



## Focus of the Working Party

- Claims inflation rates differ between:
  - Different countries
  - Different lines of business
- Working Party focussed on:
  - UK Employers Liability
  - UK Public Liability
  - UK Professional Indemnity
  - UK Motor (Bodily Injury and Property Damage)
  - US Medical Malpractice
  - US Professional Indemnity

The Actuarial Profession  
making the most of the future

---

---

---

---

---

---

---

---

## Working Party Survey

- Decided to conduct an extensive survey to gauge the views of actuaries on claims inflation
- Surveys flooded out ...
- ... and trickled back
- How many responses do you think we received?

The Actuarial Profession  
making the most of the future

---

---

---

---

---

---

---

---

# 300?

The Actuarial Profession  
making the most of the future

---

---

---

---

---

---

---

---

# 200?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

# 100?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

# 75?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

# 50?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

# 40?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

# 30?

The Essential Penbook  
making them all come in the same

---

---

---

---

---

---

---

---

20?

The Actuarial Profession  
Modeling the future of the future

---

---

---

---

---

---

---

14!

The Actuarial Profession  
Modeling the future of the future

---

---

---

---

---

---

---

So ...

- Apathy is alive and well within the profession!
- Difficult to draw any definitive conclusions from the results
- But actuaries appear to be using a wide range of claims inflation assumptions

The Actuarial Profession  
Modeling the future of the future

---

---

---

---

---

---

---

## Survey Results - Inflation Assumptions

Class	Min	Max	Ratio	Mean
UK Motor BI	6.0%	12.0%	2.0	8.9%
UK Motor PD	2.5%	6.0%	2.4	3.8%
UK Employers Liability	5.0%	12.0%	2.4	8.4%
UK Public Liability	3.0%	10.0%	3.3	6.9%
UK Professional Indemnity	5.0%	10.0%	2.0	7.5%
US Medical Malpractice	7.5%	15.0%	2.0	10.9%
US Professional Indemnity	5.0%	10.0%	2.0	7.5%

The Acton of Penalties  
Making Them a Part of the Future

## Examples of Current Issues Affecting Claim Frequency

- Compensation culture
- Conditional fee arrangements
- Claim management companies
- Changing weather patterns
- Introduction of penalty points in Ireland
- Merger and takeover activity

The Acton of Penalties  
Making Them a Part of the Future

## Examples of Current Issues Affecting Claim Severity

- Cost and wage inflation
- The Courts Act
- NHS recoveries
- Fixed fees
- Court decisions (eg, pleural plaques)
- Advances in medical science

The Acton of Penalties  
Making Them a Part of the Future

## Measuring Claims Inflation: Considerations

- Model of Frequency or Severity or both?
- Model Type?
  - Proxy
  - Econometric
  - Direct Calculation

The Actuarial Profession  
Modeling the Inflation of Claims

---

---

---

---

---

---

---

## Direct Measurement

- Cohort To Use
  - Underwriting Year, Accident Year, Settlement Year
- Incurred or Settled?
- Individual or Grouped data?
- Measure – Average or Percentile?

The Actuarial Profession  
Modeling the Inflation of Claims

---

---

---

---

---

---

---

## Percentile Method

- Consider individual settled claims by year
- Ignore nil claims
- Select percentile appropriate to cover
- Compare percentile loss from year to year
- Determine inflation from this ratio

The Actuarial Profession  
Modeling the Inflation of Claims

---

---

---

---

---

---

---

## Why Use Percentiles instead of Average?

- Greater statistical stability (for skew distributions)
- For Lognormal distribution the improvement in efficiency as given by CV is very stark

sigma	Ratio of Stddev to mean	Ratio of median to mean	Efficiency (ratio of CVs)
1	1.72	1.65	105%
1.5	4.77	3.08	155%
2	21.58	7.39	292%

The Actuarial Profession  
Modeling the Financial Future

## Burning Cost Approach

- Consider cost to a series of layers from a given cohort of claims (say UW year)
- Fit a suitable distribution to the grouped claims
- Repeat for successive years
- Trend in the scale parameter is the inflation measure

The Actuarial Profession  
Modeling the Financial Future

## Review of Burning Cost Approach

- Pros
  - Use of grouped and capped data reduces individual claim dependence
  - Fits well with requirements of excess reinsurance
- Cons
  - Assumes stable mathematical distribution over time (with just the scale parameter varying)

The Actuarial Profession  
Modeling the Financial Future



## Pitfalls

- Appropriate Measure?
  - Frequency and severity trends
  - Different claims types and size
  - Ground up vs. excess trends
  - Potential for double count

The Actuarial Pitfalls  
Modeling the Difference of the Future

---

---

---

---

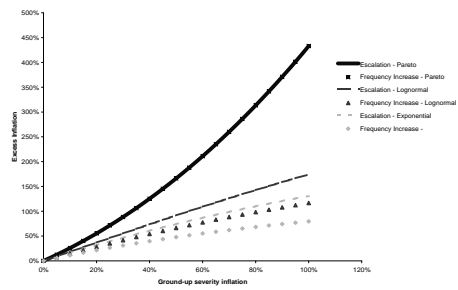
---

---

---

---

## Pitfalls



The Actuarial Pitfalls  
Modeling the Difference of the Future

---

---

---

---

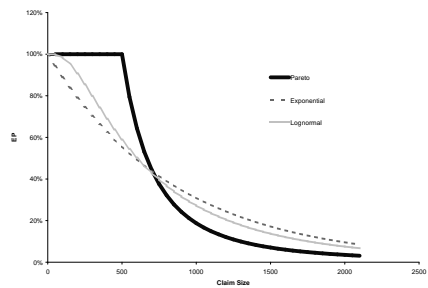
---

---

---

---

## Pitfalls



The Actuarial Pitfalls  
Modeling the Difference of the Future

---

---

---

---

---


---


---

---

## More Pitfalls

- Correctly applying inflation
- Estimating inflation
  - Stable?
  - Credible data
  - Open claims and IBNER

The Actuarial Profession  
making financial sense of the future

The Actuarial Profession  
making financial sense of the future

## Claims Inflation - The Scarlet Pimpernel of Actuarial Work

Simon Sheaf  
Simon Brickman  
Will Forster

GIRO 2005  
19 October 2005