Commercial Property .....	B2
Calculation of Statewide Prospective Loss Cost	
Level Changes (Tables 5 - 7) .....	B3-11
Distribution of Prospective Loss Cost	
Level Changes (Tables 8 - 12) .....	B12-45

SECTION C - SUPPORTING MATERIAL

Overview .....	C2-3
Loss Cost/Rate Level Histories (Tables 13 - 17) .....	C4-14
Commercial Package Policy Implicit Package	
Modification Factors (IPMF's) and IPMF Caps (Tables 18 - 20).....	C15-19
Trend Procedure (Tables 21 - 27) .....	C20-42
Loss Development Procedure (Table 28) .....	C43-47
Excess Loss Procedure (Tables 29 - 32) .....	C48-61
Credibility (Tables 33, 33A, and 34) .....	C62-67

SECTION D - ADDITIONAL SUPPORTING MATERIAL

Basic Group I Rating Group Definitions (Table 36) .....	D2-6
Special Causes of Loss Category Definitions (Table 37) .....	D7-9
Unadjusted Loss Costs, Incurred Losses,	
Experience Ratios (Tables 38 - 40) .....	D10-12
Loss Adjustment Expense Factors (Table 41) .....	D13-14

MISSOURI  
COMMERCIAL PROPERTY INSURANCE

SECTION A - SCOPE OF REVISION

Summary of Monoline Prospective Loss Cost Changes (Table 1) .....	A2
Prospective Loss Cost Changes by Rating Group for Basic Group I (Table 2).....	A3-4
Special Causes of Loss Prospective Loss Cost Changes by Category (Table 3) .....	A5
Potential Impact of BG I, BG II and SCL Monoline Approvals on Commercial Package Policy (Table 4) .....	A6

MISSOURI

TABLE 1 - SUMMARY OF MONOLINE PROSPECTIVE LOSS COST CHANGES (A)

COVERAGE	INDICATIONS	AGGREGATE LOSS COSTS AT CURRENT LEVEL
BASIC GROUP I	+0.5%	23,457,650
TERRITORY 01	-1.2%	
TERRITORY 02	-13.1%	
TERRITORY 08	+2.1%	
BASIC GROUP II	+14.7%	28,169,141
SPECIAL CAUSES OF LOSS	+7.3%	14,466,430
ALL COVERAGES COMBINED	+8.0%	66,093,221

TERRITORY DEFINITIONS

01 Kansas City  
02 Saint Louis City  
08 Balance of State

(A) FOR TREND PURPOSES, THE PERIOD OF USE FOR THIS REVISION IS ASSUMED TO BEGIN ON 07/01/2019.

MISSOURI

TABLE 2 - BASIC GROUP I PROSPECTIVE LOSS COST CHANGES  
BY RATING GROUP AND TERRITORY (A)

RATING GROUP DESCRIPTION	Kansas City			Saint Louis City		
	INDICATED	CAPPED	(B)	INDICATED	CAPPED	(B)
01 APARTMENTS	-4.4%	-4.7%		-15.6%	-15.8%	
02 OTHER HABITATIONAL	-0.3%	-0.6%		-12.0%	-12.3%	
03 RESTAURANTS & BARS	-0.2%	-0.5%		-11.9%	-12.2%	
04 OTHER MERCANTILE RISKS	+6.1%	+5.8%		-6.3%	-6.6%	
05 PUBLIC BUILDINGS	+0.8%	+0.5%		-11.0%	-11.3%	
06 CHURCHES	+1.5%	+1.2%		-10.3%	-10.6%	
07 SCHOOLS	-0.8%	-1.1%		-12.4%	-12.6%	
08 OFFICES AND BANKS	-9.0%	-9.3%		-19.7%	-19.9%	
09 RECREATIONAL FACILITIES	+5.1%	+4.8%		-7.2%	-7.5%	
10 HOTELS & MOTELS	-0.9%	-1.2%		-12.5%	-12.7%	
11 HOSPITALS & NURSING HOMES	+0.5%	+0.2%		-11.3%	-11.6%	
12 BLDGS UNDER CONSTRUCTION	-3.8%	-4.1%		-15.0%	-15.2%	
13 MOTOR VEHICLE RISKS	+3.3%	+3.0%		-8.8%	-9.1%	
14 OTHER NON-MANUFACTURING	-3.8%	-4.1%		-15.0%	-15.2%	
15 STORAGE	-1.2%	-1.5%		-12.8%	-13.0%	
17 FOOD MANUFACTURING	-4.0%	-4.3%		-15.2%	-15.4%	
18 WOOD MANUFACTURING	-3.2%	-3.5%		-14.5%	-14.7%	
19 WEARING APPAREL	-2.5%	-2.8%		-13.9%	-14.1%	
20 CHEMICAL MANUFACTURING	-3.0%	-3.3%		-14.3%	-14.5%	
21 METAL MANUFACTURING	-14.8%	-9.4%		-24.7%	-20.0%	
22 OTHER MANUFACTURING	-6.9%	-7.2%		-17.7%	-17.9%	
TOTAL	-1.2%	-1.3%		-13.1%	-13.2%	

(A) FOR EACH RATING GROUP, THE LOSS COST CHANGE FOR EACH CSP CLASS IN THE RATING GROUP, BY COVERAGE AND CONSTRUCTION, IS IDENTICAL TO THE OVERALL CHANGE SHOWN FOR THE RATING GROUP.

(B) CHANGES BY RATING GROUP HAVE BEEN CAPPED IN ORDER TO AVOID SIGNIFICANT SWINGS IN LOSS COSTS.

MISSOURI

TABLE 2 - BASIC GROUP I PROSPECTIVE LOSS COST CHANGES  
BY RATING GROUP AND TERRITORY (A)

RATING GROUP DESCRIPTION	Balance of State (Missouri)	
	INDICATED	CAPPED (B)
01 APARTMENTS	-1.3%	-1.6%
02 OTHER HABITATIONAL	+2.9%	+2.6%
03 RESTAURANTS & BARS	+3.0%	+2.7%
04 OTHER MERCANTILE RISKS	+9.5%	+9.2%
05 PUBLIC BUILDINGS	+4.0%	+3.7%
06 CHURCHES	+4.8%	+4.5%
07 SCHOOLS	+2.4%	+2.1%
08 OFFICES AND BANKS	-6.1%	-6.4%
09 RECREATIONAL FACILITIES	+8.5%	+8.2%
10 HOTELS & MOTELS	+2.3%	+2.0%
11 HOSPITALS & NURSING HOMES	+3.7%	+3.4%
12 BLDGS UNDER CONSTRUCTION	-0.7%	-1.0%
13 MOTOR VEHICLE RISKS	+6.7%	+6.4%
14 OTHER NON-MANUFACTURING	-0.7%	-1.0%
15 STORAGE	+2.0%	+1.7%
17 FOOD MANUFACTURING	-0.9%	-1.2%
18 WOOD MANUFACTURING	+0.0%	-0.3%
19 WEARING APPAREL	+0.7%	+0.4%
20 CHEMICAL MANUFACTURING	+0.2%	-0.1%
21 METAL MANUFACTURING	-12.0%	-6.5%
22 OTHER MANUFACTURING	-3.8%	-4.1%
TOTAL	+2.1%	+2.1%

(A) FOR EACH RATING GROUP, THE LOSS COST CHANGE FOR EACH CSP CLASS IN THE RATING GROUP, BY COVERAGE AND CONSTRUCTION, IS IDENTICAL TO THE OVERALL CHANGE SHOWN FOR THE RATING GROUP.

(B) CHANGES BY RATING GROUP HAVE BEEN CAPPED IN ORDER TO AVOID SIGNIFICANT SWINGS IN LOSS COSTS.

MISSOURI

TABLE 3 - SPECIAL CAUSES OF LOSS PROSPECTIVE LOSS COST CHANGES BY CATEGORY

CATEGORY DESCRIPTION	ENTIRE STATE
-----	-----
01 BUILDINGS	+9.8%
02 RES. APTS. AND CONDOS	+4.3%
03 OFFICES	+0.5%
04 MERCANTILE - HIGH	+5.3%
05 MERCANTILE - MEDIUM	+2.6%
06 MERCANTILE - LOW	+8.5%
07 MOTELS AND HOTELS	+7.0%
08 INSTITUTIONAL - HIGH	-2.1%
09 INSTITUTIONAL - LOW	-6.9%
10 INDUST-PROC - HIGH	+15.6%
11 INDUST-PROC - LOW	+3.3%
12 SERVICE - HIGH	-8.4%
13 SERVICE - LOW	+7.1%
14 CONTRACTORS	+7.1%
STATEWIDE TOTAL	+7.3%

MISSOURI  
TABLE 4

POTENTIAL IMPACT OF BG I, BG II, AND SCL MONOLINE REVISIONS  
ON COMMERCIAL PACKAGE POLICY

(1)		(2)	(3)	(4)
TYPE OF POLICY		BASIC GROUP I	BASIC GROUP II	SPECIAL CAUSES OF LOSS
-----				
31	MOTEL/HOTEL	+1.8%	+14.7%	+9.2%
32	APARTMENT	-2.1%	+14.7%	+8.9%
33	OFFICE	-8.0%	+14.7%	+7.8%
34	MERCANTILE	+4.8%	+14.7%	+8.8%
35	INSTITUTIONAL	+1.5%	+14.7%	+5.9%
36	SERVICES	+1.6%	+14.7%	+5.0%
37	INDUST/PROCESSING	-4.6%	+14.7%	+7.8%
38	CONTRACTORS	+3.4%	+14.7%	+8.5%

BASIC GROUP I, BASIC GROUP II, AND SPECIAL CAUSES OF LOSS MONOLINE CHANGES BY TYPE OF POLICY (TOP) ARE DISPLAYED. THEY ARE CALCULATED BY TAKING A WEIGHTED AVERAGE OF THE LOSS COST CHANGES BY TERRITORY (WHERE APPLICABLE) AND RATING GROUP (FOR BG I), OR BY CATEGORY (FOR SCL), USING LATEST YEAR MULTILINE TOP AGGREGATE LOSS COSTS AS WEIGHTS. BASIC GROUP II MONOLINE CHANGES DO NOT VARY BY TOP BECAUSE THE SAME MONOLINE LOSS COST CHANGE IS APPLIED STATEWIDE.



MISSOURI  
COMMERCIAL PROPERTY INSURANCE

SECTION B - CALCULATION OF PROPOSED CHANGES

Overview of Actuarial Procedures - Commercial Property .....	B2
Calculation of Statewide Prospective Loss Cost Level Changes (Tables 5 - 7) .....	B3-11
Distribution of Prospective Loss Cost Level Changes (Tables 8 - 12) .....	B12-45

## OVERVIEW OF ISO ACTUARIAL PROCEDURES - COMMERCIAL PROPERTY

### INTRODUCTION

Commercial Property prospective loss costs are determined by evaluating the adequacy of the current ISO loss costs to pay for our best estimate of losses and all loss adjustment expenses that will be incurred in the prospective (or future) period. This evaluation is done separately for Basic Group I, Basic Group II, and Special Causes of Loss.

---

### STEP 1: DETERMINATION OF INDICATED STATEWIDE LOSS COST LEVEL CHANGE

The first step in this process is the determination of the indicated statewide loss cost level change. This indicated statewide loss cost level change is the average percentage change which must be made to the current ISO loss costs in order to achieve adequacy for the prospective conditions. The percentage changes are presented on the exhibits labeled "Statewide Coverage Loss Cost Level Evaluation".

---

### STEP 2: DISTRIBUTION OF CHANGES

Based on the experience, ISO then distributes the indicated statewide loss cost level change by territory (where applicable), type of policy and rating group for Basic Group I; by type of policy for Basic Group II; and by type of policy and category for Special Causes of Loss.

---

### STEP 3: CALCULATION OF REVISED LOSS COSTS

The last step is the calculation of the prospective ISO loss costs. This is achieved by applying the indicated monoline changes to the current ISO loss costs. For Basic Group I, for those states without BG I rating territories, the statewide loss cost changes by rating group are applied to the current manual loss costs. For those states with rating territories, the Balance of State loss cost changes by rating group are applied to the current manual loss costs. The revised territory multipliers are calculated by multiplying the current territory multipliers by the indicated territory changes. For specifically-rated properties, the appropriate changes are applied to the current experience level adjustment factors and territory multipliers. For Basic Group II, revised loss costs are calculated by applying the indicated statewide monoline change to the current ISO loss costs, and where applicable, adding the hurricane modeled loss costs. For Special Causes of Loss, revised loss costs are calculated by applying the indicated monoline changes by category to the current ISO loss costs.

---

COMMERCIAL PROPERTY INSURANCE  
CALCULATION OF STATEWIDE ADVISORY LOSS COST LEVEL CHANGES IN TABLES 5, 6 AND 7

OBJECTIVE	<p>The objective of this procedure is to determine the indicated statewide advisory loss cost level change. This procedure answers the question: What average percentage change must be made to the current ISO loss costs in order for them to be adequate to cover indemnity losses and all loss adjustment expenses incurred in the prospective period in which the revised loss costs are assumed to be in effect?</p>
DESCRIPTION	<p>This procedure compares the trended and developed incurred losses and loss adjustment expenses with the trended aggregate loss costs at current ISO level. The aggregate loss costs at current level are the amounts that would have been collected for losses and all loss adjustment expenses if the current ISO loss costs had been in effect during the experience period.</p> <p>Experience ratios (losses and all loss adjustment expenses divided by aggregate loss costs, both trended to the prospective experience period) are calculated by year, and a weighted average of the yearly experience ratios is calculated. For Basic Group I (BG I) and Special Causes of Loss (SCL), the five year weights vary by year, giving greater weight to the more recent experience. For Basic Group II (BG II), because of the more volatile nature of the data, the ten individual years are given equal weight.</p> <p>The average experience ratio is then credibility-weighted with the expected experience ratio in order to minimize the impact of random variation in the observed losses. The resulting credibility-weighted experience ratio is the indicated statewide advisory loss cost level change in decimal form.</p>
EXPERIENCE BASE	<p>The experience used in this review is the latest available data reported under the ISO Commercial Statistical Plan for BG I, BG II and SCL. The data are aggregated on an accident year basis.</p>

MISSOURI  
TABLE 5

STATEWIDE BASIC GROUP I  
COVERAGE LOSS COST LEVEL EVALUATION

(1)	(2)	(3)	(4)	(5)
YEAR	AGGREGATE* LOSS COSTS	ADJUSTED** INCURRED LOSSES	EXPERIENCE RATIO (3) / (2)	WEIGHTS
2013	24,802,428	16,881,406	0.681	0.10
2014	24,891,068	22,700,951	0.912	0.15
2015	25,189,324	19,243,617	0.764	0.20
2016	22,943,771	29,397,750	1.281	0.25
2017	23,457,650	28,096,332	1.198	0.30

(6) WEIGHTED EXPERIENCE RATIO	= 1.037
(7) CREDIBILITY	= 0.327
(8) EXPECTED EXPERIENCE RATIO	= 1.003
(9) CREDIBILITY WEIGHTED EXPERIENCE RATIO (0.327 X 1.037 ) + (0.673 X 1.003 )	= 1.014
(10) INDICATED COVERAGE LOSS COST CHANGE	= 1.014
	OR +1.4%

\* AGGREGATE LOSS COSTS ARE ADJUSTED TO CURRENT ISO LOSS COST LEVEL  
AND 01/01/2020 AMOUNT OF INSURANCE LEVELS.

\*\* INCURRED LOSSES ARE ADJUSTED TO 07/01/2020 COST LEVELS INCLUDING LOSS  
DEVELOPMENT AND ALL LOSS ADJUSTMENT EXPENSES.

MISSOURI  
TABLE 6

STATEWIDE BASIC GROUP II  
COVERAGE LOSS COST LEVEL EVALUATION

(1)	(2)	(3)	(4)
YEAR	AGGREGATE* LOSS COSTS	ADJUSTED** INCURRED LOSSES	EXPERIENCE RATIO (3) / (2)
2008	33,135,136	48,635,166	1.468
2009	33,863,642	24,591,252	0.726
2010	33,674,741	28,317,545	0.841
2011	29,717,681	49,004,183	1.649
2012	30,844,603	51,935,300	1.684
2013	29,066,090	25,142,618	0.865
2014	29,038,169	32,564,559	1.121
2015	27,917,179	24,904,888	0.892
2016	26,035,345	24,007,944	0.922
2017	28,169,141	51,435,317	1.826

(5) WEIGHTED EXPERIENCE RATIO (EQUAL WEIGHTS) = 1.200

(6) CREDIBILITY = 0.488

(7) EXPECTED EXPERIENCE RATIO = 1.006

(8) CREDIBILITY WEIGHTED EXPERIENCE RATIO = 1.101  
(0.488 x 1.200 ) + (0.512 x 1.006 )

(9) INDICATED COVERAGE LOSS COST CHANGE = 1.101

OR +10.1%

\* AGGREGATE LOSS COSTS ARE ADJUSTED TO CURRENT ISO LOSS COST LEVEL  
AND 01/01/2020 AMOUNT OF INSURANCE LEVELS.

\*\* INCURRED LOSSES ARE ADJUSTED TO 07/01/2020 COST LEVELS INCLUDING LOSS  
DEVELOPMENT AND ALL LOSS ADJUSTMENT EXPENSES.

MISSOURI  
TABLE 7

STATEWIDE SPECIAL CAUSES OF LOSS  
COVERAGE LOSS COST LEVEL EVALUATION

(1)	(2)	(3)	(4)	(5)
YEAR	AGGREGATE* LOSS COSTS	ADJUSTED** INCURRED LOSSES	EXPERIENCE RATIO (3) / (2)	WEIGHTS
2013	15,899,214	13,628,777	0.857	0.10
2014	15,084,847	13,258,469	0.879	0.15
2015	14,518,211	16,855,569	1.161	0.20
2016	13,379,654	8,212,462	0.614	0.25
2017	14,466,430	13,804,603	0.954	0.30

(6) WEIGHTED EXPERIENCE RATIO = 0.890

(7) CREDIBILITY = 0.321

(8) EXPECTED EXPERIENCE RATIO = 1.003

(9) CREDIBILITY WEIGHTED EXPERIENCE RATIO = 0.967  
(0.321 X 0.890 ) + (0.679 X 1.003 )

(10) INDICATED COVERAGE LOSS COST CHANGE = 0.967

OR -3.3%

\* AGGREGATE LOSS COSTS ARE ADJUSTED TO CURRENT ISO LOSS COST LEVEL  
AND 01/01/2020 AMOUNT OF INSURANCE LEVELS.

\*\* INCURRED LOSSES ARE ADJUSTED TO 07/01/2020 COST LEVELS INCLUDING LOSS  
DEVELOPMENT AND ALL LOSS ADJUSTMENT EXPENSES.

EXPLANATORY NOTES TO TABLES 5, 6 AND 7

STATEWIDE BASIC GROUP I, BASIC GROUP II AND  
SPECIAL CAUSES OF LOSS COVERAGE LOSS COST LEVEL EVALUATION

COLUMN (1)

EXPERIENCE PERIOD

Experience for the five most recent accident years is used for BG I and SCL.  
Experience for the ten most recent accident years is used for BG II.

COLUMN (2)

AGGREGATE LOSS COSTS

Since the objective of the ratemaking procedure is to test the adequacy of the current ISO loss costs, premium data for each year in the experience period are adjusted to the loss cost level which would have been earned had the current loss costs been in effect. This is accomplished by using either an extension-of-exposures (PPR or premium at present rates/loss costs) approach or an on-level approach. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations.

Extension of Exposures Approach

Where feasible, aggregate loss costs at current level (ALCCL) are developed using an extension-of-exposures approach. That is, the exposure (amount of insurance per \$100) for each policy is multiplied by the current manual loss cost for that state, territory, subline, coverage, construction, occupancy and by any other applicable rating factors, such as limit of insurance factors and deductible relativities.

On-Level Approach

The on-level approach is applied on an individual policy basis. The first step in the process is to multiply the reported premiums by the product of all loss cost level changes that have become effective subsequent to the inception date of the policy. The premiums are divided by the reported Rating Modification Factors and Loss Cost Multipliers to bring them to current ISO monoline manual loss cost level.

For premium records with inception dates prior to the effective date of the implementation of Limit of Insurance (LOI ) curves, premiums are multiplied by off-balance factors and limit of insurance factors to bring them to a post-LOI loss cost level.

The on-level approach is used to adjust those premium records which cannot be adjusted using the extension-of-exposures techniques, for example, premium records for Basic Group I specifically-rated properties, for which manual loss costs do not exist. In addition, records failing an exposure edit which checks for a reasonable relationship between reported premium and exposure amount have also been on-leveled.

STATEWIDE BASIC GROUP I, BASIC GROUP II AND  
SPECIAL CAUSES OF LOSS COVERAGE LOSS COST LEVEL EVALUATION (cont'd)

COLUMN (2)  
(cont'd)

Current IPMF and Prospective Amount of Insurance Levels

Premiums are also adjusted to prospective amount of insurance levels by exposure trend factors to reflect the impact of inflation on the average amount of insurance written (Table 24). After multiline premiums are brought to current ISO monoline manual level, they are further adjusted to implicit package modification factor (IPMF) level by the application of Commercial Package Policy (CPP) IPMF's which vary by the eight CPP types of policy. (Both the adjustments to prospective amount of insurance level and to current IPMF level are done on an aggregate basis.) For a more complete description of the IPMF's and the other premium adjustments, refer to Tables 18 through 20 in the supporting material.

COLUMN (3)

ADJUSTED INCURRED LOSSES

In order to assure the adequacy of the proposed loss cost level, incurred losses are adjusted to reflect the effect of inflation and other trends on loss costs. The adjustment of past losses to prospective levels is accomplished on an individual loss basis by application of current cost factors, loss projection factors and loss trend adjustments (Tables 21 through 23). In addition to adjusting losses to prospective cost level, the effect of inflation on the deductible portion of the loss incurred is reflected.

For each subline, incurred losses are further adjusted by an excess loss procedure which smoothes fluctuations due to large loss occurrences. The procedure removes any losses determined to be excess from the total incurred losses, resulting in normal incurred losses. These normal incurred losses (total - excess) are then multiplied by excess loss factors to calculate adjusted incurred losses (Tables 29 through 32). The resulting adjusted incurred losses are then developed to their ultimate settlement value and loaded by a factor to include all loss adjustment expenses. Loss development factors can be found on Table 28, and loss adjustment expense factors on Table 41. Where appropriate, certain reported data elements have been adjusted prior to being used in the calculations.

COLUMN (4)

EXPERIENCE RATIO

The experience ratio is the ratio of adjusted incurred losses to aggregate loss costs for each year.



STATEWIDE BASIC GROUP I, BASIC GROUP II AND  
SPECIAL CAUSES OF LOSS COVERAGE LOSS COST LEVEL EVALUATION (cont'd)

COLUMN (5) - BG I, SCL    WEIGHTS

For Basic Group I and Special Causes of Loss, the yearly experience ratios are weighted using weights of 10%, 15%, 20%, 25%, and 30% with the greatest weight assigned to the most recent year. These weights recognize the need to balance stability and responsiveness. The ten Basic Group II experience ratios are equally weighted, each given 10% weight.

LINE (6) - BG I, SCL    WEIGHTED EXPERIENCE RATIO  
LINE (5) - BG II

For Basic Group I and Special Causes of Loss, the weights are applied to the experience ratios to yield the weighted experience ratio. For Basic Group II, the experience ratios are equally weighted. These weighted experience ratios represent a projection of the experience which would result if future policies were written without a loss cost level revision.

LINE (7) - BG I, SCL    CREDIBILITY  
LINE (6) - BG II

The standards for 100% credibility are discussed in detail in Tables 33, 33A, and 34 for Basic Group I, Basic Group II, and Special Causes of Loss, respectively.

LINE (8) - BG I, SCL    EXPECTED EXPERIENCE RATIO  
LINE (7) - BG II

The expected experience ratio is ISO's best prediction of the experience ratio if the actual incurred experience were not available. For this review, we have assumed that the current loss costs were adequate when implemented and will be inadequate for the prospective period only to the extent of the net trend. The expected experience ratio is represented by the net (loss/amount of insurance) trend factor.

LINE (9) - BG I, SCL    CREDIBILITY WEIGHTED EXPERIENCE RATIO  
LINE (8) - BG II

The credibility weighted experience ratio is a weighted average of the weighted experience ratio (line (6) for BG I and SCL; line (5) for BG II) and the expected experience ratio (line (8) for BG I and SCL; line (7) for BG II) using the credibility factor and its complement as respective weights. For more detailed information regarding the development of the credibility factors, refer to Tables 33, 33A, and 34.

LINE (10) - BG I, SCL    INDICATED COVERAGE LOSS COST CHANGE  
LINE (9) - BG II

The credibility weighted experience ratio yields the overall coverage loss cost level change for Basic Group I (see Table 5), Basic Group II (see Table 6), and Special Causes of Loss (see Table 7).

## COMPOSITION OF THE RATEMAKING DATA BASE

### DATA INCLUDED

#### BASIC GROUP I

- . CSP Subline 010 (Commercial Fire)
- . CSP Subline 015 (Basic Group I, i.e., Fire, Lightning, Explosion, Vandalism, Sprinkler Leakage)
- . CSP Subline 016 (BG I excluding Vandalism)
- . CSP Subline 017 (BG I excluding Sprinkler Leakage)
- . CSP Subline 018 (BG I excluding Vandalism and Sprinkler Leakage)

#### BASIC GROUP II

- . CSP Subline 020 (Extended Coverage)
- . CSP Subline 025 (Basic Group II, i.e., Windstorm or Hail, Smoke, Aircraft or Vehicles, Riot or Civil Commotion, Sinkhole Collapse and Volcanic Action)
- . CSP Subline 027 (Basic Group II Causes of Loss, i.e., Windstorm or Hail, Smoke, Aircraft or Vehicles, Riot or Civil Commotion, Sinkhole Collapse and Volcanic Action)
- . CSP Subline 029 (Basic Group II Causes of Loss excluding Windstorm or Hail)

#### SPECIAL CAUSES OF LOSS

- . CSP Subline 028 (All Other Perils Special Coverage Forms & Endorsements)
- . CSP Subline 035 (Causes of Loss Special Form Including Theft)
- . CSP Subline 045 (Causes of Loss Special Form Excluding Theft)

### NOTES ON DATA INCLUDED

All CSP data are reviewed for CSP Types of Policy 10 (monoline), 3X, 70, and 7X (multiline).

For BG I, BG II and SCL, the reviewed experience is for property damage and time element coverages (coverage codes 1-7, as well as coverage code 9 reported under pre-simplification sublines 010, 020, and 028).

COMPOSITION OF THE RATEMAKING DATA BASE (cont'd)

<u>DATA EXCLUDED</u>	<u>TYPE OF DATA</u>	<u>BG I</u>	<u>BG II</u>	<u>SCL</u>
	• Non-voluntary experience (e.g. FAIR Plans)	X	X	NA
	• Dwelling experience	X	X	X
	• Farm experience	X	X	NA
	• Countrywide rated risks	X	X	X
	• Highly protected risks	X	X	X
	• Experience for policies with large deductibles	X	X	X

X indicates that experience is excluded.

Separately identifiable terrorism premium and loss records have been excluded from the ratemaking experience.

## OVERVIEW OF ISO ACTUARIAL PROCEDURES - COMMERCIAL PROPERTY

### STEP 2 - DISTRIBUTION OF LOSS COST LEVEL CHANGES

OBJECTIVE	<p>The objective of this procedure is to distribute the indicated statewide loss cost level change for Basic Group I, Basic Group II, and Special Causes of Loss among the various rating variables used in each subline. These procedures are used to answer the question: What percentage change for each rating variable must be made to the current ISO loss costs in order to achieve adequacy for the prospective conditions?</p> <hr/>
BASIC GROUP I	<p>For Basic Group I, a consolidated simultaneous iterative procedure is used to calculate the type of policy, territory and rating group relativities. More detail on this procedure is given in Table 8. The type of policy relativities serve to price Commercial Package policies relative to monoline policies, via the Package Modification Factors (PMF), while the rating group and territory relativities serve to price the various rating groups and territories relative to one another.</p> <p>The indicated monoline loss cost level changes shown on Table 2 are calculated for each rating group/territory combination by taking the product of the monoline type of policy relativity, the rating group relativity, the territory relativity and the statewide loss cost level change.</p> <p>The overall monoline loss cost level change is a weighted average of the rating group/territory combination changes. In calculating this weighted average, the latest year aggregate monoline and multiline combined loss costs at current level are used as weights.</p> <hr/>
BASIC GROUP II	<p>The purpose of the Basic Group II relativity analysis is to determine monoline loss cost level needs, to obtain marginal relativities displayed on Table 12 and to price CPP policies relative to monoline policies via the PMFs. Unlike the BG I and SCL relativity analyses, the BG II relativity analysis does not employ a simultaneous review procedure because the overall loss cost change is distributed across type of policy only. The indicated statewide monoline change is the product of the monoline type of policy relativity times the statewide loss cost level change.</p> <hr/>

## OVERVIEW OF ISO ACTUARIAL PROCEDURES - COMMERCIAL PROPERTY

### STEP 2 - DISTRIBUTION OF LOSS COST LEVEL CHANGES (cont'd)

#### SPECIAL CAUSES OF LOSS

For Special Causes of Loss, a simultaneous iterative procedure is used as for BG I to arrive at a set of type of policy and category relativities (as displayed on Table 9) that best represent the experience within each state. The type of policy relativities serve to price CPP policies relative to monoline policies via the PMFs, while the category relativities serve to price the various categories relative to one another.

The indicated monoline loss cost level changes are calculated for each category by taking the product of the monoline type of policy relativity, the category relativity and the statewide coverage loss cost change. See Table 9 for the monoline loss cost indications.

The overall monoline loss cost level change is a weighted average of the 14 monoline category changes. In calculating this weighted average, the latest year monoline and multiline combined loss costs at current level are used as weights.

TABLE 8 - BASIC GROUP I RELATIVITY ANALYSIS

RATING GROUP	(5)				
	INDICATED				
	MONOLINE				
	LOSS	COST	LEVEL		
	CHANGE				
01	0.823	0.178	0.966	0.968	-3.6
02	1.039	0.178	1.007	1.009	+0.7
03	1.095	0.078	1.007	1.010	+1.0
04	1.210	0.361	1.071	1.074	+8.1
05	1.712	0.032	1.017	1.020	+3.5
06	1.115	0.235	1.026	1.028	+3.7
07	1.016	0.097	1.002	1.004	+1.0
08	0.736	0.277	0.919	0.921	-7.7
09	1.481	0.152	1.062	1.064	+7.0
10	1.010	0.067	1.001	1.003	+2.1
11	1.248	0.063	1.014	1.017	+2.2
13	1.381	0.131	1.043	1.046	+5.0
14	0.831	0.157	0.971	0.974	-1.8
15	0.963	0.075	0.997	1.000	+0.4
17	0.369	0.031	0.970	0.972	-4.3
18	0.522	0.035	0.978	0.980	-1.6
19	0.412	0.017	0.985	0.987	-0.4
20	0.393	0.022	0.980	0.982	-1.5
21	0.377	0.153	0.861	0.863	-13.2
22	0.490	0.085	0.941	0.943	-4.8

© Insurance Services Office, Inc., 2019      Missouri      CF-2019-INFO      B-14

MISSOURI

TABLE 8 - BASIC GROUP I RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)
TERRITORY	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY
Kansas City	1.013	0.144	1.002	0.984
Saint Louis City	0.491	0.173	0.884	0.869
Balance of State (Missouri)	1.053	0.646	1.034	1.016

	(5) INDICATED MONOLINE LOSS COST LEVEL CHANGE
TERRITORY	
Kansas City	-1.2
Saint Louis City	-13.1
Balance of State (Missouri)	+2.1

LOSS COST CHANGES BY INDIVIDUAL TERRITORY AND RATING GROUP  
ARE SHOWN ON TABLE 2.

MISSOURI

TABLE 8 - BASIC GROUP I RELATIVITY ANALYSIS

EXAMPLE OF AN INDIVIDUAL LOSS COST CHANGE CALCULATION  
FOR Kansas City

STATEWIDE COVERAGE LOSS COST LEVEL CHANGE	=	+1.4%
TERRITORIAL RELATIVITY	=	0.984
MONOLINE (TOP 10) RELATIVITY	=	0.990
RATING GROUP 01 RELATIVITY	=	0.968

INDICATED MONOLINE LOSS COST LEVEL CHANGE FOR RATING GROUP 01

$$= 1.014 \quad \times \quad 0.984 \quad \times \quad 0.990 \quad \times \quad 0.968 \quad = 0.956$$

OR      -4.4%



MISSOURI

TABLE 8 - CALCULATION OF INDICATED TERRITORIAL MULTIPLIERS

(1)	(2)	(3)	(4)
TERRITORY	TERRITORY RELATIVITY	OFF- BALANCE FACTOR	CURRENT TERRITORIAL MULTIPLIER
Kansas City	0.984	1.000	1.283
Saint Louis City	0.869	1.000	1.679
Balance of State (Missouri)	1.016	1.000	1.000

(5)
INDICATED TERRITORIAL MULTIPLIER ((2)X(3)X(4) / (1.016 X 1.000 ))
TERRITORY
Kansas City
Saint Louis City
Balance of State (Missouri)

MISSOURI

TABLE 9 - SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	STATEWIDE COVERAGE LOSS COST CHANGE OF 0.967 OR -3.3%
TOP	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	
10	1.706	0.196	1.110	1.110	
31	1.320	0.020	1.006	1.005	
32	0.703	0.144	0.951	0.950	
33	0.693	0.083	0.970	0.969	
34	1.010	0.263	1.003	1.002	
35	1.037	0.303	1.011	1.010	
36	0.964	0.191	0.993	0.992	
37	0.570	0.152	0.918	0.918	
38	0.676	0.094	0.964	0.963	
					(5) INDICATED MONOLINE LOSS COST LEVEL CHANGE
CATEGORY					
01	1.039	0.771	1.030	1.023	+9.8
02	0.758	0.079	0.978	0.972	+4.3
03	0.519	0.090	0.943	0.936	+0.5
04	0.912	0.132	0.988	0.981	+5.3
05	0.626	0.082	0.962	0.956	+2.6
06	1.353	0.058	1.018	1.011	+8.5
07	1.247	0.018	1.004	0.997	+7.0
08	0.555	0.145	0.918	0.912	-2.1
09	0.390	0.145	0.872	0.867	-6.9
10	9.414	0.036	1.084	1.077	+15.6
11	0.827	0.170	0.968	0.962	+3.3
12	0.406	0.169	0.859	0.853	-8.4
13	1.072	0.073	1.005	0.998	+7.1
14	1.041	0.125	1.005	0.998	+7.1
OVERALL MONOLINE LOSS COST LEVEL CHANGE					+7.3%

MISSOURI

TABLE 9 - SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

---

EXAMPLE OF A LOSS COST CHANGE CALCULATION

STATEWIDE COVERAGE LOSS COST LEVEL CHANGE	=	-3.3%
MONOLINE (TOP 10) RELATIVITY	=	1.110
CATEGORY 01 RELATIVITY	=	1.023

INDICATED MONOLINE LOSS COST LEVEL CHANGE FOR CATEGORY 01

= 0.967	X	1.110	X	1.023	=	1.098
					OR	+9.8%

## EXPLANATORY NOTES TO TABLES 8 AND 9

### BASIC GROUP I AND SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

#### INTRODUCTION

The explanations which follow clarify Tables 8 and 9, the Basic Group I relativity analysis and the Special Causes of Loss relativity analysis, respectively. The purpose of these analyses is to:

- (1) determine monoline classification and territorial loss cost level needs for Basic Group I;
- (2) determine monoline category loss cost level needs for Special Causes of Loss;
- (3) determine indicated changes to the eight CPP package modification factors (PMFs) based on Basic Group I/Special Causes of Loss experience.

#### COLUMN (1)

##### LEAST SQUARES FORMULA RELATIVITIES

The least squares formula relativities are the marginal relativities which result from the application of the simultaneous review procedure to the raw experience (where marginal refers to the relativities for a given rating variable, e.g. type of policy, across all subsets of any other rating variables, i.e. rating group and territory for Basic Group I, and category for Special Causes of Loss).

The purpose of such a simultaneous review procedure is to arrive at a set of type of policy relativities (which will serve to price CPP policies relative to monoline policies via the PMFs); a set of rating group/territory relativities for Basic Group I; and a set of category relativities for Special Causes of Loss that best represent the experience. This procedure is in contrast to a review of each rating variable's experience separately. Such one-way types of review do not take into account differing percentages of monoline and multiline experience in each rating variable, nor differing percentages of a particular rating variable's experience in the monoline and multiline types of policy. The simultaneous relativity procedure accounts for these different distributions in generating relativities for the various rating variables.

EXPLANATORY NOTES TO TABLES 8 AND 9 (cont'd)

COLUMN (1)  
(Cont'd)

The procedure follows an iterative technique to determine a set of marginal relativities by rating variable that is a best fit to the individual cell relativities, with each cell being defined as the cross-section of specific values of each rating variable. The process uses the relativity of the five year experience ratios by rating cell to the overall statewide experience ratio and the latest year aggregate loss costs for each rating cell. (This experience is shown in Table 10 for Basic Group I and Table 11 for Special Causes of Loss.) Specifically, the iteration procedure uses the following formulas:

BASIC GROUP I:

$$TOP_i = \frac{\sum_{j=1}^n \sum_{k=1}^t W_{ijk}^2 R_{ijk} RG_j TER_k}{\sum_{j=1}^n \sum_{k=1}^t W_{ijk}^2 RG_j^2 TER_k^2}, \text{ where } 1 \leq i \leq m;$$

$$RG_j = \frac{\sum_{i=1}^m \sum_{k=1}^t W_{ijk}^2 R_{ijk} TOP_i TER_k}{\sum_{i=1}^m \sum_{k=1}^t W_{ijk}^2 TOP_i^2 TER_k^2}, \text{ where } 1 \leq j \leq n;$$

$$TER_k = \frac{\sum_{i=1}^m \sum_{j=1}^n W_{ijk}^2 R_{ijk} TOP_i RG_j}{\sum_{i=1}^m \sum_{j=1}^n W_{ijk}^2 TOP_i^2 RG_j^2}, \text{ where } 1 \leq k \leq t;$$

SPECIAL CAUSES OF LOSS:

$$TOP_i = \frac{\sum_{j=1}^n w_{ij}^2 R_{ij} CAT_j}{\sum_{j=1}^n w_{ij}^2 CAT_j^2}, \text{ where } 1 \leq i \leq m;$$

$$CAT_j = \frac{\sum_{i=1}^m w_{ij}^2 R_{ij} TOP_i}{\sum_{i=1}^m w_{ij}^2 TOP_i^2}, \text{ where } 1 \leq j \leq n;$$

EXPLANATORY NOTES TO TABLES 8 AND 9 (cont'd)

COLUMN (1)  
(cont'd)

- $TOP_i$  is the relativity for the  $i$ th type of policy;
- $RG_j$  is the relativity for the  $j$ th rating group;
- $CAT_j$  is the relativity for the  $j$ th category;
- $TER_k$  is the relativity for the  $k$ th territory;
- $W_{ijk}$  is the loss cost volume at current level for the  $i$ th type of policy,  $j$ th rating group and  $k$ th territory;
- $R_{ijk}$  is the experience ratio relativity for the  $i$ th type of policy,  $j$ th rating group and  $k$ th territory;
- $R_{ij}$  is the experience ratio relativity for the  $i$ th type of policy, and  $j$ th category;
- $m$  is the number of types of policy in the analysis;
- $n$  is the number of rating groups or categories in the analysis;
- $t$  is the number of territories in the analysis.

The procedure determines  $m$  type of policy relativities using the above formulas. Then, using those results, a set of  $n$  rating group and  $t$  territory relativities are determined. These steps form an iterative process which continues until there is no appreciable difference in results from one iteration to the next.

COLUMN (2)

CREDIBILITY

The credibility of the experience for each rating variable is determined from the formula:

$$Z = \frac{P}{P + K} ,$$

where  $P$  represents the five-year aggregate adjusted loss costs for a given rating variable, and  $K$  is a constant value. For Basic Group I,  $K$  equals an aggregate loss cost volume of \$55,000,000 for territory, \$40,000,000 for rating group, and \$100,000,000 for type of policy. For Special Causes of Loss,  $K$  equals an aggregate loss cost volume of \$15,000,000.

EXPLANATORY NOTES TO TABLES 8 AND 9 (cont'd)

COLUMN (3)

CREDIBILITY-WEIGHTED RELATIVITIES

Credibility-weighted relativities are calculated based on the formula

$$W = R^Z,$$

where Z is the credibility, R is the least squares formula relativity and W is the credibility weighted relativity for a given rating variable.

This formula implicitly assigns the complement of credibility to a relativity of unity.

COLUMN (4)

BALANCED RELATIVITIES

The credibility-weighted relativities are balanced to assure that the average relativity across all rating variables remains at unity.

COLUMN (5)

INDICATED MONOLINE LOSS COST LEVEL CHANGE

For Basic Group I, the indicated monoline loss cost changes are calculated for each rating group and territory by taking the product of the monoline type of policy (TOP 10) relativity, the territory relativity, the rating group relativity and the statewide loss cost level change. (An example of such a calculation appears on Table 8.)

The indicated monoline loss cost changes by rating group shown in Table 8 of this analysis are the aggregate loss cost weighted averages of the monoline loss cost changes for the rating group across all territories.

EXPLANATORY NOTES TO TABLES 8 AND 9 (cont'd)

COLUMN (5)  
(cont'd)

Similarly, the indicated monoline loss cost changes by territory shown on the second page are aggregate loss cost-weighted averages of the monoline loss cost changes for the territory across all rating groups. The indicated overall statewide monoline loss cost level change shown at the bottom of the first page of Table 8 is the aggregate loss cost-weighted average of the individual rating group changes across all territories.

For Special Causes of Loss, the indicated monoline loss cost changes are calculated for each category by taking the product of the monoline type of policy (TOP 10) relativity, the category relativity, and the statewide loss cost level change. (An example of such a calculation is included in Table 9.) The indicated overall statewide loss cost level change shown at the bottom of Table 9 is the aggregate loss cost-weighted average of the individual category changes.

In all cases, the loss costs used in these calculations are the latest year's monoline and multiline combined adjusted loss costs.

MULTILINE  
CONSIDERATIONS

The type of policy (TOP) relativities are used to generate multiline indications which apply to the current implicit package modification factors (IPMF's). The indicated IPMF's are calculated as follows:

$$\frac{\text{TOP y indicated IPMF}}{\text{IPMF}} = \frac{(\text{TOP y current IPMF})(\text{TOP y relativity})}{\text{monoline relativity}}$$

For each CPP type of policy, the indicated IPMF is subject to a minimum value of 0.50 and a maximum value of 1.50. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the loss costs for that type of policy are adjusted to the capped IPMF level, and the entire relativity review as described above is re-performed to take this into account. If an IPMF has been capped, it is so noted at the bottom of Table 8 and Table 9.

It should be noted that although this procedure generates multiline indications, this filing only addresses monoline loss cost levels. That is, upon implementation of this filing only the monoline loss costs will be revised. The multiline indications developed here will be combined with those of the other component coverages, e.g. GL Premises and Operations in the CPP review for the purpose of revising the package modification factors.



Kansas City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
10 MONOLINE	01 APARTMENTS	11,218	166,760	3.822	2.043	2.148
	02 OTHER HABITATIONAL	14,302	121,699	0.998	1.364	1.434
	03 RESTAURANTS & BARS	8,533	24,010	0.000	1.208	1.270
	04 OTHER MERCANTILE RS	56,921	325,758	0.220	1.089	1.145
	05 PUBLIC BUILDINGS	1,648	2,890	0.000	1.223	1.286
	06 CHURCHES	12,043	22,429	0.620	1.319	1.387
	07 SCHOOLS	13,391	52,973	0.000	1.187	1.248
	08 OFFICES AND BANKS	38,497	167,285	6.282	2.643	2.779
	09 REC. FACILITIES	17,038	94,936	0.053	1.170	1.230
	10 HOTELS AND MOTELS	2,851	4,164	3.827	1.868	1.964
	11 HOSPITALS/NURS HOME	895	2,629	0.000	1.223	1.286
	13 MOTOR VEHICLE RISKS	12,550	68,326	0.000	1.176	1.237
	14 OTHER NON-MANUF.	10,506	85,397	0.325	1.232	1.295
	15 STORAGE	16,782	77,740	0.000	1.170	1.230
	18 WOOD MANUFACTURING	755	10,528	0.000	1.217	1.280
	20 CHEM. MANUFACTURING	1,236	4,601	0.000	1.222	1.285
	21 METAL MANUFACTURING	8,856	69,599	0.000	1.175	1.236
	22 OTHER MANUFACTURING	5,530	20,436	0.000	1.210	1.272
	TOTAL*	233,552	1,322,160	1.431	1.471	1.546
31 MULTILINE	10 HOTELS AND MOTELS	33,391	102,548	0.000	0.801	0.842
MOTEL/HOTEL	TOTAL*	33,391	102,548	0.000	0.801	0.842
32 MULTILINE	01 APARTMENTS	132,284	982,052	2.612	1.320	1.388
APARTMENT	02 OTHER HABITATIONAL	66,128	366,496	0.889	0.946	0.995
	TOTAL*	198,412	1,348,548	2.038	1.196	1.257
33 MULTILINE	08 OFFICES AND BANKS	80,141	365,732	0.394	0.856	0.900
OFFICE	TOTAL*	80,141	365,732	0.394	0.856	0.900
34 MULTILINE	03 RESTAURANTS & BARS	53,883	254,817	1.908	1.124	1.182
MERCANTILE	04 OTHER MERCANTILE RS	186,182	1,068,074	0.989	0.966	1.016
	08 OFFICES AND BANKS	11,521	49,446	0.000	0.804	0.845
	13 MOTOR VEHICLE RISKS	43,628	107,488	0.000	0.801	0.842
	14 OTHER NON-MANUF.	12,619	76,177	0.000	0.803	0.844
	15 STORAGE	20,572	111,905	0.105	0.818	0.860
	TOTAL*	328,405	1,667,907	0.880	0.949	0.998

Kansas City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
35 MULTILINE INSTITUTIONAL	02 OTHER HABITATIONAL	4,734	32,706	0.000	0.805	0.846
	05 PUBLIC BUILDINGS	2,334	20,096	0.000	0.806	0.848
	06 CHURCHES	147,893	967,434	0.358	0.828	0.871
	07 SCHOOLS	61,133	367,867	0.035	0.791	0.832
	08 OFFICES AND BANKS	77,918	370,823	1.263	1.014	1.066
	09 REC. FACILITIES	17,812	127,805	0.075	0.812	0.854
	11 HOSPITALS/NURS HOME	34,811	159,086	0.000	0.797	0.838
	13 MOTOR VEHICLE RISKS	198	2,273	0.000	0.807	0.849
	14 OTHER NON-MANUF.	33,227	139,319	0.090	0.814	0.856
	TOTAL*	380,060	2,187,409	0.415	0.855	0.899
36 MULTILINE SERVICES	03 RESTAURANTS & BARS	1,758	24,137	0.000	0.292	0.307
	04 OTHER MERCANTILE RS	11,781	64,751	0.000	0.254	0.267
	08 OFFICES AND BANKS	32,431	229,839	0.182	0.266	0.280
	09 REC. FACILITIES	50,063	241,454	0.053	0.191	0.201
	13 MOTOR VEHICLE RISKS	45,045	229,027	1.506	0.996	1.047
	14 OTHER NON-MANUF.	36,673	194,335	0.116	0.238	0.250
	15 STORAGE	20,678	76,538	0.000	0.244	0.257
	21 METAL MANUFACTURING	529	6,401	0.000	0.313	0.329
	22 OTHER MANUFACTURING	13,618	78,765	0.000	0.243	0.256
	TOTAL*	212,576	1,145,247	0.379	0.394	0.415
37 MULTILINE INDUST/PROCESS	04 OTHER MERCANTILE RS	6,256	34,631	0.000	0.281	0.295
	08 OFFICES AND BANKS	2,482	19,120	0.000	0.298	0.313
	13 MOTOR VEHICLE RISKS	2,360	10,537	0.000	0.308	0.324
	14 OTHER NON-MANUF.	7,088	23,424	0.636	0.424	0.446
	15 STORAGE	0	49	0.000	0.321	0.338
	17 FOOD MANUFACTURING	20,754	138,077	0.046	0.225	0.237
	18 WOOD MANUFACTURING	9,684	63,607	0.000	0.255	0.268
	19 WEARING APPAREL	6,071	18,488	0.000	0.298	0.313
	20 CHEM. MANUFACTURING	5,304	59,533	0.441	0.391	0.411
	21 METAL MANUFACTURING	41,716	275,282	0.719	0.576	0.606
	22 OTHER MANUFACTURING	28,719	141,575	1.049	0.675	0.710
	TOTAL*	130,434	784,323	0.521	0.465	0.489

Kansas City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
38 MULTILINE	04 OTHER MERCANTILE RS	33,113	254,464	0.033	0.176	0.185
CONTRACTORS	08 OFFICES AND BANKS	13,588	90,738	0.229	0.318	0.334
	14 OTHER NON-MANUF.	5,500	15,506	0.000	0.302	0.318
	TOTAL*	52,201	360,708	0.081	0.226	0.238
TOTAL ALL TOPS*	01 APARTMENTS	143,502	1,148,812	2.707	1.377	1.447
	02 OTHER HABITATIONAL	85,164	520,901	0.858	1.009	1.060
	03 RESTAURANTS & BARS	64,174	302,964	1.602	1.113	1.170
	04 OTHER MERCANTILE RS	294,253	1,747,678	0.672	0.858	0.902
	05 PUBLIC BUILDINGS	3,982	22,986	0.000	0.979	1.029
	06 CHURCHES	159,936	989,863	0.378	0.865	0.910
	07 SCHOOLS	74,524	420,840	0.029	0.862	0.907
	08 OFFICES AND BANKS	256,578	1,292,983	1.484	1.061	1.116
	09 REC. FACILITIES	84,913	464,195	0.058	0.518	0.544
	10 HOTELS AND MOTELS	36,242	106,712	0.301	0.885	0.931
	11 HOSPITALS/NURS HOME	35,706	161,715	0.000	0.808	0.849
	13 MOTOR VEHICLE RISKS	103,781	417,651	0.654	0.920	0.967
	14 OTHER NON-MANUF.	105,613	534,158	0.144	0.601	0.632
	15 STORAGE	58,032	266,232	0.037	0.715	0.752
	17 FOOD MANUFACTURING	20,754	138,077	0.046	0.225	0.237
	18 WOOD MANUFACTURING	10,439	74,135	0.000	0.324	0.341
	19 WEARING APPAREL	6,071	18,488	0.000	0.298	0.313
	20 CHEM. MANUFACTURING	6,540	64,134	0.358	0.548	0.576
	21 METAL MANUFACTURING	51,101	351,282	0.587	0.677	0.712
	22 OTHER MANUFACTURING	47,867	240,776	0.629	0.614	0.646
	TOTAL*	1,649,172	9,284,582	0.831	0.891	0.937

\* TOTALS IN COLUMNS (3), (4) & (5) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

Saint Louis City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
10 MONOLINE	01 APARTMENTS	5,830	95,484	2.144	1.450	1.525
	02 OTHER HABITATIONAL	6,028	121,625	0.210	0.197	0.207
	03 RESTAURANTS & BARS	10,493	40,753	0.000	0.088	0.093
	04 OTHER MERCANTILE RS	64,458	331,763	0.043	0.061	0.064
	05 PUBLIC BUILDINGS	313	6,737	0.000	0.128	0.135
	06 CHURCHES	518	4,789	0.000	0.131	0.138
	07 SCHOOLS	5,624	41,929	0.000	0.087	0.091
	08 OFFICES AND BANKS	38,120	209,040	0.000	0.034	0.036
	09 REC. FACILITIES	8,647	42,920	0.000	0.086	0.090
	10 HOTELS AND MOTELS	3,037	11,974	0.000	0.119	0.125
	11 HOSPITALS/NURS HOME	10,691	22,339	0.000	0.106	0.111
	13 MOTOR VEHICLE RISKS	9,714	38,320	0.121	0.145	0.152
	14 OTHER NON-MANUF.	7,047	46,970	0.231	0.198	0.208
	15 STORAGE	28,043	133,722	0.000	0.047	0.049
	17 FOOD MANUFACTURING	0	17,200	0.000	0.112	0.118
	18 WOOD MANUFACTURING	3,755	13,576	0.000	0.117	0.123
	19 WEARING APPAREL	3	1,096	0.000	0.138	0.145
	20 CHEM. MANUFACTURING	0	310,086	0.000	0.025	0.026
	21 METAL MANUFACTURING	21,088	71,686	0.000	0.068	0.072
	22 OTHER MANUFACTURING	1,251	9,369	0.000	0.123	0.129
	TOTAL*	224,660	1,571,378	0.086	0.110	0.116
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	6,541	31,246	0.000	0.468	0.492
	TOTAL*	6,541	31,246	0.000	0.468	0.492
32 MULTILINE APARTMENT	01 APARTMENTS	233,883	1,124,158	0.346	0.504	0.530
	02 OTHER HABITATIONAL	201,548	1,114,511	0.664	0.584	0.614
	TOTAL*	435,431	2,238,669	0.493	0.541	0.569
33 MULTILINE OFFICE	08 OFFICES AND BANKS	135,838	758,477	1.063	0.671	0.706
	TOTAL*	135,838	758,477	1.063	0.671	0.706
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	78,894	266,210	0.052	0.465	0.489
	04 OTHER MERCANTILE RS	172,219	1,010,465	0.581	0.563	0.592
	08 OFFICES AND BANKS	9,537	61,958	0.000	0.466	0.490
	13 MOTOR VEHICLE RISKS	32,684	62,303	0.000	0.466	0.490
	14 OTHER NON-MANUF.	4,519	33,314	0.000	0.468	0.492
	15 STORAGE	22,613	118,711	0.000	0.463	0.487
	TOTAL*	320,466	1,552,961	0.325	0.518	0.544

Saint Louis City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
<hr/>						
35 MULTILINE	02 OTHER HABITATIONAL	5,531	41,035	6.365	1.497	1.574
INSTITUTIONAL	05 PUBLIC BUILDINGS	8,057	94,398	0.000	0.465	0.489
	06 CHURCHES	129,842	894,347	0.533	0.552	0.580
	07 SCHOOLS	62,155	259,726	0.022	0.460	0.484
	08 OFFICES AND BANKS	69,404	382,931	0.022	0.454	0.477
	09 REC. FACILITIES	8,759	74,562	0.087	0.480	0.505
	11 HOSPITALS/NURS HOME	41,522	191,515	2.070	0.823	0.865
	13 MOTOR VEHICLE RISKS	327	2,982	0.000	0.469	0.493
	14 OTHER NON-MANUF.	9,431	99,314	0.000	0.464	0.488
	TOTAL*	335,028	2,040,810	0.579	0.557	0.586
36 MULTILINE	03 RESTAURANTS & BARS	4,238	14,386	0.803	0.690	0.726
SERVICES	04 OTHER MERCANTILE RS	21,237	134,805	0.000	0.387	0.407
	08 OFFICES AND BANKS	48,365	191,091	0.015	0.348	0.366
	09 REC. FACILITIES	103,471	427,691	0.038	0.252	0.265
	13 MOTOR VEHICLE RISKS	91,561	407,285	0.195	0.360	0.379
	14 OTHER NON-MANUF.	68,400	297,540	0.170	0.377	0.396
	15 STORAGE	10,644	101,987	0.000	0.420	0.442
	21 METAL MANUFACTURING	223	1,508	0.000	0.571	0.600
	22 OTHER MANUFACTURING	1,498	27,392	4.773	1.543	1.623
	TOTAL*	349,637	1,603,685	0.128	0.342	0.360
37 MULTILINE	04 OTHER MERCANTILE RS	14,504	66,252	0.000	0.464	0.488
INDUST/PROCESS	08 OFFICES AND BANKS	7,236	36,979	0.036	0.516	0.543
	13 MOTOR VEHICLE RISKS	368	523	0.000	0.573	0.603
	14 OTHER NON-MANUF.	3,616	43,479	0.000	0.497	0.523
	17 FOOD MANUFACTURING	52,645	403,866	0.000	0.234	0.246
	18 WOOD MANUFACTURING	18,950	121,128	0.000	0.400	0.421
	19 WEARING APPAREL	6,925	66,904	26.751	8.585	9.027
	20 CHEM. MANUFACTURING	5,500	29,975	0.000	0.519	0.546
	21 METAL MANUFACTURING	80,154	390,169	0.164	0.344	0.362
	22 OTHER MANUFACTURING	28,476	172,014	0.303	0.496	0.522
	TOTAL*	218,374	1,331,289	0.949	0.625	0.657

Saint Louis City

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	38,892	259,663	0.000	0.297	0.312
	08 OFFICES AND BANKS	18,506	116,238	0.000	0.405	0.426
	14 OTHER NON-MANUF.	3,924	26,196	0.795	0.692	0.728
	TOTAL*	61,322	402,097	0.051	0.355	0.373
TOTAL ALL TOPS*	01 APARTMENTS	239,713	1,219,642	0.390	0.527	0.554
	02 OTHER HABITATIONAL	213,107	1,277,171	0.799	0.597	0.627
	03 RESTAURANTS & BARS	93,625	321,349	0.080	0.433	0.455
	04 OTHER MERCANTILE RS	311,310	1,802,948	0.330	0.409	0.430
	05 PUBLIC BUILDINGS	8,370	101,135	0.000	0.452	0.476
	06 CHURCHES	130,360	899,136	0.531	0.550	0.579
	07 SCHOOLS	67,779	301,655	0.020	0.429	0.451
	08 OFFICES AND BANKS	327,006	1,756,714	0.449	0.478	0.503
	09 REC. FACILITIES	120,877	545,173	0.039	0.256	0.270
	10 HOTELS AND MOTELS	9,578	43,220	0.000	0.357	0.376
	11 HOSPITALS/NURS HOME	52,213	213,854	1.646	0.676	0.711
	13 MOTOR VEHICLE RISKS	134,654	511,413	0.141	0.371	0.390
	14 OTHER NON-MANUF.	96,937	546,813	0.169	0.394	0.414
	15 STORAGE	61,300	354,420	0.000	0.265	0.279
	17 FOOD MANUFACTURING	52,645	421,066	0.000	0.234	0.246
	18 WOOD MANUFACTURING	22,705	134,704	0.000	0.353	0.371
	19 WEARING APPAREL	6,928	68,000	26.743	8.581	9.023
	20 CHEM. MANUFACTURING	5,500	340,061	0.000	0.519	0.546
	21 METAL MANUFACTURING	101,465	463,363	0.130	0.287	0.302
	22 OTHER MANUFACTURING	31,225	208,775	0.505	0.532	0.559
	TOTAL*	2,087,297	11,530,612	0.446	0.472	0.496

\* TOTALS IN COLUMNS (3), (4) & (5) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

Balance of State (Missouri)  
\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
<hr/>						
10 MONOLINE	01 APARTMENTS	64,305	395,521	0.736	0.937	0.985
	02 OTHER HABITATIONAL	163,486	910,463	0.685	0.901	0.947
	03 RESTAURANTS & BARS	33,507	194,276	0.045	0.816	0.858
	04 OTHER MERCANTILE RS	479,928	2,693,065	1.373	1.176	1.237
	05 PUBLIC BUILDINGS	26,394	153,328	0.367	0.881	0.926
	06 CHURCHES	18,860	106,825	15.729	3.514	3.695
	07 SCHOOLS	17,046	232,730	0.161	0.832	0.875
	08 OFFICES AND BANKS	333,919	1,784,657	0.780	0.908	0.955
	09 REC. FACILITIES	186,675	962,392	0.302	0.781	0.821
	10 HOTELS AND MOTELS	87,066	428,167	0.679	0.922	0.970
	11 HOSPITALS/NURS HOME	140,787	538,152	1.627	1.150	1.209
	13 MOTOR VEHICLE RISKS	168,305	964,548	2.023	1.311	1.379
	14 OTHER NON-MANUF.	477,399	2,578,284	0.224	0.630	0.662
	15 STORAGE	105,802	538,699	0.052	0.762	0.801
	17 FOOD MANUFACTURING	16,355	86,068	0.000	0.828	0.871
	18 WOOD MANUFACTURING	34,765	260,541	5.799	1.952	2.053
	19 WEARING APPAREL	14,107	56,216	0.000	0.834	0.877
	20 CHEM. MANUFACTURING	9,037	43,986	0.000	0.836	0.879
	21 METAL MANUFACTURING	168,031	955,734	0.836	0.946	0.995
	22 OTHER MANUFACTURING	56,321	308,084	0.000	0.787	0.828
	TOTAL*	2,602,095	14,191,736	0.972	0.961	1.010
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	923,701	2,296,902	1.787	1.062	1.117
	TOTAL*	923,701	2,296,902	1.787	1.062	1.117
32 MULTILINE APARTMENT	01 APARTMENTS	1,212,797	5,923,884	0.559	0.819	0.861
	02 OTHER HABITATIONAL	1,050,739	5,890,257	1.551	1.045	1.099
	TOTAL*	2,263,536	11,814,141	1.019	0.924	0.972
33 MULTILINE OFFICE	08 OFFICES AND BANKS	1,115,500	4,634,022	0.463	0.803	0.844
	TOTAL*	1,115,500	4,634,022	0.463	0.803	0.844
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	499,106	2,031,036	0.975	0.911	0.958
	04 OTHER MERCANTILE RS	2,071,651	11,266,764	1.201	0.982	1.033
	08 OFFICES AND BANKS	176,054	700,875	0.350	0.805	0.846
	13 MOTOR VEHICLE RISKS	390,386	1,171,769	2.631	1.196	1.258
	14 OTHER NON-MANUF.	100,713	474,867	0.760	0.874	0.919
	15 STORAGE	315,704	1,388,486	0.231	0.779	0.819
	TOTAL*	3,553,614	17,033,797	1.186	0.966	1.015

Balance of State (Missouri)  
\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
<hr/>						
35 MULTILINE	02 OTHER HABITATIONAL	25,141	90,693	0.000	0.753	0.792
INSTITUTIONAL	05 PUBLIC BUILDINGS	227,618	1,024,967	2.966	1.250	1.314
	06 CHURCHES	1,791,344	10,261,589	0.565	0.806	0.848
	07 SCHOOLS	716,352	3,343,476	0.082	0.734	0.772
	08 OFFICES AND BANKS	265,234	1,426,346	0.382	0.806	0.848
	09 REC. FACILITIES	205,546	1,011,804	0.093	0.759	0.798
	11 HOSPITALS/NURS HOME	366,483	1,771,207	0.905	0.898	0.944
	13 MOTOR VEHICLE RISKS	3,387	19,350	0.000	0.754	0.793
	14 OTHER NON-MANUF.	160,159	704,113	0.139	0.770	0.810
	TOTAL*	3,761,264	19,653,545	0.590	0.823	0.866
36 MULTILINE	03 RESTAURANTS & BARS	96,117	519,287	0.032	0.912	0.959
SERVICES	04 OTHER MERCANTILE RS	216,307	1,240,377	1.373	1.278	1.344
	08 OFFICES AND BANKS	435,282	2,578,868	0.123	0.636	0.669
	09 REC. FACILITIES	803,814	4,206,521	2.118	1.792	1.884
	13 MOTOR VEHICLE RISKS	611,759	2,915,548	1.926	1.614	1.697
	14 OTHER NON-MANUF.	409,415	2,032,412	1.036	1.131	1.189
	15 STORAGE	129,933	691,019	1.284	1.238	1.302
	21 METAL MANUFACTURING	14,958	119,716	0.092	1.035	1.088
	22 OTHER MANUFACTURING	60,487	423,764	0.066	0.945	0.994
	TOTAL*	2,778,072	14,727,512	1.379	1.355	1.425
37 MULTILINE	04 OTHER MERCANTILE RS	171,397	995,936	6.487	3.047	3.204
INDUST/PROCESS	08 OFFICES AND BANKS	31,924	161,174	0.694	1.127	1.185
	13 MOTOR VEHICLE RISKS	596	3,581	0.000	1.059	1.114
	14 OTHER NON-MANUF.	63,599	369,228	0.419	1.039	1.093
	15 STORAGE	501	21,889	0.000	1.052	1.106
	17 FOOD MANUFACTURING	146,486	649,455	0.049	0.886	0.932
	18 WOOD MANUFACTURING	158,491	979,648	1.174	1.204	1.266
	19 WEARING APPAREL	86,978	528,914	0.160	0.943	0.992
	20 CHEM. MANUFACTURING	40,908	450,975	0.000	0.922	0.970
	21 METAL MANUFACTURING	846,954	5,323,309	0.721	0.877	0.922
	22 OTHER MANUFACTURING	423,797	2,516,027	1.083	1.147	1.206
	TOTAL*	1,971,631	12,000,136	1.236	1.164	1.224



Balance of State (Missouri)  
\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	522,760	2,892,728	1.079	1.141	1.200
	08 OFFICES AND BANKS	183,595	1,014,094	0.246	0.879	0.924
	14 OTHER NON-MANUF.	45,413	210,434	0.374	1.061	1.116
	TOTAL*	751,768	4,117,256	0.833	1.072	1.127
TOTAL ALL TOPS*	01 APARTMENTS	1,277,102	6,319,405	0.568	0.825	0.867
	02 OTHER HABITATIONAL	1,239,366	6,891,413	1.405	1.020	1.073
	03 RESTAURANTS & BARS	628,730	2,744,599	0.781	0.906	0.953
	04 OTHER MERCANTILE RS	3,462,043	19,088,870	1.479	1.154	1.213
	05 PUBLIC BUILDINGS	254,012	1,178,295	2.696	1.212	1.274
	06 CHURCHES	1,810,204	10,368,414	0.723	0.834	0.877
	07 SCHOOLS	733,398	3,576,206	0.084	0.736	0.774
	08 OFFICES AND BANKS	2,541,508	12,300,036	0.417	0.798	0.839
	09 REC. FACILITIES	1,196,035	6,180,717	1.487	1.457	1.532
	10 HOTELS AND MOTELS	1,010,767	2,725,069	1.692	1.050	1.104
	11 HOSPITALS/NURS HOME	507,270	2,309,359	1.105	0.968	1.018
	13 MOTOR VEHICLE RISKS	1,174,433	5,074,796	2.168	1.429	1.502
	14 OTHER NON-MANUF.	1,256,698	6,369,338	0.536	0.867	0.912
	15 STORAGE	551,940	2,640,093	0.444	0.884	0.930
	17 FOOD MANUFACTURING	162,841	735,523	0.044	0.880	0.926
	18 WOOD MANUFACTURING	193,256	1,240,189	2.006	1.338	1.408
	19 WEARING APPAREL	101,085	585,130	0.138	0.928	0.976
	20 CHEM. MANUFACTURING	49,945	494,961	0.000	0.906	0.953
	21 METAL MANUFACTURING	1,029,943	6,398,759	0.731	0.891	0.936
	22 OTHER MANUFACTURING	540,605	3,247,875	0.856	1.087	1.143
	TOTAL*	19,721,181	100,469,047	1.031	1.007	1.059

\* TOTALS IN COLUMNS (3), (4) & (5) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

ENTIRE STATE

\*\*\*\*\*

MISSOURI

BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
10 MONOLINE	01 APARTMENTS	81,353	657,765	1.262	1.126	1.184
	02 OTHER HABITATIONAL	183,816	1,153,787	0.694	0.914	0.961
	03 RESTAURANTS & BARS	52,533	259,039	0.029	0.734	0.772
	04 OTHER MERCANTILE RS	601,307	3,350,586	1.121	1.049	1.102
	05 PUBLIC BUILDINGS	28,355	162,955	0.342	0.893	0.939
	06 CHURCHES	31,421	134,043	9.679	2.617	2.752
	07 SCHOOLS	36,061	327,632	0.076	0.848	0.891
	08 OFFICES AND BANKS	410,536	2,160,982	1.224	0.989	1.041
	09 REC. FACILITIES	212,360	1,100,248	0.270	0.784	0.824
	10 HOTELS AND MOTELS	92,954	444,305	0.753	0.925	0.972
	11 HOSPITALS/NURS HOME	152,373	563,120	1.503	1.077	1.133
	13 MOTOR VEHICLE RISKS	190,569	1,071,194	1.793	1.243	1.307
	14 OTHER NON-MANUF.	494,952	2,710,651	0.226	0.637	0.669
	15 STORAGE	150,627	750,161	0.037	0.674	0.709
	17 FOOD MANUFACTURING	16,355	103,268	0.000	0.828	0.871
	18 WOOD MANUFACTURING	39,275	284,645	5.133	1.763	1.853
	19 WEARING APPAREL	14,110	57,312	0.000	0.834	0.877
	20 CHEM. MANUFACTURING	10,273	358,673	0.000	0.883	0.928
	21 METAL MANUFACTURING	197,975	1,097,019	0.710	0.862	0.907
	22 OTHER MANUFACTURING	63,102	337,889	0.000	0.811	0.853
	TOTAL*	3,060,307	17,085,274	0.942	0.937	0.986
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	963,633	2,430,696	1.713	1.049	1.103
	TOTAL*	963,633	2,430,696	1.713	1.049	1.103
32 MULTILINE APARTMENT	01 APARTMENTS	1,578,964	8,030,094	0.699	0.814	0.856
	02 OTHER HABITATIONAL	1,318,415	7,371,264	1.382	0.970	1.020
	TOTAL*	2,897,379	15,401,358	1.010	0.885	0.931
33 MULTILINE OFFICE	08 OFFICES AND BANKS	1,331,479	5,758,231	0.520	0.793	0.834
	TOTAL*	1,331,479	5,758,231	0.520	0.793	0.834
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	631,883	2,552,063	0.939	0.873	0.918
	04 OTHER MERCANTILE RS	2,430,052	13,345,303	1.141	0.951	1.000
	08 OFFICES AND BANKS	197,112	812,279	0.313	0.788	0.829
	13 MOTOR VEHICLE RISKS	466,698	1,341,560	2.201	1.108	1.165
	14 OTHER NON-MANUF.	117,851	584,358	0.649	0.851	0.895
	15 STORAGE	358,889	1,619,102	0.209	0.762	0.801
	TOTAL*	4,202,485	20,254,665	1.096	0.930	0.978

ENTIRE STATE

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
<hr/>						
35 MULTILINE	02 OTHER HABITATIONAL	35,406	164,434	0.994	0.877	0.921
INSTITUTIONAL	05 PUBLIC BUILDINGS	238,009	1,139,461	2.837	1.219	1.282
	06 CHURCHES	2,069,079	12,123,370	0.548	0.791	0.832
	07 SCHOOLS	839,640	3,971,069	0.074	0.718	0.755
	08 OFFICES AND BANKS	412,556	2,180,100	0.488	0.786	0.827
	09 REC. FACILITIES	232,117	1,214,171	0.091	0.752	0.791
	11 HOSPITALS/NURS HOME	442,816	2,121,808	0.943	0.883	0.929
	13 MOTOR VEHICLE RISKS	3,912	24,605	0.000	0.733	0.771
	14 OTHER NON-MANUF.	202,817	942,746	0.125	0.763	0.802
	TOTAL*	4,476,352	23,881,764	0.575	0.806	0.848
36 MULTILINE	03 RESTAURANTS & BARS	102,113	557,810	0.063	0.892	0.938
SERVICES	04 OTHER MERCANTILE RS	249,325	1,439,933	1.191	1.154	1.213
	08 OFFICES AND BANKS	516,078	2,999,798	0.117	0.586	0.616
	09 REC. FACILITIES	957,348	4,875,666	1.785	1.542	1.621
	13 MOTOR VEHICLE RISKS	748,365	3,551,860	1.689	1.423	1.497
	14 OTHER NON-MANUF.	514,488	2,524,287	0.855	0.967	1.017
	15 STORAGE	161,255	869,544	1.035	1.057	1.111
	21 METAL MANUFACTURING	15,710	127,625	0.088	1.004	1.056
	22 OTHER MANUFACTURING	75,603	529,921	0.147	0.830	0.873
	TOTAL*	3,340,285	17,476,444	1.184	1.188	1.249
37 MULTILINE	04 OTHER MERCANTILE RS	192,157	1,096,819	5.786	2.762	2.904
INDUST/PROCESS	08 OFFICES AND BANKS	41,642	217,273	0.538	0.972	1.021
	13 MOTOR VEHICLE RISKS	3,324	14,641	0.000	0.472	0.496
	14 OTHER NON-MANUF.	74,303	436,131	0.419	0.954	1.003
	15 STORAGE	501	21,938	0.000	1.052	1.106
	17 FOOD MANUFACTURING	219,885	1,191,398	0.037	0.667	0.702
	18 WOOD MANUFACTURING	187,125	1,164,383	0.994	1.073	1.129
	19 WEARING APPAREL	99,974	614,306	1.992	1.433	1.507
	20 CHEM. MANUFACTURING	51,712	540,483	0.045	0.824	0.867
	21 METAL MANUFACTURING	968,824	5,988,760	0.675	0.820	0.862
	22 OTHER MANUFACTURING	480,992	2,829,616	1.035	1.081	1.136
	TOTAL*	2,320,439	14,115,748	1.169	1.074	1.129

ENTIRE STATE

\*\*\*\*\*

MISSOURI  
BASIC GROUP I RELATIVITY ANALYSIS  
TABLE 10 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	594,765	3,406,855	0.950	1.032	1.085
	08 OFFICES AND BANKS	215,689	1,221,070	0.224	0.803	0.844
	14 OTHER NON-MANUF.	54,837	252,136	0.367	0.958	1.008
	TOTAL*	865,291	4,880,061	0.732	0.970	1.020
TOTAL ALL TOPS*	01 APARTMENTS	1,660,317	8,687,859	0.727	0.830	0.872
	02 OTHER HABITATIONAL	1,537,637	8,689,485	1.291	0.961	1.010
	03 RESTAURANTS & BARS	786,529	3,368,912	0.765	0.866	0.911
	04 OTHER MERCANTILE RS	4,067,606	22,639,496	1.333	1.075	1.131
	05 PUBLIC BUILDINGS	266,364	1,302,416	2.571	1.184	1.245
	06 CHURCHES	2,100,500	12,257,413	0.685	0.819	0.861
	07 SCHOOLS	875,701	4,298,701	0.074	0.723	0.760
	08 OFFICES AND BANKS	3,125,092	15,349,733	0.508	0.786	0.827
	09 REC. FACILITIES	1,401,825	7,190,085	1.275	1.296	1.363
	10 HOTELS AND MOTELS	1,056,587	2,875,001	1.629	1.038	1.091
	11 HOSPITALS/NURS HOME	595,189	2,684,928	1.087	0.933	0.981
	13 MOTOR VEHICLE RISKS	1,412,868	6,003,860	1.863	1.291	1.357
	14 OTHER NON-MANUF.	1,459,248	7,450,309	0.483	0.816	0.858
	15 STORAGE	671,272	3,260,745	0.369	0.813	0.855
	17 FOOD MANUFACTURING	236,240	1,294,666	0.034	0.679	0.714
	18 WOOD MANUFACTURING	226,400	1,449,028	1.712	1.193	1.254
	19 WEARING APPAREL	114,084	671,618	1.746	1.359	1.429
	20 CHEM. MANUFACTURING	61,985	899,156	0.038	0.834	0.877
	21 METAL MANUFACTURING	1,182,509	7,213,404	0.673	0.830	0.872
	22 OTHER MANUFACTURING	619,697	3,697,426	0.821	1.023	1.075
	TOTAL*	23,457,650	121,284,241	0.965	0.951	1.000

\* TOTALS IN COLUMNS (3), (4) & (5) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

MISSOURI

SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS  
TABLE 11 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
10 MONOLINE	01 BUILDINGS	1,209,759	6,257,492	1.650	1.848
	02 RES. APTS. AND COND	21,362	168,750	0.077	0.086
	03 OFFICES	118,493	648,425	0.411	0.460
	04 MERCANTILE - HIGH	140,610	739,932	0.352	0.394
	05 MERCANTILE - MEDIUM	21,811	118,157	0.277	0.310
	06 MERCANTILE - LOW	19,117	129,921	0.109	0.122
	07 MOTELS AND HOTELS	18,631	94,148	8.772	9.823
	08 INSTITUTIONAL - HIG	27,695	163,860	1.040	1.165
	09 INSTITUTIONAL - LOW	51,192	208,583	0.299	0.335
	10 INDUST-PROC - HIGH	7,576	63,609	0.599	0.671
	11 INDUST-PROC - LOW	66,561	409,718	0.425	0.476
	12 SERVICE - HIGH	53,782	330,334	0.286	0.320
	13 SERVICE - LOW	49,511	321,983	2.867	3.211
	14 CONTRACTORS	17,107	92,538	0.842	0.943
	TOTAL*	1,823,207	9,747,450	1.380	1.545
31 MULTILINE MOTEL/HOTEL	01 BUILDINGS	195,482	636,536	1.358	1.521
	07 MOTELS AND HOTELS	55,543	173,348	0.525	0.588
	TOTAL*	251,025	809,884	1.174	1.315
32 MULTILINE APARTMENT	01 BUILDINGS	1,067,281	5,576,160	0.671	0.751
	02 RES. APTS. AND COND	213,587	1,126,157	0.517	0.579
	TOTAL*	1,280,868	6,702,317	0.645	0.722
33 MULTILINE OFFICE	01 BUILDINGS	671,475	2,846,880	0.647	0.725
	03 OFFICES	176,967	785,108	0.777	0.870
	04 MERCANTILE - HIGH	265	1,210	0.000	0.000
	08 INSTITUTIONAL - HIG	1,469	7,286	0.000	0.000
	11 INDUST-PROC - LOW	48	204	0.000	0.000
	12 SERVICE - HIGH	6	1,143	10.269	11.499
	14 CONTRACTORS	0	62	0.000	0.000
	TOTAL*	850,230	3,641,893	0.673	0.754

MISSOURI

SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS  
TABLE 11 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
34 MULTILINE MERCANTILE	01 BUILDINGS	2,520,353	10,666,228	0.960	1.075
	03 OFFICES	4,247	6,125	0.000	0.000
	04 MERCANTILE - HIGH	263,177	1,519,350	1.368	1.532
	05 MERCANTILE - MEDIUM	212,665	1,201,366	0.592	0.663
	06 MERCANTILE - LOW	185,266	799,649	1.294	1.449
	08 INSTITUTIONAL - HIG	279	1,524	0.000	0.000
	11 INDUST-PROC - LOW	2,244	3,913	0.000	0.000
	12 SERVICE - HIGH	4,832	19,454	0.000	0.000
	13 SERVICE - LOW	3,659	17,979	0.000	0.000
	14 CONTRACTORS	10,932	48,954	0.000	0.000
	TOTAL*	3,207,654	14,284,542	0.981	1.099
35 MULTILINE INSTITUTIONAL	01 BUILDINGS	2,340,144	12,810,089	0.991	1.110
	03 OFFICES	355	737	0.000	0.000
	08 INSTITUTIONAL - HIG	436,978	2,290,266	0.529	0.592
	09 INSTITUTIONAL - LOW	438,550	2,282,484	0.379	0.424
	11 INDUST-PROC - LOW	0	17	0.000	0.000
	12 SERVICE - HIGH	228	739	0.000	0.000
	14 CONTRACTORS	1,994	9,293	0.000	0.000
	TOTAL*	3,218,249	17,393,625	0.844	0.945
36 MULTILINE SERVICES	01 BUILDINGS	1,135,357	5,659,324	0.925	1.036
	03 OFFICES	2,951	11,817	0.000	0.000
	04 MERCANTILE - HIGH	3,661	16,267	0.000	0.000
	05 MERCANTILE - MEDIUM	4,847	21,041	4.895	5.482
	06 MERCANTILE - LOW	353	1,271	0.000	0.000
	08 INSTITUTIONAL - HIG	13,658	74,325	0.000	0.000
	09 INSTITUTIONAL - LOW	12,779	57,702	0.000	0.000
	10 INDUST-PROC - HIGH	98	155	0.000	0.000
	11 INDUST-PROC - LOW	218	854	0.000	0.000
	12 SERVICE - HIGH	412,358	2,699,222	0.371	0.415
	13 SERVICE - LOW	156,825	833,469	0.743	0.832
	14 CONTRACTORS	12,591	56,840	0.000	0.000
	TOTAL*	1,755,696	9,432,287	0.765	0.857

MISSOURI

SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS  
TABLE 11 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1)	(2)	(3)	(4)
		ACCIDENT YEAR ENDING 12/31/17 AGGREGATE LOSS COSTS	5 - YEAR AGGREGATE LOSS COSTS	5 - YEAR EXPERIENCE RATIO	RELATIVITY
37 MULTILINE INDUST/PROC	01 BUILDINGS	768,021	4,004,493	0.492	0.551
	03 OFFICES	942	5,924	4.165	4.664
	04 MERCANTILE - HIGH	979	1,810	0.000	0.000
	05 MERCANTILE - MEDIUM	25	416	0.000	0.000
	06 MERCANTILE - LOW	131	471	0.000	0.000
	10 INDUST-PROC - HIGH	76,490	500,475	5.356	5.998
	11 INDUST-PROC - LOW	475,031	2,658,728	0.485	0.543
	12 SERVICE - HIGH	843	2,163	0.000	0.000
	13 SERVICE - LOW	360	633	0.000	0.000
	14 CONTRACTORS	1,737	3,906	0.000	0.000
	TOTAL*	1,324,559	7,179,019	0.771	0.863
38 MULTILINE CONTRACTORS	01 BUILDINGS	413,018	2,174,235	0.640	0.717
	03 OFFICES	5,675	26,611	0.719	0.805
	04 MERCANTILE - HIGH	853	5,607	0.251	0.281
	08 INSTITUTIONAL - HIG	659	1,871	0.000	0.000
	11 INDUST-PROC - LOW	1,069	2,907	0.000	0.000
	12 SERVICE - HIGH	1,758	4,591	0.000	0.000
	13 SERVICE - LOW	287	965	0.000	0.000
	14 CONTRACTORS	331,623	1,940,552	0.656	0.735
	TOTAL*	754,942	4,157,339	0.644	0.721
TOTAL ALL TOPS*	01 BUILDINGS	10,320,890	50,631,437	0.954	1.068
	02 RES. APTS. AND COND	234,949	1,294,907	0.477	0.534
	03 OFFICES	309,630	1,484,747	0.627	0.702
	04 MERCANTILE - HIGH	409,545	2,284,176	1.000	1.120
	05 MERCANTILE - MEDIUM	239,348	1,340,980	0.650	0.728
	06 MERCANTILE - LOW	204,867	931,312	1.180	1.321
	07 MOTELS AND HOTELS	74,174	267,496	2.597	2.908
	08 INSTITUTIONAL - HIG	480,738	2,539,132	0.541	0.606
	09 INSTITUTIONAL - LOW	502,521	2,548,769	0.361	0.404
	10 INDUST-PROC - HIGH	84,164	564,239	4.922	5.512
	11 INDUST-PROC - LOW	545,171	3,076,341	0.474	0.531
	12 SERVICE - HIGH	473,807	3,057,646	0.355	0.398
	13 SERVICE - LOW	210,642	1,175,029	1.227	1.374
	14 CONTRACTORS	375,984	2,152,145	0.617	0.691
	TOTAL*	14,466,430	73,348,356	0.893	1.000

\* TOTALS IN COLUMNS (3) & (4) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

## EXPLANATORY NOTES TO TABLES 10 AND 11

### BASIC GROUP I/SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

INTRODUCTION	<p>The experience used in the relativity analysis and displayed on Tables 10 and 11 is the latest five accident years of data reported under the Commercial Statistical Plan. As in the overall review, loss costs have been adjusted to current ISO loss cost and prospective amount of insurance levels (with multiline aggregate loss costs adjusted additionally by the current implicit package modification factors). Incurred losses are adjusted to prospective cost levels, and are further adjusted by the Basic Group I large loss procedure and the Special Causes of Loss excess procedure. Losses have also been developed to their ultimate settlement value by application of loss development factors.</p>
COLUMN (1)	<p><u>2017 AGGREGATE LOSS COSTS</u></p> <p>The latest accident year aggregate loss costs (adjusted as described above) are used as weights both in the calculation of any totals shown in this table and in the iterative formulas used in the simultaneous review procedure.</p>
COLUMN (2)	<p><u>2013-2017 AGGREGATE LOSS COSTS</u></p> <p>The combined five-year adjusted aggregate loss costs (adjusted as described above) are used to calculate the experience ratios in column (3).</p>
COLUMN (3)	<p><u>FIVE-YEAR EXPERIENCE RATIOS</u></p> <p>These are the ratios of the combined five-year adjusted incurred losses (adjusted as described above) to the combined five-year adjusted aggregate loss costs as shown in column (2). Any totals which are shown are weighted averages using the adjusted aggregate loss costs in column (1).</p>
COLUMN (4)	<p><u>CREDIBILITY (Z) WEIGHTED EXPERIENCE RATIO</u></p> <p>A credibility procedure is applied to the initial experience ratios in column (3) on a cell-by-cell basis prior to the simultaneous review procedure. The credibility values are calculated using an empirical Bayesian credibility procedure. In the following discussion, cell refers to an individual combination of TOP, rating group or category, and territory (where applicable).</p>



## EXPLANATORY NOTES TO TABLES 10 AND 11 (cont'd)

COLUMN (4)  
(cont'd)

The important concept underlying empirical Bayesian credibility is that credibility should depend both on the overall variation of the group of which the cell is a member and the variation of the yearly experience ratios for the cell. Therefore, if a cell's data is very stable then a relatively high credibility value is assigned, and vice versa.

The empirical Bayesian credibility formula for individual cell credibility is  $Z = ((C-3)/C) (P/(P+K)) + (3/C)$ . P equals the cell's five-year adjusted aggregate loss costs and C equals the number of unique combinations of rating variables (Territory, TOP and Rating Group/Category) within a class group. The K value is estimated from the underlying data using the empirical Bayes method and varies by TOP group and by territory where applicable. The three TOP groups used in this analysis are: Monoline (TOP 10), Premises (TOP's 31-35), and Operations (TOP's 36-38). The 3/C term corrects for the statistical bias associated with the credibility process. The minimum credibility that is possible is 3/C.

COLUMN (5)

### WEIGHTED RELATIVITIES

The relativities are the ratios of the five-year credibility-weighted experience ratios shown in column (4) to the average five-year credibility-weighted experience ratio for all TOP's, rating groups and territories (where applicable) combined. These relativities represent how much better or worse than average the experience for a given cell is. They are used along with the aggregate loss costs in column (1) as input for the simultaneous review procedure.

MISSOURI

TABLE 12 - BASIC GROUP II RELATIVITY ANALYSIS

INDICATED LOSS COST ADJUSTMENT: +10.1%

	(1) ACCIDENT YEAR ENDING 12/31/17 AGGR. LOSS COSTS AT CURRENT IMPLICIT PMF	(2) ACCIDENT YEARS 2008-2017 EXPER. RATIO AT CURRENT PMF A	(3) FORMULA RELATIVITY (2) / 1.199	(4) CREDI- BILITY Z C	(5) Z WEIGHTED RELA- TIVITY D	(6) BALANCED FORMULA RELA- TIVITY E	(7) NORMALIZED FORMULA RELA- TIVITY F	(8) CURRENT IMPLICIT PMF	(9) INDICATED IMPLICIT PMF G	(10) INDIC. LOSS COST ADJUST
MONOLINE	2,890,176	1.303	1.087	0.428	1.037	1.037	1.0415			+14.7%
MULTILINE	25,278,965	1.187	0.990	0.856	0.991	0.991	0.9954			+9.6%
COVERAGE	28,169,141	1.199	1.000			0.9957 B	1.0001			+10.1%
MULTILINE TOP										
31 MOTEL/HOTEL	625,226	2.332	1.945	0.089	1.084	1.091	1.0957	1.392	1.464	+20.6%
32 APARTMENT	3,222,722	1.100	0.917	0.430	0.964	0.970	0.9742	1.271	1.189	+7.3%
33 OFFICE	1,190,762	1.133	0.945	0.182	0.990	0.996	1.0003	0.663	0.637	+10.1%
34 MERCANTILE	6,644,806	1.174	0.979	0.568	0.988	0.994	0.9983	1.050	1.006	+9.9%
35 INSTITUTIONAL	7,102,876	1.152	0.961	0.663	0.974	0.980	0.9842	1.070	1.011	+8.4%
36 SERVICES	3,773,310	1.166	0.972	0.472	0.987	0.993	0.9973	1.021	0.978	+9.8%
37 INDUST/PROCESS	1,679,697	1.315	1.097	0.299	1.029	1.035	1.0395	0.724	0.723	+14.4%
38 CONTRACTORS	1,039,566	1.011	0.843	0.215	0.966	0.972	0.9762	1.004	0.941	+7.5%
	25,278,965	1.187 B	0.990		0.985 B	0.991 B	0.9954 B			+9.6%

B - AVERAGE WEIGHTED BY COLUMN (1)

C - CREDIBILITY =  $P / (P + K)$  WHERE P REPRESENTS THE TOTAL 10 YEAR ADJUSTED LOSS COSTS AND K = 45,000,000

D - (5) = (3) \* (4) + (1.000 - (4))

E - (6) = (5) \* (0.991/0.985)

F - (7) = (6) / 0.9957

G - (9) = (7) \* (8) / (1.0415)

## EXPLANATORY NOTES TO TABLE 12

### BASIC GROUP II RELATIVITY ANALYSIS

#### INTRODUCTION

The explanations which follow clarify Table 12, the Basic Group II (BG II) relativity analysis. The purpose of this analysis is to:

- (1) determine the monoline loss cost level need;
- (2) determine indicated changes to the eight CPP package modification factors (PMFs) based on Basic Group II experience.

#### COLUMN (1)

##### 2017 AGGREGATE LOSS COSTS

The latest accident year adjusted aggregate loss costs (adjusted in the same manner as in the overall review, i.e. to current manual loss cost and prospective amount of insurance levels, with multiline aggregate loss costs further adjusted to current IPMF level) are used as weights in the calculation of any totals shown in this table.

#### COLUMN (2)

##### 2008 - 2017 EXPERIENCE RATIO

These experience ratios are the ratios of the combined ten-year CSP adjusted incurred losses (adjusted to current deductible and prospective cost levels including loss development, and smoothed by the BG II excess loss procedure) to the combined ten year CSP adjusted aggregate loss costs. Any totals which are shown are weighted averages using the aggregate loss costs in column (1). When a dash is displayed in the column, it indicates that the indicated IPMF which resulted from this procedure was capped. The procedure which follows when capping occurs is described below.

#### COLUMN (3)

##### FORMULA RELATIVITY

The formula relativities are the ratios of the ten year experience ratios for the type of policy (either monoline vs. multiline or individual multiline programs) to the average ten year experience ratio for monoline and multiline combined. These relativities represent how much better or worse than average the experience for a given type of policy is. Again, any totals which are shown are weighted averages and the display of a dash indicates that the resulting IPMF was capped. Unlike the BG I and SCL relativity analyses, the BG II analysis does not employ a simultaneous review procedure since a one way review is involved. That is, the overall loss cost change is only distributed across type of policy; no other rating variables are considered.

## EXPLANATORY NOTES TO TABLE 12 (cont'd)

COLUMN (4)

### CREDIBILITY

The credibility of the experience for each type of policy is determined from the formula:

$$Z = \frac{P}{P + K}$$

where P is the ten year aggregate adjusted loss costs for a given type of policy, and K is a constant loss cost volume of \$45,000,000.

COLUMN (5)

### Z - WEIGHTED RELATIVITY

The weighted relativity is a weighted average of the individual TOP formula relativity and the overall (coverage) formula relativity using credibility and its complement as the respective weights. Therefore, to the extent that the indication for a type of policy is not fully credible, the complement of credibility is assigned to the statewide coverage level change.

COLUMN (6)

### BALANCED FORMULA RELATIVITY

The individual multiline weighted relativities are balanced to the multiline weighted relativity level by applying a factor equal to the overall multiline relativity (i.e. the weighted relativity for all multiline combined which is shown on the top of the exhibit directly under the corresponding monoline relativity) divided by the average multiline relativity (i.e. the weighted average of the individual multiline weighted relativities which is shown on the bottom of the exhibit). When the indicated IPMF for a type of policy is capped, the balanced relativity is set equal to the product of the capped IPMF in column (9) and the monoline balanced formula relativity in column (6), divided by the current IPMF in column (8).

COLUMN (7)

### NORMALIZED FORMULA RELATIVITY

The normalized relativity is equal to the balanced formula relativity divided by the average monoline/multiline combined relativity. This balances the average monoline/multiline relativity to unity.

COLUMN (8)

### CURRENT IMPLICIT PMF

This is the current IPMF for each multiline type of policy.

EXPLANATORY NOTES TO TABLE 12 (cont'd)

COLUMN (9)

INDICATED IMPLICIT PMF

The indicated IPMF is calculated from the normalized relativities as follows:

$$\frac{\text{TOP y indicated IPMF}}{\text{IPMF}} = \frac{(\text{TOP y current IPMF})(\text{TOP y relativity})}{\text{monoline relativity}}$$

For each CPP type of policy the indicated IPMF is subject to a minimum value of 0.50 and a maximum value of 1.50. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the aggregate loss costs for that type of policy are adjusted to the capped IPMF level, and the entire relativity review as described above is redone to take this into account. If an IPMF has been capped it is so noted in footnote A.

COLUMN (10)

INDICATED LOSS COST CHANGES

The indicated monoline and multiline (by TOP) changes are calculated by taking the product of the statewide loss cost level change and the corresponding TOP relativity.

The overall multiline loss cost level change is the aggregate loss cost weighted average of all multiline TOP loss cost level changes.

MULTILINE  
CONSIDERATIONS

It should be noted that although this procedure generates multiline indications, this filing only addresses monoline loss cost levels. That is, upon implementation of this filing only the monoline loss costs will be revised. The multiline indications developed here will be combined with those of the other component coverages, e.g. GL Premises and Operations in the CPP review for the purpose of revising the package modification factors.

MISSOURI  
COMMERCIAL PROPERTY INSURANCE

SECTION C - SUPPORTING MATERIAL

Overview .....	C2-3
Loss Cost/Rate Level Histories (Tables 13 - 17) .....	C4-14
Commercial Package Policy Implicit Package	
Modification Factors (IPMF's) and IPMF Caps (Tables 18 - 20).....	C15-19
Trend Procedure (Tables 21 - 27) .....	C20-42
Loss Development Procedure (Table 28) .....	C43-47
Excess Loss Procedure (Tables 29 - 32) .....	C48-61
Credibility (Tables 33, 33A, and 34) .....	C62-67

## OVERVIEW

### AGGREGATE LOSS COSTS AT CURRENT LEVEL

Tables 13, 14 and 15 provide the overall loss cost/rate level histories for Basic Group I, Basic Group II, and Special Causes of Loss respectively. These tables, along with Tables 16 and 17, provide information on the on-level factors needed to bring collected aggregate loss costs to current loss cost level.

Table 16 provides rate level/loss cost level histories by rating id (class vs. specific), rating group, and territory (where applicable) for Basic Group I, while Table 17 provides rate level/loss cost level histories by category for Special Causes of Loss. These tables can be used to develop on-level factors appropriate to bring collected aggregate loss costs up to current loss cost level. Factors based on these tables are more appropriate for company use than the overall factors shown on Tables 13 and 15 if the company's mix of business differs substantially from the industrywide average. For example, if a company's business is very heavily concentrated in a single class or territory, it is more appropriate to use the rate level/loss cost history for that class rather than the overall average to develop on-level factors.

Tables 18, 19 and 20 provide the current implicit package modification factors (IPMFs) and IPMF caps for Basic Group I, Basic Group II and Special Causes of Loss.

### ADJUSTMENTS TO LOSSES

The loss projection factors, current cost factors, and loss trend adjustments shown on Tables 21, 22 and 23 reflect the combined impact of all economic influences on Commercial Property underwriting results and are used to project past underwriting results to future loss levels. They are intended to reflect the impact of inflation on loss payments, the impact of higher costs due to repairs done on an "emergency" basis, the impact of coinsurance and relative insurance to value on loss payments, and any other economic influences which can affect underwriting losses but for which specific provisions are not made. Losses have also been developed to their ultimate settlement value using factors shown on Table 28.

### CREDIBILITY

Credibility,  $Z$ , is a weight given to the most recent body of data. The complement of credibility,  $1-Z$ , is the weight assigned to net trend. The final estimate is a weighted average obtained by using the formula  $C = Z \times R + (1-Z) \times N$ , where

$Z$  = credibility

$C$  = final estimate

$R$  = estimate based on the most recent data

$N$  = net trend

## OVERVIEW (cont'd)

### CREDIBILITY (cont'd)

Credibility may range from 0 to 1, where  $Z=1$  is full credibility and  $Z=0$  is no credibility. The actual numerical value of  $Z$  is calculated by considering how the state's volume of experience compares with the full credibility standard. Credibility is capped at 25% if the credibility calculated is less than 25%. See Tables 33, 33A, and 34 for a complete explanation of the credibility standards for Basic Group I, Basic Group II, and Special Causes of Loss.



### LOSS COST/RATE LEVEL HISTORY

Loss cost/rate level histories are provided for Basic Group I, Basic Group II and Special Causes of Loss. The loss cost/rate level changes are then further split out by rating territory, rating group or category since a company's business may be more heavily concentrated in a single class. These histories can be used to develop on-level factors appropriate to bring collected aggregate loss costs up to current loss cost levels.

MISSOURI

TABLE 13

BASIC GROUP I

HISTORY OF STATEWIDE LOSS COST/RATE LEVEL CHANGES

LOSS COST/RATE LEVEL HISTORY				
(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2001-09-01	7.1	1.071	0.563	0.334
2002-10-01	-8.8	0.977	0.617	0.252
2004-02-01	-8.8	0.891	0.677	0.915
2004-11-01	-1.1	0.881	0.684	0.167
2006-03-01	0.1	0.882	0.684	0.838
2007-03-01	-2.3	0.862	0.700	0.838
2007-11-01	-5.6	0.813	0.742	0.167
2008-09-01	-8.1	0.747	0.807	0.333
2009-08-01	-1.0	0.740	0.815	0.419
2011-08-01	-1.7	0.727	0.829	0.419
2012-09-01	-8.5	0.666	0.905	0.333
2013-10-01	0.6	0.670	0.900	0.252
2014-07-01	-3.9	0.643	0.938	0.504
2018-08-01	-6.3	0.603	1.000	0.419

TIME ELEMENT ONLY LOSS COST LEVEL HISTORY				
(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2013-04-01	-13.1	0.869	1.000	0.753

\* WEIGHT DENOTES THE PORTION OF THE EFFECTIVE YEAR FOR WHICH THE ADJUSTMENT FACTORS APPLY.

MISSOURI

TABLE 14

BASIC GROUP II

HISTORY OF STATEWIDE LOSS COST/RATE LEVEL CHANGES

LOSS COST/RATE LEVEL HISTORY				
(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2001-09-01	0.9	1.009	1.105	0.334
2002-10-01	4.4	1.053	1.059	0.252
2004-02-01	5.0	1.106	1.008	0.915
2004-11-01	-0.7	1.098	1.015	0.167
2006-03-01	13.8	1.250	0.892	0.838
2007-03-01	-6.3	1.171	0.952	0.838
2007-11-01	-9.1	1.065	1.047	0.167
2008-09-01	-4.1	1.021	1.092	0.333
2009-08-01	0.3	1.024	1.089	0.419
2011-08-01	-10.3	0.919	1.213	0.419
2012-09-01	0.0	0.919	1.213	0.333
2013-10-01	5.3	0.967	1.153	0.252
2014-07-01	14.5	1.107	1.007	0.504
2018-08-01	0.7	1.115	1.000	0.419

TIME ELEMENT ONLY LOSS COST LEVEL HISTORY				
(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2013-04-01	-13.3	0.867	1.000	0.753

\* WEIGHT DENOTES THE PORTION OF THE EFFECTIVE YEAR FOR WHICH THE ADJUSTMENT FACTORS APPLY.

MISSOURI

TABLE 15

SPECIAL CAUSES OF LOSS

HISTORY OF STATEWIDE LOSS COST/RATE LEVEL CHANGES

LOSS COST/RATE LEVEL HISTORY				
(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2001-09-01	-7.0	0.930	1.229	0.334
2002-10-01	-5.4	0.880	1.299	0.252
2004-02-01	3.2	0.908	1.259	0.915
2004-11-01	-4.5	0.867	1.318	0.167
2006-03-01	-16.1	0.727	1.572	0.838
2007-03-01	-10.0	0.655	1.745	0.838
2007-11-01	-9.8	0.591	1.934	0.167
2008-09-01	-2.7	0.575	1.988	0.333
2009-08-01	8.7	0.625	1.829	0.419
2011-08-01	14.4	0.715	1.599	0.419
2012-09-01	20.4	0.860	1.329	0.333
2013-10-01	21.3	1.044	1.095	0.252
2014-07-01	5.4	1.100	1.039	0.504
2018-08-01	3.9	1.143	1.000	0.419

TIME ELEMENT ONLY LOSS COST LEVEL HISTORY

(1)	(2)	(3)	(4)	(5)
EFFECTIVE DATE	LOSS COST/ RATE LEVEL CHANGE (%)	LOSS COST/ RATE LEVEL INDEX	ADJUSTMENT FACTOR	WEIGHT*
2013-04-01	-25.0	0.750	1.000	0.753

\* WEIGHT DENOTES THE PORTION OF THE EFFECTIVE YEAR FOR WHICH THE ADJUSTMENT FACTORS APPLY.

EXPLANATORY NOTES TO TABLES 13, 14 AND 15

LOSS COST/RATE LEVEL HISTORIES

COLUMN (1) EFFECTIVE DATE

The effective dates of the latest loss cost/rate level changes are shown.

COLUMN (2) LOSS COST/RATE LEVEL CHANGE

The overall loss cost/rate level change is shown in percent form.

COLUMN (3) LOSS COST/RATE LEVEL INDEX

The product of all loss cost/rate level changes up to and including the loss cost/rate change for that effective date is used to calculate on level factors.

COLUMN (4) WRITTEN ADJUSTMENT (ON LEVEL) FACTORS

The factors are used to bring individual policies with inception dates prior to the effective date up to current loss cost level. For Basic Group II these are the actual factors used. However, the loss cost/rate changes for Basic Group I vary by rating group and territory (where applicable), while the loss cost/rate level changes for Special Causes of Loss vary by category. Consequently, for these coverages the on-level factors represent average factors and are not the factors actually used to adjust the aggregate loss costs on an individual policy basis. For complete loss cost/rate level histories by rating group and territory (where applicable) for Basic Group I and by category for Special Causes of Loss refer to Tables 16 and 17.

COLUMN (5) WEIGHT

The weight indicates the portion of the effective year for which the on level factors apply. These can be used to calculate average yearly factors.

MISSOURI  
TABLE 16

HISTORY OF BASIC GROUP I

LOSS COST CHANGES BY TERRITORY, RATING ID AND RATING GROUP

TERRITORY: Kansas City

EFFECTIVE DATE	RATING ID	RATING GROUP																				
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	17	18	19	20	21	22
03-01-2006	SPEC.	1.5	-1.4	5.6	6.3	2.7	-5.7	-4.4	-1.7	4.1	1.9	6.0	2.1	4.4	3.7	2.9	1.3	1.6	1.8	1.1	4.9	2.8
	CLASS	-0.3	-3.1	3.7	4.4	0.9	-7.3	-6.1	-3.4	2.3	0.1	4.1	0.3	2.6	1.9	1.1	-0.5	1.6	0.0	1.1	4.9	1.0
03-01-2007	SPEC.	19.3	14.7	25.0	25.0	15.0	1.8	1.0	4.7	13.3	11.8	19.4	14.7	16.8	17.0	16.7	13.5	13.6	13.7	13.9	16.0	14.7
	CLASS	1.7	-2.1	5.9	5.2	-1.9	-3.8	-3.8	-3.8	-3.3	-3.8	1.8	-2.1	-0.3	-0.2	-0.4	-3.2	13.6	-3.0	13.9	16.0	-2.1
11-01-2007	SPEC.	11.0	8.8	12.4	18.4	6.2	1.2	1.2	1.2	5.1	2.9	8.9	6.4	8.7	7.8	9.5	5.3	4.4	4.7	5.5	7.7	3.0
	CLASS	5.7	3.7	7.2	12.9	1.1	1.2	1.2	1.2	1.2	1.2	3.8	1.3	3.6	2.8	4.4	1.2	4.4	1.2	5.5	7.7	1.2
09-01-2008	SPEC.	14.2	15.1	8.2	2.1	15.2	13.1	7.9	11.0	14.0	11.2	20.6	11.7	12.8	14.5	15.6	11.4	11.2	12.1	11.6	13.0	9.2
	CLASS	-18.0	-17.3	-22.2	-24.4	-17.2	-18.7	-22.5	-20.3	-18.1	-20.1	-13.4	-19.7	-18.9	-17.7	-16.9	-19.9	11.2	-19.5	11.6	13.0	-21.5
08-01-2009	SPEC.	0.2	1.5	-1.1	-6.5	-0.5	0.6	-1.7	-2.8	0.8	-1.6	-0.2	-1.3	1.1	0.3	-0.5	-2.0	-1.0	-0.8	-1.1	0.4	-1.1
	CLASS	-4.0	-2.8	-5.2	-10.4	-4.7	-3.6	-5.8	-6.9	-3.5	-5.7	-4.4	-5.4	-3.2	-3.9	-4.7	-6.1	-1.0	-5.0	-1.1	0.4	-5.2
08-01-2011	SPEC.	2.8	5.2	-3.4	-2.3	3.8	7.7	5.1	4.3	1.6	4.1	3.9	3.2	7.7	5.7	2.0	2.2	5.1	4.5	1.9	-7.2	7.7
	CLASS	1.2	3.6	-4.9	-3.9	2.2	6.2	3.5	2.7	-0.1	2.5	2.3	1.6	7.5	4.0	0.3	0.6	5.1	2.9	1.9	-7.2	6.7
09-01-2012	SPEC.	-17.9	-16.9	-22.4	-20.3	-17.2	-13.5	-16.2	-15.7	-14.1	-17.5	-16.9	-17.5	-13.6	-17.5	-17.5	-19.8	-17.8	-16.8	-17.8	-27.8	-15.5
	CLASS	-15.1	-14.1	-19.8	-17.6	-14.4	-10.6	-13.4	-12.9	-11.2	-14.7	-14.1	-14.8	-10.7	-14.8	-14.8	-17.2	-17.8	-14.0	-17.8	-27.8	-12.6
10-01-2013	SPEC.	-15.2	-13.6	-16.7	-16.7	-15.6	-15.0	-15.8	-16.7	-15.0	-16.3	-15.8	-14.9	-13.6	-14.9	-16.7	-15.1	-15.3	-15.2	-15.5	-15.2	-13.2
	CLASS	18.4	20.6	13.2	16.4	17.9	18.7	17.7	16.1	18.7	16.8	17.5	18.8	20.6	18.8	15.9	18.6	-15.3	18.4	-15.5	-15.2	21.2
07-01-2014	SPEC.	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7
	CLASS	0.4	-1.6	-2.7	-1.3	-1.9	-1.2	-1.8	-2.4	-0.7	-2.0	-1.6	-1.7	-0.4	-1.7	-2.0	-1.9	-19.7	-1.9	-19.7	-19.7	-3.9
08-01-2018	SPEC.	-2.8	-3.5	-3.4	4.0	-4.0	-6.4	-6.1	-10.0	0.0	-4.8	-4.7	-8.3	-1.1	-8.3	-4.2	-8.2	-6.3	-6.6	-7.3	-15.0	-15.1
	CLASS	-2.8	-3.5	-3.4	4.0	-4.0	-6.4	-6.1	-10.0	0.0	-4.8	-4.7	-8.3	-1.1	-8.3	-4.2	-8.2	-6.3	-6.6	-7.3	-15.0	-15.1

MISSOURI  
TABLE 16

HISTORY OF BASIC GROUP I

LOSS COST CHANGES BY TERRITORY, RATING ID AND RATING GROUP

TERRITORY: Saint Louis City

EFFECTIVE DATE	RATING ID	RATING GROUP																				
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	17	18	19	20	21	22
03-01-2006	SPEC.	-4.7	-7.3	-0.8	-0.2	-3.5	-11.4	-10.2	-7.6	-2.2	-4.3	-0.4	-4.1	-1.9	-2.6	-3.3	-4.9	-4.6	-4.4	-5.0	-1.4	-3.4
	CLASS	-6.4	-9.0	-2.6	-1.9	-5.2	-12.9	-11.8	-9.3	-3.9	-6.0	-2.2	-5.8	-3.6	-4.3	-5.0	-6.5	-4.6	-6.1	-5.0	-1.4	-5.1
03-01-2007	SPEC.	-3.7	-7.4	1.0	1.0	-7.2	-17.8	-18.4	-15.3	-8.4	-9.6	-3.6	-7.4	-5.6	-5.5	-5.7	-8.3	-8.2	-8.1	-8.0	-6.4	-7.4
	CLASS	-17.9	-21.0	-14.4	-15.0	-20.8	-22.3	-22.3	-22.3	-21.9	-22.3	-17.8	-21.0	-19.5	-19.5	-19.6	-21.8	-8.2	-21.7	-8.0	-6.4	-21.0
11-01-2007	SPEC.	-18.5	-20.1	-17.3	-13.0	-22.0	-25.6	-25.6	-25.6	-22.8	-24.4	-20.0	-21.8	-20.1	-20.7	-19.5	-22.6	-23.3	-23.0	-22.5	-20.8	-24.3
	CLASS	-22.3	-23.8	-21.2	-17.0	-25.6	-25.6	-25.6	-25.6	-25.6	-25.6	-23.7	-25.5	-23.9	-24.4	-23.3	-25.6	-23.3	-25.6	-22.5	-20.8	-25.6
09-01-2008	SPEC.	8.5	9.3	2.8	-2.9	9.4	7.4	2.5	5.5	8.3	5.7	14.7	6.2	7.2	8.8	9.9	5.9	5.7	6.5	6.1	7.3	3.8
	CLASS	-22.0	-21.4	-26.1	-28.1	-21.4	-22.8	-26.3	-24.2	-22.2	-24.1	-17.6	-23.7	-22.9	-21.8	-21.1	-23.9	5.7	-23.5	6.1	7.3	-25.4
08-01-2009	SPEC.	0.0	1.3	-1.3	-6.7	-0.7	0.4	-1.9	-3.0	0.6	-1.8	-0.4	-1.5	0.9	0.1	-0.7	-2.2	-1.2	-1.0	-1.3	0.2	-1.3
	CLASS	-4.2	-3.0	-5.4	-10.6	-4.9	-3.8	-6.0	-7.1	-3.7	-5.9	-4.6	-5.6	-3.4	-4.1	-4.9	-6.3	-1.2	-5.2	-1.3	0.2	-5.4
08-01-2011	SPEC.	19.3	22.1	12.1	13.3	20.4	25.0	22.0	21.0	17.8	20.8	20.6	19.7	25.0	22.6	18.3	18.5	22.0	21.3	18.2	7.6	25.0
	CLASS	17.4	20.2	10.3	11.5	18.5	23.2	20.1	19.1	16.0	18.9	18.6	17.8	24.7	20.6	16.4	16.7	22.0	19.4	18.2	7.6	23.8
09-01-2012	SPEC.	3.2	4.4	-2.5	0.2	4.0	8.7	5.3	5.9	8.0	3.7	4.4	3.6	8.6	3.6	3.6	0.7	3.3	4.5	3.3	-9.2	6.2
	CLASS	6.7	8.0	0.8	3.6	7.5	12.3	8.8	9.4	11.6	7.2	8.0	7.1	12.2	7.1	7.1	4.1	3.3	8.1	3.3	-9.2	9.8
10-01-2013	SPEC.	-18.6	-17.1	-20.0	-20.0	-19.0	-18.4	-19.1	-20.0	-18.4	-19.7	-19.2	-18.3	-17.1	-18.3	-20.0	-18.5	-18.7	-18.6	-18.9	-18.6	-16.7
	CLASS	13.6	15.8	8.6	11.7	13.2	14.0	12.9	11.5	14.0	12.2	12.8	14.1	15.8	14.1	11.3	13.9	-18.7	13.6	-18.9	-18.6	16.3
07-01-2014	SPEC.	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9	
	CLASS	-4.9	-6.8	-7.8	-6.5	-7.1	-6.4	-7.0	-7.5	-5.9	-7.2	-6.8	-6.9	-5.7	-6.9	-7.2	-7.1	-23.9	-7.1	-23.9	-23.9	-8.9
08-01-2018	SPEC.	-13.0	-13.7	-13.6	-7.0	-14.1	-16.2	-16.0	-19.5	-10.5	-14.8	-14.7	-17.9	-11.5	-17.9	-14.3	-17.9	-16.2	-16.4	-17.1	-23.9	-24.0
	CLASS	-13.0	-13.7	-13.6	-7.0	-14.1	-16.2	-16.0	-19.5	-10.5	-14.8	-14.7	-17.9	-11.5	-17.9	-14.3	-17.9	-16.2	-16.4	-17.1	-23.9	-24.0

MISSOURI  
TABLE 16

HISTORY OF BASIC GROUP I

LOSS COST CHANGES BY TERRITORY, RATING ID AND RATING GROUP

TERRITORY: Balance of State (Missouri)

EFFECTIVE DATE	RATING ID	RATING GROUP																				
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	17	18	19	20	21	22
03-01-2006	SPEC.	1.6	-1.3	5.7	6.4	2.8	-5.6	-4.3	-1.6	4.2	2.0	6.1	2.2	4.5	3.8	3.0	1.4	1.7	1.9	1.2	5.0	2.9
	CLASS	-0.2	-3.0	3.8	4.5	1.0	-7.3	-6.1	-3.3	2.4	0.2	4.2	0.4	2.7	2.0	1.2	-0.4	1.7	0.1	1.2	5.0	1.1
03-01-2007	SPEC.	9.1	4.9	14.3	14.3	5.1	-6.9	-7.6	-4.1	3.7	2.3	9.2	4.9	6.9	7.0	6.8	3.8	3.9	4.0	4.2	6.1	4.9
	CLASS	-7.0	-10.5	-3.1	-3.7	-10.3	-12.0	-12.0	-12.0	-11.6	-12.0	-6.9	-10.5	-8.8	-8.7	-8.9	-11.5	3.9	-11.3	4.2	6.1	-10.5
11-01-2007	SPEC.	-1.4	-3.2	0.0	5.3	-5.7	-10.0	-10.0	-10.0	-6.5	-8.6	-3.1	-5.5	-3.3	-4.1	-2.6	-6.3	-7.1	-6.8	-6.2	-4.3	-8.5
	CLASS	-6.0	-7.8	-4.7	0.4	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-7.7	-9.8	-7.9	-8.6	-7.1	-10.0	-7.1	-10.0	-6.2	-4.3	-10.0
09-01-2008	SPEC.	10.7	11.6	4.9	-0.9	11.7	9.7	4.6	7.6	10.5	7.8	17.0	8.4	9.4	11.0	12.1	8.0	7.8	8.7	8.3	9.5	5.9
	CLASS	-20.4	-19.8	-24.6	-26.6	-19.7	-21.2	-24.8	-22.7	-20.6	-22.5	-15.9	-22.1	-21.4	-20.2	-19.4	-22.4	7.8	-21.9	8.3	9.5	-23.9
08-01-2009	SPEC.	3.3	4.6	2.0	-3.6	2.6	3.7	1.4	0.1	3.9	1.5	2.9	1.8	4.2	3.4	2.6	1.1	2.1	2.3	2.0	3.5	2.0
	CLASS	-1.1	0.2	-2.3	-7.7	-1.8	-0.7	-2.9	-4.1	-0.5	-2.8	-1.5	-2.5	-0.2	-1.0	-1.8	-3.2	2.1	-2.0	2.0	3.5	-2.3
08-01-2011	SPEC.	-4.0	-1.7	-9.8	-8.7	-3.0	0.6	-1.8	-2.5	-5.1	-2.7	-2.9	-3.6	0.6	-1.3	-4.7	-4.5	-1.8	-2.3	-4.8	-13.4	0.6
	CLASS	-5.5	-3.2	-11.2	-10.3	-4.5	-0.8	-3.3	-4.1	-6.6	-4.3	-4.4	-5.1	0.4	-2.8	-6.2	-6.0	-1.8	-3.9	-4.8	-13.4	-0.3
09-01-2012	SPEC.	-11.5	-10.4	-16.4	-14.1	-10.8	-6.8	-9.7	-9.2	-7.4	-11.1	-10.4	-11.1	-6.9	-11.1	-11.1	-13.6	-11.4	-10.3	-11.4	-22.2	-8.9
	CLASS	-8.5	-7.4	-13.6	-11.2	-7.8	-3.7	-6.7	-6.1	-4.3	-8.1	-7.4	-8.2	-3.8	-8.2	-8.2	-10.7	-11.4	-7.3	-11.4	-22.2	-5.9
10-01-2013	SPEC.	-17.5	-15.9	-18.9	-18.9	-17.8	-17.2	-18.0	-18.9	-17.2	-18.5	-18.1	-17.2	-15.9	-17.2	-18.9	-17.3	-17.6	-17.5	-17.7	-17.5	-15.5
	CLASS	15.2	17.4	10.2	13.3	14.8	15.6	14.6	13.1	15.6	13.8	14.4	15.7	17.4	15.7	12.8	15.5	-17.6	15.2	-17.7	-17.5	18.0
07-01-2014	SPEC.	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3	-15.3
	CLASS	5.8	3.7	2.6	4.0	3.4	4.1	3.5	2.8	4.6	3.3	3.7	3.6	5.0	3.6	3.3	3.4	-15.3	3.4	-15.3	-15.3	1.3
08-01-2018	SPEC.	-3.4	-4.2	-4.1	3.3	-4.7	-7.0	-6.8	-10.6	-0.7	-5.4	-5.3	-8.9	-1.7	-8.9	-4.9	-8.8	-6.9	-7.2	-8.0	-15.5	-15.6
	CLASS	-3.4	-4.2	-4.1	3.3	-4.7	-7.0	-6.8	-10.6	-0.7	-5.4	-5.3	-8.9	-1.7	-8.9	-4.9	-8.8	-6.9	-7.2	-8.0	-15.5	-15.6



EXPLANATORY NOTES TO TABLE 16

HISTORY OF BASIC GROUP I LOSS COST/RATE CHANGES  
BY TERRITORY, RATING ID AND RATING GROUP

TERRITORY

The loss cost/rate level changes shown apply to the rating territory shown here.

EFFECTIVE DATE

The effective dates of the latest loss cost/rate level changes are shown.

LOSS COST/RATE LEVEL CHANGES

Loss cost/rate level changes are shown in percent form for each rating group.

MISSOURI  
TABLE 17

SPECIAL CAUSES OF LOSS

HISTORY OF LOSS COST/RATE LEVEL CHANGES BY CATEGORY

(1) EFFECTIVE DATE	(2) CATEGORY													
	01	02	03	04	05	06	07	08	09	10	11	12	13	14
09-01-2001	-9.7	-14.8	-3.4	3.4	-6.8									
10-01-2002	-5.6	-7.4	3.4	-4.2	-10.2									
02-01-2004	6.2	0.3	-1.1	-4.8	-1.9									
11-01-2004	-3.7	-5.8	-3.2	-4.6	-9.9									
03-01-2006	-17.9	-14.9	-12.2	-13.0	-6.5									
03-01-2007	-10.6	-11.1	-6.3	-10.7	-4.3									
11-01-2007	-10.3	-11.0	-5.7	-10.7	-4.1									
09-01-2008	-4.7	-2.6	1.4	-5.1	17.5									
08-01-2009	7.2	6.3	12.9	5.5	23.5									
08-01-2011	13.9	13.8	12.8	12.6	15.0	13.1	14.2	11.9	12.5	14.9	22.6	19.8	12.7	14.8
09-01-2012	20.3	18.1	18.3	19.3	22.5	18.9	20.1	16.1	17.8	20.3	27.7	24.2	17.6	20.2
10-01-2013	20.8	14.9	25.7	23.3	37.3	28.2	19.3	7.2	3.3	22.6	37.9	32.1	11.4	29.1
07-01-2014	6.2	-1.0	0.8	8.6	4.1	4.8	2.5	-3.4	-4.4	5.4	9.3	7.7	1.6	6.3
08-01-2018	5.2	2.6	0.7	2.3	3.4	2.3	3.8	-2.4	-4.6	5.4	1.9	0.2	3.2	3.7

EXPLANATORY NOTES TO TABLE 17

HISTORY OF SPECIAL CAUSES OF LOSS  
LOSS COST/RATE LEVEL CHANGES BY CATEGORY

COLUMN (1)

EFFECTIVE DATE

The effective dates of the latest loss cost/rate level changes are shown.

COLUMN (2)

LOSS COST/RATE LEVEL CHANGES BY CATEGORY

Loss cost/rate changes are shown in percent form for each category. Refer to Table 37 for definitions of the current 14 categories.

The prior category definitions (before implementation of the revised rating for Special Causes of Loss) are:

- 01 - Buildings
- 02 - Apartments Contents
- 03 - Office Contents
- 04 - Mercantile, Motel/Hotel and Institutional Contents
- 05 - Service, Industrial/Processing, and Contractors Contents

COMMERCIAL PACKAGE POLICY IMPLICIT PACKAGE MODIFICATION FACTORS (IPMF's)  
AND IPMF CAPS

IMPLICIT PACKAGE  
MODIFICATION  
FACTORS

Since multiline experience is included in the loss cost level evaluations, an additional adjustment is made to multiline aggregate loss costs after they have been brought to current ISO loss cost level. This adjustment is the application of implicit CPP package modification factors which vary for each of the eight CPP types of policy.

The loss costs used to price a Commercial Package Policy (CPP) are the monoline loss costs multiplied by the PMF to reflect the package policy discount for the particular type of CPP policy relative to the individual monoline policies. However, these PMF's measure the amount of multiline discount for all property coverages combined. A more accurate measure of the amount of multiline discount for each subline (e.g., Basic Group I, Basic Group II, or Special Causes of Loss) is the implicit package modification factor that was used to calculate the overall PMF for all property coverages combined.

For example, the published PMF for Apartments (all property coverages combined) may be .85, but the implicit PMF for Apartments, Commercial Basic Group I coverage only, may be .80. The average of the implicit PMF's for the various coverages is equal to the published PMF for each type of policy.

The current IPMF's by coverage for each CPP type of policy are applied to multiline aggregate loss costs at current level for Basic Group I, Basic Group II and Special Causes of Loss.

IPMF CAPS

For Basic Group I, Basic Group II, and Special Causes of Loss, the IPMF's lower caps are set at 0.50 and the upper caps are set at 1.50 for all TOP's.

MISSOURI  
TABLE 18  
BASIC GROUP I IMPLICIT PACKAGE  
MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

CPP IMPLICIT PACKAGE MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

TOP	DESCRIPTION	IPMF	LOW CAP	HIGH CAP
-----				
31	MOTEL/HOTEL	0.873	0.500	1.500
32	APARTMENT	0.633	0.500	1.500
33	OFFICE	0.958	0.500	1.500
34	MERCANTILE	0.635	0.500	1.500
35	INSTITUTIONAL	0.954	0.500	1.500
36	SERVICES	0.873	0.500	1.500
37	INDUST/PROCESSING	0.818	0.500	1.500
38	CONTRACTORS	0.919	0.500	1.500

MISSOURI  
TABLE 19  
BASIC GROUP II IMPLICIT PACKAGE  
MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

CPP IMPLICIT PACKAGE MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

TOP	DESCRIPTION	IPMF	LOW CAP	HIGH CAP
-----				
31	MOTEL/HOTEL	1.392	0.500	1.500
32	APARTMENT	1.271	0.500	1.500
33	OFFICE	0.663	0.500	1.500
34	MERCANTILE	1.050	0.500	1.500
35	INSTITUTIONAL	1.070	0.500	1.500
36	SERVICES	1.021	0.500	1.500
37	INDUST/PROCESSING	0.724	0.500	1.500
38	CONTRACTORS	1.004	0.500	1.500

MISSOURI  
TABLE 20  
SPECIAL CAUSES OF LOSS IMPLICIT PACKAGE  
MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

CPP IMPLICIT PACKAGE MODIFICATION FACTORS (IPMFS) AND IPMF CAPS

TOP	DESCRIPTION	IPMF	LOW CAP	HIGH CAP
-----				
31	MOTEL/HOTEL	0.856	0.500	1.500
32	APARTMENT	0.886	0.500	1.500
33	OFFICE	0.732	0.500	1.500
34	MERCANTILE	0.793	0.500	1.500
35	INSTITUTIONAL	0.854	0.500	1.500
36	SERVICES	0.760	0.500	1.500
37	INDUST/PROCESSING	0.811	0.500	1.500
38	CONTRACTORS	0.954	0.500	1.500

EXPLANATORY NOTES TO TABLES 18, 19, AND 20

IMPLICIT PACKAGE MODIFICATION  
FACTORS (IPMF's) AND IPMF CAPS

TABLES 18, 19,  
AND 20

These tables provide the current IPMF's and IPMF caps for Basic Group I, Basic Group II, and Special Causes of Loss. The IPMF's shown here are those which resulted from the most recent CPP revision. The IPMF lower caps are set at .50 and the upper caps are set at 1.50 for all TOP's.



## TREND PROCEDURE

### INTRODUCTION

The prospective loss cost levels established in this document reflect the anticipated claim cost and claim frequency levels and changes in revenue due to increased amounts of insurance purchased for the period when the new loss costs are assumed to be in effect.

### LOSS TREND

#### EXTERNAL LOSS DATA

For Commercial Property, the loss trend factors are referred to as current cost factors (CCF's) and loss projection factors (LPF's). These CCF's and LPF's are based on the following accepted economic indices:

1. Xactware Commercial Index (XCI) for buildings loss projection factors and current cost factors
2. Producer Price Index (PPI) published by the US Department of Labor (Finished Goods Less Energy, Not Seasonally Adjusted) for contents factors
3. Index for Manufacturers' Sales Exposure (IMSEP) developed by ISO using indices published by the Department of Commerce and Chain-Type Price Index for Retail Sales (RSALES) produced by the Bureau of the Census, Bureau of Economic Analysis for time element factors

The CCF's adjust losses for actual inflationary changes which have taken place between the accident date and the midpoint of the latest period of external trend information, i.e. August 15, 2018 for property damage and time element. The LPF's adjust losses for projected inflationary changes from the midpoint of the latest period of external trend information to the anticipated average date of accident for policies written under the proposed loss costs (assumed to be 12 months after the assumed revision date based on all one-year policies).

The CCF's and LPF's are calculated separately for buildings, contents, and time element coverages. For coverage 3 (buildings and contents on a combined basis), combined trend factors are calculated using the following weights for buildings and contents: 70%/30% for Basic Group I, 75%/25% for Basic Group II, and 50%/50% for Special Causes of Loss. For time element (coverages 4-9) the combined trend factors are calculated using 70%/30% weights for RSALES/IMSEP. The factors are applied by coverage to the losses reported under CSP and CMSP on an individual occurrence basis.

## TREND PROCEDURE (cont'd)

### LOSS TREND (cont'd)

#### LOSS TREND ADJUSTMENT - SEVERITY

An evaluation of the latest Commercial Property insurance data shows that the cost levels inherent in the property damage coverages are increasing at a different rate than those measured by the external indices. Therefore, to insure adequate prospective loss cost levels during the period for which loss costs are to be determined, loss trend adjustments (LTA's) have been applied. These factors were developed by comparing the annual rate of change in average claim costs to the annual rate of change in the external indices. (Refer to Table 23 for the calculations.)

#### LOSS TREND ADJUSTMENT - FREQUENCY

In order to reflect total trend more precisely, a frequency component is included in the loss trend adjustment factors (LTA's) separately for buildings and contents for Basic Group I and contents only for Special Causes of Loss. No frequency component is used for Basic Group II and Special Causes of Loss buildings due to the extremely volatile nature of the coverages.

### AMOUNT-OF- INSURANCE TREND

Cost changes over time to both real and personal property result in insureds purchasing increased amounts of insurance. To reflect the impact of this phenomenon, amount of insurance trend factors are applied to collected loss costs to bring them to prospective amount of insurance levels. These factors are developed by measuring amount of insurance trends on a sample of renewal policies.

The application and development of these factors parallels loss trend factors in that separate factors are developed for buildings, contents, and time element, and the adjustment to prospective amount of insurance levels is done in two steps. The current written factors adjust loss costs to the amount of insurance level for the midpoint of the latest period of renewal information, i.e. July 1, 2018. Total amount of insurance trend factors are then calculated by projecting these current factors to the average date of writing (i.e. to the amount of insurance level six months beyond the assumed effective date).

**TABLE 21**

**Development of Current Cost Factors and Loss Projection Factors  
For Commercial Property Building and Contents Experience  
Period ending September 30, 2018**

**Part A: Quarterly Indices for Buildings, Contents and Time Element**

Building Loss Projection Factors - Xactware Commercial Index (XCI) (Base: 2009 = 100.0)  
 Contents - Producer Price Index (PPI) - U.S. Dept. of Labor (Finished Goods Less Energy) (Base: 2009 = 100.0)  
 Time Element Combined Index - Weighted average of IMSEP and RSALES indices <sup>(a)</sup>

<u>Quarter</u>	<u>XCI</u>	<u>PPI</u>	<u>IMSEP</u>	<u>RSALES</u>	Time Element Combined <u>Index</u>
Q4-2015	110.0	113.9	1.031	0.961	0.982
Q1-2016	110.5	114.4	1.026	0.950	0.973
Q2-2016	110.7	114.3	1.031	0.955	0.978
Q3-2016	111.3	114.3	1.029	0.953	0.976
Q4-2016	111.9	114.6	1.033	0.956	0.979
Q1-2017	112.7	115.5	1.038	0.963	0.986
Q2-2017	114.0	116.5	1.036	0.957	0.981
Q3-2017	115.0	116.3	1.042	0.959	0.984
Q4-2017	115.5	117.1	1.044	0.965	0.989
Q1-2018	116.6	117.6	1.048	0.971	0.994
Q2-2018	117.5	118.1	1.055	0.974	0.998
Q3-2018	118.4	118.2	1.058	0.974	0.999

**Part B: Computation of Loss Projection Factor (LPF) for Buildings based on 12 points**

$$\text{Annual Rate of Change} = 0.0284 = 2.8\% \quad R^2 = 0.983$$

$$\text{Loss Projection Factor for Buildings} = 1.0284^{22.5/12 (b)} = 1.0539$$

**Part C: Computation of Loss Projection Factor (LPF) for Contents based on 12 points**

$$\text{Annual Rate of Change} = 0.0150 = 1.5\% \quad R^2 = 0.950$$

$$\text{Loss Projection Factor for Contents} = 1.0150^{22.5/12 (b)} = 1.0283$$

**Part D: Computation of Loss Projection Factor (LPF) for Time Element Based on 12 points**

$$\text{Annual Rate of Change} = 0.0085 = 0.85\% \quad R^2 = 0.785$$

$$\text{Loss Projection Factor for Time Element} = 1.0085^{22.5/12 (b)} = 1.0160$$

- (a) 30% weight for IMSEP and 70% weight for RSALES. IMSEP & RSALES indices were rescaled to a 2012 year base.
- (b) Assuming a rate or loss cost revision date of July 1 2019, and all one year policies, the time interval between the midpoint of the latest period (08/15/2018) and the average date of accident (07/01/2020) would be 22.5 months.

TABLE 21

Development of Current Cost Factors and Loss Projection Factors

## Part E: Calculation of Current Cost Factors (CCF)

Calendar Year Averages				Current Cost Factors Based on Average Index Values for Period ending September 30, 2018					
Year	XCI	PPI	Time Element Index	Buildings	Contents	Time Element			
2007	92.6	94.5	0.931	118.4 / 88.5 =	1.338	118.2 / 91.6 =	1.291	0.999 / 0.915 =	1.092
2008	97.0	98.5	0.948	118.4 / 92.6 =	1.278	118.2 / 94.5 =	1.251	0.999 / 0.931 =	1.073
2009	100.0	100.0	0.940	118.4 / 97.0 =	1.221	118.2 / 98.5 =	1.200	0.999 / 0.948 =	1.054
2010	99.3	101.8	0.953	118.4 / 100.0 =	1.184	118.2 / 100.0 =	1.182	0.999 / 0.940 =	1.063
2011	100.0	105.2	0.985	118.4 / 99.3 =	1.193	118.2 / 101.8 =	1.161	0.999 / 0.953 =	1.048
2012	101.0	108.0	1.000	118.4 / 100.0 =	1.184	118.2 / 105.2 =	1.123	0.999 / 0.985 =	1.014
2013	102.7	109.8	1.003	118.4 / 101.0 =	1.172	118.2 / 108.0 =	1.095	0.999 / 1.000 =	0.999
2014	104.7	112.5	1.006	118.4 / 102.7 =	1.153	118.2 / 109.7 =	1.077	0.999 / 1.003 =	0.996
2015	109.1	113.8	0.987	118.4 / 104.7 =	1.131	118.2 / 112.5 =	1.050	0.999 / 1.006 =	0.993
2016	111.1	114.4	0.977	118.4 / 109.1 =	1.085	118.2 / 113.8 =	1.039	0.999 / 0.987 =	1.012
2017	114.3	116.4	0.985	118.4 / 111.1 =	1.066	118.2 / 114.4 =	1.033	0.999 / 0.977 =	1.023

## EXPLANATORY NOTES TO TABLE 21

### PART A: XACTWARE, PRODUCER PRICE, IMSEP, RSALES INDICES AND COMBINED TIME ELEMENT

QUARTER	The quarter for which the indices shown apply.
XACTWARE COMMERCIAL INDEX (XCI)	The Xactware Commercial Index measures the costs of building material and repairs for commercial properties. The index, which is available since 1st Quarter 2005, is based on regular surveys of over 42,000 material and equipment suppliers and over 9,500 contractors, in addition to claims settlement data. The index values are created by estimating the cost to rebuild a sample set of different structures ranging in size, style, and quality in each economic market. The Xactware index is used in this filing to adjust for current cost from 1/1/05 to the midpoint of the latest index point and for determining the loss projection factor.
PRODUCER PRICE INDEX (PPI)	The Producer Price Index is a time series which measures the price level for a predetermined group of goods produced relative to the price level for an earlier point in time (2009). The PPI Finished Goods Less Energy is published by the U.S. Department of Labor.
PRICE DEFLATOR INDEX FOR MANUFACTURERS' SALES EXPOSURE (IMSEP)	<p>The price deflator index for manufacturers' sales exposure is a quarter's model of Manufacturers' Sales Exposure Proxy (MSEP) for the period in question relative to MSEP measured in chained 2009 dollars. The price deflator is defined as the GNP (Gross National Product) price deflator with government expenditures, investment in intellectual property products, inventory changes, and all services except food services removed.</p> <p><math display="block">\text{MSEP} = (\text{CD} + \text{CN} + \text{FS}) + (\text{EXD\&amp;N} - \text{IMD\&amp;N}) + (\text{IFIX} - \text{IPP}), \text{ where}</math></p> <p>CD and CN represent consumption of durables and nondurables, respectively; EXD&amp;N and IMD&amp;N represent exports and imports of merchandise, respectively; FS represents food services and IFIX represents gross private domestic fixed investment (including residential fixed investment as well as nonresidential fixed investment in structures, equipment, and intellectual property products); and IPP represents nonresidential fixed investment in intellectual property products.</p>
CHAIN-TYPE PRICE INDEX FOR RETAIL SALES (RSALES)	The Chain-Type Price Index for Retail Sales measures changes in losses due solely to inflation.

EXPLANATORY NOTES TO TABLE 21 (cont'd)

PARTS B, C and D: COMPUTATION OF THE LOSS PROJECTION FACTOR

LOSS PROJECTION  
FACTOR

The loss projection factor is calculated by fitting a least squares exponential curve to the appropriate number of points (where the appropriate number of points is determined based on judgment and an examination of the goodness of fit as determined by the R-squared values subject to a maximum of 12 quarterly points for property damage and time element).

The table displays the indices for those points used in fitting the curve. The relevant equations are shown and the annual rate of change in the indices based on the exponential fit is developed. This annual rate of change is projected over the period which extends from the latest period of cost information to the average accident date of the projection period.

PART E: CALCULATION OF CURRENT COST FACTORS (CCF'S)

CALENDAR YEAR  
AVERAGES

The calendar year averages are the averages of the Xactware, PPI and Time Element indices for the given year. These average indices measure the average cost level of each year relative to the base.

CURRENT COST  
FACTORS

The current cost factors are the ratios of the indices for the latest period of cost information divided by the average indices for each calendar year. These factors measure the changes in cost levels which have occurred from the midpoint of the given year to the latest point of cost information. In this regard, they represent average factors which would result if each year's losses were distributed evenly throughout the year.

For buildings, the index for the latest point is based on the latest available Xactware point.

Since losses are trended on a record by record basis, these calendar year factors are not actually used in ISO's trend calculations. Instead, factors are calculated from the bi-monthly or quarterly indices and applied to the unit losses based on the date of occurrence.

TABLE 22

SUMMARY OF LOSS TREND ADJUSTMENTS (LTA'S)

<u>BUILDINGS</u>	<u>5 YEAR INCURRED LOSSES</u>	<u>LTA'S*</u>
BASIC GROUP I	3,397,603,765	-0.3
BASIC GROUP II	3,091,434,408	0.2
SPECIAL CAUSES OF LOSS	1,852,163,757	0.2
TOTAL	8,341,201,930	0.0
<u>CONTENTS</u>		
	964,588,247	0.7
BASIC GROUP I		
BASIC GROUP II	283,850,498	0.6
SPECIAL CAUSES OF LOSS	724,827,074	0.0
TOTAL	1,973,265,819	0.4
<u>TIME ELEMENT</u>		
BASIC GROUP I	397,520,411	2.8
BASIC GROUP II	75,461,620	2.6
SPECIAL CAUSES OF LOSS	138,773,134	2.8
TOTAL	611,755,165	2.8
GRAND TOTAL	10,926,222,913	0.2

\* The LTA's are based on internal severity and frequency data. They apply to both the historical period and projection period.

EXPLANATORY NOTES TO TABLE 22

SUMMARY OF LOSS TREND ADJUSTMENTS (LTA'S)

COLUMN (1)

COVERAGE

The LTA's vary by coverage (buildings, contents, and time element) and line of business (BG I, BG II, and SCL).

COLUMN (2)

FIVE-YEAR INCURRED LOSSES

The five-year multistate incurred losses are used as weights to determine the annual LTA for all lines of business and coverages combined.

COLUMN (3)

ANNUAL LTA's

The LTA's are the factors which are applied to losses to supplement the external indices in order to correctly reflect cost level and claim frequency changes. These are shown here as annual factors. However, they are applied over the entire length of the trend period, i.e. from the date of loss occurrence to the anticipated average accident date under the revised loss costs. The severity portion of the LTA is applied on an individual record basis in the same manner as the CCF's and LPF's. The frequency portion of the LTA is applied to the aggregate losses.



## OVERVIEW

### DEVELOPMENT OF LOSS TREND ADJUSTMENTS

#### INTRODUCTION

In order to supplement the external indices reflected in CCF's and LPF's, loss trend adjustments (LTA's) have been developed based on internal loss data. This is necessary because the external indices alone have been insufficient in reflecting cost level and claim frequency changes in Commercial Property Insurance. The following tables show the calculations used to develop these LTA's. Please note the development of the LTA's for the 2019 COMFAL reviews is based on internal commercial property experience through 12/31/2017 and external cost indices through 12/31/2017. Therefore, the CCF's and LPF's shown on Table 23 will not necessarily match those shown on Table 21. ISO has determined that the selected LTAs are appropriate to be used with the latest external indices shown on Table 21.

**TABLE 23**  
**DEVELOPMENT OF LTA'S**

**I. EXTERNAL RATE OF CHANGE<sup>a</sup>**

Calendar Year	(1) Buildings Current Cost Factor	(2) Contents Current Cost Factor	(3) Time Element Cost Factor	(4) Basic Group I (BGI)& Special Causes of Loss (SCL) Weights	(5) Basic Group II (BGII) Weights
2008	1.247	1.240	1.062		0.10
2009	1.191	1.189	1.043		0.10
2010	1.155	1.171	1.052		0.10
2011	1.164	1.150	1.038		0.10
2012	1.155	1.113	1.004		0.10
2013	1.144	1.085	0.989	0.10	0.10
2014	1.125	1.067	0.986	0.15	0.10
2015	1.103	1.041	0.983	0.20	0.10
2016	1.058	1.029	1.002	0.25	0.10
2017	1.040	1.023	1.012	0.30	0.10

**(6) AVERAGE CURRENT COST FACTORS**

	Buildings	Contents	Time Element
Basic Group I and Special Causes of Loss (Weighted on Column (4))	1.080	1.041	0.998
Basic Group II (Weighted on Column (5))	1.138	1.111	1.017

**(7) LOSS PROJECTION FACTORS**

	Buildings	Contents	Time Element
Annual Rate of Change	0.024	0.011	-0.001
Loss Projection Factor: <sup>b</sup> $(1.0 + \text{Annual Rate of Change})^{(X/12)}$	1.063	1.029	0.998

**(8) TOTAL TREND FACTOR (Average Current Cost Factor × Loss Projection Factor)**

	Buildings	Contents	Time Element
Basic Group I and Special Causes of Loss	1.148	1.071	0.996
Basic Group II	1.210	1.143	1.015

**(9) EXTERNAL ANNUAL RATE OF CHANGE<sup>c</sup>**

	Buildings	Contents	Time Element
Basic Group I and Special Causes of Loss: $(\text{Total Trend Factor})^{12/54}$	1.031	1.015	0.999
Basic Group II: $(\text{Total Trend Factor})^{12/90}$	1.026	1.018	1.002

- (a) The Current Cost Factors and Loss Projection Factors on this exhibit are based on external economic indices through December 31, 2017 for Buildings, Contents and Time Element.
- (b) Assuming a loss cost revision date of July 1, 2019, the time interval between the midpoint of the latest period of external trend information (November 15, 2018) and the prospective average date of loss (July 1, 2020) is 31.5 months for Buildings, Contents and Time Element.
- (c) The time interval from the weighted midpoint of the experience period to the prospective average date of loss (July 1, 2020) is 54 months for BG I and SCL, and 90 months for BG II. The weighted midpoint is January 1, 2016 for BG I and SCL, and January 1, 2013 for BG II.

**TABLE 23**  
**DEVELOPMENT OF LTA'S**

**II. INTERNAL ANNUAL RATES OF CHANGE:**

**(10) SELECTED COMFAL**

	Buildings	Contents	Time Element
Basic Group I (BGI)	1.045	1.050	1.055
Basic Group II (BGII)	1.030	1.030	1.055
Special Causes of Loss	1.035	1.025	1.055

**III. LTA CALCULATION:**

**CALCULATION OF LTAs - BUILDINGS**

	(11) External Rate of Change <sup>d</sup>	(12) Internal Rate of Change	(13) Indicated Severity LTA [(12)/(11)-1.0]	(14) Formula Severity LTA <sup>e</sup>	(15) Frequency Effect	(16) Final LTA <sup>f</sup>
Basic Group I (BGI)	1.031	1.045	1.4	0.7	-1.0	-0.3
Basic Group II (BGII)	1.026	1.030	0.4	0.2	0.0	0.2
Special Causes of Loss	1.031	1.035	0.4	0.2	0.0	0.2

**CALCULATION OF LTAs - CONTENTS**

	(11) External Rate of Change <sup>d</sup>	(12) Internal Rate of Change	(13) Indicated Severity LTA [(12)/(11)-1.0]	(14) Formula Severity LTA <sup>e</sup>	(15) Frequency Effect	(16) Final LTA <sup>f</sup>
Basic Group I (BGI)	1.015	1.050	3.4	1.7	-1.0	0.7
Basic Group II (BGII)	1.018	1.030	1.2	0.6	0.0	0.6
Special Causes of Loss	1.015	1.025	1.0	0.5	-0.5	0.0

**CALCULATION OF LTAs - TIME ELEMENT**

	(11) External Rate of Change <sup>d</sup>	(12) Internal Rate of Change	(13) Indicated Severity LTA [(12)/(11)-1.0]	(14) Formula Severity LTA <sup>e</sup>	(15) Frequency Effect	(16) Final LTA <sup>f</sup>
Basic Group I (BGI)	0.999	1.055	5.6	2.8	0.0	2.8
Basic Group II (BGII)	1.002	1.055	5.3	2.6	0.0	2.6
Special Causes of Loss	0.999	1.055	5.6	2.8	0.0	2.8

(d) The external rates of change are based on external economic indices through December 31, 2017 for Buildings, Contents and Time Element.

(e) The formula severity LTA for Buildings, Contents and Time Element is calculated as one-half of the indicated severity LTA. This is equivalent to calculating the overall severity trend giving 50% weight to the external trend and 50% weight to the selected internal trend.

(f) The final LTA is calculated as the product (in factor form) of the formula severity LTA and frequency effect.

## EXPLANATORY NOTES TO TABLE 23

### DEVELOPMENT OF LOSS TREND ADJUSTMENTS (LTA'S)

#### I. EXTERNAL RATE OF CHANGE

COLUMN (1), (2)  
AND (3)

##### CURRENT COST FACTORS

The CCF's underlying the LTA analysis are based on external cost indices through 12/31/2017 for buildings, contents and time element.

COLUMNS (4)  
AND (5)

##### WEIGHTS

The standard review weights are shown for each line of business.

LINES (6)

##### AVERAGE CURRENT COST FACTORS

The average CCF's for the experience period are calculated based on the weights shown in columns (4) and (5).

LINE (7)

##### LOSS PROJECTION FACTORS

The LPF's underlying the LTA analysis are shown here.

LINE (8)

##### TOTAL TREND

The total trend is the product of the average CCF and the LPF.

LINE (9)

##### EXTERNAL ANNUAL RATE OF CHANGE

The total trend is converted to an annual basis by raising it to the reciprocal of the number of years between the weighted midpoint of the experience period and the anticipated average accident date. For BG I and SCL the weighted midpoint of the experience period is 1/1/2016, for BG II it is 1/1/2013. Accordingly, there are 54 and 90 months, respectively, to the anticipated average accident date of 7/1/2020.

#### II. INTERNAL ANNUAL RATES OF CHANGES

LINE (10)

##### SELECTED COMFAL

The displayed annual rates of change in the average claim costs for BG I, BG II, and SCL were selected based on several least squares exponential fits of the annual claim costs for each subline. This was done to the most recent ten years of Commercial Property data using all companies in the ratemaking data base.

EXPLANATORY NOTES TO TABLE 23 (cont'd)

III. LTA CALCULATION

COLUMN (11)

ANNUAL EXTERNAL

The annual external rates of change from column (9) are shown here.

COLUMN (12)

ANNUAL INTERNAL

The adjusted annual internal rates of change in average loss from line (10) are shown here.

COLUMN (13)

INDICATED SEVERITY LTA

The indicated severity LTA's are calculated by dividing the annual internal rates of change by the annual external rates of change.

COLUMN (14)

FORMULA SEVERITY LTA

The severity LTA's in column (13) are then selected to temper the full effect of internal trend data. Without such tempering, full weight would in effect be given to the internal data without any consideration of the external cost indices.

COLUMN (15)

FREQUENCY EFFECT

The displayed annual rates of change in claim frequency for BG I and SCL were selected based on several least squares exponential fits of the claim frequency by subline. No frequency trend was selected for BG II and SCL buildings due to the extremely volatile nature of the coverage.

COLUMN (16)

FINAL LTA

The final LTA is the combination of the severity and frequency trend adjustments, calculated as column (14) times column (15), in factor form.

TABLE 24A

**EXPOSURE TREND**  
**DEVELOPMENT OF CURRENT AND PROJECTED EARNED EXPOSURE FACTORS**

	Buildings				Contents			
	(1) <sup>a</sup> Annual Written Increase	(2) <sup>a</sup> 07-01-2018 Written Factors	(3) <sup>b</sup> 01-01-2020 Projected Factors	(4) <sup>c</sup> 01-01-2020 Earned Factors	(5) <sup>a</sup> Annual Written Increase	(6) <sup>a</sup> 07-01-2018 Written Factors	(7) <sup>b</sup> 01-01-2020 Projected Factors	(8) <sup>c</sup> 01-01-2020 Earned Factors
Year								
2006	3.8%	1.380	1.434	1.461	2.1%	1.268	1.304	1.318
2007	3.9%	1.328	1.380	1.407	2.4%	1.238	1.273	1.289
2008	3.5%	1.283	1.333	1.357	2.4%	1.209	1.244	1.259
2009	3.3%	1.242	1.291	1.312	2.2%	1.183	1.217	1.231
2010	2.5%	1.212	1.260	1.276	1.7%	1.163	1.196	1.207
2011	2.5%	1.182	1.228	1.244	1.8%	1.142	1.175	1.186
2012	2.7%	1.151	1.196	1.212	1.8%	1.122	1.154	1.165
2013	2.6%	1.122	1.166	1.181	2.1%	1.099	1.130	1.142
2014	2.5%	1.095	1.138	1.152	2.1%	1.076	1.107	1.119
2015	2.3%	1.070	1.112	1.125	1.9%	1.056	1.086	1.097
2016	2.1%	1.048	1.089	1.101	1.8%	1.037	1.067	1.077
2017	2.1%	1.026	1.066	1.078	1.8%	1.019	1.048	1.058
2018	2.6%	1.000	1.039	1.053	1.9%	1.000	1.029	1.039

## Notes

a The percentages in columns (1) and (5) represent the change in written exposures from 07/01/n-1 to 07/01/n. Columns (2) and (6) contain the cumulative changes in written exposures for each year relative to the latest year.

b The selected average annual changes in Amount of Insurance for projection purposes are 2.6% and 1.9% for Buildings and Contents, respectively. Consequently, the written factors at 07/01/2018 levels in column (2) and column (6) are brought to the level of the average date of writing in the effective period, 01/01/2020 (i.e., 6 months beyond an assumed revision date of 07/01/2019), by applying a factor of  $(1.026)^{18/12}$  for Buildings and  $(1.019)^{18/12}$  for Contents.

c Written factors are earned into each accident year ending 12/31 using the following factors which assume all one year policies:

Earning Factors	
Year	All Years
n-2	0
n-1	1/2
n	1/2

For example, the factors used to adjust earned exposures for the period from 01/01/2018 to 12/31/2018 to the projected level are 1.053 for Buildings and 1.039 for Contents.

TABLE 24A (cont'd)

EXPOSURE TREND  
DEVELOPMENT OF CURRENT AND PROJECTED EARNED EXPOSURE FACTORS

<u>Time Element</u>				
	(1) <sup>a</sup>	(2) <sup>a</sup>	(3) <sup>b</sup>	(4) <sup>c</sup>
	Annual	07-01-2018	01-01-2020	01-01-2020
	Written	Written	Projected	Earned
<u>Year</u>	<u>Increase</u>	<u>Factors</u>	<u>Factors</u>	<u>Factors</u>
2006	1.4%	1.118	1.128	1.136
2007	1.3%	1.104	1.114	1.121
2008	1.3%	1.090	1.100	1.107
2009	0.8%	1.081	1.091	1.096
2010	0.7%	1.073	1.083	1.087
2011	0.8%	1.064	1.074	1.079
2012	0.8%	1.056	1.066	1.070
2013	0.9%	1.047	1.056	1.061
2014	1.0%	1.037	1.046	1.051
2015	1.1%	1.026	1.035	1.041
2016	1.1%	1.015	1.024	1.030
2017	0.9%	1.006	1.015	1.020
2018	0.6%	1.000	1.009	1.012

Notes

a The percentage in column (1) represents the change in written exposures from 07/01/n-1 to 07/01/n. Column (2) is the cumulative change in written exposures for each year relative to the latest year.

b The selected average annual change in Net Income (Time Element exposure) for projection purposes is 0.6%. Consequently, the written factors at 07/01/2018 levels in column (2) are brought to the level of the average date of writing in the effective period, 01/01/2020 (i.e., 6 months beyond an assumed revision date of 07/01/2019), by applying a factor of  $(1.006)^{18/12}$  for Time Element.

c Written factors are earned into each accident year ending 12/31 using the following factors which assume all one year policies:

<u>Earning Factors</u>	
<u>Year</u>	<u>All Years</u>
n-2	0
n-1	1/2
n	1/2

For example, the factor used to adjust earned exposures for the period from 01/01/2018 to 12/31/2018 to the projected level is 1.012.

TABLE 24B

**PREMIUM TREND - BASIC GROUP I**  
**DEVELOPMENT OF CURRENT AND PROJECTED EARNED PREMIUM FACTORS**

	<u>Buildings</u>				<u>Contents</u>			
	(1) <sup>a</sup>	(2) <sup>a</sup>	(3) <sup>b</sup>	(4) <sup>c</sup>	(5) <sup>a</sup>	(6) <sup>a</sup>	(7) <sup>b</sup>	(8) <sup>c</sup>
	Annual	07-01-2018	01-01-2020	01-01-2020	Annual	07-01-2018	01-01-2020	01-01-2020
	Written	Written	Projected	Earned	Written	Written	Projected	Earned
<u>Year</u>	<u>Increase</u>	<u>Factors</u>	<u>Factors</u>	<u>Factors</u>	<u>Increase</u>	<u>Factors</u>	<u>Factors</u>	<u>Factors</u>
2006	3.1%	1.297	1.338	1.359	1.8%	1.219	1.248	1.260
2007	3.1%	1.258	1.298	1.318	2.0%	1.195	1.224	1.236
2008	2.8%	1.224	1.263	1.281	2.0%	1.172	1.200	1.212
2009	2.7%	1.192	1.230	1.247	1.8%	1.151	1.179	1.190
2010	2.0%	1.169	1.206	1.218	1.4%	1.135	1.162	1.171
2011	2.0%	1.146	1.182	1.194	1.5%	1.118	1.145	1.154
2012	2.2%	1.121	1.156	1.169	1.5%	1.101	1.128	1.137
2013	2.1%	1.098	1.133	1.145	1.8%	1.082	1.108	1.118
2014	2.0%	1.076	1.110	1.122	1.8%	1.063	1.089	1.099
2015	1.9%	1.056	1.089	1.100	1.6%	1.046	1.071	1.080
2016	1.7%	1.038	1.071	1.080	1.5%	1.031	1.056	1.064
2017	1.7%	1.021	1.053	1.062	1.5%	1.016	1.040	1.048
2018	2.1%	1.000	1.032	1.043	1.6%	1.000	1.024	1.032

## Notes

a The percentages in columns (1) and (5) represent the change in written premium (reflecting the combined effect of change in exposures and limit of insurance factors) from 07/01/n-1 to 07/01/n. Columns (2) and (6) contain the cumulative changes in written premiums for each year relative to the latest year.

b The average annual changes in Premium for projection purposes are 2.1% and 1.6% for Buildings and Contents, respectively. Consequently, the written factors at 07/01/2018 levels in column (2) and column (6) are brought to the level of the average date of writing in the effective period, 01/01/2020 (i.e., 6 months beyond an assumed revision date of 07/01/2019), by applying a factor of  $(1.021)^{18/12}$  for Buildings and  $(1.016)^{18/12}$  for Contents.

c Written factors are earned into each accident year ending 12/31 using the following factors which assume all one year policies:

	<u>Earning Factors</u>
<u>Year</u>	<u>All Years</u>
n-2	0
n-1	1/2
n	1/2

For example, the factors used to adjust earned exposures for the period from 01/01/2018 to 12/31/2018 to the projected level are 1.043 for Buildings and 1.032 for Contents.



TABLE 24C

**PREMIUM TREND - BASIC GROUP II - OTHER THAN SOUTHEAST  
DEVELOPMENT OF CURRENT AND PROJECTED EARNED PREMIUM FACTORS**

	Buildings				Contents			
	(1) <sup>a</sup> Annual Written Increase	(2) <sup>a</sup> 07-01-2018 Written Factors	(3) <sup>b</sup> 01-01-2020 Projected Factors	(4) <sup>c</sup> 01-01-2020 Earned Factors	(5) <sup>a</sup> Annual Written Increase	(6) <sup>a</sup> 07-01-2018 Written Factors	(7) <sup>b</sup> 01-01-2020 Projected Factors	(8) <sup>c</sup> 01-01-2020 Earned Factors
Year								
2006	2.8%	1.272	1.308	1.327	1.6%	1.197	1.222	1.232
2007	2.9%	1.236	1.271	1.290	1.8%	1.176	1.201	1.212
2008	2.6%	1.205	1.240	1.256	1.8%	1.155	1.179	1.190
2009	2.4%	1.177	1.211	1.226	1.7%	1.136	1.160	1.170
2010	1.9%	1.155	1.188	1.200	1.3%	1.121	1.145	1.153
2011	1.9%	1.133	1.165	1.177	1.4%	1.106	1.129	1.137
2012	2.0%	1.111	1.143	1.154	1.4%	1.091	1.114	1.122
2013	1.9%	1.090	1.121	1.132	1.6%	1.074	1.097	1.106
2014	1.9%	1.070	1.101	1.111	1.6%	1.057	1.079	1.088
2015	1.7%	1.052	1.082	1.092	1.4%	1.042	1.064	1.072
2016	1.6%	1.035	1.065	1.074	1.4%	1.028	1.050	1.057
2017	1.6%	1.019	1.048	1.057	1.4%	1.014	1.035	1.043
2018	1.9%	1.000	1.029	1.039	1.4%	1.000	1.021	1.028

## Notes

a The percentages in columns (1) and (5) represent the change in written premium (reflecting the combined effect of change in exposures and limit of insurance factors) from 07/01/n-1 to 07/01/n. Columns (2) and (6) contain the cumulative changes in written premiums for each year relative to the latest year.

b The average annual changes in Premium for projection purposes are 1.9% and 1.4% for Buildings and Contents, respectively. Consequently, the written factors at 07/01/2018 levels in column (2) and column (6) are brought to the level of the average date of writing in the effective period, 01/01/2020 (i.e., 6 months beyond an assumed revision date of 07/01/2019), by applying a factor of  $(1.019)^{18/12}$  for Buildings and  $(1.014)^{18/12}$  for Contents.

c Written factors are earned into each accident year ending 12/31 using the following factors which assume all one year policies:

Earning Factors	
Year	All Years
n-2	0
n-1	1/2
n	1/2

For example, the factors used to adjust earned premium for the period from 01/01/2018 to 12/31/2018 to the projected level are 1.039 for Buildings and 1.028 for Contents.

TABLE 24D

**PREMIUM TREND - SPECIAL CAUSES OF LOSS**  
**DEVELOPMENT OF CURRENT AND PROJECTED EARNED PREMIUM FACTORS**

	Buildings				Contents			
	(1) <sup>a</sup>	(2) <sup>a</sup>	(3) <sup>b</sup>	(4) <sup>c</sup>	(5) <sup>a</sup>	(6) <sup>a</sup>	(7) <sup>b</sup>	(8) <sup>c</sup>
Year	Annual Written Increase	07-01-2018 Written Factors	01-01-2020 Projected Factors	01-01-2020 Earned Factors	Annual Written Increase	07-01-2018 Written Factors	01-01-2020 Projected Factors	01-01-2020 Earned Factors
2006	2.9%	1.281	1.320	1.339	1.4%	1.168	1.189	1.197
2007	3.0%	1.244	1.282	1.301	1.6%	1.150	1.171	1.180
2008	2.7%	1.211	1.248	1.265	1.6%	1.132	1.152	1.162
2009	2.5%	1.181	1.217	1.233	1.4%	1.116	1.136	1.144
2010	1.9%	1.159	1.194	1.206	1.1%	1.104	1.124	1.130
2011	1.9%	1.137	1.171	1.183	1.2%	1.091	1.111	1.118
2012	2.1%	1.114	1.148	1.160	1.2%	1.078	1.097	1.104
2013	2.0%	1.092	1.125	1.137	1.4%	1.063	1.082	1.090
2014	1.9%	1.072	1.104	1.115	1.4%	1.048	1.067	1.075
2015	1.8%	1.053	1.085	1.095	1.2%	1.036	1.055	1.061
2016	1.6%	1.036	1.067	1.076	1.2%	1.024	1.042	1.049
2017	1.6%	1.020	1.051	1.059	1.2%	1.012	1.030	1.036
2018	2.0%	1.000	1.030	1.041	1.2%	1.000	1.018	1.024

## Notes

a The percentages in columns (1) and (5) represent the change in written premium (reflecting the combined effect of change in exposures and limit of insurance factors) from 07/01/n-1 to 07/01/n. Columns (2) and (6) contain the cumulative changes in written premiums for each year relative to the latest year.

b The average annual changes in Premium for projection purposes are 2.0% and 1.2% for Buildings and Contents, respectively. Consequently, the written factors at 07/01/2018 levels in column (2) and column (6) are brought to the level of the average date of writing in the effective period, 01/01/2020 (i.e., 6 months beyond an assumed revision date of 07/01/2019), by applying a factor of  $(1.020)^{18/12}$  for Buildings and  $(1.012)^{18/12}$  for Contents.

c Written factors are earned into each accident year ending 12/31 using the following factors which assume all one year policies:

	<u>Earning Factors</u>
<u>Year</u>	<u>All Years</u>
n-2	0
n-1	1/2
n	1/2

For example, the factors used to adjust earned premium for the period from 01/01/2018 to 12/31/2018 to the projected level are 1.041 for Buildings and 1.024 for Contents.

EXPLANATORY NOTES TO TABLES 24A - 24D  
EXPOSURE AND PREMIUM TREND FACTORS

Table 24A contains Exposure trend factors.

Tables 24B, 24C and 24D contain Premium trend factors for Basic Group I, Basic Group II and Special Causes of Loss respectively, building and contents. As annual written exposures increase (decrease), the resulting limit of insurance factors used for rating decrease (increase) and the combined effect should be reflected when trending premiums to future level. There are separate premium trend factor tables for Basic Group I, Basic Group II and Special Causes of Loss since there are separate limit of insurance curves for BG I, BG II and SCL.

For Time Element, exposure trend factors are also used to trend premiums, i.e., there are not separate Time Element premium trend factors because Time Element does not use limit of insurance factors for rating.

COLUMNS (1)                      ANNUAL WRITTEN INCREASE

AND (5)

The annual written increases for buildings, contents, and time element are calculated from the actual changes in amount of insurance from one year to the next for a sample of renewal policies (based on BG I experience). The change in amount of insurance for each policy in the sample was weighted with its prior year's premiums to obtain a weighted average change for each year. The Annual Written Increase in Premiums (Tables 24B, 24C and 24D) are calculated as the Annual Written Increase in Exposure tempered by the change in Limit of Insurance factor.

COLUMNS (2)                      07-01-2018 WRITTEN FACTORS

AND (6)

The written factors for a given year are the product of the written annual changes for all years subsequent to that year. Although the 2018 written changes are based on two quarters of data, the consistency of this experience allows for the assumption that written changes for the first half of 2018 are applicable for the entire year.

COLUMNS (3)                      01-01-2020 PROJECTED FACTORS

AND (7)

The 01-01-2020 factors are calculated by applying a factor to adjust the 07-01-2018 written factors to the amount of insurance level at the average date of writing, 01-01-2020. This is done using the selected annual changes in exposure or premium.

COLUMNS (4)                      01-01-2020 EARNED EXPOSURES/PREMIUM FACTORS

AND (8)

The projected earned factors at the 01-01-2020 level (where 01-01-2020 is the average date of writing in the effective period) are calculated by earning the written factors assuming all one-year policies. The earning factors are shown in footnote (c).

MISSOURI  
TABLE 25

BASIC GROUP I

ADDITIONAL INFORMATION ON TREND ADJUSTMENTS

YEAR	(1)	(2)	(3)	(4)		
	UNADJUSTED INCURRED LOSSES	TRENDED INCURRED LOSSES	AVERAGE TOTAL LOSS TREND FACTOR (2) / (1)	----- BUILDINGS	SPLIT % CONTENTS	----- TIME ELEMENT
2013	10,704,507	13,675,701	1.278	82.4%	9.9%	7.7%
2014	17,338,077	21,378,608	1.233	72.5%	19.6%	7.9%
2015	11,750,721	13,997,398	1.191	82.5%	13.3%	4.2%
2016	23,844,801	27,469,972	1.152	68.8%	23.6%	7.6%
2017	27,499,662	30,898,957	1.124	79.3%	14.1%	6.6%

MISSOURI  
TABLE 26

BASIC GROUP II

ADDITIONAL INFORMATION ON TREND ADJUSTMENTS

YEAR	(1)	(2)	(3)	(4)		
	UNADJUSTED INCURRED LOSSES	TRENDED INCURRED LOSSES	AVERAGE TOTAL LOSS TREND FACTOR (2) / (1)	SPLIT %		TIME
				BUILDINGS	CONTENTS	ELEMENT
2008	26,299,083	35,560,056	1.352	92.4%	6.7%	0.9%
2009	13,779,264	17,842,039	1.295	90.5%	8.3%	1.2%
2010	13,962,358	18,187,247	1.303	97.0%	2.6%	0.4%
2011	85,668,727	108,425,049	1.266	90.1%	7.2%	2.7%
2012	92,788,634	116,412,441	1.255	96.2%	2.0%	1.8%
2013	13,088,794	16,148,118	1.234	90.5%	8.2%	1.3%
2014	16,967,338	20,790,194	1.225	94.5%	5.1%	0.4%
2015	19,023,879	22,019,499	1.157	94.7%	5.1%	0.2%
2016	15,178,676	17,293,887	1.139	94.3%	5.5%	0.2%
2017	31,645,003	35,031,656	1.107	92.9%	6.8%	0.3%

MISSOURI  
TABLE 27

SPECIAL CAUSES OF LOSS

ADDITIONAL INFORMATION ON TREND ADJUSTMENTS

YEAR	(1)	(2)	(3)	(4)		
	UNADJUSTED INCURRED LOSSES	TRENDED INCURRED LOSSES	AVERAGE TOTAL LOSS TREND FACTOR (2) / (1)	----- BUILDINGS	SPLIT % CONTENTS	----- TIME ELEMENT
2013	11,887,893	14,485,686	1.219	74.6%	18.0%	7.4%
2014	10,736,438	13,020,537	1.213	82.0%	16.1%	1.9%
2015	11,480,602	13,223,957	1.152	70.2%	23.9%	5.9%
2016	5,707,976	6,445,501	1.129	75.4%	23.4%	1.2%
2017	10,046,883	11,030,457	1.098	70.5%	22.6%	6.9%

EXPLANATORY NOTES TO TABLES 25, 26 AND 27

BG I, BG II, AND SCL ADDITIONAL INFORMATION ON TREND ADJUSTMENTS

COLUMN (1) UNADJUSTED INCURRED LOSSES

The unadjusted incurred losses are the reported losses prior to any adjustment.

COLUMN (2) TRENDED INCURRED LOSSES

The trended incurred losses are the aggregate of the individual losses trended on a unit record basis.

COLUMN (3) AVERAGE TREND FACTOR

The average trend factors are the trended incurred losses in column (2) divided by the unadjusted incurred losses in column (1). Although average factors could be calculated from the information contained in Tables 21 through 23, they would differ from the factors shown in this table for the following reasons:

- (1) In calculating such averages, the usual assumption is that the losses are spread evenly throughout the year, yielding the midpoint of each year as the average date of loss. A predominance of losses at a certain time of the year could shift the average accident date away from the midpoint.
- (2) The average trend factors will be slightly higher due to the impact of trend on the deductible.

COLUMN (4) PERCENTAGE SPLIT BETWEEN BUILDINGS, CONTENTS, AND TIME ELEMENT

The current cost factors and loss projection factors are different for buildings, contents, and time element. Therefore, in addition to the reasons cited above, the average trend factors will differ from state to state depending on the buildings/contents/time element split. Companies with splits substantially different from the industrywide averages shown here may find it appropriate to develop trend factors which reflect their own coverage mix.

## LOSS DEVELOPMENT

### INTRODUCTION

For Commercial Property, losses are evaluated as of March 31, 2018, three months after the end of the latest experience year used in the review. In order to account for development of losses beyond fifteen months and to reflect overall loss development patterns, loss development was incorporated into the adjustment process of incurred losses to their ultimate settlement value.

### LOSS DEVELOPMENT PROCEDURES

The application of loss development factors recognizes the fact that not all of the Commercial Property losses for a particular accident year have been finally determined at the time the experience is compiled.

The incurred losses underlying the statewide loss cost level indications were evaluated as of March 31, 2018.

Accident year ended December 31, 2017 includes all losses paid on accidents from January 1, 2017 to December 31, 2017 and all losses outstanding on those accidents as of March 31, 2018, fifteen months after the inception of the accident year. Similarly, accident years ended December 31, 2016, 2015, 2014 and 2013 include all losses paid and outstanding as of 27, 39, 51 and 63 months, respectively, after the inception of the accident year.

Thus, the immature experience reported as of 15, 27, 39 or 51 months must be adjusted to an ultimate settlement basis. This adjustment is accomplished through the use of loss development factors based on the historic multistate Basic Group I, Basic Group II, and Special Causes of Loss incurred losses as shown in Table 28.



TABLE 28  
BASIC GROUP I  
INCURRED LOSSES  
LOSS YEARS 2008-2017  
EVALUATED AS OF 3/2018

LOSSES AS OF					
YEAR ENDING	15 MONTHS	27 MONTHS	39 MONTHS	51 MONTHS	63 MONTHS
12/31/2008	985,270,249	960,764,313	942,634,785	948,229,227	942,345,729
12/31/2009	951,545,684	938,195,735	922,596,336	916,796,159	912,958,830
12/31/2010	958,706,786	937,189,323	920,252,057	912,475,934	906,914,341
12/31/2011	875,385,607	869,164,379	853,331,190	842,602,902	838,194,396
12/31/2012	839,359,618	817,855,210	804,811,455	799,667,013	795,491,139
12/31/2013	875,058,281	868,952,119	868,080,015	855,911,071	854,261,415
12/31/2014	900,362,257	875,277,536	857,347,049	849,439,418	
12/31/2015	780,246,405	774,310,307	774,030,706		
12/31/2016	863,522,073	865,212,841			
12/31/2017	1,182,880,321				

RATIOS				
YEAR ENDING	27:15 MONTHS	39:27 MONTHS	51:39 MONTHS	63:51 MONTHS
12/31/2008	0.975	0.981	1.006	0.994
12/31/2009	0.986	0.983	0.994	0.996
12/31/2010	0.978	0.982	0.992	0.994
12/31/2011	0.993	0.982	0.987	0.995
12/31/2012	0.974	0.984	0.994	0.995
12/31/2013	0.993	0.999	0.986	0.998
12/31/2014	0.972	0.980	0.991	
12/31/2015	0.992	1.000		
12/31/2016	1.002			
5 POINT AVERAGE	0.987	0.989	0.990	0.996

DEVELOPMENT FACTORS TO ULTIMATE

15 MONTHS TO ULTIMATE =  $1.000 \times 0.989 \times 0.990 \times 0.996 = 0.963$   
 27 MONTHS TO ULTIMATE =  $0.989 \times 0.990 \times 0.996 = 0.975$   
 39 MONTHS TO ULTIMATE =  $0.990 \times 0.996 = 0.986$   
 51 MONTHS TO ULTIMATE =  $0.996 = 0.996$

TABLE 28

BASIC GROUP II  
INCURRED LOSSES  
LOSS YEARS 2008-2017  
EVALUATED AS OF 03/2018

LOSSES AS OF					
YEAR ENDING	15 MONTHS	27 MONTHS	39 MONTHS	51 MONTHS	63 MONTHS
12/31/2008	789,211,554	786,185,473	784,757,528	786,551,680	787,809,357
12/31/2009	432,828,230	439,895,180	440,877,079	441,104,192	441,639,238
12/31/2010	622,196,456	658,969,969	662,375,582	663,149,081	666,179,573
12/31/2011	1,172,946,750	1,175,526,827	1,181,263,137	1,181,212,708	1,185,854,831
12/31/2012	903,293,615	926,002,939	934,861,507	940,154,845	943,573,779
12/31/2013	548,818,561	551,174,138	546,555,871	547,351,791	556,140,648
12/31/2014	455,230,926	469,625,570	482,036,391	485,866,693	
12/31/2015	348,359,669	360,365,838	366,233,765		
12/31/2016	439,217,895	454,834,800			
12/31/2017	1,991,551,466				

RATIOS				
YEAR ENDING	27:15 MONTHS	39:27 MONTHS	51:39 MONTHS	63:51 MONTHS
12/31/2008	0.996	0.998	1.002	1.002
12/31/2009	1.016	1.002	1.001	1.001
12/31/2010	1.059	1.005	1.001	1.005
12/31/2011	1.002	1.005	1.000	1.004
12/31/2012	1.025	1.010	1.006	1.004
12/31/2013	1.004	0.992	1.001	1.016
12/31/2014	1.032	1.026	1.008	
12/31/2015	1.034	1.016		
12/31/2016	1.036			
5 POINT AVERAGE	1.026	1.010	1.003	1.006

DEVELOPMENT FACTORS TO ULTIMATE

15 MONTHS TO ULTIMATE =  $1.026 \times 1.010 \times 1.003 \times 1.006 = 1.046$

27 MONTHS TO ULTIMATE =  $1.010 \times 1.003 \times 1.006 = 1.019$

39 MONTHS TO ULTIMATE =  $1.003 \times 1.006 = 1.009$

51 MONTHS TO ULTIMATE =  $1.006 = 1.006$

TABLE 28  
SPECIAL CAUSES OF LOSS

INCURRED LOSSES  
LOSS YEARS 2008-2017  
EVALUATED AS OF 03/2018

LOSSES AS OF					
YEAR ENDING	15 MONTHS	27 MONTHS	39 MONTHS	51 MONTHS	63 MONTHS
12/31/2008	602,363,493	596,731,904	600,306,834	592,340,773	588,443,481
12/31/2009	521,611,424	514,023,637	507,854,227	506,075,466	506,730,967
12/31/2010	659,155,391	648,124,599	643,208,304	643,852,634	644,065,672
12/31/2011	678,931,106	663,305,199	658,964,195	656,096,674	656,079,095
12/31/2012	366,814,617	365,341,914	362,213,261	361,068,194	362,369,531
12/31/2013	443,143,995	437,420,233	429,956,996	429,934,953	429,635,123
12/31/2014	650,409,440	649,776,448	650,678,008	651,858,088	
12/31/2015	570,700,472	568,607,439	564,363,765		
12/31/2016	361,063,170	378,887,159			
12/31/2017	587,532,003				

RATIOS				
YEAR ENDING	27:15 MONTHS	39:27 MONTHS	51:39 MONTHS	63:51 MONTHS
12/31/2008	0.991	1.006	0.987	0.993
12/31/2009	0.985	0.988	0.996	1.001
12/31/2010	0.983	0.992	1.001	1.000
12/31/2011	0.977	0.993	0.996	1.000
12/31/2012	0.996	0.991	0.997	1.004
12/31/2013	0.987	0.983	1.000	0.999
12/31/2014	0.999	1.001	1.002	
12/31/2015	0.996	0.993		
12/31/2016	1.049			
5 POINT AVERAGE	1.005	0.992	0.999	1.001

DEVELOPMENT FACTORS TO ULTIMATE

15 MONTHS TO ULTIMATE =  $1.005 \times 0.992 \times 0.999 \times 1.001 = 0.997$

27 MONTHS TO ULTIMATE =  $0.992 \times 0.999 \times 1.001 = 0.992$

39 MONTHS TO ULTIMATE =  $0.999 \times 1.001 = 1.000$

51 MONTHS TO ULTIMATE =  $1.001 = 1.001$

## EXPLANATORY NOTES TO TABLE 28

### LOSS DEVELOPMENT

#### INTRODUCTION

Table 28 shows multistate incurred loss development exhibits for Basic Group I, Basic Group II and Special Causes of Loss. The exhibits on Table 28 are arranged identically for each subline and can be summarized as listing the following information: incurred losses by accident year and age, age-to-age factors by accident year, and age-to-ultimate factors.

#### INCURRED LOSSES

The multistate incurred losses are shown by accident year and age at the top of Table 28. The multistate incurred losses are evaluated as of 15, 27, 39, 51 and 63 months. For Basic Group II, losses due to hurricanes reflected in the modeled hurricane loss costs have been removed from the experience for each rating territory and loss month.

#### AGE-TO-AGE DEVELOPMENT FACTORS

Age-to-age development factors or link ratios are calculated for each accident year. These age-to-age factors are calculated by dividing the incurred losses evaluated at each age by the incurred losses evaluated at the immediately preceding age. For example, 27:15 month age-to-age factors are calculated by taking the losses evaluated as of 27 months and dividing them by the losses evaluated as of 15 months, for each accident year. Age-to-age development factors are also calculated for 39:27 months, 51:39 months and 63:51 months. Latest five-year averages are then determined for each age-to-age interval.

#### AGE-TO-ULTIMATE DEVELOPMENT FACTORS

Age-to-ultimate factors are then calculated for the latest four years by multiplying the five-year average age-to-age development factors. These age-to-ultimate factors are then used in the adjustment of incurred losses to develop losses to their ultimate settlement value.

## EXCESS LOSS PROCEDURES

### INTRODUCTION

If not addressed, the presence or absence of large losses during the review period can produce significant fluctuations in loss cost levels. In order to develop a more stable body of experience, large losses have been smoothed. This procedure removes any excess losses from the experience and applies excess loss factors to the resultant state normal losses to generate the adjusted incurred losses. The adjusted losses developed in this manner replace the incurred losses in the loss cost level evaluation.

### BASIC GROUP I

First, the excess portion of each large loss is removed from the trended loss experience.

Individual claim amounts that result from the same occurrence are grouped together, and if the total loss for one occurrence exceeds the normal loss cutoff (at 2005 cost levels), the total loss is identified as a large loss. Each large loss is then split into its normal and excess portions based on the normal loss cutoff.

The Basic Group I normal loss cutoff begins at \$250,000 and varies with the size of loss up to a maximum normal amount (approached asymptotically) of \$1,250,000. (The formula and a graph are shown on Table 29.) The portion of each large loss exceeding the cutoff is considered excess and the portion of any loss up to the cutoff is considered normal.

As noted above, the excess loss procedure is performed on trended loss experience (i.e. loss experience adjusted to prospective cost levels by the current cost factors, loss projection factors, and loss trend adjustment factors (for claim cost only) shown in Tables 21 through 22). The loss trend adjustment for frequency trend is not reflected at this step in the process. The normal breakpoint of \$250,000 for BGI and the parameters in the normal loss formula are at 2005 cost levels and therefore have been similarly adjusted to prospective cost levels.

Both the normal and total incurred losses are aggregated over all states by construction, protection, and amount of insurance intervals. The most recent ten years of experience are used in this analysis. Excess loss factors by construction, protection and amount of insurance are then calculated as the ratios of the ten year multistate incurred losses to the ten-year multistate normal losses.

These factors are then smoothed by fitting curves (by amount of insurance intervals) to the indicated factors. The resulting factors are then balanced so the original ten-year multistate incurred loss level is maintained.

## EXCESS LOSS PROCEDURES (cont'd)

### BASIC GROUP I (cont'd)

The excess factors are then applied to the state normal losses, which are maintained in the same detail (construction, protection and amount of insurance) as well as by year, territory, rating group and TOP. The state normal losses used in this calculation have also been trended for frequency.

The excess loss factors vary by construction, protection and the amount of insurance because these are the most significant severity-related rating variables.

### BASIC GROUP II

Since catastrophic wind losses affect both the frequency and severity of loss, the Basic Group II excess procedure identifies periods of overall adverse experience, rather than individual large losses. Also, due to the extreme volatility of windstorm losses, a long-term review period (1950 - present) is used to estimate the expected excess losses.

Loss ratio cutoffs are used to determine normal losses, state excess losses, and regional excess losses for each year in the long-term review period. The application of these cutoffs is detailed in the explanatory notes to Table 31A. The state excess losses are used to determine the state excess component of the state excess multiplier, and the regional excess losses are used to determine the regional excess component. (Table 31B is a list of states by region.) The state excess multiplier is derived in such a manner as to provide an estimate of the expected excess loss dollars per normal loss dollar.

The state excess multiplier is applied to each accident year in the ten-year experience period used in the review. In this way, a review database is created reflecting both the current normal loss experience and the average excess loss experience based on the long-term review. This allows a concurrent evaluation of both the normal and the excess components of the BG II loss cost level.

### SPECIAL CAUSES OF LOSS

Similar to Basic Group II, the Special Causes of Loss (SCL) smoothing procedure uses a loss ratio approach to reflect both the frequency and severity of unusual loss events which may produce significant fluctuations in loss cost levels. The excess procedure uses longer term statewide SCL experience (1985 - present) to account for the volatile nature of weather related losses (water damage from bursting pipes, or the weight of ice, sleet, or snow) which are the predominant cause of large SCL losses in a given experience period. A monthly normal loss ratio cutoff of 2.0 is used to define normal and excess losses. The resulting ratio of excess to normal losses over the long-term experience period is then applied to the normal losses used in the loss cost level review. SCL has a lower loss ratio cutoff than that used in Basic Group II in order to reflect the less catastrophic nature of unusual SCL loss events. The calculations underlying the smoothing procedure are described in the Explanatory Notes to Table 32.

**TABLE 29 - COUNTRYWIDE BASIC GROUP I EXCESS LOSS FACTORS  
BY CONSTRUCTION, PROTECTION AND EXPOSURE**

		Amount of Insurance *										
		1	2	3	4	5	6	7	8	9	10	11
Const. 1-3	Prot. 1-4	1.000	1.043	1.089	1.136	1.186	1.237	1.291	1.347	1.405	1.467	2.048
	Prot. 5-7	1.000	1.054	1.112	1.172	1.235	1.302	1.373	1.448	1.526	1.609	2.436
	Prot. 8-10	1.000	1.062	1.129	1.199	1.274	1.353	1.437	1.527	1.622	1.723	2.770

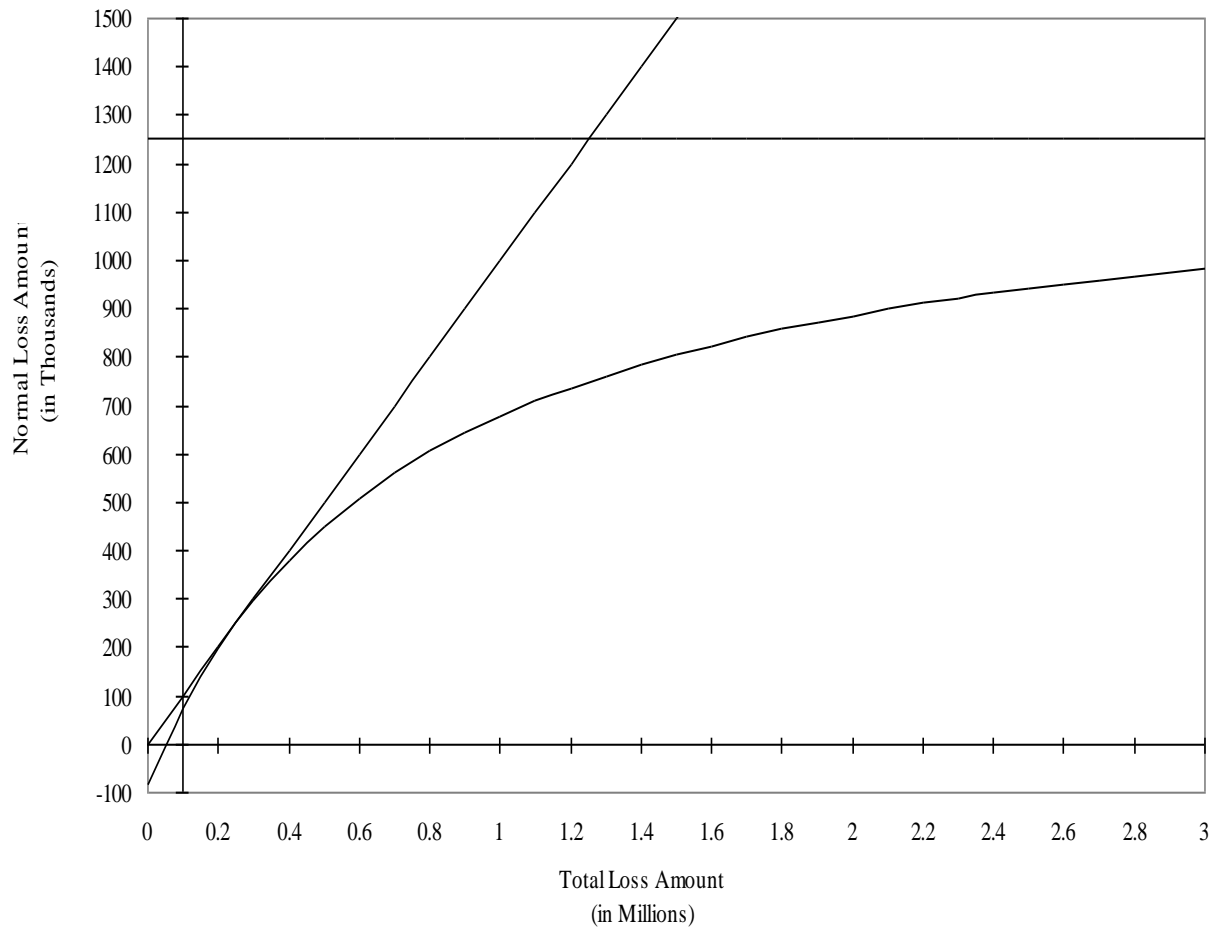
		Amount of Insurance *										
		1	2	3	4	5	6	7	8	9	10	11
Const. 4-6	Prot. 1-4	1.000	1.042	1.086	1.132	1.180	1.229	1.281	1.335	1.392	1.450	2.005
	Prot. 5-7	1.000	1.053	1.109	1.167	1.229	1.294	1.363	1.435	1.511	1.591	2.386
	Prot. 8-10	1.000	1.061	1.126	1.195	1.267	1.345	1.427	1.514	1.606	1.704	2.712

*	<u>Amount of Insurance</u>	<u>Intervals</u>
	1	0-421,000
	2	421,001-500,000
	3	500,001-700,000
	4	700,001-1,000,000
	5	1,000,001-1,500,000
	6	1,500,001-2,500,000
	7	2,500,001-3,500,000
	8	3,500,001-5,500,000
	9	5,500,001-7,500,000
	10	7,500,001-10,000,000
	11	10,000,001 and over

Table 29 (cont'd)

Countrywide Basic Group I  
Normal vs. Total Loss Amount

$$\text{Normal Loss} = \$1,250,000 \times (1 - (\$800,000 \div (\text{Total Loss} + \$750,000)))$$





EXPLANATORY NOTES TO TABLES 29

COUNTRYWIDE BASIC GROUP I EXCESS LOSS FACTORS

EXCESS LOSS  
FACTORS

The multistate excess loss factors are the ratios of the ten-year multistate adjusted incurred losses to the ten-year multistate adjusted normal losses (both adjusted for severity trend). They are determined separately by construction, protection and amount of insurance range. Due to credibility considerations, both constructions and protections have been consolidated as shown. The amount of insurance ranges are also shown.

MISSOURI  
TABLE 30

BASIC GROUP I  
ADDITIONAL EXCESS LOSS INFORMATION

	(1)	(2)	(3)	(4)	(5)	(6)
	TRENDED INCURRED LOSSES	TRENDED NORMAL LOSSES	STATE NORMAL % (2) / (1)	MULTI- STATE NORMAL %	ADJUSTED INCURRED LOSSES	STATE AVERAGE EXCESS FACTOR (5) / (2)
YEAR						
2013	13,675,701	12,404,491	90.7%	73.6%	16,425,512	1.324
2014	21,378,608	17,465,213	81.7%	73.6%	21,945,018	1.256
2015	13,997,398	13,573,048	97.0%	74.4%	18,763,092	1.382
2016	27,469,972	18,007,771	65.6%	70.8%	28,458,751	1.580
2017	30,898,957	18,289,049	59.2%	62.0%	27,341,613	1.495

## EXPLANATORY NOTES TO TABLE 30

### BASIC GROUP I ADDITIONAL EXCESS LOSS INFORMATION

COLUMN (1)                      TRENDED INCURRED LOSSES

The trended incurred losses are the aggregate of all individually-trended loss records prior to any adjustment for large losses. They are shown here fully trended for severity.

COLUMN (2)                      TRENDED NORMAL LOSSES

The normal losses are the aggregate of the normal portions of each loss occurrence. These are also fully trended.

COLUMN (3)                      STATE NORMAL PERCENTAGE

The state normal percentages are the statewide normal losses divided by the statewide trended incurred losses. These percentages can be used in conjunction with the multistate percentages and actual dollar amounts of normal losses to assess the state loss experience. For example, consistently lower state normal percentages relative to multistate normal percentages could indicate that the state has a greater propensity for large losses.

COLUMN (4)                      MULTISTATE NORMAL PERCENTAGES

The multistate normal percentages are the multistate normal losses divided by the multistate trended incurred losses. As noted above these can be used as a yardstick against which the statewide experience can be measured.

COLUMN (5)                      ADJUSTED INCURRED LOSSES

The adjusted incurred losses are the totals across all constructions, protections and exposures of the fully trended normal losses multiplied by the excess loss factors.

COLUMN (6)                      STATE AVERAGE EXCESS FACTOR

The state average excess factors are the adjusted incurred losses in column (5) divided by the normal losses in column (2). These factors represent the annual averages of the factors calculated separately by construction, protection and amount of insurance. The average excess factor reflects the normal loss mix by construction, protection and exposure. Heavy concentration in those subsets of the data with high excess factors will result in large average factors.

MISSOURI  
TABLE 31A

DEVELOPMENT OF BASIC GROUP II EXCESS MULTIPLIER

	(1)	(2)	(3)	(4)	(5)	(6)
YEAR	EARNED PREMIUMS	INCURRED LOSSES	NORMAL INCURRED LOSSES	NORMAL LOSS RATIO	STATE EXCESS LOSS RATIO	REGIONAL EXCESS LOSS RATIO
1950	2,430,917	1,531,813	1,531,813	0.630		
1951	2,676,015	1,598,439	1,598,439	0.597		
1952	3,016,733	1,097,383	1,097,383	0.364		
1953	3,103,473	1,771,104	1,771,104	0.571		
1954	3,329,225	3,795,465	2,403,700	0.722	0.351	0.067
1955	3,430,104	1,685,814	1,685,814	0.491		
1956	3,431,897	1,930,214	1,930,214	0.562		
1957	3,478,777	5,453,374	2,511,677	0.722	0.611	0.235
1958	3,407,578	1,401,717	1,401,717	0.411		
1959	3,640,377	6,963,942	2,628,352	0.722	0.773	0.418
1960	3,874,784	2,362,943	2,362,943	0.610		
1961	4,084,394	2,878,974	2,878,974	0.705		
1962	4,441,118	1,847,033	1,847,033	0.416		
1963	4,771,982	2,303,015	2,303,015	0.483		
1964	5,046,021	3,870,986	3,643,227	0.722	0.044	0.001
1965	5,275,223	1,952,489	1,952,489	0.370		
1966	5,377,212	2,929,221	2,929,221	0.545		
1967	5,388,443	3,801,869	3,801,869	0.706		
1968	4,816,179	2,081,553	2,081,553	0.432		
1969	4,618,237	3,379,649	3,334,367	0.722	0.010	
1970	5,329,285	943,727	943,727	0.177		
1971	6,683,146	3,469,264	3,469,264	0.519		
1972	7,819,686	3,130,304	3,130,304	0.400		
1973	8,602,358	6,859,395	6,210,902	0.722	0.073	0.002
1974	8,962,836	12,443,775	6,471,168	0.722	0.511	0.155
1975	9,479,599	5,688,362	5,688,362	0.600		
1976	10,912,066	3,454,649	3,454,649	0.317		
1977	13,013,922	13,574,937	9,396,052	0.722	0.280	0.041
1978	14,745,933	4,902,245	4,902,245	0.332		
1979	16,241,507	8,864,153	8,864,153	0.546		
1980	16,719,662	7,907,739	7,907,739	0.473		
1981	16,678,962	11,691,823	10,748,108	0.644	0.054	0.003
1982	15,874,452	17,415,277	16,997,418	1.071	0.026	
1983	15,436,188	8,818,519	8,818,519	0.571		
1984	15,763,692	20,007,903	16,676,086	1.058	0.198	0.013
1985	22,368,720	9,278,441	9,278,441	0.415		
1986	29,480,364	10,176,171	10,176,171	0.345		
1987	26,993,451	3,401,773	3,401,773	0.126		
1988	24,656,298	3,967,420	3,967,420	0.161		
1989	20,245,449	4,236,827	4,236,827	0.209		

MISSOURI  
TABLE 31A

DEVELOPMENT OF BASIC GROUP II EXCESS MULTIPLIER

	(1)	(2)	(3)	(4)	(5)	(6)
YEAR	EARNED PREMIUMS	INCURRED LOSSES	NORMAL INCURRED LOSSES	NORMAL LOSS RATIO	STATE EXCESS LOSS RATIO	REGIONAL EXCESS LOSS RATIO
1990	18,652,860	8,553,169	8,553,169	0.459		
1991	17,977,395	7,280,075	6,718,967	0.374	0.031	
1992	18,946,494	4,843,322	4,843,322	0.256		
1993	17,296,452	4,996,801	4,996,801	0.289		
1994	18,126,789	5,351,741	5,351,741	0.295		
1995	17,488,044	9,768,992	9,768,992	0.559		
1996	15,788,160	12,155,743	8,543,523	0.541	0.201	0.028
1997	15,097,680	3,167,762	3,167,762	0.210		
1998	12,991,176	7,884,662	7,884,662	0.607		
1999	11,747,451	7,361,620	7,361,620	0.627		
2000	11,578,116	7,076,575	7,076,575	0.611		
2001	11,803,959	23,561,237	8,338,069	0.706	0.759	0.531
2002	13,824,807	3,296,993	3,296,993	0.238		
2003	15,079,593	18,992,916	6,461,366	0.428	0.551	0.281
2004	18,523,506	11,148,691	6,389,529	0.345	0.223	0.034
2005	20,023,428	4,907,030	4,907,030	0.245		
2006	21,081,270	43,305,516	19,114,710	0.907	0.828	0.319
2007	22,997,178	6,378,544	6,378,544	0.277		
2008	24,556,366	26,299,083	23,118,875	0.941	0.125	0.005
2009	25,111,424	13,779,264	12,188,866	0.485	0.061	0.003
2010	26,294,769	13,962,358	13,962,358	0.531		
2011	25,226,392	85,668,727	24,764,519	0.982	1.353	1.061
2012	27,490,114	92,788,634	26,513,356	0.964	1.257	1.154
2013	29,856,531	13,088,794	13,088,794	0.438		
2014	32,213,095	16,967,338	16,967,338	0.527		
2015	33,582,845	19,023,879	13,704,389	0.408	0.145	0.013
2016	33,677,636	15,178,676	13,279,705	0.394	0.055	0.002
2017	34,678,646	31,645,003	28,557,190	0.823	0.084	0.006
TOTALS				36.100	8.604	4.372

(7) STATE EXCESS COMPONENT = (SELR / NLR) = 0.238

(8) REGIONAL EXCESS COMPONENT = 0.118

(9) STATE EXCESS MULTIPLIER = (1 + SEC) \* (1 + REC) = 1.384

## EXPLANATORY NOTES TO TABLE 31A

### COLUMN (1)

#### EARNED PREMIUMS

The unadjusted earned premiums are shown for each year.

### COLUMN (2)

#### INCURRED LOSSES

The unadjusted incurred losses are shown for each year.

### COLUMN (3)

#### NORMAL INCURRED LOSSES

Normal losses which are shown for each year are defined as follows:

- for losses reported under CSP (for which month of loss detail is available), that portion of each month's losses which does not exceed 2.5 times that month's earned premiums.
- for losses reported under CRSP, SCOH and SMP (for which month of loss detail is not available), that part of each year's losses which does not exceed 0.722 times that year's earned premiums.

### COLUMN (4)

#### NORMAL LOSS RATIO

For each year in the excess review period, the normal loss ratio is calculated as the ratio of the normal losses (for CSP data the sum of each month's normal losses) to the earned premiums for the same year.

### COLUMN (5)

#### STATE EXCESS LOSS RATIO

The state excess loss ratio is the ratio of the state excess losses to the unadjusted earned premium. The state excess losses are determined by the following formulas:

$$\cdot \quad EP \times \frac{20(LR-2.5)}{(LR-2.5)+20} \text{ if } LR > 2.5; \text{ otherwise } 0$$

for CSP, where EP = the monthly earned premiums, LR = the monthly loss ratio and the yearly state excess losses are the sum of the monthly state excess losses.

$$\cdot \quad EP \times \frac{2.2(LR-.722)}{(LR-.722)+2.2} \text{ if } LR > 0.722; \text{ otherwise } 0$$

for CRSP, SCOH, SMP, where EP = the earned premiums and LR = the yearly loss ratio.

EXPLANATORY NOTES TO TABLE 31A (cont'd)

COLUMN (6)

REGIONAL EXCESS LOSS RATIO

If  $LR > NLR$ , then the regional excess loss ratio is:

regional excess loss ratio =  $LR - SELR - NLR$

where             $SELR$  = the state excess loss ratio,  
                      $NLR$  = the normal loss ratio, and  
                      $LR$  = the loss ratio

LINE (7)

STATE EXCESS COMPONENT

The state excess component is determined by dividing the sum of all state excess loss ratios by the sum of all normal loss ratios (where the sum is taken across all accident years).

LINE (8)

REGIONAL EXCESS COMPONENT

The regional excess component is determined by dividing the weighted average (determined, in each case, against the latest year unadjusted premium distribution) of the sum of regional excess loss ratios of all the states in the region by the weighted average of the sum of all loss ratio points retained by a state (normal and state excess loss ratios) of all the states in the region. See Table 31B for the appropriate BG II region for the state.

LINE (9)

STATE EXCESS MULTIPLIER

The state excess multiplier is derived by taking the product of the state excess component and the regional excess component.

TABLE 31B

BASIC GROUP II REGIONS

NORTHEAST REGION

CONNECTICUT  
DELAWARE  
DIST OF COLUMBIA  
MAINE  
MARYLAND  
MASSACHUSETTS  
NEW HAMPSHIRE  
NEW JERSEY  
NEW YORK  
PENNSYLVANIA  
RHODE ISLAND  
VERMONT  
VIRGINIA

PLAINS REGION

ARKANSAS  
COLORADO  
IOWA  
KANSAS  
MINNESOTA  
MISSOURI  
MONTANA  
NEBRASKA  
NORTH DAKOTA  
OKLAHOMA  
SOUTH DAKOTA  
WYOMING

SOUTHEAST REGION

ALABAMA  
FLORIDA  
GEORGIA  
LOUISIANA  
MISSISSIPPI  
NORTH CAROLINA  
SOUTH CAROLINA  
HAWAII

MIDWEST REGION

ILLINOIS  
INDIANA  
KENTUCKY  
MICHIGAN  
OHIO  
TENNESSEE  
WEST VIRGINIA  
WISCONSIN

WEST REGION

ARIZONA  
CALIFORNIA  
IDAHO  
NEVADA  
NEW MEXICO  
OREGON  
UTAH  
WASHINGTON  
ALASKA



MISSOURI

TABLE 32 - DEVELOPMENT OF SPECIAL CAUSES OF LOSS EXCESS MULTIPLIER

YEAR	(1) EARNED PREMIUMS	(2) INCURRED LOSSES	(3) NORMAL INCURRED LOSSES	(4) NORMAL LOSS RATIO	(5) STATE EXCESS LOSS RATIO
1985	6,316,416	4,840,259	4,703,876	0.745	0.021
1986	7,997,484	4,010,906	4,010,906	0.502	
1987	8,455,260	3,461,246	3,461,246	0.409	
1988	8,203,344	3,785,311	3,785,311	0.461	
1989	8,289,744	8,966,815	6,821,002	0.823	0.259
1990	10,625,676	7,317,833	6,924,454	0.652	0.037
1991	10,485,576	12,233,767	8,972,844	0.856	0.311
1992	10,365,981	4,835,589	4,835,589	0.466	
1993	11,010,042	10,629,979	8,178,350	0.743	0.222
1994	10,704,105	8,925,875	7,698,706	0.719	0.115
1995	9,847,116	7,157,912	7,157,912	0.727	
1996	10,101,783	6,854,028	6,622,790	0.656	0.022
1997	11,148,126	6,597,727	6,597,727	0.592	
1998	10,606,467	9,349,980	8,908,773	0.840	0.042
1999	10,663,332	7,685,449	7,124,177	0.668	0.053
2000	10,559,064	6,366,357	6,051,637	0.573	0.030
2001	10,732,950	7,294,724	7,294,724	0.680	
2002	11,884,407	6,026,819	6,026,819	0.507	
2003	13,136,454	5,408,681	5,408,681	0.412	
2004	13,275,162	3,896,536	3,896,536	0.294	
2005	12,960,924	4,747,473	4,747,473	0.366	
2006	12,379,662	15,317,027	12,578,940	1.016	0.221
2007	12,153,966	14,100,426	9,719,685	0.800	0.360
2008	11,361,309	14,916,056	12,073,331	1.063	0.250
2009	12,155,799	17,533,811	11,797,364	0.971	0.471
2010	12,550,539	15,552,770	12,960,810	1.033	0.206
2011	11,559,744	15,382,550	12,619,143	1.092	0.239
2012	11,972,838	6,327,397	6,327,397	0.528	
2013	12,903,009	11,887,893	8,715,873	0.675	0.246
2014	14,545,701	10,736,438	8,534,918	0.587	0.151
2015	15,977,456	11,480,602	11,397,694	0.713	0.006
2016	16,722,300	5,707,976	5,707,976	0.341	
2017	17,361,049	10,046,883	9,795,366	0.564	0.015
TOTALS		289,383,095	251,458,030	22.074	3.277

(6) STATE EXCESS COMPONENT = (SELR / NLR) = 0.148

(7) STATE EXCESS MULTIPLIER = (1 + SEC) = 1.148

EXPLANATORY NOTES TO TABLE 32

SPECIAL CAUSES OF LOSS ADDITIONAL EXCESS LOSS FACTOR

COLUMN (1)                      EARNED PREMIUMS

These are the unadjusted earned premiums for each year.

COLUMN (2)                      INCURRED LOSSES

These are the unadjusted incurred losses for each year.

COLUMN (3)                      NORMAL INCURRED LOSSES

The normal incurred losses are shown for each year. The normal incurred losses are defined to be that portion of each month's losses which does not exceed 2.0 times the monthly earned premiums.

COLUMN (4)                      NORMAL LOSS RATIO

The normal loss ratio for each year is the ratio of the normal incurred losses for each year divided by the earned premiums for the year.

Column (4) = Column (3) ÷ Column (1)

COLUMN (5)                      EXCESS LOSS RATIO

The excess loss ratio for each year is the ratio of the excess losses to the earned premium for the year. The excess losses are calculated as the incurred losses minus the normal incurred losses for each year.

LINE (6)                          EXCESS COMPONENT

The excess component is determined by dividing the sum of the excess loss ratios by the sum of the normal loss ratios, where the sums are taken across all years in the excess review period.

LINE (7)                          EXCESS MULTIPLIER

The excess multiplier is derived by adding unity to the excess component.

## OVERVIEW

### APPLICATION OF CREDIBILITY

#### INTRODUCTION

Credibility,  $Z$ , is a weight given to the most recent body of data. The complement of credibility,  $1-Z$ , is the weight assigned to net trend. The final estimate is a weighted average obtained by using the formula  $C = Z \times R + (1-Z) \times N$ , where:

$Z$  = credibility

$C$  = final estimate

$R$  = estimate based on the most recent data

$N$  = net trend

Credibility may range from 0 to 1, where  $Z=1$  is full credibility and  $Z=0$  is no credibility. The actual numerical value of  $Z$  is calculated by considering how the state's volume of experience compares with an established full credibility standard. Credibility is capped at 25% if the credibility calculated is below 25%. See Tables 33, 33A, and 34 for a complete explanation of the credibility standards for Basic Group I, Basic Group II, and Special Causes of Loss.

MISSOURI

TABLE 33 - BASIC GROUP I STATEWIDE CREDIBILITY CALCULATION

(1a)	FULL CREDIBILITY CLAIMS STANDARD FOR FREQUENCY WITH (P,K) = ( 95.00% , 5.00%)	1,537
(1b)	SEVERITY MODIFICATION FACTOR	8.870
(1c)	FULL CREDIBILITY CLAIMS STANDARD ADJUSTED FOR SEVERITY ((1a) X (1b))	13,633
(2)	MULTISTATE FIVE YEAR RATIO OF EARNED RISKS TO CLAIMS	338.858
(3)	FULL CREDIBILITY EARNED RISKS STANDARD (1c) X (2)	4,619,651
(4)	FIVE YEAR STATEWIDE EARNED RISKS	494,770
(5)	FIVE YEAR AGGREGATE LOSS COSTS	121,284,241
(6)	AGGREGATE LOSS COSTS PER EARNED RISK (5) / (4)	245.133
(7)	AGGREGATE LOSS COSTS FOR 100% CREDIBILITY (3) X (6)	1,132,428,909
(8)	STATEWIDE CREDIBILITY ((5) / (7)) ** (.5)	32.7%

MISSOURI

TABLE 33A - BASIC GROUP II STATEWIDE CREDIBILITY CALCULATION

(1) FULL CREDIBILITY CLAIMS STANDARD	30,000
(2) MULTISTATE TEN YEAR RATIO OF EARNED RISKS TO CLAIMS	137.699
(3) FULL CREDIBILITY EARNED RISKS STANDARD (1)X(2)	4,130,970
(4) TEN YEAR STATEWIDE EARNED RISKS	984,685
(5) TEN YEAR AGGREGATE LOSS COSTS	301,461,727
(6) AGGREGATE LOSS COSTS PER EARNED RISK (5)/(4)	306.150
(7) AGGREGATE LOSS COSTS FOR 100% CREDIBILITY (3) X (6)	1,264,696,466
(8) STATEWIDE CREDIBILITY ((5)/(7))**(.5)	48.8%

MISSOURI

TABLE 34 - SPECIAL CAUSES OF LOSS STATEWIDE CREDIBILITY CALCULATION

(1) FULL CREDIBILITY CLAIMS STANDARD	25,000
(2) MULTISTATE FIVE YEAR RATIO OF EARNED RISKS TO CLAIMS	176.966
(3) FULL CREDIBILITY EARNED RISKS STANDARD (1)X(2)	4,424,150
(4) FIVE YEAR STATEWIDE EARNED RISKS	455,053
(5) FIVE YEAR AGGREGATE LOSS COSTS	73,348,356
(6) AGGREGATE LOSS COSTS PER EARNED RISK (5)/(4)	161.186
(7) AGGREGATE LOSS COSTS FOR 100% CREDIBILITY (3) X (6)	713,111,042
(8) STATEWIDE CREDIBILITY ( (5)/(7) ) ** (.5)	32.1%

EXPLANATORY NOTES TO TABLES 33, 33A AND 34

BASIC GROUP I, BASIC GROUP II, AND SPECIAL CAUSES OF LOSS  
STATEWIDE CREDIBILITY CALCULATION

LINE (1a)  
(BGI only)

Full Credibility Claims Standard of Frequency

Based on a Poisson distribution, the minimum sample size of claims is determined such that the probability that the actual number of claims will be within 5% of the expected number of claims is greater than 95%.

LINE (1b)  
(BGI only)

Severity Modification Factor

This factor, defined as  $(1 + S^2 / M^2)$ , is used to modify the claims standard to reflect variance due to severity, where S is the standard deviation and M is the mean of the loss severity distribution (on a normal loss basis).

LINE (1c) - BGI  
LINE (1) - BGII, SCL

Full Credibility Claims Standard

For Basic Group I, this standard is the product of the frequency standard in line (1a) and the severity modification factor in line (1b). For Basic Group II and Special Causes of Loss, standards for full credibility of 30,000 claims for BGII and 25,000 claims for SCL were selected to balance stability and responsiveness.

LINE (2)

Multistate Experience Period Ratio of Earned Risks to Claims

This ratio was determined based on Commercial Statistical Plan data for the latest experience period (Five years for Basic Group I and Special Causes of Loss; Ten years for Basic Group II).

LINE (3)

Full Credibility Earned Risks Standard

To translate the claims standard to an equivalent standard based on earned risks, the claims standard (line (1c) for BGI, (1) for BGII and SCL) is multiplied by the multistate experience period ratio of earned risks to claims (line (2)).

LINE (4)

Experience Period Statewide Earned Risks

This is the number of earned risks in the state for the experience period.

EXPLANATORY NOTES TO TABLE 33, 33A, AND 34 (cont'd)

LINE (5) Experience Period Aggregate Loss Costs

These are the state's experience period adjusted aggregate loss costs.

LINE (6) Statewide Experience Period Ratio of Aggregate Loss Costs to Earned Risks

This ratio is determined by dividing the state's experience period adjusted aggregate loss costs by its experience period earned risks.

LINE (7) Full Credibility Aggregate Loss Costs Standard

To translate the risk standard into an aggregate loss cost standard on a state by state basis, the ratio (line (6)) is multiplied by the full credibility earned risks standard (line (3)).

LINE (8) Credibility

The state's credibility is calculated by using the square root credibility formula:

$$Z = \sqrt{\frac{P}{C}}$$

where Z = credibility,  
P = statewide five-year adjusted aggregate loss costs (line (5)), and  
C = full credibility aggregate loss costs standard (line (7)).



MISSOURI  
COMMERCIAL PROPERTY INSURANCE

SECTION D - ADDITIONAL SUPPORTING MATERIAL

Basic Group I Rating Group Definitions (Table 36) .....	D2-6
Special Causes of Loss Category Definitions (Table 37) .....	D7-9
Unadjusted Loss Costs, Incurred Losses,	
Experience Ratios (Tables 38 - 40) .....	D10-12
Loss Adjustment Expense Factors (Table 41) .....	D13-14

TABLE 36

BASIC GROUP I RATING GROUP DEFINITIONS

THE FOLLOWING CSP CLASSES COMPRISE THE BASIC GROUP I RATING GROUPS

01      APARTMENTS

- 0311 Apartments without Mercantile Occupancies - Up to 10 Units
- 0312 Apartments without Mercantile Occupancies - 11 to 30 Units
- 0313 Apartments without Mercantile Occupancies - Over 30 Units
- 0321 Apartments with Mercantile Occupancies - Up to 10 Units
- 0322 Apartments with Mercantile Occupancies - 11 to 30 Units
- 0323 Apartments with Mercantile Occupancies - Over 30 Units
- 0331 Residential Condominiums without Mercantile Occupancies - Up to 10 Units
- 0332 Residential Condominiums without Mercantile Occupancies - 11 to 30 Units
- 0333 Residential Condominiums without Mercantile Occupancies - Over 30 Units
- 0341 Residential Condominiums with Mercantile Occupancies - Up to 10 Units
- 0342 Residential Condominiums with Mercantile Occupancies - 11 to 30 Units
- 0343 Residential Condominiums with Mercantile Occupancies - Over 30 Units

02      OTHER HABITATIONAL

- 0074 Boarding and Lodging Houses, Rooming Houses, Fraternities and Sororities, Dormitories - Up to 10 Units
- 0075 Boarding and Lodging Houses, Rooming Houses, Fraternities and Sororities, Dormitories - 11 to 30 Units
- 0076 Boarding and Lodging Houses, Rooming Houses, Fraternities and Sororities, Dormitories - Over 30 Units
- 0077 Convents, Monasteries and Rectories, Orphan Homes, Nurses' Homes, Sisters' Homes - Up to 10 Units
- 0078 Convents, Monasteries and Rectories, Orphan Homes, Nurses' Homes, Sisters' Homes - 11 to 30 Units
- 0079 Convents, Monasteries and Rectories, Orphan Homes, Nurses' Homes, Sisters' Homes - Over 30 Units
- 0196 Dwellings Written in Conjunction with Commercial Risks from the Commercial Lines Manual - 1 Family
- 0197 Dwellings Written in Conjunction with Commercial Risks from the Commercial Lines Manual - 2 Family
- 0198 Dwellings Written in Conjunction with Commercial Risks from the Commercial Lines Manual - 3 and 4 Family
- 0300 Large Area Housing Developments (Special Rating Treatment)

03      RESTAURANTS & BARS

- 0541 Bars and Taverns
- 0542 Restaurants with Commercial Cooking
- 0545 Restaurants with Limited Cooking

#### 04 OTHER MERCANTILES

- 0431 Sole Occupancy Mercantile, Over 15,000 Square Feet, Building Coverage, Other than Food Risks
- 0432 Sole Occupancy Mercantile, Over 15,000 Square Feet, Food Risks, Buildings and Personal Property
- 0433 Multiple Occupancy Mercantile, Over 15,000 Square Feet, Building Coverage Only, Not Fire Class Rated
- 0434 Multiple Occupancy Mercantile, Less than 15,000 Square Feet, Building Coverage Only, Not Fire Class Rated
- 0511 Risks Having Low Susceptibility Personal Property, NOC
- 0512 Tire, Battery and Accessory Dealers Without Tire Recapping and Vulcanizing
- 0520 Wearing Apparel, Textiles, Shoes
- 0531 Alcoholic Beverages other than Bars
- 0532 Food Products including Retail Bakeries (no baking and no cooking on premises; sales only); Beverages other than Alcoholic
- 0533 Retail Bakeries - Baking on Premises (No delivery to other outlets)
- 0534 Food Products with Limited Cooking, Excluding Bakeries
- 0550 Motor Vehicle (Auto, Aircraft, Marine) Sales, No Repair
- 0561 Boat and Marine Supply Dealers
- 0562 Drugs
- 0563 Electrical Goods, Hardware and Machinery
- 0564 Furniture and Home Furnishings other than Appliances
- 0565 Jewelry
- 0566 Sporting Goods
- 0567 Risks Having Moderate Susceptibility Personal Property, NOC
- 0570 Risks Having High Susceptibility Personal Property, NOC
- 0580 Greenhouses
- 0581 Multiple Occupancy Mercantile, Fire Class Rated, without furniture Occupant
- 0582 Multiple Occupancy Mercantile, Fire Class Rated, with furniture Occupant

#### 05 PUBLIC BUILDINGS

- 0701 Governmental Offices
- 1000 Penal Institutions
- 1051 Museums, Libraries, Art Galleries (non-profit)
- 1070 Other Public Buildings, Fire Dept., Police, Water/Sewer

#### 06 CHURCHES

- 0900 Churches and Synagogues

#### 07 SCHOOLS

- 1052 Schools, Academic

#### 08 OFFICE AND BANKS

- 0702 Non-Governmental Offices and Banks

## 09 RECREATIONAL FACILITIES

- 0755 Golf Clubs, Tennis Clubs and Similar Sports Facilities with Cooking
- 0756 Golf Clubs, Tennis Clubs and Similar Sports Facilities without Cooking
- 0757 Clubs, NOC, Including Fraternal and Union Halls
- 0831 Motion Picture Studios
- 0832 Theaters
- 0833 Drive-in Theaters
- 0834 Skating Rinks--Roller Rinks
- 0841 Bowling Alleys
- 0843 Halls and Auditoriums
- 0844 Recreational Facilities, NOC
- 0845 Boys' and Girls' Camps
- 0846 Dance Halls, Ballrooms & Discotheques
- 0951 Gambling Casinos with Restaurants
- 0952 Gambling Casinos without Restaurants

## 10 HOTELS & MOTELS

- 0742 Motels and Hotels with Restaurant - Up to 10 Units
- 0743 Motels and Hotels with Restaurant - 11 to 30 Units
- 0744 Motels and Hotels with Restaurant - Over 30 Units
- 0745 Motels and Hotels without Restaurant - Up to 10 Units
- 0746 Motels and Hotels without Restaurant - 11 to 30 Units
- 0747 Motels and Hotels without Restaurant - Over 30 Units

## 11 HOSPITALS & NURSING HOMES

- 0851 Hospitals
- 0852 Nursing and Convalescent Homes

## 12 BUILDINGS UNDER CONSTRUCTION

- 1150 Buildings Under Construction

## 13 MOTOR VEHICLE RISKS

- 0931 Auto Parking Garages, Car Washes
- 0932 Gasoline Service Stations
- 0933 Aircraft Hangars with Repairing, Motor Vehicle Repairing Including Auto Body Shops, with or without Sales
- 0934 Tire Recapping and Vulcanizing with or without Sales
- 0940 Aircraft Hangars without Repairing

## 14 OTHER NON-MANUFACTURING

- 0911 Dry Cleaner and Dyeing Plants, other than Self-Service
- 0912 Laundries, other than Self-Service
- 0913 Self-Service Laundries and Dry Cleaners
- 0921 Light Hazard Service Occupancies
- 0922 Services Occupancies, Other than Light Hazard, NOC
- 0923 Funeral Homes
- 1180 Vacant Buildings
- 1185 Billboards and Signs
- 1190 Yard Property, NOC, Including Property in the Open

## 15 STORAGE

- 1200 Piers, Wharves, Bridges
- 1211 Freight Terminals
- 1212 General Storage Warehouses - Bailee
- 1213 Miscellaneous Products Storage - (other than Retail or Wholesale or Cold Storage)
- 1220 Household Goods Storage
- 1230 Cold Storage Warehouses
- 1251 Farm Products (other than Grain, Cotton, Tobacco)
- 1252 Grain, Seed, Bean Warehouses
- 1300 Cotton Compresses and Storage
- 1400 Waste and Reclaimed Material, including Yards
- 1450 Whiskey and Liquor Warehouses in Connection with Distilleries
- 1501 Tobacco Warehouses, Storage
- 1502 Tobacco Sales Warehouses
- 1550 Grain Elevators - Terminal
- 1610 Grain Elevators - Country
- 1650 Building Supply Yards, including Retail Lumberyards, Coal and Coke Yards
- 1700 Mill Yards
- 1751 Oil Distributing, Oil Terminals and LPG Tank Farms, Including Stock
- 1752 Oil Distributing, Oil Terminals and LPG Tank Farms, Excluding Stock

## 17 FOOD MANUFACTURING

- 2000 Dairy Products
- 2059 Meat, Poultry and Fish Products
- 2150 Grain Milling, Including Feed, Stock, Flour Mills
- 2200 Bakeries and Bakery Products
- 2250 Fruit, Nut and Vegetable Products
- 2300 Sugar, Molasses and Syrup Refining
- 2350 Beverages excluding Alcoholic Beverages
- 2400 Breweries
- 2459 Distilleries and Wineries
- 2550 Tobacco and Tobacco Products
- 2600 Food Products, NOC

## 18 WOOD MANUFACTURING

- 3809 Basic Wood Production including Veneer and Plywood Plants
- 3959 Furniture and Other Wood Products, NOC

## 19 WEARING APPAREL

- 2800 Textile Mill Products - Natural and Synthetic
- 3009 Clothing and Apparel including Furs and Finished Products

## 20 CHEMICAL MANUFACTURING

- 5000 Chemicals and Pharmaceuticals - Low Hazard
- 5050 Chemicals and Pharmaceuticals - Moderate Hazard
- 5100 Chemicals and Pharmaceuticals - High Hazard

## 21 METAL MANUFACTURING

- 6810 Heavy Metalworking including Basic Metalwork
- 6850 Metalworking, NOC

## 22 OTHER MANUFACTURING

- 2750 Cotton Gins
- 3409 Leather and Leather Products
- 4400 Paper Manufacturing
- 4450 Paper and Paper Products Processing
- 4809 Printing
- 5500 Plastic Products
- 5759 Rubber Products
- 6009 Stone, Glass, Concrete, Gypsum, Brick, Tile and Clay Products, Abrasives, Plaster and Other Mineral, NOC
- 6210 Mining Other than Coal
- 6250 Coal Mining
- 6900 Precision Products, Electronic, Radio and Television Manufacturing

## TABLE 37

### SPECIAL CAUSES OF LOSS CATEGORY DEFINITIONS

#### CATEGORY 01 - BUILDING AND TIME ELEMENT COVERAGE

#### CATEGORY 02 - APARTMENT AND CONDOMINIUM CONTENTS COVERAGE

#### CATEGORY 03 - OFFICE CONTENTS COVERAGE

#### CATEGORIES 04, 05, & 06 - MERCANTILE CONTENTS COVERAGE

An establishment in which the principal business is the retail or wholesale buying or selling of goods, wares and merchandise. Included are bars, grills and restaurants.

##### CATEGORY 04 - MERCANTILE CONTENTS COVERAGE (HIGH)

Occupancy classes 0511, 0520, 0550, 0562, 0566, 0567, 0581, 0702, 1180, 1185, 1190, 1200, 1211, 1212, 1213, 1251, 1300, 1400, 1751, or 1752

##### CATEGORY 05 - MERCANTILE CONTENTS COVERAGE (MEDIUM)

Occupancy classes not listed in Category 04 or Category 06

##### CATEGORY 06 - MERCANTILE CONTENTS COVERAGE (LOW)

Occupancy classes 0512, 0541, 0563, 0921, 0922, 0933, 0940, or 1230

#### CATEGORY 07 - MOTEL & HOTEL CONTENTS COVERAGE

Hotels, motels, motor inns, motor lodges, tourist courts and similar risks whose business is principally the providing of lodging accommodations for transients, including premises and operations necessary or incidental to such lodging accommodations.

## TABLE 37

### SPECIAL CAUSES OF LOSS CATEGORY DEFINITIONS

#### CATEGORIES 08 & 09 - INSTITUTIONAL CONTENTS COVERAGE

An establishment principally occupied by an educational, religious, sanitary, charitable or governmental organization. It does not include buildings containing manufacturing of any kind, or sale, storage, processing, or repair of clothing or furniture, or paper or rag storage, or sorting or supplying of food or lodging to itinerants.

##### CATEGORY 08 - INSTITUTIONAL CONTENTS COVERAGE (HIGH)

Occupancy classes 0701, 0702, 0851, 0921, 1051, or 1052

##### CATEGORY 09 - INSTITUTIONAL CONTENTS COVERAGE (LOW)

Occupancy classes not listed in Category 08

#### CATEGORIES 10 & 11 - INDUSTRIAL & PROCESSING CONTENTS COVERAGE

An establishment in which the principal activity is the manufacturing of goods and wares or processing of raw materials or finished goods.

##### CATEGORY 10 - INDUSTRIAL & PROCESSING CONTENTS COVERAGE (HIGH)

Occupancy classes 1252, 1300, 1400, 1700, 2000, 2059, 2150, 2200, 2250, 2300, 2350, 2400, 2459, 2550, 2600, 2750, 2800, 2805, 3009, 3409, 3809, 3959, or 4400

##### CATEGORY 11 - INDUSTRIAL & PROCESSING CONTENTS COVERAGE (LOW)

Occupancy classes not listed in Category 10



## TABLE 37

### SPECIAL CAUSES OF LOSS CATEGORY DEFINITIONS

#### CATEGORIES 12 & 13 - SERVICE CONTENTS COVERAGE

An establishment in which the principal operation is the providing of a personal or commercial service. Included are establishments providing entertainment or recreation; warehousing of property of others; and automobile risks, such as service, repair or garaging of automobiles and parking lots.

##### CATEGORY 12 - SERVICE CONTENTS COVERAGE (HIGH)

Occupancy classes 0520, 0542, 0545, 0550, 0567, 0702, 0755, 0831, 0832, 0911, 0912, 0913, 0921, 0931, 0932, 0934, 1213, or 4809

##### CATEGORY 13 - SERVICE CONTENTS COVERAGE (LOW)

Occupancy classes not listed in Category 12

#### CATEGORY 14 - CONTRACTOR CONTENTS COVERAGE

An establishment in which the principal operation is that of installation, construction, demolition or maintenance. This includes any owner/contractor, general contractor or sub-contractor whether or not he or she actually performs any part of such work or has employees on the site.

MISSOURI  
TABLE 38

BASIC GROUP I

UNADJUSTED AGGREGATE LOSS COSTS, LOSSES, AND EXPERIENCE RATIOS

YEAR	TOTAL UNADJUSTED LOSS COSTS	TOTAL UNADJUSTED INCURRED LOSSES	EXPERIENCE RATIO
2013	23,603,866	10,704,507	0.454
2014	23,637,400	17,338,077	0.734
2015	23,250,063	11,750,721	0.505
2016	21,875,605	23,844,801	1.090
2017	21,142,620	27,499,662	1.301

MISSOURI  
TABLE 39

BASIC GROUP II

UNADJUSTED AGGREGATE LOSS COSTS, LOSSES, AND EXPERIENCE RATIOS

YEAR	TOTAL UNADJUSTED LOSS COSTS	TOTAL UNADJUSTED INCURRED LOSSES	EXPERIENCE RATIO
2008	13,856,242	26,299,083	1.898
2009	14,175,148	13,779,264	0.972
2010	14,818,328	13,962,358	0.942
2011	14,235,963	85,668,727	6.018
2012	15,513,906	92,788,634	5.981
2013	16,850,930	13,088,794	0.777
2014	18,211,595	16,967,338	0.932
2015	18,975,704	19,023,879	1.003
2016	19,010,345	15,178,676	0.798
2017	19,575,641	31,645,003	1.617

MISSOURI  
TABLE 40

SPECIAL CAUSES OF LOSS

UNADJUSTED AGGREGATE LOSS COSTS, LOSSES, AND EXPERIENCE RATIOS

YEAR	TOTAL UNADJUSTED LOSS COSTS	TOTAL UNADJUSTED INCURRED LOSSES	EXPERIENCE RATIO
2013	7,273,221	11,887,893	1.634
2014	8,201,149	10,736,438	1.309
2015	9,011,642	11,480,602	1.274
2016	9,432,381	5,707,976	0.605
2017	9,793,879	10,046,883	1.026

## OVERVIEW

### LOSS ADJUSTMENT EXPENSE FACTORS

OBJECTIVE	The reported indemnity losses must be loaded for any loss adjustment expenses (LAE) that are not reported in statistical detail to ISO.
PROPERTY COVERAGES	For the property coverages, only the incurred indemnity losses are reported to ISO under the Commercial Statistical Plan. All loss adjustment expenses must be loaded in. A factor representing the ratio of incurred losses plus all LAE to incurred losses was selected based on multistate financial data (see Table 41 for the underlying data).
EXPERIENCE INCLUDED	Fire and Allied Lines incurred loss and loss adjustment expense experience for 2012-2016 is displayed on Table 41. The experience is based on Insurance Expense Exhibit information compiled by A.M. Best. For Allied Lines, the loss adjustment expense ratios [Table 41, line (3)(b)] for several years are distorted by unusual catastrophe-related losses and loss adjustment expenses. The selected Allied Lines loss adjustment expense factor used for this review was selected after consideration of this distortion and based on a review of average loss adjustment expense ratios over a longer time period.
SELECTED FACTORS	The following factors have been used in this review to load incurred losses for all loss adjustment expenses:

Basic Group I	1.100
Basic Group II	1.125
Special Causes of Loss	1.125

TABLE 41  
FIRE AND ALLIED LINES INSURANCE  
COUNTRYWIDE LOSS ADJUSTMENT EXPENSE EXPERIENCE (A)

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>Selected</u>
(1) Fire						
(a) Direct Losses Incurred	5,023,106	4,688,160	5,453,055	5,307,898	5,625,399	
(b) Direct Loss Adjustment Expense Incurred	483,790	467,349	541,303	522,374	538,861	
(2) Allied Lines						
(a) Direct Losses Incurred	8,611,569	4,802,876	4,490,338	4,730,020	6,303,537	
(b) Direct Loss Adjustment Expense Incurred	807,626	702,307	617,997	650,322	701,782	
(3) Loss Adjustment Expense as a Ratio to Losses						
(a) Fire (1b) / (1a)	9.6%	10.0%	9.9%	9.8%	9.6%	10.0%
(b) Allied Lines (2b) / (2a)	9.4%	14.6%	13.8%	13.7%	11.1%	12.5%

NOTE: All dollar amounts are displayed in thousands.

(A) Items (1) and (2) are based on Insurance Expense Exhibit information compiled by A. M. Best.

MISSOURI  
COMMERCIAL PROPERTY  
LOSS COST LEVEL REVIEW  
ACTUARIAL ANALYSIS SUPPLEMENT

---

PURPOSE                      This document provides discussion and analysis of changes in the experience and adjustments used to derive the advisory prospective loss cost level indications.

---

MONOLINE  
INDICATIONS

The indicated statewide monoline changes are:

<u>Subline</u>	<u>Current Review</u>	<u>Prior Review</u>
Basic Group I	+0.5%	-6.3%
Basic Group II	+14.7%	+0.7%
Special Causes of Loss	+7.3%	+3.9%
All Coverages Combined	+8.0%	-1.2%

The prior review indications were filed and implemented. There has been a change in the Implicit Package Modification Factors since the prior review.

Special Causes of Loss (SCL) Indications on an Old Category Basis

Given below are the current SCL review indications on an old category basis for those companies that have not yet adopted the current SCL rating that was introduced in conjunction with the limit of insurance curves.

<u>Category</u>	<u>Loss Cost Change</u>
01 Buildings	+9.8%
02 Apartment and Condominium Contents	+4.3%
03 Office Contents	+0.6%
04 Mercantile, Motel-Hotel, and Institutional Contents	+2.6%
05 Service, Industrial-Processing and Contractors Contents	+3.2%
Personal Property (Contents) Excluding Theft	+2.4%

Given below is a brief discussion and comparison of the multistate factors (premium and loss trend, loss adjustment expense, and loss development) used in this year's and last year's reviews. The discussion is followed by a state specific analysis by subline and a list of events occurring during the experience period in this state that have been identified as catastrophes by ISO's Property Claims Services.

---

## DATA QUALITY

Statistical plan data reported to ISO is first processed through a system of rigorous automated data verification processes so that only valid data is used for ratemaking. Subsequent to this initial data submission review, additional analyses involving an even more customized data review for this line were performed by staff. During these processes, various data records were excluded from the review, corrected or adjusted. Specifically, an on-leveling approach was used to determine aggregate loss costs at current level rather than the extension-of-exposures method for some reported exposures, and various loss cost multipliers have been adjusted prior to their use in the calculations. The ISO staff responsible for this loss cost review also reviewed the data for reasonableness.

## LOSS ADJUSTMENT EXPENSE/LOSS DEVELOPMENT FACTORS

Loss adjustment expense factors have remained the same at 1.100 for BG I, and have changed from 1.120 to 1.125 for BG II and SCL. Loss development factors changed slightly but are still relatively close to unity for all sublines and years.

## LOSS TREND FACTORS

Given below is a comparison of the external trend factors, loss trend adjustments (LTAs) and total loss trend factors for the current and prior reviews.

### External Trend

The prospective annual rates of change based on the external indices (Xactware for Buildings, PPI for Contents, and IMSEP/RSALLES for Time Element) for the current and prior year reviews are:

<u>Coverage</u>	<u>Current Review</u>	<u>Prior Review</u>	<u>Change</u>
Buildings	+2.8%	+2.3%	+0.5%
Contents	+1.5%	+0.9%	+0.6%
Time Element	+0.9%	-0.6%	+1.5%

### Loss Trend Adjustments (LTAs)

The loss trend adjustment factors underlying the current and prior reviews are:

<u>Subline</u>	<u>Current Review</u>			<u>Prior Review</u>		
	<u>Bldg.</u>	<u>Cnts.</u>	<u>TE</u>	<u>Bldg.</u>	<u>Cnts.</u>	<u>TE</u>
Basic Group I	-0.3%	+0.7%	+2.8%	-0.4%	+0.5%	+2.5%
Basic Group II	+0.2%	+0.6%	+2.6%	+0.5%	+0.8%	+2.2%
Special Causes of Loss	+0.2%	+0.0%	+2.8%	+0.3%	+0.5%	+2.5%

### Total Annual Loss Trend

The prospective total annual loss trend factors are given below and are calculated as the product of the external trend factors and loss trend adjustment factors.

<u>Subline</u>	<u>Current Review</u>			<u>Prior Review</u>		
	<u>Bldg.</u>	<u>Cnts.</u>	<u>TE</u>	<u>Bldg.</u>	<u>Cnts.</u>	<u>TE</u>
Basic Group I	+2.5%	+2.2%	+3.7%	+1.9%	+1.4%	+1.9%
Basic Group II	+3.0%	+2.1%	+3.5%	+2.8%	+1.7%	+1.6%
Special Causes of Loss	+3.0%	+1.5%	+3.7%	+2.6%	+1.4%	+1.9%



CHANGE IN  
AVERAGE LOSS  
TREND

The changes in average loss trend from current year to prior year are:

<u>Subline</u>	<u>Change in Average Trend</u>
Basic Group I	+2.5%
Basic Group II	+0.2%
Special Causes of Loss	+0.8%

Average loss trend is calculated as a weighted average of the total loss trend from the midpoint of the experience year to one year past the assumed effective date for each year in the experience period based on the statewide loss cost level review year weights (.10, .15, .20, .25, .30 for BG I and SCL, and 0.10 for all years for BG II). Total loss trend includes the effect of Current Cost Factors to bring losses to the latest level of external cost information, Loss Projection Factors to project from the external cost level to one year past the assumed effective date, and Loss Trend Adjustment factors over the entire trend period.

PREMIUM TREND  
FACTORS

The prospective annual premium trend factors, based on annual changes in amounts of insurance written, for the current and prior reviews are:

<u>Coverage</u>	<u>Current Review</u>	<u>Prior Review</u>	<u>Change</u>
Buildings	+2.6%	+2.0%	+0.6%
Contents	+1.9%	+1.7%	+0.2%
Time Element	+0.6%	+1.0%	-0.4%

NET TREND

The prospective annual net (loss ÷ premium) trend factors for the current and prior year reviews are:

<u>Subline</u>	<u>Current Review</u>	<u>Prior Review</u>	<u>Change</u>
Basic Group I	+0.3%	-0.1%	+0.4%
Basic Group II	+0.6%	+0.6%	0.0%
Special Causes of Loss	+0.3%	+0.2%	+0.1%

BASIC GROUP I

The statewide five year weighted average experience ratio, before credibility weighting, increased by 5.3%, from 0.985 in the prior review to 1.037 in the current review. The increase is due to a higher-than-average experience ratio of 1.198 for 2017 entering the experience period, a 2.2% increase in average loss trend factors, and the implementation of last year's -6.3% monoline decrease. It was partially offset by a 5.6% increase in average Implicit Package Modification Factors (IPMFs). The monoline relativity increased by 5.1%, due to a lower-than-overall monoline experience of 0.446 for 2012 exiting the experience period and a higher-than-overall monoline experience of 1.820 for 2017 entering the experience period.

Statewide Loss Cost Level Review

	<u>Current Review</u>	<u>Prior Review</u>	<u>Ratio</u>
Weighted Experience Ratio	1.037	0.985	1.053
Credibility	0.327	0.329	0.994
Expected Experience Ratio	1.003	0.999	1.004
Coverage Change	1.014	0.994	1.020
Monoline Relativity	0.990	0.942	1.051
Monoline Change	1.005	0.937	1.073

**BASIC GROUP II**

The statewide ten year weighted average experience ratio, before credibility weighting, increased by 3.1%, from 1.164 in the prior review to 1.200 in the current review. The increase is due to a lower-than-average experience ratio of 0.519 for 2007 exiting the experience period and a higher-than-average experience ratio of 1.826 for 2017 entering the experience period. It was partially offset by a 7.3% increase in average Implicit Package Modification Factors (IPMFs). The monoline relativity increased by 11.7%, due to a lower-than-overall monoline experience of 0.337 for 2007 exiting the experience period and a higher-than-overall monoline experience of 3.879 for 2017 entering the experience period.

Statewide Loss Cost Level Review

	<u>Current Review</u>	<u>Prior Review</u>	<u>Ratio</u>
Weighted Experience Ratio	1.200	1.164	1.031
Credibility	0.488	0.470	1.038
Expected Experience Ratio	1.006	1.006	1.000
Coverage Change	1.101	1.080	1.019
Monoline Relativity	1.0415	0.9327	1.117
Monoline Change	1.147	1.007	1.139
Monoline Change incl. Hurricane	1.200	1.164	1.031

**SPECIAL CAUSES  
OF LOSS**

The statewide five year weighted average experience ratio, before credibility weighting, increased by 12.5%, from 0.791 in the prior review to 0.890 in the current review. The increase is due to a lower-than-average experience ratio of 0.551 for 2012 exiting the experience period, a higher-than-average experience ratio of 0.954 for 2017 entering the experience period, and a 10.3% decrease in average Implicit Package Modification Factors (IPMFs). It was partially offset by the implementation of last year's 3.9% monoline increase. The monoline relativity decreased by -0.4%.

Statewide Loss Cost Level Review

	<u>Current Review</u>	<u>Prior Review</u>	<u>Ratio</u>
Weighted Experience Ratio	0.890	0.791	1.125
Credibility	0.321	0.333	0.964
Expected Experience Ratio	1.003	1.002	1.001
Coverage Change	0.967	0.932	1.038
Monoline Relativity	1.110	1.114	0.996
Monoline Change	1.073	1.039	1.033

PROPERTY  
CLAIMS SERVICES  
INFORMATION

The following events have been identified by Property Claims Services as catastrophes occurring in this state from 1/1/1990 through 12/31/2017.

<u>Date From</u>	<u>Date To</u>	<u>Perils</u>
3/13/1990	3/17/1990	Wind, Hail, Tornadoes, Flooding
5/14/1990	5/17/1990	Wind, Hail, Tornadoes, Flooding
5/18/1990	5/21/1990	Wind, Hail, Tornadoes, Flooding
6/6/1990	6/8/1990	Wind, Hail, Tornadoes, Flooding
11/27/1990	11/28/1990	Wind, Hail, Tornadoes, Flooding
3/21/1991	3/23/1991	Wind, Hail, Tornadoes, Flooding
3/26/1991	3/28/1991	Wind, Hail, Tornadoes, Flooding
4/26/1991	4/29/1991	Wind, Hail, Tornadoes, Flooding
5/2/1991	5/6/1991	Wind, Hail, Tornadoes, Flooding
5/10/1991	5/13/1991	Wind, Hail, Tornadoes, Flooding
5/15/1991	5/18/1991	Wind, Hail, Tornadoes, Flooding
5/23/1991	5/26/1991	Wind, Hail, Tornadoes, Flooding
6/21/1991	6/23/1991	Wind, Hail, Tornadoes, Flooding
10/2/1991	10/4/1991	Wind, Hail, Tornadoes
4/10/1992	4/12/1992	Wind, Hail
7/6/1992	7/15/1992	Wind, Hail, Tornadoes, Flooding
4/19/1993	4/19/1993	Wind, Hail, Tornadoes
6/2/1993	6/5/1993	Wind, Hail, Tornadoes, Flooding
6/27/1993	7/3/1993	Wind, Hail, Tornadoes, Flooding
7/8/1993	7/16/1993	Wind, Hail, Tornadoes, Flooding
9/21/1993	9/22/1993	Wind, Hail, Tornadoes
4/9/1994	4/11/1994	Wind, Hail, Tornadoes, Flooding
4/14/1994	4/16/1994	Wind, Hail, Tornadoes
4/25/1994	4/27/1994	Wind, Hail, Tornadoes, Flooding
8/19/1994	8/20/1994	Wind, Hail, Tornadoes, Flooding
4/9/1995	4/11/1995	Wind, Hail, Flooding
4/16/1995	4/18/1995	Wind, Hail, Tornadoes, Flooding
5/7/1995	5/10/1995	Wind, Hail, Tornadoes, Flooding
5/16/1995	5/19/1995	Wind, Hail, Tornadoes, Flooding
6/5/1995	6/11/1995	Wind, Hail, Tornadoes, Flooding
7/2/1995	7/4/1995	Wind, Hail, Tornadoes, Flooding
1/12/1996	1/13/1996	Wind, Snow, Ice, Freezing
1/17/1996	1/20/1996	Wind, Snow, Hail, Tornadoes, Flooding
1/31/1996	2/6/1996	Wind, Snow, Ice, Tornadoes, Flooding
3/24/1996	3/25/1996	Wind, Hail, Tornadoes
4/19/1996	4/22/1996	Wind, Hail, Tornadoes, Flooding
4/27/1996	4/30/1996	Wind, Hail, Tornadoes, Flooding
5/3/1996	5/9/1996	Wind, Hail, Tornadoes, Flooding
5/13/1996	5/14/1996	Wind, Hail, Flooding
5/22/1996	5/23/1996	Wind, Hail, Tornadoes
5/24/1996	5/29/1996	Wind, Hail, Tornadoes, Flooding
10/20/1996	10/23/1996	Wind, Hail, Tornadoes, Flooding, Snow
8/15/1997	8/17/1997	Wind, Hail, Tornadoes, Flooding
4/15/1998	4/17/1998	Hail, Wind, Flooding, Tornadoes
5/22/1998	5/26/1998	Hail, Wind, Flooding, Tornadoes
6/8/1998	6/9/1998	Hail, Wind, Tornadoes
6/11/1998	6/15/1998	Hail, Wind, Flooding, Tornadoes
6/13/1998	6/14/1998	Hail, Wind, Flooding, Tornadoes
6/24/1998	6/30/1998	Hail, Wind, Flooding, Tornadoes
11/9/1998	11/11/1998	Hail, Wind, Flooding, Tornadoes

1/1/1999	1/4/1999	Hail, Snow, Wind, Flooding, Freezing
1/21/1999	1/22/1999	Hail, Wind, Flooding, Tornadoes
4/2/1999	4/4/1999	Hail, Wind, Flooding, Tornadoes
4/8/1999	4/10/1999	Hail, Wind, Tornadoes
5/3/1999	5/7/1999	Hail, Wind, Flooding, Tornadoes
5/31/1999	6/1/1999	Hail, Wind, Flooding, Tornadoes
1/2/2000	1/4/2000	Hail, Wind, Flooding, Tornadoes
4/19/2000	4/20/2000	Hail, Wind, Flooding, Tornadoes
5/8/2000	5/11/2000	Hail, Wind, Flooding, Tornadoes
9/10/2000	9/12/2000	Hail, Wind, Flooding, Tornadoes
2/24/2001	2/25/2001	Hail, Wind, Flooding, Tornadoes
4/6/2001	4/12/2001	Hail, Wind, Flooding, Tornadoes
4/14/2001	4/16/2001	Hail, Wind, Flooding, Tornadoes
5/6/2001	5/7/2001	Hail, Wind, Flooding, Tornadoes
10/23/2001	10/24/2001	Hail, Wind, Flooding, Tornadoes
1/30/2002	2/1/2002	Flooding, Freezing, Hail, Snow, Wind
3/8/2002	3/10/2002	Hail, Tornadoes, Wind
4/24/2002	4/25/2002	Flooding, Hail, Tornadoes, Wind
4/27/2002	5/3/2002	Flooding, Hail, Tornadoes, Wind
5/7/2002	5/9/2002	Flooding, Hail, Tornadoes, Wind
6/10/2002	6/16/2002	Flooding, Hail, Tornadoes, Wind
12/14/2002	12/19/2002	Flooding, Hail, Tornadoes, Wind
4/4/2003	4/8/2003	Flooding, Freezing, Hail, Ice, Snow, Tornadoes, Wind
5/1/2003	5/1/2003	Flooding, Hail, Tornadoes, Wind
5/2/2003	5/11/2003	Flooding, Hail, Tornadoes, Wind
8/31/2003	9/3/2003	Flooding, Hail, Tornadoes, Wind
11/16/2003	11/19/2003	Flooding, Hail, Tornadoes, Wind
4/20/2004	4/22/2004	Flooding, Hail, Tornadoes, Wind
5/21/2004	5/27/2004	Flooding, Hail, Tornadoes, Wind
5/29/2004	6/2/2004	Flooding, Hail, Tornadoes, Wind
1/4/2005	1/6/2005	Flooding, Freezing, Ice, Snow, Wind
4/20/2005	4/24/2005	Flooding, Hail, Tornadoes, Wind
5/6/2005	5/12/2005	Flooding, Hail, Tornadoes, Wind
3/11/2006	3/13/2006	Flooding, Hail, Tornadoes, Wind
4/2/2006	4/3/2006	Hail, Tornadoes, Wind
4/28/2006	4/30/2006	Flooding, Hail, Tornadoes, Wind
7/19/2006	7/21/2006	Flooding, Hail, Tornadoes, Wind
9/22/2006	9/23/2006	Flooding, Hail, Tornadoes, Wind
11/30/2006	12/3/2006	Freezing, Hail, Ice, Snow, Tornadoes, Wind
1/12/2007	1/17/2007	Flooding, Freezing, Ice, Snow, Tornadoes, Wind
5/4/2007	5/8/2007	Flooding, Hail, Tornadoes, Wind
8/7/2007	8/9/2007	Flooding, Hail, Tornadoes, Wind
12/9/2007	12/11/2007	Freezing, Ice
1/4/2008	1/9/2008	Flooding, Freezing, Hail, Ice, Snow, Tornadoes, Wind
1/29/2008	1/30/2008	Hail, Tornadoes, Wind
5/1/2008	5/2/2008	Hail, Tornadoes, Wind
5/10/2008	5/12/2008	Flooding, Hail, Tornadoes, Wind
6/2/2008	6/4/2008	Flooding, Hail, Tornadoes, Wind
6/5/2008	6/8/2008	Flooding, Hail, Tornadoes, Wind
6/15/2008	6/16/2008	Flooding, Hail, Wind
7/2/2008	7/3/2008	Flooding, Hail, Tornadoes, Wind
9/12/2008	9/14/2008	Hurricane Ike - Flooding, Tornadoes, Wind
1/26/2009	1/28/2009	Flooding, Freezing, Ice, Snow
3/7/2009	3/8/2009	Flooding, Hail, Tornadoes, Wind
4/9/2009	4/11/2009	Flooding, Hail, Tornadoes, Wind

5/7/2009	5/9/2009	Flooding, Hail, Tornadoes, Wind
5/13/2009	5/14/2009	Flooding, Hail, Tornadoes, Wind
6/2/2009	6/6/2009	Flooding, Hail, Wind
6/5/2009	6/8/2009	Flooding, Hail, Tornadoes, Wind
6/10/2009	6/18/2009	Flooding, Hail, Tornadoes, Wind
1/7/2010	1/12/2010	Freezing, Wind
4/23/2010	4/25/2010	Hail, Tornadoes, Wind
6/17/2010	6/20/2010	Flooding, Hail, Tornadoes, Wind
9/18/2010	9/19/2010	Flooding, Hail, Wind
2/27/2011	2/28/2011	Flooding, Hail, Tornadoes, Wind
4/3/2011	4/5/2011	Flooding, Hail, Tornadoes, Wind
4/19/2011	4/21/2011	Hail, Tornadoes, Wind
4/22/2011	4/28/2011	Flooding, Hail, Tornadoes, Wind
5/20/2011	5/27/2011	Flooding, Hail, Tornadoes, Wind
6/16/2011	6/22/2011	Flooding, Hail, Tornadoes, Wind
8/18/2011	8/19/2011	Flooding, Hail, Tornadoes, Wind
2/28/2012	2/29/2012	Flooding, Hail, Tornadoes, Wind
3/14/2012	3/15/2012	Hail, Tornadoes, Wind
4/28/2012	4/29/2012	Hail, Tornadoes, Wind
9/7/2012	9/8/2012	Flooding, Hail, Tornadoes, Wind
4/7/13	4/11/13	Flooding, Hail, Ice, Snow, Tornadoes, Wind
4/16/13	4/19/13	Flooding, Hail, Wind
5/18/13	5/22/13	Flooding, Hail, Tornadoes, Wind, Workers Compensation
5/28/13	5/31/13	Flooding, Hail, Tornadoes, Wind
11/17/13	11/18/13	Flooding, Hail, Tornadoes, Wind
1/5/14	1/8/14	Freezing, Ice, Snow, Wind
2/20/14	2/21/14	Hail, Wind
3/27/14	3/29/14	Flooding, Hail, Tornadoes, Wind
4/2/14	4/4/14	Flooding, Hail, Tornadoes, Wind
4/27/14	5/1/14	Flooding, Hail, Tornadoes, Wind
5/7/14	5/9/14	Flooding, Hail, Tornadoes, Wind
5/10/14	5/14/14	Flooding, Hail, Tornadoes, Wind
7/7/14	7/9/14	Flooding, Hail, Wind
3/25/15	3/26/15	Hail, Tornadoes, Wind
4/2/15	4/3/15	Flooding, Hail, Tornadoes, Wind
4/7/15	4/10/15	Flooding, Hail, Tornadoes, Wind
5/15/15	5/17/15	Flooding, Hail, Tornadoes, Wind
12/26/15	12/28/15	Flooding, Hail, Tornadoes, Wind
4/25/16	4/28/16	Flooding, Hail, Tornadoes, Wind
4/29/16	5/3/16	Flooding, Hail, Tornadoes, Wind
5/11/16	5/12/16	Flooding, Hail, Tornadoes, Wind
5/21/16	5/28/16	Flooding, Hail, Tornadoes, Wind
7/13/16	7/15/16	Flooding, Hail, Tornadoes, Wind
2/28/17	3/2/17	Flooding, Hail, Tornadoes, Wind
3/6/17	3/9/17	Flooding, Hail, Tornadoes, Wind
4/4/17	4/6/17	Flooding, Hail, Tornadoes, Wind
4/28/17	5/1/17	Flooding, Hail, Tornadoes, Wind
5/8/17	5/11/17	Flooding, Hail, Tornadoes, Wind
5/27/17	5/28/17	Flooding, Hail, Tornadoes, Wind
6/16/17	6/19/17	Flooding, Hail, Tornadoes, Wind
7/21/17	7/23/17	Flooding, Hail, Tornadoes, Wind
8/5/17	8/8/17	Flooding, Hail, Tornadoes, Wind
10/14/17	10/15/17	Flooding, Hail, Wind
11/5/17	11/6/17	Flooding, Hail, Tornadoes, Wind

PROPERTY  
CLAIMS SERVICES  
INFORMATION  
(cont'd)

ISO's Property Claims Services defines a catastrophe as an event that:

- reaches a threshold dollar amount of total insured property losses, and
- affects a significant number of property and casualty insurance policyholders and property and casualty insurers.

From 1949 to 1981, the threshold was \$1 million. From 1982 to 1996, it was \$5 million, and since January 1, 1997, the threshold has been \$25 million.

All of the events listed above may not have resulted in unexpected loss experience for commercial property coverage in this state since catastrophes are defined based on total insured property losses spreading across state lines and lines of business.

For more information concerning Catastrophe Claims Services, please see "Persons to Contact" in the circular cover letter.

---