Actuarial Reports

Winding Your Way Through the Maze

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What is an Actuary?

- A Professional Highly-Trained in Mathematics and Statistics who Analyzes Uncertain Financial Outcomes, Most often Insurance Liabilities
  - Actuaries Are an Integral Part of Analyzing Self-Insured Liabilities
- Actuarial Credentials
  - Fellow or Associate of the Casualty Actuarial Society, “FCAS” or “ACAS”
  - Member of the American Academy of Actuaries, “MAAA”
  - Other Professional Organizations Such as Society of Actuaries (Life/Health/Employee Benefits)

What is an Actuary?



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Scope of the Actuarial Analysis

- Net Self-Insured or Deductible Unpaid Claim Liabilities (Reserves)
- Excess Insurance Recoverable, or “Gross” Liabilities (ASU2010-24)
- Tail Liability for Claims-Made Coverage
- Funding / Future Year Budgeting Estimates
- Retention Analysis
- Safety Analytics
- Benchmark Comparisons or Allocations

Scope of the Actuarial Analysis

- Unpaid Claim Liability (Reserve)
  - "Ultimate" Loss
    - Paid Loss
    - + Case Reserve

    } Incurred Loss
    - + Development Reserve
    - + IBNR
  - Reported Claim Reserve = Case + Development Reserve
  - Tail Liability = IBNR
  - Total Reserve = Reported Claim Reserve + Tail Liability

Scope of the Actuarial Analysis

- Funding Estimate / Budgeting
  - Trend assumptions (“On-Level”)
  - Changes in underlying exposure
- Retention Analysis
  - Optimal level of risk retention
  - Risk/reward trade-off
  - Depends on risk appetite and prevailing excess insurance rates
- Safety Analytics / Benchmarking
  - Where do losses come from? (Facility / Department / Specialty / etc.)
  - Measure impact of risk management changes

Step 1: Initial Discussion With the Actuary / Data

- Provide Understanding of Insurance Program
  - Loss Experience
  - Exposures
  - Retentions (by coverage type)
  - Financial reporting decisions
  - Client needs and expectations
  - Any change from the past?
- Provide Data to Actuary
  - Loss Run – Individual Claim Detail
  - Exposures
    - Occupancy and Utilization Statistics / Physician Rosters

Step 2: Receive and Review Draft Report

- Reconciliation of Data to What was Provided
  - Losses / Exposures / Retentions / Other Information
- Understand Results and Changes
  - Drivers and Sensitivity of Results
  - Proper Comparisons
    - Movement in reserve has multiple moving parts
    - Change in ultimate losses

Step 3: Finalize Actuarial Report

- Distribution to Brokers / Underwriters / etc.
- Presentation to Management

Actuarial Report Overview

- Scope of Analysis
  - What is the valuation date of the data?
  - What is the reserve or accounting date?
  - What coverage is included in the estimates?
  - Are there any exceptional limitations or constraints to be noted?
  - Definition of expenses – is ULAE included?
  - Any client-prepared assumptions (exposure projection / interest rate)?
  - Net or gross of salvage and subrogation or excess insurance?
- Background
  - Discussion of historical limits and retentions
  - Other relevant information

Actuarial Report Overview

- Results of Analysis
  - Presentation of Projections
  - Considerations – “The estimate includes…; or excludes…”
  - Implications of results
  - Discussion of changes since prior estimate

Actuarial Report Overview

- Methodology – Client Input
  - Historical Loss Experience
  - Historical Exposure Data
  - Qualitative Information
    - Risk Management Program
    - Change in Reporting Requirements
    - Claims Handling Process / Settlement Rate
    - Individual Large Claims
    - Any Changes in Program

Actuarial Report Overview

- Methodology – Key Assumptions
  - Past Data is Indicative of Future Results
  - Source of Assumptions
    - Client specific versus Industry trends
  - External Shocks
    - Change in Law / Regulation / Benefits
    - Change in Interest Rates
    - Economic Changes (eg., Recession)
    - Societal Attitudes

Actuarial Report Overview

- Limitations and Uncertainty
  - Reliance on unaudited client data
  - Actual results WILL differ from projections, possibly significantly
  - Sources of variability:
    - Uncertainty related to client-specific risks
    - Uncertainty related to industry factors
    - Uncertainty related to legal/social/judicial changes
    - Uncertainty inherent in random claim outcomes
  - Sensitivity to reasonable alternate assumptions
  - Interest rate and timing risk
  - Actual vs. projected exposures
  - Collectibility of insured claims

Actuarial Terms

- Loss / ALAE / ULAE
- Exposure
- Loss Development
- Loss Trend
- Frequency and Severity
- Case Reserve / Development Reserve / IBNR Reserve
- Claims-Made / Tail
- Actuarial Central Estimate / Expected Value / Confidence Level
- Interest Discount
- Data Valuation Date vs Accounting Date
- Years – Report vs Accident vs Calendar

Life of An Individual Claim



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Historical Net Incurred Loss and ALAE

	Evaluated as of:					
Report Year	**12/31/2007**	**12/31/2008**	**12/31/2009**	**12/31/2010**	**12/31/2011**	**12/31/2012**
2007	$227,000	$775,000	$875,000	$950,000	$975,000	$975,000
2008		150,000	550,000	775,000	850,000	900,000
2009			375,000	675,000	850,000	925,000
2010				250,000	550,000	825,000
2011					370,000	800,000
2012						280,000

Note:
1. Amounts Include ALAE.

Net Incurred Loss and ALAE – Development Triangle

	Months of Development:					
Report Year	**12**	**24**	**36**	**48**	**60**	**72**
2007	$227,000	$775,000	$875,000	$950,000	$975,000	$975,000
2008	150,000	550,000	775,000	850,000	900,000	
2009	375,000	675,000	850,000	925,000		
2010	250,000	550,000	825,000			
2011	370,000	800,000				
2012	280,000					
	Development Factors:					
	12-24	**24-36**	**36-48**	**48-60**	**60-72**	
2007	3.414	1.129	1.086	1.026	1.000	
2008	3.667	1.409	1.097	1.059		
2009	1.800	1.259	1.088			
2010	2.200	1.500				
2011	2.162					
						Tail
Average:	2.649	1.324	1.090	1.043	1.000	
Cumulative:	3.987	1.505	1.137	1.043	1.000	1.000
Percent Developed:	25%	66%	88%	96%	100%	100%

Note:
1. Amounts Include ALAE.

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Projected Ultimate Claim Severity



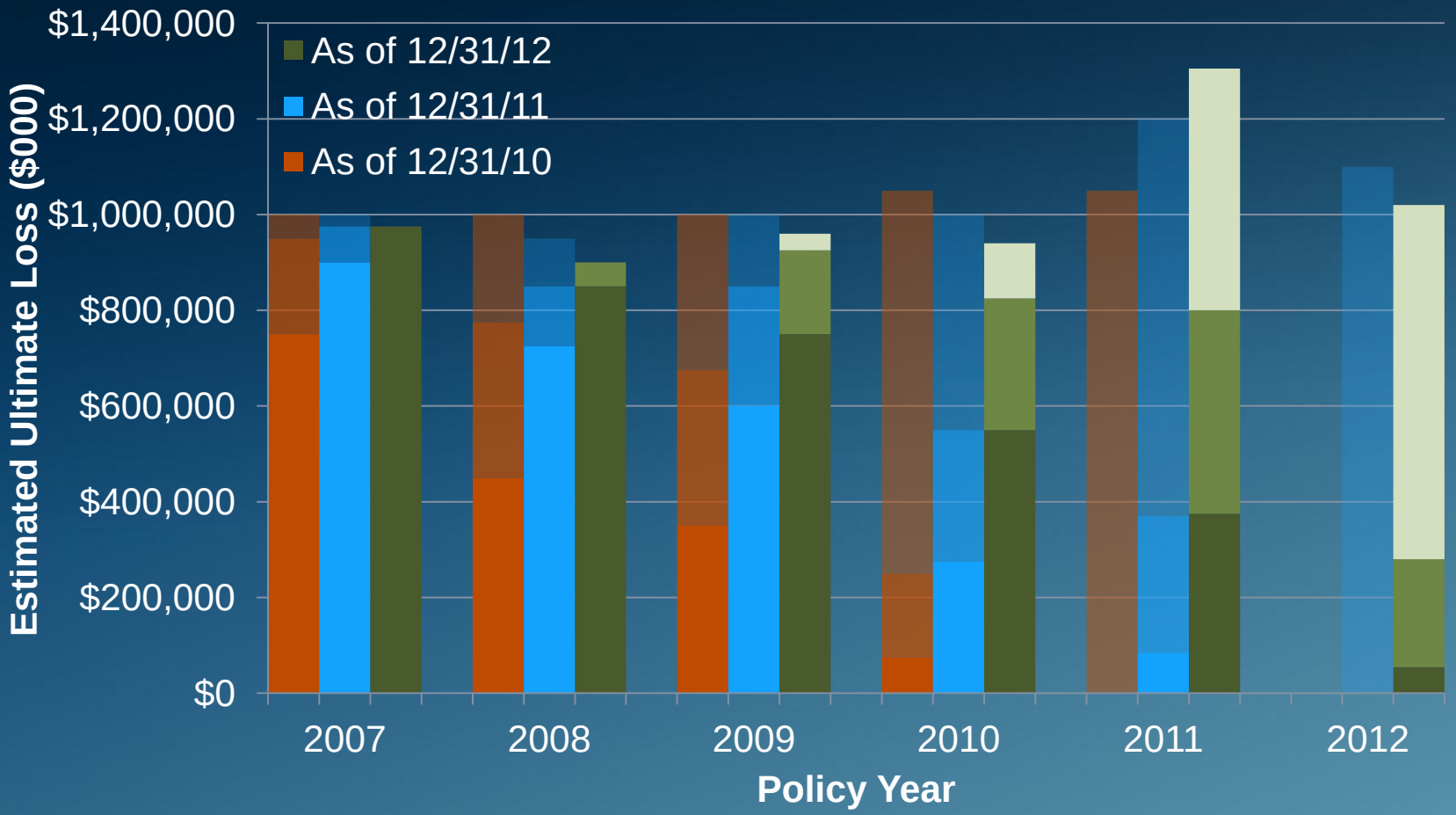
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Severity Method Ultimate Loss Estimate

	(1)	(2)	(3)	(4)	(5)	(6)
Report Year	Preliminary Severity	Trended Average Severity	Preliminary Weight	Trended Average Weight	Selected Ultimate Severity	Selected Ultimate Loss (5)x Claim Counts
2007	$81,000	$80,000	100%	0%	$81,000	$975,000
2008	90,000	84,000	100%	0%	90,000	900,000
2009	80,000	87,000	100%	0%	80,000	960,000
2010	94,000	91,000	100%	0%	94,000	940,000
2011	80,000	94,000	50%	50%	87,000	1,305,000
2012	112,000	98,000	25%	75%	102,000	1,020,000

Note:
1. Amounts Include ALAE.

Comparison of Estimates – Split into Component



Dark = Paid; Medium = Case Reserve; Light = Development / IBNR Reserve

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Reserves as of December 31, 2012

Report Year	(1) Selected Ultimate Loss	(2) Paid Loss	(3) Incurred Loss	(4) Case Reserve (3) – (2)	(5) Development Reserve (1) – (3)	(6) Total Reserve (1) – (2)
2007	$975,000	$975,000	$975,000	$0	$0	$0
2008	900,000	850,000	900,000	50,000	0	50,000
2009	960,000	750,000	925,000	175,000	35,000	210,000
2010	940,000	550,000	825,000	275,000	115,000	390,000
2011	1,305,000	375,000	800,000	425,000	505,000	930,000
2012	1,020,000	55,000	280,000	225,000	740,000	965,000
Total	6,100,000	3,555,000	4,705,000	1,150,000	1,395,000	2,545,000

Note:
1. Amounts Include ALAE.

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Historical Exposure Data

Exposure Year	(1) Average Occupied Acute Beds	(2) Deliveries	(3) Outpatient Surgeries	(4) Outpatient Visits (00s)	(5) Acute Bed Equivalent
2007	230	1,275	2,250	57,000	438
2008	235	1,300	2,175	52,500	429
2009	237	1,150	2,295	53,400	432
2010	230	1,200	2,300	56,750	436
2011	240	1,175	2,245	55,700	442
2012	245	1,150	2,350	57,750	453
Risk Factor:	1.000	0.020	0.005	0.003	

Note:
1. Acute bed equivalent is the sum of each statistic multiplied by the associated risk factors.

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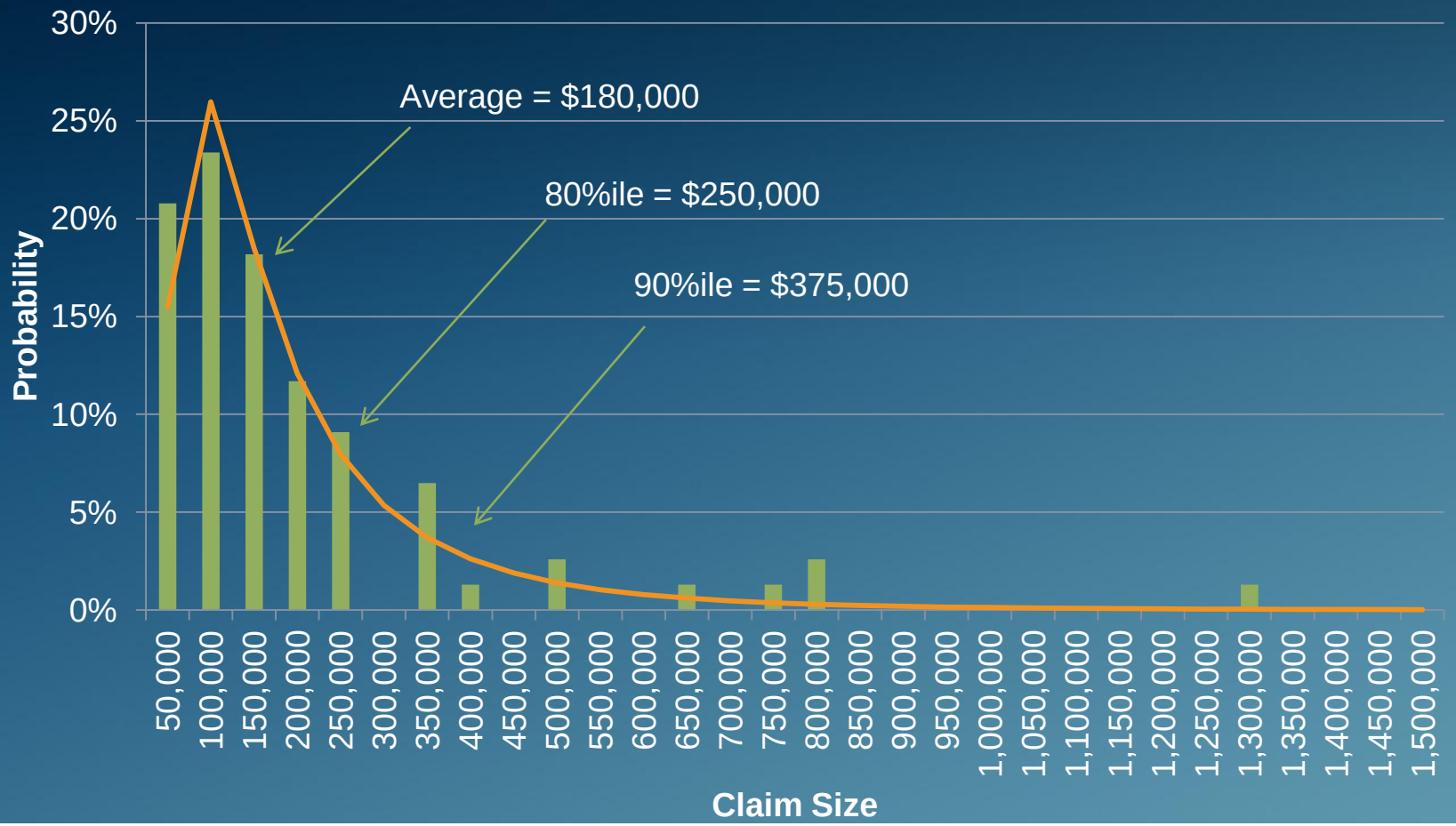
2013 Policy Year Funding

Report Year	(1) Selected Ultimate Loss	(2) Equivalent Exposures	(3) Pure Premium (1) / (2)	(4) Trend Factor	(5) 2013 Level Pure Premium (3) x (4)
2007	$975,000	438	$2,227	1.265	$2,818
2008	900,000	429	2,096	1.217	2,550
2009	960,000	432	2,224	1.170	2,602
2010	940,000	436	2,157	1.125	2,427
2011	1,305,000	442	2,954	1.082	3,195
2012	1,020,000	453	2,252	1.040	2,342
Projected 2013 Pure Premium:					$2,700
Projected 2013 Exposures:					500
Projected 2013 Funding:					$1,350,000

Note:
1. Amounts Include ALAE.

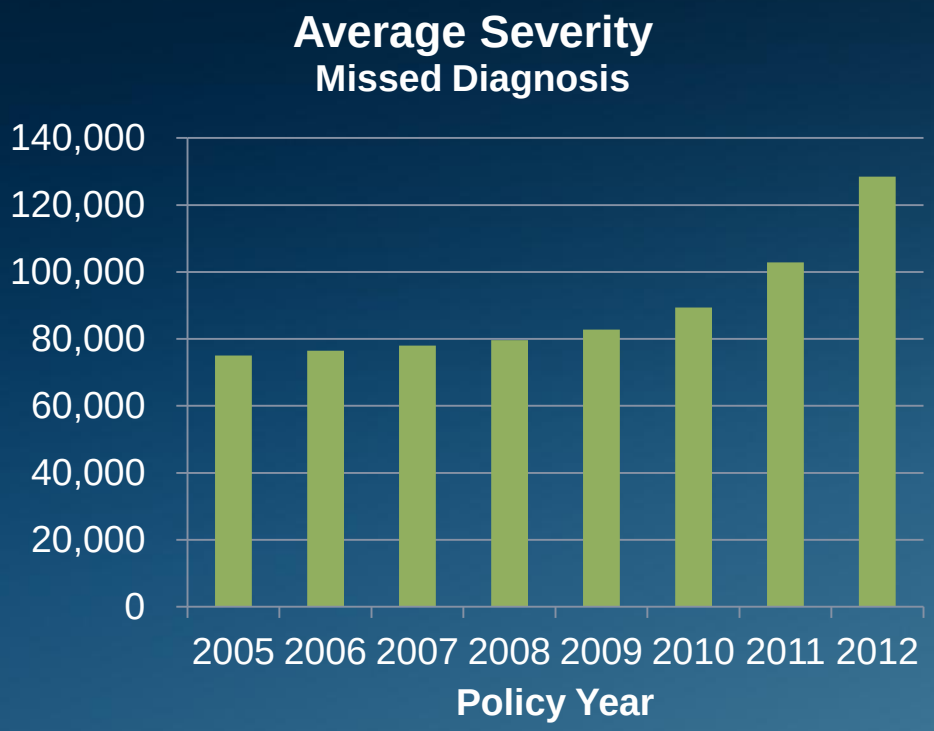
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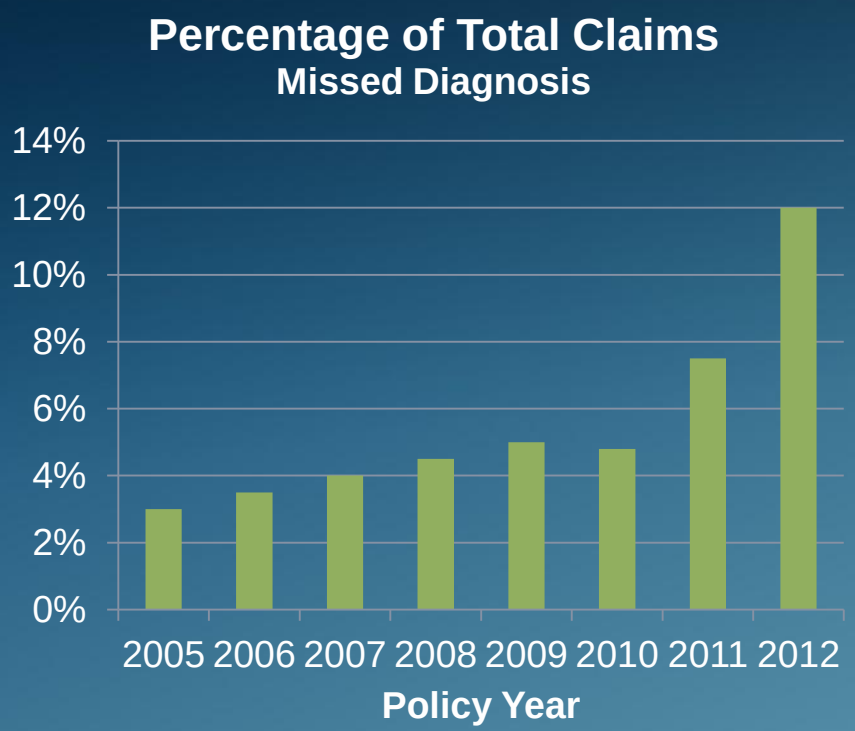
Confidence Level Factors – Insurance Claims Example



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Safety Analytics

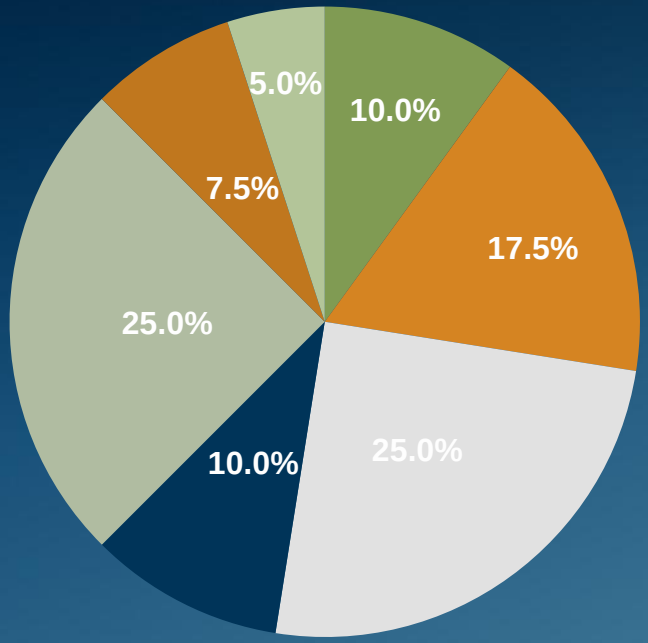




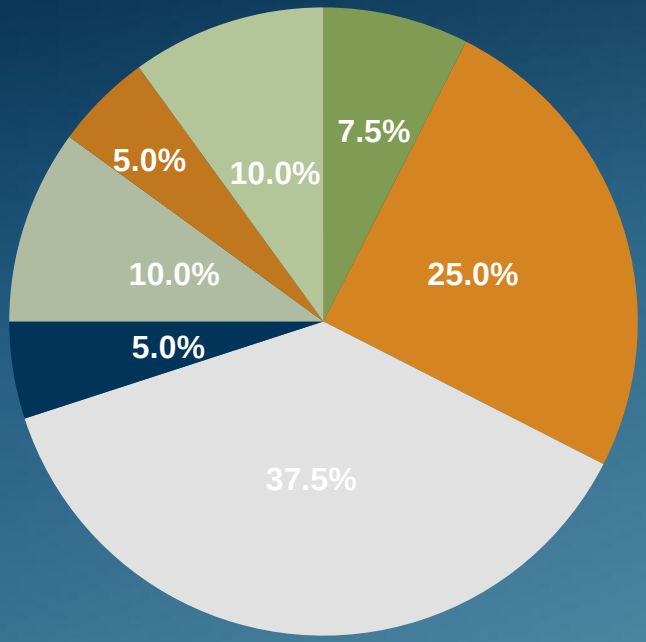
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Benchmarks – By Specialty

Claim Counts



Loss Payments



- Radiology
- ER
- OB/GYN
- Surgery
- Internal Medicine
- Nursing
- Other

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Conclusion

- How Can My Actuary Help With Results?
  - Communicate Trends and Changes with Results
  - Identify loss drivers
  - Allocate to measure risk management goals
  - Negotiate excess/reinsurance insurance rates
  - Benchmark this year to last
  - Assist with risk analysis
- How Can A Risk Manager Help the Actuary?
  - Communicate!
  - Changes in program
    - Claims handling or definitions / Service Providers / Risk Management Programs
  - Concerns with program
  - Expectations with results and/or changes