

# Profitability and Company Loss Development Speed September 2017

Monday Web Seminar

Presented by: ISO - Excess & Reinsurance Division



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# Today's Presenters



**John Buchanan**

*Managing Principal*

Excess and Reinsurance Division  
ISO Solutions



**Marni Wasserman**

*Actuarial Analyst*

Excess and Reinsurance Division  
ISO Solutions



# Topic

- It has long been observed that **profitability varies significantly** by company, line of business and market
- Over the last year, ISO has been **analyzing the top 500 reporting companies**, including investigating the results by company size, class of business, reinsurance buying patterns, and loss reserving practices
- In this Webinar, we will **present an overview of our analysis** including linkage between profitability, loss development speed, and other measures



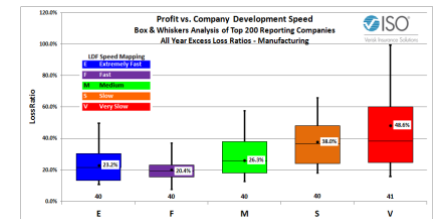
# Agenda

- **Investigating Profit Differences by Company**

- Ranked Loss Ratios by Company – Sample Lines (All year and 5-year)
- Review by Size of Company – Regional, Super-Regional, National
- Other Tests such as Reinsurance Buying Patterns

- **Company Profitability and Development Speed**

- Loss Development Percentile Distributions – Quintiles (EFMSV)
- Impact on Loss Ratios – Ground-Up, Excess, and Frequencies
- Hockey Sticks, Snakes, Whiskers and Penguins

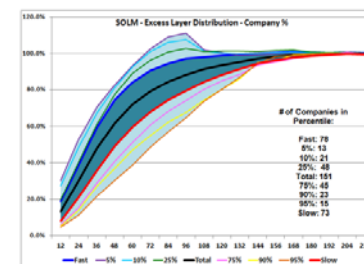


- **Holistic Analysis of Market Results and Company Speed**

- Analysis of 500 Individual Companies including LDF Scores
- Sample Market Analyses including Loss Ratios, LDFs, Trends, and Rate Changes
- Comparing Reserving and Settlement Patterns

## Appendix

- Data Sources
- Other lines
- Additional Case Reserving Testing



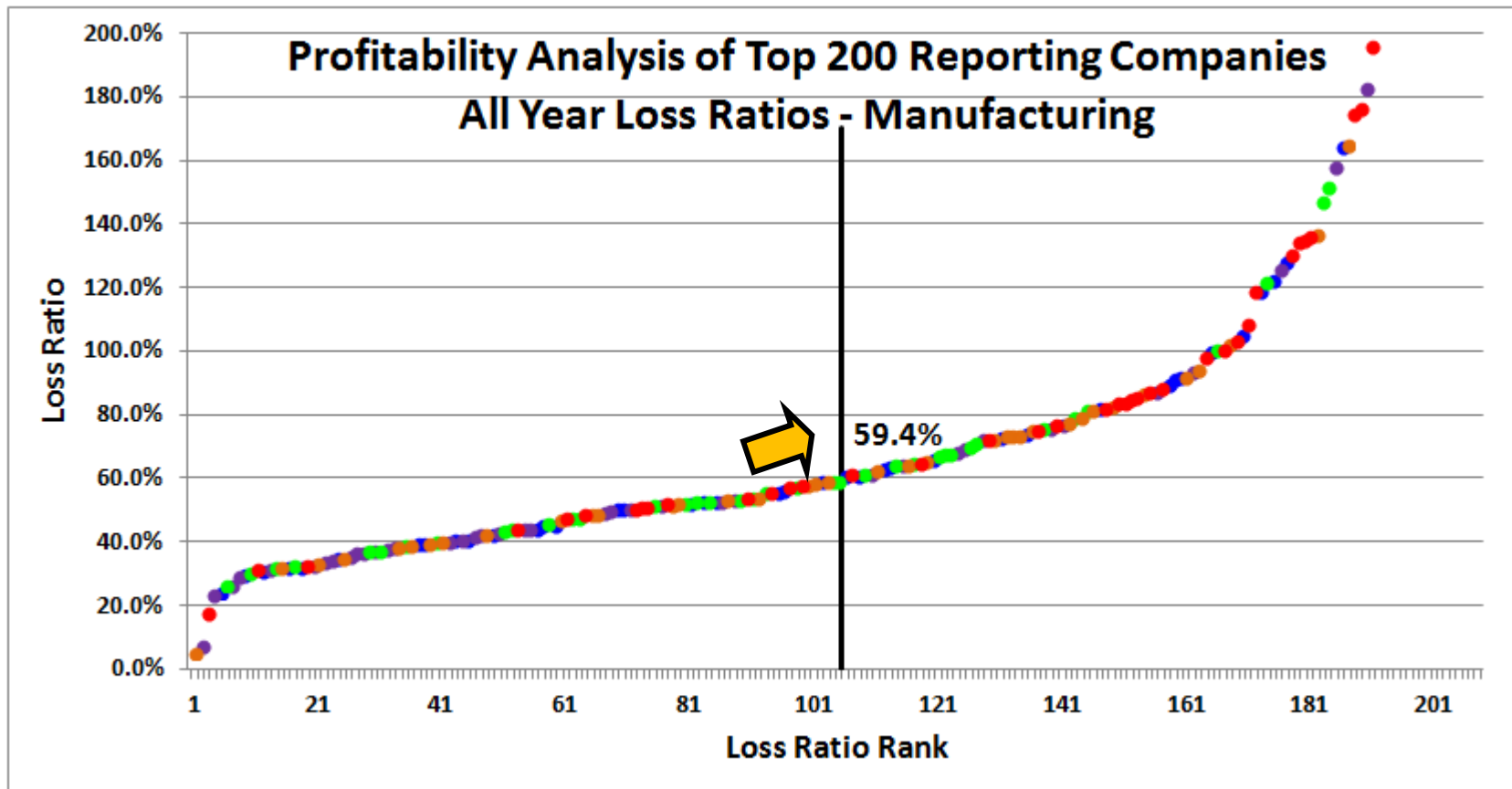
# Company Profitability Investigation





# Why Are Company Results so Different From Each Other? Investigating Manufacturing Classes

Illustrative

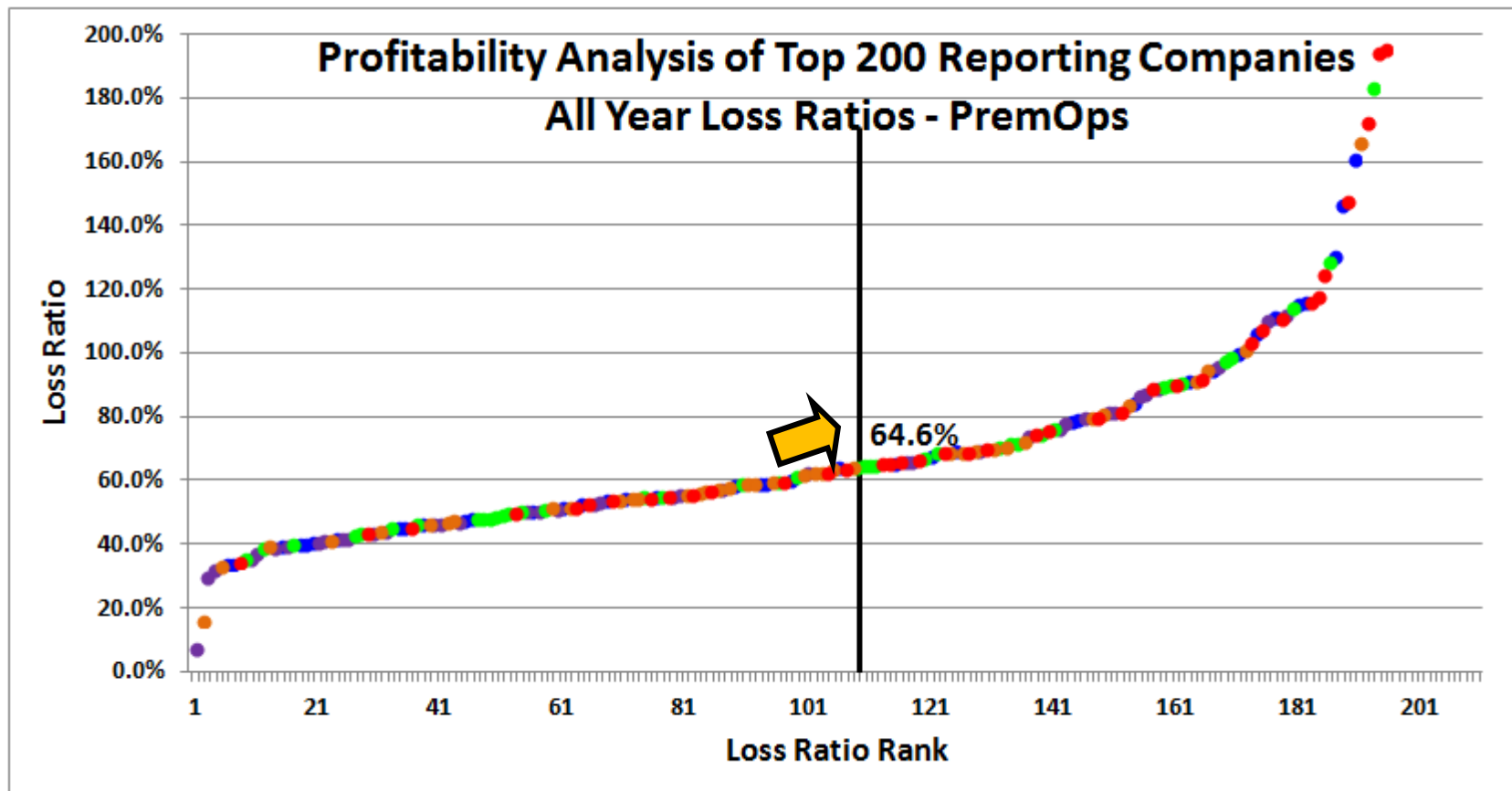


*Note: Total loss ratios (2001-2016) use 20 year loss triangles and all-year LDFs; each individual company uses credibility weighted all-year industry factors, split between Fast and Slow for apriori; see Appendix for sample Manufacturing Classes*



# Why Are Company Results so Different From Each Other? Premises Operations

Illustrative



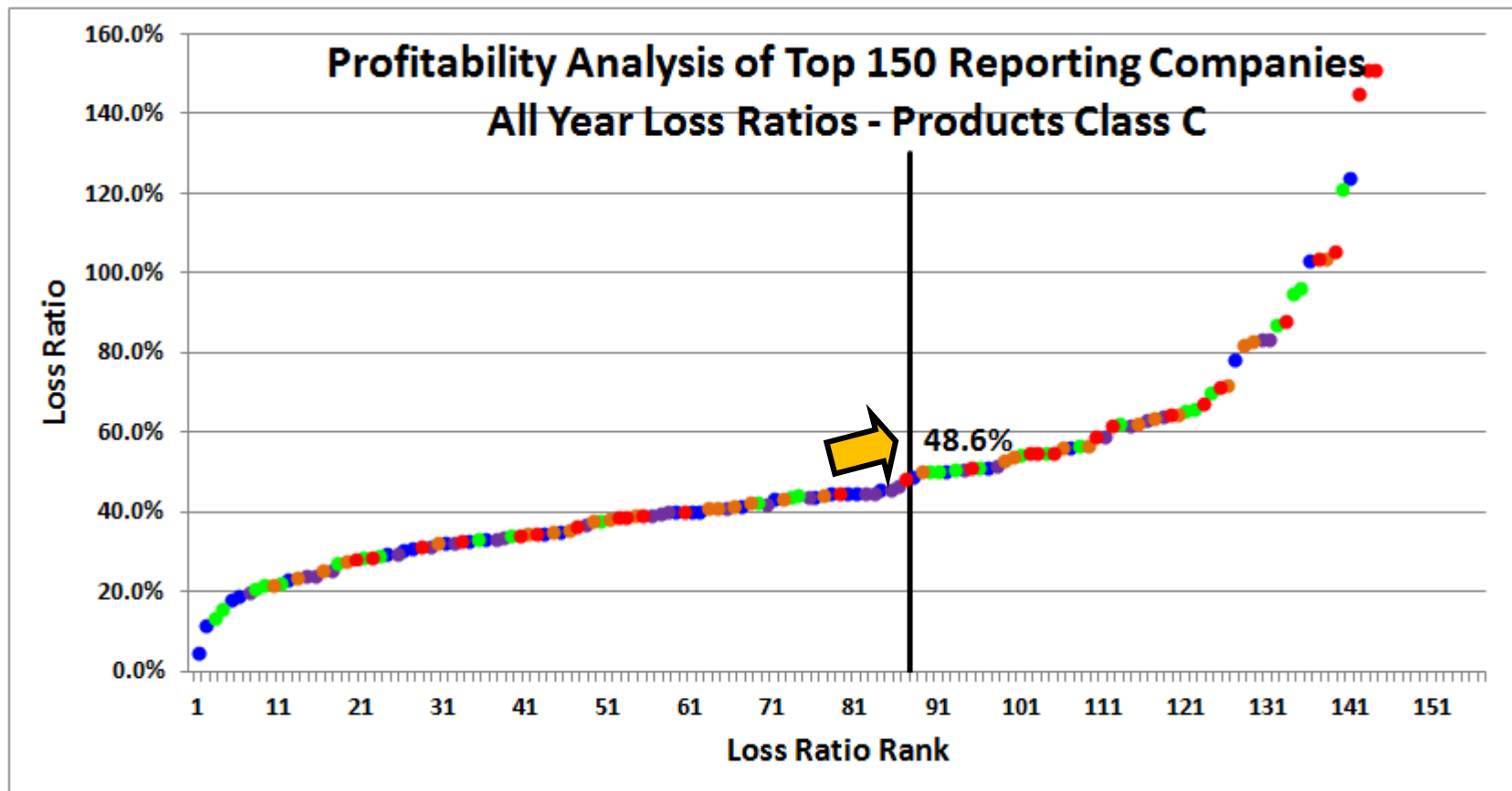
*Note: Total loss ratios (2001-2016) use 20 year loss triangles and all-year LDFs; each individual company uses credibility weighted all-year industry factors, split between Fast and Slow for apriori; see Appendix for sample Premises and Operations Classes*



# Why Are Company Results so Different From Each Other?

## Products Class Group C

Illustrative



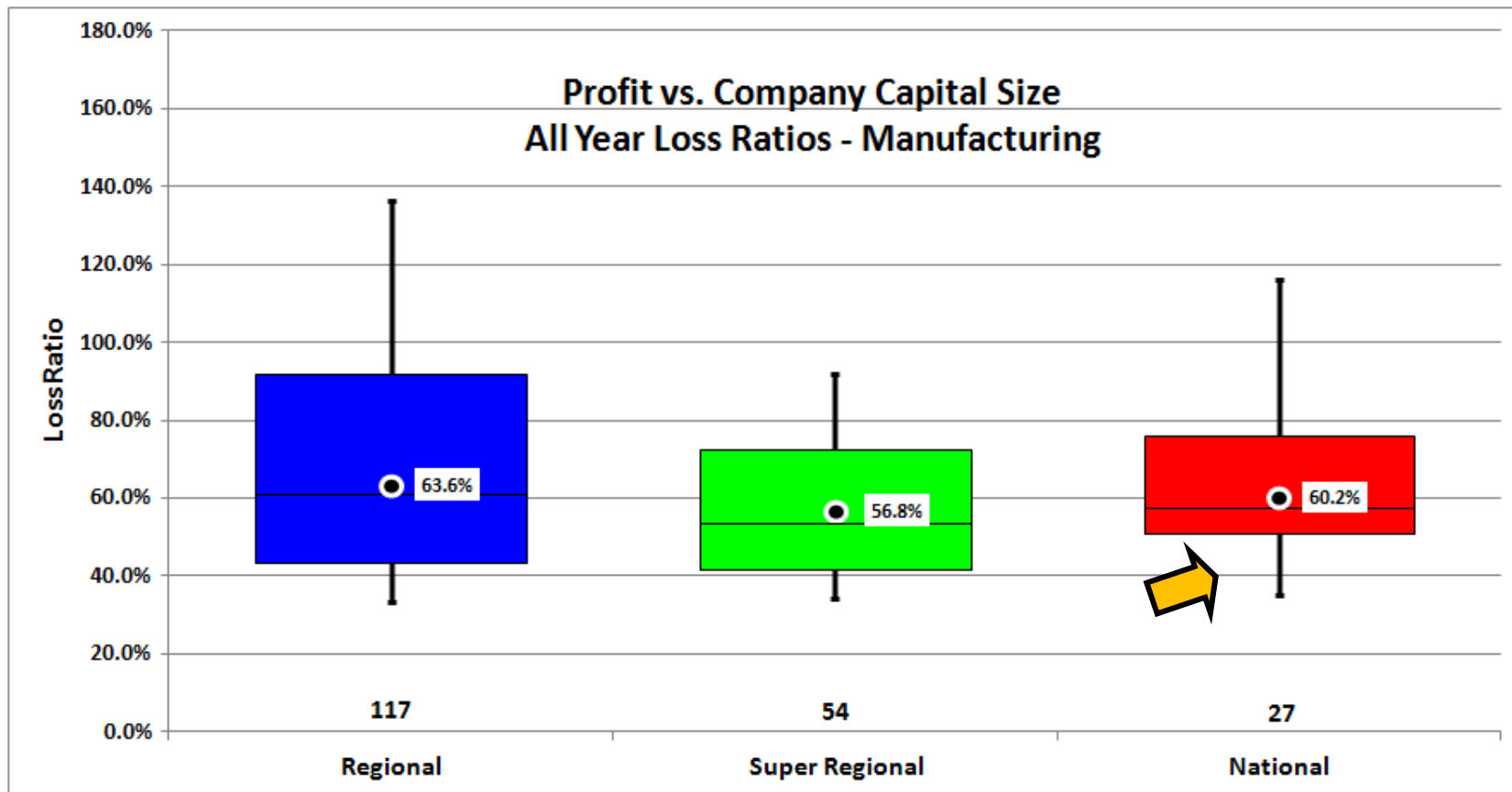
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# Is There a Connection between Profitability and Company Capital Size? Ground-up Losses – All Years – Manufacturing

Illustrative

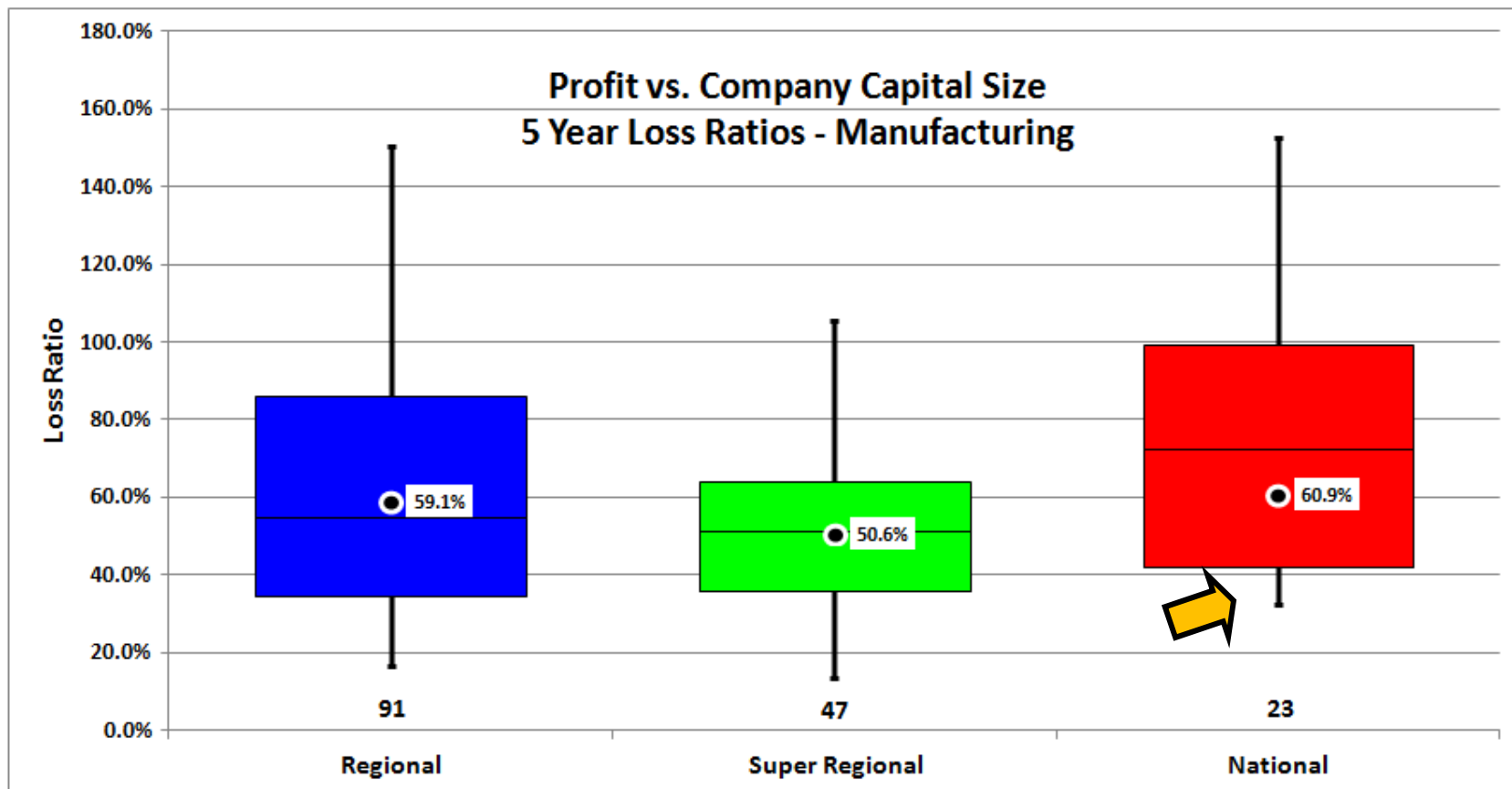


*Note: Top error bar is 90<sup>th</sup> percentile, top of box is 75<sup>th</sup> percentile, line in box is 50<sup>th</sup> percentile, bottom of box is 25<sup>th</sup> percentile, bottom error bar is 10<sup>th</sup> percentile.*



# Is There a Connection between Profitability and Company Capital Size? Ground-up Losses – 5 Years – Manufacturing

Illustrative

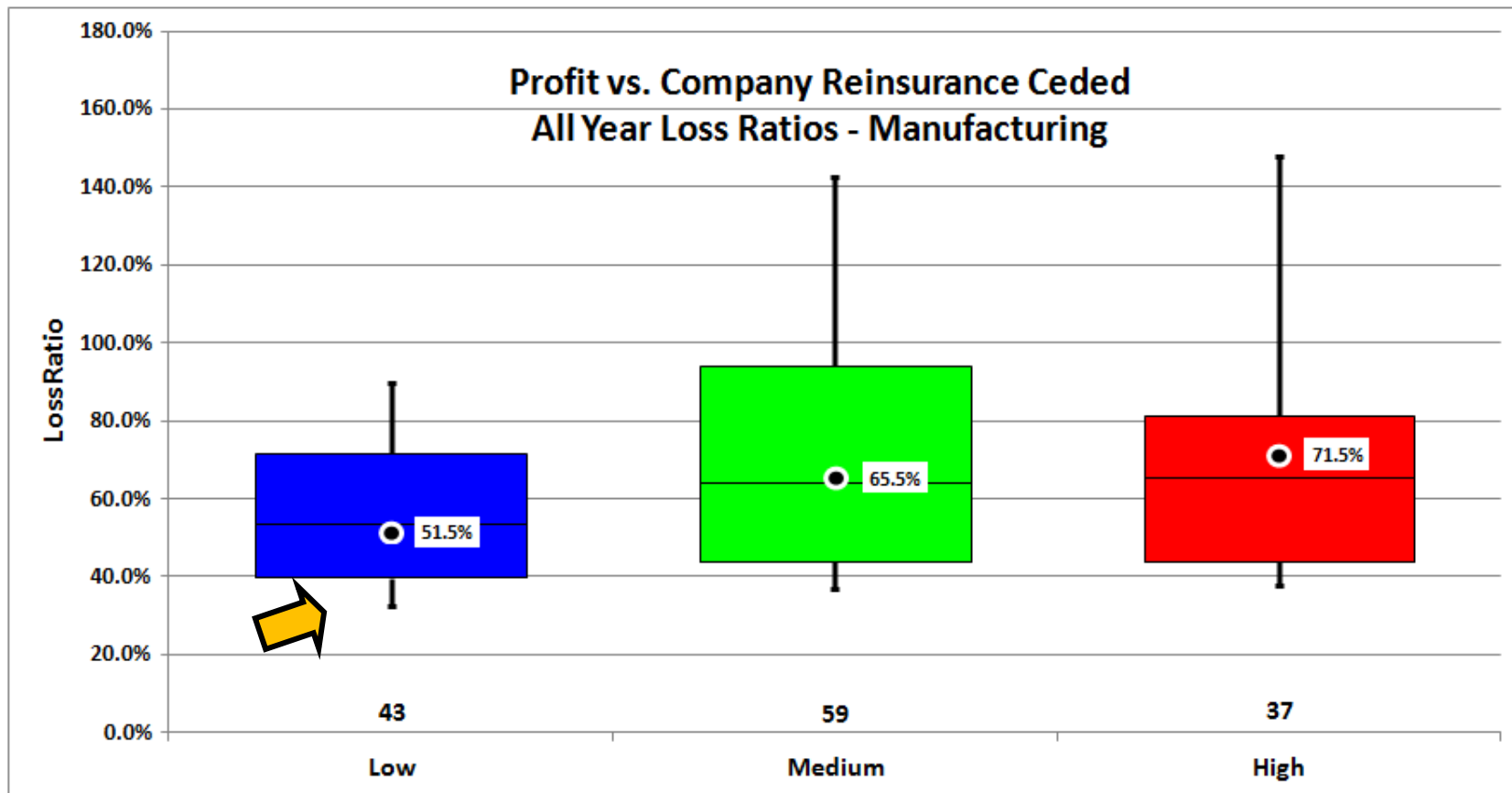


*Note: Top error bar is 90<sup>th</sup> percentile, top of box is 75<sup>th</sup> percentile, line in box is 50<sup>th</sup> percentile, bottom of box is 25<sup>th</sup> percentile, bottom error bar is 10<sup>th</sup> percentile.*



# Is There a Connection between Profitability and Reinsurance Purchasing? Ground-up Losses – All Years - Manufacturing

Illustrative

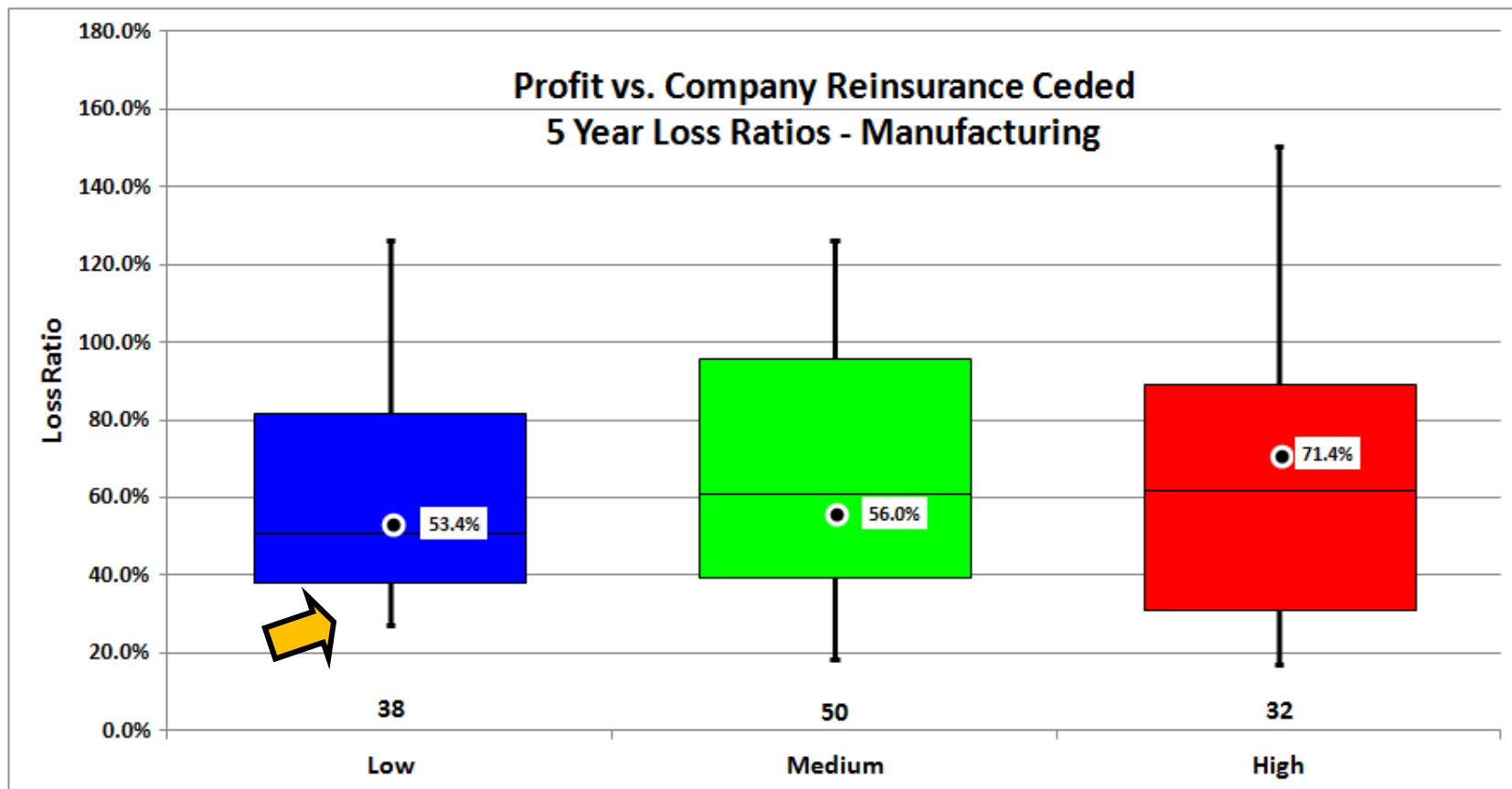


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Illustrative



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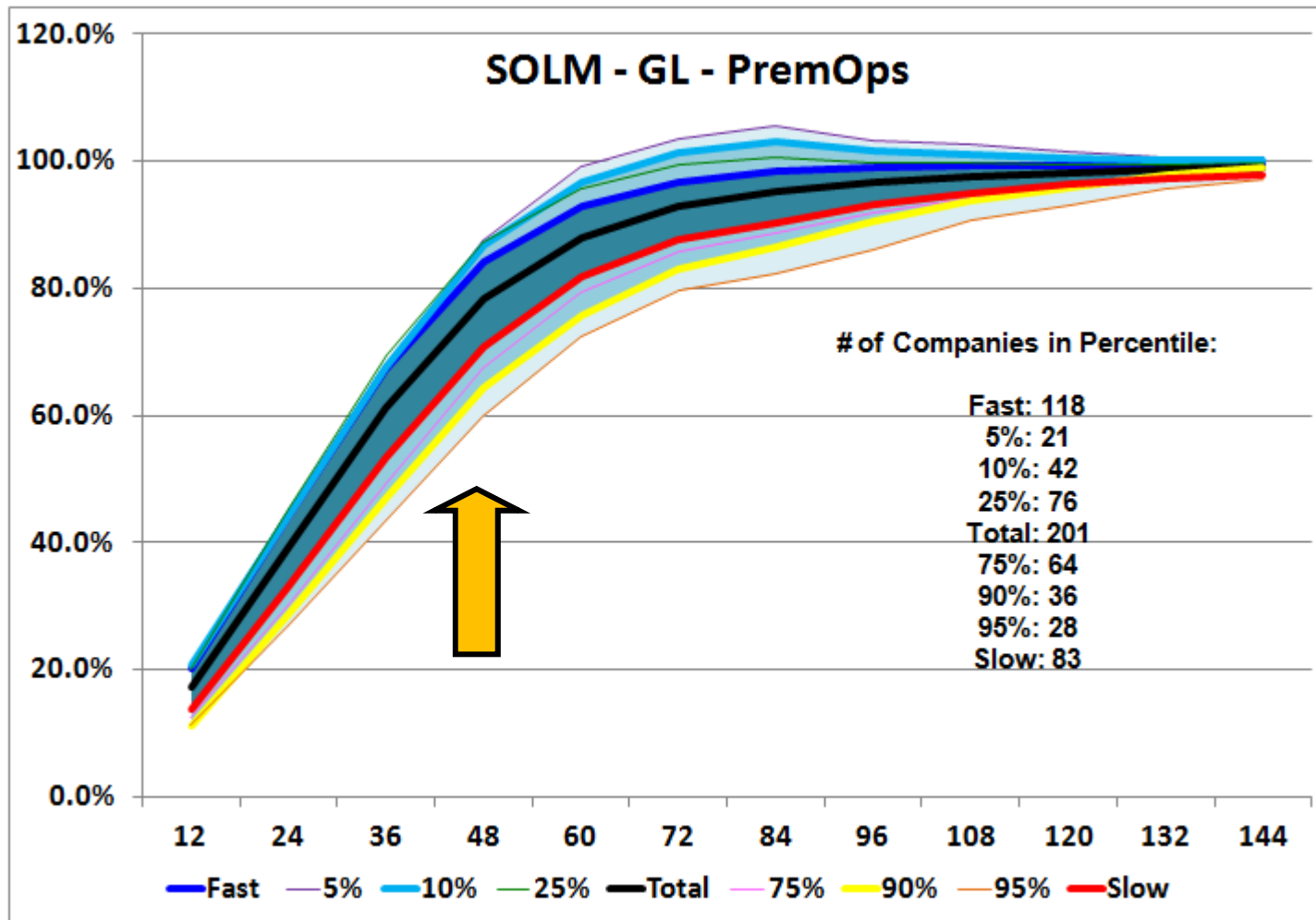
# Company Profitability and Loss Development Speed





# We Noticed that Company Speeds Vary Dramatically Premises Operations

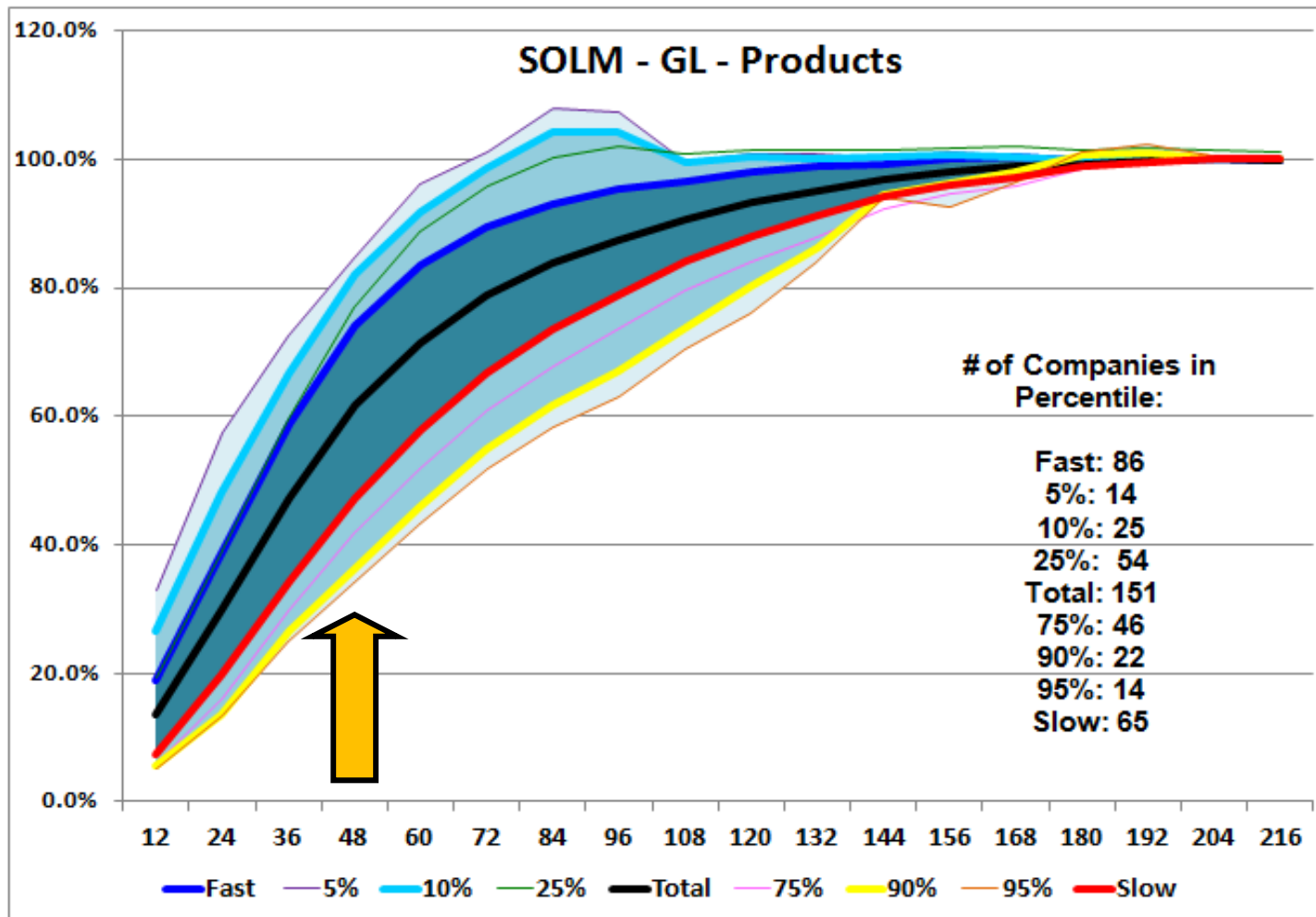
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# We Noticed that Company Speeds Vary Dramatically Products

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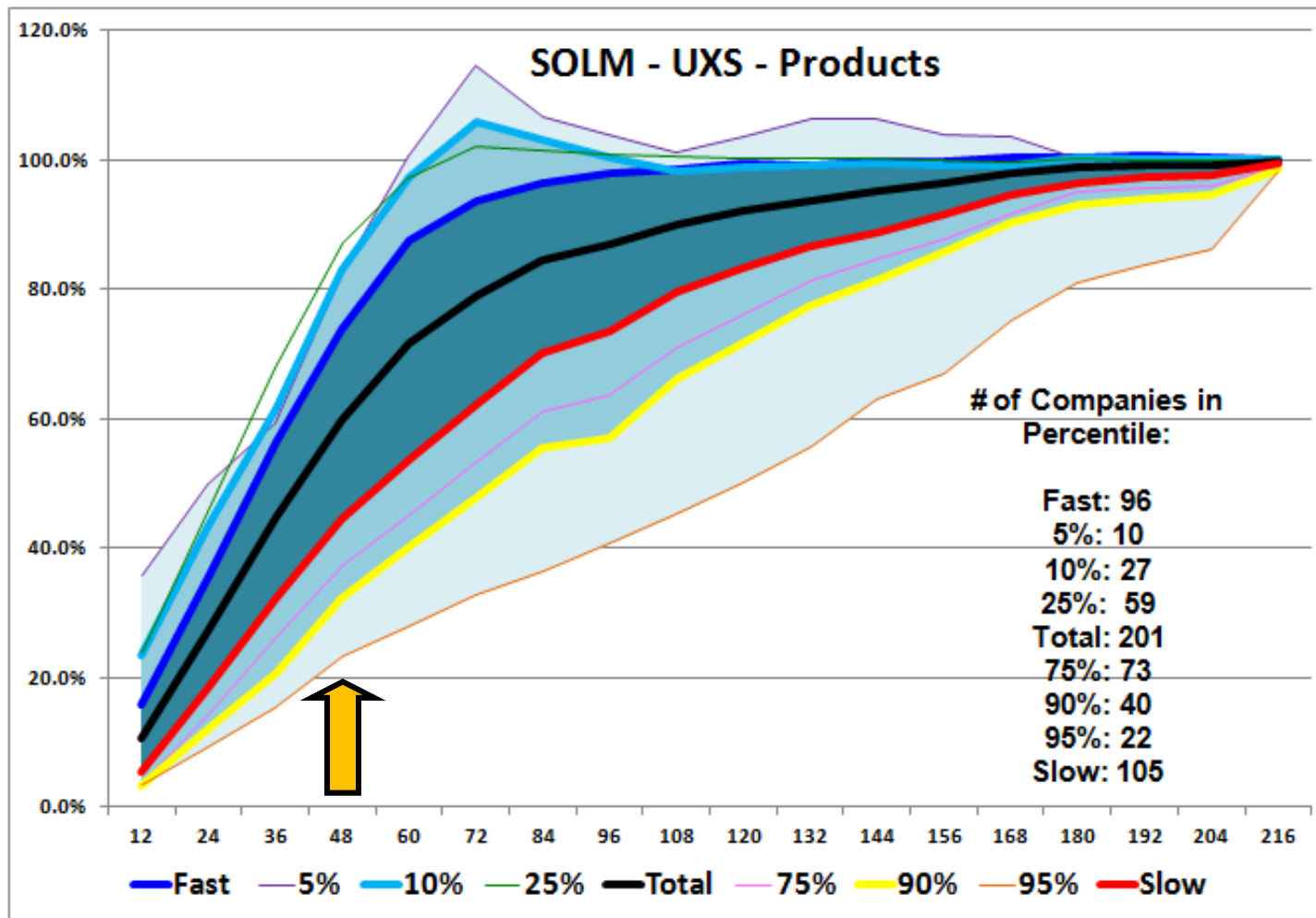




# We Noticed that Company Speeds Vary Dramatically

## UXS Products

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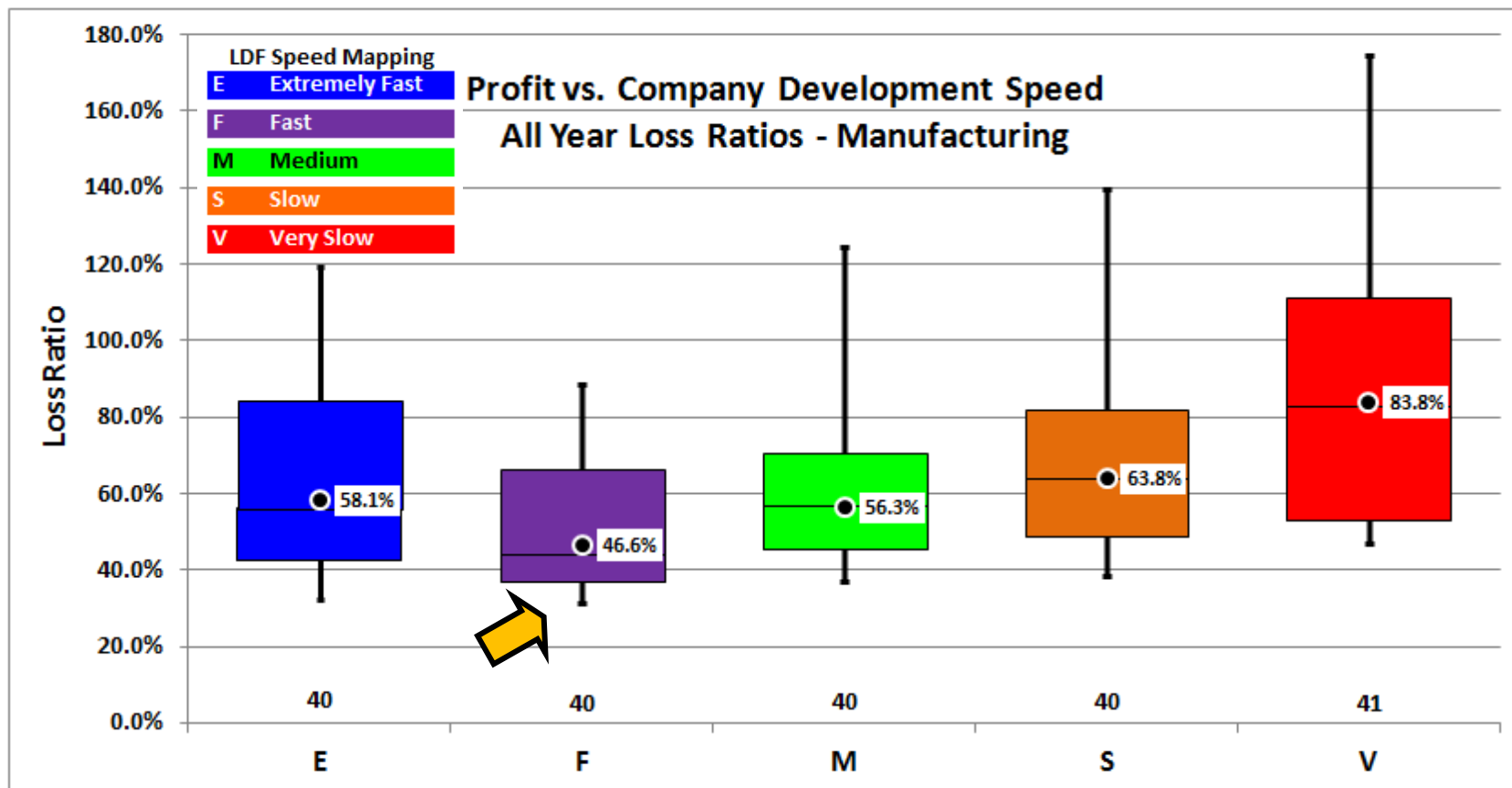






# Is There a Connection between Profitability and Speed?

## Ground-up Losses – All Years - Manufacturing Illustrative

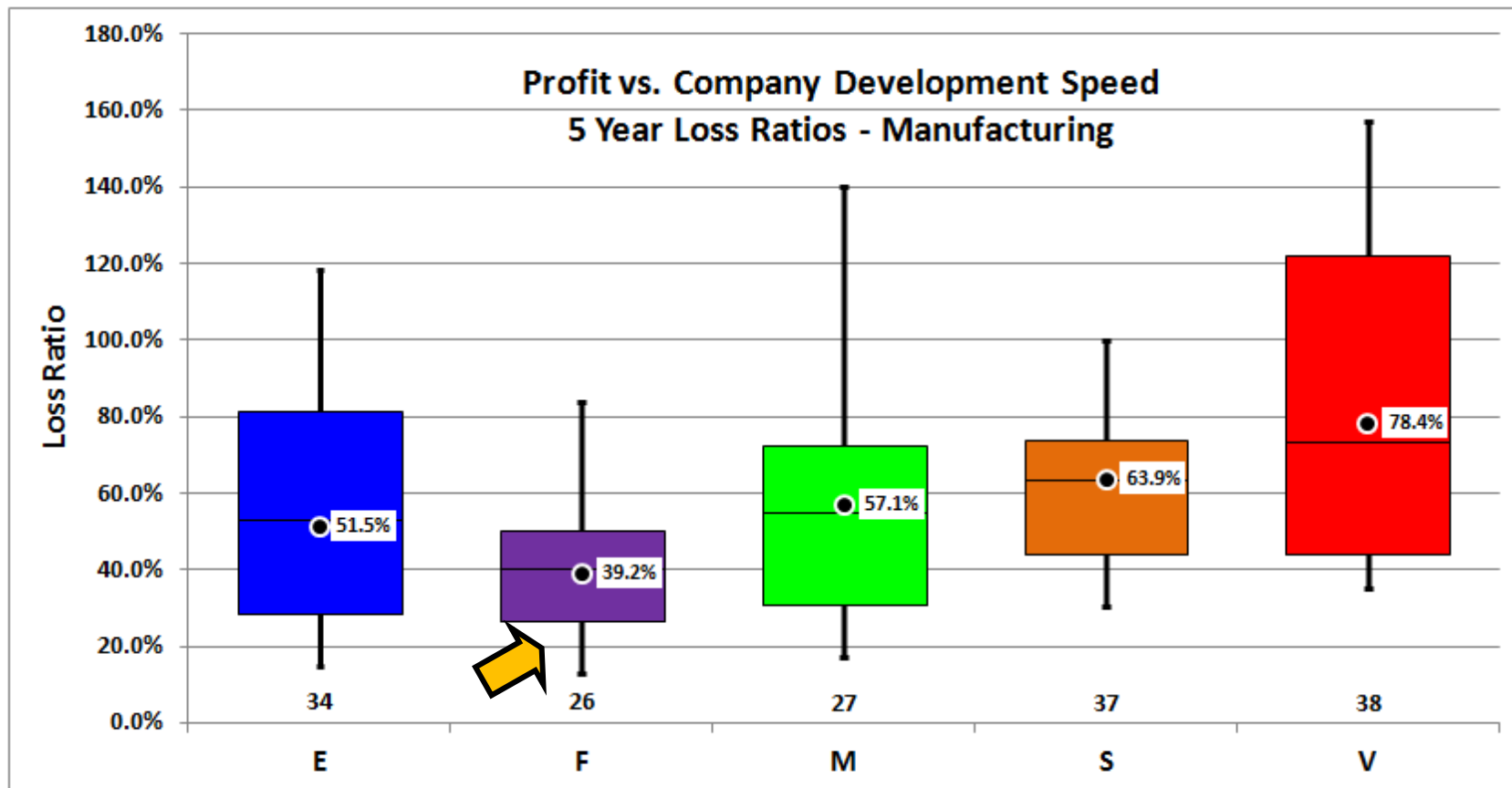


Note: Top error bar is 90<sup>th</sup> percentile, top of box is 75<sup>th</sup> percentile, line in box is 50<sup>th</sup> percentile, bottom of box is 25<sup>th</sup> percentile, bottom error bar is 10<sup>th</sup> percentile; losses and premiums developed to ultimate using 20-year triangles (all yr VWA) by company using SOLM claim count based credibility procedure with weighted Fast/Slow industry factors



# Is There a Connection between Profitability and Speed?

## Ground-up Losses – 5 Years - Manufacturing Illustrative

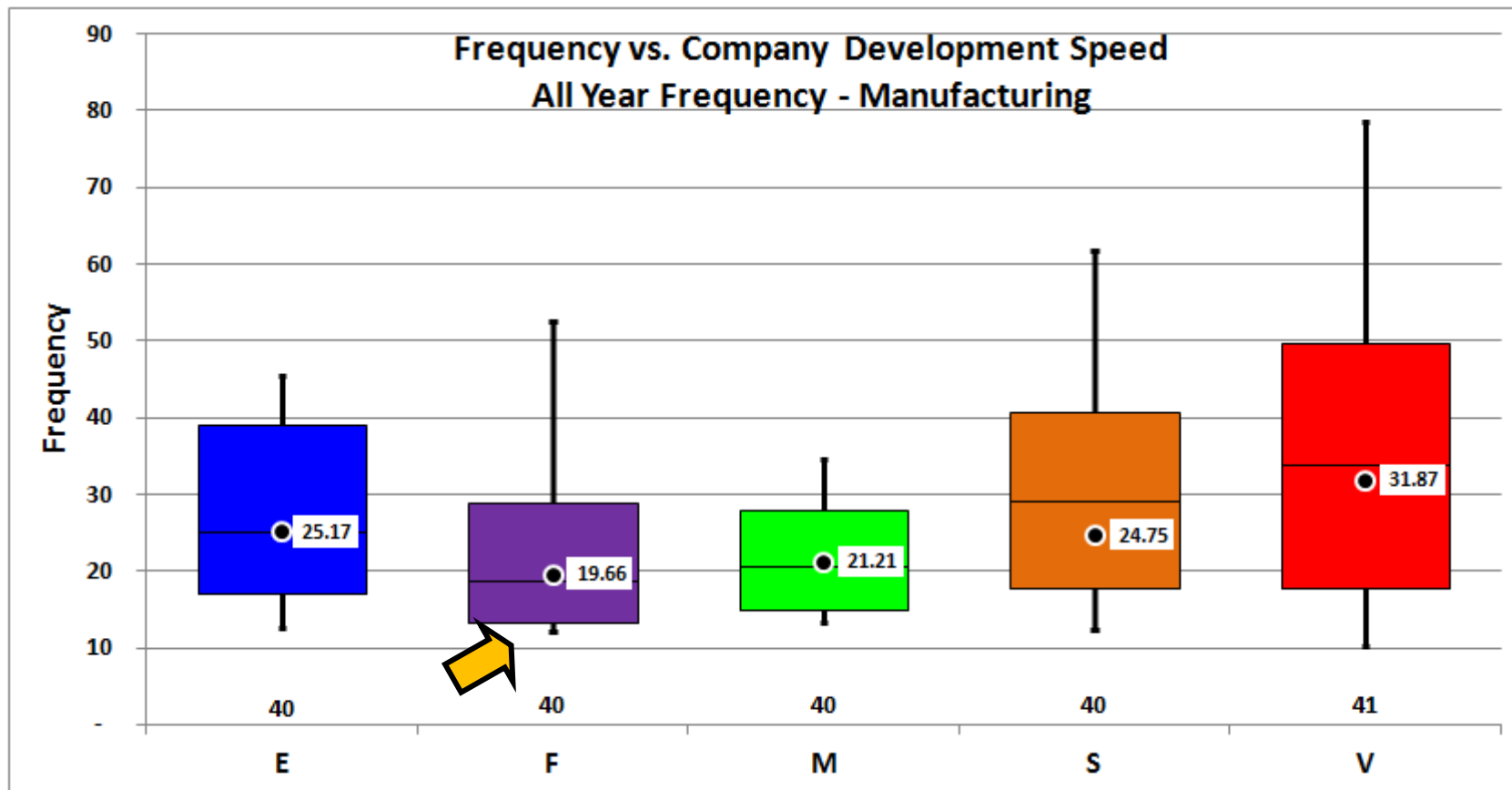


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# Is There a Connection between Profitability and Speed? Ground-up Frequency – All Years - Manufacturing

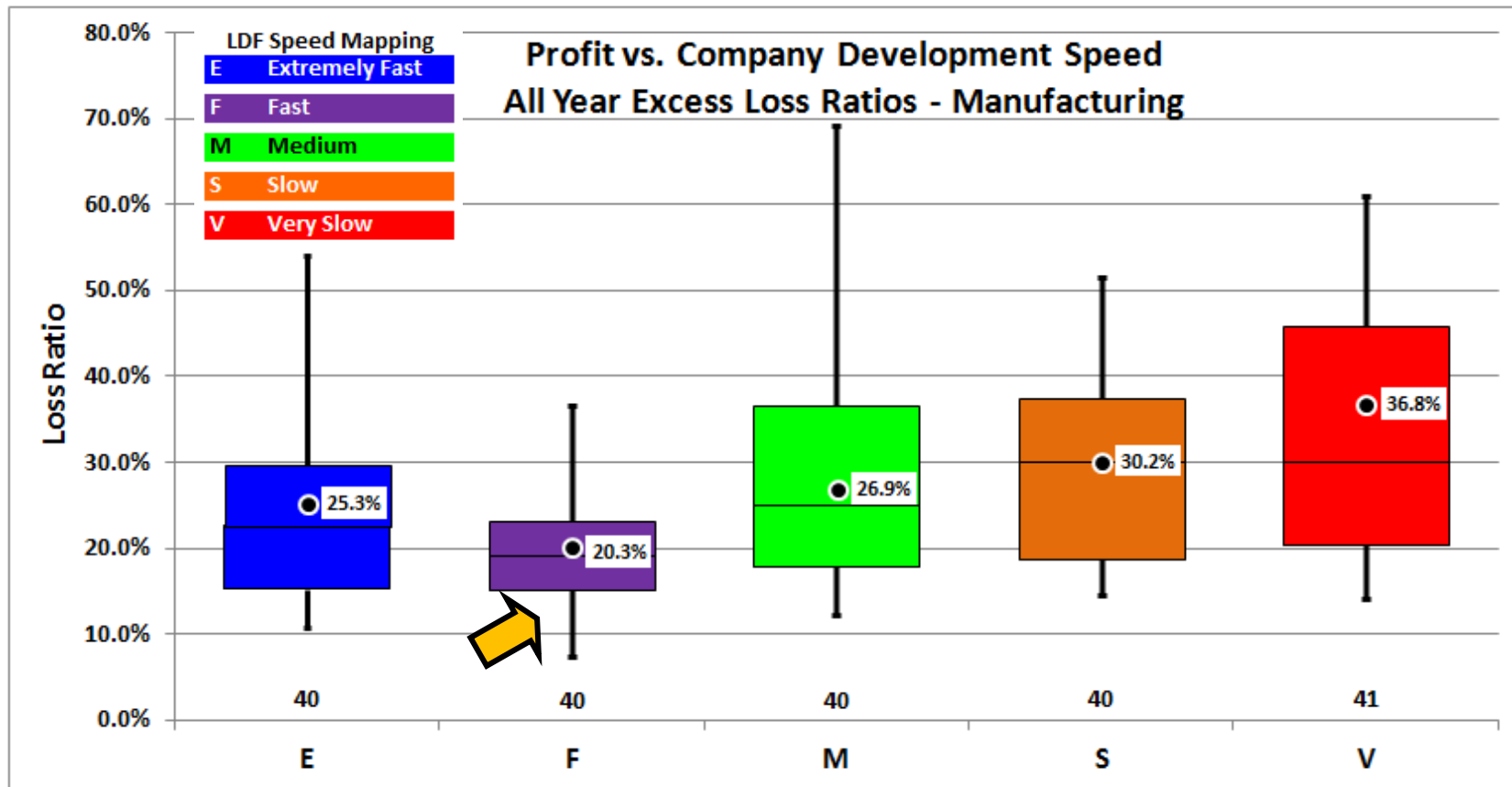
Illustrative



*Note: Top error bar is 90<sup>th</sup> percentile, top of box is 75<sup>th</sup> percentile, line in box is 50<sup>th</sup> percentile, bottom of box is 25<sup>th</sup> percentile, bottom error bar is 10<sup>th</sup> percentile.*



# Is There a Connection between Profitability and Speed? Excess Losses – All Years - Manufacturing Illustrative



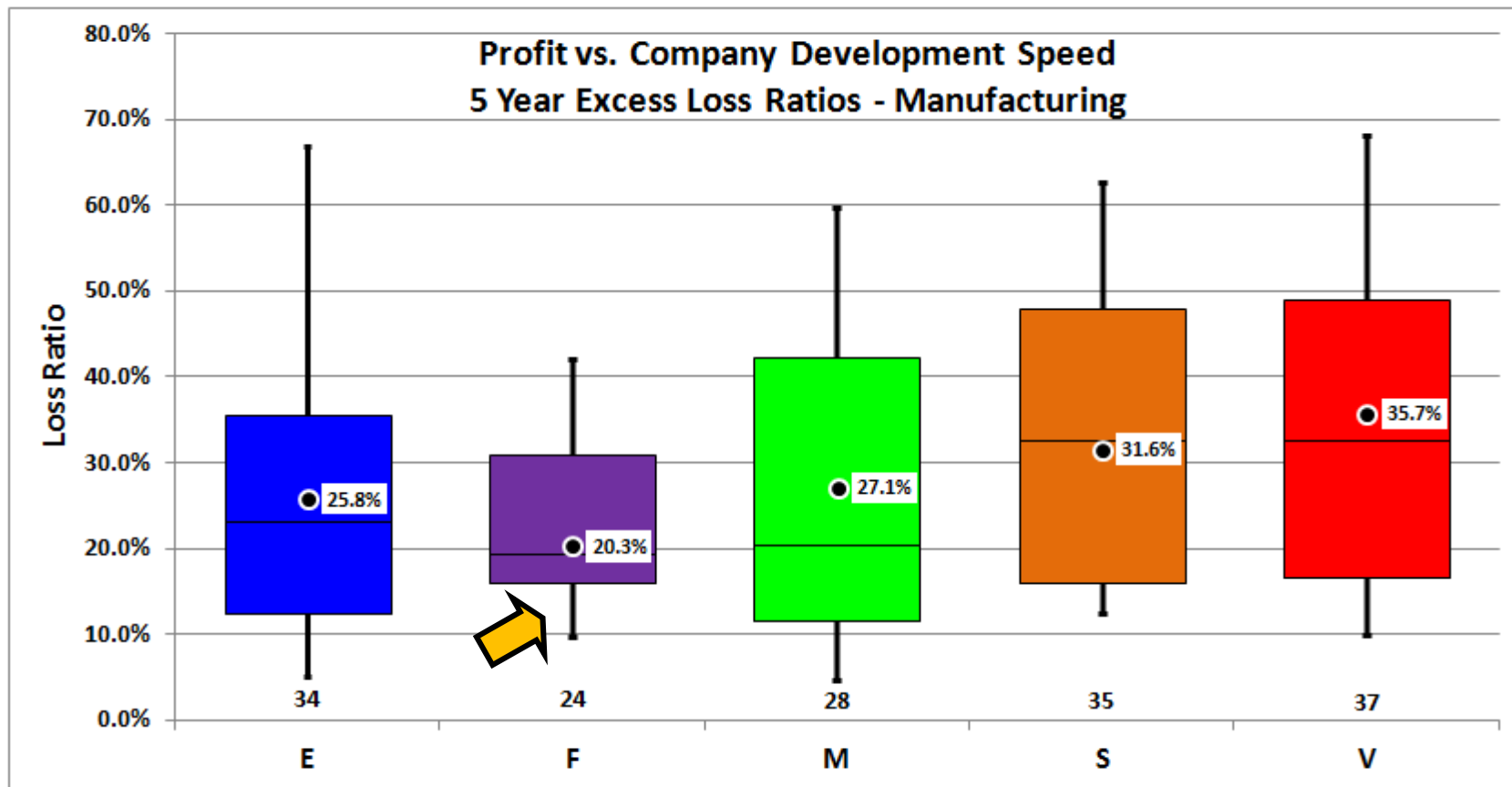
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# Is There a Connection between Profitability and Speed?

## Excess Losses – 5 Years - Manufacturing

Illustrative

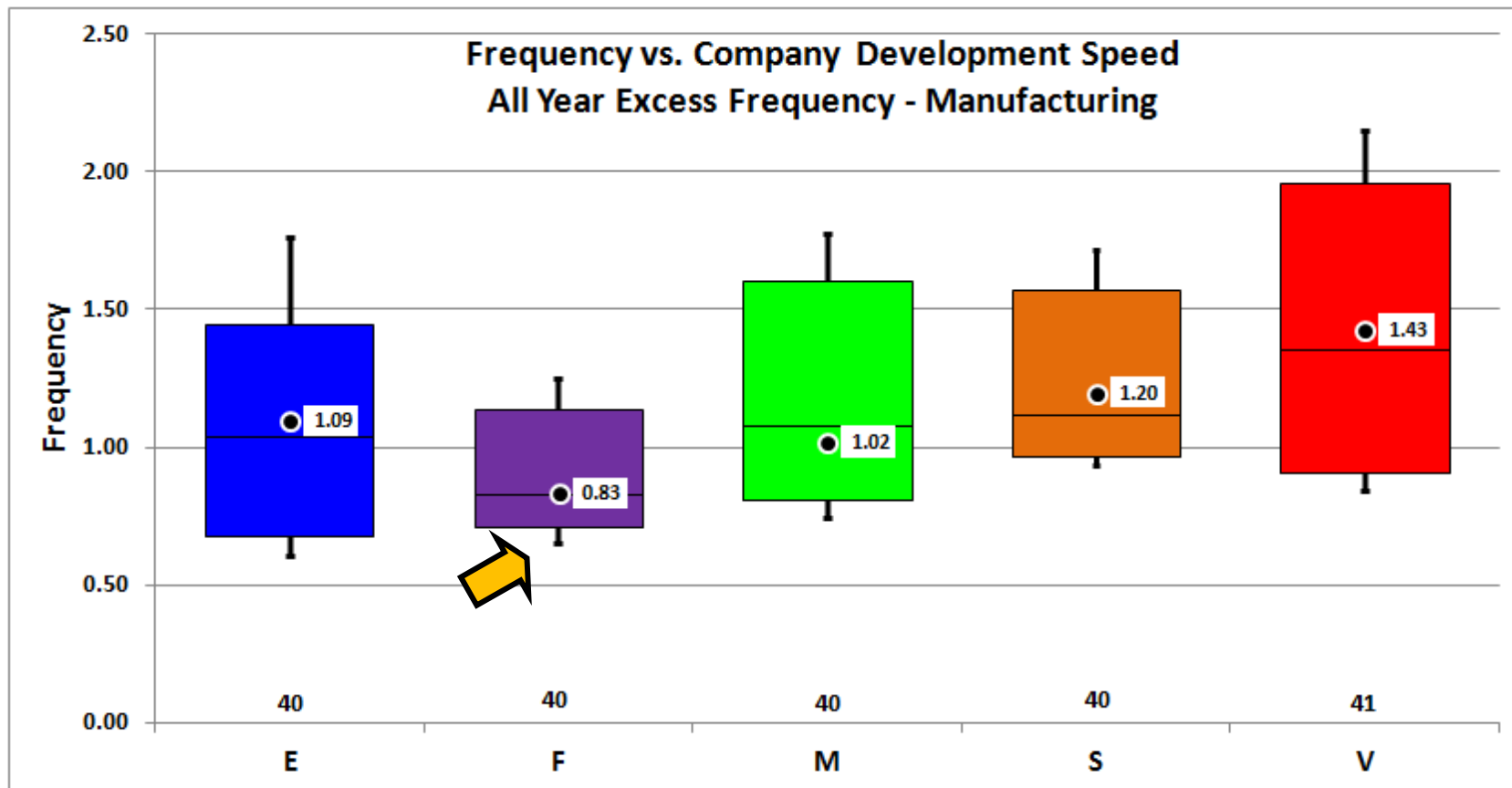


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Illustrative



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# GL Manufacturers – Fast/Slow Loss Ratio Infographic

## ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2017

Market Segment: General Liability  
Manufacturers  
All Companies - All Hazard Groups  
All Causes of Loss  
Unlimited xs 0

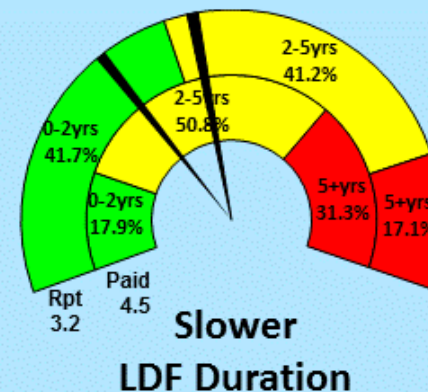
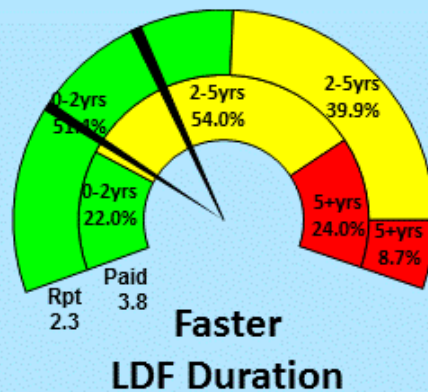
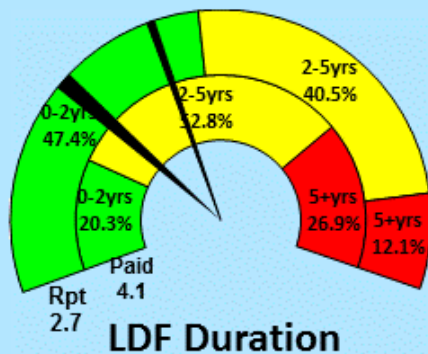
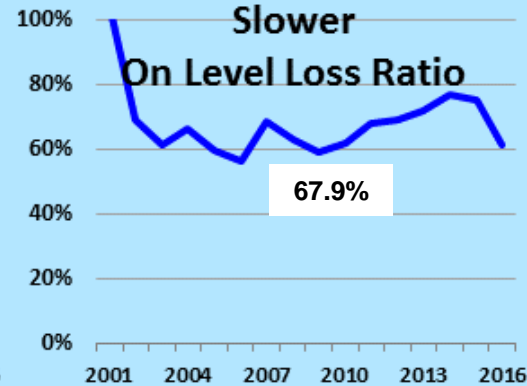
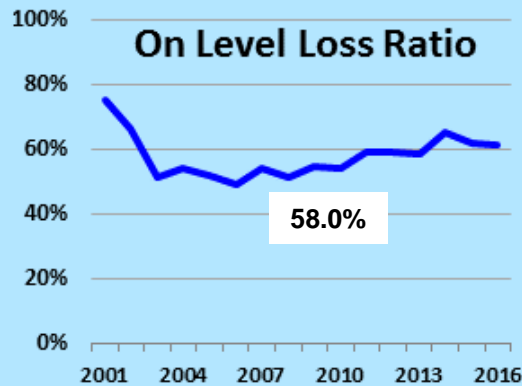
## Illustrative

Est All Yr/Curr Yr LR: 58.0% / 61.5%  
7 Year Severity Trend: 4.85%  
All Year Trend: 3.70%  
Avg Rep / Pay Duration: 2.7 / 4.1 Years

## Fast/Slow Loss Ratio Analytics

SOLM 2017 v2

Total Premium 12/2016: 10,222,516,567  
Total Incurred \$ Indemnity+Alae (Prorata): 7,348,061,981  
Total Occurrences: 307,113



Note: Rate changes from All Lines MarketWatch - 12/31/2016

# Holistic Analysis of Profitability and Speed







# ISO Size-of-Loss Matrix

# Peer Group Comparison

Illustrative

### Company Selection

Company ABC

### Market Selection

All Lines of Business

### Type of Analysis

Reported

Indemnity & ALAE

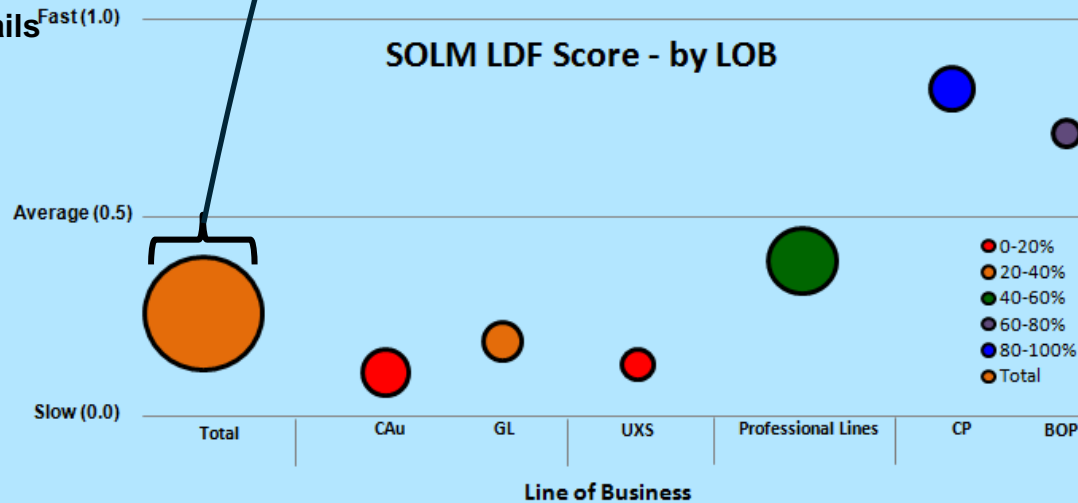
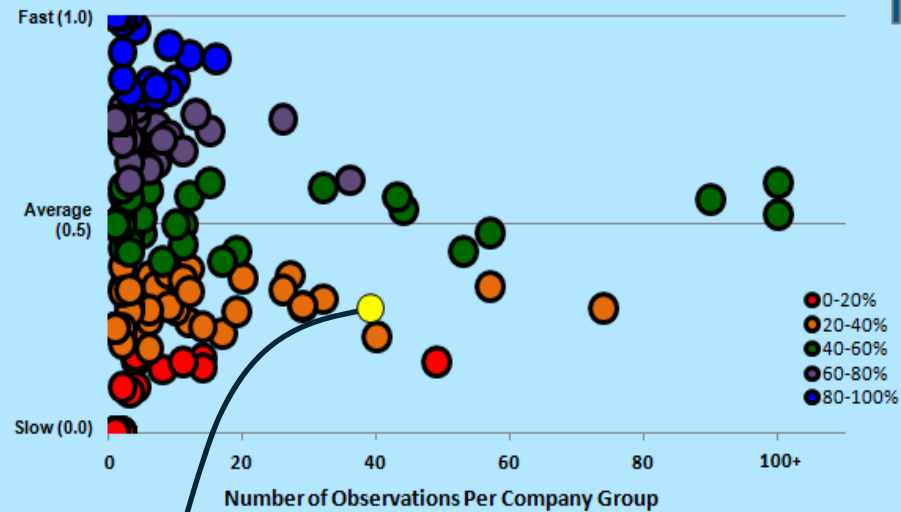
### Layer Selection

4,900,000 xs 100,000

### Loss Development Details

Trend = 3%

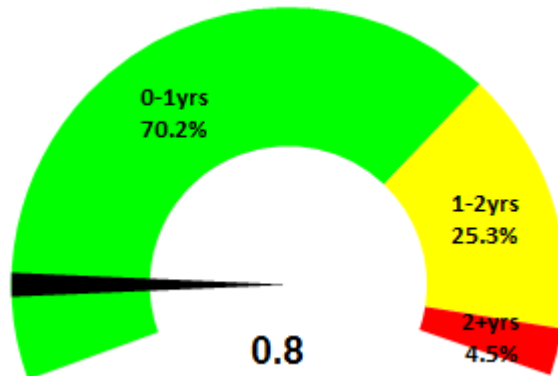
### Company ABC



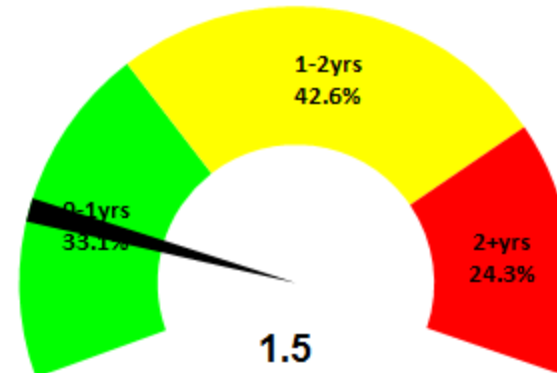


## Sample Market – # Incurred/Paid Claims – Excess of 25K All Causes of Loss

**All Companies**  
Incurred Claims – Excess of 25k

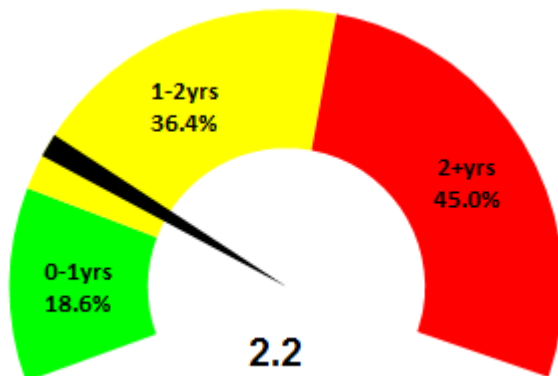


**ABC Insurance Company**  
Incurred Claims – Excess of 25k

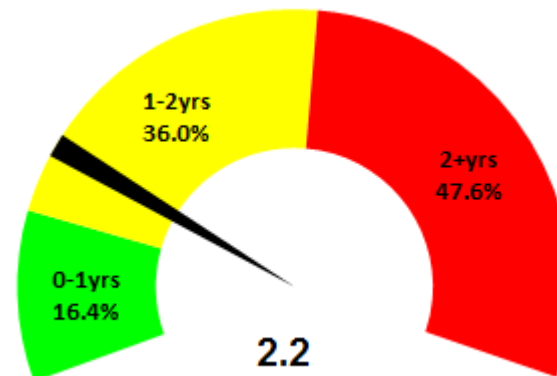


*Illustrative*

**All Companies**  
Paid Claims – Excess of 25k



**ABC Insurance Company**  
Paid Claims – Excess of 25k



Source: ISO SOLM 2016 v4 7-yr VWA; premium on-leveled using MarketWatch rate changes – 9/30/2016



# GL Manufacturers – Loss Ratio Infographic

## ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2017

Market Segment: General Liability  
Manufacturers  
All Companies - All Hazard Groups  
All Causes of Loss  
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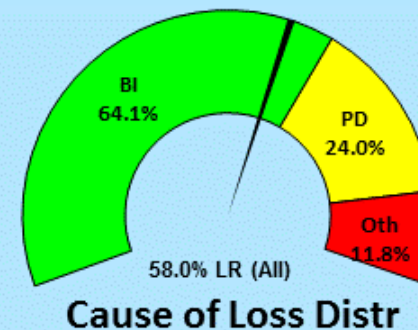
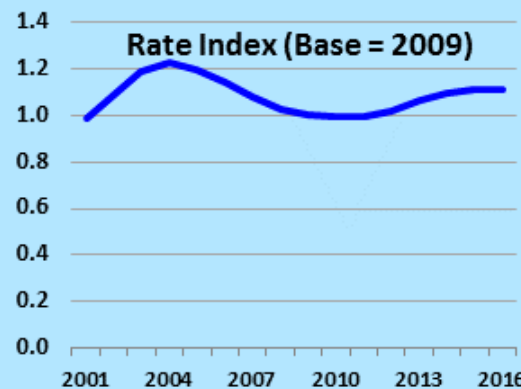
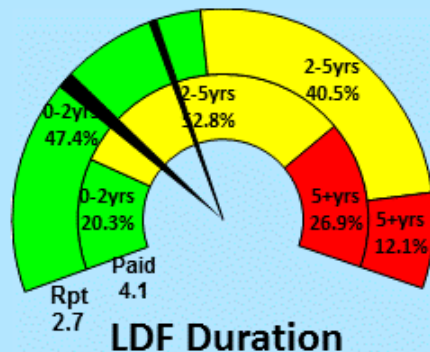
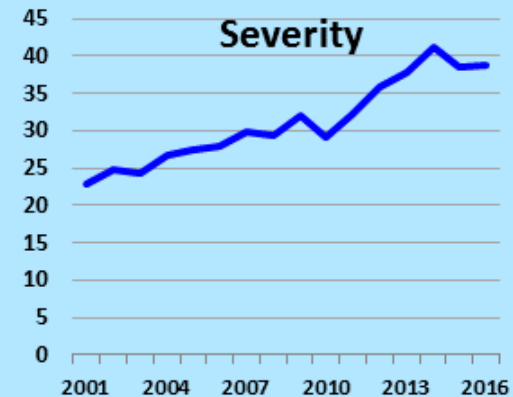
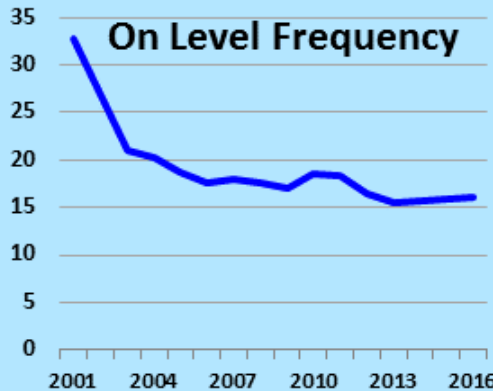
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## Loss Ratio Analytics

SOLM 2017 v2

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Total Incurred \$ Indemnity+Alae (Prorata): 7,348,061,981  
Total Occurrences: 307,113



Note: Rate changes from All Lines MarketWatch - 12/31/2016



# SOLM – Faster/Slower LR Analysis

Illustrative

Manufacturers - Incd LR	All Year Loss Ratio	Five Year Loss Ratio	Total Losses
10%	56.1%	55.6%	932,511,465
Faster	51.5%	53.0%	3,923,658,520
All	57.4%	60.5%	6,924,991,264
Slower	67.2%	72.8%	3,001,332,744
90%	78.9%	92.8%	885,353,310
Ratio 90th/All	37%	53%	
Ratio 90th/10th	41%	67%	
Ratio 90th/Faster	53%	75%	

Manufacturers - BI - Incd LR	All Year Loss Ratio	Five Year Loss Ratio	Total Losses
10%	37.0%	38.3%	587,888,153
Faster	33.1%	36.1%	2,413,437,556
All	38.0%	41.9%	4,425,826,826
Slower	45.8%	50.9%	2,012,389,270
90%	50.7%	64.5%	569,478,121
Ratio 90th/All	33%	54%	
Ratio 90th/10th	37%	68%	
Ratio 90th/Faster	53%	78%	

Manufacturers - Freq	All Year Frequency (per \$1M UOP)	Five Year Frequency (per \$1M UOP)	Total Counts
10%	21.21	18.17	44,207
Faster	19.75	17.10	186,969
All	19.42	16.94	298,040
Slower	18.87	16.66	111,071
90%	23.08	24.23	32,779
Ratio 90th/All	19%	43%	
Ratio 90th/10th	9%	33%	
Ratio 90th/Faster	17%	42%	

Using MarketWatch Manufacturers Rate changes – 6/30/2016



# ISO Size-of-Loss Matrix

© Insurance Services Office, Inc., 2017

Market Segment: Commercial Auto  
Trucks Tractors and Trailers - All Companies  
All Causes of Loss  
Unlimited xs 0

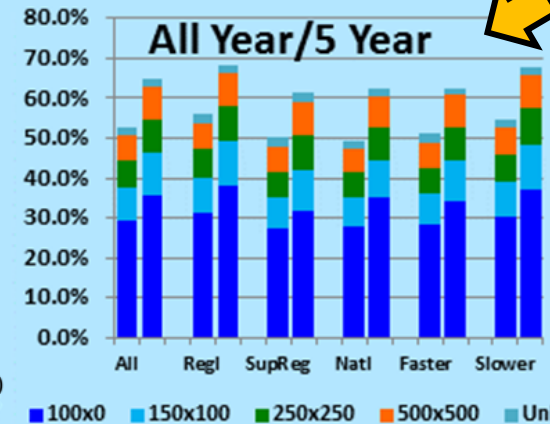
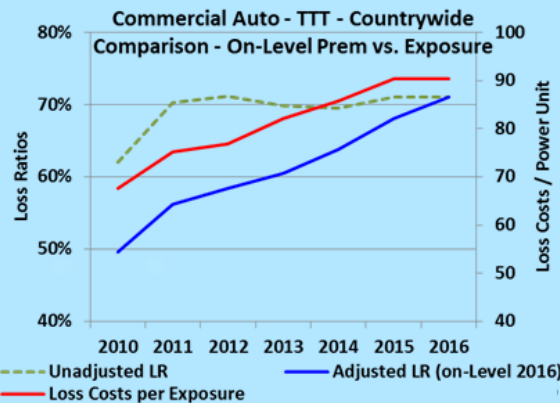
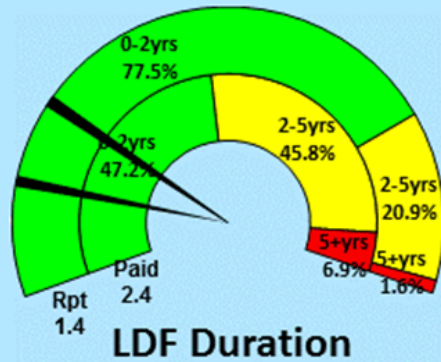
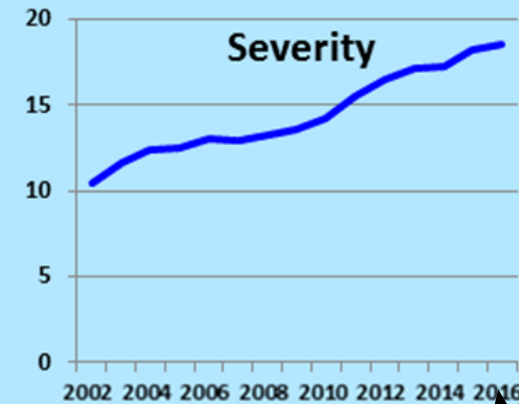
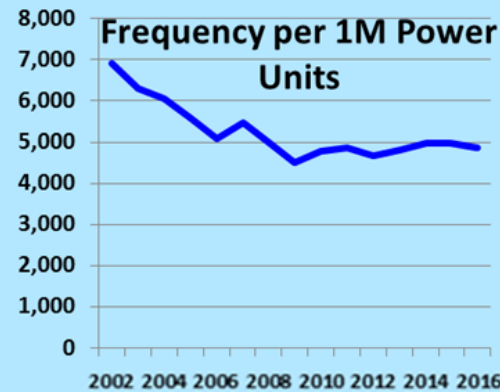
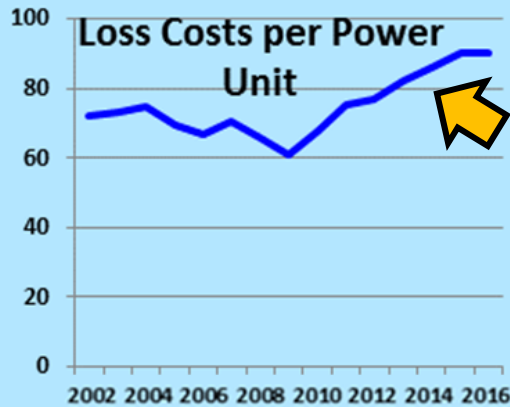
## Illustrative

Est All Yr/Curr Yr LC: 74.9 / 90.4  
7 Year Severity Trend: 4.16%  
All Year Trend: 3.84%  
Avg Rep / Pay Duration: 1.4 / 2.4 Years

## Loss Cost Analytics

SOLM 2017 v1

Total Premium 12/2016: 63,102,706,808  
Total Incurred Loss & Alae: 48,317,495,268  
Total Occurrences: 4,057,089  
Total Exposure (Power Units): 457,996,921



Note: Companies are split using SOLM Bifurcation Method (EV5)  
All triangles use 7-year VWA (3.0% detrended)  
Loss Costs are Total Losses / Power Units, Power Units are in months (multiply LC \* 12 for annual cost)

Source: CLRS – September 12, 2017 (Phila – Concurrent Session LOB3: Wheels Down)



# Average Outstanding Test – GL OL&T

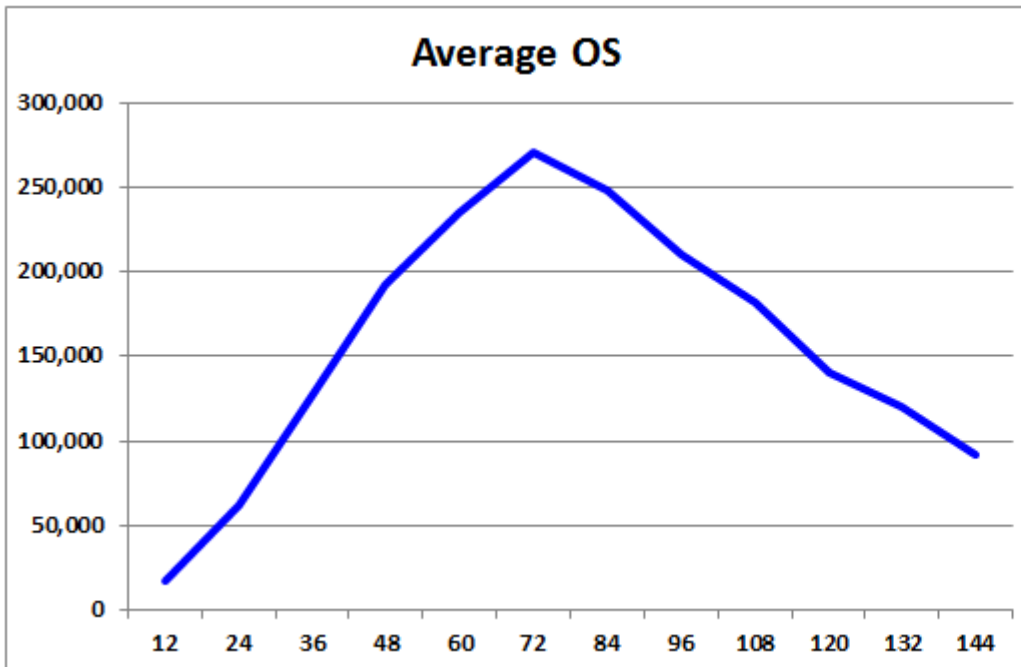
Illustrative

Line of Business **General Liability**  
 Market **Owners Landlords & Tenants**  
 Major Class **GL-OLT**  
 Company **All**

Data Threshold Min **0**  
 Data Threshold Max **>5,000,000**

The screenshot shows the 'SOLM Settings' dialog box. It includes sections for 'Market Selection' (Line of Business, Market, Class Group, State, Multiple Markets), 'Type of Analysis Selection' (Paid vs Incurred, Loss Type, Analysis Method, Cause of Loss, Year Type), 'Data Details' (Data Threshold Min, Data Threshold Max, Deductible/Attachment, Limit), and 'Triangle Details' (Trend, # year AT&LTU factor, LDF Weight, Ex Ante). At the bottom, there are buttons for 'OK + Calc', 'Calc Details', 'Ex-Ante Analysis', 'Acct Pricing Stats', 'Average OS', and 'Cancel'. A yellow arrow points to the 'Average OS' button.

A close-up view of the buttons from the 'SOLM Settings' dialog box: 'OK + Calc', 'Calc Details', 'Ex-Ante Analysis', 'Acct Pricing Stats', 'Average OS', and 'Cancel'. A yellow arrow points to the 'Average OS' button. Below the buttons, the text 'Menu Keyboard Shortcut: Ctrl+Shift+M' is visible.



Maturity	Average OS	\$ of Claims	# of Claims
12	16,992	10,800,557,582	635,614
24	62,253	12,098,262,806	194,340
36	126,503	10,143,735,896	80,186
48	193,095	6,805,839,749	35,246
60	235,344	3,838,454,882	16,310
72	270,647	2,170,321,091	8,019
84	247,814	1,188,517,245	4,796
96	210,455	686,714,623	3,263
108	182,050	416,167,057	2,286
120	140,219	261,649,222	1,866
132	120,169	175,927,786	1,464
144	91,681	106,991,919	1,167
156	100,574	70,301,111	699
168	96,032	49,072,363	511
180	96,033	38,413,089	400
192	85,445	24,608,256	288
204	91,594	17,036,544	186
216	101,417	13,184,221	130
228	145,411	11,196,625	77
240	120,594	4,703,175	39

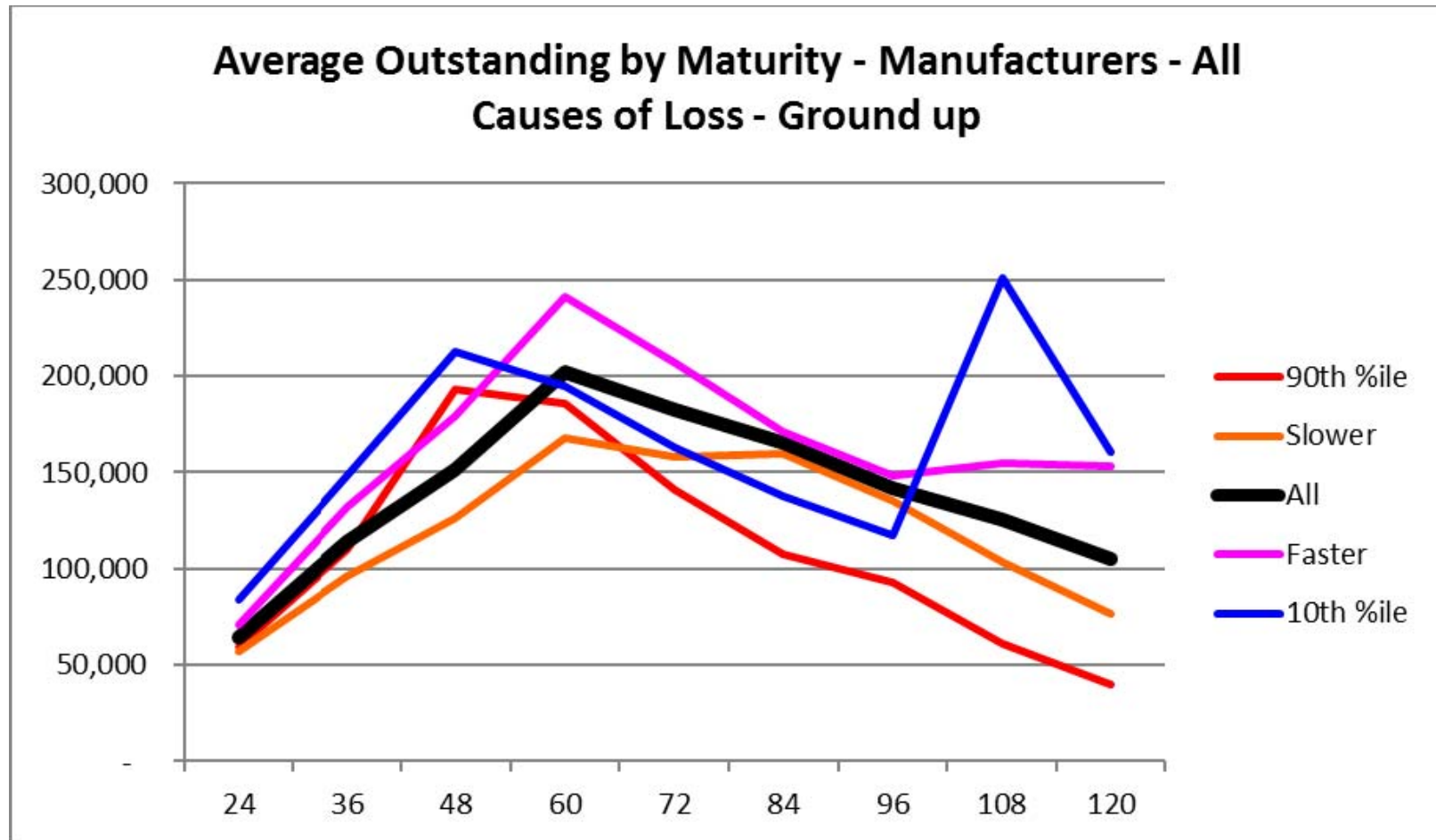
Source: ISO SOLM 2017 v2





# Average Outstanding Test By Company LDF Speed

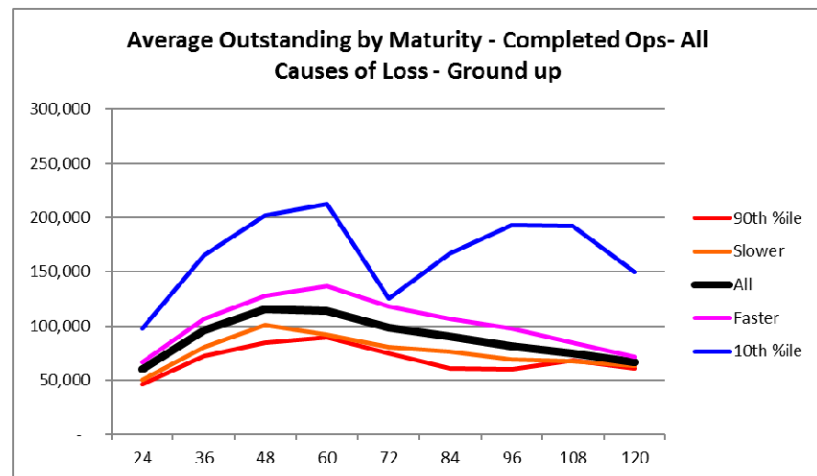
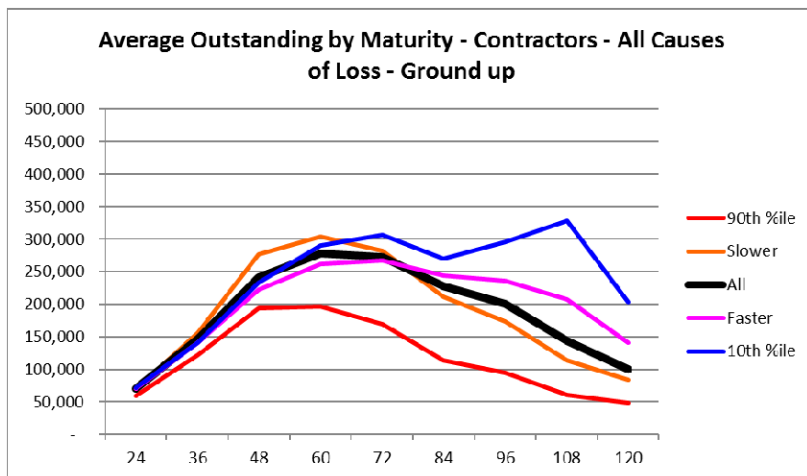
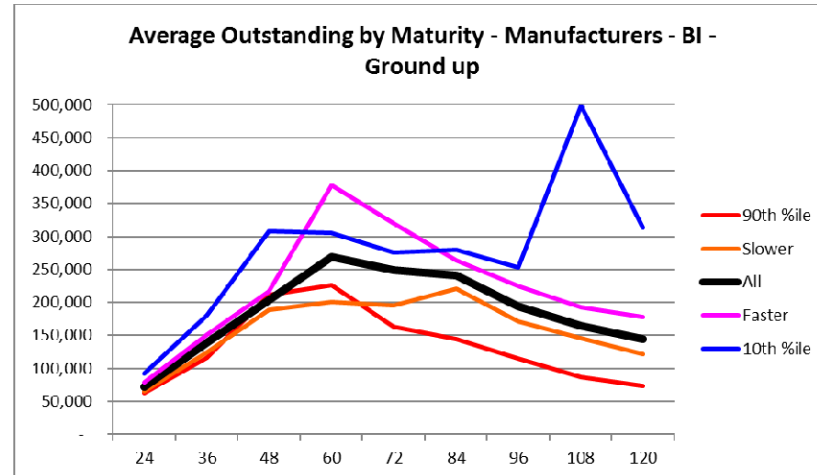
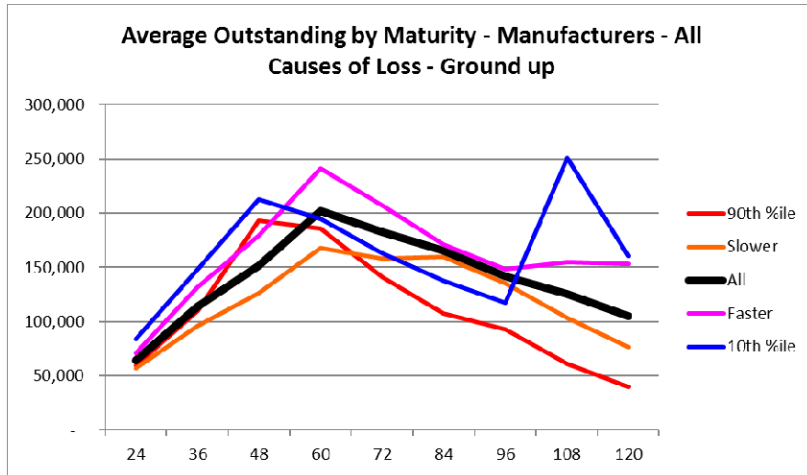
Illustrative





# Average Outstanding Test By Company LDF Speed - Multiple Lines

Illustrative





# Appendix



# Data Sources and Further Analysis





# Size-of-Loss Matrix

To help address various needs in the U.S. casualty market, we've developed our Size-of-Loss Matrix to provide insurers and reinsurers information quickly and through robust delivery, which is critical for day-to-day business decisions.

ISO's Size-of-Loss Matrix includes data on the following lines of business:

## **Businessowners**

### **Commercial Auto Liability:**

- buses
- composite-rated risks
- garages
- miscellaneous
- private passenger types
- public
- trucks, tractors, and trailers
- trucks, tractors, and trailers—zone-rated

### **Commercial Property:**

- commercial
- manufacturing
- residential

## **General Liability:**

- completed operations
- composite-rated risks
- contractors
- liquor
- local products
- manufacturers
- owners, landlords, and tenants
- pollution
- products

## **Umbrella and Excess:**

- premises/operations only
- commercial auto only
- premises/operations and commercial auto
- products

## **Professional Liability:**

- accountants
- agents
- architects and engineers
- directors and officers—for profit
- directors and officers—not-for-profit
- employment practices liability
- lawyers professional liability
- medical—allied health claims-made
- medical—allied health occurrence
- medical—dentists claims-made
- medical—hospital claims-made
- medical—physicians and surgeons claims-made
- other errors and omissions



# SOLM 2017 v2: August 2017 – Full Unlimited Version

## 38 Markets – GL, PL, Comm'l Auto, Comm'l Prop, BOP, UXS

Market	# of Policies	Incurred Indemnity + ALAE	Loss Year Start	Premium Year Start	Attachment Points	Limits	ALAE Treatment	Cause of Loss Splits	Class Splits	Company Speed	Company Capital Size
<b>General Liability</b>											
Owners, Landlords, and Tenants	49,221,643	34,468,850,263	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Contractors	26,765,202	21,120,948,230	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Manufacturers	8,633,780	7,348,061,981	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>PremOps - Combined</b>	<b>84,620,625</b>	<b>62,937,880,474</b>	<b>1997</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>Bodily Injury / Property Damage</b>	<b>PremOps Tables 1, 2, 3</b>	<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
Products	6,625,252	7,165,692,927	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Local Products	5,092,953	884,487,152	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Completed Operations	17,415,090	9,155,053,607	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>Products - Combined</b>	<b>29,133,295</b>	<b>17,205,233,686</b>	<b>1997</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>Bodily Injury / Property Damage</b>	<b>Products Tables A, B, C</b>	<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
Composite Rated Risks	3,406,326	30,504,389,043	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Liquor Law	2,002,727	942,615,063	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Pollution	1,392,595	1,061,385,105	1997	2001	All	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>Total General Liability (9 Markets)</b>	<b>120,655,568</b>	<b>112,651,483,371</b>	<b>1997</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>Bodily Injury / Property Damage</b>			
<b>Professional Liability</b>											
Directors and Officers - For Profit	1,419,358	11,776,427,903	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Directors and Officers - Not For Profit	2,364,782	1,267,937,402	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Directors and Officers	3,784,140	13,044,365,305	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Architects and Engineers	495,724	5,834,128,369	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Agents	1,245,581	2,082,484,122	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Lawyers Professional Liability	1,339,495	5,857,277,975	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Employment Practices Liability	2,601,317	1,370,353,131	2001	2001	All	All	PR/Incl	Discrimination/Harassment		Faster / Slower	
Accountants	619,792	1,494,480,709	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
Other E&O	8,550,430	10,586,009,377	1997	2001	All	All	PR/Incl	All Causes of Loss		Faster / Slower	
<b>Total Professional Lines Other than Medical (8 Markets)</b>	<b>18,636,479</b>	<b>40,269,098,988</b>	<b>1997</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>All Causes of Loss</b>		<b>10 /Faster / Slower/ 90</b>	
Medical - Phys&Surg Claims Made	1,168,688	6,692,881,777	2001	2001	All	All	PR/Incl	All Causes of Loss			
Medical - Dentists Claims Made	602,279	1,268,783,650	2001	2001	All	All	PR/Incl	All Causes of Loss			
Medical - Allied Health Claims Made	819,925	1,000,102,658	2001	2001	All	All	PR/Incl	All Causes of Loss			
Medical - Allied Health Occurrence	14,445,939	1,013,933,127	2001	2001	All	All	PR/Incl	All Causes of Loss			
Medical - Allied Health	15,265,864	2,014,035,785	2001	2001	All	All	PR/Incl	All Causes of Loss			
Medical - Hospitals Claims Made	159,936	1,850,653,430	2001	2001	All	All	PR/Incl	All Causes of Loss			
<b>Total Medical Malpractice (5 Markets)</b>	<b>17,196,767</b>	<b>11,826,354,642</b>	<b>2001</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>All Causes of Loss</b>		<b>10 /Faster / Slower/ 90</b>	
<b>Total Professional Liability (13 Markets)</b>	<b>35,833,246</b>	<b>52,095,453,630</b>	<b>1997</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>All Causes of Loss</b>		<b>10 /Faster / Slower/ 90</b>	
<b>Commercial Auto Liability</b>											
Trucks Tractors and Trailers	72,351,276	50,729,706,680	1997	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Private Passenger Types	18,675,537	9,218,392,009	1997	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Trucks Tractors and Trailers-Zone Rated	815,384	2,584,148,724	1997	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Buses	2,031,461	2,047,050,196	2001	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Garages	6,186,315	3,858,937,016	2001	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Miscellaneous	71,879,696	13,503,422,917	2001	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Publics	1,411,830	2,065,711,399	2001	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
Composite Rated Risks	1,478,401	16,958,710,153	2001	2001	All = \$0	All	PR/Incl	Bodily Injury / Property Damage		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>Total Commercial Auto Liability (8 Markets)</b>	<b>174,829,900</b>	<b>100,966,079,094</b>	<b>1997</b>	<b>2001</b>	<b>All = \$0</b>	<b>All</b>	<b>PR/Incl</b>	<b>Bodily Injury / Property Damage</b>		<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
<b>Total Casualty (30 Markets)</b>	<b>331,218,714</b>	<b>265,713,016,095</b>	<b>1997</b>	<b>2001</b>			<b>PR/Incl</b>			<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
<b>Commercial Property</b>											
Commercial	153,427,291	42,394,252,201	2001	2001	All	All	PR/Incl	Fire & Lightning / Wind & Hail / Theft		10 /Faster / Slower/ 90	Regional / Super Regional / National
Manufacturing	31,557,499	14,635,100,408	2001	2001	All	All	PR/Incl	Fire & Lightning / Wind & Hail / Theft		10 /Faster / Slower/ 90	Regional / Super Regional / National
Residential	19,787,942	6,654,539,112	2001	2001	All	All	PR/Incl	Fire & Lightning / Wind & Hail / Theft		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>Total Commercial Property (3 Markets)</b>	<b>204,772,732</b>	<b>63,683,891,721</b>	<b>2001</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>Fire &amp; Lightning / Wind &amp; Hail / Theft</b>		<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
Businessowners (1 Market)	98,276,098	36,848,908,439	2001	2001	All	All	PR/Incl	Property Damage / Prem Ops Liability		10 /Faster / Slower/ 90	Regional / Super Regional / National
<b>Commercial Auto Physical Damage (1 Market)</b>	<b>275,794,368</b>	<b>23,843,575,378</b>	<b>2001</b>	<b>2001</b>	<b>All</b>	<b>All</b>	<b>PR/Incl</b>	<b>Collision / Other than Collision</b>			
<b>Total Property &amp; Casualty (xUXS) (35 Markets)</b>	<b>910,061,912</b>	<b>390,089,391,633</b>	<b>1997</b>				<b>PR/Incl</b>			<b>10 /Faster / Slower/ 90</b>	<b>Regional / Super Regional / National</b>
<b>Umbrella and Excess</b>											
PremOps Only		10,022,881,118	2008		5 bands	4 bands	PR/Incl	All / Bodily Injury		Faster / Slower	Regional / Super Regional / National
Commercial Auto Only		1,481,341,280	2008		5 bands	4 bands	PR/Incl	All / Bodily Injury		Faster / Slower	Regional / Super Regional / National
PremOps/Commercial Auto		36,258,282,653	1994		5 bands	4 bands	PR/Incl	All / Bodily Injury		Faster / Slower	Regional / Super Regional / National
Products		7,578,236,852	1994		5 bands	4 bands	PR/Incl	All / Bodily Injury		Faster / Slower	Regional / Super Regional / National
<b>Total Umbrella and Excess (3 Markets)</b>	<b>24,504,497</b>	<b>43,836,519,505</b>	<b>1994</b>	<b>2001</b>	<b>5 bands</b>	<b>4 bands</b>	<b>PR/Incl</b>	<b>All / Bodily Injury</b>		<b>Faster / Slower</b>	<b>Regional / Super Regional / National</b>
<b>Total Property &amp; Casualty (iUXS) - 2016 (38 Markets)</b>	<b>934,566,409</b>	<b>433,925,911,138</b>	<b>1994</b>								

Note: Sections in Yellow are new in 2017 v2



# GL - Largest Classes

Illustrative

## GL Manufacturing

### Class Class Description

- 58561 Railroad or Other Public Conveyance Cars Parts Mfg.
- 10255 Building Material Dealers
- 13454 Gasoline Stations – self-service
- 43470 Pest Control Services
- 46622 Parking – private

## GL PremOps

### Class Class Description

- 60010 Apartment Buildings
- 61212 Buildings or Premises – bank or office – mercantile or manufacturing (Lessor's risk only) (For-Profit)
- 61217 Buildings or Premises – bank or office – mercantile or manufacturing – maintained by the insured (Lessor's risk only) (For-Profit)
- 91585 Contractors – subcontracted work – in connection with construction, reconstruction, repair or erection of buildings – NOC
- 91560 Concrete Construction

## GL Products C

### Class Class Description

- 91585 Contractors – subcontracted work – in connection with construction, reconstruction, repair or erection of buildings – NOC
- 91583 Contractors – subcontracted work – in connection with building construction, reconstruction, repair or erection – one or two family dwellings
- 91342 Carpentry – NOC
- 56632 Machinery or Machinery Parts Mfg. – industrial type
- 58058 Plastic or Rubber Goods Mfg. – other than household – NOC





# SOLM - Company Bifurcation – Fast / Slow – Hypothesis Testing

Illustrative

4Mx1M - Payment Pattern (3% detrended threshold)

Dev't	E&O				Company A			
	\$ Num	\$ Den	Actual ATA	Expected Actual	\$ Num	\$ Den	Actual ATA	Expected Actual
228								
216	105,531,247	105,531,247	1.000	105,531,247	8,198,446	8,198,446	1.000	8,198,446
204	293,942,535	293,942,535	1.000	293,942,535	18,923,710	19,045,099	0.994	19,045,099
192	475,642,114	472,575,957	1.006	475,642,114	31,612,986	31,551,259	1.002	31,755,969
180	705,566,867	705,479,590	1.000	705,566,867	45,409,833	45,493,492	0.998	45,499,120
168	1,024,718,508	1,020,904,699	1.004	1,024,718,508	57,494,522	57,458,763	1.001	57,673,413
156	1,388,421,724	1,383,081,587	1.004	1,388,421,724	66,378,209	65,253,074	1.017	65,505,019
144	1,688,270,963	1,677,909,614	1.006	1,688,270,963	73,712,551	73,181,641	1.007	73,633,549
132	1,973,912,149	1,968,595,712	1.003	1,973,912,149	80,527,589	80,389,627	1.002	80,606,729
120	2,339,797,103	2,319,972,111	1.009	2,339,797,103	87,793,749	86,799,305	1.011	87,541,036
108	2,726,649,787	2,679,039,960	1.018	2,726,649,787	93,348,932	92,564,040	1.008	94,209,017
96	3,209,684,397	3,096,986,698	1.036	3,209,684,397	104,252,613	104,864,603	0.994	108,680,570
84	3,580,259,532	3,432,496,791	1.043	3,580,259,532	112,582,200	114,178,679	0.986	119,093,863
72	3,863,973,715	3,566,658,852	1.083	3,863,973,715	124,331,344	128,478,419	0.968	139,188,314
60	4,111,432,098	3,647,257,365	1.127	4,111,432,098	139,698,553	140,324,828	0.996	158,183,518
48	4,065,488,874	3,219,405,713	1.263	4,065,488,874	150,806,971	151,100,620	0.998	190,810,958
36	3,541,277,111	2,318,904,928	1.527	3,541,277,111	157,533,788	149,561,557	1.053	228,400,445
24	2,522,512,650	1,205,975,660	2.092	2,522,512,650	155,221,988	140,510,957	1.105	293,903,665
12	1,354,693,563	298,927,949	4.532	1,354,693,563	143,717,469	139,258,281	1.032	631,096,214
Total (all)	38,971,774,937	33,413,646,968		38,971,774,937	1,651,545,453	1,628,212,690		2,433,024,946
Total (incl maturities)	31,553,291,613	29,589,838,431		31,553,291,613	1,195,072,208	1,198,881,895		1,279,624,621
Actual vs Expected	1,963,453,182	1.00		1,963,453,182	(3,809,687)	-0.05		80,742,726
Difference - Adverse (Fav)	-	0.0%			(84,552,413)	-7.1%		
Total Premium	52,596,745,930				221,005,118			
5yr Premium	19,590,875,897				73,547,439			
Total Loss	5,906,994,239				164,669,711			
5yr Loss	1,142,366,853				27,860,921			

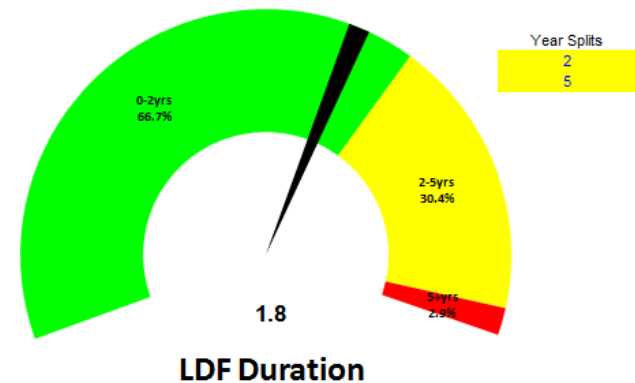


# Commercial Auto – PPT – 900x100k Loss – National Carriers

Illustrative

Threshold Min	Threshold Max		12	24	36	48	60	72	84	96
57,029	570,286	AY 1997	16,801,374	34,225,272	41,521,895	46,250,032	47,680,849	49,917,019	52,202,267	51,600,300
58,740	587,394	AY 1998	15,725,579	35,444,722	45,782,161	52,701,365	56,587,783	56,817,936	55,475,404	56,759,921
60,502	605,016	AY 1999	22,681,958	37,724,276	44,495,638	49,073,070	53,413,145	55,078,955	56,227,738	56,541,800
62,317	623,166	AY 2000	19,027,450	34,740,707	44,168,328	50,994,286	51,175,997	52,655,911	52,736,251	52,953,537
64,187	641,861	AY 2001	17,913,978	33,966,512	46,513,039	52,388,949	55,130,637	55,404,669	55,783,166	55,481,566
66,112	661,117	AY 2002	15,663,168	33,235,171	42,138,392	49,014,735	53,240,810	54,350,223	54,960,050	55,420,997
68,096	680,951	AY 2003	18,824,633	43,991,561	53,805,707	59,494,728	63,035,148	64,072,493	64,907,577	65,180,164
70,138	701,379	AY 2004	20,245,545	36,929,851	47,415,925	50,212,044	52,253,386	53,164,532	52,197,434	52,726,312
72,243	722,421	AY 2005	33,912,390	53,475,021	58,579,981	63,462,699	65,542,295	65,891,377	66,803,228	66,349,688
74,410	744,093	AY 2006	20,997,231	36,194,538	44,219,493	49,947,259	53,608,185	56,114,773	57,099,191	56,819,744
76,642	766,416	AY 2007	26,056,100	42,735,187	50,154,593	54,484,061	54,306,241	54,035,408	55,712,654	55,936,312
78,941	789,409	AY 2008	19,505,997	30,985,709	39,806,732	41,684,552	41,542,704	43,358,466	43,843,718	44,066,043
81,310	813,091	AY 2009	20,066,239	32,858,818	40,317,187	46,082,908	51,441,650	52,152,692	52,146,110	52,093,188
83,749	837,484	AY 2010	17,200,903	31,401,281	37,811,797	43,268,774	47,323,838	47,513,342	47,426,389	
86,261	862,608	AY 2011	19,431,412	34,699,067	44,449,981	50,063,267	53,867,449	53,379,875		
88,849	888,487	AY 2012	16,772,885	33,776,207	47,159,807	52,767,518	56,838,718			
91,515	915,141	AY 2013	19,699,861	36,274,397	43,287,137	48,208,575				
94,260	942,595	AY 2014	14,693,395	26,932,625	31,855,053					
97,088	970,873	AY 2015	17,243,565	27,560,671						
100,001	1,000,000	AY 2016	20,815,105							
CY tots-2014,2015,2016:			917,174,800	963,739,130	1,008,269,515					

	7 year ATA/ATU Factor							0 Ex Ante
	12 - 24	24 - 36	36 - 48	48 - 60	60 - 72	72 - 84	84 - 96	96 - 108
7-Yr ATA	1.786	1.255	1.111	1.061	1.013	1.008	1.001	1.002
7-Yr ATU	2.708	1.516	1.208	1.088	1.025	1.012	1.004	1.003
All-Yr ATA	1.818	1.237	1.115	1.056	1.017	1.009	1.003	1.000
All-Yr ATU	2.726	1.500	1.212	1.088	1.030	1.013	1.004	1.001
Sel ATA	1.818	1.237	1.115	1.056	1.017	1.009	1.003	1.000
Sel ATU	2.726	1.500	1.212	1.088	1.030	1.013	1.004	1.001
% Reptd	36.7%	66.7%	82.5%	91.9%	97.1%	98.7%	99.6%	99.9%
	2016	2015	2014	2013	2012	2011	2010	2009
To Date	20,815,105	27,560,671	31,855,053	48,208,575	56,838,718	53,379,875	47,426,389	52,093,188
Est Ult Unadjusted	56,745,947	41,327,968	38,618,547	52,432,600	58,565,727	54,072,089	47,603,664	52,155,017
Threshold Adj*	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Est Ult Adj	56,745,947	41,327,968	38,618,547	52,432,600	58,565,727	54,072,089	47,603,664	52,155,017
Act Prem To Date	232,758,353	225,571,939	217,658,027	209,523,954	192,959,238	209,212,305	219,039,711	235,087,618
Ultimate Prem	232,207,352	225,471,756	217,642,905	209,515,530	192,956,541	209,212,268	219,040,660	235,088,237
Factor (Premium)**	1.000	1.041	1.089	1.160	1.239	1.286	1.294	1.288
Sel On-level Factor	1.000	1.041	1.089	1.160	1.239	1.286	1.294	1.288
Level Ultimate Prem	232,207,352	234,636,283	236,925,479	242,966,089	239,009,900	269,097,271	283,346,505	302,795,456
Partial Loss Ratio	24.4%	17.6%	16.3%	21.6%	24.5%	20.1%	16.8%	17.2%



## Duration Calculation

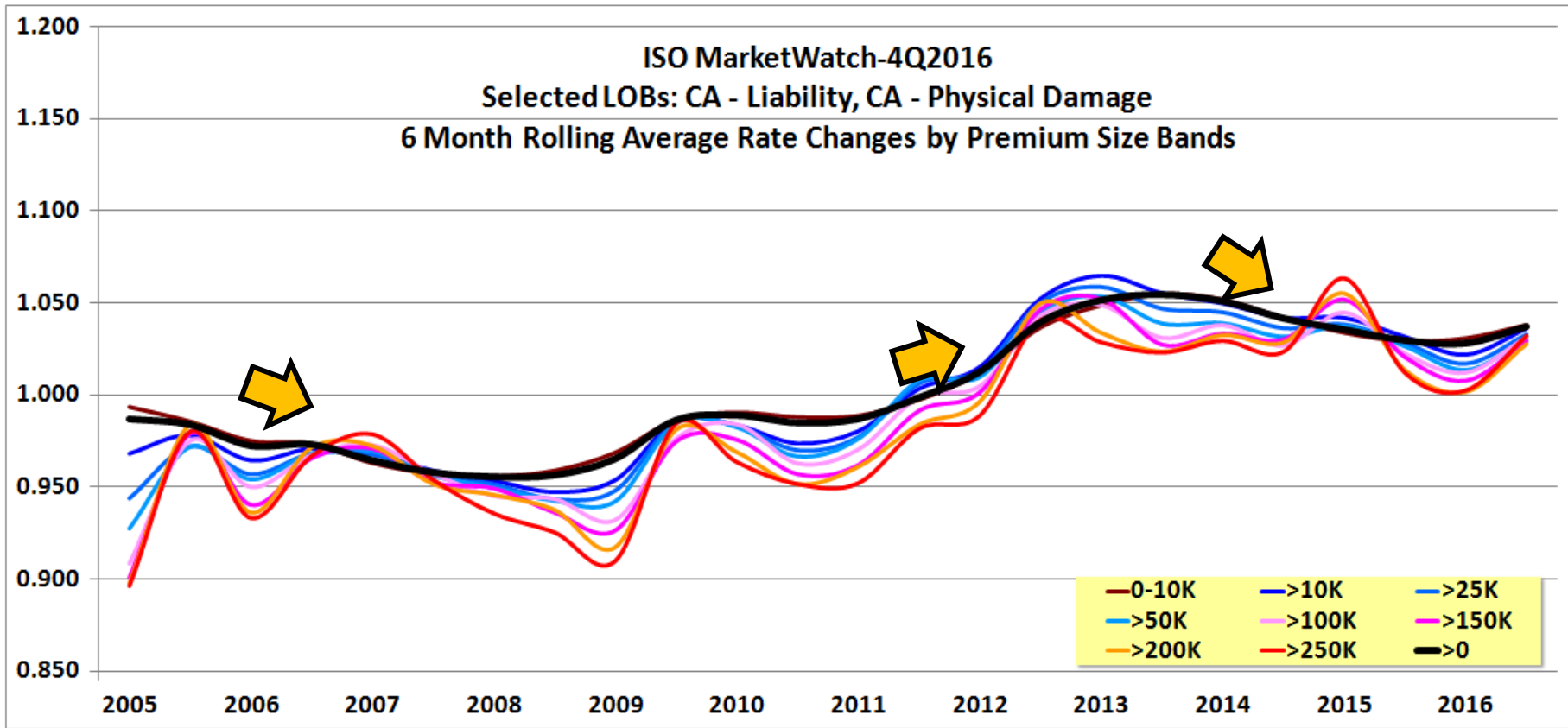
# of years: 1.8	0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5
100.0% % Reptd - All Yr	36.7%	30.0%	15.8%	9.5%	5.1%	1.7%	0.9%	0.3%
	18.3%	45.0%	39.5%	33.1%	23.0%	9.2%	5.9%	1.9%

Source: Gauge pointer is on the same year scale as the gauge values (1.8 years is near the green endpoint of 2 years)  
The Infographics Gauge pointers denote the duration from 0-10 years for easier comparison across segments



# Incremental Rate Changes Through 12/31/2016 Illustrative

## Commercial Auto Liability & Physical Damage



Total # of policies	Total Premium (previous)			
	All	>10K	>100k	>200k
120,437,201	50,288,574,884	12,048,004,851	3,263,364,854	1,856,290,095

Source: ISO MarketWatch – released 3/27/2017





# Questions and Feedback

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- **Visit** [www.verisk.com/mws](http://www.verisk.com/mws) for future events

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