TOWERS PERRIN

TILLINGHAST

Evaluating Liabilities for Latent Exposures and Mass Torts

2005 Casualty Actuarial Society Spring Meeting

John Yonkunas, FCAS, CFA (presented by Ronald Kozlowski)

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Our engineering colleagues have issues with product design and failure — they use FRACAS

Failure **R**eporting, **A**nalysis and **C**orrective **A**ction **S**ystem

FRACAS provides for

- Collection of accurate data from the lab or field
- Analysis to determine root cause and failure trends
- Determination of corrective actions
- Continuous monitoring
- Support of legacy systems and migration to a common database
- Conveyance of information to drive design innovation

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Our profession is challenged by a lack or paucity of relevant data or recognition of failure

Failure to **R**ecognize **A**nd **C**ontrol **A**ssertions by **S**ociety

FRACAS provides for

- Lack of accurate or complete data from the field
- Backward-looking data analysis
- Late determination of corrective actions
- Anecdotal monitoring
- Inadequate legacy systems
- Lack of early recognition to drive contract language

Common themes in evaluating latent product exposure

Factors affecting the number of claims

- Level of products exposed
- Concentration of population
- Forum and SOL
- Plaintiff bar activity
- Unforeseen coverage extensions

Factors affecting the cost per claim

- Nature and extent of injury
- Ancillary resources for recovery
- Defense strategy
- Court decisions
- Unforeseen coverage extensions

Construction defect had early signs of an emerging exposure to latent injury and mass torts

Factors affecting the number of claims

- Unprecedented population and housing growth
- Stepped-up production
  - unskilled construction labor
  - cheaper materials
  - less supervision
- Aggressive plaintiff's bar

Litigation ensues and presses the insurance industry for coverage that was not expected in pricing

Factors affecting the cost per claim

- Unfavorable legal decisions (discussed later)
- Exposure to large cases
  - construction of multifamily units
  - homeowners associations
- Limitation to property value

CD claims represent a conflagration of complexity

- Definition
- Reporting lag
- Statute of limitations (patent vs. latent)
- Continuous trigger
- Multiple claimants
- Multiple defendants
- Multiple insurance companies
- Litigious environment
- Additional insured endorsements
- Changes in policy form and introduction of exclusions
- Insurer insolvencies

Actuarial Analysis — CD turns out to be a claim count exercise

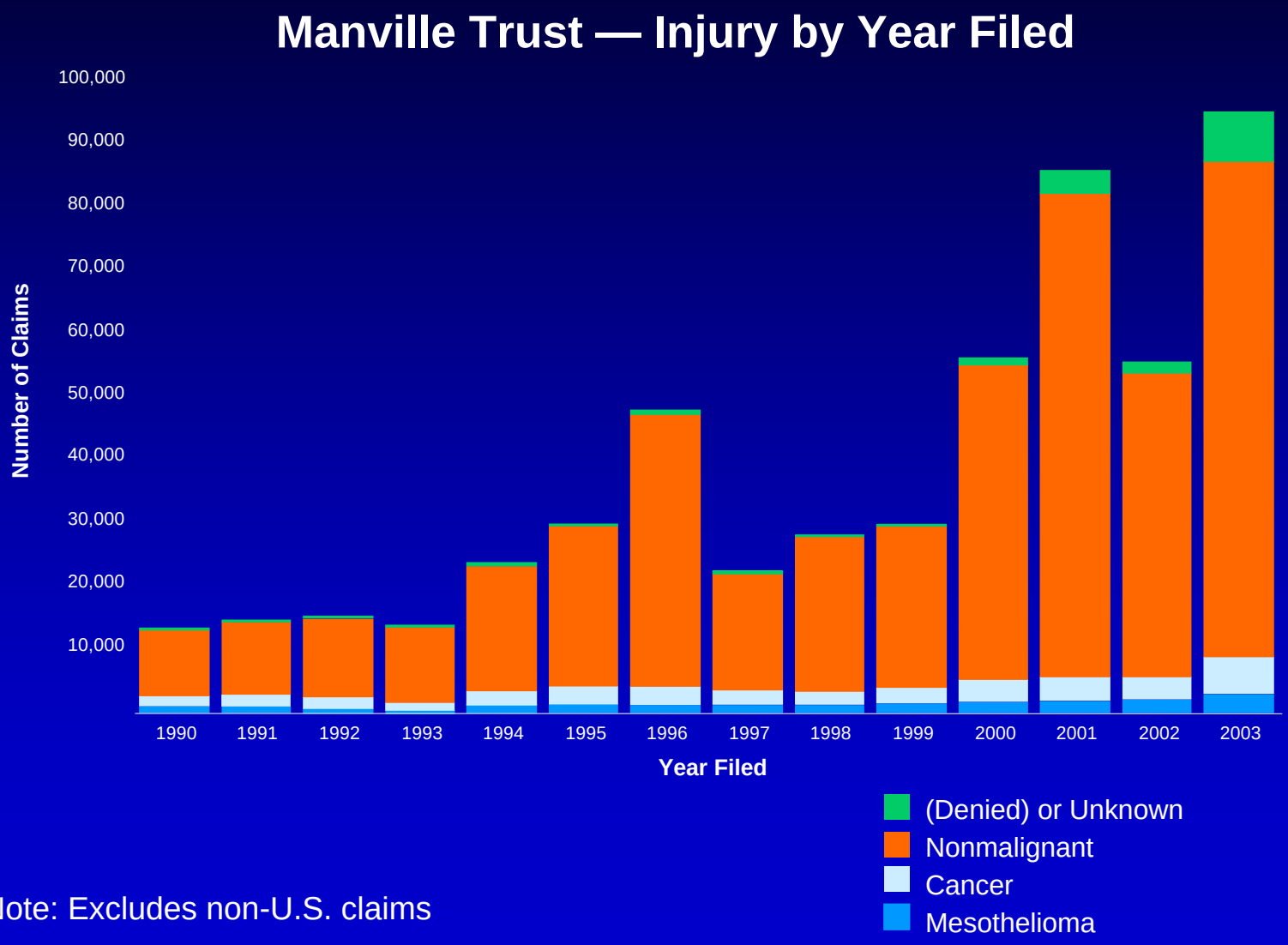
Exposures/underwriting

- Policy year
- California and other states
- Residential vs. commercial
- Developer/contractor vs. subs/artisans
- Changes in mix by SIC codes, class, etc.
- Primary and/or excess
- Endorsements/coverage restrictions
- Premium and exposures
- Other mitigation efforts

Tillinghast's CD "best practice" method

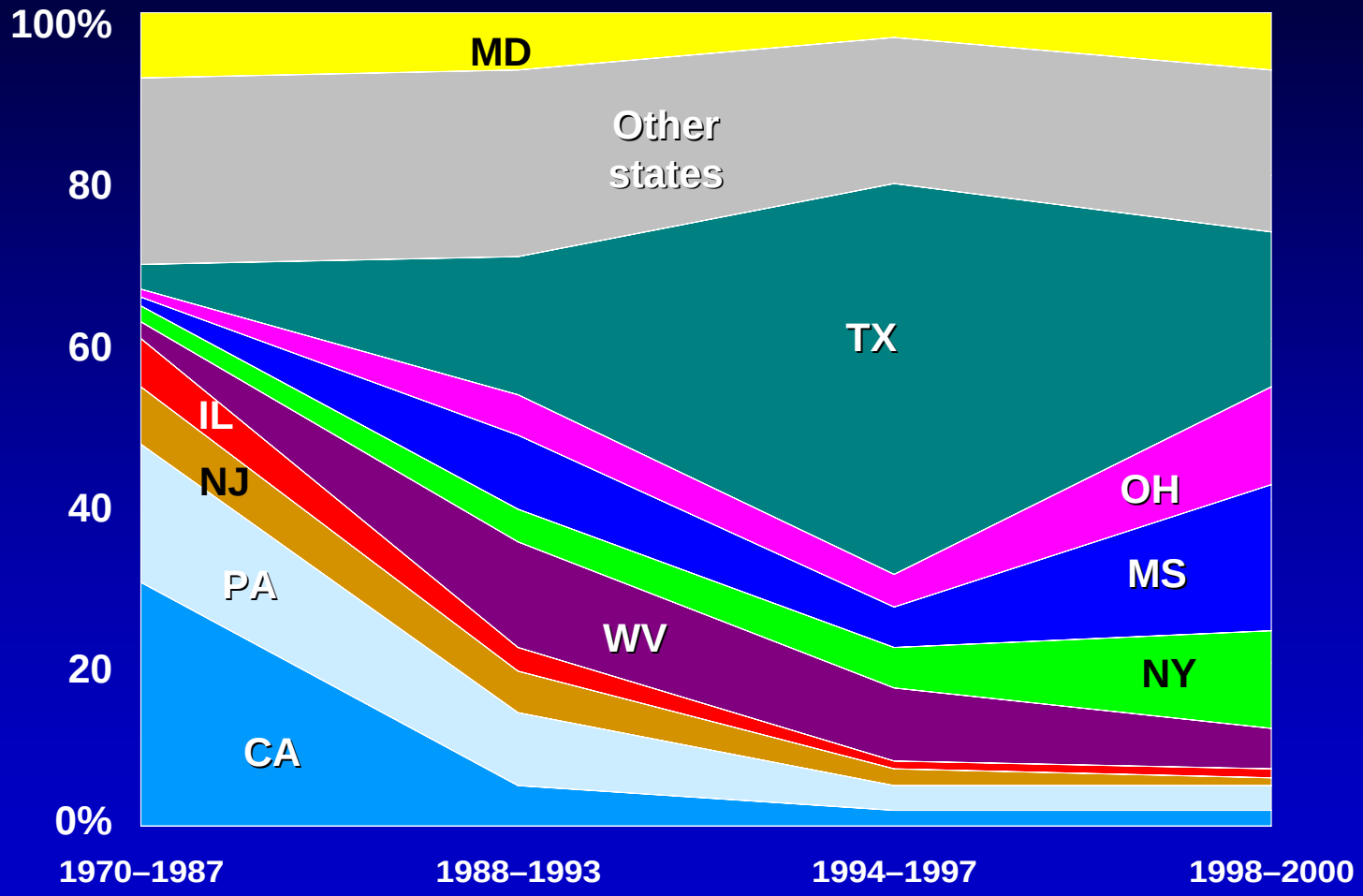
- Once reported, claims settle quickly
- Evaluate the uncertainty in the reported count emergence
- Isolate changes in claims handling
- Best practice is a two-pronged approach
  - Report Year Loss Development for known claims
  - frequency/severity method for IBNR

Asbestos surge in claim filings



Note: Excludes non-U.S. claims

Asbestos evidence of forum shopping



Source: RAND, January 2003

Quantifying asbestos liabilities

Many use benchmarks or rules of thumb

- Market share techniques
- Survival ratio techniques
  - defined as ratio of reserves to average annual payments
  - A.M. Best undiscounted survival ratio of 18 to 20
- Aggregate development
- Comparisons to peer companies

Quantifying asbestos liabilities

- Exposure-based modeling will improve understanding of ultimate A&E liabilities
- For an insurer or reinsurer, it considers
  - mix of insureds
  - types of coverage
    - policy wording
    - attachment points and limits
    - years of coverage
    - claims handling and settlement activities
- Greater understanding equips the defendant, insurer or reinsurer to deal strategically with its exposure

Pharmaceutical exposure analysis for product liability claims

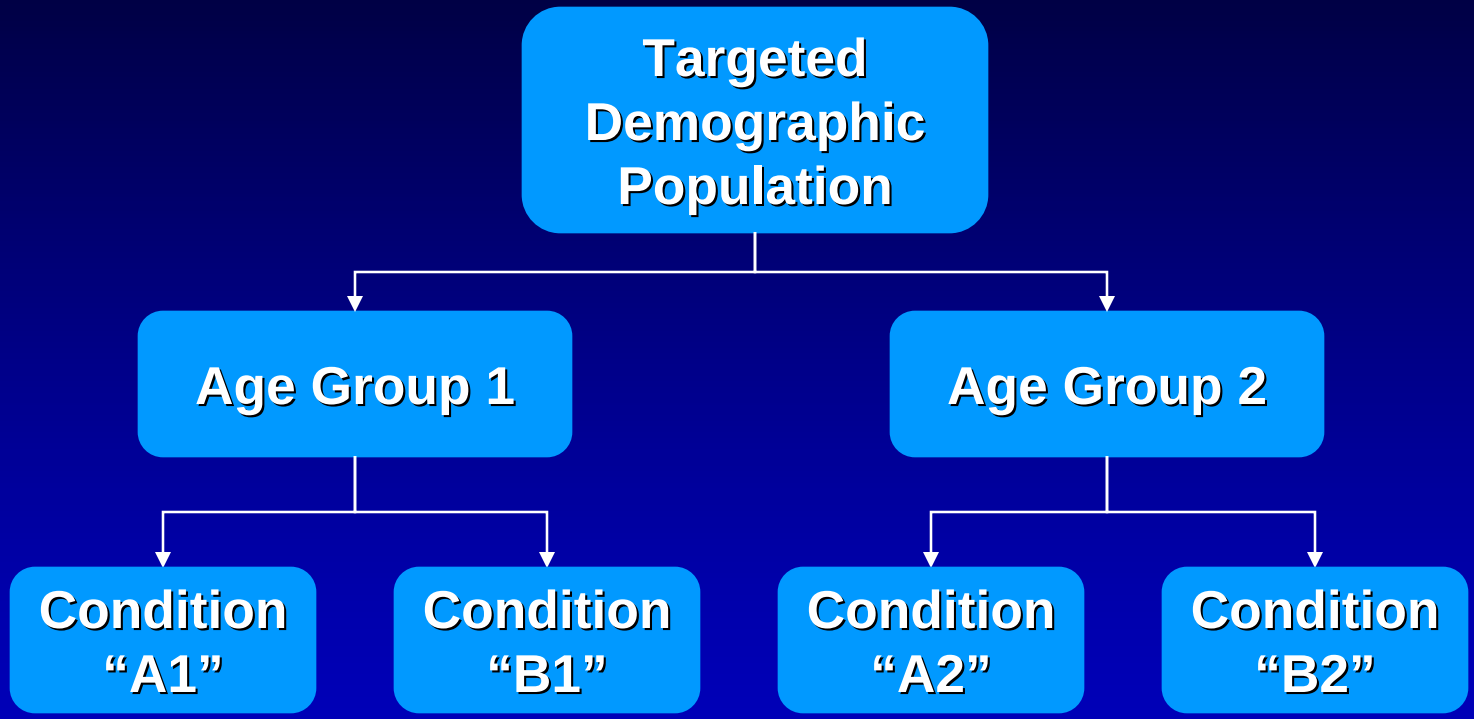
- Socioeconomic-based analysis
- Actuarial-based analysis

Pharmaceutical exposure socioeconomic-based analysis

Steps that comprise an exposure-based analysis

1. Identify exposure to population
2. Use tree diagram to assess the number of claims
3. Use Delphi Technique to assess cost per claim
4. Collapse tree diagram to get expected value
5. Use probability assessments to get a range of estimates

Pharmaceutical exposure — Number of claims via a tree diagram

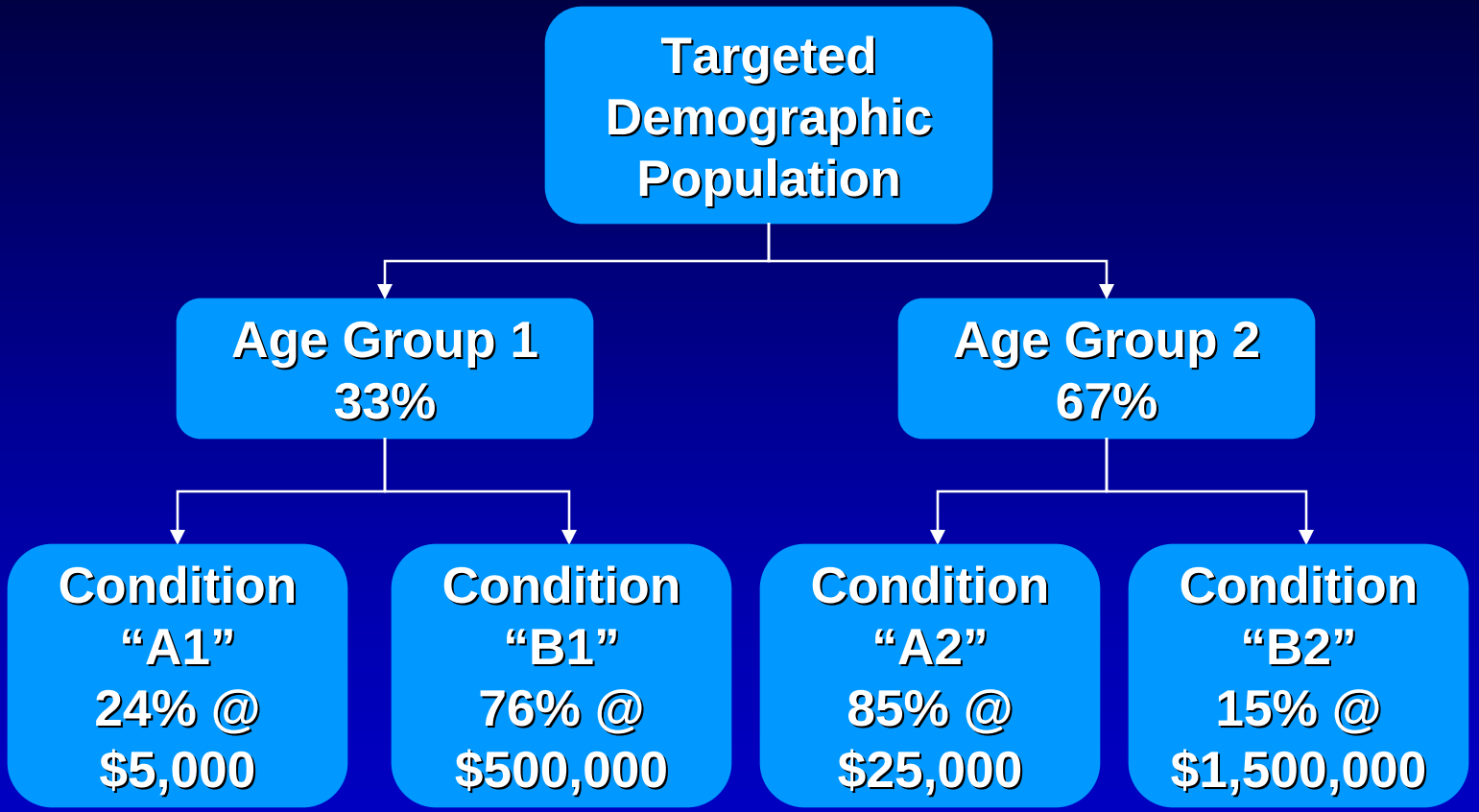


Pharmaceutical exposure — Cost per claim via Delphi Technique

Condition "A1" | **Condition "B1"** | **Condition "A2"** | **Condition "B2"**

- Iterative Method
  - results of the initial survey form the basis of a second, and so on
  - aim is to progressively clarify and define potential costs
- Process
  - identify internal and external experts and information
  - first survey/questions — gain a broad understanding of the views
  - second survey/questions — dig more deeply to clarify specific issues

Pharmaceutical exposure — Convolution of a tree diagram



Pharmaceutical exposure — Actuarial-based analysis for IBNR

- Data available
  - sales — proxy for number of products
  - amount and number of claims by fiscal year
- Approach
  - convert sales to claims-made and tail exposure components
  - use exposures to get weighted LDF and trend
  - determine a composite loss rate for all years combined
  - apply trended loss rate to tail exposure

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Fiscal year ending	Sales ($000)
1/1/1993-12/31/1993	152,500
1/1/1994-12/31/1994	405,600
1/1/1995-12/31/1995	530,000
1/1/1996-12/31/1996	759,500
1/1/1997-12/31/1997	1,150,400
1/1/1998-12/31/1998	1,305,700
1/1/1999-12/31/1999	1,625,000
1/1/2000-12/31/2000	1,875,400
1/1/2001-12/31/2001	2,200,500
1/1/2002-12/31/2002	2,405,000
1/1/2003-12/31/2003	2,606,000
1/1/2004-12/31/2004	1,206,000

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Fiscal year — inception-to-date claims experience

Valuation	Value ($mm)	Number	Average
(1)	(2)	(3)	(4)
12/30/2004	142.54	82	1,738,293

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Fiscal period	Product sales	2000	2001	2002	2003	2004
(1)	(2)	(3)	(3)	(3)	(3)	(3)
1998	1,305,700	130,570				
1999	1,625,000	325,000	162,500			
2000	1,875,400	1,312,780	375,080	187,540		
2001	2,200,500		1,540,350	440,100	220,050	
2002	2,405,000			1,683,500	481,000	240,500
2003	2,606,000				1,824,200	521,200
2004	1,206,000					844,200
4) In-use exposure		0.700	0.200	0.100		
5) Occurrence exposures		$1,768,350	$2,077,930	$2,311,140	$2,525,250	$1,605,900

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Claims-made exposures calculation

Accident period	Occurrence exposures	1999	2000	2001	2002	2003	2004	Tail exposure as of 12/31/2004
(1)	(2)	(3)	(3)	(3)	(3)	(3)	(3)	(4)
1994	314,420	31,442						0
1995	467,370	70,106	46,737					0
1996	678,210	271,284	101,732	67,821				0
1997	1,010,180	202,036	404,072	151,527	101,018			0
1998	1,220,020	122,002	244,004	488,008	183,003	122,002		0
1999	1,513,680	75,684	151,368	302,736	605,472	227,052	151,368	0
2000	1,768,350		88,418	176,835	353,670	707,340	265,253	176,835
2001	2,077,930			103,897	207,793	415,586	831,172	519,483
2002	2,311,140				115,557	231,114	462,228	1,502,241
2003	2,525,250					126,263	252,525	2,146,463
2004	1,605,900						80,295	1,525,605
5) Lag factor		**0.050**	**0.100**	**0.200**	**0.400**	**0.150**	**0.100**	
6) Claims-made exposures		$772,554	$1,036,330	$1,290,824	$1,566,513	$1,829,357	$2,042,841	$5,870,626

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Calculation of ultimate losses
Losses and exposures in thousands
Claims-made basis

Report period	Claims-made exposures	Losses	Reported development factor	Frequency per billion $ exposures	Severity
	(1)	(2)	(3)	(4)	(5)
2000	1,036,330		1.007		1,998
2001	1,290,824		1.022		2,117
2002	1,566,513		1.117		2,244
2003	1,829,357		1.585		2,379
2004	2,042,841		5.179	8.429	2,522
Total	**$9,728,575**	**$142,540**	**1.619**	**8.429**	**$2,188**

Report period	Methods used to project ultimate losses: Freq/sev	Reported LDF	Reported BF	Selected ultimate losses
	(6)	(7)	(8)	(9)
(13) Weights:	0.25	0.25	0.50	1.00
Total	**$179,445**	**$230,810**	**$211,166**	**$208,147**

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Loss costs per exposure unit
Claims-made basis

Report period	Selected losses	Claims-made exposure units	Developed loss costs per exp. unit	Trend factor	On-level loss costs per exp. unit
	(1)	(2)	(3)	(4)	(5)
2000		1,036,330		1.338	
2001		1,290,824		1.262	
2002		1,566,513		1.191	
2003		1,829,357		1.124	
2004		2,042,841		1.060	
Total	$208,147	$9,728,575	0.021	1.243	0.027

Pharmaceutical exposure — Actuarial-based analysis for IBNR (cont'd)

Calculation of IBNR
Valued as of 12/31/2004
(000s)

1) Loss cost	0.027
2) Tail exposures	$5,870,626
3) Estimated IBNR	$158,507

Our profession is challenged by a lack or paucity of relevant data or recognition of failure

Forward **R**ecognition **A**nd **C**ontrol of **A**ssertions by **S**ociety

- Create synthetic data from interviews and Delphi Technique
- Use forward-looking analysis of IBNR
- Take proactive corrective actions
- Position to monitor and modify assumptions
- Focus on early recognition to drive exposure management

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Q&A