NCCI Holdings, Inc.

Workers Compensation Excess Loss Development

Executive Summary

Large loss and excess development is relevant to calculating excess loss factors used in retrospective rating. As part of this review of excess loss factors, NCCI investigates countrywide excess loss development.

This is an update to the 2007 NCCI study, "Workers Compensation Excess Development" (available at **ncci.com**), adding four calendar years of large loss experience.

In addition to updating our previous analysis, we look at excess loss development in relation to:

- Large deductible policies
- State lump-sum settlement rules
- State ELFs (excess loss factors) at a $1 million limit

The key findings are:

- Claims over $5 million were more likely to develop down than up through 26 years of development. In contrast, claims of about $1 million to $2 million were more likely to develop up than down through 26 years.
- Claims under large deductible policies had significantly more development in the excess layers than claims under other policies (ground up or small deductible policies).
- States allowing medical lump-sum settlements had more development for high excess layers than states that do not allow medical lump-sum settlements.
- No clear and credible differences in development were observed between the states relative to their ELFs at a $1 million limit.

Most of the excess loss development patterns presented in this report are derived from claim information reported in NCCI's Call 31—Large Loss and Catastrophe Claims. Under this Call, initiated in 2003, carriers report information annually on every claim for injuries occurring in 1984 or later where the case-basis incurred value of the claim is at least $500,000.

Where indicated, we have trended these claims by 3% and 5% per year on an accident-year basis. (More detail on the data, trend adjustments, and development factor calculations is given in the section "Background and Methodology" in the Appendix.)

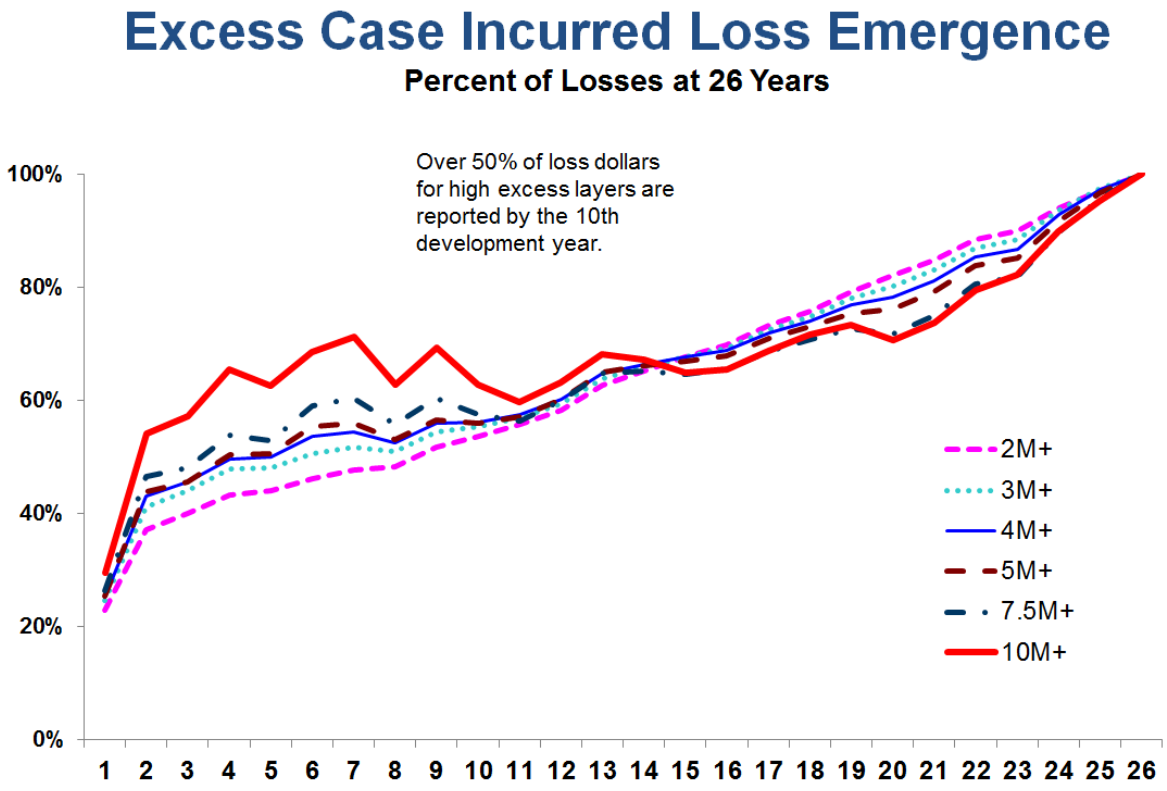
Every two years, the Reinsurance Association of America (RAA) publishes "Historical Loss Development Study" (see www.reinsurance.org for more information), which includes several workers compensation loss development triangles. This report briefly compares the patterns seen in the Call 31 data with those in the RAA study (see Exhibits 9 and 10). RAA data, though systematically very different from Call 31 data, does show instances where development factors decrease for higher attachment points. This is consistent with a key finding from Call 31 data.

EXCESS DEVELOPMENT PATTERNS

Exhibit 1 shows the case incurred loss excess of various attachment points for development years 1 to 26 relative to the 26th year. The proportion of losses reported at early stages of development increases with increasing attachment point, indicating that incremental percentage development from the early development ages to the 26th year decreases with increasing attachment point.

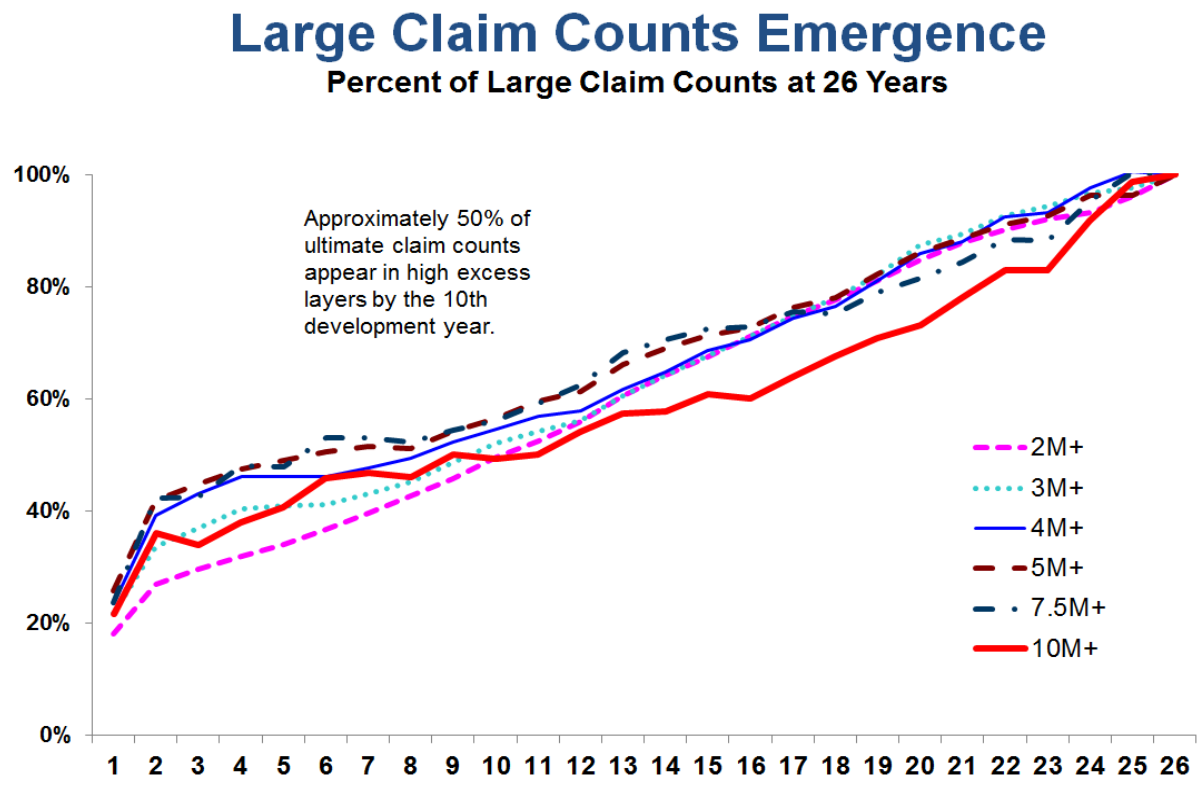
The number of reported cases exceeding various attachment points at development ages 1 to 26 relative to the 26th year is shown in Exhibit 2. Similar to Exhibit 1, incremental percentage development from the early stages to the 26th year generally decreases with increasing attachment point.

For both incurred losses and number of cases, there are fewer situations where development factors decrease as attachment points increase in this update than in the prior study (see Exhibits 1 and 2 in prior study). Exhibits 1 and 2 look slightly different from the previous report. Some of this difference is due to the inclusion of development from the 22nd to the 26th year in the update.



Source: Call 31 data, Accident Years 1984–2008, Calendar Years 2000–2009, combination of 3% and 5% trend, based on data for the states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 1



Source: Call 31 data, Accident Years 1984–2008, Calendar Years 2000–2009, combination of 3% and 5% trend, based on data for the states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 2

Individual Claim Development Patterns by Size of Loss

Exhibits 3 through 8 show development of individual claims by size of loss. Each circle in these exhibits represents a single claim and shows the beginning case incurred loss of the claim (on the horizontal axis) and subsequent percentage change in the case incurred loss (on the vertical axis) over a certain calendar year (CY) period. The exhibits cover different calendar year periods:

- CY 2001 in Exhibits 3 and 6
- CY 2009 in Exhibits 4 and 7
- CY 2001–2009 in Exhibits 5 and 8

The exhibits also cover different accident years:

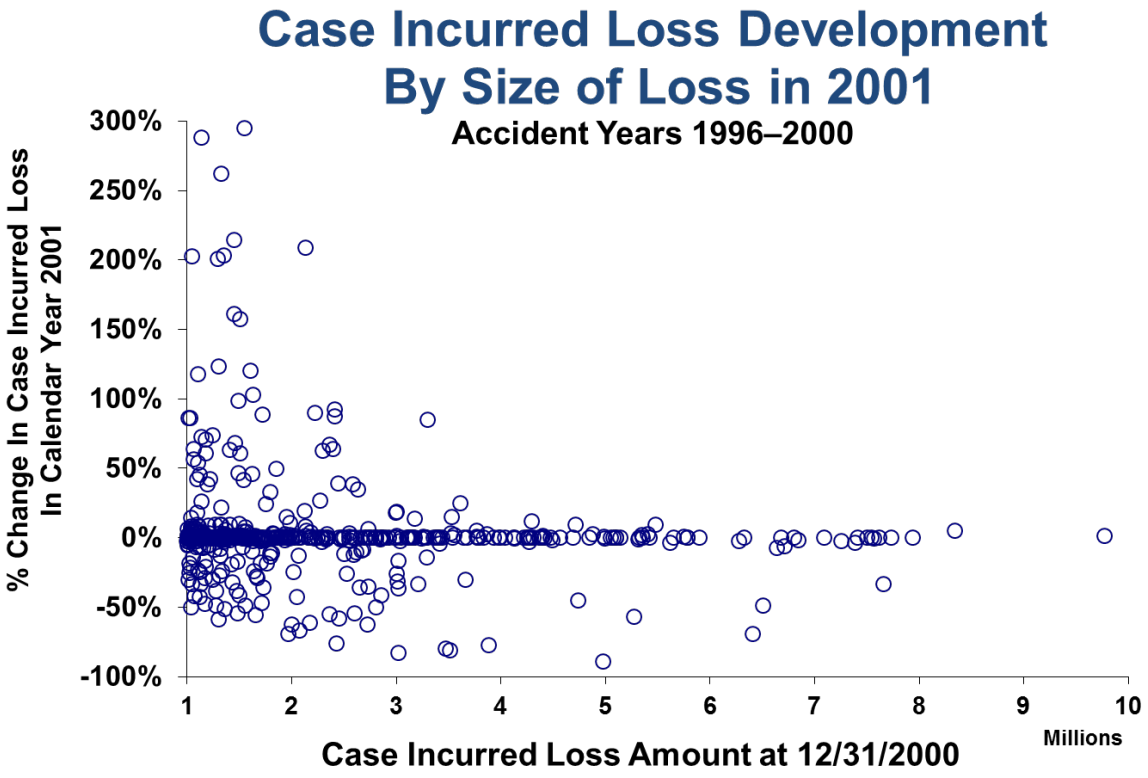
- Exhibits 3, 4, and 5 include the five most recent accident years having development through the whole calendar year period
- Exhibits 6, 7, and 8 include earlier accident years

The major development patterns we observe are:

- As the size of loss becomes larger, the proportion of claims that develop upward becomes smaller.
- As the size of loss becomes larger, dramatic drops in estimated claim values become more frequent. For example, in Exhibit 3, above $4 million (right half of the graph), only three claims show an increase of at least 5%, but four claims show decreases of 40% or more. The death of a disabled worker or an agreement to a lump-sum settlement are examples of reasons for sharp reductions in estimated values for large claims.

In the previous look at Calendar Years 2001–2005, very large losses were more likely to show dramatic drops in case incurred value than increases. Updated Exhibits 4, 5, 7, and 8 show that this pattern persists into Calendar Years 2006–2009. This gives rise to instances where development for higher layers is approximately the same or less than development for lower layers. For very mature development ages, the increases and decreases are more balanced (see Exhibit 8).

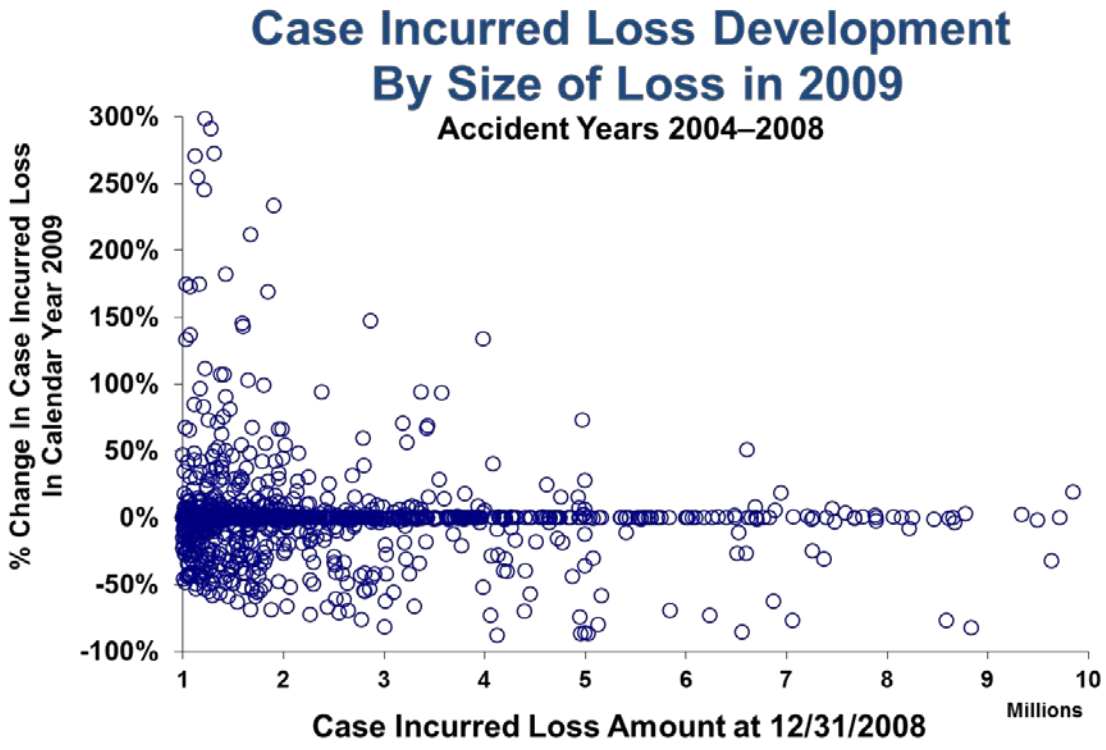
Exhibit 3 updates a chart from our previous report and shows the major development patterns discussed.



Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

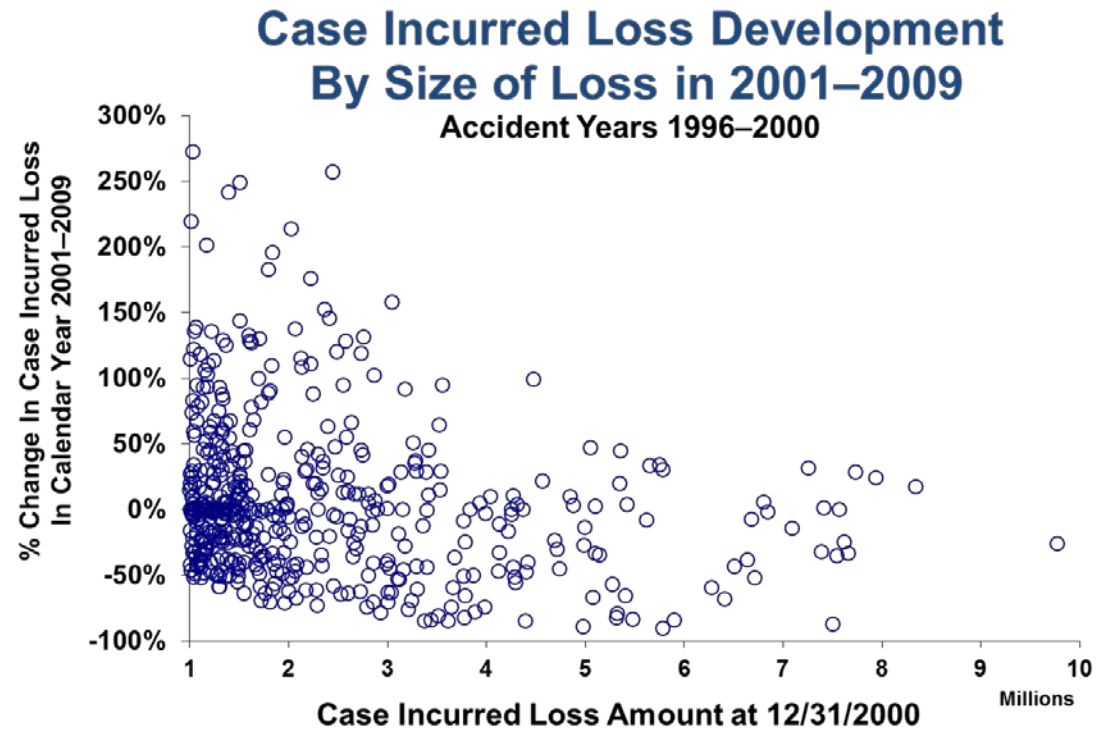
Exhibit 3

Exhibits 4 and 5 show that the major development patterns discussed persist from 2001 through 2009.



Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

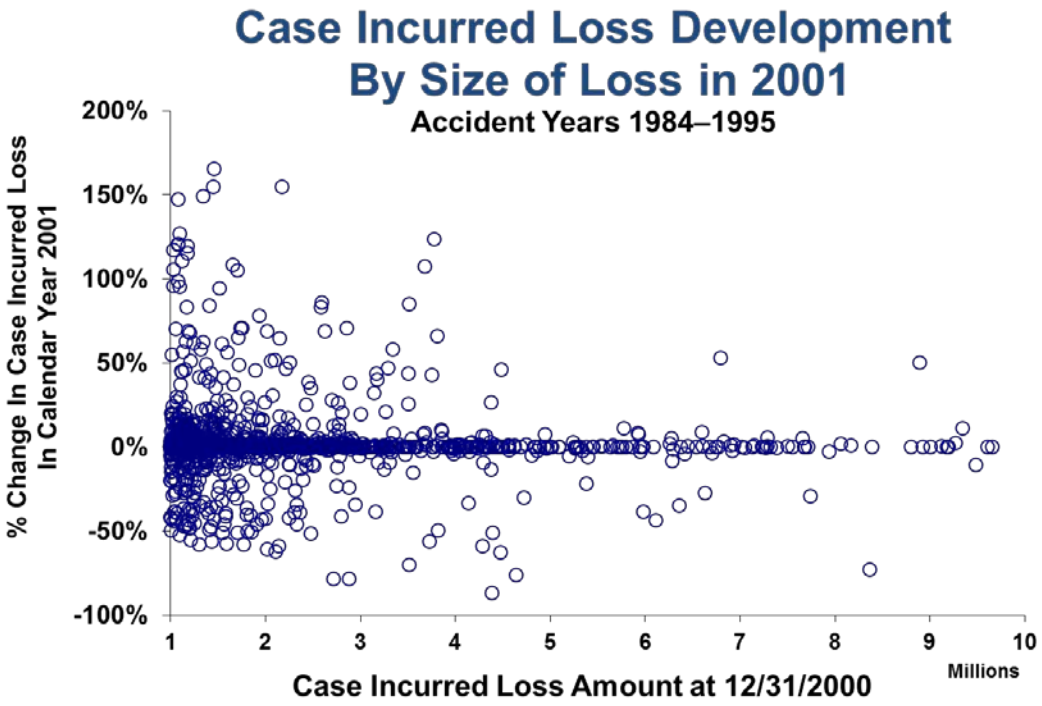
Exhibit 4



Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 5

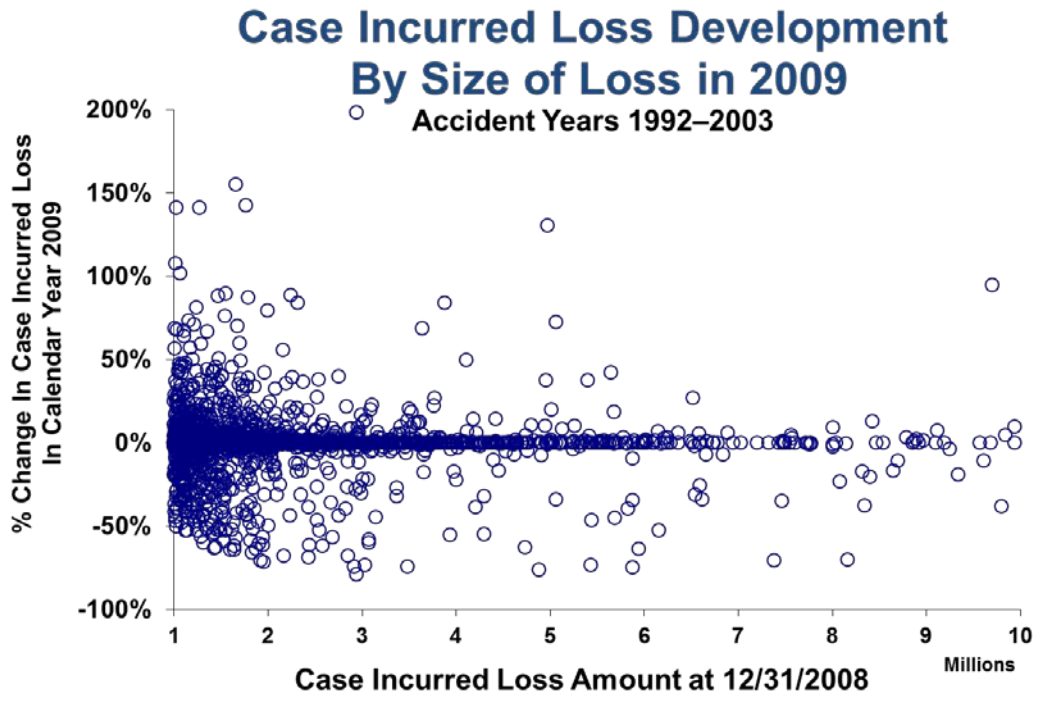
Exhibit 6 updates a chart from our previous report and shows the major development patterns discussed hold for later stages of development than shown in Exhibit 3.



Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 6

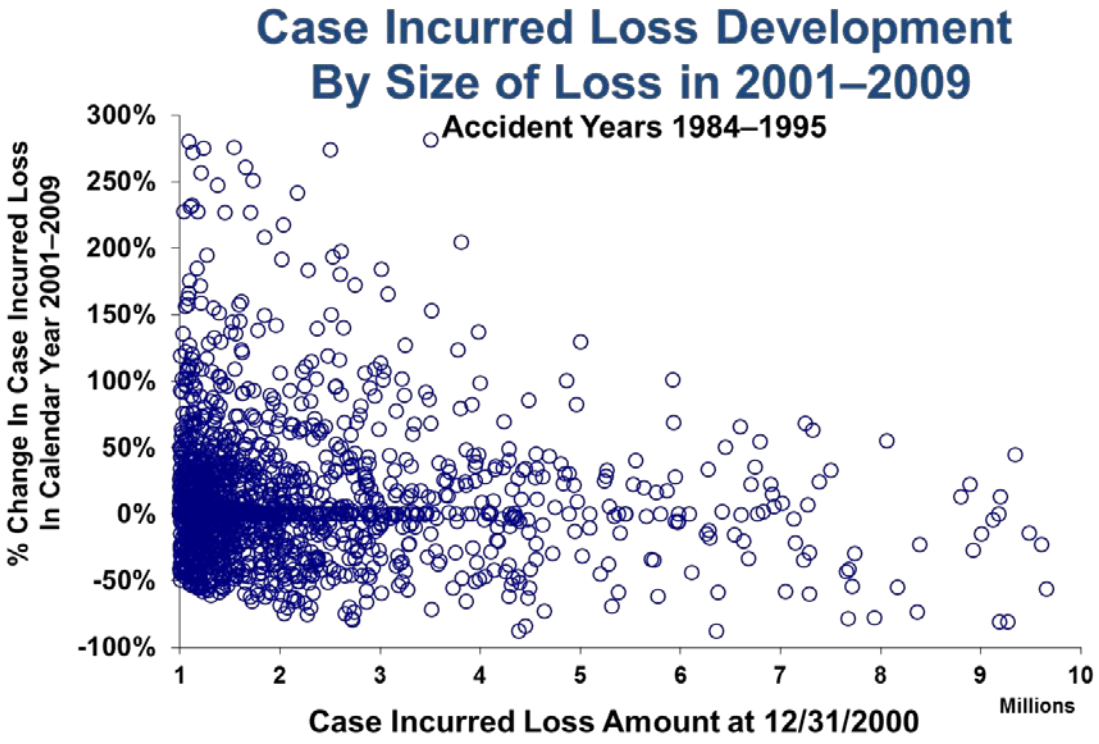
Exhibit 7 shows that, at comparable stages of development, the main development patterns in 2009 are similar to those in 2001.



Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 7

Exhibit 8 shows that, at later stages of development, there is less difference in the proportions of claims developing upward or downward as claim size increases than at earlier stages of development.



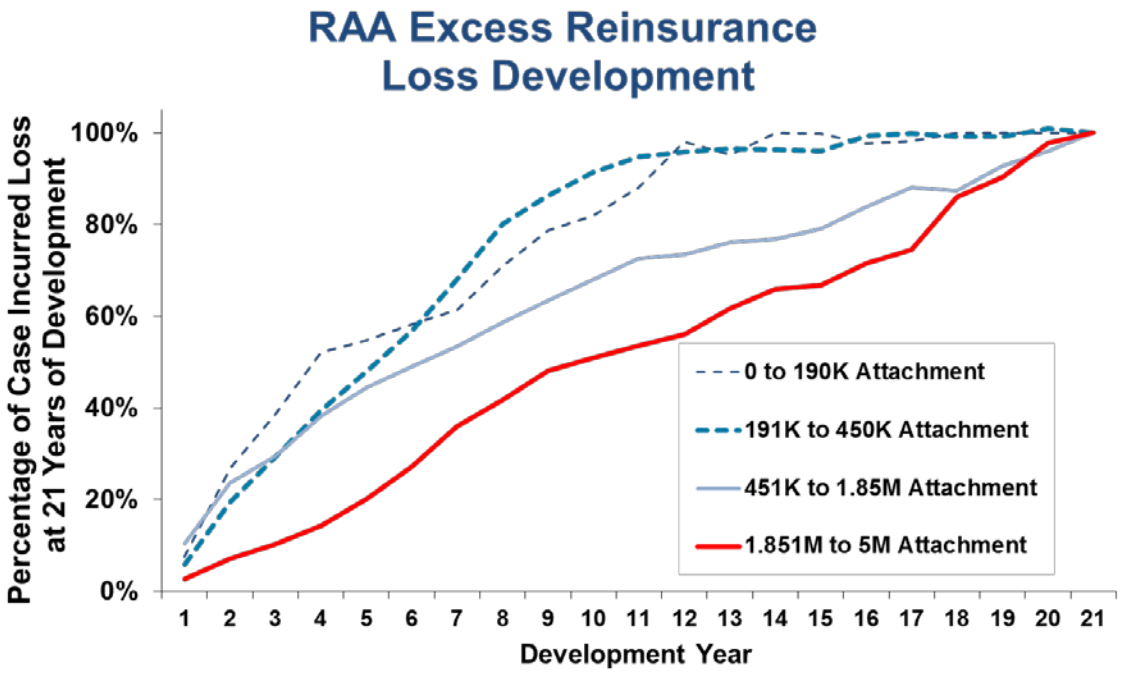
Source: Call 31 data, states where NCCI provides ratemaking services, excluding TX and WV

Exhibit 8

Comparison With RAA Excess Development

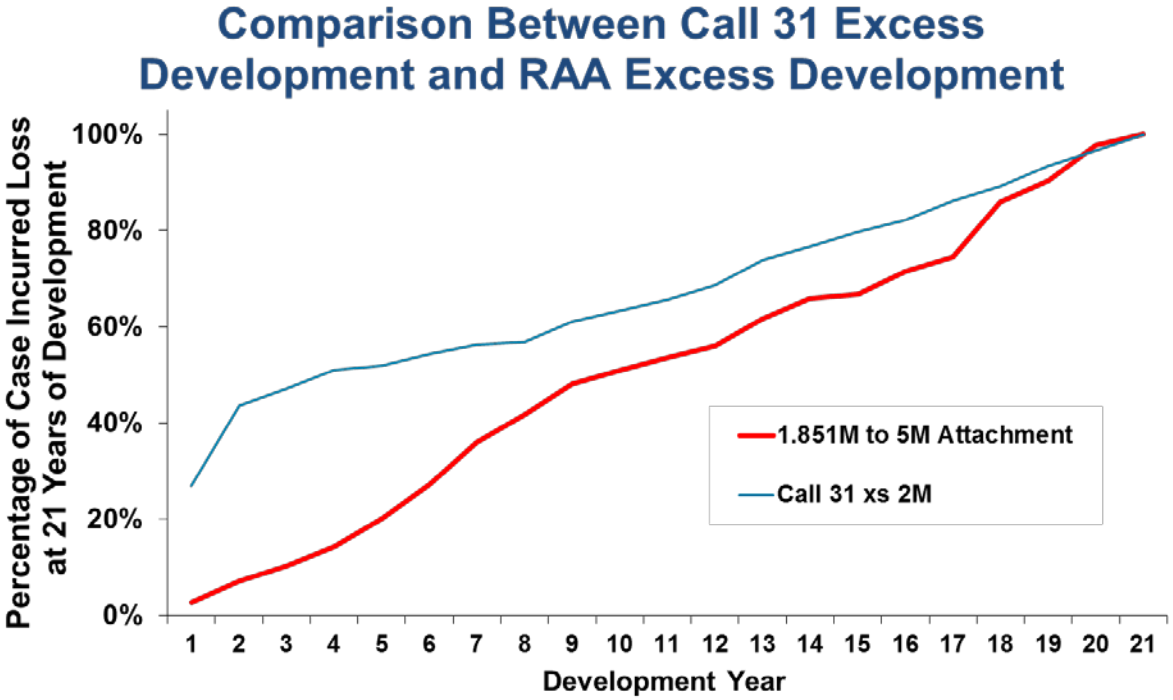
Every two years, the Reinsurance Association of America (RAA) publishes excess workers compensation development factors based on data voluntarily reported to the RAA by reinsurers. The RAA excess triangles differ from the NCCI excess triangles in the following respects:

- The RAA limit ranges are generally lower than the attachment points used in the NCCI study
- Various limits are combined in the RAA report
- Reinsurance coverage is usually on a per-occurrence basis, while the NCCI Call 31 data is on a per-claim basis
- Amounts reported for losses in the RAA report may be affected by various provisions of actual reinsurance contracts
- Losses in the RAA report may include reinsurer-adjusted estimates for ceded case reserves
- Losses in the RAA report may include excess loss for claims actually settling below a given attachment point due to a commutation agreement
- The lag in reporting claims to reinsurers affects the observed development pattern in the RAA report



Source: Volume weighted for Accident Years 1986–2005 and Calendar Years 2000–2006, derived from the Reinsurance Association of America's *Historical Loss Development Study (2007)*

Exhibit 9



Source: Call 31 data, Accident Years 1984–2008, Calendar Years 2000–2009, Combination of 3% and 5% trend
Based on data for the states where NCCI provides ratemaking services, excluding TX and WV
Volume weighted for Accident Years 1986–2005 and Calendar Years 2000–2006,
derived from the Reinsurance Association of America's *Historical Loss Development Study (2007)*

Exhibit 10

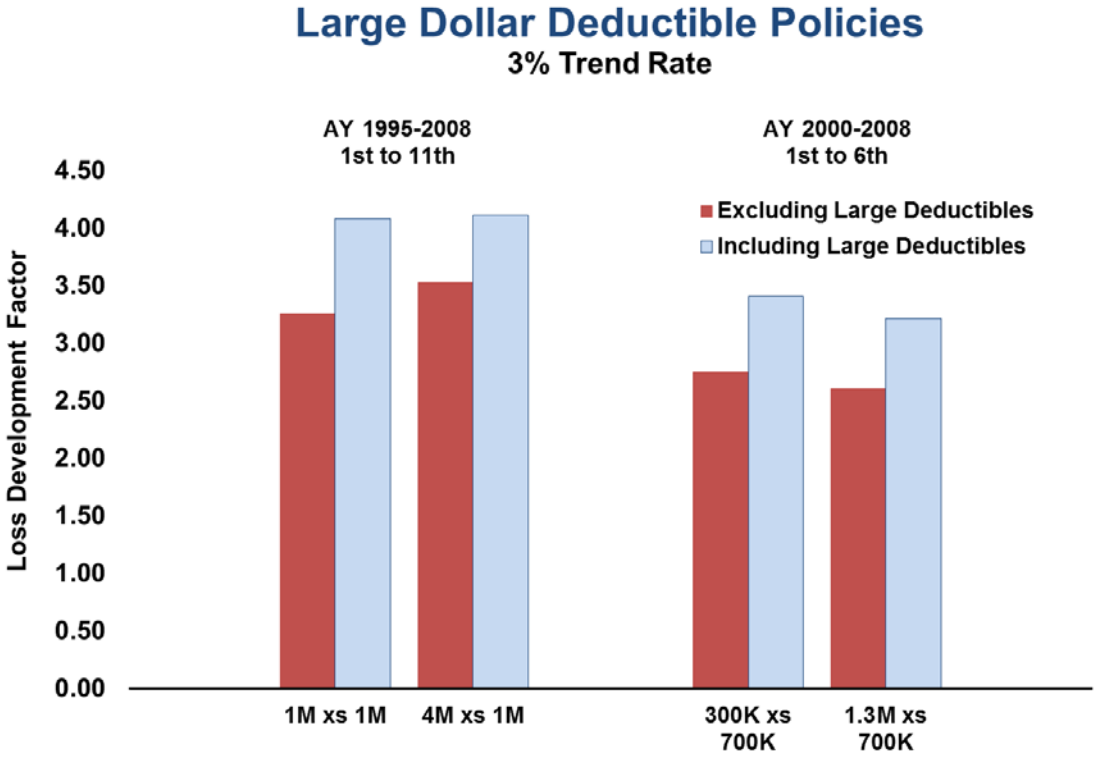
The RAA development patterns show some cases of lower development with increasing attachment points (see Exhibit 9), although they are not as pronounced as in the NCCI Call 31 data. Given the key differences between the underlying data and the development factor calculations, the differences in these excess development patterns are not entirely surprising. This is partly because in using the NCCI data we are able to review higher attachment points than is possible with the RAA summary data. Additionally, the reinsurance process tends to produce slower development than the Call 31 reporting by direct carriers (Exhibit 10).

Though less pronounced than in older RAA data used in the prior study, these cases of decreasing development for higher limits continue to confirm the reversal patterns observed in Call 31 excess development.

Development for Large Dollar Deductible Policies

Large deductible claims are reported in Call 31 for four states—Florida, Nebraska, Oregon, and Virginia. Oregon reported insufficient claims volume, so this analysis is based on Florida, Nebraska, and Virginia. In order to have sufficient claim volume, only limits of $1 million and smaller are reviewed. We compare loss emergence including large deductible claims and excluding large deductible claims.

Including claims under large deductible policies produced significantly more development in the excess layers reviewed (see Exhibits 11 and 12).



Source: Call 31 data for FL, NE, and VA

Exhibit 11

Cumulative Development Factors Derived From Call 31

Layers	3% Trend Rate: Excluding Large Deductibles	3% Trend Rate: Including Large Deductibles	5% Trend Rate: Excluding Large Deductibles	5% Trend Rate: Including Large Deductibles
AY 1995-2008	1st to 11th		1st to 11th	
1M xs 1M	3.26	4.09	3.45	4.30
4M xs 1M	3.53	4.11	3.64	4.28
AY 2000-2008	1st to 6th		1st to 6th	
300K xs 700K	2.75	3.41	2.78	3.45
1.3M xs 700K	2.60	3.22	2.62	3.25

Source: Calendar Years 2000–2009, 1st through 26th calendar year past accident year, case incurred loss trended from Accident Year to 2010, Florida, Nebraska, and Virginia. Loss development factors are volume weighted averages.

Exhibit 12

Development for States Grouped by Lump-Sum Settlement Rules

Although lump-sum rules vary by state and change over time, in recent years the following groups of states have somewhat similar rules:

Group M—States allowing medical liability to be extinguished in some circumstances: AL, AR, CO, FL, GA, HI, IA, IL, KS, ME, MO, MS, MT, NC, NE, OK, RI, SC, TN, UT, VA, VT.

Group I—States permitting only indemnity lump-sum settlements: AK, AZ, DC, KY, LA, NH, NM, OR, SD.

Interestingly, Exhibits 13 and 14 show that claims from states that allow lump-sum settlements for medical have more development for high excess layers than claims from states that do not allow lump-sum settlements for medical.

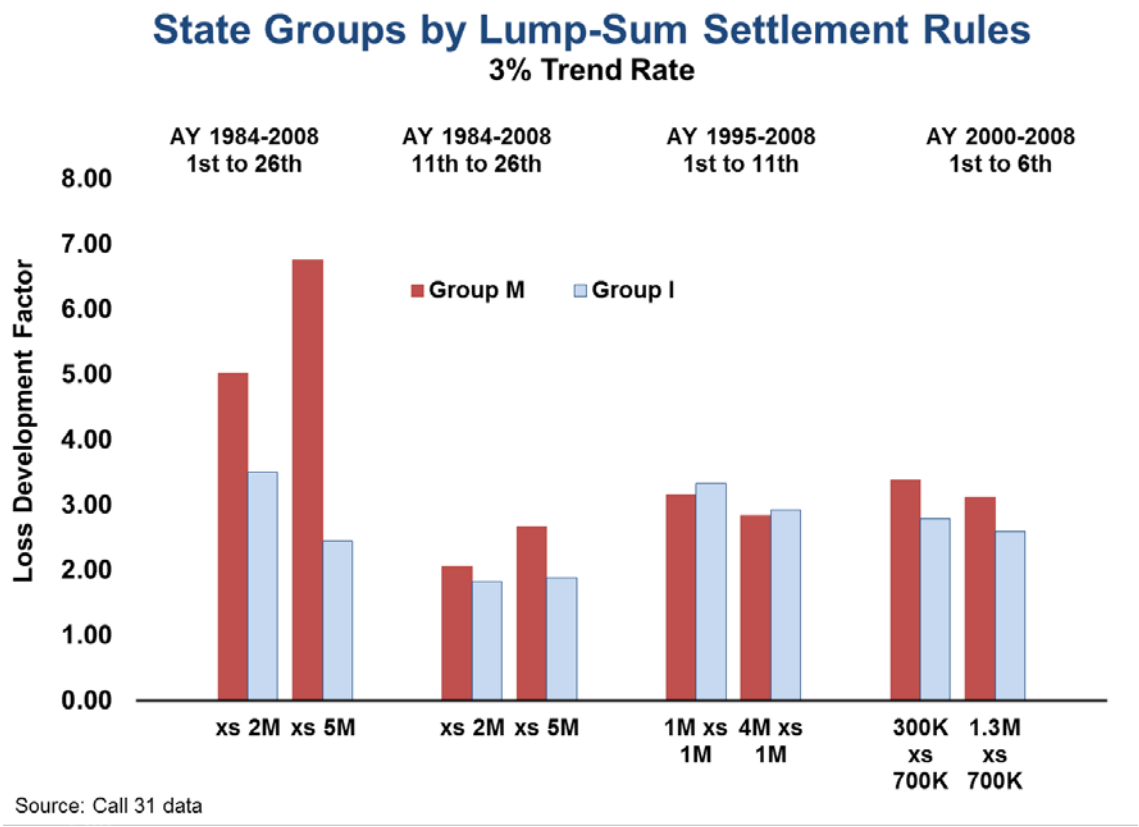

State Groups by Lump-Sum Settlement Rules
3% Trend Rate
AY 1984-2008 1st to 26th
AY 1984-2008 11th to 26th
AY 1995-2008 1st to 11th
AY 2000-2008 1st to 6th
Loss Development Factor
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Group M
Group I
xs 2M xs 5M
xs 2M xs 5M
1M xs 1M
4M xs 1M
300K xs 700K
1.3M xs 700K
Source: Call 31 data

Exhibit 13

Cumulative Development Factors Derived From Call 31

	3% Trend Rate		5% Trend Rate	
Layers	LUMP Group M	LUMP Group I	LUMP Group M	LUMP Group I
AY 1984-2008	1st to 26th		1st to 26th	
xs 2M	5.02	3.51	5.04	4.19
xs 5M	6.76	2.45	5.48	2.83
AY 1984-2008	11th to 26th		11th to 26th	
xs 2M	1.91	1.65	1.87	1.83
xs 5M	2.28	1.42	2.00	1.50
AY 1995-2008	1st to 11th		1st to 11th	
1M xs 1M	3.16	3.33	3.51	3.75
4M xs 1M	2.84	2.92	3.08	3.30
AY 2000-2008	1st to 6th		1st to 6th	
300K xs 700K	3.38	2.79	3.41	2.82
1.3M xs 700K	3.13	2.59	3.16	2.63

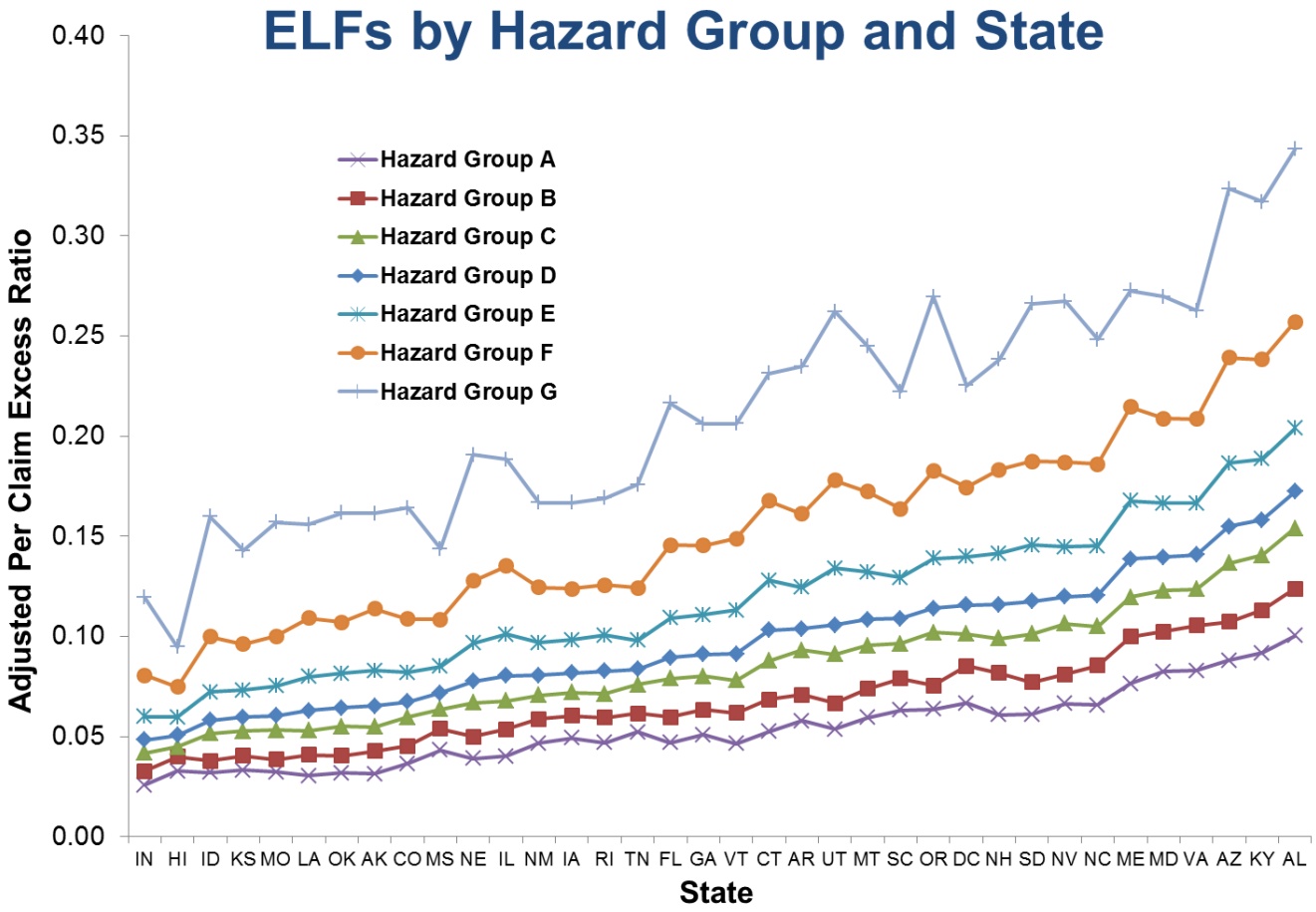
Source: Calendar Years 2000–2009, 1st through 26th calendar year past accident year, case incurred loss trended from Accident Year to 2010. Loss development factors are volume weighted averages.

Exhibit 14

Development for States Grouped by ELF at a $1 Million Limit

An excess loss factor (ELF) at a limit is the ratio of losses excess of the limit to total losses. NCCI publishes ELFs, which vary by state, hazard group, and year. The adjusted per-claim excess ratios shown in Exhibits 15 and 16 are the per-claim ELFs from NCCI's publication, ***Excess Loss Factors Calculations***, for each state.

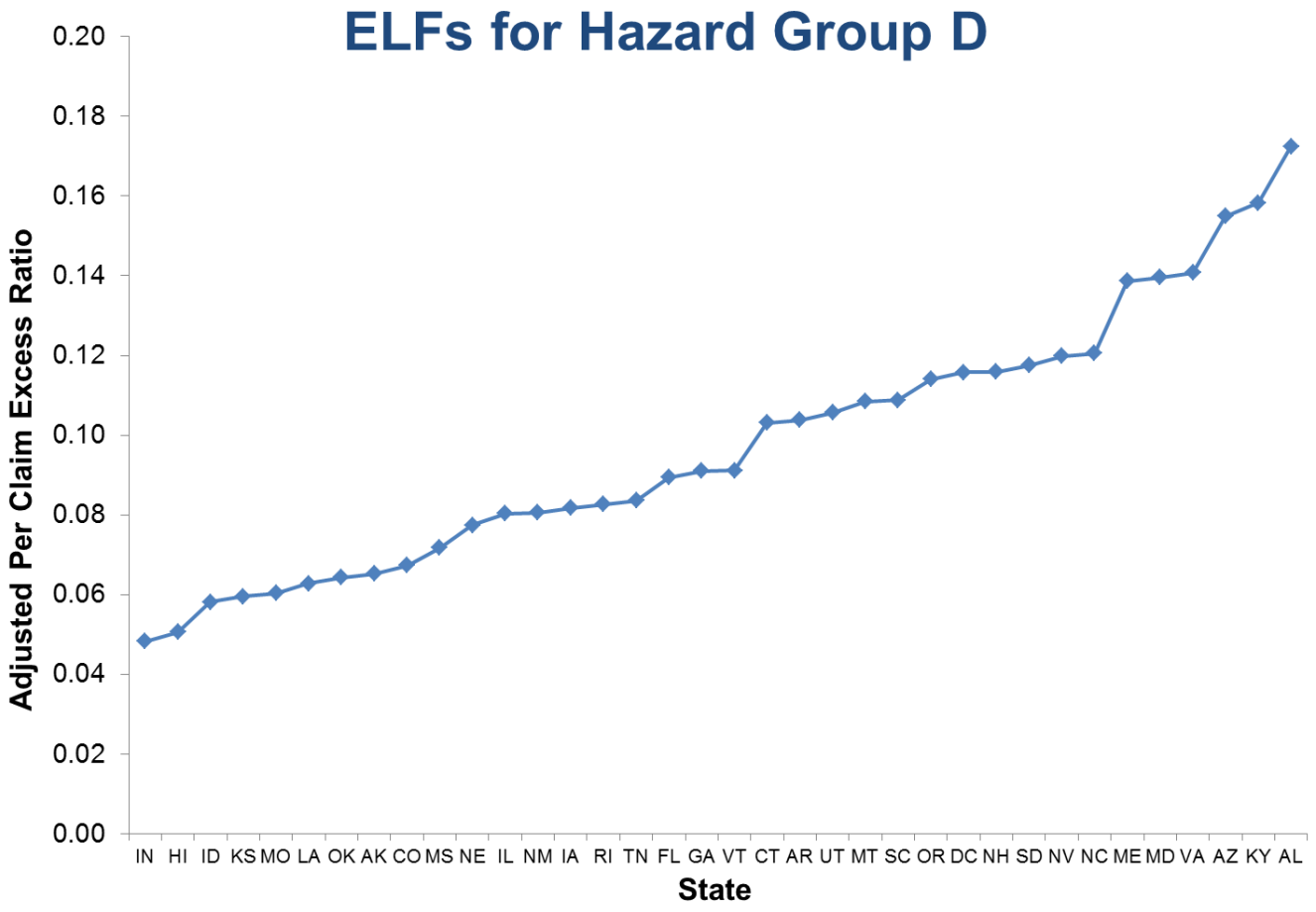
Exhibit 15 shows ELFs for a $1 million limit by state and hazard group, sorted on the ELFs for Hazard Group D.



Source: NCCI Excess Loss Factors effective at 01/01/11

Exhibit 15

Exhibit 16 shows ELFs for a $1 million limit for Hazard Group D, on a larger vertical scale.



Source: NCCI Excess Loss Factors effective at 01/01/11

Exhibit 16

We split states into the following categories based on inspection of Exhibits 15 and 16.

High (H) Group:	AL, AZ, KY, MD, ME, VA
Medium (M) Group:	AR, CT, DC, MT, NC, NH, NV OR, SC, SD, UT
Low (L) Group:	AK, CO, FL, GA, HI, IA, ID, IL, KS, LA, MO, MS, NE, NM, OK, RI, TN, VT

States in the Low ELF group tend to show more development in high excess layers—and less development in the lower excess layers—than states in the High and Medium ELF groups (see Exhibits 17 and 18). However, it is not clear from this analysis that there is any credible and consistent relationship between ELFs and excess loss development.

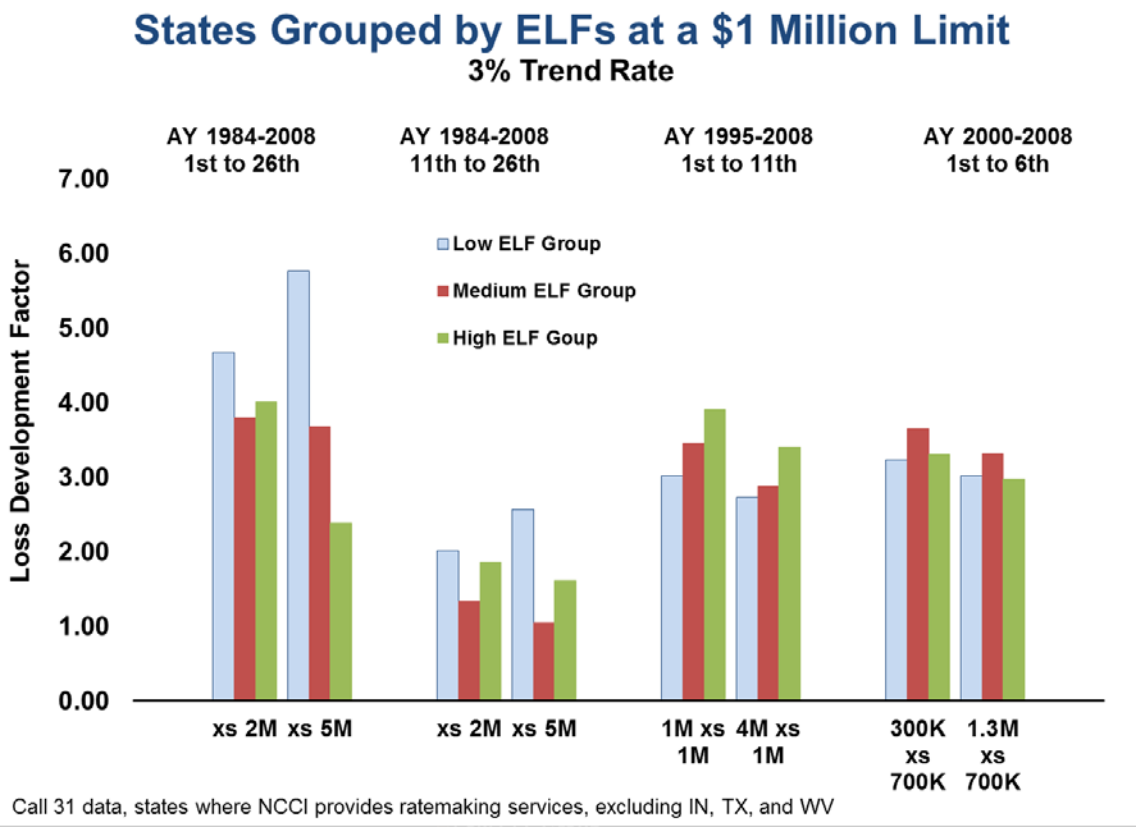

States Grouped by ELFs at a $1 Million Limit
3% Trend Rate
AY 1984-2008 1st to 26th
AY 1984-2008 11th to 26th
AY 1995-2008 1st to 11th
AY 2000-2008 1st to 6th
Loss Development Factor
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Low ELF Group
Medium ELF Group
High ELF Goup
xs 2M
xs 5M
xs 2M
xs 5M
1M xs 1M
4M xs 1M
300K xs 700K
1.3M xs 700K
Call 31 data, states where NCCI provides ratemaking services, excluding IN, TX, and WV

Exhibit 17

Cumulative Development Factors Derived From Call 31

	3% Trend Rate			5% Trend Rate		
Layers	Low ELF Group	Medium ELF Group	High ELF Group	Low ELF Group	Medium ELF Group	High ELF Group
AY 1984-2008		1st to 26th			1st to 26th	
xs 2M	4.68	3.81	4.02	4.66	4.20	5.02
xs 5M	5.77	3.68	2.39	4.78	3.76	2.88
AY 1984-2008		11th to 26th			11th to 26th	
xs 2M	2.02	1.34	1.86	1.89	1.49	2.18
xs 5M	2.57	1.05	1.62	2.20	1.20	1.60
AY 1995-2008		1st to 11th			1st to 11th	
1M xs 1M	3.02	3.46	3.91	3.35	3.88	4.41
4M xs 1M	2.73	2.88	3.41	2.97	3.16	3.88
AY 2000-2008		1st to 6th			1st to 6th	
300K xs 700K	3.24	3.65	3.31	3.26	3.70	3.37
1.3M xs 700K	3.02	3.32	2.97	3.05	3.38	3.03

Source: Calendar Years 2000–2009, 1st through 26th calendar year past accident year, case incurred loss trended from Accident Year to 2010. Loss development factors are volume weighted averages.

Exhibit 18

Some Caveats

Some precautions should be taken into consideration when interpreting the implications of this study to excess loss reserve estimation.

Losses to date can be volatile for excess layers, and applying Call 31-derived excess development factors—or any excess development factors—to actual losses may not be very predictive. However, excess development factors may be more useful for exposure-based reserving methods, such as Bornhuetter-Ferguson.

Underlying losses are trended to Accident Year 2010 and the resulting development factors may be less indicative of development in other accident years.

Actual reinsurance excess layers will be affected by contractual provisions not reflected in the per-claim layers produced from Call 31 data.

Development beyond the 26th year is not addressed in this study, and there is some anecdotal evidence suggesting that there can be significant development in the higher layers at late stages of development (see Gary G. Venter, "Workers Compensation Excess Reinsurance—The Longest Tail?," NCCI ***Issues Report***, 1995). High development beyond the 26th year for high layers might result from the dispersion of longevity of individual claimants. At early stages, claims are reserved at expected values. At very late stages, those claims with great longevity will begin to penetrate higher layers at a time beyond the point when the big drops from early mortality and other causes are likely to have mostly ceased.

Closing Remarks

This update, like the original study, demonstrates that patterns of excess loss development are sometimes the opposite of intuitive. Higher excess layers sometimes had lower development factors than lower excess layers. States allowing lump-sum settlement of medical benefits had higher excess development factors than states allowing only indemnity benefits to be settled in lump sums.

NCCI will continue to study the behavior of excess losses in various contexts.

Appendix

Background and Methodology

Loss development factors and patterns presented in this report are derived from data reported to NCCI under Call 31. Call 31 was initiated to allow limited loss development in aggregate ratemaking. The data reported includes all claims, gross of reinsurance recoveries, over $500,000 from Accident Year 1984 forward, valued at annual intervals from 12/31/98 through 12/31/09.

Adjustment for Trend

WC average claim sizes have been increasing in the recent past. As a result, the proportion of claims and the share of claim dollars that exceed a fixed attachment point generally grow over time. For example, if the average claim size has doubled over a 10-year period, then loss development patterns in excess of $2 million at the end of the period will likely be similar to loss development patterns in excess of $1 million at the beginning of the period.

We have adjusted for trend by trending individual ground-up claim incurred claim amounts at constant rates of 3% and 5% from the accident year of the claim to Accident Year 2010. This is only a rough first-order adjustment and accounts for changes in prices (wages or price per service for medical services) but does not account for changes in claim duration or utilization of medical services. We think that this trend increases the consistency of link ratios across accident years. In some exhibits, 3% and 5% trend rates are combined by averaging the resulting percentages of excess losses, or percentages of claim counts exceeding a given attachment point, calculated using each trend rate.

Bases for Loss Development Factors

The Call 31 data was used to compute development factors on the following bases:

- Development is per claim.
- Claim values are case incurred amounts (paid plus case reserves) for indemnity and medical benefits combined, without loss adjustment expenses.
- Claims are trended on ground up basis by 3% and 5% from the accident year of the claim to Accident Year 2010.
- The number of years of development varies by attachment point:
  - 26 years of development for attachment points $2 million or greater
  - 10 years for attachment points $1 million or greater
  - 5 years for attachment points $700,000 or greater
- Losses or claim counts, underlying the denominators of individual accident year link ratios, are used as weights to calculate volume-weighted average incremental development factors across accident years. Volume-weighted development factors across multiple development years are the product of volume-weighted incremental development factors.
- Individual accident years may be included in the calculation development factors for development periods that extend beyond their current maturity. For example, the first year of incremental development for Accident Year 2008 may be included in the calculation of the volume-weighted development factor from 1st to 6th.