

RULES – INFORMATION

JULY 11, 2019

COMMERCIAL MULTIPLE LINE

LI-ML-2019-030

ARIZONA COMMERCIAL PACKAGE POLICY PACKAGE MODIFICATION FACTOR ANALYSIS FURNISHED FOR INFORMATION; EXCEL WORKBOOK NEWLY INCLUDED

KEY MESSAGE

This analysis is provided for your information. We are NOT revising the current package modification factors based on this analysis.

BACKGROUND

In circular [LI-ML-2019-004](#), we provided you with information about the package modification factor review.

ISO ACTION

We are:

- NOT making a submission to the Insurance Department based on this analysis.
- NOT implementing any changes, at this time, to the current package modification factors for this jurisdiction.

COMPANY ACTION

You may wish to evaluate your package modification factor needs. The methods described in the attached analysis are based on the judgments of Insurance Services Office, Inc. You should evaluate and substitute your own judgments and procedures where appropriate, and consider your own loss experience when determining your package modification factor needs.

If you decide to independently file a package modification factor revision, you must comply with the applicable regulatory filing requirements.

REFERENCE(S)

[LI-ML-2019-004](#) (04/03/2019) Commercial Package Policy Experience Reviewed By Staff

ATTACHMENT(S)

- Informational Analysis
- 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.

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DATA QUALITY

Statistical plan data reported to ISO is first processed through a system of rigorous automated data verification procedures so that only valid data would be used for ratemaking. Subsequent to this initial data submission review, additional analyses on the statistical plan data involving an even more customized data review for this line was performed by staff. During these processes, various data records were excluded from the review. The ISO staff responsible for this circular also reviewed the data for reasonableness.

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 rule 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.

CONTACT INFORMATION

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ARIZONA

ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

EXECUTIVE SUMMARY

PURPOSE

This document:

- presents a review of advisory Package Modification Factors (PMFs). PMFs are relativity factors used to adjust monoline loss costs as appropriate for multiline risks.
 - provides the analyses used to derive these advisory PMFs.
-

PMF CHANGES

The proposed Commercial Package Policy (CPP) Package Modification Factor changes are:

<u>Type of Policy</u>	<u>Property</u>	<u>Liability</u>	<u>Prop. & Liab. Total</u>
Motel/Hotel	0.0%	0.0%	0.0%
Apartment	1.1%	4.8%	2.7%
Office	-1.0%	-3.3%	-2.7%
Mercantile	0.0%	-7.1%	-3.7%
Institutional	0.0%	-3.1%	-1.2%
Services	1.0%	1.0%	1.0%
Indust./Proc.	-2.0%	0.0%	-0.9%
Contractors	0.0%	3.3%	2.9%
Statewide	-0.2%	-0.7%	-0.5%

INDICATED VS. CAPPED

Indicated PMF changes are based on standard ISO methodology. Differences between indicated and capped PMF changes are caused by rounding each indicated PMF to the nearest one percent and applying an upper cap of 1.00, where necessary.

ARIZONA

ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

EXECUTIVE SUMMARY

HISTORICAL SOURCE DATA

The data used in this review is from ISO reporting companies for:

- Basic Group I: five fiscal accident years ending 03/31/18.
 - Basic Group II: ten fiscal accident years ending 03/31/18.
 - Special Causes of Loss: five fiscal accident years ending 03/31/18.
 - Crime: calendar year ending 06/30/16.
 - Inland Marine: five calendar accident years ending 12/31/16.
 - Fidelity: policy year ending 12/31/15.
 - Owners, Landlords, and Tenants: five fiscal accident years ending 03/31/18.
 - Manufacturers and Contractors: five fiscal accident years ending 03/31/18.
 - Products: three calendar accident years ending 12/31/17.
 - Local Products and Completed Operations: three calendar accident years ending 12/31/17.
-

PRIOR ISO REVISIONS

The latest revisions in this state are:

<u>Filing</u>	ML-17-RLA1	ML-13-RLA1	ML-09-RLA1
<u>Dates</u>			
Implemented	01/01/2018	01/01/14	02/01/10
<u>Changes</u>			
Indicated	-1.0%	+3.7%	-1.7%
Filed	-1.0%	+3.6%	-1.7%
Implemented	-1.0%	+3.6%	-1.7%

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ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

EXECUTIVE SUMMARY

ADJUSTMENTS TO REPORTED EXPERIENCE

Standard actuarial procedures have been used in the reviews underlying the calculation of the PMFs, including adjusting the fire and liability losses to ultimate settlement level and, for all coverages, reflecting all loss adjustment expenses and trend. Specific procedures vary by subline.

TEN LARGEST GROUPS IN ISO DATA BASE

Insurers are listed in descending order based on the percent of statewide written premium volume from Annual Statement Page 15 for the year ending 12/31/17 for the Annual Statement Line of Business (ASLOB) indicated.

COMMERCIAL MULTI PERIL (ASLOB 51 & 52)

1. Travelers Indemnity Company
 2. Tokio Marine Companies
 3. Liberty Mutual Insurance Company
 4. Continental Casualty Company (CNA)
 5. Cincinnati Insurance Company
 6. Hartford Accident & Indemnity Company
 7. Hanover Insurance Company
 8. Westfield Insurance Company
 9. RLI Insurance Company
 10. Allied Group
-

SIZE OF ISO DATA BASE

The market share of ISO participating insurers as measured by Annual Statement Page 15 written premium for the year ending 12/31/17 is:

Commercial Multi Peril (ASLOB 51 & 52). 49.5%.

ADDITIONAL SUPPORTING MATERIAL

Additional supporting material underlying the calculation of the experience review indications used in this PMF analysis may be found in the respective monoline experience review documents for each line.

STATE NAME

ADVISORY PACKAGE MODIFICATION FACTOR REVIEW

COMMERCIAL PACKAGE POLICY

EXECUTIVE SUMMARY

COMPANY DECISION

We encourage each insurer to decide independently whether the judgments made and the procedures or data used by ISO in developing the PMFs contained herein are appropriate for your 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 a 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 projection based on the aggregate data.

Some calculations included in this document involve areas of ISO staff judgment. Each company should carefully review and evaluate whether the ISO selected PMFs are appropriate for its use.

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

COMMERCIAL PACKAGE POLICY

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COMMERCIAL PACKAGE POLICY

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COMMERCIAL PACKAGE POLICY METHODOLOGY OVERVIEW

OBJECTIVE

A Commercial Package Policy (CPP) is essentially a combination of monoline coverages. CPP pricing employs monoline loss costs modified by Package Modification Factors (PMFs). These factors vary by the eight CPP types of policy and are reviewed annually. Monoline and multiline experience are combined and reviewed via a monoline/multiline relativity analysis. The resulting indicated PMFs represent the loss cost for a CPP relative to that for monoline policies providing the same coverages.

STEP 1: THE RELATIVITY ANALYSES

Each line of insurance develops indicated changes to monoline and multiline aggregate loss costs based on an experience ratio relativity analysis for that coverage. The monoline indication represents the needed change to monoline loss costs. The multiline indication represents the needed change to multiline aggregate loss costs, which is implemented through changes to the PMFs. For this PMF analysis, multiline indications are developed for each line of insurance and Type of Policy. Relativity analyses are explained in Section B.

STEP 2: CALCULATION OF THE PMFs

The procedure described above generates indicated Implicit PMFs (IPMFs) which vary by the various lines of insurance and by type of policy. IPMFs represent what the PMF would be for the CPP risk if only a single coverage were written. For each Type of Policy, IPMFs are weighted by CPP aggregate loss costs to determine the indicated property and liability PMFs. These PMFs may be capped, or rounded to the nearest one percent, and certain component IPMFs appropriately adjusted for this change. These calculations are explained in the remainder of Section A.

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TABLE 1
COMMERCIAL PACKAGE POLICY

SUMMARY OF THIS REVIEW

The display below summarizes the review and shows the capped Package Modification Factors for Property and Liability. For each type of risk, the PMFs are determined to be those factors which when applied to the monoline loss costs produce the appropriate CPP aggregate loss cost level as determined by an analysis of the CPP experience.

TYPE OF POLICY	PROPERTY PMFS			LIABILITY PMFS			PROP. & LIAB. TOTAL
	CURRENT	CAPPED	% CHANGE	CURRENT	CAPPED	% CHANGE	% CHANGE
MOTEL/HOTEL (31)	1.00	1.00	0.0%	1.00	1.00	0.0%	0.0%
APARTMENT (32)	0.92	0.93	1.1%	0.62	0.65	4.8%	2.7%
OFFICE (33)	0.99	0.98	-1.0%	0.91	0.88	-3.3%	-2.7%
MERCANTILE (34)	1.00	1.00	0.0%	0.99	0.92	-7.1%	-3.7%
INSTITUTION (35)	1.00	1.00	0.0%	0.97	0.94	-3.1%	-1.2%
SERVICES (36)	0.99	1.00	1.0%	0.96	0.97	1.0%	1.0%
IND/PROC (37)	0.99	0.97	-2.0%	0.93	0.93	0.0%	-0.9%
CONTRACTORS (38)	0.99	0.99	0.0%	0.92	0.95	3.3%	2.9%
STATEWIDE			-0.2%			-0.7%	-0.5%

ARIZONA
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

MOTEL/HOTEL (31) *****	(1) AGGREG- ATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
<u>COVERAGE</u>					
PROPERTY-					
BASIC GRP I	378,051	1.306	3.4%	1.350	1.296
BASIC GRP II	150,031	0.790	17.1	0.925	0.888
SP CAUSE/LOSS	126,932	0.708	-5.4	0.670	0.643
*CRIME	2,631	0.910	0.0	0.910	0.910
*INL. MAR.	1,051	0.910	0.0	0.910	0.910
*FIDELITY	5,264	1.000	0.0	1.000	1.000
<u>TOTAL</u>	<u>663,960</u>	<u>1.00</u>	<u>4.1%</u>	<u>1.041</u>	<u>1.00</u>
LIABILITY-					
OL&T	1,259,046	1.000	0.9%	1.009	1.000
<u>TOTAL</u>	<u>1,259,046</u>	<u>1.00</u>	<u>0.9%</u>	<u>1.009</u>	<u>1.00</u>
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	1,923,006		2.0%		
 APARTMENT (32) *****	 (1) AGGREG- ATE LOSS COSTS	 (2) CURRENT IMPLICIT PMF	 (3) NET INDICATION	 (4) INDIC. PMF	 (5) CAPPED PMF
<u>COVERAGE</u>					
PROPERTY-					
BASIC GRP I	740,538	0.813	1.0%	0.821	0.824
BASIC GRP II	501,333	0.821	10.4	0.906	0.910
SP CAUSE/LOSS	601,007	1.199	-6.4	1.122	1.126
*CRIME	1,396	0.910	0.0	0.910	0.910
*INL. MAR.	243	0.910	0.0	0.910	0.910
*FIDELITY	79,840	1.000	0.0	1.000	1.000
<u>TOTAL</u>	<u>1,924,357</u>	<u>0.92</u>	<u>0.5%</u>	<u>0.924</u>	<u>0.93</u>
LIABILITY-					
OL&T	1,430,554	0.617	4.9%	0.647	0.647
<u>TOTAL</u>	<u>1,430,554</u>	<u>0.62</u>	<u>4.4%</u>	<u>0.647</u>	<u>0.65</u>
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PROP. & LIAB. TOTAL	3,354,911		2.2%		

* indicates coverage for which reviews are on a MULTISTATE basis.

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TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

OFFICE (33) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	510,474	1.164	4.4%	1.215	1.220
BASIC GRP II	362,702	0.782	8.7	0.850	0.853
SP CAUSE/LOSS	560,634	0.994	-8.5	0.910	0.913
*CRIME	5,191	0.910	0.0	0.910	0.910
*INL. MAR.	26,255	0.910	0.0	0.910	0.910
*FIDELITY	25,981	1.000	0.0	1.000	1.000
TOTAL	1,491,237	0.99	-0.9%	0.981	0.98
LIABILITY-					
OL&T	3,808,113	0.952	-4.9%	0.905	0.906
M&C	165,488	0.505	5.6	0.533	0.533
TOTAL	3,973,601	0.91	-3.6%	0.877	0.88
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	5,464,838		-2.9%		
MERCANTILE (34) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	3,340,257	1.103	6.6%	1.176	1.171
BASIC GRP II	1,415,410	0.729	14.0	0.831	0.828
SP CAUSE/LOSS	2,170,992	1.082	-14.9	0.921	0.917
*CRIME	28,827	0.910	0.0	0.910	0.910
*INL. MAR.	157,091	0.910	0.0	0.910	0.910
*FIDELITY	218,984	1.000	0.0	1.000	1.000
TOTAL	7,331,561	1.00	0.4%	1.004	1.00
LIABILITY-					
OL&T	6,172,840	0.989	-9.7%	0.893	0.897
M&C	643,245	1.118	3.4	1.156	1.161
LOCAL PRODUCT	368,504	1.106	0.1	1.107	1.112
*MULTI PRODUCT	663,581	0.832	2.5	0.853	0.853
TOTAL	7,848,170	0.99	-7.4%	0.917	0.92
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	15,179,731		-3.6%		

* indicates coverage for which reviews are on a MULTISTATE basis.

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TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

INSTITUTION (35) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-					
BASIC GRP I	1,292,864	1.270	3.3%	1.312	1.275
BASIC GRP II	782,069	0.684	21.2	0.829	0.806
SP CAUSE/LOSS	1,040,829	1.057	-8.2	0.970	0.943
*CRIME	13,187	0.910	0.0	0.910	0.910
*INL. MAR.	2,794	0.910	0.0	0.910	0.910
*FIDELITY	103,774	1.000	0.0	1.000	1.000
TOTAL	3,235,517	1.00	2.8%	1.028	1.00
LIABILITY-					
OL&T	1,962,791	0.991	-7.7%	0.915	0.958
M&C	110,679	0.707	-1.2	0.699	0.732
TOTAL	2,073,470	0.97	-7.3%	0.899	0.94
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	5,308,987		-1.2%		

SERVICES (36) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-					
BASIC GRP I	2,565,800	1.119	2.3%	1.145	1.110
BASIC GRP II	1,536,142	1.022	11.2	1.136	1.102
SP CAUSE/LOSS	1,117,286	0.790	-6.6	0.738	0.715
*CRIME	12,165	0.910	0.0	0.910	0.910
*INL. MAR.	20,932	0.910	0.0	0.910	0.910
*FIDELITY	112,957	1.000	0.0	1.000	1.000
TOTAL	5,365,282	0.99	4.1%	1.030	1.00
LIABILITY-					
OL&T	2,913,480	0.910	-5.6%	0.859	0.882
M&C	1,882,399	0.979	0.3	0.982	1.009
LOCAL PRODUCT	1,399,724	1.075	1.6	1.092	1.122
*MULTI PRODUCT	44,021	0.899	1.8	0.915	0.915
TOTAL	6,239,624	0.96	-1.8%	0.943	0.97
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	11,604,906		0.9%		

* indicates coverage for which reviews are on a MULTISTATE basis.

ARIZONA
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

IND/PROC (37) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	1,711,765	1.190	-0.2%	1.188	1.192
BASIC GRP II	432,331	0.630	11.2	0.701	0.703
SP CAUSE/LOSS	729,069	0.912	-13.7	0.787	0.790
*CRIME	1,846	0.910	0.0	0.910	0.910
*INL. MAR.	1,114	0.910	0.0	0.910	0.910
*FIDELITY	49,192	1.000	0.0	1.000	1.000
TOTAL	2,925,317	0.99	-2.6%	0.964	0.97
LIABILITY-					
M&C	2,692,557	0.959	1.2	0.971	0.971
LOCAL PRODUCT	65,917	0.670	2.1	0.684	0.684
*MULTI PRODUCT	1,256,606	0.884	-2.3	0.864	0.864
TOTAL	4,015,080	0.93	-0.1%	0.929	0.93
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	6,940,397		-1.2%		
CONTRACTORS (38) *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE <u>LOSS COSTS</u>	CURRENT IMPLICIT <u>PMF</u>	NET <u>INDICATION</u>	INDIC. <u>PMF</u>	CAPPED <u>PMF</u>
COVERAGE					
PROPERTY-					
BASIC GRP I	518,194	1.087	5.0%	1.141	1.146
BASIC GRP II	308,176	0.853	9.0	0.930	0.933
SP CAUSE/LOSS	532,877	0.992	-10.3	0.890	0.893
*CRIME	1,743	0.910	0.0	0.910	0.910
*INL. MAR.	2,291	0.910	0.0	0.910	0.910
*FIDELITY	55,302	1.000	0.0	1.000	1.000
TOTAL	1,418,583	0.99	-0.2%	0.988	0.99
LIABILITY-					
M&C	7,055,853	0.911	0.8	0.918	0.919
LOCAL PRODUCT	5,806,299	0.933	4.8	0.978	0.978
TOTAL	12,862,152	0.92	2.7%	0.945	0.95
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	14,280,735		2.4%		

* indicates coverage for which reviews are on a MULTISTATE basis.

ARIZONA
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS (PMF)

STATEWIDE *****	(1)	(2)	(3)	(4)	(5)
	AGGREGATE	CURRENT	NET	INDIC.	CAPPED
COVERAGE	<u>LOSS COSTS</u>	<u>IMPLICIT</u>	<u>INDICATION</u>	<u>PMF</u>	<u>PMF</u>
PROPERTY-		PMF			
BASIC GRP I	11,057,943	1.118	3.5%	1.157	1.143
BASIC GRP II	5,488,194	0.795	13.1	0.900	0.888
SP CAUSE/LOSS	6,879,626	0.985	-10.6	0.880	0.871
*CRIME	66,986	0.910	0.0	0.910	0.910
*INL. MAR.	211,771	0.910	0.0	0.910	0.910
*FIDELITY	651,294	1.000	0.0	1.000	1.000
TOTAL	24,355,814	0.990	1.0%	1.000	0.989
LIABILITY-					
OL&T	17,546,824	0.923	-5.8%	0.870	0.879
M&C	12,550,221	0.927	1.0	0.936	0.941
LOCAL PRODUCT	7,640,444	0.960	4.0	0.998	1.004
*MULTI PRODUCT	1,964,208	0.866	-0.6	0.861	0.861
TOTAL	39,701,697	0.927	-1.4%	0.914	0.921
-----	-----	-----	-----	-----	-----
PROP. & LIAB. TOTAL	64,057,511		-0.5%		

* indicates coverage for which reviews are on a MULTISTATE basis.

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TABLE 2

COMMERCIAL PACKAGE POLICY

COMBINED PMFs

<u>TYPE OF POLICY</u>	<u>CURRENT COMBINED</u>	<u>INDICATED COMBINED</u>	<u>CAPPED COMBINED</u>
MOTEL/HOTEL (31)	1.00	1.020	1.00
APARTMENT (32)	0.75	0.779	0.78
OFFICE (33)	0.93	0.904	0.91
MERCANTILE (34)	0.99	0.959	0.96
INSTITUTION (35)	0.99	0.977	0.98
SERVICES (36)	0.97	0.982	0.98
IND/PROC (37)	0.95	0.943	0.94
CONTRACTORS (38)	0.93	0.949	0.95

NOTE: Combined PMFs are provided for informational purposes only.

EXPLANATORY NOTES TO TABLE 2

CALCULATION OF REVISED PACKAGE MODIFICATION FACTORS

OBJECTIVE	<p>Commercial package policies were introduced in the 1960's as a convenient tool for both insurer and insured to have the many types of insurance needed by commercial risks packaged under one cover. Thus fire, extended coverage, crime, liability insurance, etc. could be written using a single policy instead of several. Today, virtually any type of monoline coverage can also be purchased as part of a package policy such as the CPP.</p> <p>The types of insured which can be written under a CPP are generally categorized into the following Types of Policy:</p> <ul style="list-style-type: none">. Motels and Hotels (TOP 31). Apartments (TOP 32). Offices (TOP 33). Mercantile Operations (TOP 34). Institutions (TOP 35). Service Operations (TOP 36). Industrial and Processing Operations (TOP 37). Contractors (TOP 38)
PRICING OF POLICIES	<p>Since a CPP is essentially a combination of monoline coverages, CPP pricing employs monoline loss costs modified by PMFs (Package Modification Factors). These factors vary by the categories shown above and are reviewed annually.</p>
CPP PMF REVIEW PROCEDURE	<p>The CPP review of Package Modification Factors, which appears in Table 2 of this document, determines the appropriate PMF loss cost level for each of the eight CPP categories. This is done by combining the indications of the simultaneous reviews of monoline and multiline experience for the various lines (or coverages).</p> <p>A detailed explanation of the calculation of the revised PMFs follows.</p>

EXPLANATORY NOTES TO TABLE 2 (Cont'd)

LINES OF INSURANCE (COVERAGES) INCLUDED

The CPP review reflects the contribution from each significant coverage which can be written on a CPP. Included are:

Property Coverages

- . Basic Group I (BGI) - the predominant property coverage included.
- . Basic Group II (BGII) - both Basic Group I and Basic Group II must be purchased under a CPP contract.
- . Special Causes of Loss (SCL) - typically a type of insurance which is purchased in addition to Basic Group I and Basic Group II in order to provide "all risk" property coverage for the insured.
- . Crime (CRIME) - Crime insurance is a commonly purchased CPP coverage.
- . Inland Marine (INL. MAR.) - A highly specialized line of property insurance, Inland Marine coverages can be purchased as part of a package policy.
- . Fidelity (FIDELITY) - Certain forms of fidelity insurance can be part of the CPP package. Various forms of employee dishonesty coverage are available.

Liability Coverages

- . Owners, Landlords and Tenants (OL&T) Liability - this is the prevalent type of Premises/Operations liability for CPP insureds.
- . Manufacturers and Contractors Liability (M&C) - this is the type of Premises/Operations liability insurance for risks whose liability exposure is more heavily off-premises than on.
- . Products/Completed Operations Liability (PROD) - this type of insurance protects against claims for damages arising from products/completed operations in conjunction with an insured's business. For review purposes, this line of insurance is split into the following two categories:
 - Products: experience for this category is reviewed on a multistate basis.
 - Local Products/ Completed Operations: experience for this category reflects an exposure to loss which is local in nature; therefore, individual state experience is used.

EXPLANATORY NOTES TO TABLE 2 (Cont'd)

THE IMPLICIT PACKAGE MODIFICATION FACTOR

For each applicable coverage listed under each of the eight (8) CPP categories, a "current implicit PMF" is shown in column (2). The definition of this factor follows:

For a given CPP category (e.g., apartments) the published Package Modification Factor (PMF) represents the loss cost for a CPP relative to that for monoline policies providing the same coverages. Thus a property (liability) PMF of .80 represents a 20% lower aggregate loss cost for a CPP than for the comparable monoline policies. This PMF, however, represents the CPP "loss cost" for all property (liability) coverages combined. Based on CPP experience, it has been determined that this CPP "loss cost" can differ significantly if it is determined for each property (liability) coverage individually. The IPMF represents what the PMF would be for that CPP risk if only a single coverage were written. The use of the IPMF in monoline/multiline ratemaking and in the determination of revised CPP Package Modification Factors is significant in that it appropriately identifies how different the component parts of the multiline "loss cost" are.

THE MULTILINE INDICATION

Under the CPP ratemaking procedures, monoline and multiline experience are combined for each coverage. The results of these coverage analyses are indicated changes to monoline loss costs and also indicated CPP aggregate loss cost level changes. The CPP indications by coverage are then incorporated in the CPP PMF review. These indications (shown in column (3)) represent the needed adjustments to the IPMFs (shown in column (2)) described above.

The development of these indications is detailed in Section B.

THE INDICATED PMF

For each CPP category (and for property vs. liability), the indicated PMF is calculated as follows:

Each of the current IPMFs in column (2) is multiplied by the indicated percent change shown in column (3). A weighted average of the indicated IPMFs, using weights based on latest year aggregate loss costs at current ISO loss cost level (column (1) divided by column (2)), yields the indicated PMF at the bottom of column (4).

THE CAPPED PMF

The indicated PMF for each category (and for property vs. liability) shown at the bottom of column (4) is limited to a maximum of 1.00 in arriving at the proposed PMF (bottom of column (5)). All indicated PMFs which are below 1.00 are rounded to the nearest .01 in determining the proposed PMF. To the extent that any indicated PMFs are capped at 1.00, indicated PMFs below this value are adjusted in order to minimize any revenue changes which would result from capping.

In addition to the adjustments just described, the IPMFs (for property and liability) shown in column (4) are subject to minimum and maximum values and adjusted in column (5) so that they average to the proposed PMF shown at the bottom of column (5).

COMMERCIAL PACKAGE POLICY

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TABLE 3 - BASIC GROUP I RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	(5)
TOP	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	INDICATED CHANGE *
10	0.530	0.050	0.969	0.969	
31	1.070	0.019	1.001	1.002	+3.4%
32	0.528	0.034	0.979	0.979	+1.0%
33	1.598	0.024	1.011	1.012	+4.4%
34	1.246	0.144	1.032	1.033	+6.6%
35	1.008	0.061	1.000	1.001	+3.3%
36	0.914	0.111	0.990	0.991	+2.3%
37	0.653	0.079	0.967	0.967	-0.2%
38	1.855	0.026	1.016	1.017	+5.0%
RATING GROUP					
01	2.086	0.066	1.050	1.065	
02	2.149	0.029	1.022	1.037	
03	0.833	0.091	0.984	0.997	
04	0.874	0.293	0.961	0.975	
06	1.015	0.061	1.001	1.015	
07	0.878	0.029	0.996	1.010	
08	0.647	0.148	0.938	0.951	
09	1.783	0.126	1.076	1.091	
10	1.215	0.049	1.010	1.024	
11	0.907	0.012	0.999	1.013	
13	0.923	0.047	0.996	1.010	
14	0.789	0.089	0.979	0.993	
15	0.701	0.047	0.983	0.997	
17	0.661	0.026	0.989	1.003	
18	1.086	0.022	1.002	1.016	
21	0.673	0.080	0.969	0.983	
22	0.727	0.075	0.976	0.990	

	(1)	(2)	(3)	(4)
TERRITORY	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY
Phoenix	1.433	0.225	1.084	1.096
Tucson	0.481	0.103	0.927	0.937
Balance of State (Arizona)	0.905	0.409	0.960	0.970

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

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TABLE 4 - SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

	(1)	(2)	(3)	(4)	(5)
	\$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	INDICATED CHANGE *
TOP					
10	2.219	0.096	1.080	1.106	
31	3.990	0.015	1.021	1.046	-5.4%
32	1.176	0.062	1.010	1.035	-6.4%
33	0.814	0.060	0.988	1.012	-8.5%
34	0.664	0.208	0.918	0.941	-14.9%
35	0.926	0.120	0.991	1.015	-8.2%
36	1.065	0.128	1.008	1.033	-6.6%
37	0.461	0.092	0.931	0.954	-13.7%
38	0.615	0.065	0.969	0.992	-10.3%
CATEGORY					
01	1.024	0.595	1.014	1.013	
02	0.157	0.049	0.913	0.913	
03	0.470	0.103	0.925	0.924	
04	0.443	0.118	0.908	0.908	
05	1.327	0.106	1.030	1.030	
06	0.740	0.035	0.990	0.989	
07	2.487	0.016	1.015	1.014	
08	0.664	0.071	0.971	0.971	
09	0.780	0.122	0.970	0.969	
10	1.208	0.029	1.005	1.005	
11	1.596	0.099	1.047	1.047	
12	0.732	0.092	0.972	0.971	
13	2.435	0.060	1.055	1.054	
14	1.219	0.105	1.021	1.020	

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

EXPLANATORY NOTES TO TABLES 3 AND 4

BASIC GROUP I AND SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

OBJECTIVE

The explanations which follow clarify Tables 3 and 4, 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 need for Special Causes of Loss;
- (3) determine indicated changes to the eight property CPP Package Modification Factors 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 PMF); 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, or 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 3 AND 4 (Cont'd)

COLUMN (1)
(Cont'd)

The procedure uses 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 5 for Basic Group I and Table 6 for Special Causes of Loss). Specifically, the iteration procedure uses the following formulas:

BASIC GROUP I:

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

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

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

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (1)
(Cont'd)

SPECIAL CAUSES OF LOSS:

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

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

- 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 or Category and k th Territory;
- R_{ijk} is the experience ratio relativity for the i th Type of Policy, j th Rating Group or Category and k th Territory;
- R_{ij} is the experience ratio relativity for the i th Type of Policy, j th Rating Group or Category;

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (1) (Cont'd)

- 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 is the 5-year adjusted aggregate 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.

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.

EXPLANATORY NOTES TO TABLES 3 AND 4 (Cont'd)

COLUMN (4)

BALANCED RELATIVITIES

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

MULTILINE
CONSIDERATIONS

The type of policy (TOP) relativities are used to generate multiline indications which apply to the current Implicit Package Modification Factors (IPMFs). The indicated IPMFs are calculated as follows:

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

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 re-performed to take this into account. If an IPMF has been capped it is so noted at the bottom of Table 3 and Table 4.

Loss cost changes for each TOP are calculated as described on Tables 3 and 4.

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BASIC GROUP I RELATIVITY ANALYSIS

TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 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	53,470	368,390	3.974	1.548	1.341
	02 OTHER HABITATIONAL	15,674	118,947	0.608	0.599	0.519
	03 RESTAURANTS & BARS	38,485	279,692	0.213	0.508	0.440
	04 OTHER MERCANTILE RS	283,052	1,577,908	0.403	0.647	0.560
	06 CHURCHES	3,717	13,837	0.567	0.607	0.526
	07 SCHOOLS	19,412	107,656	0.021	0.571	0.494
	08 OFFICES AND BANKS	125,396	644,025	0.166	0.586	0.507
	09 REC. FACILITIES	72,954	430,981	1.038	0.729	0.631
	10 HOTELS AND MOTELS	16,508	88,030	2.112	0.791	0.685
	11 HOSPITALS/NURS HOME	13,016	76,393	0.021	0.483	0.418
	13 MOTOR VEHICLE RISKS	44,920	216,880	0.216	0.538	0.465
	14 OTHER NON-MANUF.	98,781	508,667	1.633	0.813	0.704
	15 STORAGE	36,265	201,498	0.061	0.560	0.485
	17 FOOD MANUFACTURING	23,486	71,916	0.000	0.518	0.448
	18 WOOD MANUFACTURING	14,526	79,132	0.000	0.867	0.751
	21 METAL MANUFACTURING	35,688	212,701	0.125	0.725	0.628
	22 OTHER MANUFACTURING	49,845	248,391	0.031	0.486	0.421
	TOTAL*	945,195	5,245,044	0.696	0.692	0.599
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	378,051	1,975,324	2.850	1.617	1.400
	TOTAL*	378,051	1,975,324	2.850	1.617	1.400
32 MULTILINE APARTMENT	01 APARTMENTS	525,277	2,477,387	2.066	1.447	1.253
	02 OTHER HABITATIONAL	215,261	1,058,581	1.821	1.395	1.208
	TOTAL*	740,538	3,535,968	1.995	1.432	1.240
33 MULTILINE OFFICE	08 OFFICES AND BANKS	510,474	2,492,859	0.971	1.277	1.105
	TOTAL*	510,474	2,492,859	0.971	1.277	1.105
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	582,651	3,219,818	0.900	1.268	1.098
	04 OTHER MERCANTILE RS	2,136,390	10,906,658	1.550	1.379	1.193
	08 OFFICES AND BANKS	118,842	626,039	0.860	1.310	1.134
	13 MOTOR VEHICLE RISKS	123,019	320,729	0.038	1.080	0.935
	14 OTHER NON-MANUF.	74,854	387,531	0.000	1.167	1.010
	15 STORAGE	304,501	1,335,228	0.089	1.106	0.957
	TOTAL*	3,340,257	16,796,003	1.189	1.316	1.139

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BASIC GROUP I RELATIVITY ANALYSIS

TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 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	2,595	34,678	0.000	0.999	0.865
	06 CHURCHES	437,212	2,607,069	1.166	1.294	1.121
	07 SCHOOLS	281,658	1,086,015	0.140	1.144	0.990
	08 OFFICES AND BANKS	248,356	1,113,629	0.269	1.239	1.073
	09 REC. FACILITIES	114,318	659,031	2.882	1.538	1.331
	11 HOSPITALS/NURS HOME	91,208	429,790	0.411	1.096	0.949
	13 MOTOR VEHICLE RISKS	1,331	10,384	0.000	1.068	0.925
	14 OTHER NON-MANUF.	116,186	551,481	0.054	1.057	0.915
	TOTAL*	1,292,864	6,492,077	0.765	1.236	1.070
36 MULTILINE SERVICES	03 RESTAURANTS & BARS	119,711	507,747	1.326	1.257	1.088
	04 OTHER MERCANTILE RS	317,503	1,660,538	1.847	0.752	0.651
	08 OFFICES AND BANKS	239,955	1,229,347	0.316	0.670	0.580
	09 REC. FACILITIES	942,242	4,683,898	1.653	1.657	1.435
	13 MOTOR VEHICLE RISKS	328,788	1,427,497	1.416	1.024	0.887
	14 OTHER NON-MANUF.	434,597	2,061,648	0.666	0.834	0.722
	15 STORAGE	100,443	426,483	0.019	0.707	0.612
	21 METAL MANUFACTURING	32,878	159,193	0.190	0.860	0.745
	22 OTHER MANUFACTURING	49,683	291,934	0.036	0.774	0.671
	TOTAL*	2,565,800	12,448,285	1.225	1.149	0.995
37 MULTILINE INDUST/PROCESS	04 OTHER MERCANTILE RS	104,755	541,337	0.023	0.693	0.600
	08 OFFICES AND BANKS	39,701	189,139	0.075	0.795	0.688
	13 MOTOR VEHICLE RISKS	3,206	9,915	0.000	0.890	0.771
	14 OTHER NON-MANUF.	42,853	215,705	0.102	0.827	0.716
	15 STORAGE	2,206	19,427	0.000	0.479	0.414
	17 FOOD MANUFACTURING	224,823	1,016,811	0.059	0.557	0.482
	18 WOOD MANUFACTURING	173,291	839,161	0.746	1.010	0.875
	21 METAL MANUFACTURING	616,570	3,087,163	0.103	0.527	0.456
	22 OTHER MANUFACTURING	504,360	2,688,559	0.799	0.642	0.555
	TOTAL*	1,711,765	8,607,217	0.362	0.638	0.553
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	339,407	1,851,360	2.489	2.118	1.834
	08 OFFICES AND BANKS	136,927	650,501	0.261	0.712	0.616
	14 OTHER NON-MANUF.	41,860	182,309	0.802	0.900	0.779
	TOTAL*	518,194	2,684,170	1.764	1.648	1.427

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BASIC GROUP I RELATIVITY ANALYSIS

TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) Z-WEIGHTED EXPERIENCE RATIO	(5) Z-WEIGHTED RELATIVITY
TOTAL ALL TOPS*	01 APARTMENTS	578,747	2,845,777	2.242	1.457	1.261
	02 OTHER HABITATIONAL	233,530	1,212,206	1.720	1.337	1.158
	03 RESTAURANTS & BARS	740,847	4,007,257	0.933	1.227	1.062
	04 OTHER MERCANTILE RS	3,181,107	16,537,801	1.528	1.307	1.132
	06 CHURCHES	440,929	2,620,906	1.161	1.289	1.116
	07 SCHOOLS	301,070	1,193,671	0.133	1.107	0.958
	08 OFFICES AND BANKS	1,419,651	6,945,539	0.564	1.041	0.902
	09 REC. FACILITIES	1,129,514	5,773,910	1.737	1.585	1.373
	10 HOTELS AND MOTELS	394,559	2,063,354	2.819	1.582	1.370
	11 HOSPITALS/NURS HOME	104,224	506,183	0.363	1.020	0.883
	13 MOTOR VEHICLE RISKS	501,264	1,985,405	0.957	0.993	0.860
	14 OTHER NON-MANUF.	809,131	3,907,341	0.612	0.897	0.777
	15 STORAGE	443,415	1,982,636	0.071	0.968	0.838
	17 FOOD MANUFACTURING	248,309	1,088,727	0.053	0.553	0.479
	18 WOOD MANUFACTURING	187,817	918,293	0.688	0.999	0.865
	21 METAL MANUFACTURING	685,136	3,459,057	0.109	0.553	0.479
	22 OTHER MANUFACTURING	603,888	3,228,884	0.673	0.640	0.554
	TOTAL*	12,003,138	60,276,947	1.112	1.155	1.000

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

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SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
<hr/>					
10 MONOLINE	01 BUILDINGS	393,819	2,181,505	1.985	2.430
	02 RES. APTS. AND COND	15,945	76,520	0.237	0.290
	03 OFFICES	86,993	480,299	0.498	0.610
	04 MERCANTILE - HIGH	80,165	401,722	0.379	0.464
	05 MERCANTILE - MEDIUM	16,983	90,845	9.744	11.927
	06 MERCANTILE - LOW	12,164	56,735	0.893	1.093
	07 MOTELS AND HOTELS	5,810	35,656	0.000	0.000
	08 INSTITUTIONAL - HIG	20,954	98,064	0.721	0.882
	09 INSTITUTIONAL - LOW	30,550	160,960	0.010	0.012
	10 INDUST-PROC - HIGH	10,880	51,492	0.000	0.000
	11 INDUST-PROC - LOW	34,686	190,308	0.210	0.257
	12 SERVICE - HIGH	19,805	108,787	0.103	0.126
	13 SERVICE - LOW	28,319	164,186	0.912	1.116
	14 CONTRACTORS	22,780	149,250	1.169	1.431
	TOTAL*	779,853	4,246,329	1.427	1.747
31 MULTILINE	01 BUILDINGS	93,431	424,291	3.375	4.131
MOTEL/HOTEL	07 MOTELS AND HOTELS	33,501	201,843	8.332	10.198
	TOTAL*	126,932	626,134	4.683	5.732
32 MULTILINE	01 BUILDINGS	442,765	1,968,581	1.002	1.226
APARTMENT	02 RES. APTS. AND COND	158,242	694,889	0.155	0.190
	TOTAL*	601,007	2,663,470	0.779	0.953
33 MULTILINE	01 BUILDINGS	317,857	1,456,851	0.662	0.810
OFFICE	03 OFFICES	226,175	1,071,956	0.454	0.556
	08 INSTITUTIONAL - HIG	4,353	25,670	2.515	3.078
	12 SERVICE - HIGH	12,249	20,679	0.000	0.000
	14 CONTRACTORS	0	78	0.000	0.000
	TOTAL*	560,634	2,575,234	0.578	0.707

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SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
34 MULTILINE MERCANTILE	01 BUILDINGS	1,521,697	6,800,310	0.568	0.695
	03 OFFICES	10,783	29,946	0.052	0.064
	04 MERCANTILE - HIGH	222,683	1,429,385	0.435	0.532
	05 MERCANTILE - MEDIUM	307,051	1,683,852	0.659	0.807
	06 MERCANTILE - LOW	90,990	453,560	0.420	0.514
	08 INSTITUTIONAL - HIG	242	5,224	0.000	0.000
	11 INDUST-PROC - LOW	213	366	0.000	0.000
	12 SERVICE - HIGH	8,484	41,221	2.815	3.446
	13 SERVICE - LOW	5,551	25,475	0.181	0.222
	14 CONTRACTORS	3,298	22,648	0.392	0.480
	TOTAL*	2,170,992	10,491,987	0.566	0.693
35 MULTILINE INSTITUTIONAL	01 BUILDINGS	502,459	2,676,971	0.777	0.951
	03 OFFICES	352	1,859	0.000	0.000
	04 MERCANTILE - HIGH	408	770	0.000	0.000
	06 MERCANTILE - LOW	77	365	0.000	0.000
	08 INSTITUTIONAL - HIG	199,331	944,740	0.529	0.647
	09 INSTITUTIONAL - LOW	328,538	1,791,505	0.635	0.777
	12 SERVICE - HIGH	1,574	7,992	1.169	1.431
	13 SERVICE - LOW	7,391	33,159	0.443	0.542
	14 CONTRACTORS	699	3,830	0.000	0.000
	TOTAL*	1,040,829	5,461,191	0.682	0.835
36 MULTILINE SERVICES	01 BUILDINGS	729,073	3,430,818	0.880	1.077
	03 OFFICES	4,746	18,039	7.136	8.734
	04 MERCANTILE - HIGH	7,972	29,921	0.026	0.032
	05 MERCANTILE - MEDIUM	1,321	5,266	0.000	0.000
	06 MERCANTILE - LOW	2,039	6,570	1.931	2.364
	08 INSTITUTIONAL - HIG	17,324	78,028	0.000	0.000
	09 INSTITUTIONAL - LOW	23,722	129,375	0.000	0.000
	10 INDUST-PROC - HIGH	0	173	0.000	0.000
	11 INDUST-PROC - LOW	1,727	6,808	0.000	0.000
	12 SERVICE - HIGH	181,248	1,333,808	0.678	0.830
	13 SERVICE - LOW	129,580	723,741	2.519	3.083
	14 CONTRACTORS	18,534	86,731	0.000	0.000
	TOTAL*	1,117,286	5,849,278	1.010	1.236

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SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
37 MULTILINE INDUST/PROC	01 BUILDINGS	393,135	2,126,996	0.223	0.273
	03 OFFICES	7,183	22,610	0.000	0.000
	04 MERCANTILE - HIGH	5,541	26,239	0.726	0.889
	05 MERCANTILE - MEDIUM	940	4,242	0.000	0.000
	06 MERCANTILE - LOW	9	9	0.000	0.000
	08 INSTITUTIONAL - HIG	51	290	0.000	0.000
	10 INDUST-PROC - HIGH	70,241	393,672	0.721	0.882
	11 INDUST-PROC - LOW	249,738	1,456,902	0.866	1.060
	12 SERVICE - HIGH	513	2,508	0.000	0.000
	13 SERVICE - LOW	1,245	5,104	0.000	0.000
	14 CONTRACTORS	473	2,050	0.000	0.000
	TOTAL*	729,069	4,040,622	0.492	0.602
38 MULTILINE CONTRACTORS	01 BUILDINGS	195,526	1,001,335	0.430	0.526
	03 OFFICES	22,605	100,456	1.647	2.016
	04 MERCANTILE - HIGH	25,104	111,823	0.214	0.262
	05 MERCANTILE - MEDIUM	784	2,023	0.000	0.000
	06 MERCANTILE - LOW	8,279	31,914	2.451	3.000
	08 INSTITUTIONAL - HIG	180	575	0.000	0.000
	11 INDUST-PROC - LOW	454	1,634	0.000	0.000
	12 SERVICE - HIGH	1,120	4,628	0.000	0.000
	13 SERVICE - LOW	1,087	2,923	0.000	0.000
	14 CONTRACTORS	277,738	1,504,365	0.659	0.807
	TOTAL*	532,877	2,761,676	0.619	0.758

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SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS
TABLE 6 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	CATEGORY	(1) ACCIDENT YEAR ENDING 03/31/18 AGGREGATE LOSS COSTS	(2) 5 - YEAR AGGREGATE LOSS COSTS	(3) 5 - YEAR EXPERIENCE RATIO	(4) RELATIVITY
<hr/>					
TOTAL ALL TOPS*	01 BUILDINGS	4,589,762	22,067,658	0.832	1.018
	02 RES. APTS. AND COND	174,187	771,409	0.163	0.200
	03 OFFICES	358,837	1,725,165	0.607	0.743
	04 MERCANTILE - HIGH	341,873	1,999,860	0.400	0.490
	05 MERCANTILE - MEDIUM	327,079	1,786,228	1.125	1.377
	06 MERCANTILE - LOW	113,558	549,153	0.646	0.791
	07 MOTELS AND HOTELS	39,311	237,499	7.101	8.692
	08 INSTITUTIONAL - HIG	242,435	1,152,591	0.542	0.663
	09 INSTITUTIONAL - LOW	382,810	2,081,840	0.546	0.668
	10 INDUST-PROC - HIGH	81,121	445,337	0.624	0.764
	11 INDUST-PROC - LOW	286,818	1,656,018	0.779	0.953
	12 SERVICE - HIGH	224,993	1,519,623	0.670	0.820
	13 SERVICE - LOW	173,173	954,588	2.059	2.520
	14 CONTRACTORS	323,522	1,768,952	0.652	0.798
	TOTAL*	7,659,479	38,715,921	0.817	1.000

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

EXPLANATORY NOTES TO TABLES 5 AND 6

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

INTRODUCTION The experience used in the relativity analysis and displayed in Tables 5 and 6 is the latest five years of accident year data as 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.

COLUMN (1) AGGREGATE LOSS COSTS

The latest year adjusted 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 formulae used in the simultaneous review procedure.

COLUMN (2) 5 - YEAR AGGREGATE LOSS COSTS

The combined five-year adjusted aggregate loss costs (adjusted as described above) are used to calculate the experience ratios in column (3).

COLUMN (3) FIVE-YEAR EXPERIENCE RATIOS

These are the ratio 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).

COLUMN (4) CREDIBILITY (Z) WEIGHTED EXPERIENCE RATIO

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).

EXPLANATORY NOTES TO TABLES 5 AND 6 (Cont'd)

COLUMN (4)
(Cont'd)

The important concept underlying empirical Bayesian credibility is that the credibility should depend both on the overall variation of the group of which the cell is a member, in addition to the variation of the yearly experience ratios for each cell. Therefore, if a cell's data is itself very stable then we would assign a relatively high credibility value, 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.

The calculated credibility (Z) is then applied to the five-year experience ratio with the complement of credibility applied to the credibility-weighted average of the individual experience ratios of the group, where group refers to the specified TOP/territory group. In a non-territory state, K values would be determined for the three TOP groups on an entire state basis.

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.

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TABLE 7 - BASIC GROUP II RELATIVITY ANALYSIS

	(1) ACCIDENT YEAR ENDING 03/31/18 AGGR. LOSS COSTS AT CURRENT IMPLICIT PMF	(2) ACCIDENT YEARS 2009-2018 EXPER. RATIO AT CURRENT PMF A	(3) FORMULA RELATIVITY (2) / 1.086	(4) CREDI- BILITY Z C	(5) Z WEIGHTED RELA- TIVITY D	(6) BALANCED FORMULA RELA- TIVITY E	(7) NORMALIZED FORMULA RELA- TIVITY F	(8) INDICATED CHANGE G
MONOLINE	703,458	0.503	0.463	0.152	0.918	0.918	0.8953	
MULTILINE	5,488,194	1.161	1.069	0.564	1.039	1.039	1.0130	
COVERAGE	6,191,652	1.086	1.000			1.0253 B	0.9996	
MULTILINE TOP								
31 MOTEL/HOTEL	150,031	2.422	2.230	0.040	1.049	1.075	1.0485	+17.1%
32 APARTMENT	501,333	0.954	0.878	0.090	0.989	1.013	0.9880	+10.4%
33 OFFICE	362,702	0.698	0.643	0.072	0.974	0.998	0.9734	+8.7%
34 MERCANTILE	1,415,410	1.180	1.087	0.246	1.021	1.046	1.0202	+14.0%
35 INSTITUTIONAL	782,069	1.637	1.507	0.170	1.086	1.113	1.0855	+21.2%
36 SERVICES	1,536,142	1.070	0.985	0.259	0.996	1.021	0.9958	+11.2%
37 INDUST/PROCESS	432,331	1.044	0.961	0.104	0.996	1.021	0.9958	+11.2%
38 CONTRACTORS	308,176	0.745	0.686	0.072	0.977	1.001	0.9763	+9.0%
	5,488,194	1.161 B	1.069		1.014 B	1.039 B	1.0130	

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) * (1.039/1.014)

F - (7) = (6) / 1.0253

G - (8) = (NORMALIZED FORMULA RELATIVITY FOR TOP) / (NORMALIZED FORMULA MONOLINE (TOP 10) RELATIVITY) - 1

EXPLANATORY NOTES TO TABLE 7

BASIC GROUP II RELATIVITY ANALYSIS

OBJECTIVE

The explanations which follow clarify Table 7, 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 property Commercial Package Policy (CPP) Package Modification Factors (PMFs) based on Basic Group II experience.

COLUMN (1)

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)

10 - YEAR EXPERIENCE RATIO

These experience ratios are the ratio of the combined ten year CSP adjusted incurred losses (adjusted to current deductible and prospective cost levels including loss development, and also adjusted to reflect the BGII 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.

EXPLANATORY NOTES TO TABLE 7 (Cont'd)

COLUMN (3)
(Cont'd)

Unlike the BGI and SCL relativity analyses, the BGII 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.

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 adjusted aggregate 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 and the monoline balanced formula relativity, divided by the current IPMF.

EXPLANATORY NOTES TO TABLE 7 (Cont'd)

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)

INDICATED LOSS COST CHANGES

The indicated multiline (by TOP) changes are calculated by taking the ratio of the TOP relativity (Column 7) to the monoline relativity.

For each 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.

CRIME AND FIDELITY

The reviews for Burglary and Theft and for Fidelity are done on a multistate basis, combining both multiline and monoline experience. However, unlike other coverages included in a Commercial Package Policy, there is no simultaneous review procedure for either Burglary and Theft or for Fidelity in which separate loss cost level changes can be determined for multiline and monoline experience. In the absence of a simultaneous review procedure, we are unable to determine Type of Policy relativities with which to price CPP policies relative to monoline policies and therefore have assumed a multiline change of 0.0% and thus no change to the historic Crime or Fidelity IPMFs.

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TABLE 8

COMMERCIAL I.M. RELATIVITY ANALYSIS

(1)	(2)	(3)	(4)	(5)
TOP	BALANCED	CURRENT	INDICATED	SELECTED
10	RELATIVITY	IPMF	IPMF*	IPMF
	1.000	0.910	0.910	0.910
3X & 7X	1.000			

CLASSIFICATION

150	0.923
191	1.100
192	0.785
220	0.789
221	0.755
234	1.202
235	1.088
240	0.789
241	0.715
327	0.757
328	0.932
340	0.646
341	0.757
342	0.751
343	0.767
403	0.640
451	0.946
452	0.778
453	0.811
454	0.713
460	0.479
482	0.889
510	0.662
514	0.631
530	0.628
534	0.757

*COLUMN (4) = COLUMN (3) * (TOP 3X & 7X COLUMN (2) / TOP 10 COLUMN (2))

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COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

<u>TYPE OF POLICY</u>	<u>RATING</u>	(1) 2016 AGGREGATE <u>LOSS COSTS</u>	(2) 2012 - 2016 <u>AGGREGATE LOSS COSTS</u>	(3) FIVE-YEAR <u>EXP RATIO</u>	(4) <u>RELATIVITY</u>
<u>MONOLINE 10</u>	<u>GROUP</u>				
	150	311,633	1,898,096	1.151	1.353
	191	5,446,492	15,816,054	1.032	1.213
	192	862,002	2,760,886	0.627	0.737
	220	5,112	87,903	5.716	6.717
	221	1,491	2,853	1.199	1.409
	234	5,224,155	20,144,072	0.600	0.705
	235	8,439,000	24,407,283	0.761	0.894
	240	928,183	3,685,254	0.656	0.771
	241	15,553	114,739	0.053	0.062
	327	18,917	91,546	0.000	0.000
	328	2,319,887	11,908,665	0.792	0.931
	340	40,688	87,993	0.000	0.000
	341	0	0	0.000	0.000
	342	19,188	65,375	0.555	0.652
	343	589	3,417	343.665	578.925
	403	1,600,852	5,771,545	0.345	0.405
	451	3,309,677	12,953,836	0.855	1.005
	452	34,702	137,467	1.628	1.913
	453	45,575	212,456	3.203	3.764
	454	164,836	745,300	0.734	0.863
	460	790,198	3,687,530	0.415	0.488
	482	839,364	2,841,134	0.986	1.159
	510	3,252	39,977	0.020	0.024
	514	446,469	1,612,361	0.339	0.398
	530	504,434	2,697,004	0.489	0.575
	534	0	0	0.000	0.000
	TOTAL#	31,372,249	111,772,746	0.785	0.922

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COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

TYPE OF POLICY	RATING GROUP	(1) 2016 AGGREGATE LOSS COSTS	(2) 2012 - 2016 AGGREGATE LOSS COSTS	(3) FIVE-YEAR EXP RATIO	(4) RELATIVITY
MULTILINE ## 3X & 7X	150	720,095	3,333,227	0.795	0.934
	191	603,595	2,704,067	0.774	0.910
	192	202,803	783,492	0.826	0.971
	220	6,439	28,512	1.526	1.793
	221	5,606	27,010	0.258	0.303
	234	12,669,443	52,530,286	1.162	1.365
	235	478,171	2,380,353	2.879	3.383
	240	11,651	60,061	1.983	2.330
	241	5,028	15,371	0.019	0.022
	327	2,942	18,862	0.000	0.000
	328	396	2,751	168.726	198.268
	340	32,828	132,609	0.016	0.019
	341	0	0	0.000	0.000
	342	6,082	30,546	0.000	0.000
	343	2,369	7,996	0.000	0.000
	403	479,869	2,417,275	0.739	0.868
	451	95,342	438,635	0.360	0.423
	452	38,096	206,651	0.535	0.629
	453	34,375	104,958	0.147	0.173
	454	228,162	984,183	0.274	0.322
	460	3,613,811	15,118,089	0.318	0.374
	482	127,496	760,961	0.693	0.814
	510	23,290	121,842	0.000	0.000
	514	63,169	300,866	0.073	0.086
	530	1,129,574	4,779,992	0.414	0.486
	534	0	0	0.000	0.000
	TOTAL#	20,580,632	87,288,595	0.952	1.119

REFLECTS CURRENT IPMF OF 0.910.

ARIZONA

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS
TABLE 9 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

<u>TYPE OF POLICY</u>	<u>RATING</u>	(1)	(2)	(3)	(4)
<u>TOTAL ALL TOPS#</u>	<u>GROUP</u>	<u>2016 AGGREGATE LOSS COSTS</u>	<u>2012 - 2016 AGGREGATE LOSS COSTS</u>	<u>FIVE-YEAR EXP RATIO</u>	<u>RELATIVITY</u>
	150	1,031,728	5,231,323	0.903	1.061
	191	6,050,087	18,520,121	1.006	1.182
	192	1,064,805	3,544,378	0.665	0.781
	220	11,551	116,415	3.380	3.972
	221	7,097	29,863	0.456	0.536
	234	17,893,598	72,674,358	0.998	1.173
	235	8,917,171	26,787,636	0.875	1.028
	240	939,834	3,745,315	0.672	0.790
	241	20,581	130,110	0.045	0.053
	327	21,859	110,408	0.000	0.000
	328	2,320,283	11,911,416	0.821	0.965
	340	73,516	220,602	0.007	0.008
	341	0	0	0.000	0.000
	342	25,270	95,921	0.421	0.495
	343	2,958	11,413	267.552	314.397
	403	2,080,721	8,188,820	0.436	0.512
	451	3,405,019	13,392,471	0.841	0.988
	452	72,798	344,118	1.056	1.241
	453	79,950	317,414	1.889	2.220
	454	392,998	1,729,483	0.467	0.549
	460	4,404,009	18,805,619	0.335	0.394
	482	966,860	3,602,095	0.947	1.113
	510	26,542	161,819	0.002	0.002
	514	509,638	1,913,227	0.306	0.360
	530	1,634,008	7,476,996	0.437	0.514
	534	0	0	0.000	0.000
	TOTAL#	51,952,881	199,061,341	0.851	1.000

TOTAL IN COLUMN (3) IS AN AVERAGE USING COLUMN (1) AS WEIGHTS.

EXPLANATORY NOTES TO TABLES 8 AND 9

COMMERCIAL INLAND MARINE RELATIVITY ANALYSIS

EXPERIENCE BASE

The Commercial Inland Marine IPMF review presented in the attached exhibits is based on a review of the latest available five years of monoline and multiline experience through accident year 2016 for all companies reporting data to Insurance Services Office under the Inland Marine Module of the Commercial Statistical Plan (CSP) and the Intermediate Level of the Commercial Minimum Statistical Plan (CMSP).

ADJUSTMENT OF DATA

Aggregate loss costs for each year in the review period have been adjusted to the levels which would have been earned had the current loss costs applied throughout the experience period. Reported premiums are adjusted to current level on an individual policy basis by applying a factor equal to all loss cost level changes that have been implemented subsequent to the policy being written. These adjusted premiums are then converted to a loss cost at current level. In order to eliminate the impact of company deviations from the manual level and individual risk modifications which were in effect at the time the policy was written, aggregate loss costs are further adjusted based on reported Rate Modification and Rate Departure Factors/Loss Cost Multipliers. Multiline aggregate loss costs are further adjusted to the level of the current Implicit Package Modification Factor (IPMF). Incurred losses are loaded for all loss adjustment expenses by applying a factor of 1.105.

RELATIVITY ANALYSIS

For Inland Marine coverage, a multistate IPMF level is determined via a two-way relativity analysis similar to the analysis used in Basic Group I. The experience for all reviewed classes is used to form class group relativities. These relativities for monoline and multiline (all programs combined) are determined through an iterative procedure. The ratio of the multiline relativity to the monoline relativity is multiplied by the current IPMF to yield the indicated IPMF. The indicated IPMF is subject to a minimum value of 0.500 and a maximum value of 1.500. If an indicated IPMF falls outside one of those limits, it is capped at that amount, the premiums for that Type of Policy (i.e., TOP 10 versus TOP 3X) are adjusted to the capped IPMF level, and the entire relativity review is performed again to take this into account.

TABLE 10
ARIZONA
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
TOP					
10	1.137	0.263	1.034	1.036	
31	1.481	0.107	1.043	1.045	+0.9%
32	2.058	0.113	1.085	1.087	+4.9%
33	0.892	0.144	0.984	0.985	-4.9%
34	0.711	0.200	0.934	0.936	-9.7%
35	0.655	0.110	0.955	0.956	-7.7%
36	0.841	0.139	0.976	0.978	-5.6%

CLASS
GROUP

01	1.013	0.059	1.001	1.002	
02	1.148	0.172	1.024	1.025	
03	1.067	0.113	1.007	1.008	
04	0.304	0.023	0.973	0.974	
05	0.668	0.042	0.983	0.984	
06	0.489	0.055	0.961	0.962	
07	1.433	0.160	1.059	1.060	
08	1.952	0.035	1.024	1.024	
09	0.780	0.145	0.965	0.965	
10	0.864	0.117	0.983	0.984	
11	0.803	0.133	0.971	0.972	
12	0.946	0.223	0.988	0.988	
13	1.629	0.067	1.033	1.034	
16	0.000	0.007	1.000	1.001	

	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.
TERRITORY				
2	1.083	0.310	1.025	1.024
3	0.927	0.156	0.988	0.987
4	0.920	0.255	0.979	0.978

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

TABLE 11
ARIZONA
MANUFACTURERS AND CONTRACTORS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

TOP	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
10	0.957	0.193	0.992	0.994	
33	3.915	0.034	1.047	1.050	+5.6%
34	1.456	0.067	1.025	1.028	+3.4%
35	0.319	0.018	0.980	0.982	-1.2%
36	0.952	0.106	0.995	0.997	+0.3%
37	1.061	0.067	1.004	1.006	+1.2%
38	0.997	0.200	0.999	1.002	+0.8%
CLASS GROUP					
30	1.114	0.105	1.011	1.006	
31	1.209	0.147	1.028	1.023	
32	1.119	0.192	1.022	1.016	
33	1.017	0.079	1.001	0.996	
34	1.011	0.102	1.001	0.996	
35	1.220	0.022	1.004	0.999	
36	0.529	0.047	0.970	0.965	
37	0.365	0.032	0.968	0.963	
38	0.701	0.096	0.966	0.961	

* INDICATED CHANGE = (BALANCED RELATIVITY FOR TOP) / (MONOLINE RELATIVITY (TOP 10)) - 1

TABLE 12
ARIZONA
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TERRITORY	ALL	(1)	(2)	(3)	(4)	(5)	(6)
		FISCAL A.Y.E. 03/31/2018 AGGREGATE LOSS COSTS AT CURRENT LEVEL	FISCAL A.Y.E. 2014 - 2018 AGG LOSS COST CURRENT LEVEL	FIVE YEAR EXPERIENCE RATIO		NUMBER OF OCCURRENCES	BAL CELL RELATIV.
TYPE OF POLICY	CLASS GROUP				RELATIV.		
10 MONOLINE	01 FOOD&BEV. (RETAIL)	\$42,902	\$236,984	0.711		12	
	02 RESTAURANTS	442,864	1,985,939	1.078		147	
	03 STORES	389,297	1,487,470	1.165		111	
	04 VENDING & RENTAL	23,634	78,653	0.130		3	
	05 FOOD & BEV. DIST.	72,114	242,839	0.225		6	
	06 NON-FOOD&BEV.DIST	111,265	884,218	0.284		21	
	07 CLUBS, AMSMT&SPRTS	910,103	3,139,873	1.525		231	
	08 HEALTH CARE FACIL	102,354	466,288	1.854		10	
	09 HOTELS AND MOTELS	576,761	3,110,621	0.859		155	
	10 SCHLS & CHURCHES	609,060	2,703,855	0.968		63	
	11 APARTMENTS	1,332,249	4,981,362	0.920		127	
	12 BUILDINGS&OFFICES	1,741,668	8,703,561	1.163		316	
	13 MISC. PREMISES	101,101	599,044	2.105		44	
	TOTAL *	\$6,455,372	\$28,620,707	1.106		1,246	
31 MULT MOTEL/HOTEL	09 HOTELS AND MOTELS	\$744,557	\$3,087,011	1.123		208	
	TOTAL *	\$744,557	\$3,087,011	1.123		208	
32 MULT APARTMENT	11 APARTMENTS	\$725,327	\$3,480,200	1.584		195	
	12 BUILDINGS&OFFICES	120,654	512,870	2.097		35	
	TOTAL *	\$845,981	\$3,993,070	1.657		230	
33 MULT OFFICE	12 BUILDINGS&OFFICES	\$2,225,776	\$11,505,720	0.860		375	
	13 MISC. PREMISES	26,213	144,096	0.022		1	
	TOTAL *	\$2,251,989	\$11,649,816	0.850		376	
34 MULT MERCANTILE	01 FOOD&BEV. (RETAIL)	\$199,231	\$1,178,121	0.766		52	
	02 RESTAURANTS	1,581,025	7,612,184	0.852		391	
	03 STORES	518,925	2,612,871	0.868		112	
	04 VENDING & RENTAL	15,850	30,677	0.842		1	
	05 FOOD & BEV. DIST.	141,082	893,990	0.724		26	
	06 NON-FOOD&BEV.DIST	352,578	1,610,858	0.431		35	
	12 BUILDINGS&OFFICES	841,717	4,389,689	0.379		104	
	TOTAL *	\$3,650,408	\$18,328,390	0.695		721	

TABLE 12
ARIZONA
OWNERS, LANDLORDS AND TENANTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TERRITORY	ALL	(1) FISCAL A.Y.E. 03/31/2018 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2014 - 2018 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
TYPE OF POLICY	CLASS GROUP						
35 MULT INSTITUT.	07 CLUBS,AMSMT&SPRTS	\$155,648	\$603,186	0.662		19	
	08 HEALTH CARE FACIL	149,190	834,754	1.459		13	
	10 SCHLS & CHURCHES	844,047	4,075,049	0.538		185	
	12 BUILDINGS&OFFICES	979	8,610	0.000		0	
	13 MISC. PREMISES	0	45,298	0.000		0	
	16 GOVT SUBDIVISIONS	10,864	157,706	0.000		1	
	TOTAL *	\$1,160,728	\$5,724,603	0.667		218	
36 MULT SERVICES	03 STORES	\$104,932	\$448,624	0.249		9	
	04 VENDING & RENTAL	40,877	177,475	0.138		6	
	07 CLUBS,AMSMT&SPRTS	1,194,061	5,214,017	1.163		216	
	08 HEALTH CARE FACIL	606	2,573	0.000		0	
	09 HOTELS AND MOTELS	35,175	537,600	0.322		16	
	10 SCHLS & CHURCHES	2,863	16,136	0.087		1	
	12 BUILDINGS&OFFICES	200,683	1,185,899	1.044		66	
	13 MISC. PREMISES	143,736	678,999	1.419		36	
	TOTAL *	\$1,722,933	\$8,261,323	1.071		350	
TOTAL ALL TOP	01 FOOD&BEV. (RETAIL)	\$242,133	\$1,415,105	0.756		64	
	02 RESTAURANTS	2,023,889	9,598,123	0.902		538	
	03 STORES	1,013,154	4,548,965	0.918		232	
	04 VENDING & RENTAL	80,361	286,805	0.274		10	
	05 FOOD & BEV. DIST.	213,196	1,136,829	0.555		32	
	06 NON-FOOD&BEV.DIST	463,843	2,495,076	0.396		56	
	07 CLUBS,AMSMT&SPRTS	2,259,812	8,957,076	1.274		466	
	08 HEALTH CARE FACIL	252,150	1,303,615	1.616		23	
	09 HOTELS AND MOTELS	1,356,493	6,735,232	0.990		379	
	10 SCHLS & CHURCHES	1,455,970	6,795,040	0.717		249	
	11 APARTMENTS	2,057,576	8,461,562	1.154		322	
	12 BUILDINGS&OFFICES	5,131,477	26,306,349	0.920		896	
	13 MISC. PREMISES	271,050	1,467,437	1.540		81	
	16 GOVT SUBDIVISIONS	10,864	157,706	0.000		1	
	TOTAL *	\$16,831,968	\$79,664,920	0.977		3,349	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 13
ARIZONA
MANUFACTURERS AND CONTRACTORS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) FISCAL A.Y.E. 03/31/2018 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2014 - 2018 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	30 SERVICE	\$572,987	\$1,941,661	1.296	1.291	62	1.000
	31 LIGHT CONTRACTING	492,201	2,136,474	1.207	1.202	148	1.016
	32 MEDIUM CONTRCTING	2,161,786	9,896,691	0.879	0.876	303	1.010
	33 HEAVY CONTRACTING	544,618	2,317,084	1.465	1.460	41	0.990
	34 DEALER OR DISTRIB	194,108	897,816	0.882	0.879	38	0.990
	35 LGT. MANUFACTURER	14,143	105,694	4.746	4.727	3	0.993
	36 MED. MANUFACTURER	336,557	1,124,674	0.475	0.474	6	0.959
	37 HVY. MANUFACTURER	50,421	214,450	0.176	0.176	2	0.957
	38 MISC. OPERATION	456,482	1,937,213	0.655	0.653	70	0.955
	TOTAL *	\$4,823,303	\$20,571,757	0.983		673	
33 MULT OFFICE	31 LIGHT CONTRACTING	\$8,399	\$144,050	0.000	0.000	0	1.074
	32 MEDIUM CONTRCTING	3,452	18,033	0.663	0.661	2	1.067
	33 HEAVY CONTRACTING	29,363	146,991	3.458	3.445	6	1.046
	38 MISC. OPERATION	56,650	240,615	3.966	3.951	14	1.009
	TOTAL *	\$97,864	\$549,689	3.357		22	
34 MULT MERCANTILE	30 SERVICE	\$51,770	\$238,527	0.074	0.074	6	1.034
	32 MEDIUM CONTRCTING	33,035	145,205	1.199	1.194	5	1.045
	34 DEALER OR DISTRIB	283,857	1,458,068	1.829	1.822	61	1.023
	38 MISC. OPERATION	11,731	111,819	0.620	0.618	10	0.988
	TOTAL *	\$380,393	\$1,953,619	1.498		82	
35 MULT INSTITUT.	31 LIGHT CONTRACTING	\$3,359	\$31,267	0.141	0.140	1	1.004
	32 MEDIUM CONTRCTING	62,093	344,217	0.372	0.371	5	0.998
	TOTAL *	\$65,452	\$375,484	0.360		6	
36 MULT SERVICES	30 SERVICE	\$88,396	\$352,313	1.502	1.496	18	1.003
	31 LIGHT CONTRACTING	71,417	420,867	0.534	0.532	19	1.020
	32 MEDIUM CONTRCTING	127,435	567,488	1.976	1.969	13	1.013
	33 HEAVY CONTRACTING	6,319	116,528	0.419	0.417	2	0.993
	34 DEALER OR DISTRIB	342,869	1,498,219	1.010	1.006	88	0.993
	36 MED. MANUFACTURER	5,950	24,256	0.000	0.000	0	0.962
	38 MISC. OPERATION	470,801	2,217,201	0.420	0.418	64	0.959
	TOTAL *	\$1,113,187	\$5,196,872	0.871		204	

ARIZONA
MANUFACTURERS AND CONTRACTORS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) FISCAL A.Y.E. 03/31/2018 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) FISCAL A.Y.E. 2014 - 2018 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
37 MULT INDUST/PROC.	31 LIGHT CONTRACTING	\$168	\$1,429	0.000	0.000	0	1.029
	32 MEDIUM CONTRCTING	144,876	488,780	0.965	0.961	8	1.023
	33 HEAVY CONTRACTING	23,317	101,328	6.574	6.549	7	1.002
	34 DEALER OR DISTRIB	97,817	294,456	0.086	0.085	3	1.002
	35 LGT. MANUFACTURER	90,011	416,412	0.738	0.735	6	1.005
	36 MED. MANUFACTURER	707,812	3,833,881	0.583	0.581	34	0.971
	37 HVY. MANUFACTURER	511,691	2,157,600	0.406	0.405	17	0.969
	38 MISC. OPERATION	16,595	73,676	2.562	2.552	8	0.967
	TOTAL *	\$1,592,287	\$7,367,562	0.647		83	
38 MULT CONTRACTORS	30 SERVICE	\$708,820	\$3,404,784	0.992	0.988	113	1.008
	31 LIGHT CONTRACTING	663,885	3,229,811	1.304	1.299	221	1.024
	32 MEDIUM CONTRCTING	1,972,979	9,607,241	1.307	1.302	328	1.018
	33 HEAVY CONTRACTING	768,629	4,076,099	0.531	0.529	57	0.998
	38 MISC. OPERATION	58,279	192,798	1.251	1.246	1	0.963
	TOTAL *	\$4,172,592	\$20,510,733	1.109		720	
TOTAL ALL TOP	30 SERVICE	\$1,421,973	\$5,937,285	1.113		199	
	31 LIGHT CONTRACTING	1,239,429	5,963,898	1.209		389	
	32 MEDIUM CONTRCTING	4,505,656	21,067,655	1.095		664	
	33 HEAVY CONTRACTING	1,372,246	6,758,030	1.067		113	
	34 DEALER OR DISTRIB	918,651	4,148,559	1.138		190	
	35 LGT. MANUFACTURER	104,154	522,106	1.282		9	
	36 MED. MANUFACTURER	1,050,319	4,982,811	0.545		40	
	37 HVY. MANUFACTURER	562,112	2,372,050	0.385		19	
	38 MISC. OPERATION	1,070,538	4,773,322	0.789		167	
	TOTAL *	\$12,245,078	\$56,525,716	1.004		1,790	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 14
ARIZONA
PRODUCTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

TOP	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
10	0.988	0.372	0.995	0.996	
34	1.036	0.371	1.013	1.014	+ 1.8%
36	1.005	0.187	1.001	1.002	+ 0.6%
37	0.988	0.507	0.994	0.994	- 0.2%
CLASS GROUP					
3	0.924	0.500	0.961	0.965	
4	1.048	0.406	1.019	1.024	
5	1.107	0.132	1.014	1.018	
6	1.007	0.320	1.002	1.006	
7	1.006	0.182	1.001	1.005	

* INDICATED CHANGE =
(BALANCED RELATIVITY FOR TOP) / (BALANCED MONOLINE (TOP 10) RELATIVITY) - 1

NOTE: THE INDICATED CHANGES BY TOP WERE FURTHER ADJUSTED BY THE FOLLOWING
DIFFERENTIALS:

TOP 34: 1.007
TOP 36: 1.012
TOP 37: 0.979

TABLE 15
MULTISTATE
PRODUCTS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	03 MAN,DLR,DSTFD/DRG	\$18,227,491	\$79,500,211	0.856	0.869	1,461	0.961
	04 DLR,DST-NOTFD/DRG	9,616,743	42,155,667	1.119	1.136	640	1.019
	05 MAN.NTFD/DRG (LOW)	1,605,615	6,748,634	1.039	1.055	84	1.014
	06 MAN.NTFD/DRG (MED)	9,640,686	42,498,903	0.958	0.972	466	1.002
	07 MAN.NTFD/DRG (HGH)	2,568,561	11,286,663	1.018	1.033	129	1.001
	TOTAL *	\$41,659,096	\$182,190,078	0.957		2,780	
34 MULT MERCANTILE	03 MAN,DLR,DSTFD/DRG	\$5,166,155	\$25,851,441	1.131	1.148	791	0.979
	04 DLR,DST-NOTFD/DRG	29,011,611	140,165,685	1.037	1.052	1,972	1.038
	06 MAN.NTFD/DRG (MED)	7,625	57,567	0.000	0.000	0	1.020
	TOTAL *	\$34,185,391	\$166,074,693	1.051		2,763	
36 MULT SERVICES	04 DLR,DST-NOTFD/DRG	\$3,197,904	\$14,609,890	1.041	1.057	699	1.025
	06 MAN.NTFD/DRG (MED)	54,898	258,512	0.781	0.793	1	1.008
	TOTAL *	\$3,252,802	\$14,868,402	1.037		700	
37 MULT INDUST/PROC.	03 MAN,DLR,DSTFD/DRG	\$16,474,514	\$81,117,947	0.888	0.901	2,761	0.960
	05 MAN.NTFD/DRG (LOW)	4,070,679	20,897,437	1.092	1.108	269	1.012
	06 MAN.NTFD/DRG (MED)	28,248,516	131,744,418	0.987	1.002	1,582	1.001
	07 MAN.NTFD/DRG (HGH)	7,346,721	36,933,393	0.965	0.980	537	1.000
	TOTAL *	\$56,140,430	\$270,693,195	0.963		5,149	
TOTAL ALL TOP	03 MAN,DLR,DSTFD/DRG	\$39,868,160	\$186,469,599	0.905		5,013	
	04 DLR,DST-NOTFD/DRG	41,826,258	196,931,242	1.056		3,311	
	05 MAN.NTFD/DRG (LOW)	5,676,294	27,646,071	1.077		353	
	06 MAN.NTFD/DRG (MED)	37,951,725	174,559,400	0.979		2,049	
	07 MAN.NTFD/DRG (HGH)	9,915,282	48,220,056	0.979		666	
	TOTAL *	\$135,237,719	\$633,826,368	0.985		11,392	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 16
ARIZONA
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

	(1) BAILEY FORMULA RELATIV.	(2) CREDIBILITY Z	(3) Z-WTD RELATIV.	(4) BALANCED RELATIV.	(5) INDICATED CHANGE *
TOP					
10	0.969	0.752	0.977	0.973	
34	0.959	0.541	0.978	0.974	+ 0.1%
36	0.986	0.516	0.993	0.989	+ 1.6%
37	0.972	0.138	0.996	0.993	+ 2.1%
38	1.025	0.962	1.024	1.020	+ 4.8%
CLASS GROUP					
1	0.918	0.550	0.954	0.948	
2	1.037	0.495	1.018	1.012	
11	1.095	0.352	1.032	1.026	
12	1.016	1.000	1.016	1.010	
13	0.785	0.266	0.938	0.932	

* INDICATED CHANGE =
 (BALANCED RELATIVITY FOR TOP) / (BALANCED MONOLINE (TOP 10) RELATIVITY) - 1

TABLE 16A
MULTISTATE
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS *

STATE	(1) BAILEY FORMULA RELATIV	(2) CREDIBILITY Z	(3) Z-WTD RELATIV	(4) BALANCED RELATIV.
	1.418	0.386	1.144	1.144
	1.202	0.623	1.122	1.121
	1.425	0.229	1.085	1.084
	1.144	0.427	1.059	1.059
	1.413	0.160	1.057	1.057
	1.437	0.153	1.057	1.057
	1.197	0.263	1.049	1.048
	1.096	0.505	1.048	1.047
	1.135	0.345	1.045	1.044
	1.122	0.368	1.043	1.043
	1.191	0.231	1.041	1.041
	1.128	0.326	1.040	1.040
	1.173	0.239	1.039	1.039
	1.148	0.224	1.031	1.031
	1.059	0.435	1.025	1.025
	1.052	0.453	1.023	1.023
	1.257	0.100	1.023	1.023
	1.083	0.227	1.018	1.018
	1.101	0.187	1.018	1.018
	1.090	0.192	1.017	1.016
	1.045	0.369	1.016	1.016
	1.037	0.307	1.011	1.011
	1.019	0.449	1.008	1.008
	1.027	0.143	1.004	1.003
	1.002	0.494	1.001	1.000
	1.002	0.131	1.000	1.000
	0.994	0.097	0.999	0.999
	0.992	0.402	0.997	0.997
	0.989	0.377	0.996	0.995
	0.975	0.190	0.995	0.995
	0.965	0.458	0.984	0.983
	0.924	0.241	0.981	0.981
	0.933	0.349	0.976	0.976
	0.895	0.260	0.972	0.971
	0.892	0.285	0.968	0.968
	0.788	0.160	0.963	0.962
	0.693	0.104	0.963	0.962
	0.889	0.364	0.958	0.958
	0.759	0.154	0.958	0.958
Arizona	0.843	0.288	0.952	0.952
	0.720	0.158	0.949	0.949
	0.765	0.195	0.949	0.949
	0.906	0.547	0.948	0.947
	0.793	0.238	0.946	0.946
	0.512	0.084	0.945	0.945
	0.639	0.136	0.941	0.941
	0.813	0.308	0.938	0.938
	0.889	0.581	0.934	0.933
	0.846	0.470	0.924	0.924
	0.756	0.321	0.914	0.914
	0.602	0.179	0.913	0.913
	0.804	0.575	0.882	0.882

* Sorted by balanced relative change.

TABLE 17
ARIZONA
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	01 RET. STRS-FOOD/DRG	\$17,783	\$77,415	0.758	0.700	8	0.878
	02 RET. STRS-NTFD/DRG	23,818	98,946	1.568	1.447	5	0.938
	11 COMP. OPS. (LOW)	89,065	487,413	0.848	0.783	10	0.951
	12 COMP. OPS. (MED)	1,873,820	7,152,281	0.841	0.776	83	0.935
	13 COMP. OPS. (HGH)	97,025	733,060	0.049	0.045	2	0.863
	TOTAL *	\$2,101,511	\$8,549,115	0.813		108	
34 MULT MERCANTILE	01 RET. STRS-FOOD/DRG	\$97,701	\$604,650	1.054	0.973	47	0.879
	02 RET. STRS-NTFD/DRG	64,146	322,036	1.258	1.161	10	0.939
	12 COMP. OPS. (MED)	52,899	212,760	0.054	0.050	1	0.937
	TOTAL *	\$214,746	\$1,139,446	0.869		58	
36 MULT SERVICES	01 RET. STRS-FOOD/DRG	\$11,214	\$56,101	0.704	0.650	1	0.893
	02 RET. STRS-NTFD/DRG	202,871	873,675	1.650	1.522	35	0.953
	11 COMP. OPS. (LOW)	108,477	532,941	2.570	2.371	19	0.966
	12 COMP. OPS. (MED)	484,618	1,477,074	0.430	0.396	13	0.951
	13 COMP. OPS. (HGH)	8,510	38,760	0.476	0.439	1	0.877
	TOTAL *	\$815,690	\$2,978,551	1.022		69	
37 MULT INDUST/PROC.	11 COMP. OPS. (LOW)	\$942	\$4,541	0.008	0.008	0	0.969
	12 COMP. OPS. (MED)	37,471	175,973	0.808	0.745	4	0.954
	13 COMP. OPS. (HGH)	0	231	0.000	0.000	0	0.880
	TOTAL *	\$38,413	\$180,745	0.788		4	
38 MULT CONTRACTORS	11 COMP. OPS. (LOW)	\$188,967	\$816,998	1.204	1.111	17	0.996
	12 COMP. OPS. (MED)	2,946,316	12,748,147	0.944	0.871	192	0.981
	13 COMP. OPS. (HGH)	248,341	1,087,607	1.054	0.972	10	0.905
	TOTAL *	\$3,383,624	\$14,652,752	0.966		219	
TOTAL ALL TOP	01 RET. STRS-FOOD/DRG	\$126,698	\$738,166	0.982		56	
	02 RET. STRS-NTFD/DRG	290,835	1,294,657	1.557		50	
	11 COMP. OPS. (LOW)	387,451	1,841,893	1.502		46	
	12 COMP. OPS. (MED)	5,395,124	21,766,235	0.852		293	
	13 COMP. OPS. (HGH)	353,876	1,859,658	0.764		13	
	TOTAL *	\$6,553,984	\$27,500,609	0.920		458	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

TABLE 18
MULTISTATE
LOCAL PRODUCTS/COMPLETED OPERATIONS
BASIC LIMIT RELATIVE CHANGE ANALYSIS

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

TYPE OF POLICY	CLASS GROUP	(1) CALENDAR A.Y.E. 12/31/2017 AGGREGATE LOSS COSTS AT CURRENT LEVEL	(2) CALENDAR A.Y.E. 2013 - 2017 AGG LOSS COST CURRENT LEVEL	(3) FIVE YEAR EXPERIENCE RATIO	(4) RELATIV.	(5) NUMBER OF OCCURRENCES	(6) BAL CELL RELATIV.
10 MONOLINE	01 RET. STRS-FOOD/DRG	\$2,570,942	\$11,000,189	0.978		762	
	02 RET. STRS-NTFD/DRG	2,629,603	11,663,817	1.219		494	
	11 COMP. OPS. (LOW)	4,024,036	18,069,271	1.329		705	
	12 COMP. OPS. (MED)	82,107,926	364,826,722	1.080		6,242	
	13 COMP. OPS. (HGH)	7,801,373	39,341,081	0.703		282	
	TOTAL *	\$99,133,880	\$444,901,080	1.062		8,485	
34 MULT MERCANTILE	01 RET. STRS-FOOD/DRG	\$8,002,266	\$37,342,335	0.940		3,591	
	02 RET. STRS-NTFD/DRG	5,186,195	23,434,483	1.012		665	
	12 COMP. OPS. (MED)	2,043,786	10,139,349	1.186		140	
	TOTAL *	\$15,232,247	\$70,916,167	0.997		4,396	
36 MULT SERVICES	01 RET. STRS-FOOD/DRG	\$729,961	\$3,439,653	1.065		197	
	02 RET. STRS-NTFD/DRG	12,256,900	48,452,562	1.088		2,518	
	11 COMP. OPS. (LOW)	3,094,937	14,012,389	1.111		510	
	12 COMP. OPS. (MED)	4,447,208	21,021,492	0.941		694	
	13 COMP. OPS. (HGH)	989,332	5,061,195	1.199		87	
	TOTAL *	\$21,518,338	\$91,987,291	1.065		4,006	
37 MULT INDUST/PROC.	01 RET. STRS-FOOD/DRG	\$26,867	\$90,627	2.388		1	
	11 COMP. OPS. (LOW)	114,535	530,208	1.229		19	
	12 COMP. OPS. (MED)	3,550,014	17,334,430	1.039		268	
	13 COMP. OPS. (HGH)	40,532	307,938	0.580		0	
	TOTAL *	\$3,731,948	\$18,263,203	1.050		288	
38 MULT CONTRACTORS	11 COMP. OPS. (LOW)	\$8,122,432	\$37,446,153	1.157		634	
	12 COMP. OPS. (MED)	143,209,202	677,397,379	1.125		12,565	
	13 COMP. OPS. (HGH)	14,631,915	67,788,410	0.919		693	
	TOTAL *	\$165,963,549	\$782,631,942	1.108		13,892	
TOTAL ALL TOP	01 RET. STRS-FOOD/DRG	\$11,330,036	\$51,872,804	0.960		4,551	
	02 RET. STRS-NTFD/DRG	20,072,698	83,550,862	1.086		3,677	
	11 COMP. OPS. (LOW)	15,355,940	70,058,021	1.193		1,868	
	12 COMP. OPS. (MED)	235,358,136	1,090,719,372	1.105		19,909	
	13 COMP. OPS. (HGH)	23,463,152	112,498,624	0.858		1,062	
	TOTAL *	\$305,579,962	\$1,408,699,683	1.084		31,067	

* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

OBJECTIVES

The objectives of this procedure are to:

- 1) determine monoline loss cost level needs for the appropriate rating variables;
- 2) determine indicated changes to the eight liability Commercial Package Policy (CPP) Package Modification Factors (PMFs) based on Premises/Operations and Products/Completed Operations data.

EXPERIENCE
BASE

The experience used in this relativity analysis is the latest five (5) years of accident year data, as reported under the Commercial Statistical Plan with aggregate loss costs adjusted to current loss cost level (multiline aggregate loss costs adjusted additionally by the current Implicit Package Modification Factors). Losses have been trended and developed in the Relativity Analysis. ALCCCL have been trended.

SIMULTANEOUS
DETERMINATION
OF RATING
VARIABLE
RELATIVITIES

Once the aggregate loss costs at current level and incurred losses used in the analysis have been appropriately adjusted, the 5-year experience ratios are calculated for each combination of the appropriate rating variables. From these ratios, relativities to the statewide 5-year experience ratio are calculated. These relativities are then used in a minimum bias iterative review procedure, which simultaneously determines the relativities for each rating variable.

The purpose of a simultaneous review procedure is to arrive at a set of relativities for each rating variable that best represent the experience. For example, the type of policy relativities will serve to derive the relationship of CPP policies relative to monoline policies, via the PMF, while the class group and territory (if applicable) relativities will serve to derive the relationship of the various classification and territories relative to one another. An iterative technique is used to derive relativities for each rating variable. This procedure is in contrast to a one-way type of review, wherein relativities for each rating variable would each be reviewed separately.

Such one-way types of review do not take into account differing percentages of experience of each rating variable within the other rating variables. The simultaneous review procedure accounts for these different distributions in generating relativities for each rating variable.

RATING
VARIABLES
USED

For Premises/Operations and Products/Completed Operations, the rating variables used in the relativity analysis are as follows:

Manufacturers and Contractors -	type of policy and class group
Owners, Landlords and Tenants -	type of policy, territory and class group
Products -	type of policy and class group
Local Products/Completed Operations-	type of policy, state and class group

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

ITERATIVE
PROCEDURE

The iterative technique referred to in the previous paragraph solves for a set of relativities for each rating variable based on the experience for the cells; that is, based on the experience ratio and latest year adjusted aggregate loss cost volume for each combination of rating variables relative to the experience ratio and adjusted aggregate loss cost volume for all combinations of rating variables combined. Specifically, the iterative procedure uses the following formulas:

For Owners, Landlords and Tenants:

$$TOP_i = \frac{\sum_j \sum_k W_{ijk} r_{ijk}}{\sum_j \sum_k W_{ijk} CG_j TER_k} \quad \text{where } 1 \leq i \leq m$$

$$CG_j = \frac{\sum_i \sum_k W_{ijk} r_{ijk}}{\sum_i \sum_k W_{ijk} TOP_i TER_k} \quad \text{where } 1 \leq j \leq n$$

$$TER_k = \frac{\sum_i \sum_j W_{ijk} r_{ijk}}{\sum_i \sum_j W_{ijk} TOP_i CG_j} \quad \text{where } 1 \leq k \leq p$$

TOP_i is the relative change for the i^{th} type of policy;

CG_j is the relative change for the j^{th} class group;

TER_k is the relative change for the k^{th} territory;

W_{ijk} is the aggregate loss costs at current level for the i^{th}

type of policy, j^{th} class group and k^{th} territory;

r_{ijk} is the relative change for the i^{th} type of policy,

j^{th} class group and k^{th} territory;

m is the number of types of policy in the analysis;

n is the number of class groups in the analysis;

p is the number of territories in the analysis;

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

For Manufacturers and Contractors, and Products:

$$TOP_i = \frac{\sum_j W_{ij} r_{ij}}{\sum_j W_{ij} CG_j} \quad \text{where } 1 \leq i \leq m$$

$$CG_j = \frac{\sum_i W_{ij} r_{ij}}{\sum_i W_{ij} TOP_i} \quad \text{where } 1 \leq j \leq n$$

TOP_i is the relative change for the i^{th} type of policy;

CG_j is the relative change for the j^{th} class group;

W_{ij} is the aggregate loss costs at current level for the i^{th}

type of policy and j^{th} class group;

r_{ij} is the relative change for the i^{th} type of policy

and j^{th} class group;

m is the number of types of policy in the analysis;

n is the number of class groups in the analysis;

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

For Local Products/Completed Operations:

$$TOP_i = \frac{\sum_j \sum_k W_{ijk} r_{ijk}}{\sum_j \sum_k W_{ijk} CG_j ST_k} \quad \text{where } 1 \leq i \leq m$$

$$CG_j = \frac{\sum_i \sum_k W_{ijk} r_{ijk}}{\sum_i \sum_k W_{ijk} TOP_i ST_k} \quad \text{where } 1 \leq j \leq n$$

$$ST_k = \frac{\sum_i \sum_j W_{ijk} r_{ijk}}{\sum_i \sum_j W_{ijk} TOP_i CG_j} \quad \text{where } 1 \leq k \leq p$$

TOP_i is the relative change for the i^{th} type of policy;

CG_j is the relative change for the j^{th} class group;

ST_k is the relative change for the k^{th} state;

W_{ijk} is the aggregate loss costs at current level for the i^{th}

type of policy, j^{th} class group and k^{th} state;

r_{ijk} is the relative change for the i^{th} type of policy,

j^{th} class group and k^{th} state;

m is the number of types of policy in the analysis;

n is the number of class groups in the analysis;

p is the number of states in the analysis;

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

ITERATIVE
PROCEDURE
(Cont'd)

For example, for Owners, Landlords and Tenants, the procedure starts by inserting the actual relativities for type of policy and class group into the third formula to get a territory relativity. This result is then used with the class group relativity in the first formula to get a new type of policy relativity, which in turn is substituted along with the territory relativity into the second formula to get a new class group relativity. The process continues on in that fashion until there is no appreciable difference from one iteration to the next.

APPLICATION OF
CREDIBILITY

Consideration is then given to the credibility of the experience for each rating variable. The credibility of each of these categories is based on the formula $Z = \sqrt{P/18,000}$ for Owners, Landlords and Tenants, $Z = \sqrt{P/18,000}$ for Manufacturers and Contractors and $Z = \sqrt{P/20,000}$ for Products, where P is the 5 year occurrence total for a given class group, territory or type of policy. For Local Products/Completed Operations, separate formulas are used to calculate the credibility of the experience for each type of policy and class group versus the credibility of the experience for each state, namely $Z = \sqrt{P/15,000}$ for type of policy and class group, and $Z = \sqrt{P/5,500}$ for state (in this case, P is the 5 year occurrence total for a given state). Credibility-weighted relativities are then calculated as follows:

$$W = R^Z \quad \text{where:}$$

Z is the class group, territory, state or type of policy credibility;

R is the class group, territory, state or type of policy relativity;

W is the credibility-weighted relativity.

The resulting credibility-weighted relativities are then balanced to assure that the average relativity remains at unity.

EXPLANATORY NOTES TO GENERAL LIABILITY
RELATIVITY ANALYSIS - TABLES 10 THROUGH 18.

MULTILINE
CONSIDERATIONS

The monoline relativities and the class group, territory (if applicable) and state relativities which result from the aforementioned procedures are then used to generate indicated monoline classification loss cost changes. The multiline relativities are used to generate multiline indications that apply to the current Implicit Package Modification Factors. The indicated IPMFs are calculated as follows:

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

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 re-performed to take this into account.
