Trend In Excess Layers

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Zurich North America

Agenda:

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- Quick Overview:
  - The data – it is credible, reliable and sufficient to reach a conclusion (in my opinion, anyway).
  - The main Observation: Over the last 15 years, the observed Severity trend in the Excess layers was less than 'Primary' trend.
  - Possible conclusion: Trend has not been uniform for all losses. In a recent history, trend was inversely proportional to the size of loss.

- Data: History, quantity and quality

- Loss Development – LDFs for Open Claims

- Empirical Results – multiple ways to look at the data to assess a trend

- Main Conclusion and possible consequences

Quick Overview

- This discussion will address Medical Malpractice claims for Hospitals. However, the overall conclusion might be applicable to a broader range of 'Liability' products

- Zurich has participated in Med Mal market over the last 20 years.

- During our underwriting process, we were able to compile data from our submissions. This data includes '**ground up**' information for all reported claims over the 10 years period (usually). It also contains fairly detailed exposure information. We will refer to it as 'Database' throughout the presentation

- Zurich has summarized and made public some of this information since 2005 (via 11 annual 'Perspectives' / 'Healthcare Risk Insights' issues, usually at ASHRM).

- For many years (and probably still) this has been the largest continuously updated database of this kind with respect to both quality and quantity of reported losses: losses in tens of billions of dollars and claims in hundreds of thousands.

Quick Overview - continued

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- I believe that underlying data provides for a very credible sample. Consequently, the conclusions from our study, as unexpected as they might seem, could, indeed, be a fairly accurate representation of reality.

- Over the last 15 years we observed a steady decrease in Med Mal severity trend.

- During this period, we have observed a surprisingly low trend in the Excess layers. In fact, **The Observed Severity Trend in Excess layers was less than Overall trend and even lower than a trend on a Primary layer** (e.g. limited to $1m).

- During this presentation, we will try to support this notion as well as to share some of the techniques and methodologies which can be useful in evaluating losses in the Excess layers.

A Problem, An Observation and A Possible Conclusion

Problem:
Misestimating the trend, even by a few points, often leads to a material error in the 'on-leveling' procedure. This is especially true in reserving for excess layers.

Observation:
Trend in Excess layer was actually less than in Primary layer

Possible Conclusion:
- **Trend is not uniform for losses of all sizes.**
- **Trend is 'size-of-loss' dependent.**
- **'Large' claims are trended less than 'Small' claims**

Trend in Excess Layers.

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Here is my view of a simplified process of selecting a trend in excess layers. The figures below reflect outcomes based on a 'generic' loss distribution with mean of about $300k and St. Dev of about $2.5m.

Trend in a 'primary' layer (e.g. base rate) is usually known with a some degree of certainty – from variety of industry publications and company's own data.

Even with a very benign primary trend, estimates of an 'excess' trend could be material.

2%

Observed **Primary** Trend

Using lognormal assumption, 2% primary trend would imply 3% ground up trend.

3%

Estimated **Ground Up** Trend

Using lognormal assumption, 3% ground up trend would imply 5% trend in $15m x $10m layer.

5%

Estimated **$15m x $10m** Trend

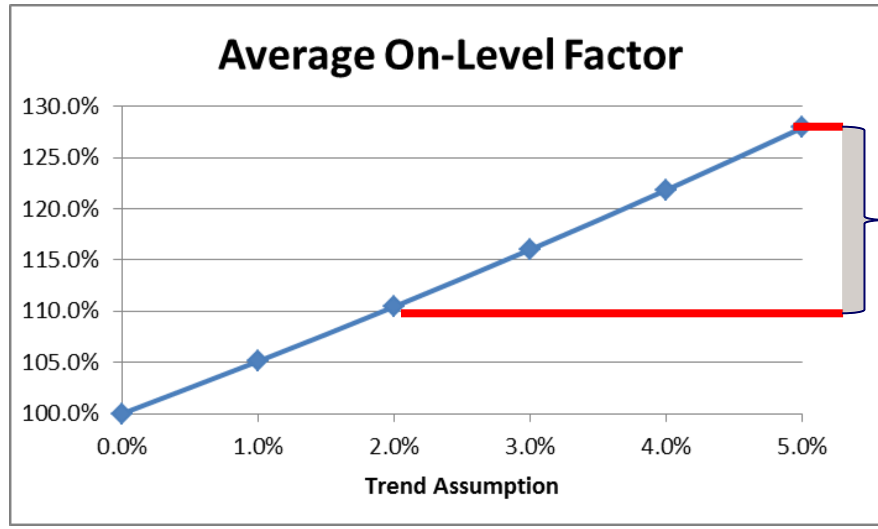
View of on-level losses is greatly impacted by the trend selection

Here is a hypothetical scenario of the on-level procedure. In this example, we will use last five years, not counting the current one. We will project ultimate losses one year forward and calculate the average on-level factor

Year
5th Prior
4th Prior
3rd Prior
2nd Prior
1st Prior
Current
Projected

Ultimate Loss

Trend and take the average



Considering generally long term nature of Excess Liability coverage, on-leveling procedure is very sensitive to even a small changes in trend assumption.

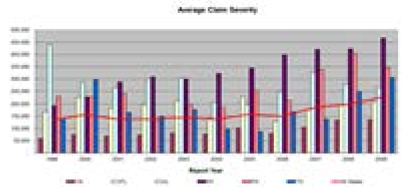
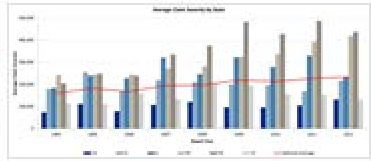
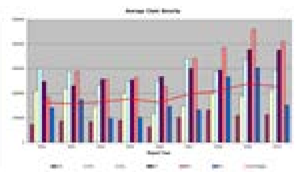
Over 15% difference

Data – We have a Huge Database

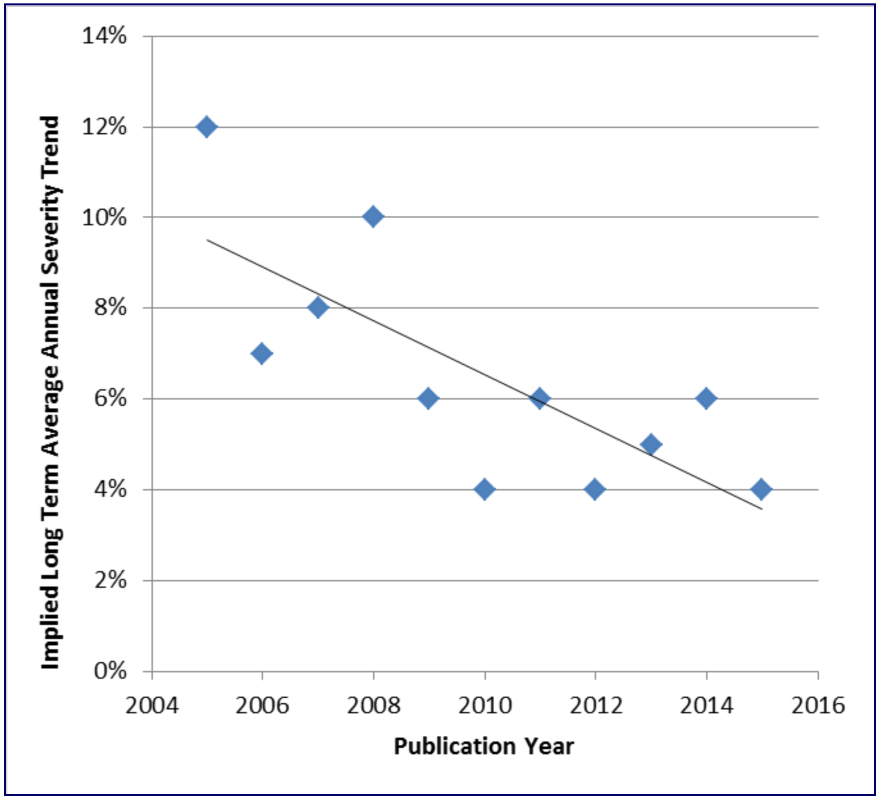
We have an access to the extensive data on Medical Mal Practice losses. We collect submission data from medical facilities seeking coverage. Over the years we have shared a summary of this information via our Perspectives and Healthcare Risk Insights reports

Data

Prior ‘Perspectives’ and ‘Risk Insights’ Publications – Severity Trend Observations
(Ground up and unlimited)

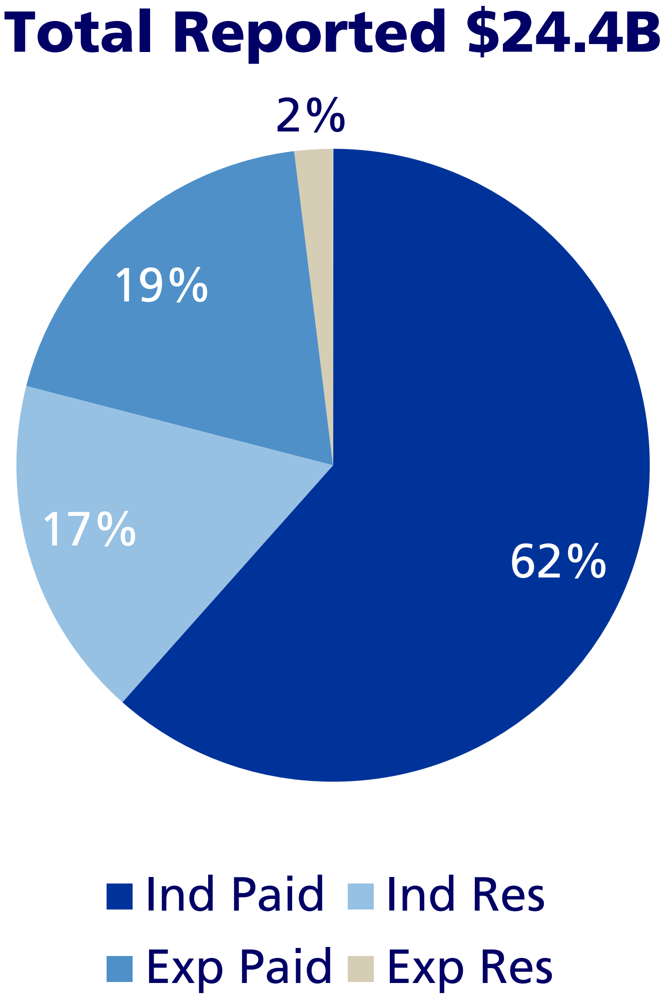
Publication Year	Report Years Available	Implied Long Term Average Annual Severity Trend
2005	1994-2002	12%
2006	1994-2003	7%
2007	1994-2004	8%
2008	1995-2005	10%
2009	1996-2006	6%
2010	1997-2007	4%
2011	1998-2008	6%
2012	1999-2009	4%
2013	2002-2010	5%
2014	2003-2011	6%
2015	2004-2012	4%

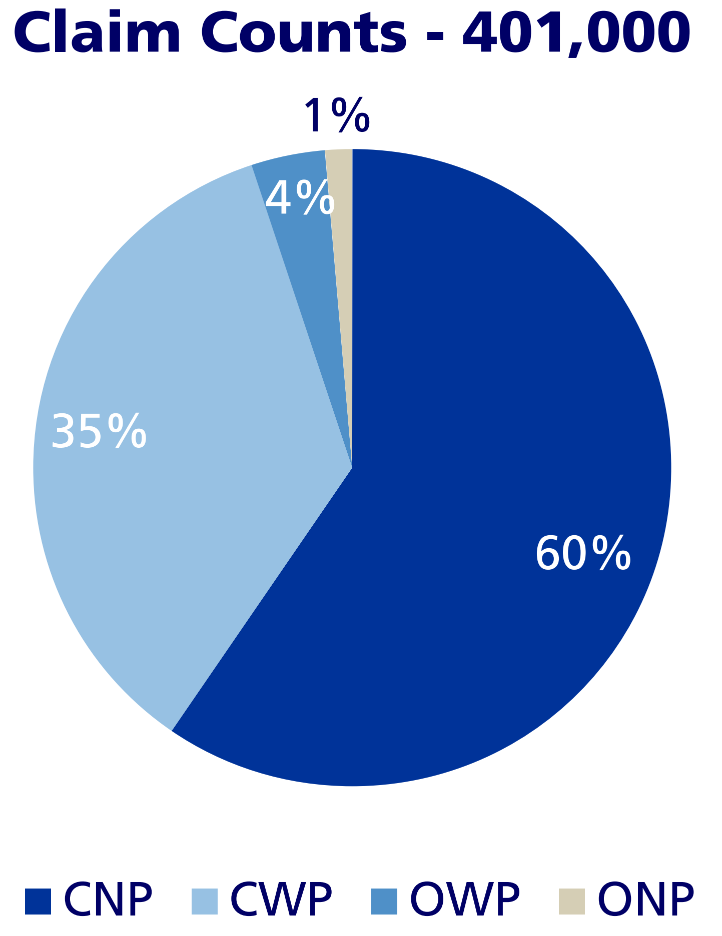


Trends from publications ’06, ’07, ’11, ’14 and ’15 represent the last 5 to 7 years of data from each respective dataset. Trends referenced from the remaining publications use all data in each respective dataset.

Zurich's Submission Database – the latest one

Industry-wide data – Report Years 2005 - 2013





Zurich's Submission Database

Industry-wide data – Report Years 2005 - 2013

Total Reported

Total Claim Counts:	401 K
Projected Ultimate Claim Counts:	159 K
Total Incurred:	24.4 B
Total Incurred – Developed:	26.6 B

Just the Indemnity

Total Claim Counts:	83 K
Projected Ultimate Claim Counts:	80 K
Total Indemnity:	19.3 B
Total Indemnity – Developed:	21.1 B

Just How Big is the Latest Database?

High Level Statistics

- Robust submission database consisting of 9 report years of data
- Losses from thousands of individual locations across the country
  - From all 50 states and Washington DC
  - From various hospitals and outpatient facilities
- Valuation dates, though different depending on when the submission was received, are recent
- Over 25,000 claims have a total indemnity portion at or above $100,000. Of these claims, over 4,500 have total indemnity at or above $1,000,000
  - These numbers represent the total indemnity **before** development
  - 95% of total claims are closed

This data is close to the 'ultimate', but still is subject to some development.

Loss Development – few obvious observations.

- In order to analyze severity trend, we need to examine ultimate losses (or derivative of that set) as a time series.
- Consequently, we need to develop our claims to their ultimate values.
- The outcome of a trend study is very sensitive to this development.
- This is especially true if we study trend in Excess layers. Trend in excess layers is highly dependent on the variance of underlying distribution.

- Our development procedure should **'preserve' both: the 'true' underlying *mean* AND the *variance*** of the ultimate loss distribution (which is currently yet unknown). The CV (St. Dev/Mean) of the distribution is very important.

Developing Open Claims

Traditional Approach vs Developing Just the Open Claims

The traditional approach to developing claims applies Ultimate LDFs to total losses

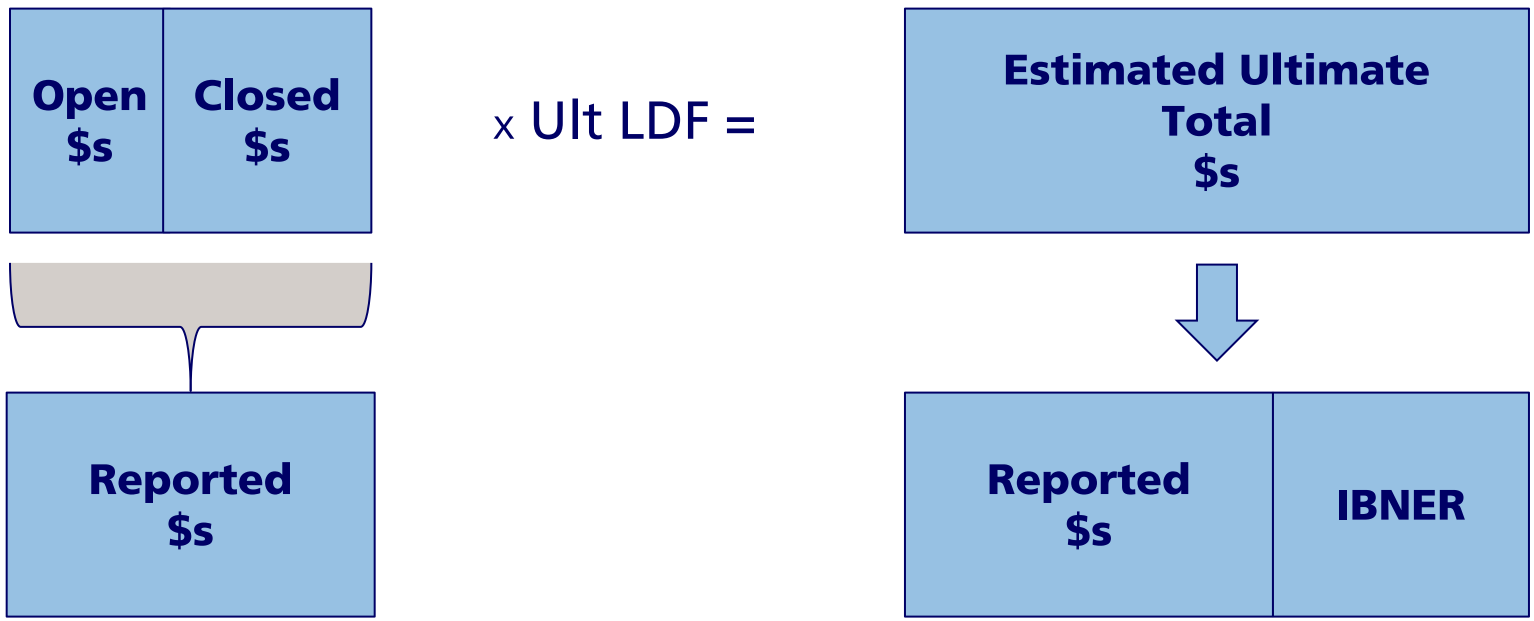
- When an Ultimate LDF is applied to total losses, the IBNER on historical years (claims made policies) is effectively spread between both open and closed claims.
- This approach could preserve the mean of the distribution, but will not be effective with respect to the variance.

Developing just the open claims 'preserves' ultimate CV and provides for a better estimate of excess losses: individually and in total.

- It is not perfect, but it is a step in a right direction.
- Should not introduce any bias into the total ultimate loss.

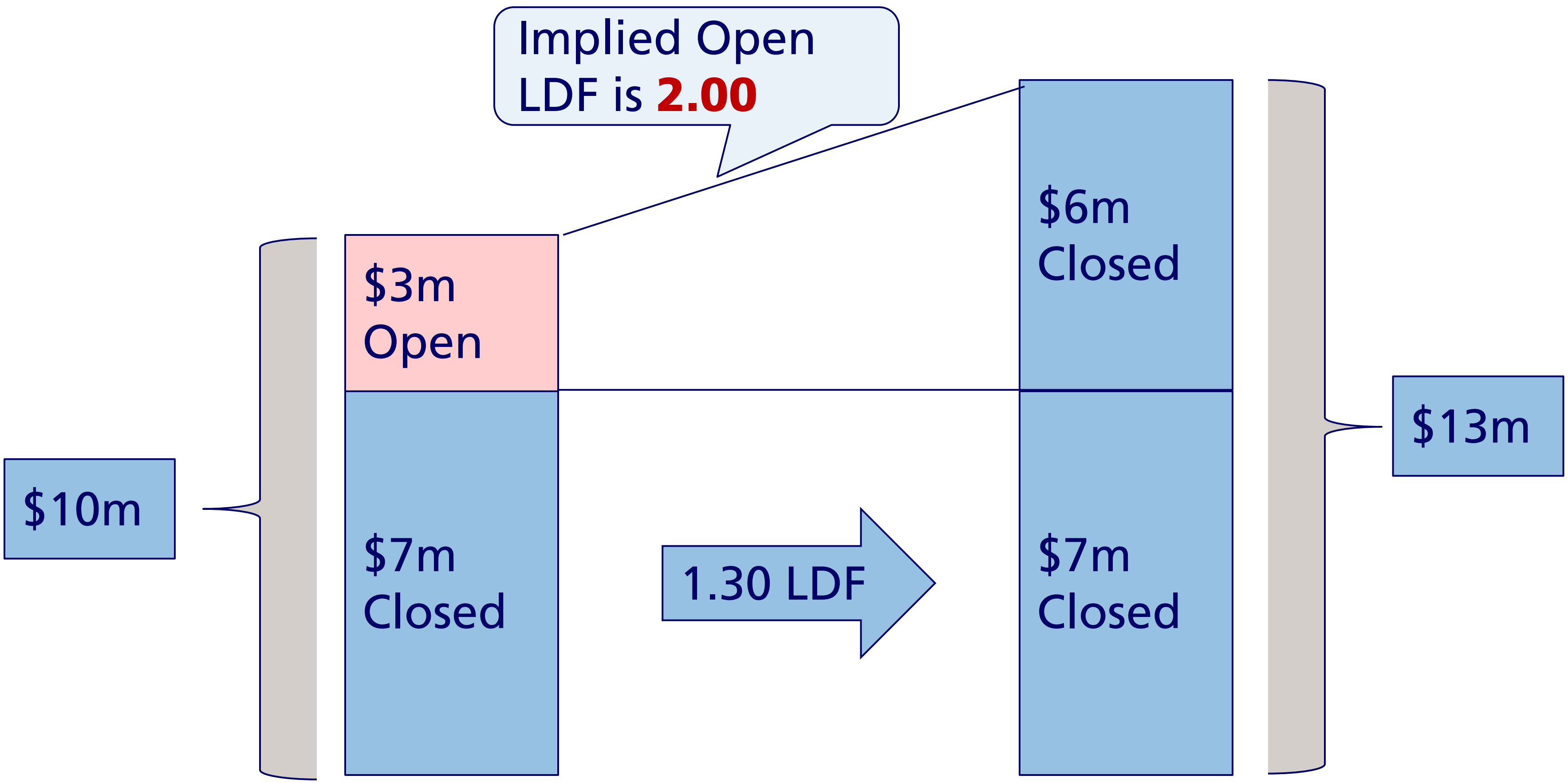
Traditional Development Approach

An Example (generic, applicable to any LDF methodology)



? **Where is the development REALLY coming from on claims made policies?**
Are the 'reported on closed' claims changing? **?**

Open LDF – Simple Concept



$$\text{Open Claim Ult LDF} = \frac{\$13 - \$7}{\$10 - \$7} = 2.00$$

Developing Open Claims

Determining the Open Claim Ultimate LDFs

Conceptually, the formulae will look like this:

The Open Claim Ult LDF is as follows:

$$\frac{\text{Estimated Ultimate} - \text{Paid on Closed}}{\text{Reported} - \text{Paid on Closed}}$$

If we express it in terms of LDFs and %s, then we have the following formulae for Open Claims Ult LDF:

$$\frac{\text{Ult LDF} - \text{Paid on Closed \%}}{1 - \text{Paid on Closed \%}}$$

Developing Open Claims

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It sounds more difficult than it really is. Here is the simplification:

- We can use the implied open claim multipliers to adjust our Ultimate LDFs to be Open Claim Ultimate LDFs

- $\textbf{Open Claim Ult LDF} = (\textbf{Ult LDF} - 1) \times \textbf{Open Claim Multiplier} + 1$

- In this case, **Open Claim Multiplier** is simply **1/(1- Paid on Closed %)**

- This will simplify the procedure and prevent the 'reversals' in the data.

Developing Open Claims

Calculating the Open Claim Ultimate LDF

- We can estimate the Paid on Closed % claims at different ages (some time we can use claim count triangles or paid triangles as a proxy)

1. • Reported Loss Triangle
2. • Paid on Closed Loss Triangle
3. • Paid on Closed as % of Reported Triangle
4. • Select an Open Claim Multiplier as 1 / (1 - Average % Paid on Closed), for each maturity
5. • Open Claim Ult LDF = (Ult LDF – 1)*Open Claim Multiplier + 1

Developing Open Claims

Calculating the Open Claim Ultimate LDF – Simplified Example

Reported Claims ($)

PY	12m	24m	36m	48m	60m
2009	2,000	2,040	2,081	2,122	2,165
2010	2,100	2,142	2,185	2,229	
2011	2,205	2,249	2,294		
2012	2,315	2,362			
2013	2,431				

Paid on Closed ($)

PY	12m	24m	36m	48m	60m
2009	800	1,240	1,736	1,910	2,005
2010	840	1,302	1,823	2,005	
2011	882	1,367	1,914		
2012	926	1,435			
2013	972				

All loss development at 36 months will come from only 17% of the reported claims

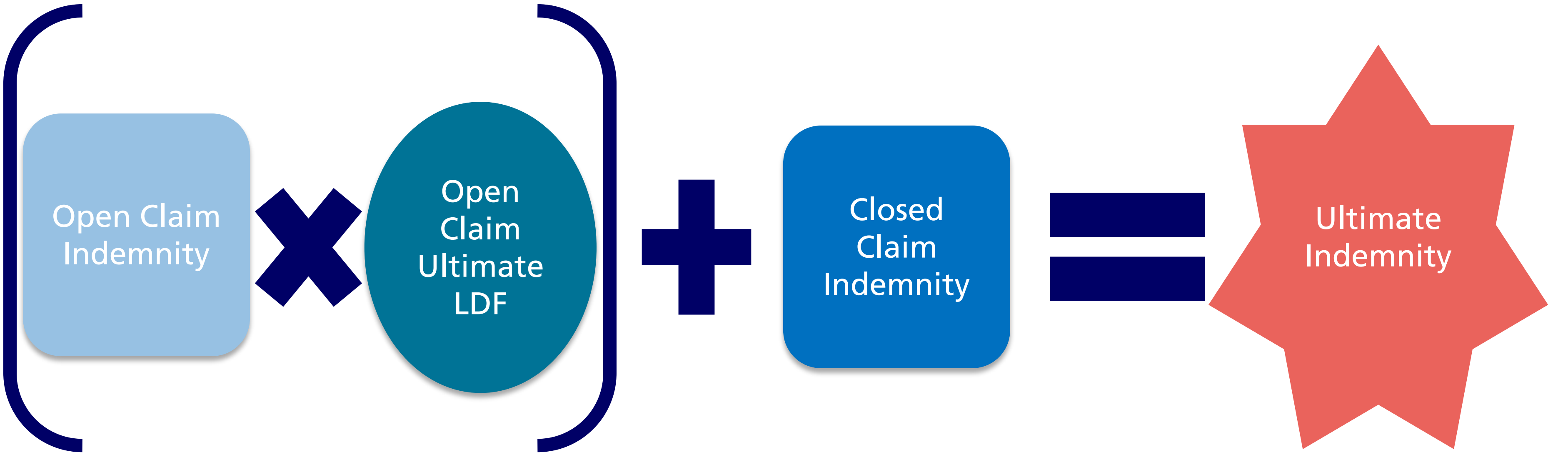
Paid on Closed as % of Reported

PY	12m	24m	36m	48m	60m
2009	0.40	0.61	0.83	0.90	0.93
2010	0.40	0.61	0.83	0.90	
2011	0.40	0.61	0.83		
2012	0.40	0.61			
2013	0.40				

	12m	24m	36m	48m	60m
Average % Paid on Closed	**40%**	**61%**	**83%**	**90%**	**93%**
Average % Open	**60%**	**39%**	**17%**	**10%**	**7%**
Implied Open Claim Multiplier	**1.67**	**2.55**	**6.03**	**9.97**	**13.55**

This numbers usually appear in a nice increasing pattern

Developing Open Claims



Developing Open Claims – Back to the Database

Checking for Bias – Using Total Incurred for Illustration Purposes

- No bias is introduced by developing just the open claims
- There is little development on the older report years
- The overall difference between the two methods is immaterial

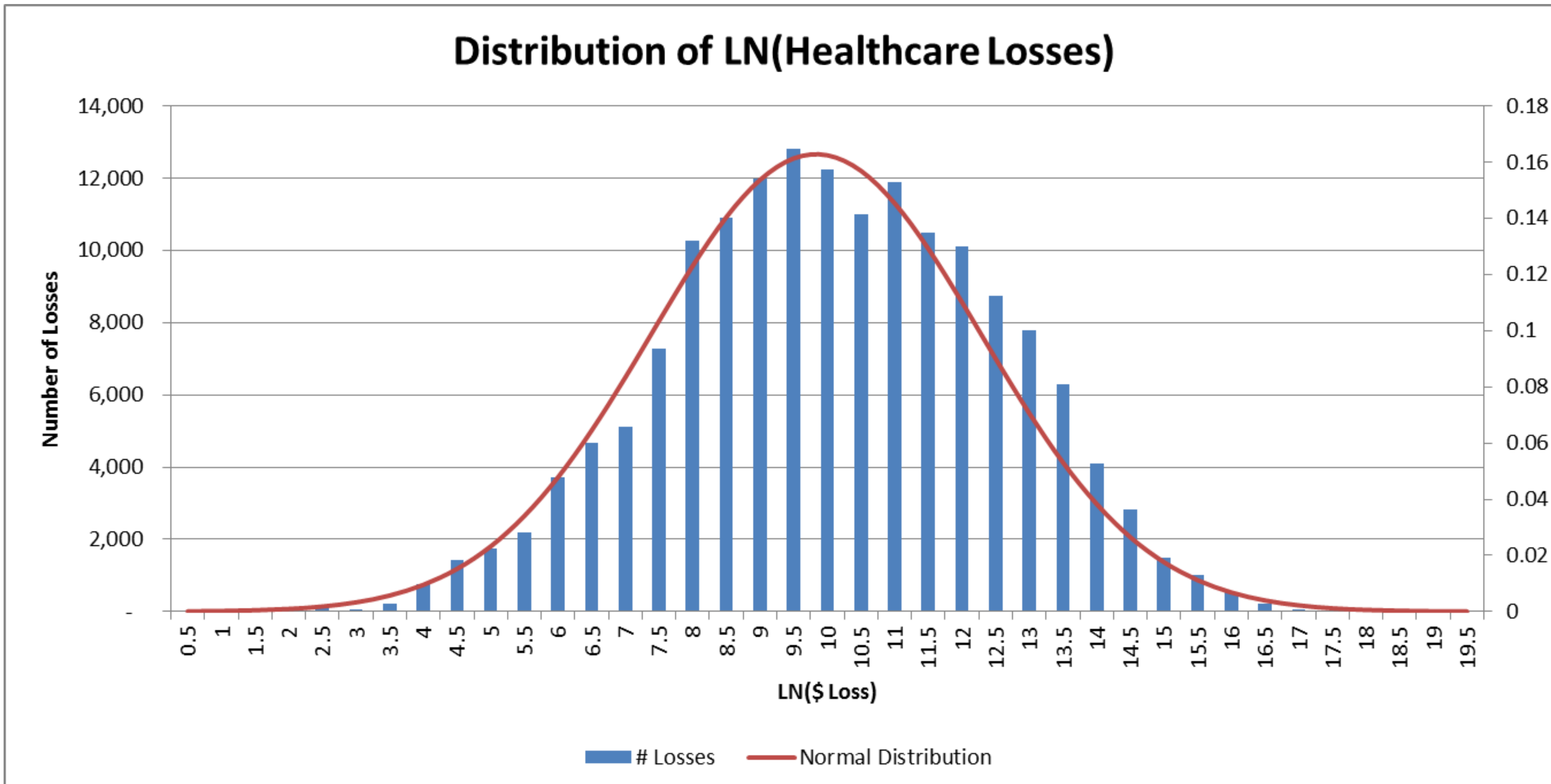
Report Year	Total Incurred (000s)	Estimated Ultimate Incurred (000s)		Developing Open vs All	Impact of Development (Open Method)
		Developing All Claims	Developing Open Claims		
2005	2,433	2,439	2,436	**0%**	1.00
2006	2,176	2,186	2,180	**0%**	1.00
2007	2,628	2,651	2,640	**0%**	1.00
2008	2,727	2,771	2,757	**-1%**	1.01
2009	2,970	3,059	3,043	**-1%**	1.02
2010	3,034	3,203	3,189	**0%**	1.05
2011	2,965	3,286	3,292	**0%**	1.11
2012	2,835	3,417	3,404	**0%**	1.20
2013	2,621	3,679	3,702	**1%**	1.41
Total	**24,388**	**26,692**	**26,643**	**0%**	**1.09**

Just a 9% impact from development

Virtually no difference in ultimates.
No bias is introduced by developing just the open claims.

Distribution of Healthcare Losses

Empirical distribution does resemble a Lognormal Distribution.
It is just an empirical distribution, not on-level.



Trend

- Now, after we compile a extensive database of historical losses, we can turn our attention to calculating severity trend.
- We will examine the common historical approach of selecting excess trend.
- We will assess alternative methodologies and question common assumptions regarding inflationary pressure on insured losses.
- We will look at the trend in the Indemnity portion of Hospitals Med Mal loses. However, overall phenomenon and main conclusions might be applicable to a broader range of 'liability' products (especially those with potentially large 'punitive' component of the total loss)

The most common assumption about trend could be incorrect

- **We accept the fact that trend could be dependent on a multitude of factors: state, industry, area of ops, coverage, peril and …**

- **However, the most common trend assumption is that trend is *independent* of the size of a loss:**

$$X \rightarrow a X$$

For All Xs

- **We have strong evidence to suggest that Trend IS size-dependent.**

- **The 'transformation' function is not linear, but a function of size of loss**

$$X \rightarrow f(X)\, X$$

Are Healthcare Claims Exhibiting a Constant Trend?

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- With a positive constant trend, we expect to see a higher trend in the excess layers. This is due to a well known leverage effect on the excess losses:
  1. For losses above the limit, the trend is entirely in the excess layer
  2. Losses just below the limit are pushed into the excess layer by the trend, which in turn creates new losses for the excess layer

- However, our empirical data has produced very different results. Thus, the assumption of a constant trend must be in question.

- Furthermore, **evidence suggests that Large claims experience lower trend than Small claims.** The argument can be made for even a 'negative' trend in excess layers.

- There appears to be 'step' in the middle of the experience period. However, this 'step' is not enough to compensate for overall lower trend in excess layers.

Example – Limited Average Severity Trend

Hypothetical Lognormal Distribution Assuming 3% Annual Trend

Report Year	Hypothetical Distribution Expected Limited Average Severity						
	100K	1M	3M	5M	10M	15M	Unlimited
2005	48,000	125,197	154,222	163,237	171,268	174,168	178,940
2006	48,586	127,983	158,220	167,676	176,141	179,213	184,307
2007	49,172	130,817	162,309	172,225	181,145	184,398	189,836
2008	49,759	133,698	166,489	176,885	186,283	189,727	195,530
2009	50,346	136,628	170,764	181,660	191,559	195,203	201,395
2010	50,934	139,605	175,134	186,551	196,975	200,831	207,436
2011	51,522	142,631	179,600	191,561	202,535	206,614	213,658
2012	52,110	145,707	184,164	196,692	208,242	212,556	220,067
2013	52,698	148,831	188,829	201,947	214,100	218,661	226,667

Trend	**1.17%**	**2.19%**	**2.56%**	**2.70%**	**2.83%**	**2.88%**	**3.00%**

As the limit increases, trend also increases

Example – Trends in the Layer

Hypothetical Lognormal Distribution Assuming 3% Annual Trend

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Report Year	Hypothetical Distribution Expected Severity in the Layer					
	1M	2M x 1M	2M x 3M	5M x 5M	5M x 10M	x 15M
2005	125,197	29,025	9,015	8,031	2,900	4,771
2006	127,983	30,237	9,456	8,465	3,072	5,094
2007	130,817	31,492	9,916	8,920	3,253	5,438
2008	133,698	32,791	10,396	9,398	3,443	5,803
2009	136,628	34,136	10,896	9,899	3,644	6,192
2010	139,605	35,528	11,418	10,424	3,856	6,605
2011	142,631	36,968	11,961	10,974	4,079	7,044
2012	145,707	38,458	12,528	11,550	4,314	7,510
2013	148,831	39,998	13,118	12,153	4,561	8,006

Trend	**2.19%**	**4.09%**	**4.80%**	**5.32%**	**5.82%**	**6.68%**

With the constant trend for all losses, we expect to see a significantly higher trend in the excess layers than in the lower layers

Analysis of Ground-Up Severity Trends

Limited Average Severity – **Empirical Data**

Report Year	Ultimate Indemnity Severity Limited to: 100K	500K	1M	3M	5M	10M	Unlimited
2005	44,440	115,537	154,120	213,781	234,257	251,802	257,063
2006	42,897	109,680	143,674	190,226	204,898	215,328	221,373
2007	44,295	112,519	149,390	205,539	227,927	244,280	251,177
2008	45,814	115,293	151,137	208,097	228,269	241,107	245,271
2009	46,679	120,289	160,827	225,183	249,054	263,943	269,338
2010	47,271	125,905	169,696	238,069	262,635	281,068	289,093
2011	47,582	124,736	168,617	232,791	256,948	278,229	287,573
2012	47,427	124,194	167,576	229,280	250,834	269,054	278,732
2013	50,280	127,909	169,472	230,043	250,681	264,153	269,587
Total	**46,530**	**83,656**	**120,141**	**160,202**	**220,309**	**241,791**	**257,752**

Overall Trend	**1.63%**	**1.81%**	**2.02%**	**2.08%**	**2.12%**	**2.15%**	**2.22%**
Trend 05-08	1.24%	0.19%	-0.20%	-0.03%	0.29%	-0.04%	-0.15%
Trend 09-13	1.53%	1.10%	0.93%	0.05%	-0.33%	-0.42%	-0.35%

For periods 2005-2008 and 2009-2013, the lower limits experience larger trend than the higher limits, which are trending negatively. **This is not what we would expect if trend were constant and followed linear transformation: X=>aX.**

Analysis of Severity Trends

Severity in the Layer – **Empirical Data**

Report Year	Ultimate Indemnity Severity in the Layer			
	1M	4M x 1M	5M x 5M	5M x 10M
2005	154,120	80,137	17,545	3,894
2006	143,674	61,225	10,430	3,302
2007	149,390	78,536	16,353	5,754
2008	151,137	77,132	12,838	2,395
2009	160,827	88,226	14,889	2,961
2010	169,696	92,939	18,433	3,766
2011	168,617	88,331	21,280	4,521
2012	167,576	83,258	18,220	4,233
2013	169,472	81,209	13,472	3,336
Total	**160,202**	**81,589**	**15,961**	**3,785**

Trend 05-13	**2.02%**	**2.36%**	**2.54%**	**0.16%**
Trend 05-08	-0.20%	1.35%	-4.76%	-8.64%
Trend 09-13	0.93%	-2.72%	-2.09%	3.62%

These trends are inconsistent with the constant trend assumption

Let's examine a Survival Function, (1-CDF)

Hypothetical Lognormal Distribution Assuming Annual Trend of 3%

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We can view number of claims penetrating the limit as a survival function at that limit. If trend is constant by size, we would expect 'survival' rate to increase over time

Report Year	1 - CDF Expected Percentage of Claims > X									
	50K	100K	250K	500K	1M	3M	5M	10M	15M	25M
2005	42.40%	28.21%	13.88%	7.07%	3.17%	0.68%	0.30%	0.09%	0.04%	0.01%
2006	43.05%	28.76%	14.25%	7.29%	3.29%	0.71%	0.31%	0.09%	0.04%	0.01%
2007	43.69%	29.33%	14.62%	7.52%	3.41%	0.75%	0.33%	0.10%	0.04%	0.02%
2008	44.34%	29.89%	15.00%	7.76%	3.54%	0.78%	0.35%	0.10%	0.05%	0.02%
2009	44.99%	30.47%	15.38%	8.00%	3.67%	0.82%	0.36%	0.11%	0.05%	0.02%
2010	45.64%	31.04%	15.78%	8.25%	3.80%	0.86%	0.38%	0.11%	0.05%	0.02%
2011	46.29%	31.63%	16.18%	8.50%	3.94%	0.89%	0.40%	0.12%	0.06%	0.02%
2012	46.94%	32.21%	16.58%	8.76%	4.08%	0.94%	0.42%	0.13%	0.06%	0.02%
2013	47.60%	32.80%	16.99%	9.02%	4.23%	0.98%	0.44%	0.13%	0.06%	0.02%

More claims are pushing past all limits, but we specifically want to highlight the larger limits. If a positive constant trend existed for healthcare claims, we would have a greater percentage of "big" claims now than in the past, as evidenced by the expected survival function. This, however, is contrary to what we are witnessing in the empirical data.

Empirical results present a very different pattern

It appears that larger claims experience LOWER trend and smaller claims experience HIGHER trend.

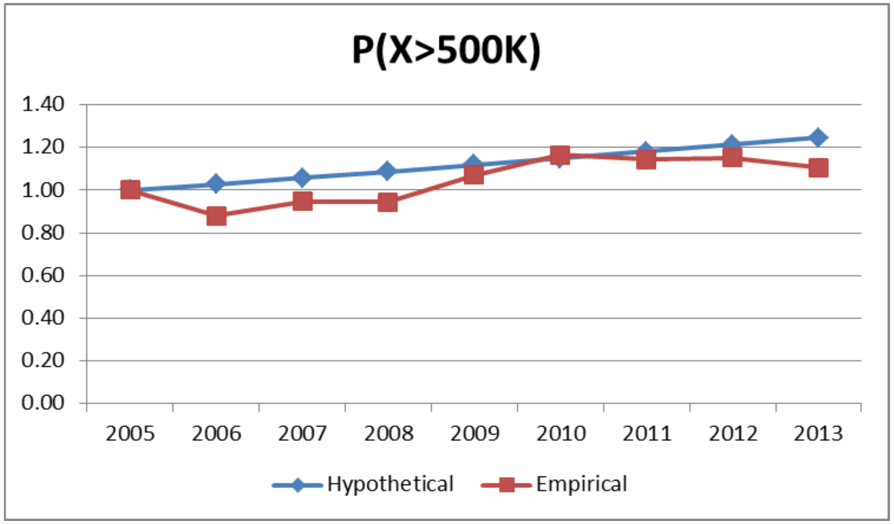
Report Year	1 - Empirical CDFs Percentage of Ultimate Indemnity Claims > X									
	50K	100K	250K	500K	1M	3M	5M	10M	15M	25M
2005	39.36%	30.06%	17.90%	10.12%	5.04%	1.44%	0.56%	0.12%	0.05%	0.00%
2006	37.62%	28.12%	17.06%	8.92%	4.19%	1.09%	0.39%	0.11%	0.03%	0.01%
2007	39.46%	29.20%	17.04%	9.60%	4.86%	1.55%	0.60%	0.13%	0.04%	0.00%
2008	40.69%	30.30%	17.67%	9.56%	4.72%	1.55%	0.59%	0.08%	0.03%	0.00%
2009	42.27%	31.55%	18.77%	10.83%	5.42%	1.81%	0.69%	0.12%	0.01%	0.01%
2010	42.43%	32.71%	20.07%	11.81%	5.94%	1.77%	0.75%	0.13%	0.06%	0.01%
2011	42.82%	32.77%	19.81%	11.57%	5.93%	1.73%	0.77%	0.17%	0.04%	0.02%
2012	42.31%	32.76%	20.11%	11.65%	6.41%	1.42%	0.74%	0.12%	0.06%	0.02%
2013	42.43%	32.03%	20.13%	11.20%	5.98%	1.52%	0.60%	0.12%	0.05%	0.01%

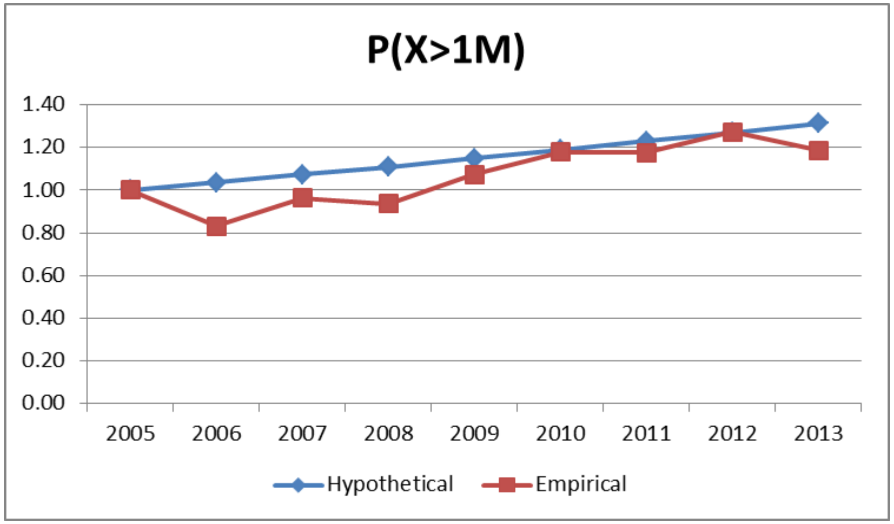
More claims are pushing past lower limits than in the past, which is expected.

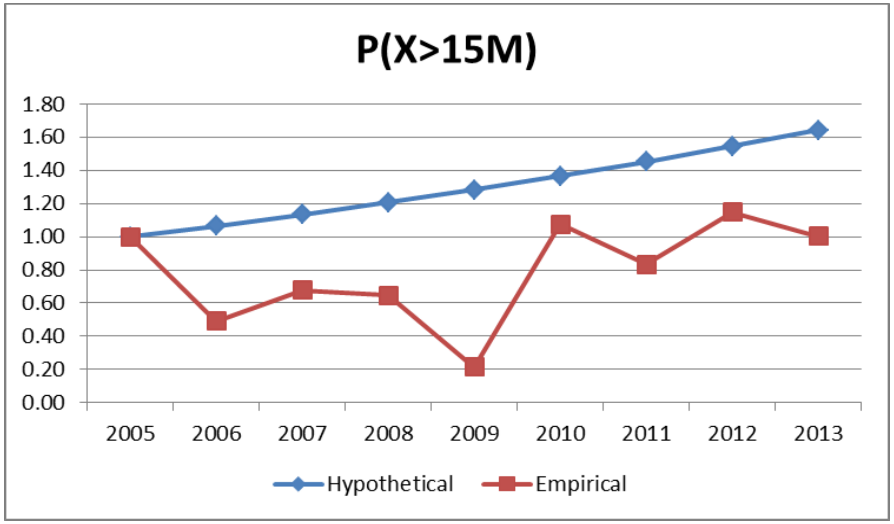
However, we have approximately the same percentage of "big" claims in the past as now. **If trend were constant by size, we would not expect this observation.**

Graphical Representation – Indexed CDF

Results are indexed to 2005, hypothetical distribution assumes 3% trend.







- Lower limits losses appear to be trending as expected
- Large loses, however, are lagging behind the trend

Conditional CDFs, yet another view

What if we truncate losses to remove "small" claims?

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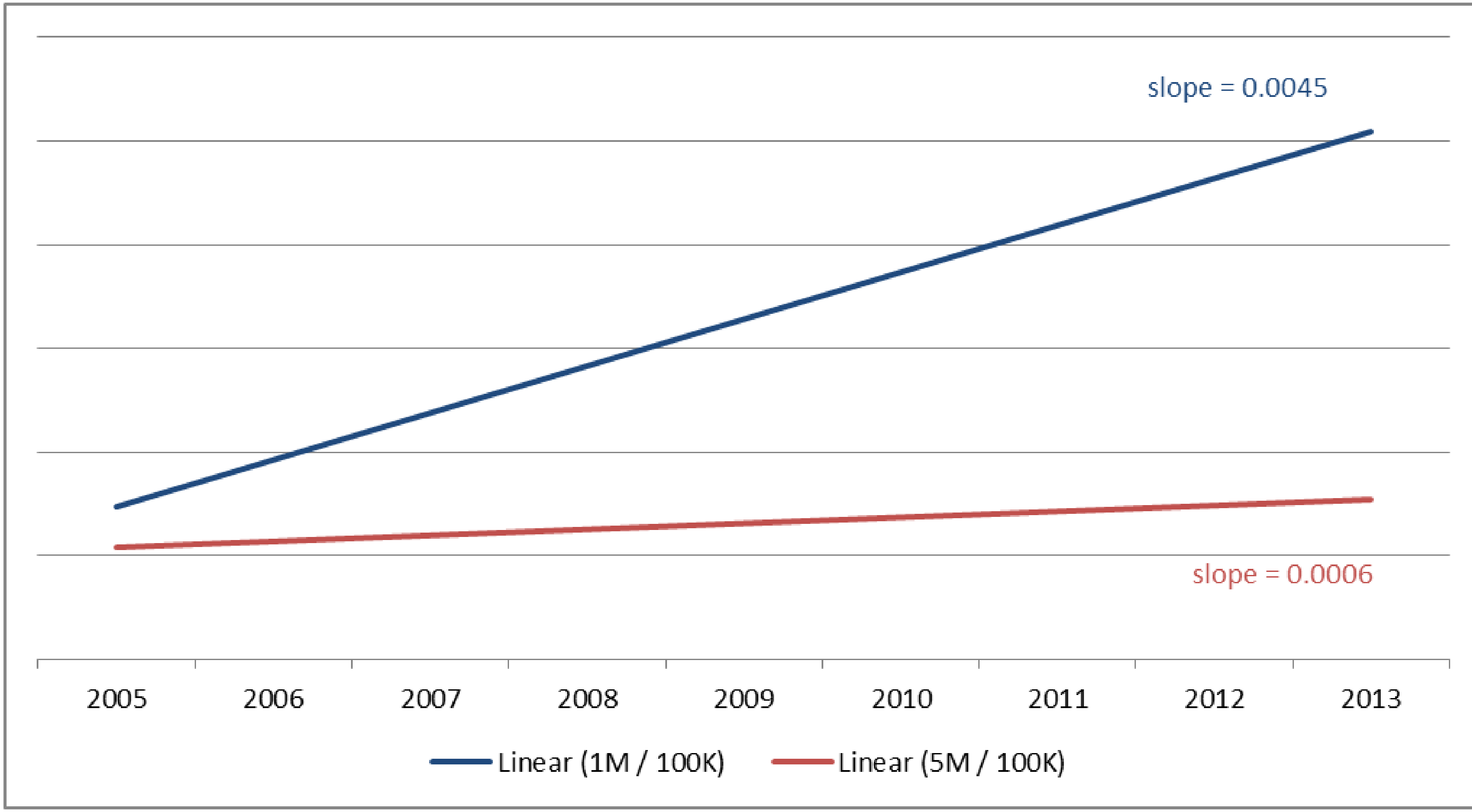
- Empirical CDFs are conditional on claims being greater than $100K

Report Year	Empirical CDF given X > 100K							
	250K	500K	1M	3M	5M	10M	15M	25M
2005	0.4046	0.6633	0.8323	0.9521	0.9814	0.9960	0.9982	1.0000
2006	0.3936	0.6830	0.8511	0.9613	0.9860	0.9963	0.9991	0.9995
2007	0.4164	0.6713	0.8336	0.9469	0.9794	0.9955	0.9988	1.0000
2008	0.4168	0.6845	0.8441	0.9488	0.9807	0.9973	0.9989	1.0000
2009	0.4052	0.6567	0.8284	0.9428	0.9780	0.9960	0.9996	0.9996
2010	0.3863	0.6389	0.8182	0.9460	0.9772	0.9961	0.9982	0.9996
2011	0.3955	0.6469	0.8190	0.9471	0.9766	0.9949	0.9986	0.9993
2012	0.3861	0.6444	0.8043	0.9567	0.9776	0.9963	0.9981	0.9994
2013	0.3713	0.6503	0.8134	0.9524	0.9814	0.9964	0.9983	0.9997

As one would expect, CDFs are decreasing over time, meaning more losses are pushing pass these lower limits.

Even after truncating losses to remove "small claims", the CDFs at the higher limits remain fairly constant over time. This is not in line with the constant trend assumption.

Percentage of Claims Greater than 1M and 5M Conditioned on Claims Being Greater than 100K



Graph has been indexed to show both trend lines at the same starting point

Conditional CDFs, continued

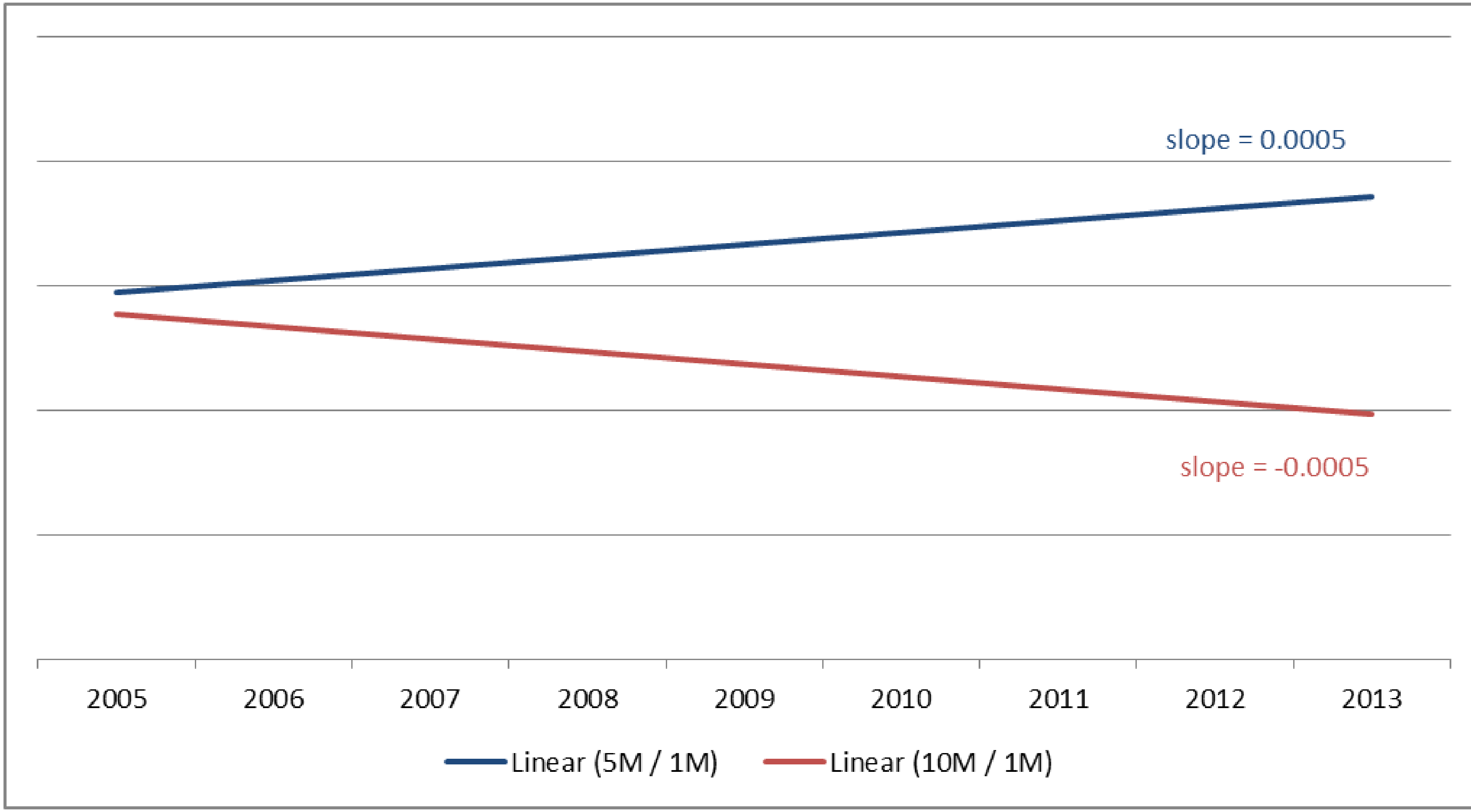
What if we truncate losses to remove those under $1M?

- If we truncate our data to remove losses under $1M, it becomes more apparent that, although losses are breaching the $1M mark somewhat more frequently now than in the past, fewer losses are, however, exceeding the higher limits.

Report Year	Empirical CDF given X > 1M				
	3M	5M	10M	15M	25M
2005	0.7143	0.8889	0.9762	0.9894	1.0000
2006	0.7398	0.9060	0.9749	0.9937	0.9969
2007	0.6807	0.8762	0.9728	0.9926	1.0000
2008	0.6715	0.8759	0.9830	0.9927	1.0000
2009	0.6667	0.8721	0.9769	0.9979	0.9979
2010	0.7027	0.8745	0.9788	0.9903	0.9981
2011	0.7079	0.8708	0.9719	0.9925	0.9963
2012	0.7787	0.8854	0.9809	0.9904	0.9968
2013	0.7452	0.9001	0.9806	0.9911	0.9985

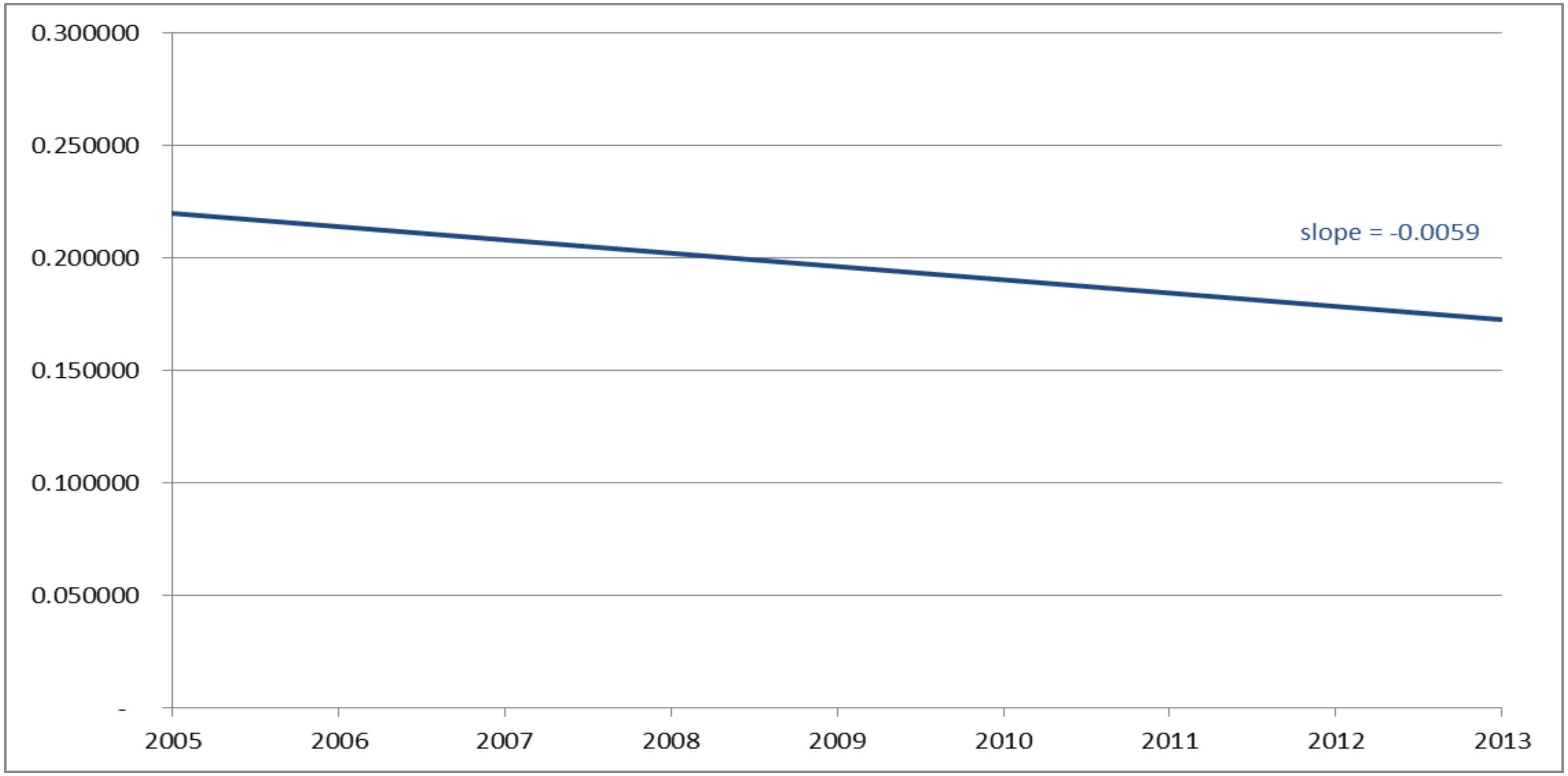
If trend was constant for all losses, we would observe a decreasing CDF over time, as loss amounts would increase and more claims would push past these higher limits.

Percentage of Claims Greater than 5M and 10M Conditioned on Claims Being Greater than 1M



Graph has been indexed to show both trend lines at the same starting point

Percentage of Claims Greater than 10M Conditioned on Claims Being Greater than 5M



- If healthcare claims were trending linearly, we would not expect this ratio of Claims > $10M to Claims > $5M to be decreasing over time

Percentage of Claims Greater than X

Developed to Ultimate

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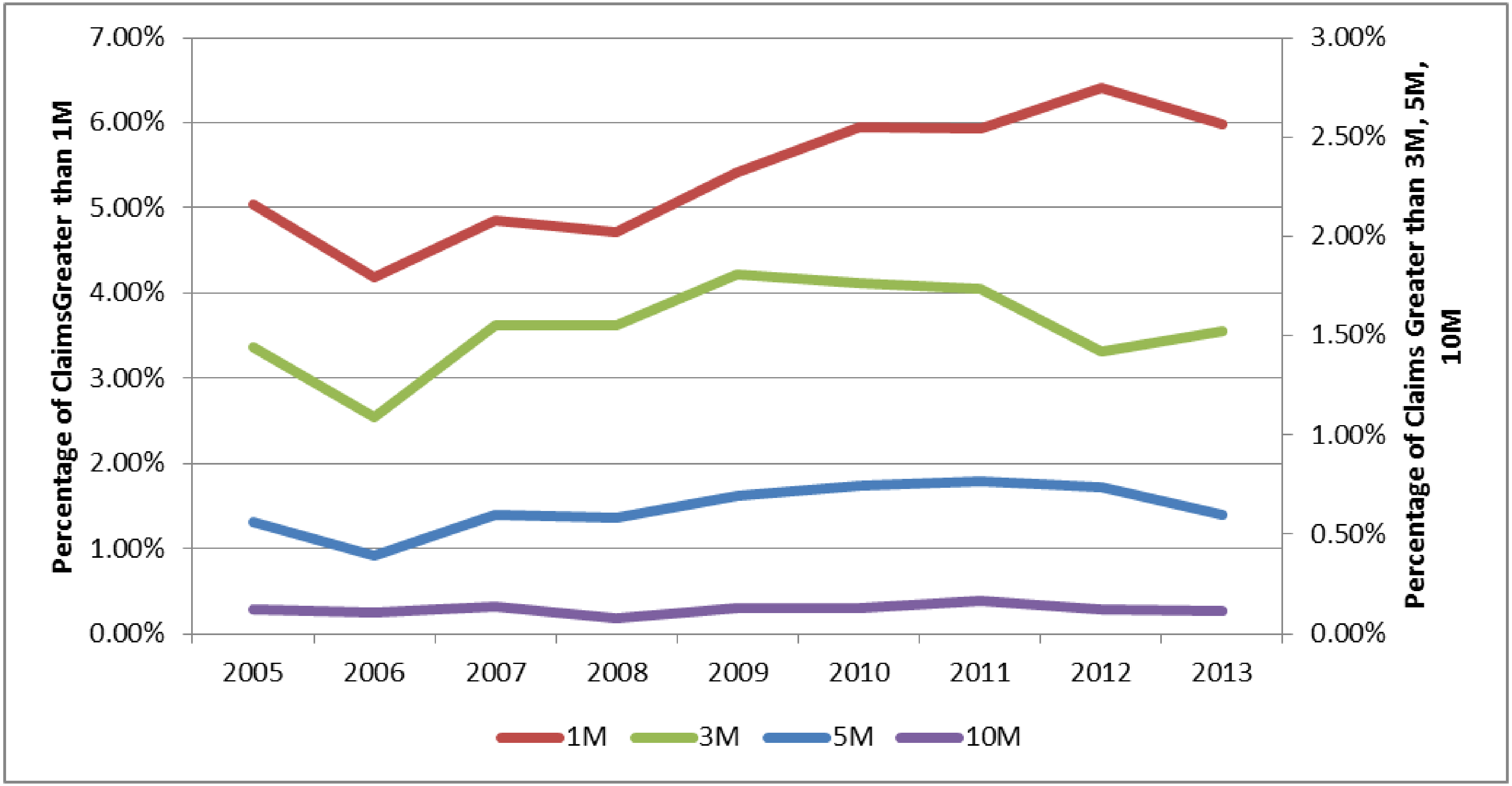
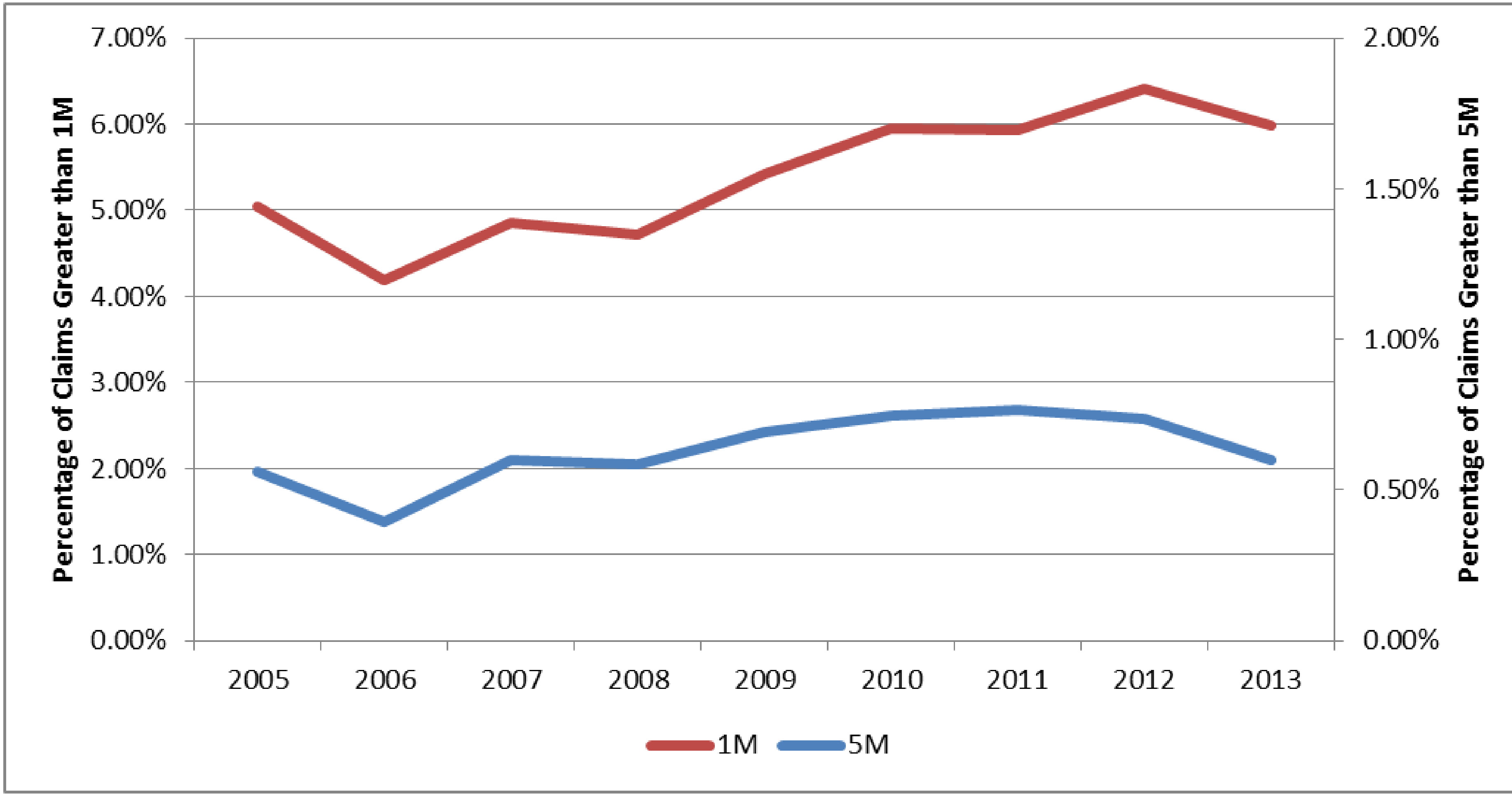


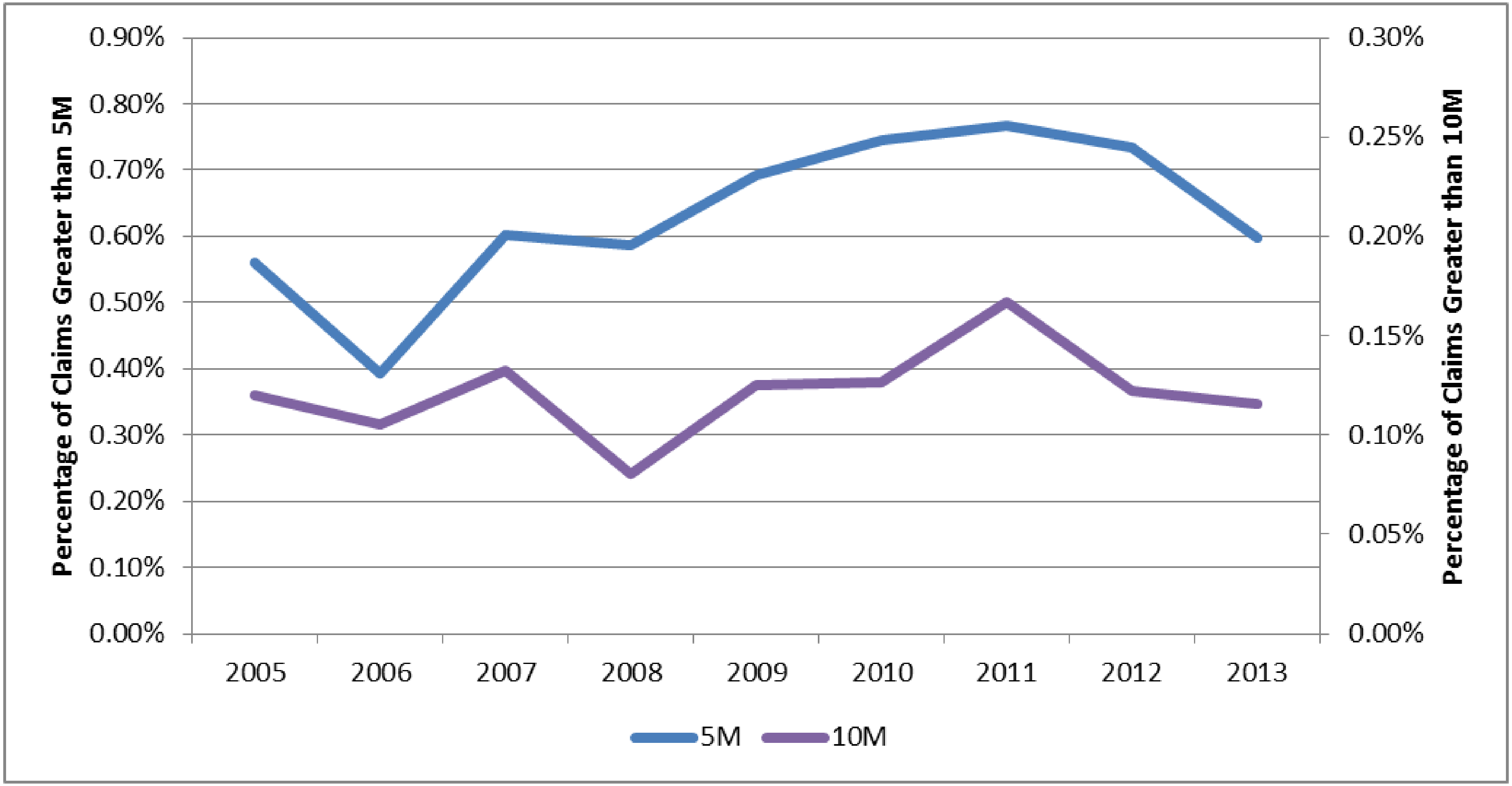
Percentage of Claims Greater than 1M and 5M

Developed to Ultimate



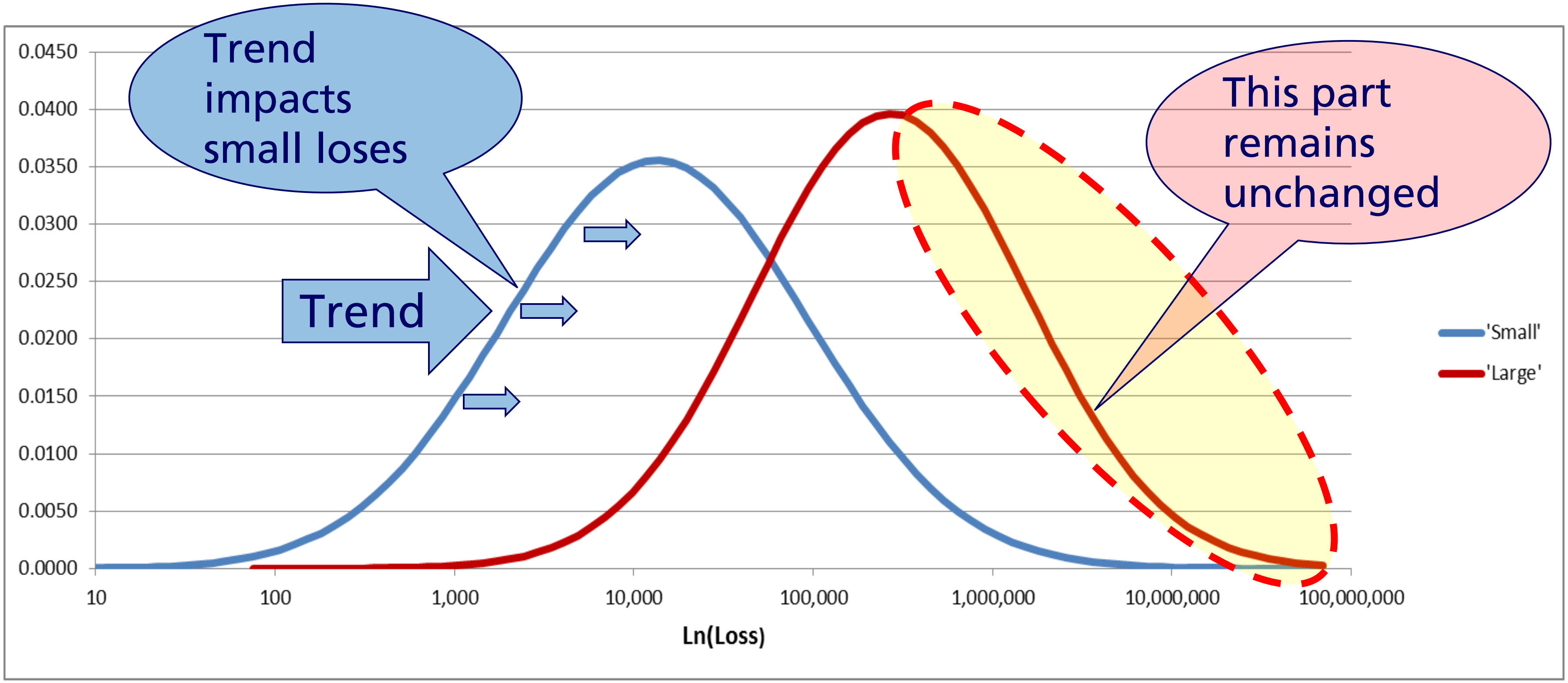
Percentage of Claims Greater than 5M and 10M

Developed to Ultimate



This dynamic can be visualized as a sum of two distributions.

Trend impacts small losses as 'blue' distribution is moved to the right. However, 'red' distribution remains fairly constant as large losses are not impacted to the same degree.



Main Conclusion:
There is strong evidence to suggest that severity trend is not constant by size of loss.

A few things to remember

- **Excess trend IS NOT automatically higher than Primary**
- **For Med Mal (and a few other 'liability' lines) over the recent decade, 'Large' claims have experienced less trend than 'Small' claims.**
- **If we are using a common trend assumption (e.g. 'trend is constant by size'), our on-level factors could be significantly overstated.**

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What is a ‘large’ sum of money?
Perception…

- Evidence suggests that these ‘large’ losses are not subject to the same inflationary pressures as ‘small’ losses.

  – Large losses are likely to be impacted by the **perception** of what ‘a large sum of money’ is.

  – Social Economics appears to play a big role.

    1. Late 90s early 2000s: internet bubble changed the perception of ‘$1m’ – people became millionaires overnight – **the social definition of a ‘large sum of money’ changed drastically** (period of high trends)
    2. Early 2000s to present (after internet bubble burst) – **the social definition of a ‘large sum of money’ has not changed materially** (period of low to moderate trends).
    3. In my opinion, we were ready for another ‘jump’ in 2008-2009, but ‘Great Recession’ reset our expectations
    4. For extremely large sums of money (i.e. $15m+) – **the social definition of ‘$15m’ has not changed materially** (it **was** ‘a lot’ of money in 2001 in 2007 and **is** still ‘a lot’ of money in 2016).

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