MONTANA 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.

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

MONTANA

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:

Type of Policy	Property	Liability	Prop. & Liab. Total
Motel/Hotel	0.0%	1.1%	0.5%
Apartment	3.7	0.0	2.9
Office	-2.1	2.2	0.2
Mercantile	0.0	1.1	0.5
Institutional	2.5	4.5	3.0
Services	-3.1	-1.0	-2.3
Indust./Proc.	-3.3	2.6	-0.7
Contractors	2.2	3.1	2.9
Statewide	0.1%	2.3%	1.2%

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.

MONTANA

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 12/31/17.
- Manufacturers and Contractors: five fiscal accident years ending 12/31/17.
- 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:

Filing	ML-15-RLA1	ML-10-RLA1	ML-08-RLA1
Dates			
Implemented	11/01/15	11/01/10	10/01/08
Changes			
Indicated	+1.6%	-1.7 %	-1.7 %
Filed	+1.6%	-1.8%	-1.7 %
Implemented	+1.6%	-1.8%	-1.7 %

MONTANA

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. Liberty Mutual Insurance Company
2. Cincinnati Insurance Company
3. Travelers Indemnity Company
4. Tokio Marine Companies
5. Admiral Insurance Company
6. American Hallmark Insurance Company of Texas
7. Fireman's Fund Insurance Company
8. Capitol Indemnity Corporation
9. Continental Casualty Company
10. Hartford Accident and Indemnity Company

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).   57.8%.

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.

MONTANA

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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SECTION A - SCOPE OF PMF REVISION

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 underline 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.

	PROPERTY PMFS			LIABILITY PMFS			PROP. & LIAB. TOTAL
TYPE OF POLICY	CURRENT	CAPPED	% CHANGE	CURRENT	CAPPED	% CHANGE	% CHANGE
MOTEL/HOTEL(31)	0.98	0.98	0.0%	0.89	0.90	1.1%	0.5%
APARTMENT (32)	0.82	0.85	3.7%	0.93	0.93	0.0%	2.9%
OFFICE (33)	0.94	0.92	-2.1%	0.93	0.95	2.2%	0.2%
MERCANTILE (34)	0.85	0.85	0.0%	0.92	0.93	1.1%	0.5%
INSTITUTION(35)	0.79	0.81	2.5%	0.89	0.93	4.5%	3.0%
SERVICES (36)	0.96	0.93	-3.1%	1.00	0.99	-1.0%	-2.3%
IND/PROC (37)	0.90	0.87	-3.3%	0.78	0.80	2.6%	-0.7%
CONTRACTORS(38)	0.93	0.95	2.2%	0.97	1.00	3.1%	2.9%
STATEWIDE			0.1%			2.3%	1.2%

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                            MONTANA
                            TABLE 2
                  COMMERCIAL PACKAGE POLICY
    CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS(PMF)
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MOTEL/HOTEL(31) ************	(1) AGGREG- ATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
COVERAGE					
PROPERTY-					
BASIC GRP I	419,081	1.037	-3.7%	0.999	0.999
BASIC GRP II	332,773	0.835	11.0	0.927	0.927
SP CAUSE/LOSS	246,504	1.085	-3.6	1.046	1.046
*CRIME	3,714	0.774	0.0	0.774	0.774
*INL. MAR.	8,401	0.855	6.4	0.910	0.910
*FIDELITY	4,225	1.000	0.0	1.000	1.000
TOTAL	1,014,698	0.98	0.0%	0.980	0.98
LIABILITY-					
OL&T	828,866	0.887	1.9%	0.904	0.904
TOTAL	828,866	0.89	1.6%	0.904	0.90
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PROP. & LIAB. TOTAL	1,843,564		0.7%		

APARTMENT (32) ************	(1) AGGREG- ATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
COVERAGE					
PROPERTY-					
BASIC GRP I	644,708	0.690	-6.5%	0.645	0.645
BASIC GRP II	646,126	0.863	18.8	1.025	1.025
SP CAUSE/LOSS	467,308	1.020	-3.9	0.980	0.980
*CRIME	1,148	0.774	0.0	0.774	0.774
*INL. MAR.	34	0.855	6.4	0.910	0.910
*FIDELITY	4,802	1.000	0.0	1.000	1.000
TOTAL	1,764,126	0.82	3.7%	0.850	0.85
LIABILITY-					
OL&T	432,631	0.931	0.2%	0.933	0.933
TOTAL	432,631	0.93	0.3%	0.933	0.93
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PROP. & LIAB. TOTAL	2,196,757		3.0%		

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

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


   OFFICE      (33)        (1)         (2)         (3)       (4)        (5)
   ************                     CURRENT
                        AGGREGATE   IMPLICIT      NET      INDIC.    CAPPED
   COVERAGE            LOSS COSTS     PMF     INDICATION    PMF        PMF
   PROPERTY-
    BASIC GRP I          530,025     1.130      -5.6%      1.067      1.067
    BASIC GRP II         382,676     0.729       7.2       0.781      0.781
    SP CAUSE/LOSS        326,115     0.973      -3.4       0.940      0.940
   *CRIME                  1,063     0.774       0.0       0.774      0.774
   *INL. MAR.            14,090      0.855       6.4       0.910      0.910
   *FIDELITY              4,954      1.000       0.0       1.000      1.000
    TOTAL             1,258,923      0.94       -1.9%      0.922      0.92

   LIABILITY-
    OL&T              1,417,406      0.964       2.0%      0.983      0.983
    M&C                  60,531      0.555       1.1       0.561      0.561
    TOTAL             1,477,937      0.93        2.6%      0.954      0.95
   ------------       -----------   --------  - ------  ---  -------   ------
   PROP. & LIAB.      2,736,860                  0.5%
      TOTAL




   MERCANTILE (34)        (1)         (2)         (3)       (4)        (5)
   ************                     CURRENT
                        AGGREGATE   IMPLICIT      NET      INDIC.    CAPPED
   COVERAGE            LOSS COSTS     PMF     INDICATION    PMF        PMF
   PROPERTY-
    BASIC GRP I        2,111,021     0.875      -3.4%      0.845      0.845
    BASIC GRP II       1,251,696     0.878       7.3       0.942      0.942
    SP CAUSE/LOSS        595,003     0.710      -1.1       0.702      0.702
   *CRIME                 8,381      0.774       0.0       0.774      0.774
   *INL. MAR.           163,431      0.855       6.4       0.910      0.910
   *FIDELITY             27,361      1.000       0.0       1.000      1.000
    TOTAL             4,156,893      0.85        0.3%      0.852      0.85

   LIABILITY-
    OL&T              2,247,635      0.915       0.1%      0.916      0.916
    M&C                 643,407      1.017       1.6       1.033      1.033
    LOCAL PRODUCT       159,502      0.925       0.1       0.926      0.926
   *MULTI PRODUCT       314,572      0.831       2.6       0.853      0.853
    TOTAL             3,365,116      0.92        1.1%      0.930      0.93
   ------------       -----------   --------  - ------  ---  -------   ------
   PROP. & LIAB.      7,522,009                  0.6%
      TOTAL


   * indicates coverage for which reviews are on a MULTISTATE basis.
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MONTANA
TABLE 2
COMMERCIAL PACKAGE POLICY
CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS(PMF)

INSTITUTION(35)	(1) AGGREGATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
COVERAGE					
PROPERTY-					
BASIC GRP I	886,208	1.040	-6.3%	0.974	0.974
BASIC GRP II	692,564	0.685	13.5	0.777	0.777
SP CAUSE/LOSS	314,073	0.592	-0.9	0.587	0.587
*CRIME	7,793	0.774	0.0	0.774	0.774
*INL. MAR.	11,332	0.855	6.4	0.910	0.910
*FIDELITY	52,296	1.000	0.0	1.000	1.000
TOTAL	1,964,266	0.79	2.5%	0.810	0.81
LIABILITY-					
OL&T	494,452	0.914	4.7%	0.957	0.957
M&C	44,587	0.636	7.2	0.682	0.682
TOTAL	539,039	0.89	4.0%	0.925	0.93
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PROP. & LIAB. TOTAL	2,503,305		2.8%		

SERVICES (36)	(1) AGGREGATE LOSS COSTS	(2) CURRENT IMPLICIT PMF	(3) NET INDICATION	(4) INDIC. PMF	(5) CAPPED PMF
COVERAGE					
PROPERTY-					
BASIC GRP I	1,463,205	1.028	-7.8%	0.948	0.948
BASIC GRP II	857,738	0.868	6.5	0.924	0.924
SP CAUSE/LOSS	532,356	0.926	-1.6	0.911	0.911
*CRIME	5,492	0.774	0.0	0.774	0.774
*INL. MAR.	26,521	0.855	6.4	0.910	0.910
*FIDELITY	47,787	1.000	0.0	1.000	1.000
TOTAL	2,933,099	0.96	-2.8%	0.933	0.93
LIABILITY-					
OL&T	705,333	1.063	-1.0%	1.052	1.052
M&C	770,673	0.796	3.5	0.824	0.824
LOCAL PRODUCT	412,624	1.441	1.6	1.464	1.464
*MULTI PRODUCT	125,206	0.940	-2.6	0.915	0.915
TOTAL	2,013,836	1.00	-0.7%	0.993	0.99
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PROP. & LIAB. TOTAL	4,946,935		-1.9%		

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

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                                    MONTANA
                                    TABLE 2
                          COMMERCIAL PACKAGE POLICY
           CALCULATION OF REVISED CPP PACKAGE MODIFICATION FACTORS(PMF)
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IND/PROC (37)	(1)	(2) CURRENT IMPLICIT	(3) NET	(4) INDIC.	(5) CAPPED
************	AGGREGATE				
COVERAGE	LOSS COSTS	PMF	INDICATION	PMF	PMF
PROPERTY-					
BASIC GRP I	678,691	0.980	-2.6%	0.955	0.955
BASIC GRP II	257,208	0.648	9.8	0.712	0.712
SP CAUSE/LOSS	232,483	0.955	-4.8	0.909	0.909
*CRIME	1,400	0.774	0.0	0.774	0.774
*INL. MAR.	2,354	0.855	6.4	0.910	0.910
*FIDELITY	6,783	1.000	0.0	1.000	1.000
TOTAL	1,178,919	0.90	-2.8%	0.874	0.87
LIABILITY-					
M&C	746,029	0.762	3.7	0.790	0.790
LOCAL PRODUCT	64,875	0.795	2.1	0.812	0.812
*MULTI PRODUCT	154,461	0.841	2.7	0.864	0.864
TOTAL	965,365	0.78	2.9%	0.802	0.80
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PROP. & LIAB. TOTAL	2,144,284		-0.3%		

CONTRACTORS(38)	(1)	(2) CURRENT IMPLICIT	(3) NET	(4) INDIC.	(5) CAPPED
************	AGGREGATE				
COVERAGE	LOSS COSTS	PMF	INDICATION	PMF	PMF
PROPERTY-					
BASIC GRP I	636,265	0.931	-2.9%	0.904	0.931
BASIC GRP II	308,897	0.919	7.3	0.986	1.015
SP CAUSE/LOSS	208,505	0.944	-4.0	0.906	0.933
*CRIME	128	0.774	0.0	0.774	0.774
*INL. MAR.	581	0.855	6.4	0.910	0.910
*FIDELITY	13,087	1.000	0.0	1.000	1.000
TOTAL	1,167,463	0.93	-0.3%	0.927	0.95
LIABILITY-					
M&C	3,737,827	0.970	2.7	0.996	0.991
LOCAL PRODUCT	2,528,401	0.972	4.8	1.019	1.013
TOTAL	6,266,228	0.97	3.6%	1.005	1.00
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PROP. & LIAB. TOTAL	7,433,691		3.0%		

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 * indicates coverage for which reviews are on a MULTISTATE basis.
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STATEWIDE	(1)	(2)	(3)	(4)	(5)
************		CURRENT			
	AGGREGATE	IMPLICIT	NET	INDIC.	CAPPED
COVERAGE	LOSS COSTS	PMF	INDICATION	PMF	PMF
PROPERTY-					
BASIC GRP I	7,369,204	0.936	-5.0%	0.890	0.892
BASIC GRP II	4,729,678	0.811	10.0	0.893	0.894
SP CAUSE/LOSS	2,922,347	0.852	-2.6	0.830	0.832
*CRIME	29,119	0.774	0.0	0.774	0.774
*INL. MAR.	226,744	0.855	6.4	0.910	0.910
*FIDELITY	161,295	1.000	0.0	1.000	1.000
TOTAL	15,438,387	0.881	-0.1%	0.880	0.882
LIABILITY-					
OL&T	6,126,323	0.938	1.0%	0.948	0.948
M&C	6,003,054	0.908	2.8	0.933	0.930
LOCAL PRODUCT	3,165,402	1.008	4.1	1.049	1.044
*MULTI PRODUCT	594,239	0.855	1.5	0.868	0.868
TOTAL	15,889,018	0.934	2.5%	0.958	0.956
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PROP. & LIAB. TOTAL	31,327,405		1.2%		

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

MONTANA

TABLE 2

COMMERCIAL PACKAGE POLICY

COMBINED PMFs

TYPE OF POLICY	CURRENT COMBINED	INDICATED COMBINED	CAPPED COMBINED
MOTEL/HOTEL(31)	0.94	0.944	0.94
APARTMENT (32)	0.85	0.865	0.86
OFFICE (33)	0.94	0.939	0.94
MERCANTILE (34)	0.88	0.885	0.89
INSTITUTION(35)	0.83	0.833	0.83
SERVICES (36)	0.98	0.957	0.96
IND/PROC (37)	0.83	0.840	0.84
CONTRACTORS(38)	0.97	0.993	0.99

NOTE: Combined PMFs are provided for informational purposes only.

EXPLANATORY NOTES TO TABLE 2

CALCULATION OF REVISED PACKAGE MODIFICATION FACTORS

OBJECTIVE

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.

The types of insured which can be written under a CPP are generally categorized into the following Types of Policy:

. 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

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.

CPP PMF
REVIEW
PROCEDURE

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).

A detailed explanation of the calculation of the revised PMFs follows.

LINES OF INSURANCE (COVERAGES) INCLUDED

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

<u>Property Coverages</u>

. 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.

<u>Liability Coverages</u>

. 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:

   - <u>Products</u>: experience for this category is reviewed on a multistate basis.
   - <u>Local Products/ Completed Operations</u>: experience for this category reflects an exposure to loss which is local in nature; therefore, individual state experience is used.

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

TABLE OF CONTENTS

SECTION B - CALCULATION OF PROPOSED CHANGES

PROPERTY COVERAGES

Commercial Fire & Allied Lines

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	1.931	0.058	1.039	1.045	
31	1.010	0.022	1.000	1.006	-3.7%
32	0.421	0.033	0.972	0.977	-6.5%
33	0.389	0.020	0.981	0.987	-5.6%
34	1.037	0.098	1.004	1.009	-3.4%
35	0.555	0.045	0.974	0.979	-6.3%
36	0.573	0.075	0.959	0.964	-7.8%
37	1.464	0.033	1.013	1.018	-2.6%
38	1.368	0.029	1.009	1.015	-2.9%

RATING GROUP					
01	1.181	0.071	1.012	1.047	
02	1.221	0.026	1.005	1.040	
03	0.919	0.039	0.997	1.032	
04	0.590	0.249	0.877	0.907	
05	0.928	0.010	0.999	1.034	
06	2.079	0.048	1.036	1.072	
07	0.918	0.021	0.998	1.033	
08	0.869	0.099	0.986	1.021	
09	1.496	0.059	1.024	1.060	
10	0.768	0.065	0.983	1.017	
11	2.053	0.012	1.009	1.044	
13	2.028	0.092	1.067	1.104	
14	1.052	0.044	1.002	1.037	
15	0.438	0.054	0.956	0.990	
17	0.593	0.013	0.993	1.028	
18	0.769	0.024	0.994	1.028	
21	1.042	0.014	1.001	1.036	
22	0.580	0.027	0.985	1.020	

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

TABLE 4 - SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS

_____

	(1)	(2)	(3)	(4)	(5)
TOP	$ LST SQ FORMULA RELATIVITY	CREDIBILITY Z	Z-WTD. RELATIVITY	BALANCED RELATIVITY	INDICATED CHANGE *
10	1.430	0.064	1.023	1.022	
31	0.621	0.029	0.986	0.985	-3.6%
32	0.746	0.057	0.983	0.982	-3.9%
33	0.675	0.031	0.988	0.987	-3.4%
34	1.217	0.064	1.013	1.011	-1.1%
35	1.405	0.042	1.014	1.013	-0.9%
36	1.118	0.067	1.008	1.006	-1.6%
37	0.383	0.027	0.974	0.973	-4.8%
38	0.495	0.025	0.983	0.981	-4.0%

CATEGORY					
01	1.023	0.458	1.010	1.004	
02	0.758	0.047	0.987	0.981	
03	0.547	0.025	0.985	0.979	
04	0.529	0.028	0.982	0.976	
05	1.029	0.017	1.000	0.994	
06	1.343	0.007	1.002	0.996	
07	0.525	0.017	0.989	0.983	
08	1.264	0.020	1.005	0.999	
09	0.543	0.023	0.986	0.980	
10	3.119	0.009	1.010	1.004	
11	0.926	0.014	0.999	0.993	
12	0.633	0.034	0.985	0.979	
13	1.251	0.018	1.004	0.998	
14	1.621	0.028	1.014	1.007	

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

<u>EXPLANATORY NOTES TO TABLES 3 AND 4</u>

<u>BASIC GROUP I AND SPECIAL CAUSES OF LOSS RELATIVITY ANALYSIS</u>

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 loss cost level needs for Basic Group I;

(2)   determine monoline category loss cost level needs for Special Causes of Loss;

(3)   determine indicated changes to the eight property CPP Package Modification Factors (PMFs) based on Basic Group I/Special Causes of Loss experience.

COLUMN (1)

<u>LEAST SQUARES FORMULA RELATIVITIES</u>

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 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 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.

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:

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

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

SPECIAL CAUSES OF LOSS:

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

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

COLUMN (1)
(Cont'd)

. TOP_i is the relativity for the ith Type of Policy;

. RG_j is the relativity for the jth Rating Group;

. CAT_j is the relativity for the jth Category;

. W_{ij} is the aggregate loss costs for the ith Type of Policy, jth Rating Group or Category;

. R_{ij} is the experience ratio relativity for the ith Type of Policy, jth Rating Group or Category;

.   m is the number of Types of Policy in the analysis;

.   n is the number of Rating Groups or Categories 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 or Category 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 $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.

COLUMN (4)   BALANCED RELATIVITIES

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

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

TOP y indicated =   (TOP y current IPMF)x(TOP y relativity)
       IPMF   monoline relativity

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

MULTILINE
CONSIDERATIONS
(Cont'd)

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.

MONTANA
BASIC GROUP I RELATIVITY ANALYSIS
TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

		(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
TYPE OF POLICY	CATEGORY					
10 MONOLINE	01 APARTMENTS	87,410	546,304	5.724	2.183	2.646
	02 OTHER HABITATIONAL	52,031	234,680	2.689	1.656	2.007
	03 RESTAURANTS & BARS	25,038	138,895	0.012	1.205	1.461
	04 OTHER MERCANTILE RS	413,802	2,144,834	1.155	1.391	1.686
	05 PUBLIC BUILDINGS	15,155	63,199	0.007	1.205	1.461
	06 CHURCHES	2,611	18,586	0.059	1.215	1.473
	07 SCHOOLS	14,815	68,653	11.825	3.183	3.858
	08 OFFICES AND BANKS	111,108	587,285	1.609	1.474	1.787
	09 REC. FACILITIES	61,954	353,126	0.757	1.329	1.611
	10 HOTELS AND MOTELS	101,676	536,126	0.689	1.316	1.595
	11 HOSPITALS/NURS H0ME	13,439	81,917	0.109	1.222	1.481
	13 MOTOR VEHICLE RISKS	80,944	424,475	0.149	1.224	1.484
	14 OTHER NON-MANUF.	40,009	226,357	0.057	1.211	1.468
	15 STORAGE	56,815	290,138	0.579	1.299	1.575
	17 FOOD MANUFACTURING	26,253	140,245	0.000	1.203	1.458
	18 WOOD MANUFACTURING	20,649	101,995	0.068	1.215	1.473
	21 METAL MANUFACTURING	20,459	118,959	0.286	1.251	1.516
	22 OTHER MANUFACTURING	22,445	97,810	0.000	1.204	1.459
	TOTAL*	1,166,613	6,173,584	1.411	1.439	1.744
31 MULTILINE MOTEL/HOTEL	10 HOTELS AND MOTELS	419,081	2,237,652	0.697	0.688	0.834
	TOTAL*	419,081	2,237,652	0.697	0.688	0.834
32 MULTILINE APARTMENT	01 APARTMENTS	484,162	2,528,219	0.350	0.417	0.505
	02 OTHER HABITATIONAL	160,546	840,612	0.672	0.666	0.807
	TOTAL*	644,708	3,368,831	0.430	0.479	0.581
33 MULTILINE OFFICE	08 OFFICES AND BANKS	530,025	2,067,884	0.179	0.300	0.364
	TOTAL*	530,025	2,067,884	0.179	0.300	0.364
34 MULTILINE MERCANTILE	03 RESTAURANTS & BARS	182,493	1,409,527	0.953	0.858	1.040
	04 OTHER MERCANTILE RS	1,448,354	7,121,852	0.462	0.480	0.582
	08 OFFICES AND BANKS	27,231	168,445	0.083	0.490	0.594
	13 MOTOR VEHICLE RISKS	153,548	531,490	6.789	3.572	4.330
	14 OTHER NON-MANUF.	36,593	231,505	0.000	0.439	0.532
	15 STORAGE	262,802	1,398,999	0.129	0.301	0.365
	TOTAL*	2,111,021	10,861,818	0.910	0.715	0.866

MONTANA
BASIC GROUP I RELATIVITY ANALYSIS
TABLE 5 - SUMMARY OF EXPERIENCE USED IN SIMULTANEOUS REVIEW

		(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
TYPE OF POLICY	CATEGORY					
35 MULTILINE INSTITUTIONAL	02 OTHER HABITATIONAL	2,973	11,043	0.000	0.548	0.664
	05 PUBLIC BUILDINGS	62,896	331,918	0.339	0.535	0.648
	06 CHURCHES	385,391	2,013,227	1.150	1.024	1.241
	07 SCHOOLS	126,988	799,438	0.152	0.376	0.456
	08 OFFICES AND BANKS	86,666	384,730	0.514	0.599	0.726
	09 REC. FACILITIES	78,002	389,936	0.006	0.387	0.469
	11 HOSPITALS/NURS H0ME	101,580	406,695	1.818	1.151	1.395
	13 MOTOR VEHICLE RISKS	2,007	7,322	0.000	0.550	0.667
	14 OTHER NON-MANUF.	39,705	353,690	0.031	0.408	0.495
	TOTAL*	886,208	4,697,999	0.807	0.783	0.949
36 MULTILINE SERVICES	03 RESTAURANTS & BARS	8,601	76,200	0.149	0.757	0.918
	04 OTHER MERCANTILE RS	159,225	851,585	0.453	0.792	0.960
	08 OFFICES AND BANKS	109,399	795,703	0.109	0.736	0.892
	09 REC. FACILITIES	295,176	1,778,798	1.413	0.967	1.172
	13 MOTOR VEHICLE RISKS	605,899	3,075,145	1.338	0.968	1.173
	14 OTHER NON-MANUF.	156,228	850,567	0.371	0.779	0.944
	15 STORAGE	98,945	583,972	1.183	0.912	1.105
	21 METAL MANUFACTURING	686	10,814	0.000	0.737	0.893
	22 OTHER MANUFACTURING	29,046	122,263	0.000	0.735	0.891
	TOTAL*	1,463,205	8,145,047	1.017	0.901	1.093
37 MULTILINE INDUST/PROCESS	04 OTHER MERCANTILE RS	111,348	604,068	0.331	0.776	0.941
	08 OFFICES AND BANKS	9,557	57,153	0.126	0.754	0.914
	13 MOTOR VEHICLE RISKS	299	3,627	0.000	0.738	0.895
	14 OTHER NON-MANUF.	13,629	74,824	0.000	0.736	0.892
	15 STORAGE	3,587	8,691	0.000	0.737	0.893
	17 FOOD MANUFACTURING	87,272	401,761	0.126	0.747	0.905
	18 WOOD MANUFACTURING	174,098	881,565	1.693	1.000	1.212
	21 METAL MANUFACTURING	107,956	451,143	4.180	1.378	1.670
	22 OTHER MANUFACTURING	170,945	876,531	0.165	0.744	0.902
	TOTAL*	678,691	3,359,363	1.213	0.916	1.110
38 MULTILINE CONTRACTORS	04 OTHER MERCANTILE RS	539,008	2,574,472	0.235	0.727	0.881
	08 OFFICES AND BANKS	69,096	344,917	0.031	0.734	0.890
	14 OTHER NON-MANUF.	28,161	119,020	0.000	0.735	0.891
	TOTAL*	636,265	3,038,409	0.202	0.728	0.883

MONTANA
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	571,572	3,074,523	1.172	0.687	0.833
	02 OTHER HABITATIONAL	215,550	1,086,335	1.150	0.904	1.095
	03 RESTAURANTS & BARS	216,132	1,624,622	0.812	0.894	1.084
	04 OTHER MERCANTILE RS	2,671,737	13,296,811	0.518	0.702	0.851
	05 PUBLIC BUILDINGS	78,051	395,117	0.275	0.665	0.806
	06 CHURCHES	388,002	2,031,813	1.143	1.026	1.243
	07 SCHOOLS	141,803	868,091	1.372	0.669	0.811
	08 OFFICES AND BANKS	943,082	4,406,117	0.356	0.558	0.677
	09 REC. FACILITIES	435,132	2,521,860	1.067	0.914	1.109
	10 HOTELS AND MOTELS	520,757	2,773,778	0.695	0.811	0.983
	11 HOSPITALS/NURS H0ME	115,019	488,612	1.618	1.159	1.405
	13 MOTOR VEHICLE RISKS	842,697	4,042,059	2.213	1.466	1.777
	14 OTHER NON-MANUF.	314,325	1,855,963	0.196	0.742	0.899
	15 STORAGE	422,149	2,281,800	0.436	0.582	0.706
	17 FOOD MANUFACTURING	113,525	542,006	0.097	0.852	1.033
	18 WOOD MANUFACTURING	194,747	983,560	1.521	1.023	1.240
	21 METAL MANUFACTURING	129,101	580,916	3.541	1.355	1.642
	22 OTHER MANUFACTURING	222,436	1,096,604	0.127	0.789	0.957
	TOTAL*	8,535,817	43,950,587	0.865	0.825	1.000

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

MONTANA
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
10 MONOLINE	01 BUILDINGS	431,065	1,944,851	1.577	1.453
	02 RES. APTS. AND COND	16,661	81,041	0.380	0.350
	03 OFFICES	19,657	109,932	1.003	0.924
	04 MERCANTILE - HIGH	25,257	144,920	1.113	1.026
	05 MERCANTILE - MEDIUM	5,684	27,172	15.283	14.086
	06 MERCANTILE - LOW	1,979	12,623	11.019	10.156
	07 MOTELS AND HOTELS	20,729	116,620	0.832	0.767
	08 INSTITUTIONAL - HIG	8,065	59,501	0.081	0.075
	09 INSTITUTIONAL - LOW	9,766	48,148	0.143	0.132
	10 INDUST-PROC - HIGH	3,208	15,469	10.498	9.676
	11 INDUST-PROC - LOW	7,638	44,943	0.347	0.320
	12 SERVICE - HIGH	9,197	41,271	1.379	1.271
	13 SERVICE - LOW	7,695	51,188	2.911	2.683
	14 CONTRACTORS	8,552	26,488	5.170	4.765
	TOTAL*	575,153	2,724,167	1.700	1.567
31 MULTILINE MOTEL/HOTEL	01 BUILDINGS	215,485	1,049,004	0.687	0.633
	07 MOTELS AND HOTELS	31,019	144,330	0.331	0.305
	TOTAL*	246,504	1,193,334	0.642	0.592
32 MULTILINE APARTMENT	01 BUILDINGS	339,087	1,768,217	0.822	0.758
	02 RES. APTS. AND COND	128,221	661,445	0.637	0.587
	TOTAL*	467,308	2,429,662	0.771	0.711
33 MULTILINE OFFICE	01 BUILDINGS	253,140	991,964	0.747	0.688
	03 OFFICES	72,004	262,713	0.374	0.345
	04 MERCANTILE - HIGH	26	82	0.000	0.000
	08 INSTITUTIONAL - HIG	311	1,595	0.000	0.000
	11 INDUST-PROC - LOW	24	73	0.000	0.000
	12 SERVICE - HIGH	482	1,702	0.000	0.000
	14 CONTRACTORS	128	300	0.000	0.000
	TOTAL*	326,115	1,258,429	0.662	0.610

MONTANA

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	01 BUILDINGS	466,663	2,117,564	1.349	1.243
MERCANTILE	03 OFFICES	252	374	0.000	0.000
	04 MERCANTILE - HIGH	52,172	278,103	0.615	0.567
	05 MERCANTILE - MEDIUM	46,304	233,883	1.112	1.025
	06 MERCANTILE - LOW	23,176	99,392	1.691	1.559
	08 INSTITUTIONAL - HIG	1	30	0.000	0.000
	12 SERVICE - HIGH	2,634	7,505	0.000	0.000
	13 SERVICE - LOW	599	2,524	0.000	0.000
	14 CONTRACTORS	3,202	12,099	1.131	1.042
	TOTAL*	595,003	2,751,474	1.270	1.171
35 MULTILINE	01 BUILDINGS	221,120	1,284,463	1.548	1.427
INSTITUTIONAL	03 OFFICES	44	71	0.000	0.000
	08 INSTITUTIONAL - HIG	36,691	204,888	2.060	1.899
	09 INSTITUTIONAL - LOW	56,164	276,825	0.857	0.790
	12 SERVICE - HIGH	14	38	0.000	0.000
	13 SERVICE - LOW	35	35	0.000	0.000
	14 CONTRACTORS	5	32	0.000	0.000
	TOTAL*	314,073	1,766,352	1.484	1.368
36 MULTILINE	01 BUILDINGS	387,402	2,069,099	1.238	1.141
SERVICES	03 OFFICES	30	160	0.000	0.000
	04 MERCANTILE - HIGH	2,035	6,044	0.520	0.479
	05 MERCANTILE - MEDIUM	198	1,711	0.000	0.000
	06 MERCANTILE - LOW	128	647	0.000	0.000
	08 INSTITUTIONAL - HIG	7,170	32,468	0.000	0.000
	09 INSTITUTIONAL - LOW	7,797	31,751	0.000	0.000
	10 INDUST-PROC - HIGH	674	3,851	0.000	0.000
	11 INDUST-PROC - LOW	248	1,283	0.000	0.000
	12 SERVICE - HIGH	87,186	476,295	0.761	0.701
	13 SERVICE - LOW	37,298	220,719	1.460	1.346
	14 CONTRACTORS	2,190	13,470	0.000	0.000
	TOTAL*	532,356	2,857,498	1.130	1.041

MONTANA

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	01 BUILDINGS	169,963	809,814	0.438	0.404
INDUST/PROC	03 OFFICES	7	265	0.000	0.000
	04 MERCANTILE - HIGH	0	309	0.000	0.000
	05 MERCANTILE - MEDIUM	0	346	0.000	0.000
	10 INDUST-PROC - HIGH	25,936	123,231	0.973	0.897
	11 INDUST-PROC - LOW	35,994	165,123	0.566	0.522
	12 SERVICE - HIGH	215	807	0.000	0.000
	13 SERVICE - LOW	57	145	0.000	0.000
	14 CONTRACTORS	311	760	0.000	0.000
	TOTAL*	232,483	1,100,800	0.516	0.476
38 MULTILINE	01 BUILDINGS	130,893	626,911	0.595	0.548
CONTRACTORS	03 OFFICES	1,660	8,976	1.512	1.394
	04 MERCANTILE - HIGH	378	2,040	6.172	5.688
	08 INSTITUTIONAL - HIG	191	260	0.000	0.000
	11 INDUST-PROC - LOW	121	440	0.000	0.000
	12 SERVICE - HIGH	393	2,006	0.000	0.000
	14 CONTRACTORS	74,869	373,099	0.776	0.715
	TOTAL*	208,505	1,013,732	0.675	0.622
TOTAL ALL TOPS*	01 BUILDINGS	2,614,818	12,661,887	1.109	1.022
	02 RES. APTS. AND COND	144,882	742,486	0.607	0.559
	03 OFFICES	93,654	382,491	0.525	0.484
	04 MERCANTILE - HIGH	79,868	431,498	0.796	0.734
	05 MERCANTILE - MEDIUM	52,186	263,112	2.651	2.443
	06 MERCANTILE - LOW	25,283	112,662	2.412	2.223
	07 MOTELS AND HOTELS	51,748	260,950	0.532	0.490
	08 INSTITUTIONAL - HIG	52,429	298,742	1.454	1.340
	09 INSTITUTIONAL - LOW	73,727	356,724	0.672	0.619
	10 INDUST-PROC - HIGH	29,818	142,551	1.976	1.821
	11 INDUST-PROC - LOW	44,025	211,862	0.523	0.482
	12 SERVICE - HIGH	100,121	529,624	0.789	0.727
	13 SERVICE - LOW	45,684	274,611	1.682	1.550
	14 CONTRACTORS	89,257	426,248	1.187	1.094
	TOTAL*	3,497,500	17,095,448	1.085	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).

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.

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)/ 1.374	(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	941,718	0.884	0.643	0.164	0.941	0.941	0.9231	
MULTILINE	4,729,678	1.472	1.071	0.502	1.036	1.035	1.0157	
COVERAGE	5,671,396	1.374	1.000			1.0194 B	1.0003	
MULTILINE TOP								
31 MOTEL/HOTEL	332,773	1.758	1.279	0.063	1.018	1.045	1.0251	+11.0%
32 APARTMENT	646,126	2.378	1.731	0.122	1.089	1.118	1.0967	+18.8%
33 OFFICE	382,676	0.959	0.698	0.057	0.983	1.009	0.9898	+7.2%
34 MERCANTILE	1,251,696	1.261	0.918	0.197	0.984	1.010	0.9908	+7.3%
35 INSTITUTIONAL	692,564	1.718	1.250	0.158	1.040	1.068	1.0477	+13.5%
36 SERVICES	857,738	1.172	0.853	0.166	0.976	1.002	0.9829	+6.5%
37 INDUST/PROCESS	257,208	1.559	1.135	0.046	1.006	1.033	1.0133	+9.8%
38 CONTRACTORS	308,897	0.971	0.707	0.056	0.984	1.010	0.9908	+7.3%
	4,729,678	1.472 B	1.071		1.009 B	1.035 B	1.0157	

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) * (1.036/1.009)
F - (7) = (6) / 1.0194
G - (8) = (NORMALIZED RELATIVITY FOR TOP)/(NORMALIZED MONOLINE RELATIVITY (TOP 10)) - 1

<u>EXPLANATORY NOTES TO TABLE 7</u>

<u>BASIC GROUP II RELATIVITY ANALYSIS</u>

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)

<u>AGGREGATE LOSS COSTS</u>

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)

<u>10 - YEAR EXPERIENCE RATIO</u>

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)

<u>FORMULA RELATIVITY</u>

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.

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.

COLUMN (7)   <u>NORMALIZED FORMULA RELATIVITY</u>

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)   <u>INDICATED LOSS COST CHANGES</u>

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.

MONTANA

TABLE 8

<u>**COMMERCIAL I.M. RELATIVITY ANALYSIS**</u>

(1) TOP	(2) BALANCED RELATIVITY	(3) CURRENT IPMF	(4) INDICATED IPMF*	(5) SELECTED IPMF
10	1.000	0.855	0.910	0.910
3X & 7X	1.064			

CLASSIFICATION

150	0.922
191	1.086
192	0.772
220	0.773
221	0.738
234	1.224
235	1.071
240	0.772
241	0.697
327	0.740
328	0.914
340	0.630
341	0.740
342	0.734
343	0.750
403	0.630
451	0.929
452	0.762
453	0.795
454	0.701
460	0.484
482	0.878
510	0.647
514	0.613
530	0.627
534	0.740

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

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
MONOLINE 10	150	311,633	1,898,096	1.151	1.320
	191	5,446,492	15,816,054	1.032	1.183
	192	862,002	2,760,886	0.627	0.719
	220	5,112	87,903	5.716	6.555
	221	1,491	2,853	1.199	1.375
	234	5,224,155	20,144,072	0.600	0.688
	235	8,439,000	24,407,283	0.761	0.873
	240	928,183	3,685,254	0.656	0.752
	241	15,553	114,739	0.053	0.061
	327	18,917	91,546	0.000	0.000
	328	2,319,887	11,908,665	0.792	0.908
	340	40,688	87,993	0.000	0.000
	341	0	0	0.000	0.000
	342	19,188	65,375	0.555	0.636
	343	589	3,417	343.665	540.900
	403	1,600,852	5,771,545	0.345	0.396
	451	3,309,677	12,953,836	0.855	0.981
	452	34,702	137,467	1.628	1.867
	453	45,575	212,456	3.203	3.673
	454	164,836	745,300	0.734	0.842
	460	790,198	3,687,530	0.415	0.476
	482	839,364	2,841,134	0.986	1.131
	510	3,252	39,977	0.020	0.023
	514	446,469	1,612,361	0.339	0.389
	530	504,434	2,697,004	0.489	0.561
	534	0	0	0.000	0.000
	TOTAL#	31,372,249	111,772,746	0.785	0.900

MONTANA

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 ##	150	676,573	3,131,768	0.846	0.970
3X & 7X	191	567,114	2,540,634	0.824	0.945
	192	190,545	736,138	0.879	1.008
	220	6,050	26,789	1.624	1.862
	221	5,267	25,377	0.274	0.314
	234	11,903,708	49,355,379	1.237	1.419
	235	449,271	2,236,486	3.064	3.514
	240	10,947	56,431	2.111	2.421
	241	4,724	14,442	0.020	0.023
	327	2,764	17,722	0.000	0.000
	328	372	2,585	179.561	205.919
	340	30,844	124,594	0.017	0.019
	341	0	0	0.000	0.000
	342	5,714	28,700	0.000	0.000
	343	2,226	7,513	0.000	0.000
	403	450,866	2,271,176	0.787	0.903
	451	89,579	412,124	0.384	0.440
	452	35,794	194,161	0.569	0.653
	453	32,298	98,614	0.157	0.180
	454	214,372	924,700	0.291	0.334
	460	3,395,394	14,204,359	0.338	0.388
	482	119,791	714,969	0.738	0.846
	510	21,882	114,478	0.000	0.000
	514	59,351	282,682	0.078	0.089
	530	1,061,303	4,491,092	0.441	0.506
	534	0	0	0.000	0.000
	TOTAL#	19,336,749	82,012,913	1.013	1.162

REFLECTS CURRENT IPMF OF   0.855.

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
TOTAL ALL TOPS#	150	988,206	5,029,864	0.942	1.080
	191	6,013,606	18,356,688	1.012	1.161
	192	1,052,547	3,497,024	0.673	0.772
	220	11,162	114,692	3.498	4.011
	221	6,758	28,230	0.478	0.548
	234	17,127,863	69,499,451	1.043	1.196
	235	8,888,271	26,643,769	0.877	1.006
	240	939,130	3,741,685	0.673	0.772
	241	20,277	129,181	0.045	0.052
	327	21,681	109,268	0.000	0.000
	328	2,320,259	11,911,250	0.821	0.942
	340	71,532	212,587	0.007	0.008
	341	0	0	0.000	0.000
	342	24,902	94,075	0.428	0.491
	343	2,815	10,930	281.143	322.412
	403	2,051,718	8,042,721	0.442	0.507
	451	3,399,256	13,365,960	0.843	0.967
	452	70,496	331,628	1.090	1.250
	453	77,873	311,070	1.940	2.225
	454	379,208	1,670,000	0.484	0.555
	460	4,185,592	17,891,889	0.353	0.405
	482	959,155	3,556,103	0.955	1.095
	510	25,134	154,455	0.003	0.003
	514	505,820	1,895,043	0.308	0.353
	530	1,565,737	7,188,096	0.456	0.523
	534	0	0	0.000	0.000
	TOTAL#	50,708,998	193,785,659	0.872	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.

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

              (1)          (2)         (3)          (4)          (5)
            BAILEY
            FORMULA    CREDIBILITY    Z-WTD      BALANCED     INDICATED
      TOP   RELATIV.       Z        RELATIV.    RELATIV.     CHANGE *

      10     0.927       0.099       0.993       0.992

      31     1.156       0.080       1.012       1.011        +1.9%
      32     0.899       0.052       0.994       0.994        +0.2%
      33     1.142       0.095       1.013       1.012        +2.0%
      34     0.949       0.124       0.994       0.993        +0.1%

      35     1.651       0.076       1.039       1.039        +4.7%
      36     0.774       0.071       0.982       0.982        -1.0%



    CLASS
    GROUP
      01     0.958       0.053       0.998       1.000
      02     0.733       0.070       0.979       0.981
      03     1.095       0.084       1.008       1.010

      04     1.066       0.018       1.001       1.004
      05     1.754       0.023       1.013       1.016
      06     0.125       0.024       0.951       0.954

      07     1.508       0.072       1.030       1.033
      08     1.658       0.024       1.012       1.015
      09     1.318       0.095       1.027       1.029

      10     0.440       0.068       0.946       0.948
      11     0.663       0.054       0.978       0.980
      12     0.981       0.120       0.998       1.000

      13     0.807       0.032       0.993       0.996
      16     0.049       0.014       0.959       0.961
```

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

```
                            TABLE 11
                            MONTANA
                  MANUFACTURERS AND CONTRACTORS
                 BASIC LIMIT RELATIVE CHANGE ANALYSIS
                 -----------------------------------


              (1)          (2)         (3)          (4)         (5)
            BAILEY
            FORMULA    CREDIBILITY    Z-WTD      BALANCED     INDICATED
     TOP    RELATIV.        Z        RELATIV.    RELATIV.     CHANGE *

     10      0.848       0.126        0.979       0.983

     33      0.604       0.021        0.989       0.994        +1.1%
     34      0.899       0.050        0.995       0.999        +1.6%
     35      4.809       0.031        1.050       1.054        +7.2%
     36      1.201       0.071        1.013       1.017        +3.5%

     37      1.325       0.051        1.014       1.019        +3.7%
     38      1.043       0.140        1.006       1.010        +2.7%



   CLASS
   GROUP
     30      1.034       0.047        1.002       1.001
     31      1.192       0.089        1.016       1.015
     32      0.991       0.150        0.999       0.998

     33      0.958       0.061        0.997       0.997
     34      1.088       0.079        1.007       1.006
     35      0.944       0.018        0.999       0.998

     36      1.303       0.038        1.010       1.009
     37      0.185       0.019        0.968       0.968
     38      0.768       0.047        0.988       0.987
```

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

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

SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS

		(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.
TYPE OF POLICY	CLASS GROUP						
10 MONOLINE	01 FOOD&BEV.(RETAIL)	$50,087	$110,996	3.009	2.910	8	0.992
	02 RESTAURANTS	129,914	396,220	0.031	0.030	4	0.973
	03 STORES	71,049	356,365	0.593	0.574	13	1.002
	04 VENDING & RENTAL	4,582	22,848	0.067	0.065	1	0.996
	05 FOOD & BEV. DIST.	6,903	26,681	0.000	0.000	0	1.008
	06 NON-FOOD&BEV.DIST	13,039	66,676	0.153	0.148	3	0.946
	07 CLUBS,AMSMT&SPRTS	148,415	534,383	1.790	1.731	34	1.025
	08 HEALTH CARE FACIL	10,271	44,859	0.000	0.000	0	1.007
	09 HOTELS AND MOTELS	168,161	641,024	1.345	1.301	36	1.021
	10 SCHLS & CHURCHES	66,298	450,385	0.197	0.190	11	0.941
	11 APARTMENTS	199,526	713,498	0.663	0.641	13	0.973
	12 BUILDINGS&OFFICES	258,001	1,197,332	0.932	0.902	50	0.992
	13 MISC. PREMISES	29,226	87,680	0.557	0.539	4	0.988
	16 GOVT SUBDIVISIONS	0	412	0.000	0.000	0	0.954
	TOTAL *	$1,155,472	$4,649,359	0.946		177	
31 MULT MOTEL/HOTEL	09 HOTELS AND MOTELS	$490,163	$2,128,030	1.575	1.524	118	1.041
	TOTAL *	$490,163	$2,128,030	1.575		118	
32 MULT APARTMENT	11 APARTMENTS	$196,264	$1,062,536	0.588	0.569	40	0.975
	12 BUILDINGS&OFFICES	59,579	259,389	1.003	0.971	10	0.994
	TOTAL *	$255,843	$1,321,925	0.685		50	
33 MULT OFFICE	12 BUILDINGS&OFFICES	$835,460	$3,899,115	1.160	1.122	164	1.013
	13 MISC. PREMISES	2,746	11,701	0.601	0.581	0	1.008
	TOTAL *	$838,206	$3,910,816	1.158		164	
34 MULT MERCANTILE	01 FOOD&BEV.(RETAIL)	$264,048	$859,602	0.543	0.526	43	0.993
	02 RESTAURANTS	674,460	2,868,375	0.849	0.821	86	0.974
	03 STORES	241,378	1,012,208	1.133	1.096	106	1.003
	04 VENDING & RENTAL	1,183	15,348	0.000	0.000	0	0.997
	05 FOOD & BEV. DIST.	31,347	147,663	2.091	2.023	10	1.009
	06 NON-FOOD&BEV.DIST	32,414	189,112	0.109	0.106	8	0.947
	12 BUILDINGS&OFFICES	84,345	501,052	0.884	0.855	27	0.993
	TOTAL *	$1,329,175	$5,593,360	0.852		280	

TABLE 12
MONTANA
OWNERS, LANDLORDS AND TENANTS
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.
35 MULT INSTITUT.	07 CLUBS,AMSMT&SPRTS	$33,704	$142,652	2.033	1.967	15	1.072
	08 HEALTH CARE FACIL	32,298	172,536	3.335	3.226	11	1.054
	10 SCHLS & CHURCHES	200,255	1,129,368	0.826	0.799	74	0.985
	12 BUILDINGS&OFFICES	2,169	11,232	0.066	0.064	1	1.039
	13 MISC. PREMISES	8,863	76,397	0.279	0.270	1	1.034
	16 GOVT SUBDIVISIONS	15,113	198,915	0.084	0.081	4	0.998
	TOTAL *	$292,402	$1,731,100	1.182		106	
36 MULT SERVICES	03 STORES	$20,800	$110,357	1.752	1.695	9	0.992
	04 VENDING & RENTAL	16,128	62,102	1.200	1.161	5	0.985
	07 CLUBS,AMSMT&SPRTS	259,557	1,192,524	1.079	1.044	45	1.014
	09 HOTELS AND MOTELS	53,047	249,455	0.797	0.771	9	1.010
	10 SCHLS & CHURCHES	608	2,237	0.000	0.000	0	0.931
	12 BUILDINGS&OFFICES	43,930	277,373	0.918	0.888	10	0.982
	13 MISC. PREMISES	23,040	139,820	1.384	1.339	14	0.977
	TOTAL *	$417,110	$2,033,868	1.080		92	
TOTAL ALL TOP	01 FOOD&BEV.(RETAIL)	$314,135	$970,598	0.936		51	
	02 RESTAURANTS	804,374	3,264,595	0.717		90	
	03 STORES	333,227	1,478,930	1.056		128	
	04 VENDING & RENTAL	21,893	100,298	0.898		6	
	05 FOOD & BEV. DIST.	38,250	174,344	1.714		10	
	06 NON-FOOD&BEV.DIST	45,453	255,788	0.122		11	
	07 CLUBS,AMSMT&SPRTS	441,676	1,869,559	1.391		94	
	08 HEALTH CARE FACIL	42,569	217,395	2.531		11	
	09 HOTELS AND MOTELS	711,371	3,018,509	1.463		163	
	10 SCHLS & CHURCHES	267,161	1,581,990	0.668		85	
	11 APARTMENTS	395,790	1,776,034	0.626		53	
	12 BUILDINGS&OFFICES	1,283,484	6,145,493	1.079		262	
	13 MISC. PREMISES	63,875	315,598	0.819		19	
	16 GOVT SUBDIVISIONS	15,113	199,327	0.084		4	
	TOTAL *	$4,778,371	$21,368,458	1.034		987	

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

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	30 SERVICE	$77,039	$405,255	0.420	0.506	7	0.984
	31 LIGHT CONTRACTING	272,995	1,232,275	0.864	1.041	47	0.998
	32 MEDIUM CONTRCTING	1,348,827	6,120,539	0.677	0.815	161	0.981
	33 HEAVY CONTRACTING	331,593	1,535,135	0.734	0.885	32	0.980
	34 DEALER OR DISTRIB	136,166	581,659	0.726	0.875	25	0.989
	35 LGT. MANUFACTURER	9,402	38,708	1.120	1.350	1	0.982
	36 MED. MANUFACTURER	46,475	354,629	0.685	0.826	3	0.993
	37 HVY. MANUFACTURER	60,643	134,811	0.552	0.665	4	0.952
	38 MISC. OPERATION	82,056	478,418	0.675	0.813	9	0.971
	TOTAL *	$2,365,196	$10,881,429	0.699		289	
33 MULT OFFICE	31 LIGHT CONTRACTING	$5,003	$27,872	2.943	3.547	5	1.008
	32 MEDIUM CONTRCTING	581	4,492	0.000	0.000	0	0.991
	33 HEAVY CONTRACTING	21,703	124,429	0.030	0.036	0	0.990
	38 MISC. OPERATION	8,509	37,125	0.188	0.226	3	0.980
	TOTAL *	$35,796	$193,918	0.474		8	
34 MULT MERCANTILE	30 SERVICE	$9,180	$68,991	1.186	1.430	1	1.000
	32 MEDIUM CONTRCTING	10,950	50,420	0.000	0.000	0	0.997
	34 DEALER OR DISTRIB	339,825	1,510,901	0.849	1.023	40	1.005
	36 MED. MANUFACTURER	548	3,313	0.000	0.000	0	1.008
	38 MISC. OPERATION	19,986	92,323	0.196	0.236	5	0.986
	TOTAL *	$380,489	$1,725,948	0.797		46	
35 MULT INSTITUT.	31 LIGHT CONTRACTING	$1,975	$6,851	10.022	12.079	2	1.070
	32 MEDIUM CONTRCTING	24,392	179,593	3.527	4.250	16	1.052
	TOTAL *	$26,367	$186,444	4.013		18	
36 MULT SERVICES	30 SERVICE	$30,800	$158,224	1.626	1.959	9	1.018
	31 LIGHT CONTRACTING	34,474	159,998	0.747	0.900	9	1.032
	32 MEDIUM CONTRCTING	34,658	121,983	0.220	0.266	3	1.015
	33 HEAVY CONTRACTING	8,187	43,445	7.774	9.369	3	1.014
	34 DEALER OR DISTRIB	214,324	954,470	1.058	1.275	48	1.023
	36 MED. MANUFACTURER	16,769	70,695	0.000	0.000	0	1.027
	38 MISC. OPERATION	116,538	478,068	0.723	0.872	20	1.004
	TOTAL *	$455,750	$1,986,883	1.005		92	

TABLE 13
MONTANA
MANUFACTURERS AND CONTRACTORS
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.
37 MULT INDUST/PROC.	31 LIGHT CONTRACTING	$136	$431	0.000	0.000	0	1.034
	32 MEDIUM CONTRCTING	118,630	564,312	0.835	1.006	8	1.016
	33 HEAVY CONTRACTING	14,421	159,561	2.446	2.948	4	1.015
	34 DEALER OR DISTRIB	1,903	14,989	0.601	0.724	2	1.025
	35 LGT. MANUFACTURER	31,361	139,653	0.902	1.087	5	1.017
	36 MED. MANUFACTURER	123,333	626,818	1.701	2.051	23	1.028
	37 HVY. MANUFACTURER	148,108	588,034	0.031	0.038	3	0.986
	38 MISC. OPERATION	3,284	15,562	3.339	4.024	3	1.005
	TOTAL *	$441,176	$2,109,360	0.882		48	
38 MULT CONTRACTORS	30 SERVICE	$189,746	$862,151	0.904	1.089	23	1.011
	31 LIGHT CONTRACTING	519,391	2,344,467	1.005	1.212	82	1.025
	32 MEDIUM CONTRCTING	1,091,921	5,492,264	0.952	1.148	218	1.008
	33 HEAVY CONTRACTING	401,633	1,554,665	0.616	0.742	30	1.007
	38 MISC. OPERATION	7,733	17,581	0.000	0.000	0	0.997
	TOTAL *	$2,210,424	$10,271,128	0.896		353	
TOTAL ALL TOP	30 SERVICE	$306,765	$1,494,621	0.863		40	
	31 LIGHT CONTRACTING	833,974	3,771,894	0.981		145	
	32 MEDIUM CONTRCTING	2,629,959	12,533,603	0.816		406	
	33 HEAVY CONTRACTING	777,537	3,417,235	0.759		69	
	34 DEALER OR DISTRIB	692,218	3,062,019	0.889		115	
	35 LGT. MANUFACTURER	40,763	178,361	0.952		6	
	36 MED. MANUFACTURER	187,125	1,055,455	1.292		26	
	37 HVY. MANUFACTURER	208,751	722,845	0.183		7	
	38 MISC. OPERATION	238,106	1,119,077	0.656		40	
	TOTAL *	$5,915,198	$27,355,110	0.830		854	

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

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                            TABLE 14
                            MONTANA
                            PRODUCTS
                  BASIC LIMIT RELATIVE CHANGE ANALYSIS
                  ------------------------------------


              (1)          (2)        (3)          (4)           (5)
            BAILEY
           FORMULA     CREDIBILITY   Z-WTD      BALANCED      INDICATED
   TOP     RELATIV.         Z       RELATIV.    RELATIV.      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: 1.008
                       TOP 36: 0.968
                       TOP 37: 1.029

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                                    TABLE 15
                                  MULTISTATE
                                   PRODUCTS
                      BASIC LIMIT RELATIVE CHANGE ANALYSIS
                   --------------------------------------------
                 SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS
```

		(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.
TYPE OF POLICY	CLASS GROUP						
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	

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* TOTALS IN COLUMN (3) ARE AVERAGES USING COLUMN (1) AS WEIGHTS.
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                          TABLE 16
                          MONTANA
              LOCAL PRODUCTS/COMPLETED OPERATIONS
              BASIC LIMIT RELATIVE CHANGE ANALYSIS
         ----------------------------------------------

                  (1)         (2)        (3)          (4)          (5)
                BAILEY
                FORMULA    CREDIBILITY   Z-WTD      BALANCED     INDICATED
         TOP    RELATIV.        Z       RELATIV.    RELATIV.     CHANGE *

         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

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

                  (1)          (2)         (3)        (4)
                BAILEY
                FORMULA    CREDIBILITY    Z-WTD     BALANCED
        STATE   RELATIV         Z        RELATIV   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
      Montana    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
                 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
                                      MONTANA
                          LOCAL PRODUCTS/COMPLETED OPERATIONS
                          BASIC LIMIT RELATIVE CHANGE ANALYSIS
                      --------------------------------------------
                      SUMMARY OF EXPERIENCE USED IN RELATIVE CHANGE ANALYSIS
```

		(1) CALENDAR A.Y.E. 12/31/2017 AGGREGATE LOSS COSTS AT	(2) CALENDAR A.Y.E. 2013 - 2017 AGG LOSS COST	(3) FIVE YEAR EXPERIENCE	(4)	(5) NUMBER OF	(6) BAL CELL
TYPE OF POLICY	CLASS GROUP	CURRENT LEVEL	CURRENT LEVEL	RATIO	RELATIV.	OCCURRENCES	RELATIV.
10 MONOLINE	01 RET.STRS-FOOD/DRG	$10,561	$35,012	0.000	0.000	0	0.961
	02 RET.STRS-NTFD/DRG	11,699	59,143	0.311	0.287	3	1.025
	11 COMP. OPS. (LOW)	63,061	210,003	0.382	0.352	4	1.040
	12 COMP. OPS. (MED)	759,664	3,070,202	1.495	1.379	67	1.023
	13 COMP. OPS. (HGH)	54,575	460,572	0.126	0.116	4	0.944
	TOTAL *	$899,560	$3,834,932	1.301		78	
34 MULT MERCANTILE	01 RET.STRS-FOOD/DRG	$45,576	$163,326	0.205	0.189	3	0.962
	02 RET.STRS-NTFD/DRG	40,991	187,049	1.534	1.415	4	1.027
	12 COMP. OPS. (MED)	6,383	38,172	0.000	0.000	0	1.024
	TOTAL *	$92,950	$388,547	0.777		7	
36 MULT SERVICES	01 RET.STRS-FOOD/DRG	$3,994	$16,121	0.000	0.000	0	0.976
	02 RET.STRS-NTFD/DRG	120,753	480,068	1.865	1.720	45	1.042
	11 COMP. OPS. (LOW)	75,677	325,840	1.409	1.300	14	1.056
	12 COMP. OPS. (MED)	13,335	153,990	1.102	1.017	6	1.040
	13 COMP. OPS. (HGH)	26,698	115,118	0.202	0.186	1	0.959
	TOTAL *	$240,457	$1,091,137	1.463		66	
37 MULT INDUST/PROC.	01 RET.STRS-FOOD/DRG	$59	$132	0.000	0.000	0	0.980
	11 COMP. OPS. (LOW)	367	1,444	0.000	0.000	0	1.060
	12 COMP. OPS. (MED)	37,284	179,713	3.008	2.775	2	1.043
	13 COMP. OPS. (HGH)	96	1,177	0.000	0.000	0	0.963
	TOTAL *	$37,806	$182,466	2.966		2	
38 MULT CONTRACTORS	11 COMP. OPS. (LOW)	$45,969	$244,308	0.639	0.590	2	1.090
	12 COMP. OPS. (MED)	1,321,378	5,947,645	1.291	1.191	131	1.073
	13 COMP. OPS. (HGH)	106,080	538,072	1.107	1.021	10	0.990
	TOTAL *	$1,473,427	$6,730,025	1.257		143	
TOTAL ALL TOP	01 RET.STRS-FOOD/DRG	$60,190	$214,591	0.155		3	
	02 RET.STRS-NTFD/DRG	173,443	726,260	1.682		52	
	11 COMP. OPS. (LOW)	185,074	781,595	0.865		20	
	12 COMP. OPS. (MED)	2,138,044	9,389,722	1.388		206	
	13 COMP. OPS. (HGH)	187,449	1,114,939	0.692		15	
	TOTAL *	$2,744,200	$12,227,107	1.297		296	

```
  * 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
```

		(1) CALENDAR A.Y.E. 12/31/2017 AGGREGATE LOSS COSTS AT	(2) CALENDAR A.Y.E. 2013 - 2017 AGG LOSS COST	(3) FIVE YEAR EXPERIENCE	(4)	(5)	(6)
TYPE OF POLICY	CLASS GROUP	CURRENT LEVEL	CURRENT LEVEL	RATIO	RELATIV.	NUMBER OF OCCURRENCES	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. ALCCL 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 relativities will serve to derive the relationship of the various classifications 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:

Owners, Landlords and Tenants -	type of policy and class group
Manufacturers and Contractors -	type of policy 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:

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

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

TOP_i is the relative change for the ith type of policy;

CG_j is the relative change for the jth class group;

W_{ij} is the aggregate loss costs at current level for the ith

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

r_{ij} is the relative change for the ith 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 Manufacturers and Contractors, and Products:

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

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

TOP_i is the relative change for the ith type of policy;

CG_j is the relative change for the jth class group;

W_{ij} is the aggregate loss costs at current level for the ith

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

r_{ij} is the relative change for the ith 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:

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

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

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

TOP_i is the relative change for the ith type of policy;

CG_j is the relative change for the jth class group;

ST_k is the relative change for the kth state;

W_{ijk} is the aggregate loss costs at current level for the ith

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

r_{ijk} is the relative change for the ith 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;

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EXPLANATORY NOTES TO GENERAL LIABILITY
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For Local Products/Completed Operations:

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

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

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

TOP_i is the relative change for the ith type of policy;

CG_j is the relative change for the jth class group;

ST_k is the relative change for the kth state;

W_{ijk} is the aggregate loss costs at current level for the ith

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

r_{ijk} is the relative change for the ith 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
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ITERATIVE
PROCEDURE
(Cont'd)

For example, for Owners, Landlords and Tenants, the procedure starts by inserting the actual relativities for type of policy into the second formula to get a class group relativity. The resultant class group relativities then produce a new set of type of policy relativities. 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:

$$W = R^Z$$ where:

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

R is the class group, 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.

MULTILINE
CONSIDERATIONS

The monoline relativities, the class group and state relativities which result from the aforementioned procedures are then used to generate indicated monoline classification loss cost changes. The multiline relativities, the class group and state relativities which result from the aforementioned procedures are then 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.