



The Actuarial Profession

making financial sense of the future

Critical Illness Experience Update

Neil Reynolds - Critical Illness Committee

Agenda

- **CI Investigation Overview**
- **Methodology**
- **Overview of the 1999-2002 data**
- **Claim Dates**
- **Claims Delays**
- **1999-2002 results**
- **Further work**
- **Conclusions**

Critical Illness Investigation Overview

- Investigation started with 1998 data
 - Published results to members for 1998, 1999 & 2000 in 2003
 - Problems in collecting and analysing data for 2001-02:
 - Delays in some offices submitting data
 - A significant number of data re-submissions
 - Data issues have forced us to exclude some offices whose data was used until 2000
 - 2001, 2002 and quadrennium results are being released to member offices in April 2005
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Methodology

- **Collect start- and end-year exposure data and claims settled during year**
 - **Fields required include**
 - **Benefit type (Accelerated / Stand-Alone)**
 - **Gender**
 - **Date of Birth**
 - **Date of Commencement**
 - **Smoker Status**
 - **Benefit Amount**
 - **Product Code**
 - **Sales channel**
 - **Investigation covers Standard Rates cases only**
 - **Census method of calculating exposure**
 - **Comparisons against CIBT93**
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Overview of the 1999-2002 data (1)

- **Data from 16 offices**
- **7.4 million life-years exposure**
 - 6.4 m under Accelerated cover
 - 1.0 m under Stand-Alone cover
- **11,803 claims**
 - 10,310 under Accelerated cover
 - Of which 7,978 are CI claims and 2,332 are Death claims
 - 1,493 under Stand-Alone cover

Overview of the 1999-2002 data (2)

- **Split of exposure data (on lives basis):**
 - **86% Accelerated cover / 14% Stand-Alone cover**
 - **45% Single Life / 55% Joint Life**
 - **53% Male / 47% Female**
 - **80% Non-smoker / 19% Smoker**
 - **Sales Channel –**
Bancassurer 30% / IFA 33% / DSF 29% / Other 5%

Contributing Offices for 1999-2002 data

- Data from 16 offices:

AEGON

AXA

Bupa

Cornhill

HSBC

Liverpool Victoria

Royal Sun Alliance

Standard Life

Allied Dunbar

Barclays Life

CIS

Halifax Life

Legal & General

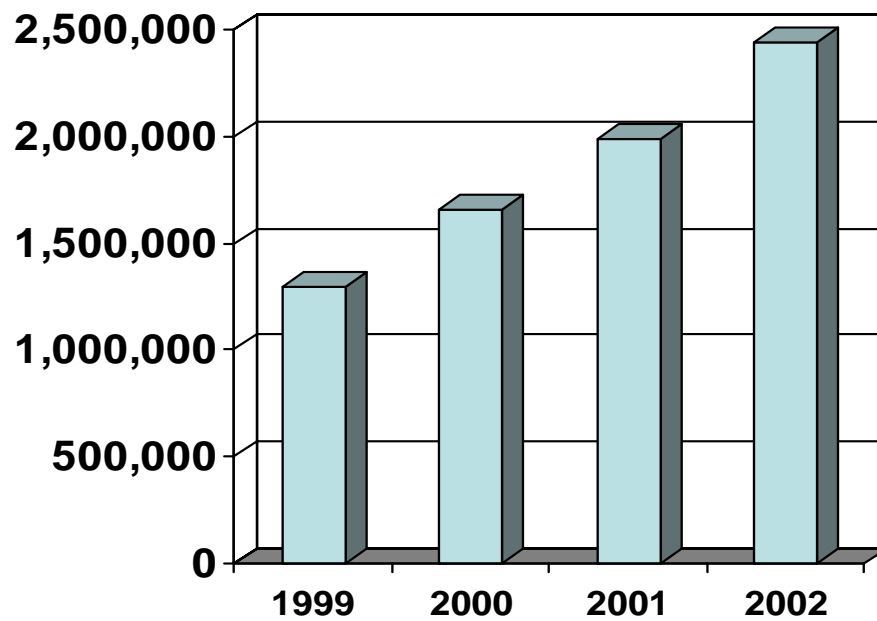
Nationwide Life

Scottish Provident

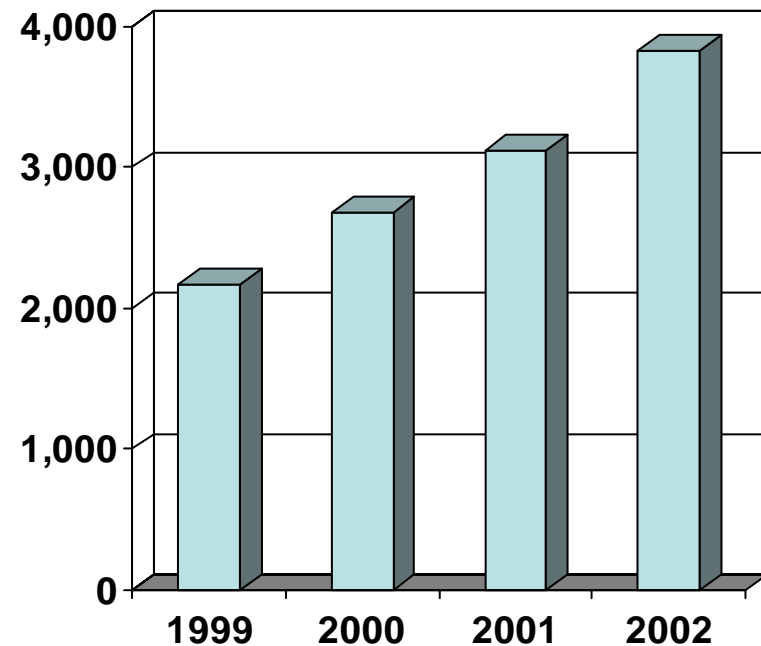
Swiss Life (UK)

1999-2002 data: Distribution of Exposure and Claims by year

Exposure

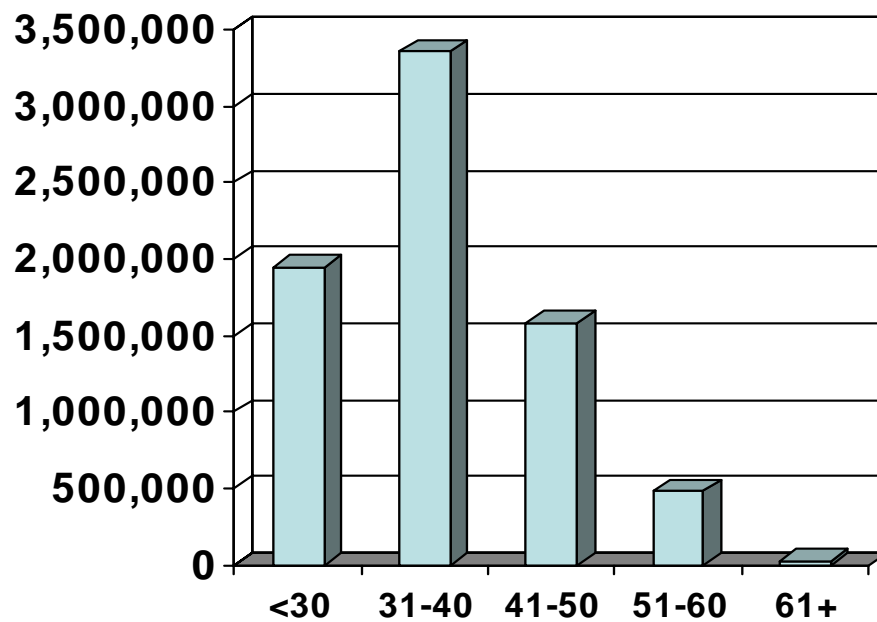


Settled Claims

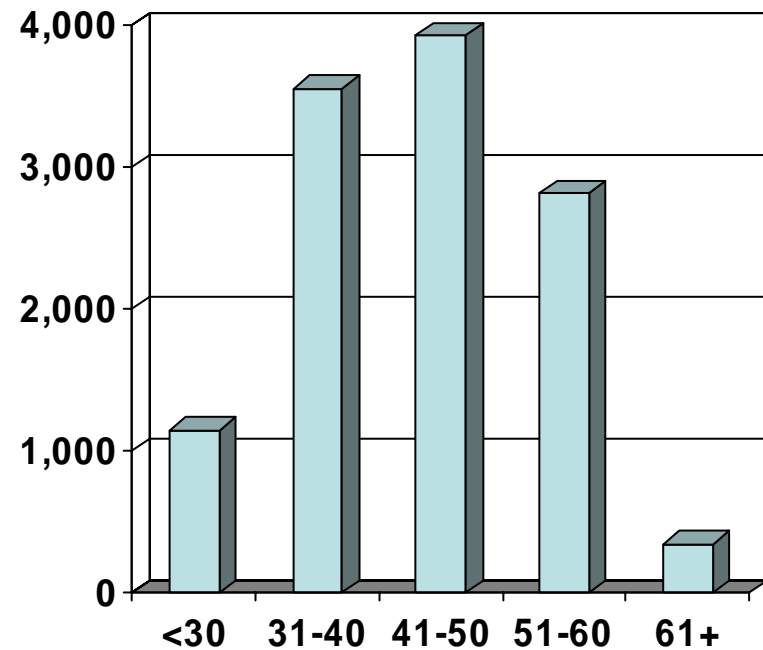


1999-2002 data: Distribution of Exposure and Claims by age band

Exposure

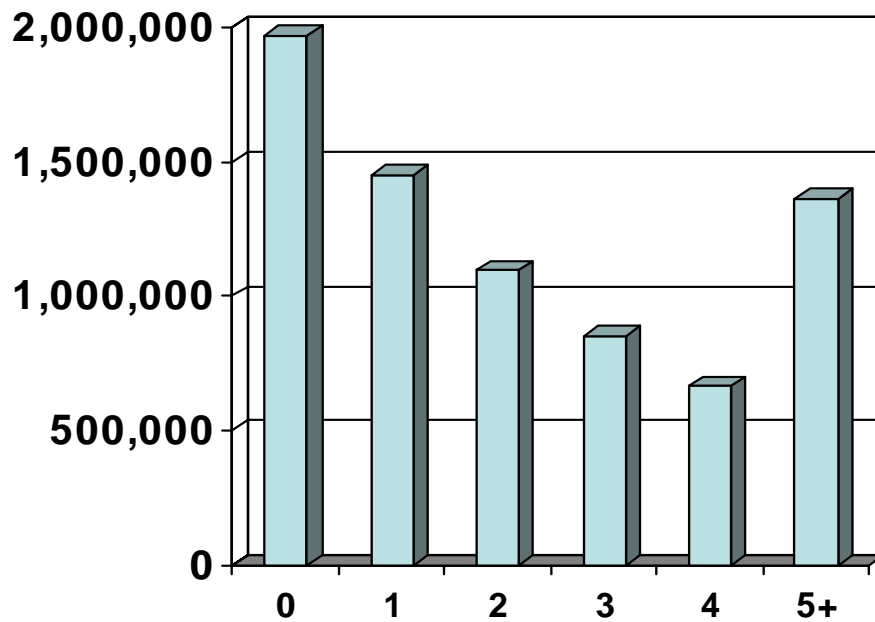


Claims

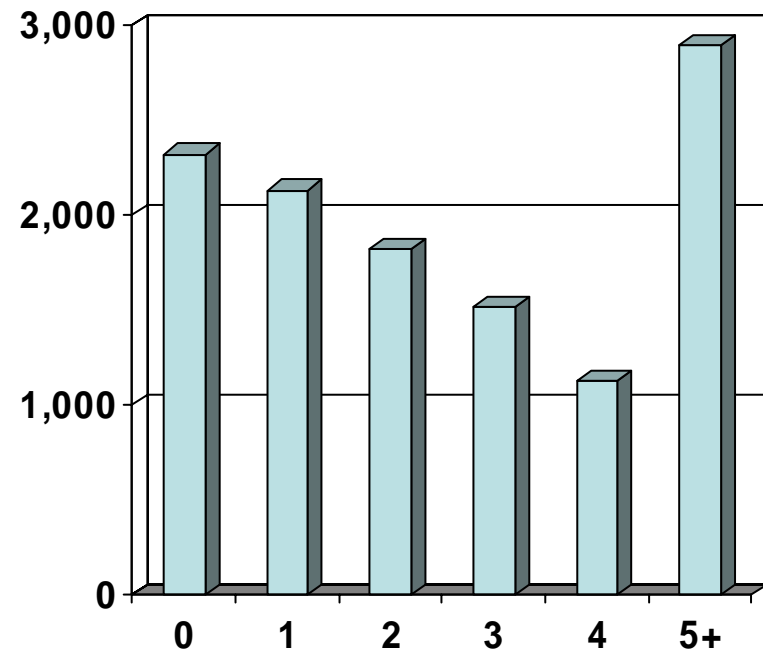


1999-2002 data: Distribution of Exposure and Claims by duration

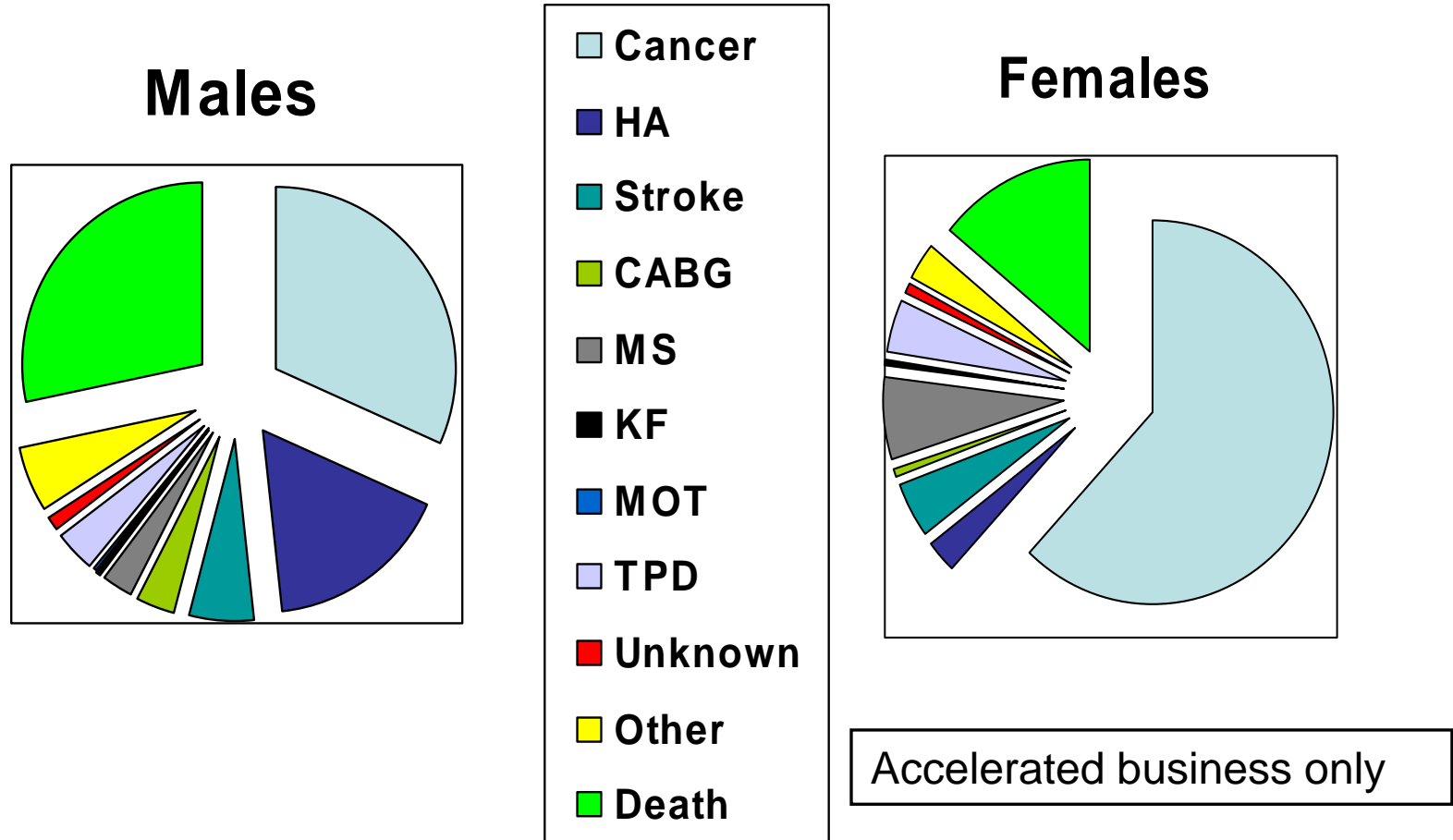
Exposure



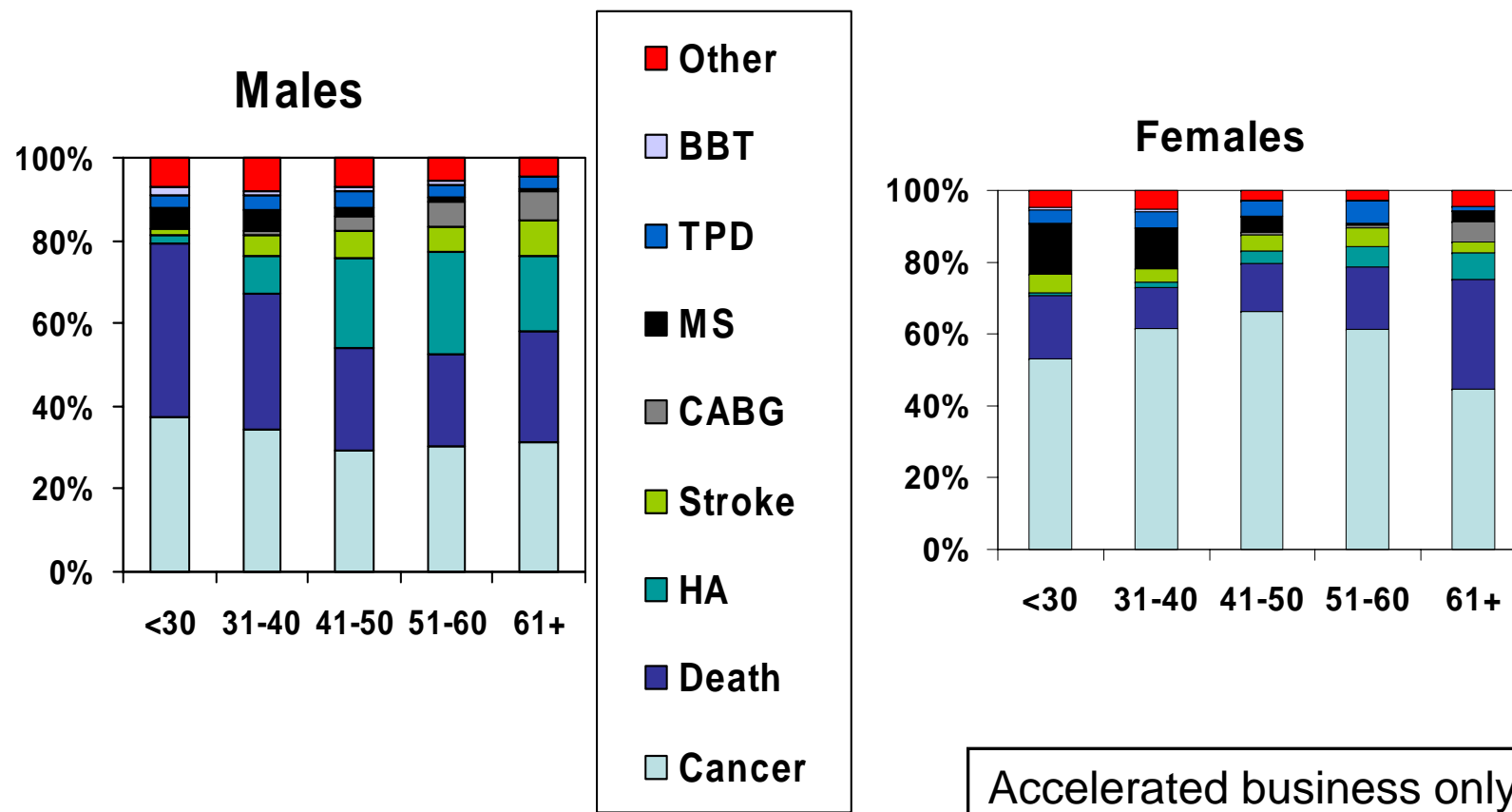
Claims



1999-2002 data: Distribution of Claims by Cause



1999-2002 data: Distribution of Claims by Cause



Claim Dates

- **CMI requested 4 dates for each claim:**
 - Date of Diagnosis
 - Date of Notification
 - Date of Admittance
 - Date of Settlement
- **Committee decided that diagnosis was the most appropriate, as matches exposure and matches the risk incurred by the office**
- **We have date of diagnosis in 56% of claims**
 - In other cases we estimate it from the dates we are given
- **The claims we are analysing are those settled in the quad**

Claim Dates

- **Data problems included:**
 - **Date of Diagnosis before Commencement**
 - These claims have been excluded
 - **Date of Diagnosis = Date of Settlement**
 - These claims have been included with a revised Date of Diagnosis estimated from the Date of Settlement
 - **Date of Diagnosis close to Date of Settlement**
 - These claims have been included without adjustment
- **As a result, the Date of Diagnosis used for each claim is:**

• Actual Date of Diagnosis	56.3%
• Estimated from Date of Settlement	42.3%
• Estimated from Date of Admittance	1.2%
• Estimated from Date of Notification	0.2%

What do we mean by Date of Diagnosis?

- **For some events it has a clear intuitive meaning, e.g. :**
 - Heart Attack
 - Surgery events
 - Death
 - **For Cancer, is it the date symptoms are detected by the GP, or when a diagnosis is confirmed by the consultant?**
 - **ABI definition of MS:**

A definite diagnosis by a Consultant Neurologist of Multiple Sclerosis which satisfies all of the following criteria:

 - There must be current impairment of motor or sensory function, which must have persisted for a continuous period of at least six months.
 - The diagnosis must be confirmed by diagnostic techniques current at the time of the claim.
- So is it when diagnosis obtained or after the 6 months?**
- **Definition may vary between offices or even between assessors within an office**
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Claims Delays

- Approx. observed delays between claim dates:

- Date of Diagnosis



104 days

- Date of Notification



67 days

- Date of Admittance



5 days

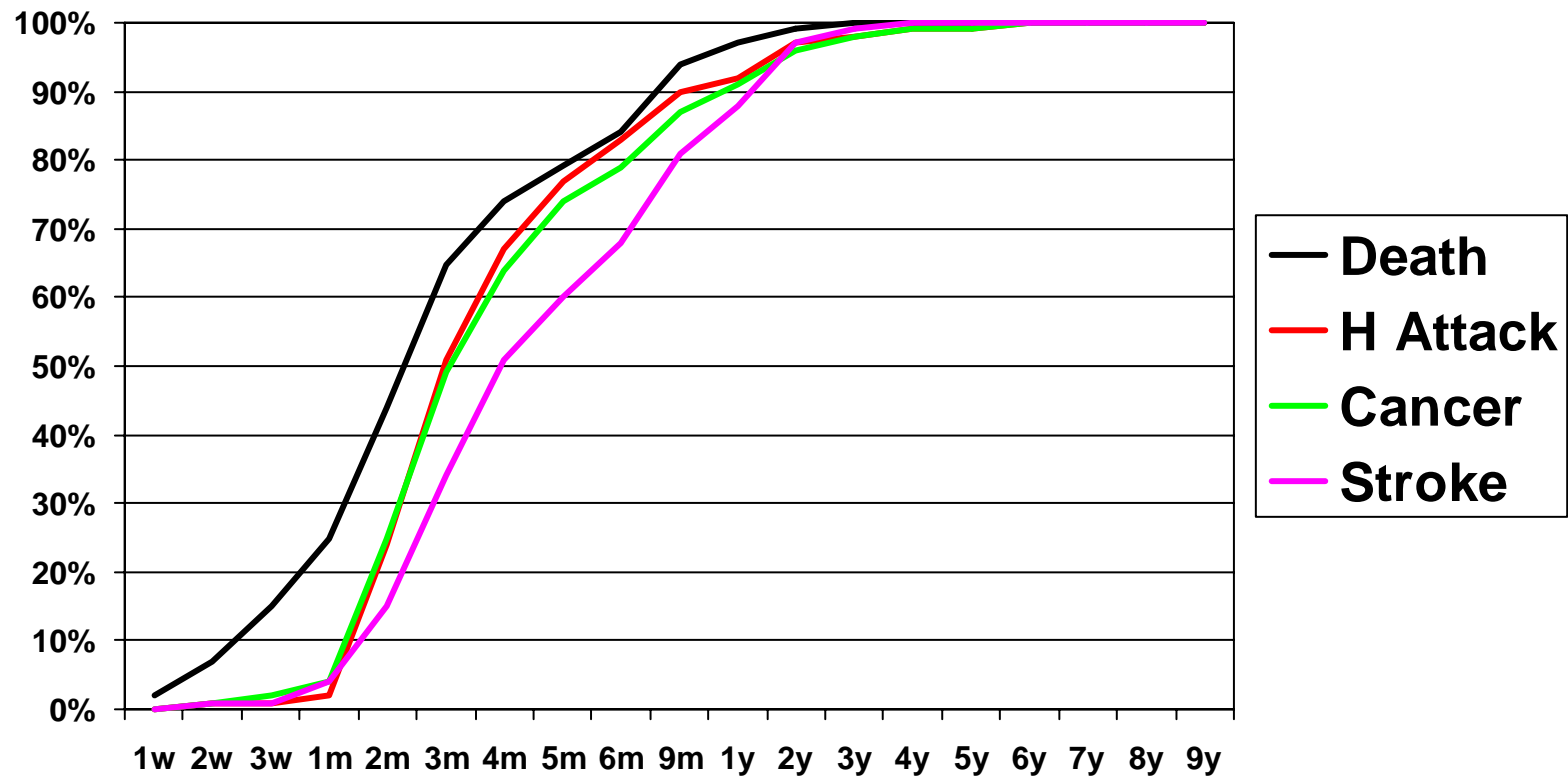
- Date of Settlement

Claims Delays

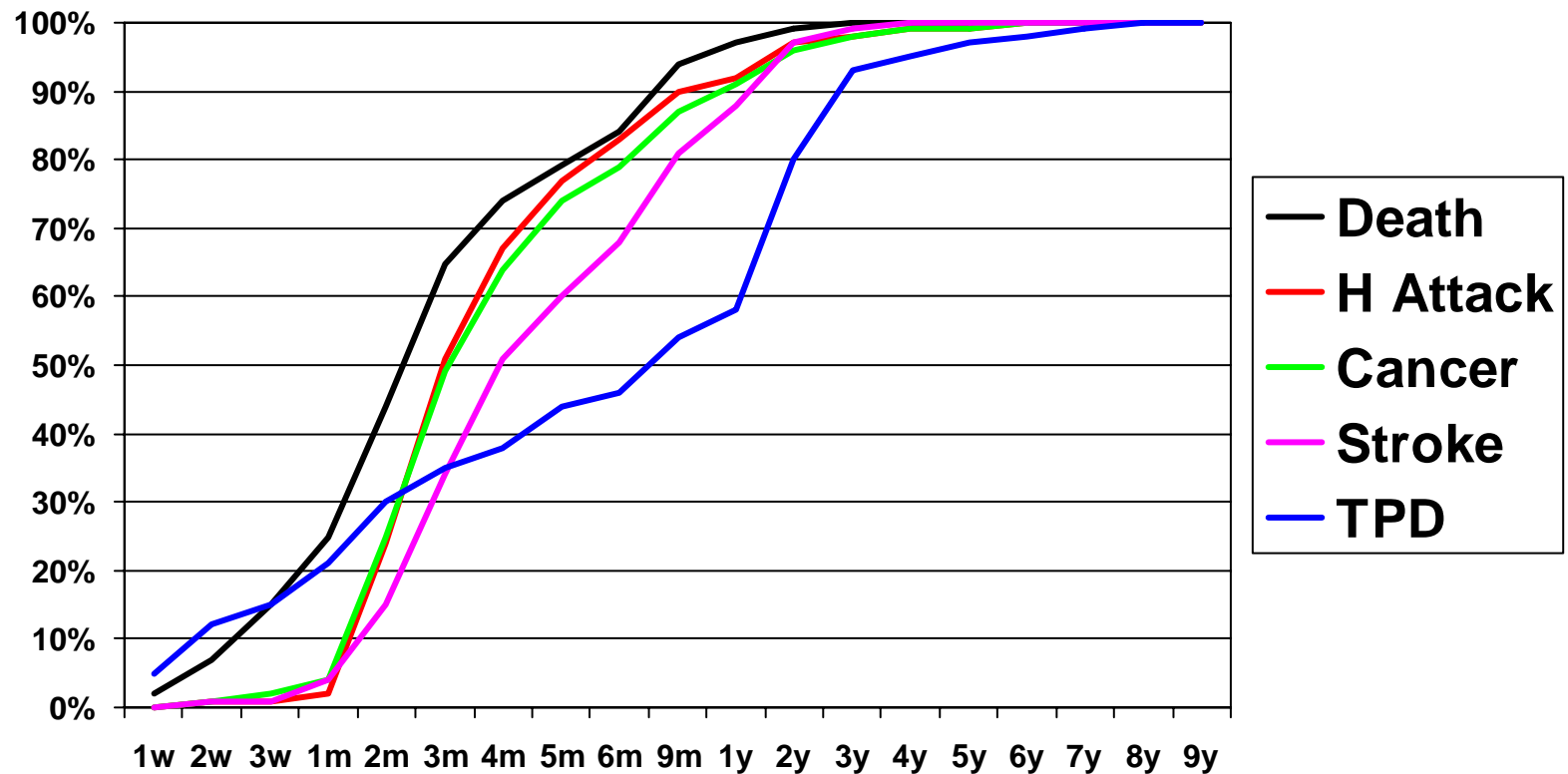
- Approx. observed delays between claim dates:

	Death	CI
• Date of Diagnosis	12 days	127 days
• Date of Notification	83 days	49 days
• Date of Admittance	5 days	5 days
• Date of Settlement		

Observed claim delays by cause



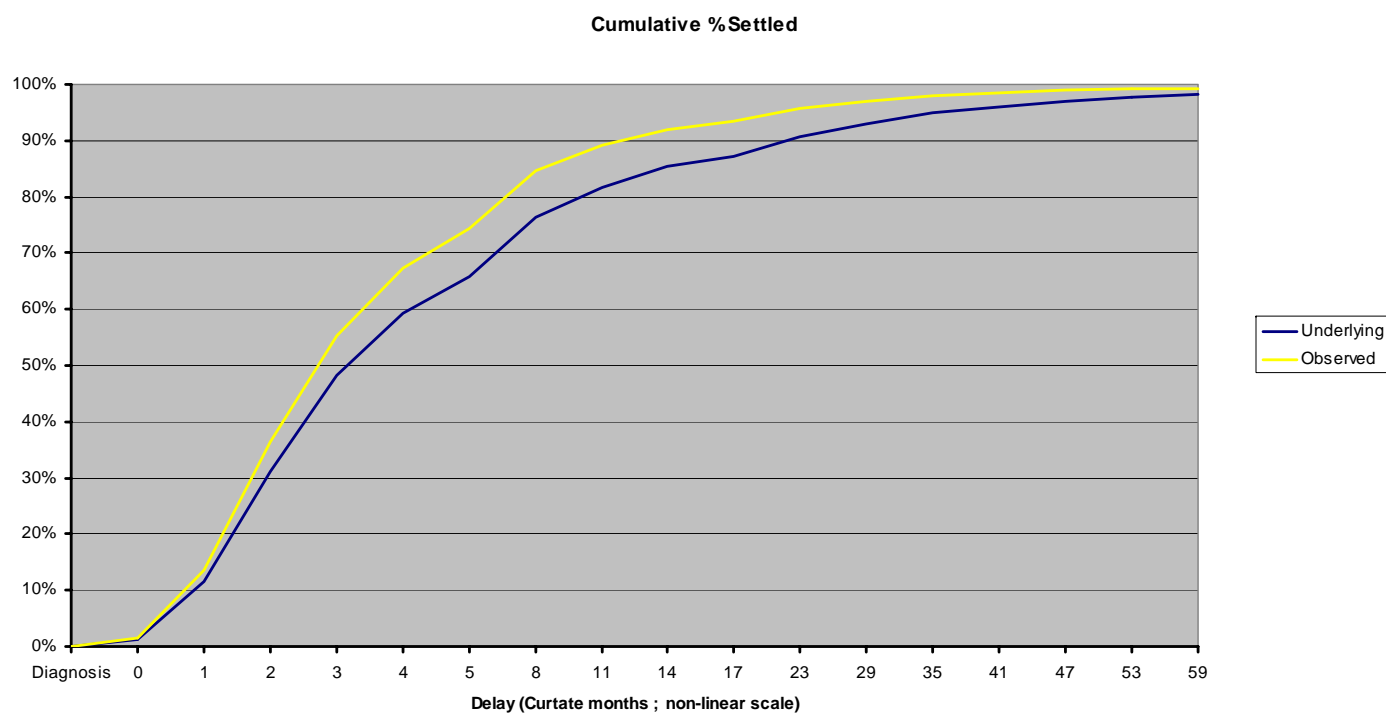
Observed claim delays by cause



Claim Delays

- 1998-2000 analyses used an average delay of 155 days between diagnosis and settlement
- Average delay has lengthened now to 176 days
- We expect it to continue to lengthen until number of claims stabilises. Our model suggests an underlying average delay of around 260 days
- A straight average over-simplifies these effects:
 - We are now differentiating between Death and CI
 - We apply an average based on duration of policy

Observed vs Underlying Claim Delays



Observed Claim Delays (diagnosis to settlement, in days)

Duration of policy at date of settlement	CI	Death
Up to 3 months	53	41
3 – 6 months	82	44
6 – 12 months	104	103
1 – 2 years	125	
2 – 3 years	154	
3 – 4 years	195	
4 – 5 years	234	
5 – 6 years	236	
6 – 7 years	261	
7 years +	298	

Importance of Claim Dates

- The date of diagnosis is used to correctly calculate the age and duration but not to re-allocate claims in or out of the analysis
- This would not be an issue with a stable portfolio
- **BUT VOLUMES HAVE INCREASED RAPIDLY**
- The effect of this is that CMI results are understated by a factor of the order of 15%
- This factor will vary between offices according to the growth rate in their claims portfolio

Grossing Up Factors



1999-2002 Results

Aggregate results, all ages, all durations

		Accelerated	Stand-Alone
Male	Lives	44	48
	Amounts	41	49
Female	Lives	47	52
	Amounts	45	56

1999-2002 Results by Calendar Year

Accelerated business, all ages, all durations, Lives

		1999	2000	2001	2002	Quad
Male	NS	40	39	39	35	38
	Sm	77	73	68	62	69
Female	NS	52	46	42	43	45
	Sm	58	55	57	56	57

1999-2002 Results by Duration

Accelerated business, all ages, all years, Lives

		Dn 0	Dn 1	Dn 2+	All
Male	NS	31	37	41	38
	Sm	64	68	71	69
Female	NS	41	46	46	45
	Sm	45	60	61	57

1999-2002 Results by Age

Accelerated business, all durations, all years, Lives

		<30	31-40	41-50	51-60	61+	All
Male	NS	50	40	36	35	39	38
	Sm	55	60	76	77	56	69
Female	NS	44	48	45	41	31	45
	Sm	49	52	59	63	91	57

Further Work (1)

- **Methodology Paper**
 - Just published as Working Paper 14 on website
 - Seeking feedback by 31st May
- **1999-2002 Results:**
 - Results finalised ... given current methodology
 - Results will be released to offices with explanation of methodology and commentary in next few days
 - Some further analysis outstanding (e.g. product type)
 - Publication will follow receipt of feedback on methodology (and any necessary revisions)
- **Graduation**
 - Aim was to produce a standard table for use in pricing and reserving, but do we have a stable base?

Key issues for Graduation WP

- **Do we include Grossing-Up Factors before graduating?**
- **How do we graduate?**
 - Currently looking mainly at GM and LGM families
- **Do we graduate by cause separately or for all causes combined?**
 - Currently intending to graduate death and non-death separately (but not individual causes)
- **How do we allow for age extremities?**
 - Distinct lack of data above age 60!
 - Looking to blend into adjusted CIBT93 where no insured experience
- **How do we allow for selection and should we?**
 - Normal approach is to graduate the ultimate experience and blend in select but much of our data is select!
 - We are looking at graduating a surface varying by age and duration for each sex/smoker status category
- **Do we graduate Accelerated & Stand-Alone separately?**
 - Currently intending to graduate Accelerated only

Further Work (2)

- **Subsequent years**
 - **Already collecting 2003 data!**
 - **Will attempt to track maturing 1999-2002 experience**
 - **Need to seek consistency of claim recording**

Conclusions from "The First Quadrennium"

- 1999-2002 results are in line with previous results
- Claims are subject to considerable delays
- Offices must make allowance for IBNS
- Grossing-up factor is of the order of 15%
 - But depends on offices' growth in claims



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