Risk-Based Capital (RBC) Premium Risk Charges—Differences in Premium Risk Charge by Type of Company

Report 8 of the CAS Risk-Based Capital (RBC) Research Working Parties

Issued by the RBC Dependencies and Calibration Working Party (DCWP)

Abstract: The paper examines differences in premium risk factors (PRFs) by type of company, i.e., reinsurers, personal lines, medical malpractice, etc.

Using the calibration approach developed in the CAS Dependencies and Calibration Working Party (DCWP) Report 6, we find that there is a close connection between the differences in PRFs by Type of Company and the "minor line effect" described in DCWP Report 6.

We also find that, even after adjusting for the minor line effect, many types of specialist companies indicate lower PRFs than non-specialists.

This is one of several papers being issued by the Risk-Based Capital (RBC) Dependencies and Calibration.

Keywords: Risk-Based Capital, Capital Requirements, Analyzing/Quantifying Risks, Assess/Prioritizing Risks, Integrating Risks

1. Introduction and Findings

Introduction

DCWP Report 6[1] described an improved method for using Annual Statement data in calibrating NAIC RBC premium risk factors (PRFs). In that method, indicated PRFs by line of business (LOB) are determined using combined data from all types of companies, i.e., personal lines companies, reinsurers and all others, without distinction.

In this report we examine data by type of company to determine the extent to which indicated PRFs vary by type of company for the following types of specialization: reinsurance, personal lines, medical malpractice, commercial property, workers compensation, commercial general liability, and non-specific commercial lines.

Also, within the private passenger automobile (PPA) liability and physical damage LOBs, we examined the extent to which PRFs vary based on "customer focus," i.e., preferred, standard, or non-standard.

The baseline method described in DCWP Report 6 uses data excluding "minor lines"

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[1] Casualty Actuarial Society E-Forum, CAS Research Working Party on Risk-Based Capital Dependencies and Calibration (DCWP), Risk-Based Capital (RBC) Premium Risk Charges—Improvements to Current Calibration Method, Report 6.

data points. Minor lines data points are defined as company/accident year/LOB data points where the premium for the LOB by year was less than 5% of the premium for all LOBs for that year and company. Minor lines data points are not necessarily small, but they represent a small percentage of a company's entire premium for a particular year.

Findings

Our findings are best described separately for Group 1: reinsurers, personal lines companies, and medical malpractice companies; and then for Group 2: various other types of commercial lines companies—workers compensation, commercial general liability, commercial property, and non-specific commercial lines.

For Group 1, our findings are as follows:

1. Using data including minor lines data points, there are often large differences between indicated PRFs for specialists and non-specialists by type of company.
2. Using data excluding minor lines data points, the differences in indicated PRFs between specialists and non-specialists are smaller, sometimes much smaller.
3. Specialists, in their area of specialization (specializing lines), have lower indicated PRFs than non-specialists

Points 1 and 2 demonstrate that the minor lines filter used in DCWP Report 6 has the effect of reducing differences in indicated PRFs by type of company, without the need to explicitly categorize companies by type.

Second, for the four commercial lines types of companies in Group 2 we found that the differences in PRFs between including and excluding minor lines data points is more random, sometimes higher or lower.

We did not investigate the reasons for the difference in observations between Group 1 and Group 2. However, as hypotheses for future research, we note that companies in the commercial lines categories may be less similar to each other than is the case for Group 1 types of companies, or perhaps Group 2 types of companies write riskier types of commercial lines business.

Finally, considering private passenger automobile <u>customer focus,</u> we found that indicated PRFs for preferred automobile companies are the lowest. The pattern of indicated PRFs is mixed as between standard and non-standard. The PPA liability indicated PRF is lower for non-standard than standard, but the Physical Damage indicated PRF is higher for

non-standard than for standard automobile.[2]

In the remainder of this report:

- Section 2 provides more detail regarding the definition of type of company and the use of the risk measurement data.
- Sections 3.1-3.7 present results separately for each type of company.
- Section 4 presents results by private passenger automobile customer focus.
- Section 5 outlines the manner in which we considered the effect of LOB-size on our findings.

1.1   Terminology, Assumed Reader Background and Disclaimer

This paper assumes the reader is generally familiar with the property/casualty RBC formula[3] and has a working knowledge of DCWP Report 6.

In this paper, references to "we" and "our" refer to the principal authors of this paper. The "working party," and "DCWP" refer to the RBC Dependencies and Calibration Working Party.

The analysis and opinions expressed in this report are solely those of the authors, and in particular are not those of the members' employers, the Casualty Actuarial Society, or the American Academy of Actuaries.

DCWP make no recommendations to the NAIC or any other body. DCWP and URWP material is for the information of CAS members, policy makers, actuaries and others who might make recommendations regarding the future of the P&C RBC formula. In particular, we expect that the material will be used by the American Academy of Actuaries.

This paper is one of a series of articles prepared under the direction of the CAS RBC Dependencies and Calibration Working Party.

In this report, we will use the term "premium risk factor" or PRF to mean the 87.5[th]-percentile loss ratio for the group of data points being observed. These loss ratios are computed using each individual data point's ratio of "loss and all loss adjustment expenses

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[2] We did not analyze the reasons for this observation about the PRF relationship between Standard and Non-Standard customer types, but it is possible that the data is not sufficiently refined to allow us to identify differences in PRF that might exist.

[3] For a detailed description of the formula and its basis, see Feldblum, Sholom, "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," *Proceedings of the Casualty Actuarial Society*, 1996 and NAIC, "Risk-Based Capital Forecasting & Instructions," Property Casualty, 2010.

net of reinsurance" to "earned premium net of reinsurance," as shown in Schedule P-Part 1, column 31. The methodology is described more fully in DCWP Report 6.

2. Data and Definitions

In our analysis we use two types of data:

- Information to assess indicated PRFs.
- Information to determine type of company/ private passenger customer focus.

The sections below discuss risk data (2.1), type of company data (2.2), customer focus data within private passenger automobile business (2.3), features of the overall data set (2.4) and definitions (2.5).

2.1 Risk Data

The data we used to determine indicated PRFs is as described in DCWP Report 6, accident years 1988-2010 loss and loss adjustment expense ratios at the latest available maturity from Schedule P in the 1997-2010 Annual Statements, by LOB and by company for individual companies and DWCP-defined group pools, as indicated. Thus, each data point is a single accident year and LOB for a single company or pool.

We removed certain data points using the filtering process explained in Section 3.2.2 of DCWP Report 6.

2.2 Categorization of Companies by Business Focus

For each AY/LOB/company data point, we assigned a type of company using the "Business Focus" categories by company assigned by SNL[R]. Table 2-1 below lists our understanding of the SNL Business Focus definitions.

Table 2-1: Areas of Business Focus and Their Definitions

	Business Focus	**Definition**
1	Professional Reinsurers	Companies that assume a very large percentage of their gross business.
2	Personal Lines	Companies that write 50% or more of their business in homeowners and private passenger auto LOBs.
3	Medical Malpractice	Companies that write a large percentage of their business in the medical professional liability LOBs.
5	Commercial Property	Companies that write a large percentage in commercial property lines such as commercial auto, commercial multi-peril, fire and allied lines. This focus includes commercial automobile liability and also may include personal business classified as fire and allied lines in the statement.
6	Workers Compensation	Companies that write a large percentage of their business in the workers compensation LOB.
7	Commercial General Liability	Companies that write a large percentage of their business in products liability and other liability LOBs.
8	Commercial Lines	Companies that write 50% or more of their business in commercial lines. However, these companies have a diversified book of business where no one LOB is the bulk of the total that they write.

LOBs and premium used for Business Focus assignment is from the Insurance Expense Exhibit (IEE), Underwriting & Investment (U&I) Exhibit, Part 1. For Professional Reinsurers, the Business Focus assignment is based on gross and net premium. Other Business Focus assignments are determined from the percentage of net premiums written (NPW) to total NPW the insurer writes in each of the Business Focus categories.

In using the Business Focus for our type of company assignments, we make two simplifications.

First, SNL assigns a Business Focus to each company, and not to pooled entities. For the DCWP pooled entities, we used the Business Focus that represented the companies that included the majority of premium in the pool. This simplification did not seem to distort the results, but we did not explore the potential impact extensively.

Second, since historical Business Focus assignments were not readily available, we assigned the type of company using the current Business Focus for all accident years for each company/pool. We use data as old as 1988, and we observe that for some companies the historical business does not fit the current business focus category. This simplification did not seem to distort the results, but we did not investigate the potential impact extensively.

2.3 Categorization of Companies by Primary Personal Automobile Customer Type

For private passenger automobile liability and automobile physical damage LOB data

points, we assigned a personal automobile customer type, i.e., preferred, standard or non-standard, using the SNL[R] customer types. Table 2-2 below lists our understanding of the SNL primary personal automobile customer type definitions.

Table 2-2: Primary Personal Automobile Customer Types and Their Definitions

Primary Personal Automobile Customer Type	Definition
Preferred	Individuals with a lack of violations or accidents are deemed to be "preferred" drivers, leading to the lowest premiums available. Companies that target high net worth individuals typically write large amounts of preferred insurance, so SNL also considered these writers to be preferred insurers. The preferred category can be further split into preferred and ultra preferred, though SNL placed both tiers into the preferred type. SNL put companies that mentioned the terms "preferred," "low risk" or "high net worth" into the preferred bucket.
Standard	Individuals that have an adequate number of years driving and limited amount of violations or accidents are deemed to be "standard" drivers. SNL placed insurers into the standard category if the companies' websites or public documents mentioned "normal" or "standard" risk. If the company gave no indication on the type of risk it wrote, SNL placed it into the standard category. SNL placed an insurer into the standard category if the company writes several types of risks and did not indicate which category had the largest amount of personal automobile premiums.
Non-Standard	Individuals with several accidents or traffic violations (especially DUIs), the elderly, teenagers, or those with other high risk factors, are considered to be "non-standard" drivers, leading to higher rates compared to standard clients. SNL put companies that mentioned "high risk," "DUIs," "non-standard" or "sub-standard" into the non-standard category.

A company is assigned a primary personal automobile customer type only if the company writes more than $1 million in direct or net private automobile premiums.

If a company writes more than one type of personal automobile customer, the company is assigned a primary personal automobile customer type determined by the majority of the premium.

A primary personal automobile customer type is assigned to all companies that write personal auto, regardless of the type of company.

In using the Customer Focus for our type of company assignments, we make the two simplifications that we applied to Business Focus with respect to pooled data points and use of the current Customer Focus assignment to historical data.

2.4   Overall Data Set

There are a total of 1,778 companies in our PRF data set, including 226 pooled entities (from 1,035 individual companies). One hundred twenty-four of these 1,778 companies had no type of company assigned to them which reduced the number of companies actually used to 1,654 (including 220 pooled entities).

Each LOB has a different number of data points for each of the type of company analysis. For some LOBs, there were no data points. In that case, the exhibits below show "N/A." Where the indicated PRF is based on 100 or fewer data points, perhaps as few as five companies, the indicated PRFs are identified with an asterisk and smaller font size.

2.5   Definitions—"Specialists" and "Specializing LOBs"

In each PRF analysis by type of company, the specialists are companies of the type being analyzed. Other companies are non-specialists. For example, in the analysis of PRFs for professional reinsurers, the companies categorized as professional reinsurers are specialists and all other companies are non-specialists.

The LOBs that the specialists specialize in are called the "specializing LOBs." For examplehomeowners and private passenger automobile liability are the specializing LOBs for a Personal Lines type of company. While usually obvious, these specializing LOBs are specified in each of the type of company sections below.

3. Analysis—Type of Company

The exhibits in subsections 3.1-3.7 below show specialist and non-specialist indicated PRFs by LOB for seven types of companies. For each type of company analysis, we show indicated PRFs by LOB separately for (a) specialists vs. non-specialists, separately with data, and (b) excluding vs. including minor lines data points.

In each exhibit, columns 1 and 2 show the indicated PRFs with minor line data points included. Columns 4 and 5 show the indicated PRFs with minor line data points excluded.

Column 3 shows the differences in indicated PRFs for specialists vs. non-specialists based on data including minor lines data points. Column 6 shows the differences in indicated PRFs for specialists vs. non-specialists, based on data excluding minor lines data points. Column 7 shows whether the magnitude of column 6 is less than (Y) or more than (N) the magnitude of column 3. Column 7 is blank if there are 100 or fewer data points underlying column 3 or column 6.

We discuss the findings by type of company in the sections below.

3.1   Professional Reinsurers

Definitions

The specialists in this section are companies that assume a very large percentage of their business.

The specializing LOBs for reinsurers are LOB N&P (reinsurance A&C) and LOB O (reinsurance B).

Minor Lines Effect for all LOBs

Exhibit 3.1, column 7 shows that the magnitudes of the differences in column 6 are nearly always less than the magnitude of the differences in column 3, for 10 of the 12 meaningful LOB differences. Line 20, columns 3 and 6, shows that the average difference between specialists and non-specialists decreases from 0.05 to 0.02 when minor line data points are excluded.

Thus, when minor line data points are excluded, the magnitude of the differences between specialist indicated PRFs and non-specialist indicated PRFs are reduced.

Also, on line 20, columns 1, 2, 4 and 5, show that after excluding minor line data points, the average PRF decreases from 1.11 to 1.02 for specialists and from 1.07 to 1.00 for non-specialists. Thus excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

For the two specializing LOBs, even after excluding minor lines data points, indicated PRFs for reinsurers are lower than indicated PRFs for non-specialists. Column 4 shows that the specialist-indicated PRFs are 1.29 and 1.31 for LOB N&P (reinsurance A&C) and LOB O (reinsurance B), respectively. By comparison, column 5 lines 15 and 16 show that the non-specialist indicated PRFs are 1.31 and 1.34 for the same LOBs.

Non-Specializing LOBs

Column 6, which is column 4 minus column 5, we see that specialist indicated PRFs for non-specializing LOBs are not consistently higher or lower than the indicated PRFs for the non-specialists. In some LOBs, such as LOB A (homeowners/farmowners), reinsurers have lower indicated PRFs than non-reinsurers (negative values). In other LOBs, such as LOB B (private passenger automobile liability), reinsurers have larger indicated PRFs than non-reinsurers (positive values).

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (0.96;

column 4) is somewhat higher than the PRF for non-specialists (0.94; column 5).

Exhibit 3.1: PRFs—Professional Reinsurers

			Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
	Line of Business (LOB)		(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	0.91	0.97	(0.06)	0.87	0.96	(0.08)	N
2	B	Priv. Passenger Auto Liability	1.08	0.98	0.10	1.00	0.97	0.03	Y
3	C	Commercial Auto Liability	1.12	0.98	0.14	0.98	0.98	(0.00)	Y
4	D	Workers Compensation	1.20	1.05	0.15	1.07	1.04	0.03	Y
5	E	Commercial Multiperil	1.04	0.92	0.12	1.00	0.88	0.12	N
6	F1	Medical Mal – Occurrence	1.60	1.67	(0.07)	N/A	1.46	N/A	
7	F2	Medical Mal - Claims made	1.31	1.20	0.11	0.946*	1.147*	(0.201)*	
8	G	Special Liability	1.12	0.97	0.15	1.02	0.93	0.09	Y
9	H	Other Liability	1.19	1.01	0.18	1.07	1.02	0.05	Y
10	I	Special Property	1.01	0.83	0.18	0.93	0.81	0.12	Y
11	J	Auto Physical Damage	0.93	0.86	0.06	0.81	0.84	(0.04)	Y
12	K	Fidelity & Surety	1.24	0.79	0.45	0.704*	0.648*	0.056*	
13	L	Other	1.12	0.97	0.15	0.87	0.93	(0.06)	Y
14	M	International	1.54	1.72	(0.18)	0.694*	0.912*	(0.217)*	
15	N&P	Reinsurance A & C	1.33	1.62	(0.29)	1.29	1.30	(0.02)	Y
16	O	Reinsurance B	1.33	1.65	(0.32)	1.31	1.34	(0.04)	Y
17	R	Products Liability	1.97	1.21	0.76	2.320*	1.167*	1.152*	
18	S*	Financial Guarantee*	1.332*	3.000*	(1.668)*	N/A*	2.410*	N/A*	
19	T*	Warranty*	N/A*	1.178*	N/A*	N/A*	1.270*	N/A*	
20	#/AVG - LOB w/ data		1.11	1.07	0.05	1.02	1.00	**0.02**	12
21	Non-Spec line w/ data		1.07	0.95	0.12	0.96	0.94	**0.03**	
22	Number "Y"								10

Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.

Specializing LOBs differences in column 6 are shaded.

3.2 Personal Lines

Definitions

The specialists in this section are companies that write 50% or more of their business in homeowners or private passenger automobile LOBs.

The specializing LOBs for personal lines companies are LOB A(homeowners/farmowners) and LOB B (private passenger automobile liability).

Minor Lines Effect for all LOBs

Exhibit 3.2, column 7 shows that the magnitudes of the differences in column 6 are usually less than the magnitude of the differences in column 3, for 8 of the 11 meaningful LOB differences. Line 20 shows that the magnitude of the average difference between specialists and non-specialists decreases from 0.08 to 0.05 when minor line data points are excluded.

Thus, when minor line data points are excluded, the magnitude of the differences between specialist indicated PRFs and non-specialist indicated PRFs are reduced.

Also, line 20 shows that after excluding minor line data points the average PRF decreases from 0.96 to 0.94 for specialists and from 1.04 to 0.99 for non-specialists. Thus excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

For the two specializing LOBs, even after excluding minor lines data points, indicated PRFs for personal lines companies are lower than the indicated PRFs for non-specialists. For instance, column 4 line 2 shows that the specialist indicated PRF for LOB B (private passenger automobile liability) is 0.95. This is less than the non-specialists indicated PRF of 1.03 for the same LOB, shown in column 5.

Non-Specializing LOBs

Looking at column 6, which is column 4 minus column 5, we see that the specialist indicated PRFs are usually lower than non-specialist indicated PRFs. The only exceptions with non-trivial number of data points are LOB G (special liability) and LOB J (automobile physical damage) in which the non-specialists indicated PRF is slightly lower than the specialist indicated PRF.

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (0.94) is somewhat lower than the PRF for non-specialists (0.98).

Exhibit 3.2: PRFs—Personal Lines

		Line of Business (LOB)	Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	0.95	0.98	(0.03)	0.95	0.96	(0.01)	Y
2	B	Priv. Passenger Auto Liability	0.95	1.05	(0.10)	0.95	1.03	(0.08)	Y
3	C	Commercial Auto Liability	0.90	1.02	(0.12)	0.90	1.00	(0.10)	Y
4	D	Workers Compensation	0.97	1.09	(0.12)	0.94	1.06	(0.12)	Y
5	E	Commercial Multiperil	0.86	0.97	(0.11)	0.81	0.92	(0.10)	Y
6	F1*	Medical Mal – Occurrence*	1.883*	1.657*	0.226*	N/A*	1.458*	N/A*	
7	F2*	Medical Mal - Claims made*	2.147*	1.192*	0.955*	1.024*	1.145*	(0.121)*	
8	G	Special Liability	0.93	1.01	(0.08)	1.20	0.94	0.26	N
9	H	Other Liability	0.90	1.05	(0.15)	0.87	1.03	(0.17)	N
10	I	Special Property	0.80	0.86	(0.06)	0.80	0.84	(0.04)	Y
11	J	Auto Physical Damage	0.85	0.88	(0.04)	0.84	0.84	0.01	Y
12	K	Fidelity & Surety	0.78	0.83	(0.06)	0.917*	0.643*	0.274*	
13	L	Other	0.93	1.00	(0.07)	0.88	0.94	(0.06)	Y
14	M*	International*	1.385*	1.624*	(0.240)*	N/A*	0.844*	N/A*	
15	N&P	Reinsurance A & C	1.55	1.52	0.03	1.20	1.30	(0.10)	N
16	O	Reinsurance B	1.72	1.47	0.26	1.231*	1.340*	(0.109)*	
17	R	Products Liability	1.12	1.28	(0.16)	0.894*	1.175*	(0.281)*	
18	S*	Financial Guarantee*	0.983*	3.000*	(2.017)*	N/A*	2.410*	N/A*	
19	T*	Warranty*	0.443*	1.237*	(0.794)*	N/A*	1.270*	N/A*	
20	#/AVG - LOB w/ data		0.96	1.04	(0.08)	0.94	0.99	**(0.05)**	11
21	Non-Spec line w/ data		0.96	1.05	(0.08)	0.94	0.98	**(0.05)**	
22	Number "Y"								8

Asterisks identify PRFs that were computed with fewer than 100 data points, and thus may be particularly unreliable.
Specializing LOBs differences in column 6 are shaded.

3.3   Medical Malpractice

Definitions

For this section, specialists are defined as insurers who write 50% or more of their business in medical malpractice LOBs.

The specializing LOBs are LOB F1(medical malpractice-occurrence) and LOB F2 (medical malpractice–claims-made).

Minor Lines Effect for all LOBs

Exhibit 3.3, column 7 shows that the magnitudes of the differences in column 6 are less than the magnitude of the differences in column 3, for three of the four meaningful LOB differences.   While line 20, columns 3 and 6 show that the average difference between

specialists and non-specialists increases from -0.04 to 0.06 when minor line data points are excluded, the average of the absolute value of the differences decreases.

Thus, when minor line data points are excluded, the magnitude of the differences between specialist indicated PRFs and non-specialist indicated PRFs are reduced.

Also, line 20 shows that after excluding minor line data points, the average PRF decreases from 1.27 to 1.22 for specialists and from 1.31 to 1.16 for non-specialists. Thus, excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

The specialists have lower indicated PRFs than non-specialists for both of the specializing LOBs. The specialists indicated PRFs when minor lines data points are excluded are 1.44 and 1.13 for LOB F1 (medical malpractice-occurrence) and LOB F2 (medical malpractice–claims-made), respectively. This is in comparison to the non-specialist indicated PRFs of 1.48 and 1.25 for the same LOBs.

Non-Specializing LOBs

For the non-specializing LOBs, the specialists have higher indicated PRFs than non-specialists. When minor lines data points are excluded, the specialist indicated PRFs for LOB E (commercial multiperil) and LOB H (other liability) are 1.05 and 1.23, respectively. This compares to the non-specialists indicated PRFs of 0.88 and 1.02 for the same LOBs, respectively.

Line 21 shows that on average, the specialists PRF for the two non-specializing LOBs (1.14) is higher than the PRF for non-specialists (0.95).

Exhibit 3.3: **PRFs—Medical Malpractice**

		Line of Business (LOB)	Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A*	Homeowners/Farmowners*	1.078*	0.963*	0.115*	1.024*	0.953*	0.071*	
2	B*	Priv. Passenger Auto Liability*	1.704*	0.984*	0.720*	N/A*	0.974*	N/A*	
3	C*	Commercial Auto Liability*	1.945*	0.988*	0.958*	0.786*	0.982*	(0.196)*	
4	D*	Workers Compensation*	1.063*	1.059*	0.004*	1.068*	1.041*	0.027*	
5	E	Commercial Multiperil	1.08	0.93	0.15	1.05	0.88	0.17	N
6	F1	Medical Mal – Occurrence	1.59	1.86	(0.27)	1.44	1.48	(0.04)	Y
7	F2	Medical Mal - Claims made	1.14	1.45	(0.32)	1.13	1.25	(0.11)	Y
8	G*	Special Liability*	0.639*	1.008*	(0.369)*	0.639*	0.947*	(0.308)*	
9	H	Other Liability	1.29	1.01	0.28	1.23	1.02	0.22	Y
10	I*	Special Property*	0.839*	0.835*	0.003*	1.141*	0.818*	0.323*	
11	J*	Auto Physical Damage*	1.133*	0.863*	0.270*	0.737*	0.842*	(0.105)*	
12	K*	Fidelity & Surety*	N/A*	0.826*	N/A*	N/A*	0.650*	N/A*	
13	L*	Other*	1.054*	0.989*	0.065*	1.063*	0.922*	0.141*	
14	M*	International*	N/A*	1.613*	N/A*	N/A*	0.844*	N/A*	
15	N&P*	Reinsurance A & C*	1.700*	1.535*	0.165*	1.185*	1.295*	(0.109)*	
16	O*	Reinsurance B*	2.010*	1.506*	0.504*	1.158*	1.338*	(0.180)*	
17	R*	Products Liability*	N/A*	1.257*	N/A*	N/A*	1.173*	N/A*	
18	S*	Financial Guarantee*	N/A*	2.825*	N/A*	N/A*	2.410*	N/A*	
19	T*	Warranty*	N/A*	1.178*	N/A*	N/A*	1.270*	N/A*	
20	#/AVG - LOB w/ data		1.27	1.31	(0.04)	1.22	1.16	**0.06**	4
21	Non-Spec line w/ data		1.18	0.97	0.22	1.14	0.95	**0.19**	
22	Number "Y"								3

*Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.
Specializing LOBs differences in column 6 are shaded.

3.4   Commercial Property

Definitions

Specialists in this section are defined as companies that write 50% or more of their business in the commercial property LOBs.

The specializing LOBs for these companies are LOB C (commercial automobile liability), LOB E (commercial multiperil), LOB I (special property) and LOB J (automobile physical damage).

Minor Lines Effect for all LOBs

Exhibit 3.4, column 7 shows that, excluding minor line data, the magnitudes of the differences between specialists and non-specialists is lower for 5 of 13 LOBs.

Line 20, columns 3 and 6 show that the average difference between specialists and non-specialists is essentially unchanged—0.04 in both cases—when minor line data points are excluded.

Thus, unlike the situation with the four Group 1 types of companies, excluding minor line data points does not significantly affect the magnitude of the differences between specialists and non-specialists.

However, line 20 columns 1 vs. 4 and 2 vs. 5 show that after excluding minor line data points, the average PRF decreases from .99 to .94 for specialists and from 1.03 to .98 for non-specialists. Thus, as is the case for the four Group 1 types of companies, excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

For the four specializing LOBs, the specialists have lower indicated PRFs than the non-specialists. For example, the specialists indicated PRF when minor lines data points are excluded for LOB I (special property) is 0.77, compared to the non-specialists indicated PRF of 0.84. For LOB J (automobile physical damage), the specialists comparable indicated PRF is 0.80 and the non-specialists indicated PRF is 0.85.

Non-Specializing LOBs

For the majority of the non-specializing LOBs, the specialists have lower indicated PRFs than non-specialists when minor lines data points are excluded. The exceptions are LOB B (private passenger automobile liability) and LOB K (fidelity & surety), where the specialists have higher indicated PRFs than non-specialists.

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (0.97) is somewhat higher than the PRF for non-specialists (1.02).

Exhibit 3.4: **PRFs—Commercial Property**

	Line of Business (LOB)		Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	0.96	0.96	(0.00)	0.95	0.95	(0.00)	Y
2	B	Priv. Passenger Auto Liability	1.03	0.98	0.05	1.02	0.97	0.05	Y
3	C	Commercial Auto Liability	0.98	0.99	(0.01)	0.97	0.99	(0.02)	N
4	D	Workers Compensation	1.07	1.06	0.01	1.03	1.04	(0.01)	N
5	E	Commercial Multiperil	0.90	0.95	(0.05)	0.88	0.89	(0.01)	Y
6	F1	Medical Mal – Occurrence	1.97	1.64	0.33	0.275*	1.465*	(1.190)*	
7	F2	Medical Mal - Claims made	1.44	1.20	0.24	0.949*	1.148*	(0.199)*	
8	G	Special Liability	0.86	1.05	(0.19)	0.85	0.99	(0.14)	Y
9	H	Other Liability	0.95	1.04	(0.09)	0.95	1.04	(0.09)	N
10	I	Special Property	0.78	0.85	(0.07)	0.77	0.84	(0.07)	N
11	J	Auto Physical Damage	0.84	0.87	(0.03)	0.80	0.85	(0.05)	N
12	K	Fidelity & Surety	0.93	0.81	0.12	0.81	0.64	0.18	N
13	L	Other	0.99	0.99	(0.00)	0.92	0.93	(0.01)	N
14	M*	International*	1.484*	1.641*	(0.157)*	0.784*	0.908*	(0.124)*	
15	N&P	Reinsurance A & C	1.56	1.53	0.03	1.18	1.30	(0.12)	N
16	O	Reinsurance B	1.69	1.50	0.19	1.216*	1.337*	(0.121)*	
17	R	Products Liability	1.07	1.34	(0.27)	1.04	1.27	(0.23)	Y
18	S*	Financial Guarantee*	N/A*	2.825*	N/A*	N/A*	2.410*	N/A*	
19	T*	Warranty*	1.195*	1.118*	0.077*	0.626*	1.410*	(0.783)*	
20	#/AVG - LOB w/ data		0.99	1.03	(0.04)	0.94	0.98	**(0.04)**	13
21	Non-Specline w/data		1.05	1.08	(0.04)	0.97	1.02	**(0.04)**	
22	Number "Y"								5

Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.

Specializing LOBs differences in column 6 are shaded.

3.5   Workers Compensation

Definitions

In this section, specialists are companies that write 50% or more of their business in workers compensation.

LOB D (workers compensation) is the specializing LOB for the specialists in this section.

Minor Lines Effect for all LOBs

Exhibit 3.5, column 7 shows that, excluding minor line data, the magnitudes of the differences between specialists and non-specialists is lower for four of six LOBs, and line 20 shows that the average difference between specialists and non-specialists is reduced when

minor line data points are excluded—from .05 to .03. Thus, excluding minor line data points has some effect on the magnitude of the differences between specialists and non-specialists.

Line 20 shows that after excluding minor line data points, the average PRF decreases from 1.00 to 0.96 for specialists and from 0.95 to 0.93 for non-specialists. Thus, as is the case for the four Group 1 types of companies, excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

Unlike the situation for the four Group 1 types of business, specialists have a *higher* indicated PRF than non-specialists for the specializing LOB, when minor lines data points are excluded. The indicated PRF for specialists is 1.05 compared to a 1.04 indicated PRF for non-specialists, a difference of 0.01.

Non-Specializing LOBs

For non-specializing LOBs, there is no general pattern. For some LOBs, the specialists have higher indicated PRFs than non-specialists. For instance, the specialists excluding minor lines indicated PRF for LOB E (commercial multiperil) is 1.00, compared to the non-specialists indicated PRF of 0.88. On the other hand, the specialists excluding minor lines indicated PRF of 0.99 for LOB H (other liability) is lower than the non-specialists indicated PRF of 1.02.

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (0.94) is somewhat higher than the PRF for non-specialists (0.91).

Exhibit 3.5: **PRFs—Workers Compensation**

		Line of Business (LOB)	Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	1.02	0.96	0.06	1.011*	0.953*	0.058*	
2	B	Priv. Passenger Auto Liability	1.04	0.98	0.06	1.048*	0.973*	0.074*	
3	C	Commercial Auto Liability	1.07	0.99	0.08	1.04	0.98	0.06	Y
4	D	Workers Compensation	1.05	1.06	(0.01)	1.05	1.04	0.01	Y
5	E	Commercial Multiperil	1.07	0.93	0.14	1.00	0.88	0.12	Y
6	F1*	Medical Mal – Occurrence*	1.214*	1.669*	(0.455)*	N/A*	1.458*	N/A*	
7	F2*	Medical Mal - Claims made*	1.239*	1.202*	0.036*	0.968*	1.146*	(0.178)*	
8	G	Special Liability	1.18	1.00	0.18	0.773*	0.949*	(0.175)*	
9	H	Other Liability	0.99	1.02	(0.03)	0.99	1.02	(0.03)	N
10	I	Special Property	0.98	0.83	0.15	0.90	0.82	0.08	Y
11	J	Auto Physical Damage	0.87	0.86	0.00	0.76	0.84	(0.08)	N
12	K	Fidelity & Surety	1.36	0.81	0.55	0.964*	0.637*	0.326*	
13	L	Other	1.08	0.99	0.09	1.087*	0.921*	0.166*	
14	M*	International*	N/A*	1.613*	N/A*	N/A*	0.844*	N/A*	
15	N&P*	Reinsurance A & C*	2.091*	1.522*	0.569*	N/A*	1.295*	N/A*	
16	O*	Reinsurance B*	3.000*	1.507*	1.493*	1.137*	1.336*	(0.199)*	
17	R	Products Liability	1.53	1.25	0.28	0.555*	1.192*	(0.636)*	
18	S*	Financial Guarantee*	0.053*	3.000*	(2.947)*	N/A*	2.410*	N/A*	
19	T*	Warranty*	N/A*	1.178*	N/A*	N/A*	1.270*	N/A*	
20	#/AVG - LOB w/ data		1.00	0.95	0.05	0.96	0.93	**0.03**	6
21	Non-Specline w/data		0.99	0.93	0.07	0.94	0.91	**0.03**	
22	Number "Y"								4

Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.
Specializing LOBs differences in column 6 are shaded.

3.6   Commercial General Liability

Definitions

In this section, specialists are defined as companies that write 50% or more of their business in commercial general liability LOBs.

The specializing LOBs are LOB H (other liability) and LOB R (product liability). Note that there are relatively fewer data points for LOB R (product liability), so the results for LOB R (product liability) may not be as reliable as those for LOB H (other liability).

Minor Lines Effect for all LOBs

Exhibit 3.6, column 7 shows that, excluding minor line data, the magnitudes of the differences between specialists and non-specialists is lower for only four of the nine LOBs.

Moreover, line 20 columns 3 and 6 show that the average difference between specialists and non-specialists increases (rather than decreases), from 0.04 to 0.07, when minor line data points are excluded.

Thus, unlike the situation for the four Group 1 types of companies, excluding minor line data points does not significantly reduce the magnitude of the differences between specialists and non-specialists.

Finally, line 20 columns 1 vs. 4 and 2 vs. 5 shows that after excluding minor line data points, the average PRF is unchanged at 1.03 for specialists and decreases from 0.99 to 0.96 for non-specialists. Thus, there is no clear case that excluding minor line data points generally decreases the indicated PRF.

Specializing LOBs

For the specializing LOBs, as with workers compensation-type of companies, the specialists have *higher* indicated PRFs than the non-specialists. For LOB H (other liability), for instance, the excluding minor lines indicated PRF for specialists is 1.03, vs. 1.02 for non-specialists. For LOB R (product liability), for instance, the excluding minor lines indicated PRF for specialists is 1.39. The related indicated PRF for non-specialists is 1.13.

Thus, again there is no pattern of lower PRFs for specialists for this LOB.

Non-Specializing LOBs

For non-specializing LOBs, sometimes the specialists have higher indicated PRFs and at other times they have lower indicated PRFs. The excluding minor lines indicated PRF for specialists is greater than non-specialists for LOB D (workers compensation), LOB E (commercial multiperil) and LOB I (special property). The opposite is true for LOB B (private passenger automobile liability), LOB C (commercial automobile liability), LOB G (special liability) and LOB J (automobile physical damage).

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (0.99) is somewhat higher than the PRF for non-specialists (0.93).

Exhibit 3.6: **PRFs—Commercial General Liability**

			Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Line of Business (LOB)		Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	1.03	0.96	0.07	1.036*	0.952*	0.084*	
2	B	Priv. Passenger Auto Liability	0.96	0.99	(0.03)	0.96	0.97	(0.01)	Y
3	C	Commercial Auto Liability	0.99	0.99	(0.00)	0.98	0.98	(0.01)	N
4	D	Workers Compensation	1.13	1.06	0.07	1.13	1.04	0.09	N
5	E	Commercial Multiperil	1.04	0.93	0.11	1.07	0.88	0.18	N
6	F1	Medical Mal – Occurrence	1.62	1.67	(0.05)	1.384*	1.458*	(0.074)*	
7	F2	Medical Mal - Claims made	1.10	1.21	(0.10)	0.986*	1.153*	(0.167)*	
8	G	Special Liability	0.96	1.01	(0.05)	0.87	0.95	(0.08)	N
9	H	Other Liability	1.05	1.01	0.03	1.03	1.02	0.02	Y
10	I	Special Property	1.09	0.83	0.26	1.03	0.81	0.22	Y
11	J	Auto Physical Damage	0.82	0.87	(0.05)	0.82	0.84	(0.02)	Y
12	K	Fidelity & Surety	0.89	0.82	0.06	0.626*	0.650*	(0.024)*	
13	L	Other	1.18	0.99	0.19	1.036*	0.924*	0.112*	
14	M*	International*	1.528*	1.613*	(0.084)*	1.528*	0.777*	0.752*	
15	N&P*	Reinsurance A & C*	1.578*	1.534*	0.045*	1.578*	1.288*	0.290*	
16	O*	Reinsurance B*	1.076*	1.541*	(0.465)*	1.208*	1.335*	(0.128)*	
17	R	Products Liability	1.29	1.25	0.05	1.39	1.13	0.26	N
18	S*	Financial Guarantee*	0.537*	3.000*	(2.463)*	N/A*	2.410*	N/A*	
19	T*	Warranty*	N/A*	1.178*	N/A*	N/A*	1.270*	N/A*	
20	#/AVG - LOB w/ data		1.03	0.99	0.04	1.03	0.96	**0.07**	9
21	Non-Specline w/data		1.00	0.95	0.04	0.98	0.93	**0.05**	
22	Number "Y"								4

*Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.
Specializing LOBs differences in column 6 are shaded.

3.7   Commercial Lines

Definitions

The specialists in this section are companies that write 50% or more of their business in any of the commercial lines, but where no single LOB constitutes the bulk of the total premium they write.

The specializing LOBs for commercial lines insurers are all LOBs except the personal lines (LOB A-homeowners/farmowners and LOB B-private passenger automobile liability) and reinsurance lines (LOB N&P-reinsurance A&C and LOB O-reinsurance B).

Minor Lines Effect for all LOBs

Exhibit 3.7, column 7 shows that, excluding minor line data, the magnitudes of the

differences between specialists and non-specialists is lower for only three of the eight LOBs. Moreover, line 20, columns 3 and 6 show that the average difference between specialists and non-specialists changes from +0.01 to -0.01 when minor line data points are excluded.

Thus, unlike the situation for the four Group 1 types of companies, excluding minor line data points does not significantly reduce the magnitude of the differences between specialists and non-specialists.

On the other hand, line 20, columns 1 vs. 4 and 2 vs. 5, show that after excluding minor line data points, the average PRF decreases from 1.03 to 0.97 for specialists and decreases from 1.02 to 0.97 for non-specialists.

<u>Specializing LOBs</u>

Like the situation for workers compensation and commercial general liability types of companies, specialists do not generally have lower indicated PRFs than non-specialists. For some of the "standard" commercial lines, i.e., LOB C (commercial automobile liability), LOB D (workers compensation) and LOB E (commercial multiperil), the indicated PRFs are higher for specialists than non-specialists. The reverse is true though for LOB H (other liability) and LOB I (special property) and LOB J (automobile physical damage).

<u>Non-Specializing LOBs</u>

A general observation cannot be made for the non-specializing LOBs either. For LOB A (homeowners/farmowners), the specialists have lower indicated PRFs than non-specialists. For the other non-specializing LOBs, the excluding minor lines indicated PRF for specialists is higher than for non-specialists.

Line 21 shows that on average, the specialists PRF for non-specializing LOBs (1.12) is higher than the PRF for non-specialists (1.08).

Exhibit 3.7: PRFs—Commercial Lines

	Line of Business (LOB)		Including Minor Lines			Excluding Minor Lines			|6| ≤|3|
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specialists	Non-Specialists	Difference	Specialists	Non-Specialists	Difference	
1	A	Homeowners/Farmowners	0.97	0.96	0.01	0.92	0.96	(0.04)	N
2	B	Priv. Passenger Auto Liability	1.02	0.98	0.04	0.99	0.97	0.02	Y
3	C	Commercial Auto Liability	1.03	0.98	0.05	1.00	0.98	0.02	Y
4	D	Workers Compensation	1.08	1.05	0.03	1.06	1.04	0.02	Y
5	E	Commercial Multiperil	1.01	0.92	0.09	0.91	0.88	0.03	Y
6	F1	Medical Mal – Occurrence	2.01	1.64	0.38	1.842*	1.446*	0.396*	
7	F2	Medical Mal - Claims made	1.33	1.19	0.13	0.974*	1.147*	(0.173)*	
8	G	Special Liability	0.97	1.02	(0.05)	0.85	0.98	(0.13)	N
9	H	Other Liability	1.00	1.03	(0.03)	0.97	1.04	(0.07)	N
10	I	Special Property	0.84	0.83	0.01	0.80	0.82	(0.02)	N
11	J	Auto Physical Damage	0.88	0.86	0.01	0.82	0.84	(0.03)	N
12	K	Fidelity & Surety	0.85	0.81	0.04	0.73	0.60	0.13	N
13	L	Other	0.94	1.01	(0.07)	0.90	0.96	(0.06)	Y
14	M*	International*	1.879*	1.536*	0.343*	0.761*	0.846*	(0.085)*	
15	N&P	Reinsurance A & C	1.78	1.48	0.30	1.355*	1.288*	0.068*	
16	O	Reinsurance B	1.59	1.50	0.09	1.46	1.32	0.14	N
17	R	Products Liability	1.22	1.27	(0.05)	1.13	1.28	(0.14)	N
18	S*	Financial Guarantee*	3.000*	1.809*	1.191*	0.129*	2.696*	(2.567)*	
19	T*	Warranty*	1.410*	1.027*	0.383*	1.410*	0.626*	0.783*	
20	#/AVG - LOB w/ data		1.03	1.02	0.01	0.97	0.97	**(0.01)**	13
21	Non-Specline w/data		1.19	1.15	0.04	1.12	1.08	**0.04**	
22	Number "Y"								5

Asterisks identify PRFs that were computed with fewer than 100 data points and thus may be particularly unreliable.

Specializing LOBs differences in column 6 are shaded.

4. Analysis—Personal Automobile Customer Type

Definitions

In this section we compare indicated PRFs between companies with Preferred, Standard and Non-Standard primary personal automobile customer types as defined in Section 2.

Exhibit 4.1 shows the indicated PRFs and the number of data points included for each LOB.

PPA Liability and Liability and Physical Damage LOBs

For LOB B (private passenger automobile liability), Preferred has the lowest indicated PRF (0.93). The indicated PRF for Standard (0.97) is higher than the indicated PRF for

Non-Standard (0.95).

For LOB J (automobile physical damage), Preferred again has the lowest indicated PRF (0.83). Standard also has an indicated PRF of 0.83, with Non-Standard having the highest indicated PRF at 0.85.

The premium-weighted average indicated PRFs for LOB B and LOB J are shown in the final row of Exhibit 4.1. Preferred has the lowest average indicated PRF (0.89). The average indicated PRFs for Standard and Non-Standard are similar: the Standard indicated PRF is slightly higher than the Non-Standard indicated PRF—0.92 for Standard compared to 0.91 for Non-Standard.

Other LOBs

For most of the other LOBs, the indicated PRF for Standard Automobile companies is lower than for Non-Standard Automobile companies. Some exceptions are LOB K (fidelity & surety), LOB L (other), LOB O (reinsurance B), and LOB R (product liability). For these LOBs, however, the number of data points for Non-Standard tend to get very small, so the data may have less credibility.

The indicated PRFs for Preferred are the lowest for many of the LOBs other than private auto. For LOB A (homeowners) and LOB D (workers compensation), however, the indicated PRFs for Preferred companies are higher than the indicated PRFs for both Standard and Non-Standard companies.

Exhibit 4.1: **PRFs—Primary Personal Automobile Customer Type**

		Excluding Minor Lines					
		Premium Risk Factors			Number of Data Points		
		Auto Customer Focus			Auto Customer Focus		
Line of Business (LOB)		(1)	(2)	(3)	(4)	(5)	(6)
		Pref.	Stand.	Non-Stand.	Pref.	Stand.	Non-Stand.
A	Homeowners/Farmowners	1.05	0.95	1.04	479	3,991	245
B	Priv. Passenger Auto Liability	0.93	0.97	0.95	507	4,884	1,615
C	Commercial Auto Liability	0.89	0.95	0.99	89	2,199	395
D	Workers Compensation	1.02	0.99	1.01	125	1,754	144
E	Commercial Multiperil	0.85	0.85	1.05	185	2,421	190
F1	Medical Mal - Occurrence	N/A	0.95	N/A	-	48	-
F2	Medical Mal - Claims made	N/A	0.90	0.98	-	91	13
G	Special Liability	0.80	0.90	1.05	4	217	65
H	Other Liability	0.88	0.92	1.05	103	1,746	289
I	Special Property	0.77	0.81	0.83	220	2,476	271
J	Auto Physical Damage	0.83	0.83	0.85	495	4,985	1,484
K	Fidelity & Surety	0.42	0.92	0.65	12	172	51
L	Other	N/A	0.94	0.87	-	431	57
M	International	N/A	0.78	0.76	-	22	18
N&P	Reinsurance A&C	1.07	1.24	1.24	5	428	49
O	Reinsurance B	N/A	1.34	1.11	-	385	47
R	Products Liability	1.13	1.09	1.00	12	102	30
S	Financial Guarantee	N/A	2.88	N/A	-	5	-
T	Warranty	N/A	N/A	N/A	-	-	-
B&J Avg.	Personal Auto LOBs Average*	0.89	0.92	0.91	1,002	9,869	3,099

*Premium-weighted average of LOB B – private passenger automobile liability and LOB J – automobile physical damage.

5. Dealing with LOB Size

The indicated PRFs presented in the paper are computed using the DCWP Report 6 calibration methodology. They are the 87.5[th] percentile loss ratios for specialist or non-specialist data points by LOB with premium above a size threshold that varies by LOB. The thresholds are shown in Appendix A.

In DCWP Report 6 we show that indicated PRFs vary by LOB-size. As such, apparent differences between specialists and non-specialists, and differences between indicated PRFs

including minor lines data points and excluding minor lines data points, might be affected by differences in distribution of LOB-size in the different categories.

Therefore, we analyzed PRFs *by LOB premium size band* for specialists vs. non-specialists and for excluding vs. including minor lines data. The results by size band are generally consistent with the overall upward or downward patterns discussed in Section 3.1- 3.7, i.e., all data points over the threshold size.

Appendix B shows the size-band results for the personal lines type of company. The charts on Appendix B, pages 1 and 2, show the differences in premium risk charges between specialists and non-specialists by LOB. Page 1 shows the differences when minor lines are included. Page 2 shows the differences when minor lines are excluded. Comparing page 1 to page 2, we see that the lines on page 2 are closer to the zero x-axis than the lines on page 1. This demonstrates that differences between specialists and non-specialists are smaller *by size band*, when minor lines data points are excluded.

Appendix B, pages 3 through 11, show the number of data points and premium risk factors for each LOB by premium size percentiles for specialists and non-specialists, including and excluding minor lines. The rightmost column on each page shows the difference between PRFs for specialists and PRFs for non-specialists by LOB and by size band. These values are mostly negative, confirming the observation in Exhibit 3.2 that PRFs for personal lines specialists are lower than for PRFs for non-specialists, for most LOBs.

Pages 12 through 20 contain line graphs corresponding to pages 3 through 11, showing the differences in premium risk factors between specialists and non-specialists for each LOB, including and excluding minor lines. Also shown in these graphs is the total number of data points included in each premium size percentile, shown by the bar graphs.

Note that graphs in this appendix are *not* on the same scale as one another, as PRFs vary from LOB to LOB. Also, note that if there are no data points for a given premium size percentile, the premium risk factor and the premium risk factor difference between specialists and non-specialists for that premium size percentile will show a #REF!. The by-LOB graphs will also either not graph those differences that contain a #REF!, or the difference will be shown as a 0 on the line graph.

The size-band analysis for the other types of companies is too large to include with this report, but it is available from the authors.

6. Further Research

Areas of further research arising from this work include the following:

Categorizing Companies

- Refine the type of company data assignments by identifying the type of company historically, rather than just currently, and thereby reducing some mismatches in type of company and data by year.

Dealing with the LOB Size

- Applying a more rigorous analytical approach to analyzing Appendix B results by size.

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Pablo Castets	Giuseppe F. LePera	Andrew Jon Staudt
Joseph F. Cofield	Zhe Robin Li	Timothy Delmar Sweetser
Jose R. Couret	Lily (Manjuan) Liang	Anna Marie Wetterhus
Brian A. Fannin	Thomas Toong-Chiang Loy	Jennifer X. Wu
Sholom Feldblum	Glenn G. Meyers	Jianwei Xie
Kendra Felisky	Douglas Robert Nation	Linda Zhang
Dennis A. Franciskovich		Christina Tieyan Zhou
CAS Staff—Karen Sonnet		
Actuarial Students—Damon Chom and Dean Guo		

Retired Members (2011-2012)

Karen H. Adams	Timothy Gault	Mark McCluskey
Damon Chom	G. Chris Nyce	Daniel M. Murphy
Orla Donnelly	Jed Nathaniel Isaman	James P. McNichols
Chris Dougherty	James Kahn	David L. Ruhm
Nicole Elliott	Alex Krutov	Ji Yao
Kendra Felisky	Eduardo P. Marchena	

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[1.] Casualty Actuarial Society *E-Forum*, CAS Research Working Party on Risk-Based Capital Dependencies and Calibration (DCWP), Report 6, Risk-based Capital (RBC) Premium Risk Charges—Improvements to Current Calibration Method
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[3.] NAIC, "Risk-Based Capital Forecasting & Instructions," Property Casualty, 2010.

Appendix A
Premium Risk Charge Thresholds
(By Line of Business; From DCWP Report 6)

	LOB	Premium Threshold
A	Homeowners/Farmowners	1000
B	Priv. Passenger Auto Liability	1000
C	Commercial Auto Liability	1000
D	Workers Comp	600
E	Commercial Multiperil	300
F1	Medical Mal—Occurrence	800
F2	Medical Mal—Claims made	600
G	Special Liability	1000
H	Other Liability	300
I	Spec Property	200
J	Auto Physical Damage	200
K	Fidelity & Surety	200
L	Other	200
M	International	200
N&P	Reinsurance A &C	200
O	Reinsurance B	300
R	Products Liability	200
S	Financial Guarantee	100
T	Warranty	0

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

Difference in 87.5th-Percentile Loss Ratios Between Personal Lines Insurers and All Other (Including Minor Lines)

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

Difference in 87.5th-Percentile Loss Ratios Between Personal Lines Insurers and All Other (Excluding Minor Lines)

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB A - HOMEOWNERS/FARMOWNERS

			Including Minor Lines									Excluding Minor Lines					
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	1,263	874	1.160	2,736	1.294	3,610	-0.134	0	1,583	805	1.068	1,669	1.178	2,474	-0.110
25%	1,263	2,431	583	0.973	727	1.054	1,310	-0.081	1,583	3,006	537	0.943	467	1.011	1,004	-0.068
35%	2,431	4,342	583	0.972	584	1.017	1,167	-0.046	3,006	5,274	537	0.963	354	0.988	891	-0.025
45%	4,342	7,754	583	0.941	564	0.990	1,147	-0.049	5,274	9,035	537	0.929	367	0.954	904	-0.025
55%	7,754	13,273	584	0.933	423	0.934	1,007	-0.001	9,035	15,142	536	0.928	264	0.877	800	0.051
65%	13,273	22,640	583	0.933	305	1.047	888	-0.114	15,142	25,188	537	0.945	219	0.982	756	-0.037
75%	22,640	38,962	583	0.961	320	0.936	903	0.024	25,188	42,025	537	0.946	210	0.969	747	-0.023
85%	38,962	70,271	583	0.926	256	0.939	839	-0.014	42,025	76,387	537	0.914	178	0.947	715	-0.034
95%	70,271	289,076	583	0.967	363	0.885	946	0.082	76,387	312,089	537	0.975	290	0.885	827	0.090
100%	289,076	18,406,826	99	0.951	42	0.883	141	0.068	312,089	18,406,826	99	0.951	42	0.883	141	0.068

LOB B - PRIVATE PASSENGER AUTO LIABILITY

			Including Minor Lines									Excluding Minor Lines					
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	2,201	820	1.160	2,094	1.567	2,914	-0.407	0	2,908	785	1.042	1,102	1.256	1,887	-0.214
25%	2,201	4,835	547	0.979	601	1.105	1,148	-0.126	2,908	5,716	524	0.969	382	1.050	906	-0.081
35%	4,835	8,135	547	1.005	369	1.048	916	-0.043	5,716	9,279	524	1.003	264	1.020	788	-0.017
45%	8,135	12,810	547	0.972	347	1.023	894	-0.051	9,279	13,690	524	0.961	255	1.029	779	-0.069
55%	12,810	18,419	547	0.942	309	1.019	856	-0.077	13,690	20,052	523	0.952	257	1.006	780	-0.055
65%	18,419	31,810	547	0.961	327	0.980	874	-0.019	20,052	34,180	524	0.958	284	0.960	808	-0.003
75%	31,810	63,824	547	0.944	362	0.982	909	-0.038	34,180	72,130	524	0.952	347	0.998	871	-0.046
85%	63,824	167,943	547	0.925	358	0.997	905	-0.071	72,130	180,118	524	0.920	257	0.990	781	-0.070
95%	167,943	713,061	547	0.916	253	0.943	800	-0.027	180,118	763,669	524	0.912	224	0.935	748	-0.024
100%	713,061	18,406,826	99	0.895	12	0.865	111	0.030	763,669	18,406,826	99	0.895	12	0.865	111	0.030

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB C - COMMERCIAL AUTO LIABILITY

			Including Minor Lines								Excluding Minor Lines						
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	244	462	1.554	960	2.082	1,422	-0.529	0	1,360	157	1.007	1,269	1.219	1,426	-0.211
25%	244	558	309	0.965	636	1.322	945	-0.358	1,360	2,589	106	0.873	523	1.037	629	-0.164
35%	558	1,128	308	1.090	721	1.273	1,029	-0.183	2,589	4,409	105	0.931	499	1.008	604	-0.076
45%	1,128	2,071	307	0.871	684	1.097	991	-0.225	4,409	6,171	105	0.889	283	1.033	388	-0.144
55%	2,071	3,245	308	0.884	521	1.045	829	-0.161	6,171	8,743	105	0.837	265	1.017	370	-0.180
65%	3,245	5,897	308	0.903	737	1.048	1,045	-0.144	8,743	14,305	105	0.932	461	0.983	566	-0.051
75%	5,897	9,820	308	0.885	488	1.046	796	-0.161	14,305	21,877	106	0.951	382	1.010	488	-0.059
85%	9,820	20,579	308	0.934	785	1.007	1,093	-0.073	21,877	46,724	105	0.831	481	0.995	586	-0.164
95%	20,579	90,621	308	0.869	998	1.000	1,306	-0.131	46,724	130,578	105	0.930	463	0.947	568	-0.017
100%	90,621	18,406,826	76	0.857	218	0.982	294	-0.125	130,578	18,406,826	25	0.788	188	0.971	213	-0.184

LOB D - WORKERS' COMPENSATION

			Including Minor Lines								Excluding Minor Lines						
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	339	225	1.152	621	2.762	846	-1.610	0	2,047	100	0.929	931	1.322	1,031	-0.392
25%	339	927	150	1.061	528	1.535	678	-0.474	2,047	4,725	68	0.923	666	1.219	734	-0.296
35%	927	1,850	151	1.022	492	1.236	643	-0.214	4,725	6,994	67	1.024	343	1.084	410	-0.059
45%	1,850	4,077	149	0.989	704	1.230	853	-0.241	6,994	10,836	67	0.900	412	1.113	479	-0.213
55%	4,077	7,390	151	0.990	660	1.136	811	-0.146	10,836	17,541	68	0.913	436	1.034	504	-0.120
65%	7,390	13,254	150	0.952	627	1.112	777	-0.160	17,541	25,850	67	0.825	369	1.052	436	-0.227
75%	13,254	24,920	150	0.891	648	1.047	798	-0.157	25,850	42,606	67	0.900	488	0.972	555	-0.072
85%	24,920	54,050	150	0.924	730	0.979	880	-0.054	42,606	94,997	68	0.955	624	0.963	692	-0.008
95%	54,050	245,378	150	0.968	1,109	0.974	1,259	-0.005	94,997	291,966	67	0.966	714	0.989	781	-0.023
100%	245,378	18,406,826	37	0.934	415	1.104	452	-0.170	291,966	18,406,826	16	0.932	399	1.104	415	-0.172

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB E - COMMERCIAL MULTIPLE PERIL

			Including Minor Lines								Excluding Minor Lines					
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile		Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio		From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	275	513	1.350	1,060	2.054	1,573	-0.704		0	556	291	0.843	670	1.248	961	-0.406
25%	275	566	342	1.017	438	1.346	780	-0.329		556	1,281	194	0.798	487	0.888	681	-0.089
35%	566	1,138	343	0.945	594	1.075	937	-0.129		1,281	2,387	194	0.791	453	0.943	647	-0.152
45%	1,138	2,140	342	0.837	615	1.020	957	-0.183		2,387	4,052	194	0.757	503	0.960	697	-0.203
55%	2,140	3,859	342	0.791	728	0.997	1,070	-0.206		4,052	6,236	195	0.782	433	0.922	628	-0.141
65%	3,859	6,303	342	0.817	629	0.960	971	-0.143		6,236	10,026	194	0.784	455	0.901	649	-0.117
75%	6,303	11,573	343	0.819	695	0.927	1,038	-0.108		10,026	16,952	194	0.767	453	0.930	647	-0.162
85%	11,573	23,166	342	0.826	767	0.941	1,109	-0.115		16,952	37,501	194	0.783	721	0.885	915	-0.101
95%	23,166	88,468	342	0.840	1,003	0.901	1,345	-0.062		37,501	191,004	194	0.861	684	0.878	878	-0.017
100%	88,468	18,406,826	85	0.922	221	0.881	306	0.041		191,004	18,406,826	48	0.870	178	0.880	226	-0.010

LOB F1 - MEDICAL MALPRACTICE - OCCURRENCE

			Including Minor Lines								Excluding Minor Lines					
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile		Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio		From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	51	11	3.000	162	3.000	173	0.000		0	2,970,994	0	#REF!	1,114	1.521	1,114	#REF!
25%	51	174	8	1.024	203	3.000	211	-1.976		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
35%	174	254	7	1.339	101	3.000	108	-1.661		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
45%	254	372	8	1.564	121	2.816	129	-1.252		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
55%	372	803	8	3.000	276	2.784	284	0.216		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
65%	803	1,986	8	1.529	382	2.121	390	-0.591		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
75%	1,986	3,330	7	0.639	206	1.607	213	-0.968		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
85%	3,330	36,341	8	2.179	657	1.602	665	0.577		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
95%	36,341	74,571	8	1.892	151	1.359	159	0.533		2,970,994	2,970,994	0	#REF!	0	#REF!	-	#REF!
100%	74,571	18,406,826	2	0.639	109	1.394	111	-0.755		2,970,994	18,406,826	0	#REF!	0	#REF!	-	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB F2 - MEDICAL MALPRACTICE - CLAIMS-MADE

	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
Premium Size			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	99	8	3.000	116	3.000	124	0.000	0	2,932	1	0.449	665	1.386	666	-0.937
25%	99	162	6	1.862	40	3.000	46	-1.138	2,932	8,368	1	0.178	568	1.060	569	-0.882
35%	162	1,201	5	2.391	410	1.889	415	0.501	8,368	8,470	1	1.038	2	0.874	3	0.164
45%	1,201	3,455	7	1.557	526	1.139	533	0.418	8,470	9,269	1	0.463	40	0.997	41	-0.534
55%	3,455	8,368	4	2.400	554	1.073	558	1.327	9,269	9,375	1	0.733	1	0.733	2	0.000
65%	8,368	10,579	6	1.548	112	1.066	118	0.483	9,375	10,579	1	0.738	47	0.921	48	-0.183
75%	10,579	14,785	6	1.406	178	1.255	184	0.151	10,579	11,988	1	0.851	47	1.204	48	-0.353
85%	14,785	27,264	5	1.568	326	1.241	331	0.327	11,988	12,197	1	1.171	9	0.900	10	0.271
95%	27,264	65,219	6	2.303	411	1.119	417	1.185	12,197	12,399	1	0.837	8	0.867	9	-0.030
100%	65,219	18,406,826	1	1.208	270	1.295	271	-0.087	12,399	18,406,826	0	#REF!	1,044	1.198	1,044	#REF!

LOB G - SPECIAL LIABILITY

	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
Premium Size			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	77	91	3.000	293	3.000	384	0.000	0	1,344	6	1.965	197	1.225	203	0.740
25%	77	184	62	1.221	213	1.512	275	-0.291	1,344	1,493	4	0.598	6	1.774	10	-1.176
35%	184	331	59	1.180	181	1.506	240	-0.326	1,493	1,738	4	0.549	15	1.168	19	-0.618
45%	331	553	61	0.940	151	1.590	212	-0.650	1,738	1,980	4	0.627	34	1.103	38	-0.476
55%	553	1,091	61	1.063	262	1.422	323	-0.359	1,980	2,466	5	0.777	52	0.893	57	-0.116
65%	1,091	1,944	61	0.719	230	1.332	291	-0.613	2,466	2,647	4	0.660	10	0.918	14	-0.258
75%	1,944	5,012	61	0.867	474	1.064	535	-0.197	2,647	4,087	4	0.810	86	1.045	90	-0.235
85%	5,012	8,843	60	1.084	269	1.044	329	0.040	4,087	5,165	4	1.585	43	0.931	47	0.654
95%	8,843	23,464	61	1.023	340	0.976	401	0.047	5,165	7,650	4	1.202	102	0.974	106	0.228
100%	23,464	18,406,826	14	0.853	638	0.870	652	-0.016	7,650	18,406,826	0	#REF!	493	0.884	493	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB H - OTHER LIABILITY

Premium Size Percentile	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio
15%	0	82	642	2.000	1,307	2.500	1,949	-0.500	0	183	113	0.904	626	2.000	739	-1.096
25%	82	153	425	1.204	581	1.383	1,006	-0.179	183	531	75	0.820	595	1.168	670	-0.348
35%	153	272	423	1.139	604	1.390	1,027	-0.250	531	1,142	76	0.867	757	1.019	833	-0.152
45%	272	506	423	1.155	807	1.248	1,230	-0.093	1,142	2,359	75	0.872	958	1.115	1,033	-0.242
55%	506	1,020	426	1.068	1,100	1.130	1,526	-0.062	2,359	3,270	76	0.886	415	1.131	491	-0.245
65%	1,020	1,764	425	0.866	966	1.136	1,391	-0.271	3,270	4,689	75	0.796	510	0.999	585	-0.203
75%	1,764	3,372	425	0.859	1,190	1.126	1,615	-0.267	4,689	7,278	76	0.835	656	1.045	732	-0.210
85%	3,372	6,743	426	0.817	1,249	1.053	1,675	-0.236	7,278	19,207	75	0.969	1,325	0.993	1,400	-0.023
95%	6,743	38,476	425	0.890	2,390	0.993	2,815	-0.103	19,207	60,406	76	0.832	1,013	1.023	1,089	-0.191
100%	38,476	18,406,826	99	0.867	880	0.991	979	-0.123	60,406	18,406,826	18	0.844	236	1.012	254	-0.168

LOB I - SPECIAL PROPERTY

Premium Size Percentile	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio
15%	0	427	756	0.959	1,937	1.347	2,693	-0.388	0	573	424	0.818	1,127	1.017	1,551	-0.199
25%	427	735	505	0.769	721	0.862	1,226	-0.093	573	967	284	0.745	434	0.841	718	-0.096
35%	735	1,256	503	0.749	722	0.841	1,225	-0.092	967	1,491	283	0.746	376	0.795	659	-0.049
45%	1,256	2,110	506	0.795	697	0.873	1,203	-0.078	1,491	2,357	283	0.758	431	0.845	714	-0.087
55%	2,110	3,204	502	0.770	556	0.864	1,058	-0.094	2,357	3,399	284	0.770	346	0.790	630	-0.019
65%	3,204	4,966	504	0.802	624	0.865	1,128	-0.063	3,399	5,537	283	0.762	500	0.783	783	-0.022
75%	4,966	8,446	504	0.806	618	0.847	1,122	-0.041	5,537	9,047	283	0.870	449	0.838	732	0.033
85%	8,446	16,409	504	0.796	744	0.849	1,248	-0.053	9,047	16,525	284	0.782	576	0.834	860	-0.052
95%	16,409	49,937	504	0.846	1,076	0.844	1,580	0.002	16,525	47,001	283	0.873	860	0.851	1,143	0.022
100%	49,937	18,406,826	99	0.707	416	0.882	515	-0.176	47,001	18,406,826	70	0.775	552	0.853	622	-0.077

Casualty Actuarial Society E-Forum, Spring 2014

34

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB J - AUTO PHYSICAL DAMAGE

	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
Premium Size			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	1,370	765	1.052	2,540	1.193	3,305	-0.141	0	1,962	722	0.953	1,345	1.001	2,067	-0.048
25%	1,370	3,280	511	0.870	1,063	0.882	1,574	-0.012	1,962	4,011	481	0.848	618	0.849	1,099	-0.001
35%	3,280	5,829	510	0.850	686	0.875	1,196	-0.025	4,011	6,782	481	0.848	486	0.835	967	0.013
45%	5,829	9,466	510	0.843	571	0.851	1,081	-0.008	6,782	10,849	482	0.841	446	0.836	928	0.004
55%	9,466	14,891	511	0.847	497	0.839	1,008	0.008	10,849	16,245	481	0.844	339	0.810	820	0.034
65%	14,891	25,042	510	0.824	463	0.817	973	0.007	16,245	28,431	482	0.852	374	0.834	856	0.019
75%	25,042	50,908	511	0.839	438	0.831	949	0.008	28,431	57,716	481	0.827	350	0.806	831	0.021
85%	50,908	121,529	510	0.828	411	0.768	921	0.061	57,716	132,843	481	0.819	342	0.763	823	0.056
95%	121,529	521,134	510	0.818	364	0.765	874	0.053	132,843	560,513	482	0.819	292	0.763	774	0.056
100%	521,134	18,406,826	99	0.813	23	0.755	122	0.058	560,513	18,406,826	99	0.813	23	0.755	122	0.058

LOB K - FIDELITY & SURETY

	Including Minor Lines							Excluding Minor Lines							
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
Premium Size			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile			# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	38	99	1.653	220	3.000	319	-1.347	0	848	8	0.918	209	0.977	217	-0.059
25%	38	87	67	0.461	198	1.403	265	-0.943	848	1,152	6	0.528	47	0.677	53	-0.149
35%	87	238	65	0.603	346	1.453	411	-0.850	1,152	1,340	5	0.274	34	1.027	39	-0.753
45%	238	469	66	0.852	321	0.997	387	-0.145	1,340	1,862	6	1.202	71	0.691	77	0.511
55%	469	817	66	0.649	232	1.318	298	-0.669	1,862	3,456	6	0.489	139	0.526	145	-0.037
65%	817	1,231	66	0.640	195	0.921	261	-0.282	3,456	4,719	6	1.057	72	0.717	78	0.340
75%	1,231	2,626	66	0.800	429	0.898	495	-0.098	4,719	7,122	5	1.239	140	0.711	145	0.528
85%	2,626	5,479	66	0.771	438	0.803	504	-0.032	7,122	15,491	6	1.117	291	0.586	297	0.531
95%	5,479	14,695	66	0.907	606	0.741	672	0.166	15,491	30,778	6	0.777	175	0.506	181	0.271
100%	14,695	18,406,826	16	0.700	535	0.720	551	-0.020	30,778	18,406,826	0	#REF!	167	0.626	167	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB L - OTHER

Premium Size Percentile	Including Minor Lines							Excluding Minor Lines						
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio
15%	0	67	111	2.045	213	3.000	324	-0.955	0	642	15	0.893	153	1.391	168	-0.497
25%	67	115	70	1.186	57	1.427	127	-0.241	642	1,157	11	0.901	95	0.878	106	0.022
35%	115	234	73	1.635	109	1.869	182	-0.233	1,157	1,859	10	0.576	107	0.916	117	-0.341
45%	234	542	73	0.828	235	1.435	308	-0.607	1,859	4,225	10	0.979	179	0.833	189	0.146
55%	542	1,004	72	0.924	214	1.019	286	-0.095	4,225	5,582	11	0.650	60	0.966	71	-0.316
65%	1,004	1,812	73	0.904	242	1.148	315	-0.244	5,582	14,964	10	0.777	290	0.870	300	-0.094
75%	1,812	4,665	73	0.887	390	0.974	463	-0.087	14,964	134,947	11	0.925	567	0.937	578	-0.012
85%	4,665	10,911	72	0.871	340	0.979	412	-0.108	134,947	191,132	10	0.856	42	1.037	52	-0.181
95%	10,911	200,625	73	0.914	958	0.941	1,031	-0.027	191,132	220,750	10	0.882	18	1.495	28	-0.612
100%	200,625	18,406,826	17	0.932	15	0.912	32	0.020	220,750	18,406,826	2	0.825	11	0.901	13	-0.076

LOB M - INTERNATIONAL

Premium Size Percentile	Including Minor Lines							Excluding Minor Lines						
	Size Bands		Specialists		Non-Specialists		Total # of	Diff in	Size Bands		Specialists		Non-Specialists		Total # of	Diff in
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio	Data Points for All	87.5th-%tile Loss Ratio
15%	0	5,740	5	2.229	163	3.000	168	-0.771	0	2,477,354	0	#REF!	78	0.842	78	#REF!
25%	5,740	7,115	3	1.523	9	2.099	12	-0.576	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
35%	7,115	10,558	4	1.745	23	1.910	27	-0.165	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
45%	10,558	12,258	3	1.234	10	1.065	13	0.169	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
55%	12,258	22,421	4	1.347	51	1.005	55	0.342	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
65%	22,421	33,034	3	0.923	25	0.910	28	0.013	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
75%	33,034	36,708	4	1.018	2	0.733	6	0.285	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
85%	36,708	38,520	3	1.258	1	0.341	4	0.917	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
95%	38,520	56,678	4	0.746	12	1.504	16	-0.758	2,477,354	2,477,354	0	#REF!	0	#REF!	-	#REF!
100%	56,678	18,406,826	1	0.878	27	0.765	28	0.113	2,477,354	18,406,826	0	#REF!	0	#REF!	-	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB N&P - REINSURANCE A & C

Premium Size Percentile	Including Minor Lines							Excluding Minor Lines						
	Size Bands		Specialists		Non-Specialists		Total # of Data Points for All	Diff in 87.5th-%tile Loss Ratio	Size Bands		Specialists		Non-Specialists		Total # of Data Points for All	Diff in 87.5th-%tile Loss Ratio
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio			From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio		
15%	0	248	126	1.646	295	3.000	421	-1.354	0	1,583	805	1.068	1,669	1.178	2,474	-0.110
25%	248	472	83	1.158	90	2.036	173	-0.878	1,583	3,006	537	0.943	467	1.011	1,004	-0.068
35%	472	701	84	1.773	71	2.859	155	-1.086	3,006	5,274	537	0.963	354	0.988	891	-0.025
45%	701	979	84	1.503	74	1.581	158	-0.078	5,274	9,035	537	0.929	367	0.954	904	-0.025
55%	979	1,488	84	1.421	85	1.689	169	-0.269	9,035	15,142	536	0.928	264	0.877	800	0.051
65%	1,488	2,391	84	1.789	106	1.895	190	-0.105	15,142	25,188	537	0.945	219	0.982	756	-0.037
75%	2,391	3,467	84	1.395	82	1.755	166	-0.359	25,188	42,025	537	0.946	210	0.969	747	-0.023
85%	3,467	7,555	84	1.792	207	1.616	291	0.175	42,025	76,387	537	0.914	178	0.947	715	-0.034
95%	7,555	30,785	84	1.916	472	1.375	556	0.541	76,387	312,089	537	0.975	290	0.885	827	0.090
100%	30,785	18,406,826	20	1.307	341	1.214	361	0.094	312,089	18,406,826	99	0.951	42	0.883	141	0.068

LOB O - REINSURANCE B

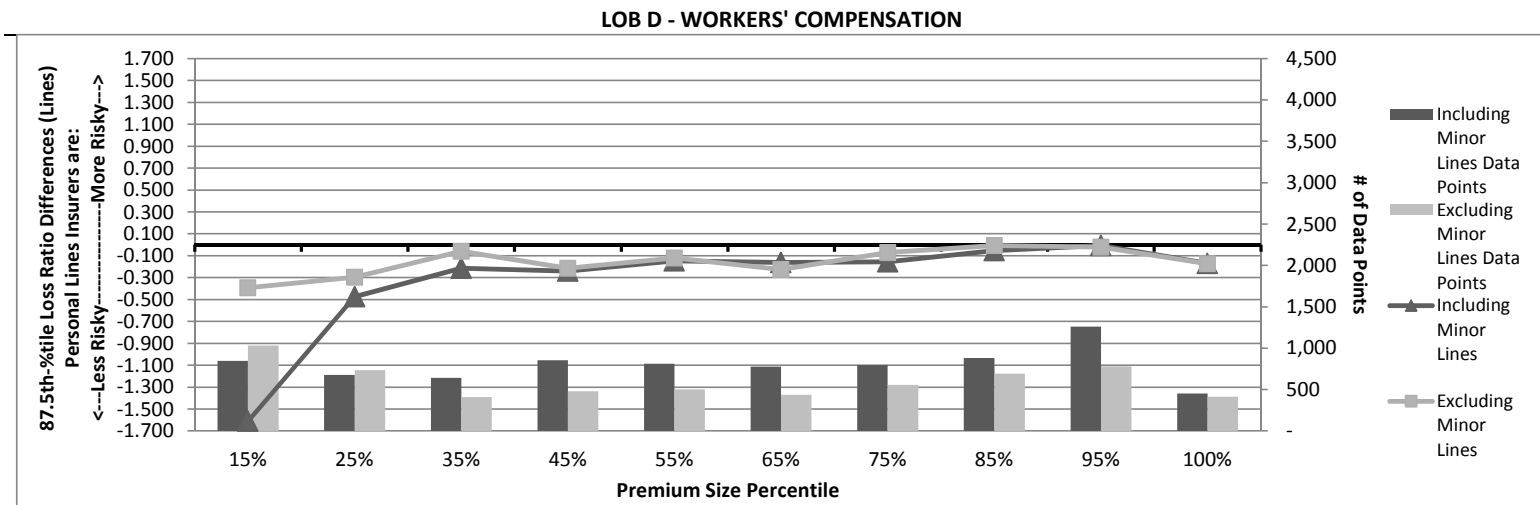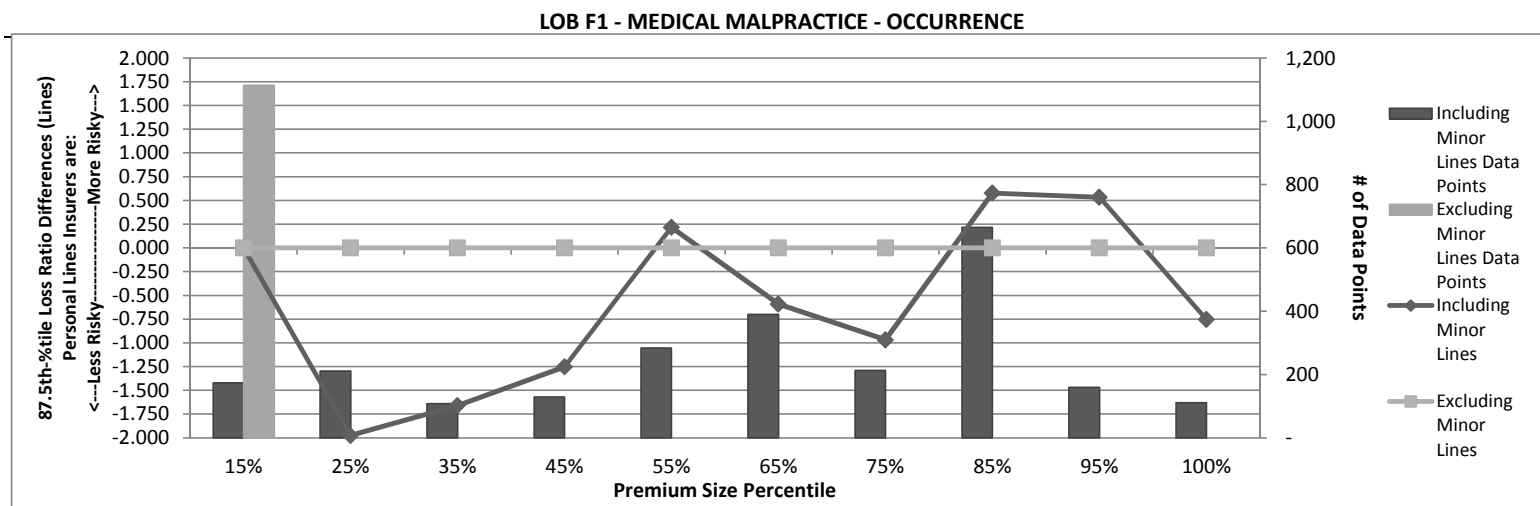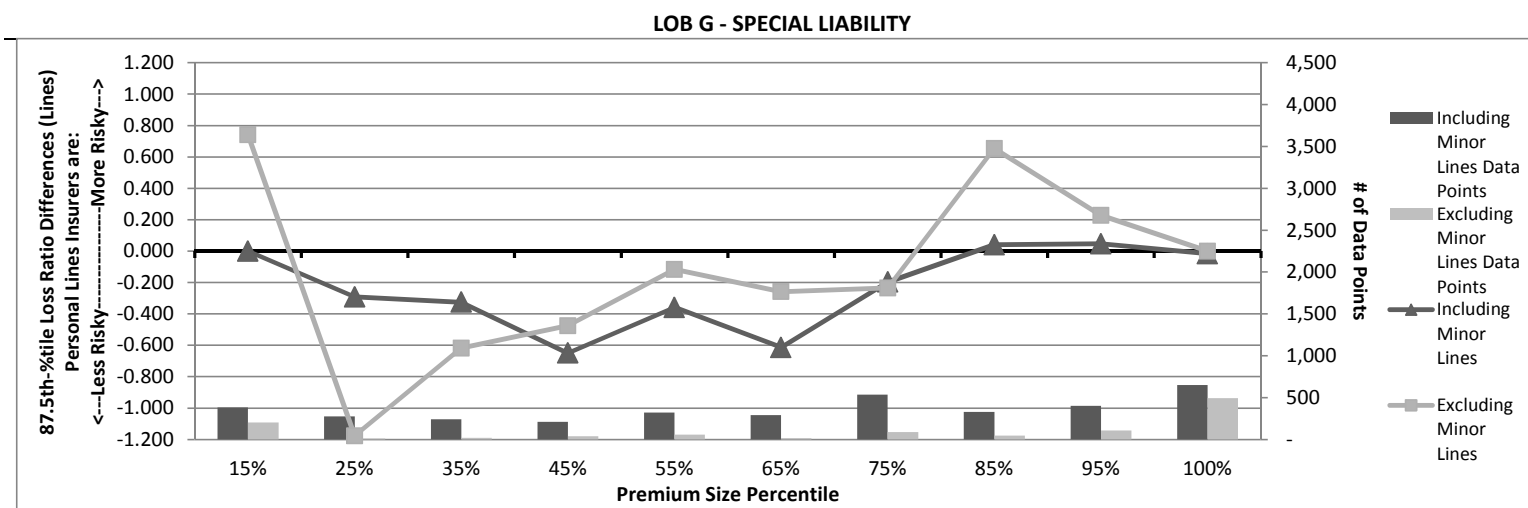| Premium Size Percentile	Including Minor Lines							Excluding Minor Lines						
	Size Bands		Specialists		Non-Specialists		Total # of Data Points for All	Diff in 87.5th-%tile Loss Ratio	Size Bands		Specialists		Non-Specialists		Total # of Data Points for All	Diff in 87.5th-%tile Loss Ratio
	From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio			From	To	# of Data Points	87.5th-%tile Loss Ratio	# of Data Points	87.5th-%tile Loss Ratio		
15%	0	51	107	1.598	135	3.000	242	-1.402	0	3,220	6	0.744	202	1.764	208	-1.021
25%	51	99	68	1.322	68	2.812	136	-1.490	3,220	5,468	5	1.091	76	1.398	81	-0.308
35%	99	197	71	1.285	88	1.458	159	-0.174	5,468	7,612	4	0.859	63	1.104	67	-0.245
45%	197	420	69	1.545	120	2.446	189	-0.902	7,612	14,655	5	1.134	114	1.278	119	-0.143
55%	420	863	70	1.618	136	2.158	206	-0.540	14,655	33,620	4	1.553	138	1.267	142	0.286
65%	863	1,675	70	1.979	148	2.136	218	-0.157	33,620	38,866	5	1.365	31	1.378	36	-0.013
75%	1,675	3,119	70	1.417	145	1.717	215	-0.300	38,866	45,967	4	1.171	36	1.168	40	0.003
85%	3,119	6,364	70	1.650	176	1.572	246	0.078	45,967	53,270	5	1.096	26	1.343	31	-0.247
95%	6,364	35,387	70	2.325	446	1.343	516	0.982	53,270	59,084	4	1.007	19	1.436	23	-0.429
100%	35,387	18,406,826	17	1.277	476	1.285	493	-0.008	59,084	18,406,826	0	#REF!	347	1.273	347	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB R - PRODUCTS LIABILITY

		Including Minor Lines								Excluding Minor Lines						
			Specialists		Non-Specialists		Total # of	Diff in				Specialists		Non-Specialists		Total # of	Diff in
Premium Size	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile	Size Bands		# of	87.5th-%tile	# of	87.5th-%tile	Data Points	87.5th-%tile
Percentile	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio	From	To	Data Points	Loss Ratio	Data Points	Loss Ratio	for All	Loss Ratio
15%	0	57	126	1.816	334	3.000	460	-1.184	0	27,658	1	0.943	524	1.330	525	-0.387
25%	57	131	83	1.311	251	1.582	334	-0.271	27,658	27,658	0	#REF!	0	#REF!	-	#REF!
35%	131	201	84	1.255	192	3.000	276	-1.745	27,658	29,823	1	0.577	11	1.031	12	-0.454
45%	201	300	83	1.680	164	1.743	247	-0.062	29,823	29,823	0	#REF!	0	#REF!	-	#REF!
55%	300	454	82	1.478	201	1.695	283	-0.218	29,823	29,823	0	#REF!	0	#REF!	-	#REF!
65%	454	811	83	1.025	271	1.096	354	-0.072	29,823	29,823	0	#REF!	0	#REF!	-	#REF!
75%	811	1,407	83	0.992	334	1.215	417	-0.223	29,823	32,578	1	0.747	11	1.381	12	-0.635
85%	1,407	3,278	84	0.944	458	1.382	542	-0.439	32,578	32,578	0	#REF!	0	#REF!	-	#REF!
95%	3,278	27,681	83	1.341	785	1.197	868	0.145	32,578	32,578	0	#REF!	0	#REF!	-	#REF!
100%	27,681	18,406,826	21	1.042	297	1.121	318	-0.078	32,578	18,406,826	0	#REF!	107	1.087	107	#REF!

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB A - HOMEOWNERS/FARMOWNERS

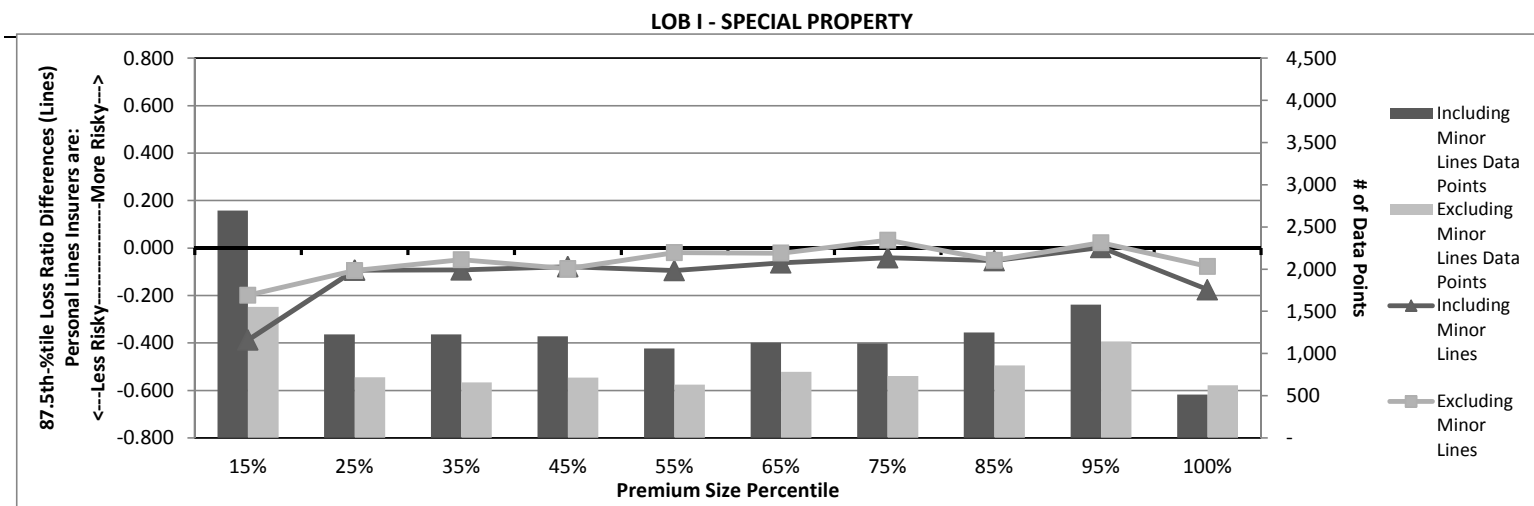**LOB B - PRIVATE PASSENGER AUTO LIABILITY**

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB C - COMMERCIAL AUTO LIABILITY

LOB D - WORKERS' COMPENSATION

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB E - COMMERCIAL MULTIPLE PERIL

LOB F1 - MEDICAL MALPRACTICE - OCCURRENCE

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB F2 - MEDICAL MALPRACTICE - CLAIMS-MADE

LOB G - SPECIAL LIABILITY

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB H - OTHER LIABILITY

LOB I - SPECIAL PROPERTY

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB J - AUTO PHYSICAL DAMAGE

LOB K - FIDELITY & SURETY

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB L - OTHER

LOB M - INTERNATIONAL

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB N&P - REINSURANCE A & C

LOB O - REINSURANCE B

Personal Lines Business Focus

Differences in Premium Risk Charge by Type of Company (Report 8)

LOB R - PRODUCTS LIABILITY