

## Practicalities of Protection Experience Analysis

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Resolution Plc

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## Agenda

- Why?
- Who?
- How?
- Analysing Results
- Assumption Setting
- What next?

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## Purposes of Investigation?

- Setting EV Basis
- Setting Pricing Basis
- Reviewable premiums
- Support Reinsurance tenders
- Issues with business practices
  - E.g. early claims, declined claims?
- Analyse experience by Sales channel eg by IFA, consultant, branch.

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## Who Should Own it?

- Often seen as a less interesting job, and not as important
- Lack of ownership
- Resource often pulled on to other tasks
- Lack of continuity
- Documentation of processes can be poor
- Requires knowledge of many different areas of the business
- Who should own it ?
  - Pricing?
  - Reporting?
  - Stand Alone Team?

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## Mortality or Morbidity Experience Investigation

- Actual over Expected: A/E
- What do you need?
  - A
    - Claims data
  - E
    - Inforce data
    - Basis table
  - Method
- Simple ?

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## Reliability of claims data

- Not all claim information on a valuation extract
- May need to use claim register
- If Manual system errors can arise
  - Wrong claim amount entered
  - Wrong date entered
  - Dates unavailable ( e.g. occurrence date for CI claim)
  - Claim may not have been entered at all
  - Pending claims not updated or rejected claims removed completely
  - Changing Claim Admin procedures
  - Wrong claim type ( e.g. death on a stand alone CI policy)

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## Other Claim Issues

- Claim delays
  - IBNR
  - Decisions pending
  - Register not updated
- Multiple claims
  - E.g. same life on 2 benefits but only recorded as 1 claim
- Partial Claims
  - E.g. Children's claims, ex-gratia payments

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## Practicality: Verifying accuracy of claim data

- Cross reference all data sources
  - Valuation movements extract
  - Claim Register
  - Reassurance recoveries and invoices
  - Accounting Ledger
    - Check all payments out to policyholders above threshold minimum (to avoid having to check refunds)
  - Administration system
    - Suspect claims can be investigated using all admin data available
- **DON'T UNDERESTIMATE THE WORK REQUIRED**

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## Practicality: Allowing for delays

- Could value each pending claim , or
- Develop an Incurred But Not Settled (IBNS) claim development
  - Separate for each benefit
  - Use basic chain ladder development triangles (monthly or quarterly development)
- Captures all delays from occurrence to settlement
- Captures pending and rejected claims
- Assumes all practices and processes constant
  - Can adjust development triangle if believe process has changed
- Be careful with annuities (seasonality)

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## Reliability of Exposure Data (and expected claims)

- Missing Data
  - Is all data available for both lives
  - Smoker status missing
  - Original Sum Assured missing
  - Rated data missing from extract
- Can be practical difficulties due to
  - Legacy systems (Acquisitions, system updates)
    - May need to combine exposure data across different systems

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## Practicality: Allowing for rated Cases when unable to identify in exposure data

- Claim data will include rated and non rated lives
- Legacy system exposure data unable to identify rated lives
- Make assumptions for
  - % of lives rated
  - Average rating %
- Adjust expected upward by multiple of above.

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## Other Practical difficulties

- Industry and product changes
  - Changes in benefit eg CI definition changes
  - Changes in application form
  - Changes in underwriting
  - Change in smoker definition
  - Impact of e-business processes
  - Impact of ICOB regulations
- Economic effects
  - Unemployment, mortgage market etc
- Segregation vs Credibility
- Mix of GIO's and other options being exercised

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## Practicality: Change to IFA regulation

- SP Self Assurance office persistency experience markedly different for regulated and non regulated IFAs
- All IFAs now regulated so how do we adjust past experience to set pricing basis
- Assume all will follow regulated experience ?
- Assume mixture of reg an non-reg experience ?
- Will individual IFA change advise and behaviour because now regulated
- Solution ?

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## Practicality: CI definition changes

- SP Pegasus CI deduction review
- Office experience covers 8 series of product with different CI conditions and definitions
- How do we adjust office experience to set a basis for each series?
  - Group data by similar series (2 groups)
    - Majority of data in 1 large series in each group
  - Set 1 overall basis for each group
    - Assume basis applies to the largest series in the group
  - Adjust basis for each smaller series
    - Use industry research available to give % of overall claims for each condition -  $C_c$
    - If condition not in series overall basis adjusted by  $1/(1+C_c)$

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## Assumption Setting

- What is the purpose?
- What standard/base table?
- How many years average over?
- Allow for trends?
- Best estimate or Prudent Best estimate?
- Granularity in assumptions
- Should you change how you set the assumptions?
- Always be some judgement involved.

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## Trends

- Industry trends
  - CMI experience
  - CMI working parties
- Other external data
- Internal experience trends

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## CMI data

- Key Questions
  - What was the quality of the data?
  - Have the contributors remained stable?
  - Is the population investigated similar to that you are concerned with?
  - Is the past a guide to the future?

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## Other External Data

- For example:
  - Hospital Episode Statistics
  - Office of National Statistics
  - Medical papers e.g. BMJ, Medicine, etc
  - Other actuarial eg NAAJ etc
  - Government, WHO, UN etc
  - Studies eg Framingham, MRFIT, etc
- How relevant is the data to your business?
  - Insured population
  - Definition of illnesses
  - Has the data remained stable over time
- Is the past a guide to the future?

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## Practicality: Internal trends

- Do you really have enough data?
- How is that data affected by other factors?
  - Changes in sales mix inc. types of broker
  - Changes in smoker definition
  - Changes in underwriting e.g. ratings by BMI, changes in own occ CI provision, improved application forms
  - Changes in claims methodology e.g. FOS impacts.
- Are improved claims a change or due to past actions?
- We find it very difficult to substantiate trends.

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## Practicality: How good is the fit?

- First steps. Actual / Expected analysis
  - Lives, amounts
  - For protection consider retained amounts
  - For annuities consider reserves.
- Whole portfolio analysis
- Simple one/two way analysis
- Be careful about dividing data too far, so there is limited data and large confidence intervals - balancing act.

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## Practicality: How good is the fit?

- Factors to analyse
  - Age, sex, smoker status
  - Duration, underwriting year, calendar year
  - Single / joint life
  - Sum assured, premium (for annuity)
  - Sales channel, Commission type, broker type
  - Product features - e.g.
    - Protection - level or decreasing lump sum benefit; TPD definition.
    - Annuity - level and escalating annuity; guaranteed period etc
  - Socio-economic factors - location, occupation,
- Lack of data will lead to a limited breakdown
- Is a difference genuine or due to a underlying mix difference, or another underlying factor?

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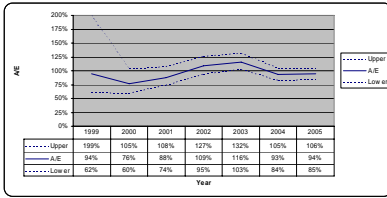
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## Practicality: Confidence Intervals

95% confidence intervals



- What is the trend? Flat, down, up then down?
- Limits =  $A / (E \pm 1.96 * \sqrt{E})$

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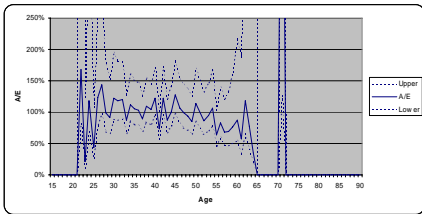
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## Practical: How good a fit is this?



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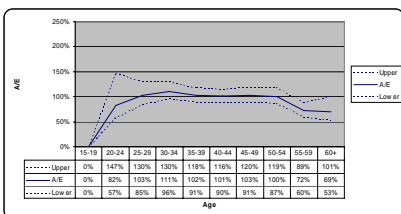
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## Practical: How good a fit is this?



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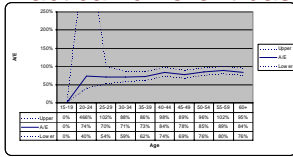
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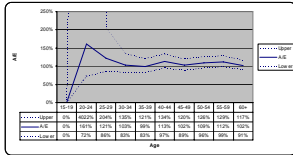
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## Practical: different base tables



100% TMF92



100% TMF00

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## Next Steps

- Other investigations
- GLIM
- ICA and stochastic projections

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## Other investigations

- Cause of claim
- Early Claims
- Underwriting eg e-underwriting, Non Disclosure
- Premium review impact
- Renewable options experience
- Increase options experience
- Experience post reinstatement
- Analysis by IFA
- External data rating eg census data

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## GLIM

- Works better on A/Es than absolute level
- Lack of claims can cause issues with protection business
- Start with a simplistic model
- Do the conclusions look sensible?
- In a more simplistic alternate model. Use grouped data, polynomial functions and a best fit (such as least squares) easily in spreadsheets.

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## ICA

- 3 key areas of uncertainty
  - Current level of claims
  - Future trends
  - Volatility of claims by number and amount
- Simple models can help understand these

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## Summary

### **Experience investigations are generally simple but you need to**

- Understand the data
- Understand the business
- Do lots of checks on data and results
- Be careful over analysing or using over-complicated models.
- Be aware of wider business issues and drivers

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