



**The Actuarial Profession**

making financial sense of the future

## Critical Illness Experience Trends

*Dave Grimshaw*

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# CMI Critical Illness – “The first quadrennium”

*Dave Grimshaw*

*Chairman, CMI Critical Illness Committee*



# CMI Critical Illness Investigation

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- 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
  - Aim to release 2001, 2002 and quadrennial results in February 2005
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# Agenda

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

# Methodology

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- **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)

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- **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)

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- **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 28% / Other 6%**

# Contributing Offices for 1999-2002 data

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- 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**

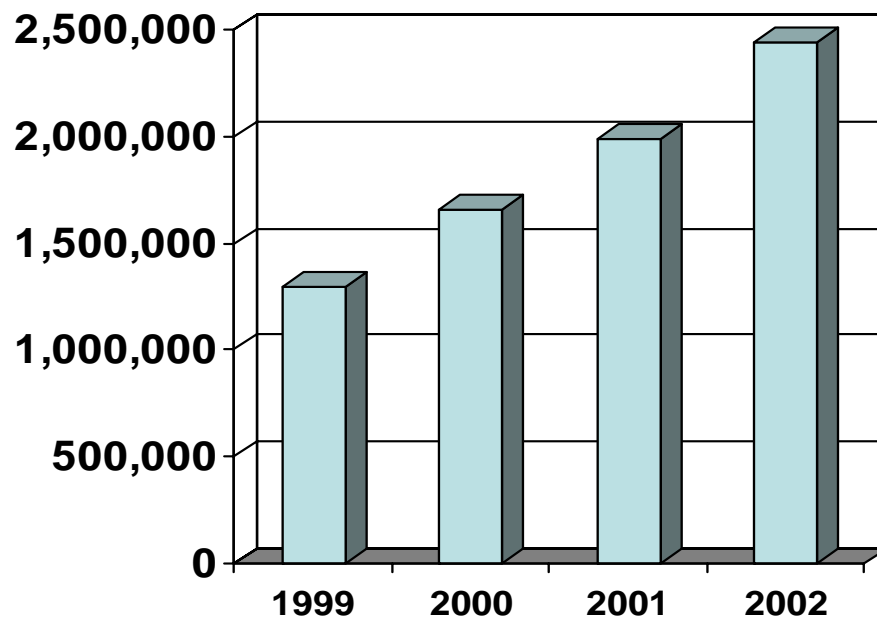
**Swiss Life (UK)**



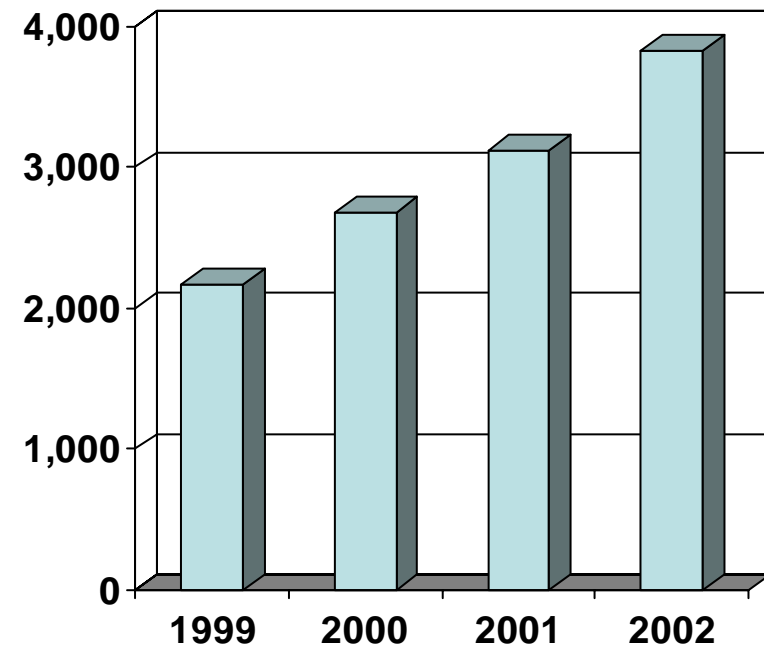
# 1999-2002 data: Distribution of Exposure and Claims by year

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Exposure



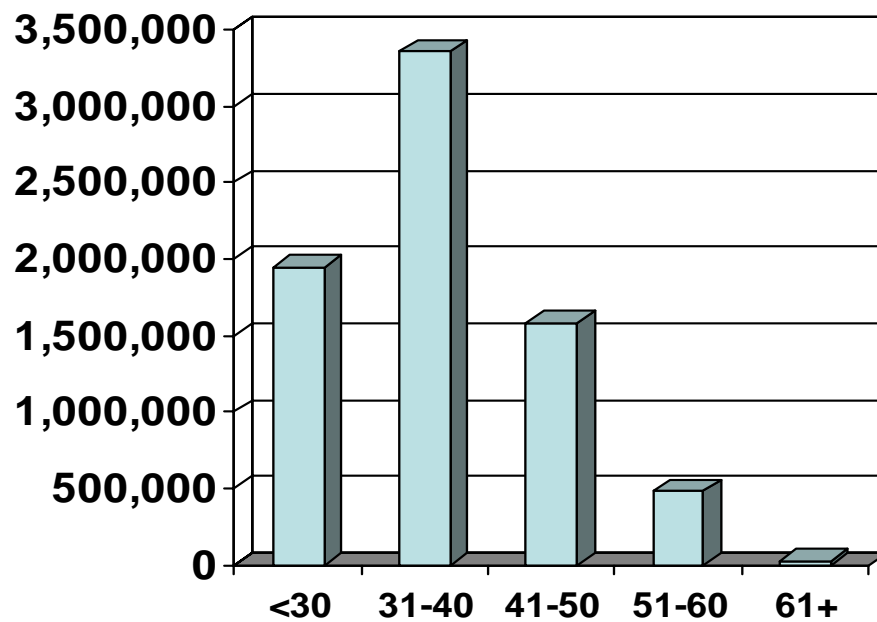
Settled Claims



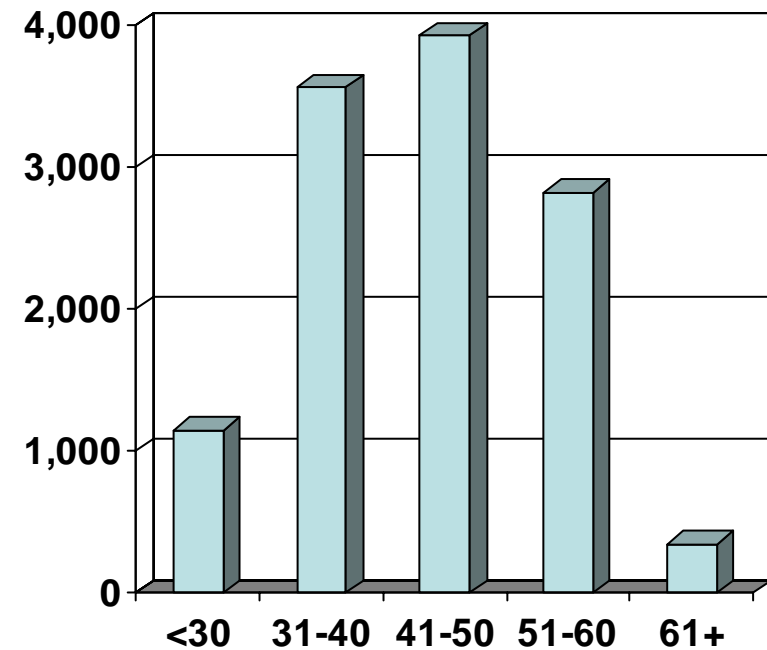
# 1999-2002 data: Distribution of Exposure and Claims by age band

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Exposure



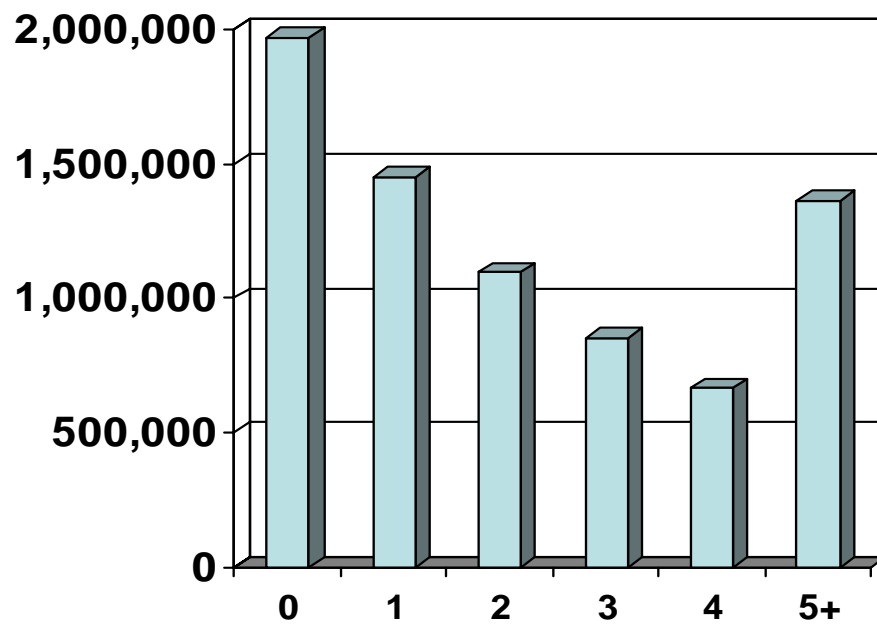
Claims



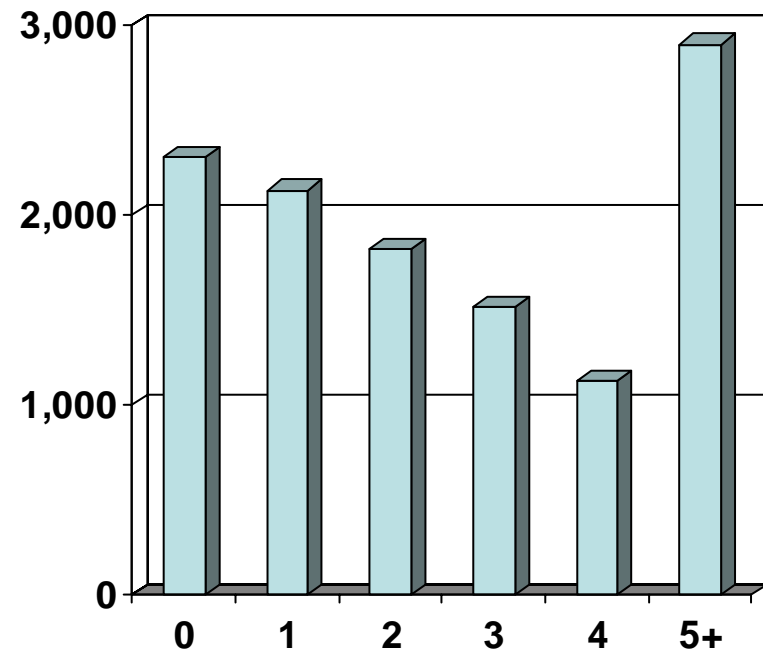
# 1999-2002 data: Distribution of Exposure and Claims by duration

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Exposure

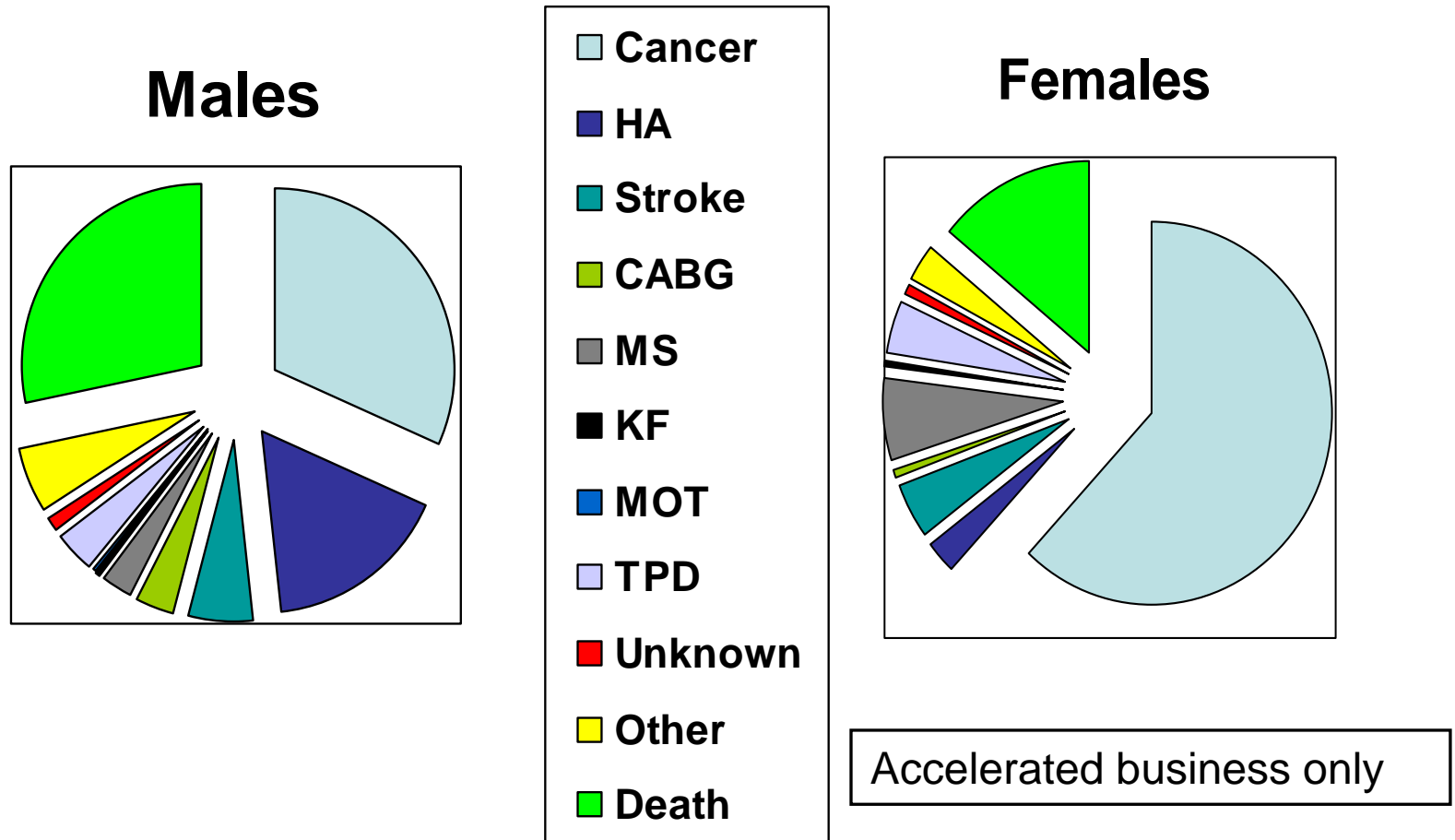


Claims



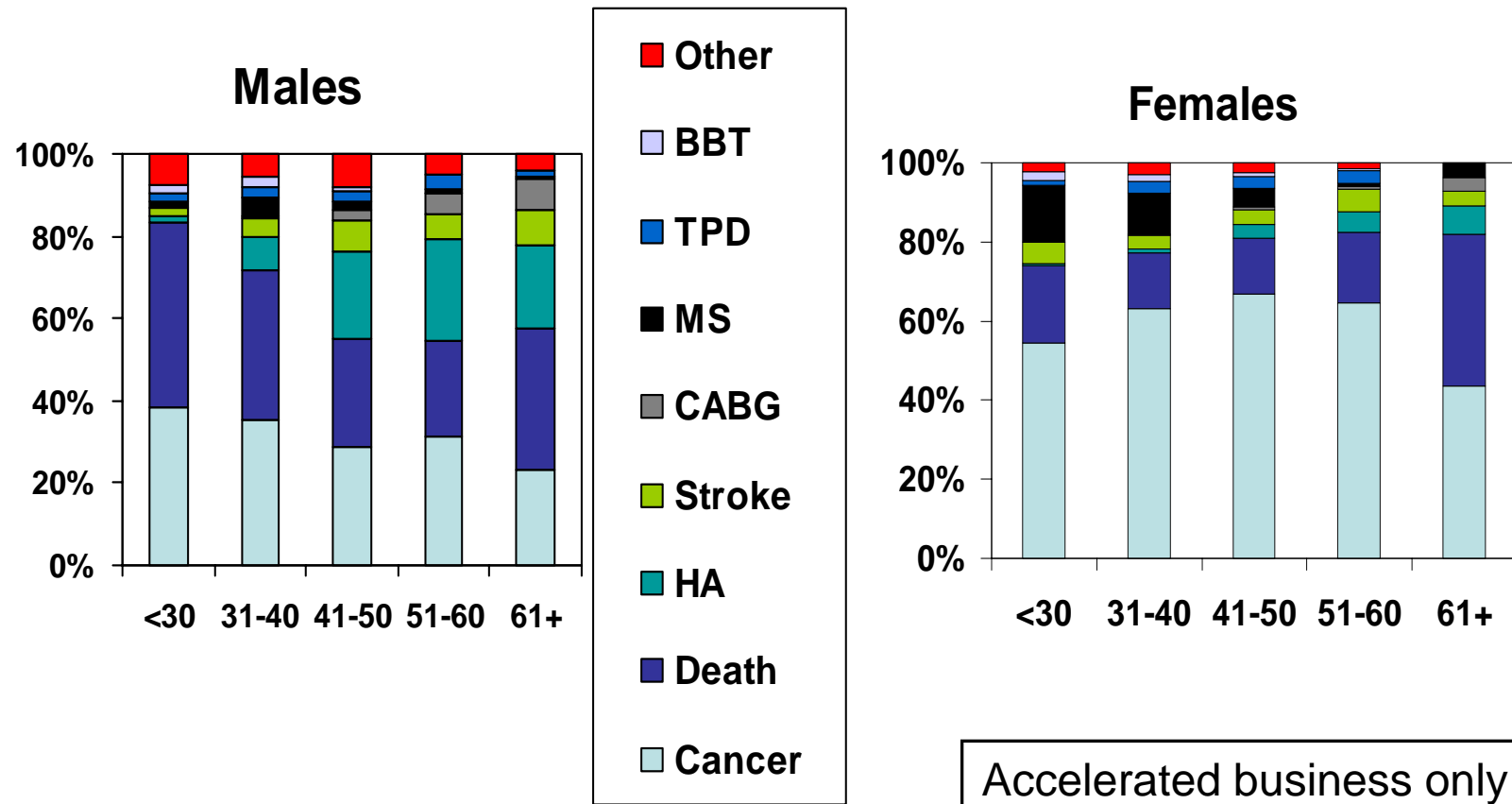
## 1999-2002 data: Distribution of Claims by Cause

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## 1999-2002 data: Distribution of Claims by Cause

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# Claim Dates

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- **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

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- **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:**

• <b>Actual Date of Diagnosis</b>	<b>56.3%</b>
• <b>Estimated from Date of Settlement</b>	<b>42.3%</b>
• <b>Estimated from Date of Admittance</b>	<b>1.2%</b>
• <b>Estimated from Date of Notification</b>	<b>0.2%</b>

# What do we mean by Date of Diagnosis?

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- **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

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- Approx. observed delays between claim dates:

- Date of Diagnosis



114 days

- Date of Notification



55 days

- Date of Admittance



7 days

- Date of Settlement

# Claims Delays

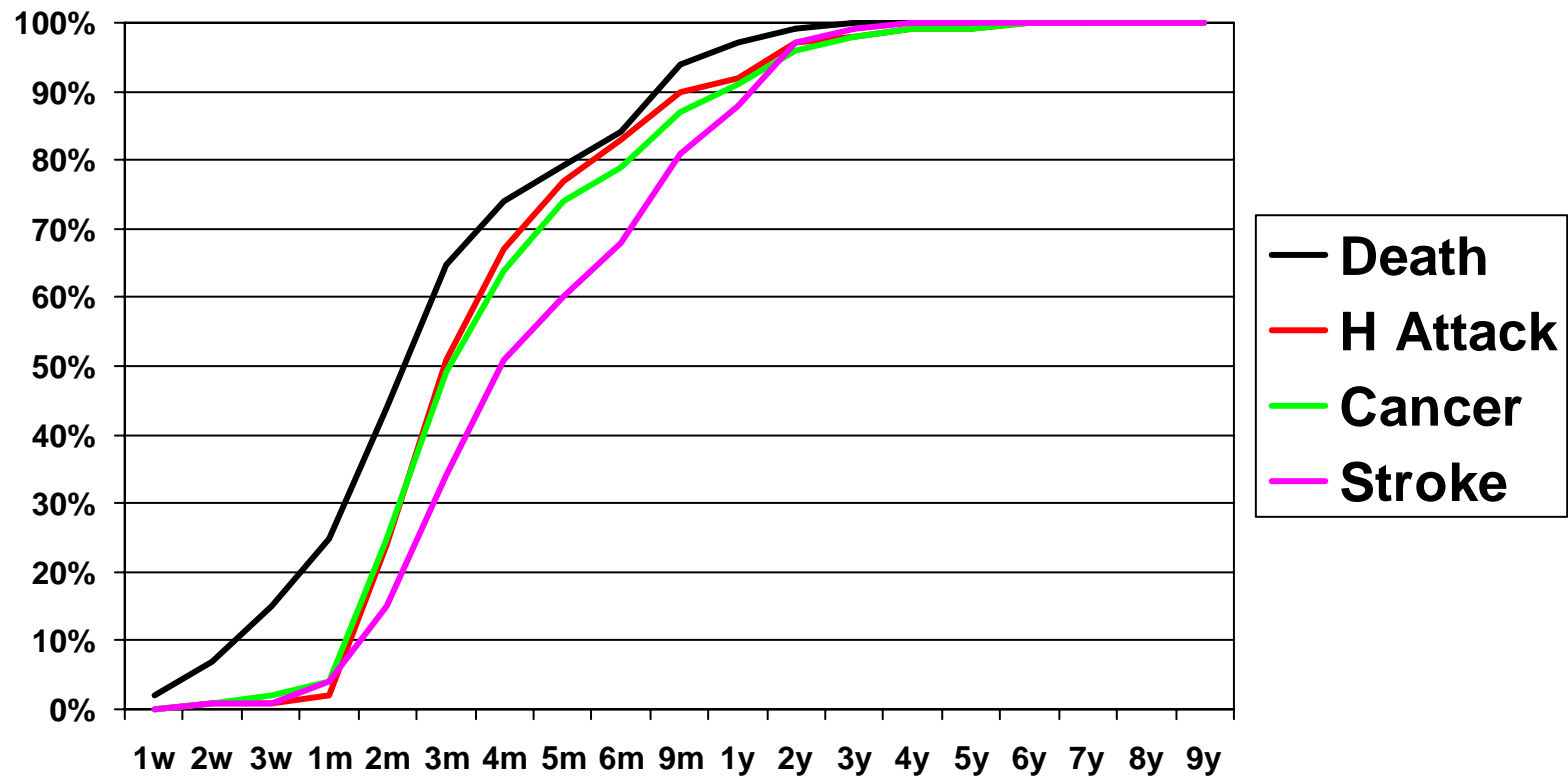
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- Approx. observed delays between claim dates:

	Death	CI
• Date of Diagnosis	12 days	127 days
• Date of Notification	78 days	48 days
• Date of Admittance	10 days	5 days
• Date of Settlement		

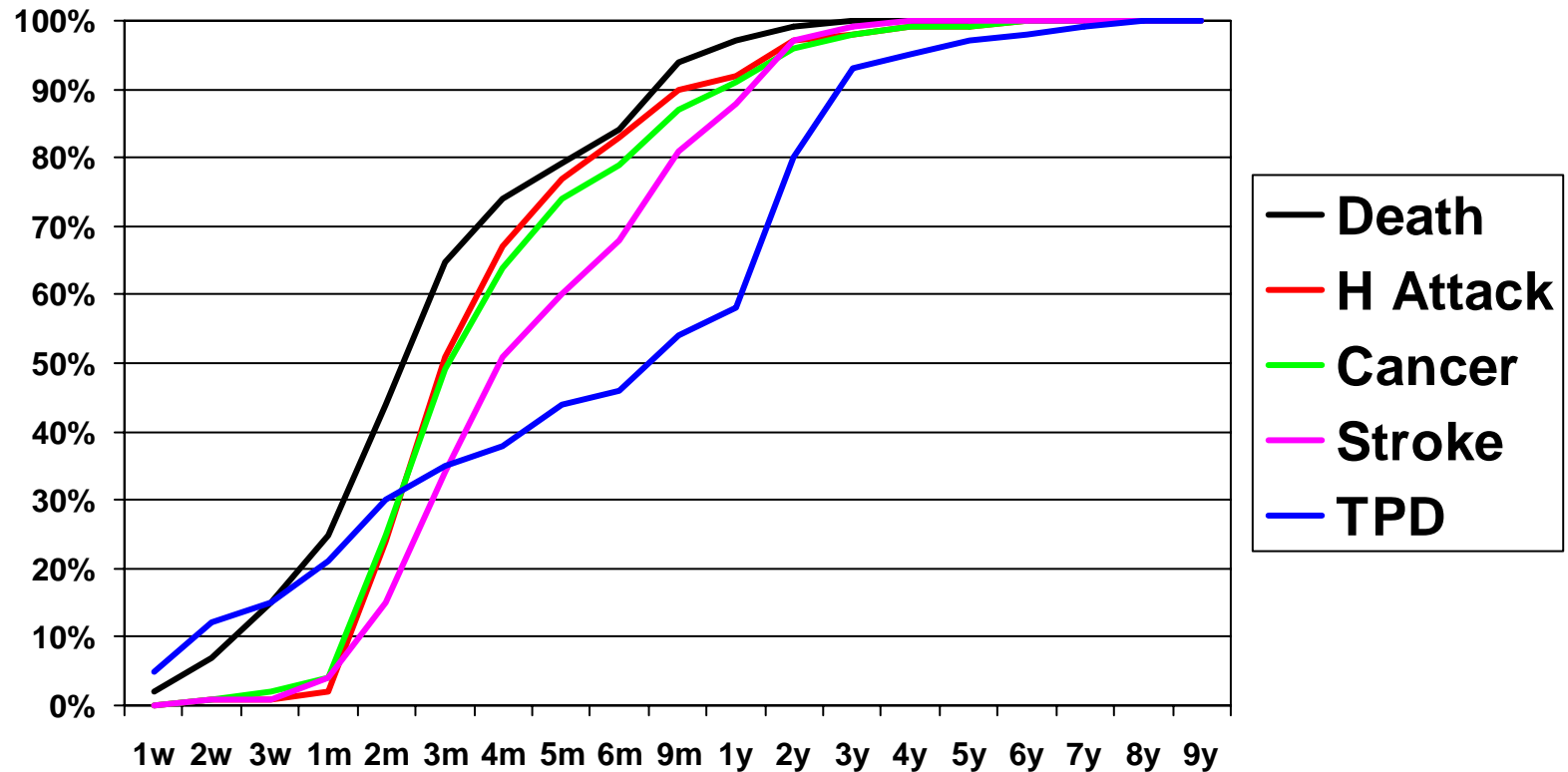
# Observed claim delays by cause

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# Observed claim delays by cause

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# Claim Delays

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- 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 Claim Delays

(diagnosis to settlement, in days)

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Duration of policy at date of settlement	CI	Death
Up to 3 months	53	41
3 – 6 months	82	44
6 – 12 months	104	102
1 – 2 years	125	
2 – 3 years	154	
3 – 4 years	195	
4 – 5 years	234	
5 – 6 years	237	
6 – 7 years	261	
7 years +	298	

# Importance of Claim Dates

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- 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

# 1999-2002 Results

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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

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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

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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

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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)

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- **1999-2002 Results:**
  - Results still undergoing further checks
  - Currently analysing results, looking for issues that require further investigation
  - Then results will be released to offices with explanation of methodology and commentary
- **Analysis of 1999-2002**
  - “Blue Book” report will provide more detailed analysis
- **Graduation**
  - Aim to produce a standard table for use in pricing and reserving

# Key issues for Graduation WP

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- **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?**
  - 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)

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- **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”

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- **Draft 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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