

2013 Convention

new solutions for a new world

31 Oct - 1 Nov 2013

Sandton, Johannesburg

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ASSA CSI Committee Feed Back: Assured Lives Report and Pensions Report

Presenters:

Paul Lewis, Douw de Jongh and Gary Velcich

2013 Convention

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What we will talk about

1. General CSI Committee Feedback
2. IAA Mortality Working Group Feedback
3. Feedback on Current New Gen Assured Lives Report
4. Feedback on Current Pension Report

General CSI Committee Feedback

- Data
- Future Plans
 - Publish New Gen Assured Lives 2003 to 2010
 - And graduate it
 - Publish Pensioners report
 - 2014 will be CI and Disability
 - And maybe updating Assured Lives New Gen
 - And comparing to Old Gen
- New Members
- Assistance in Africa

General CSI Committee Feedback

- IAA Mortality Working Group
 - Den Hague and Singapore
 - Next year is important because of ICA2014 - Washington
 - New Chairperson of the MWG – another South African!
- Hip and happening mortality stuff
 - Comparative Mortality Study using HMDB
 - Close to finishing “Underwriting Around the World” paper
 - A few more country reports (Taiwan, Australia, RSA, Belgium)
 - How does Swiss Re manage mortality risk
 - The link between mortality and the economy

General CSI Committee Feedback

- Hip and happening mortality stuff
 - Stronger cooperation between associations – meeting CMI in December
 - Mortality seminar in Birmingham, 15 to 17 September 2014
 - Our BIG TO DO – how does mortality differ by population, insurance, annuity, pensions

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Assured Lives Report

Douw de Jongh (and John-Craig Clur)

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New Gen Assured Lives 2003 – 2010: Agenda

- Scope
- Data
- Compared to SA85-90
- Smoker
- Socio-economic underwriting class
- Duration
- Accelerator
- Company

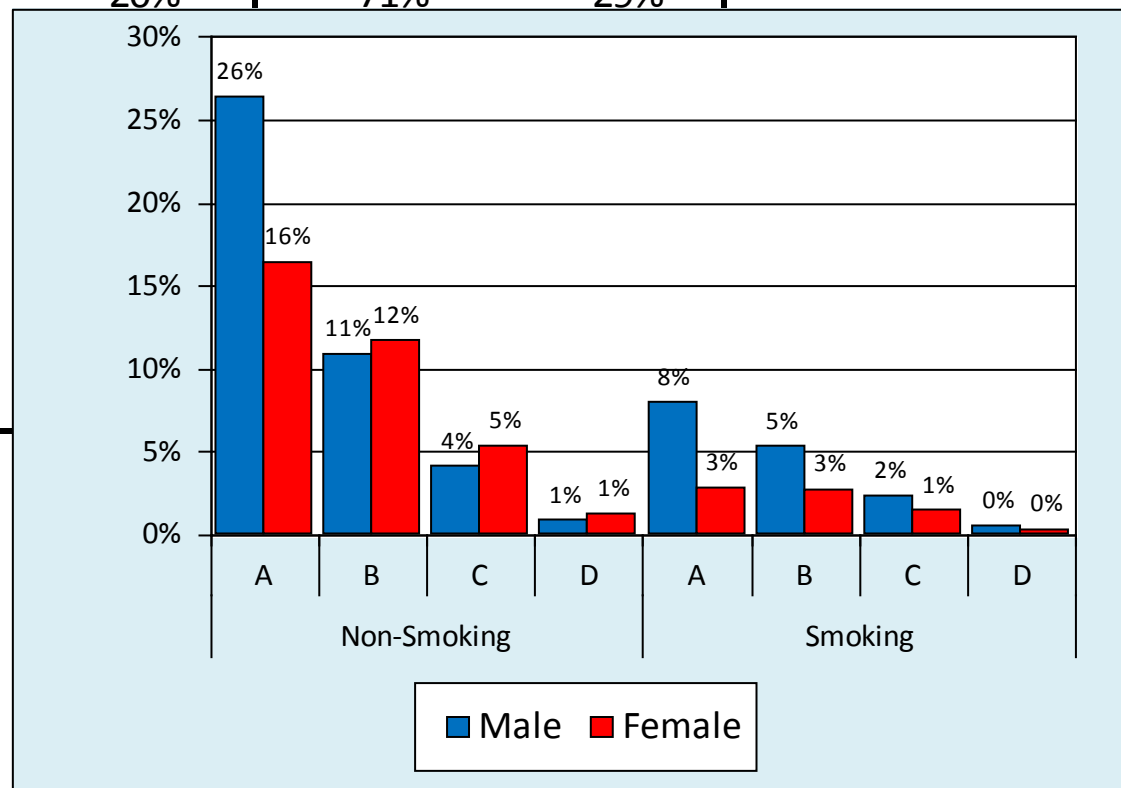
New Gen Assured Lives 2003 – 2010: Scope of Investigation

- New Generation Products
 - Pure Risk Products
 - No investment portion, No surrender value
 - Whole Life Assurance and Term Assurance
 - Level premium or Risk-related increases
 - Full underwriting with HIV test
- Contributing Companies
 - Discovery, Liberty, Metropolitan, Old Mutual and Sanlam

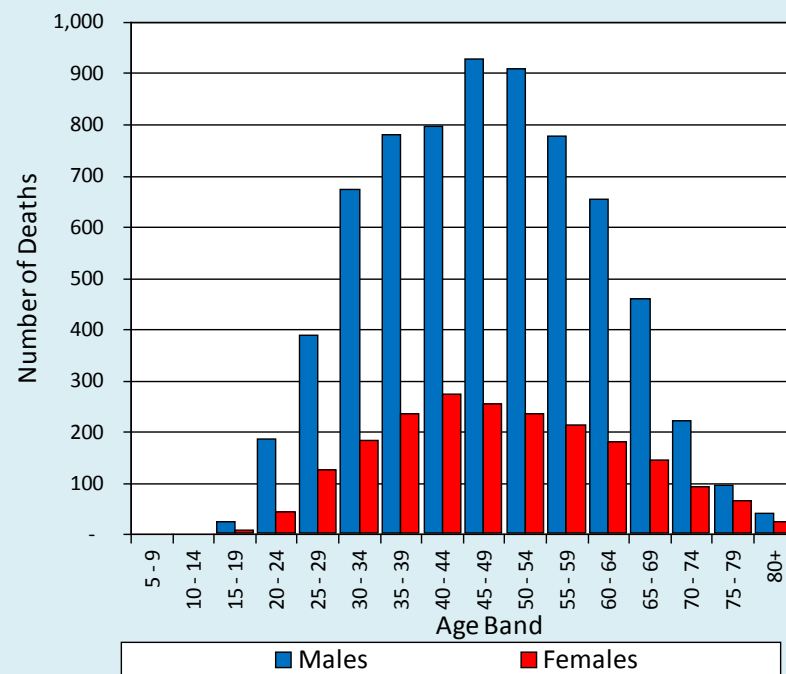
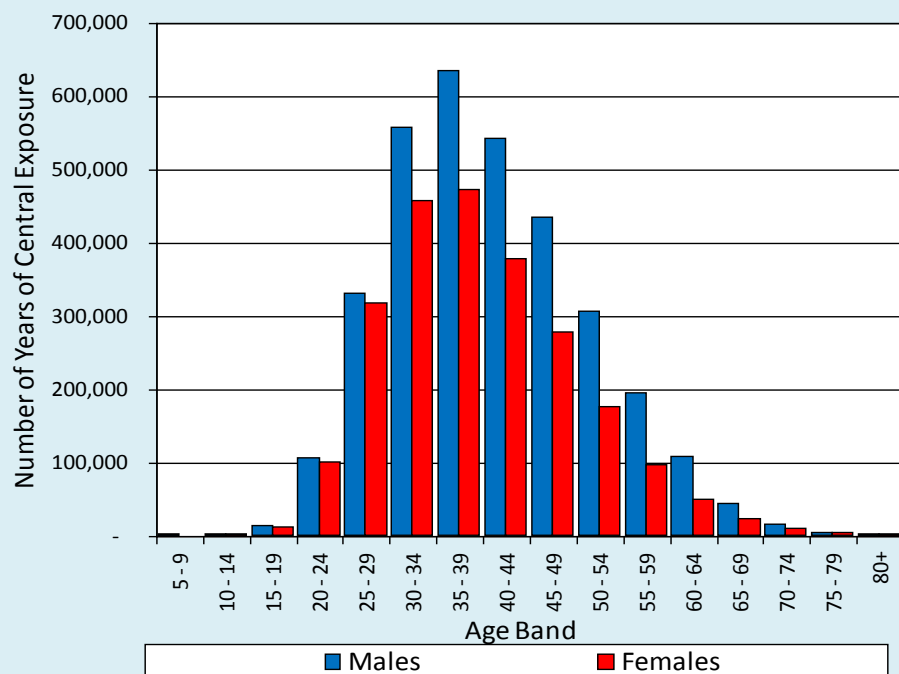
New Gen Assured Lives 2003 – 2010: Overview of the Data

- Completeness excellent

Calendar year	Females		Males	
	Non-Smoking	Smoking	Non-Smoking	Smoking
2003	80%	20%	71%	29%
2004	80%			
2005	81%			
2006	81%			
2007	82%			
2008	83%			
2009	84%			
2010	85%			

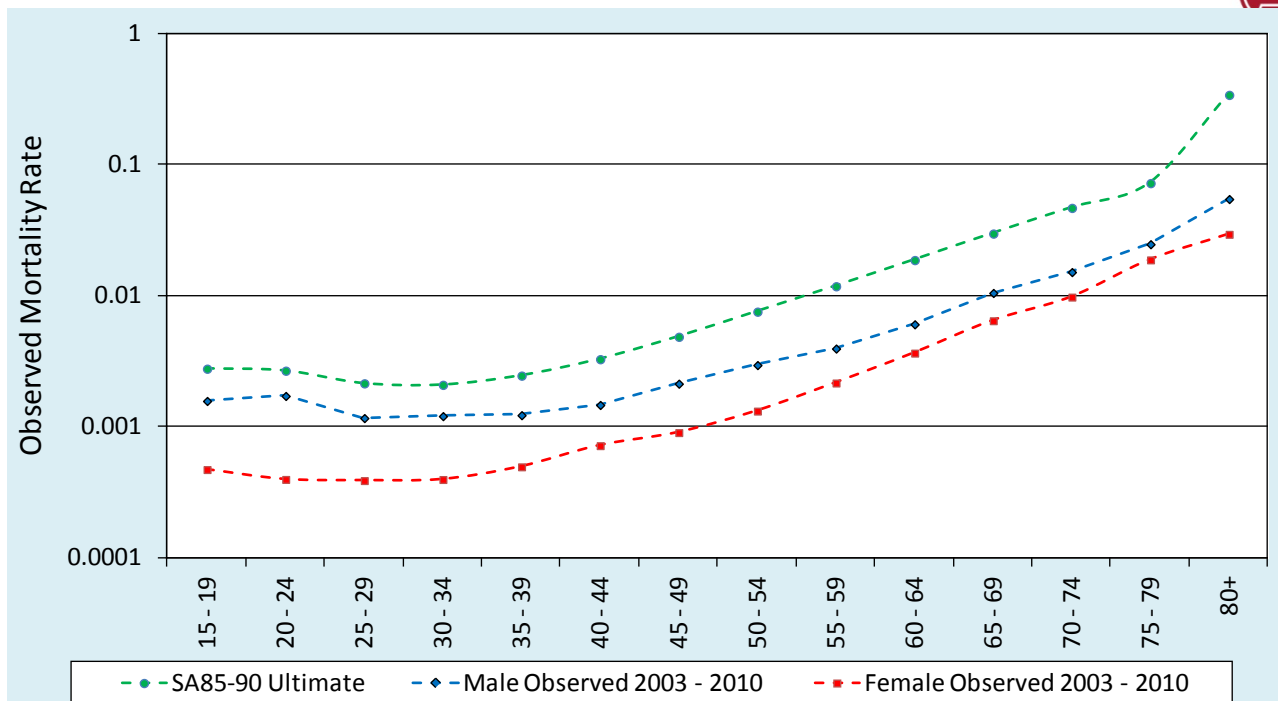


New Gen Assured Lives 2003 – 2010: Overview of the Data



Year	Total Deaths		% of Total Deaths		Total E_x^c		% of Total E_x^c	
	Male	Female	Male	Female	Male	Female	Male	Female
2003	111	28	1.6%	1.4%	62 009	41 654	1.9%	1.8%
2004	392	75	5.7%	3.7%	195 970	129 096	6.0%	5.5%
2005	576	150	8.3%	7.3%	298 623	198 846	9.1%	8.4%
2006	742	200	10.8%	9.8%	409 910	278 095	12.5%	11.7%
2007	1 018	277	14.8%	13.6%	499 749	350 217	15.2%	14.8%
2008	1 211	391	17.6%	19.2%	562 149	407 501	17.1%	17.2%
2009	1 292	402	18.7%	19.7%	611 470	460 432	18.6%	19.4%
2010	1 558	518	22.6%	25.4%	644 377	502 803	19.6%	21.2%
Total	6 900	2 041			3 284 257	2 368 643		

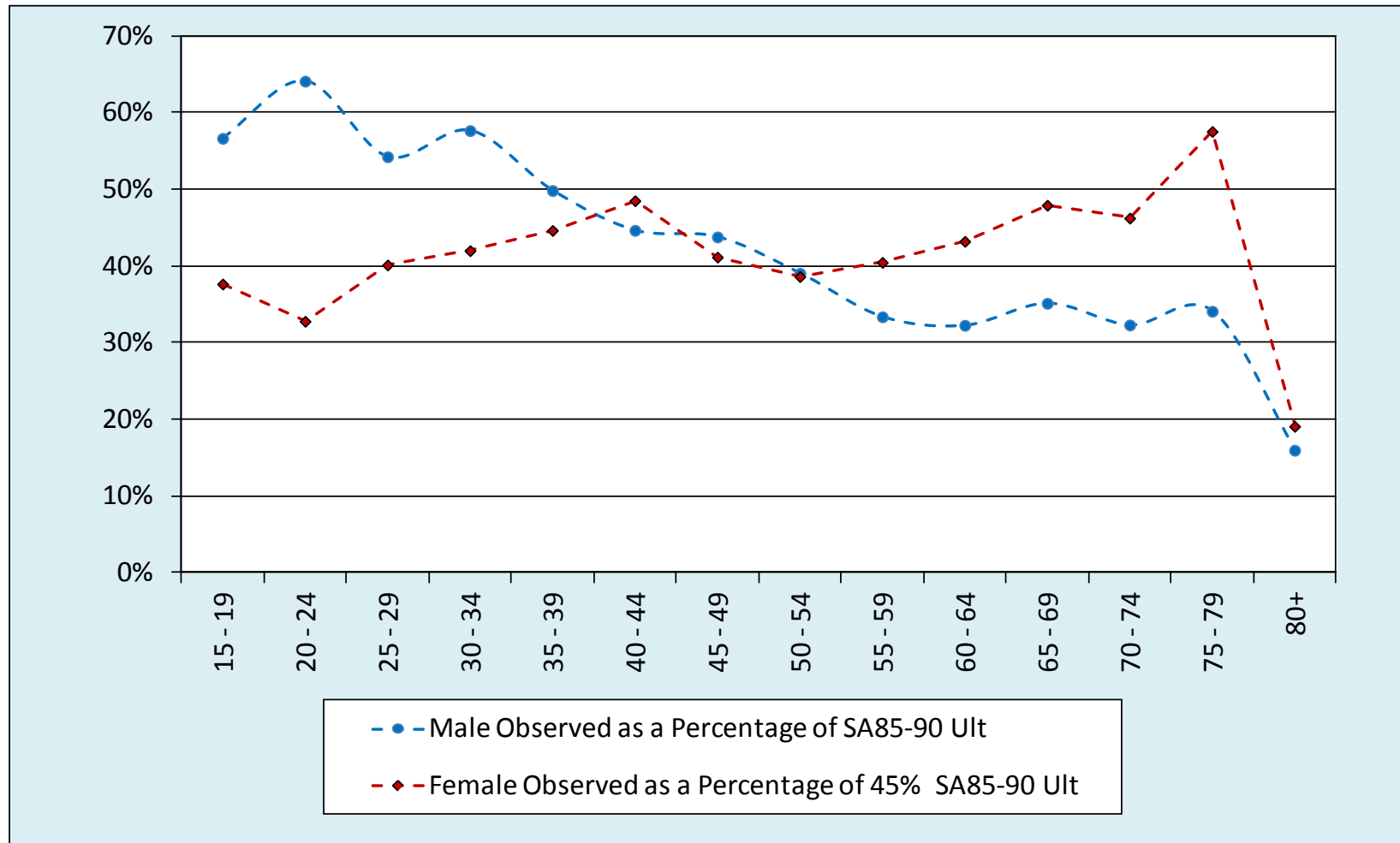
New Gen Assured Lives 2003 – 2010: Overview of the Data



Year	Observed Rates		Average Age		Average Duration		A vs E	
	Male	Female	Male	Female	Male	Female	Male	Female
2003	0.00179	0.00067	38.16	36.16	0.29	0.26	0.4023	0.1730
2004	0.00200	0.00058	38.91	36.89	0.67	0.64	0.4560	0.1520
2005	0.00193	0.00075	39.43	37.45	0.99	0.97	0.4273	0.1913
2006	0.00181	0.00072	39.99	38.05	1.32	1.30	0.3858	0.1754
2007	0.00204	0.00079	40.43	38.53	1.66	1.61	0.4186	0.1862
2008	0.00215	0.00096	40.96	39.04	2.01	1.93	0.4219	0.2156
2009	0.00211	0.00087	41.42	39.52	2.33	2.22	0.3938	0.1866
2010	0.00242	0.00103	41.97	40.10	2.71	2.57	0.4271	0.2081
Total	0.00210	0.00086	40.73	38.86	1.86	1.82	0.4147	0.1940

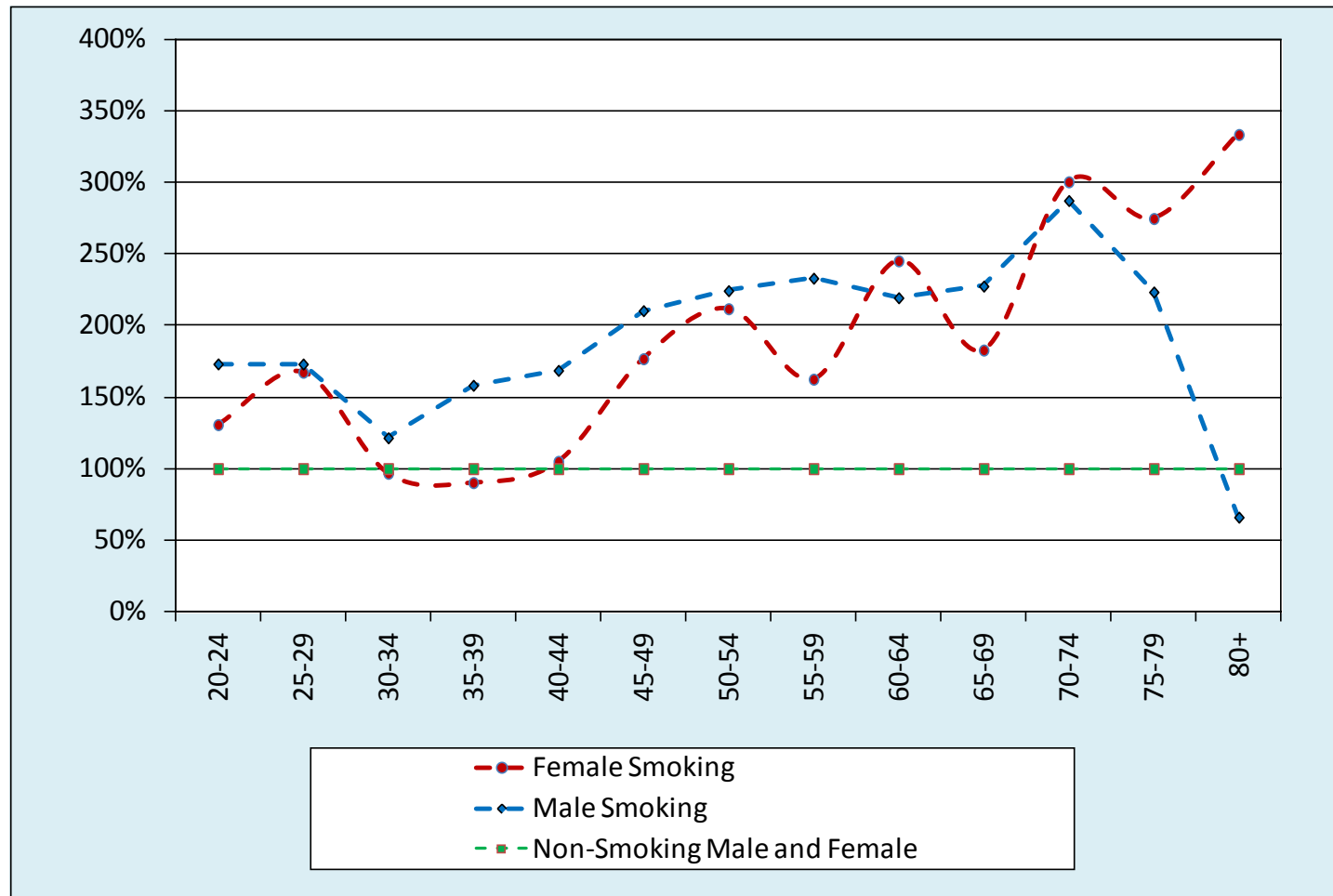
New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - Comparison to SA85-90 Ultimate

Mortality as a Percentage of SA85-90 Ultimate (Males) and 45% of SA85-90 Ultimate (Females)



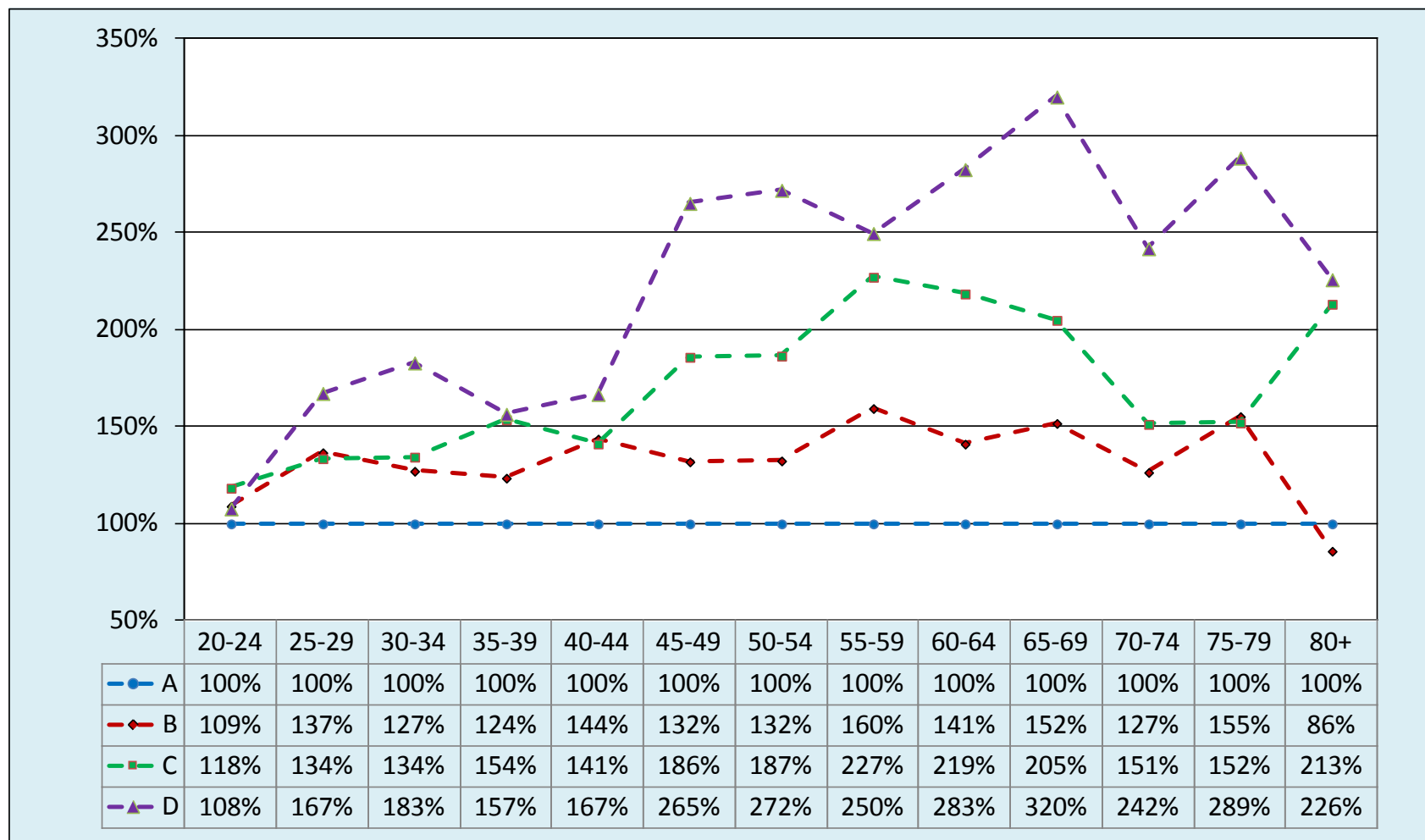
New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - by Smoking Status

Smoking Mortality as a Percentage of Non-Smoking Mortality



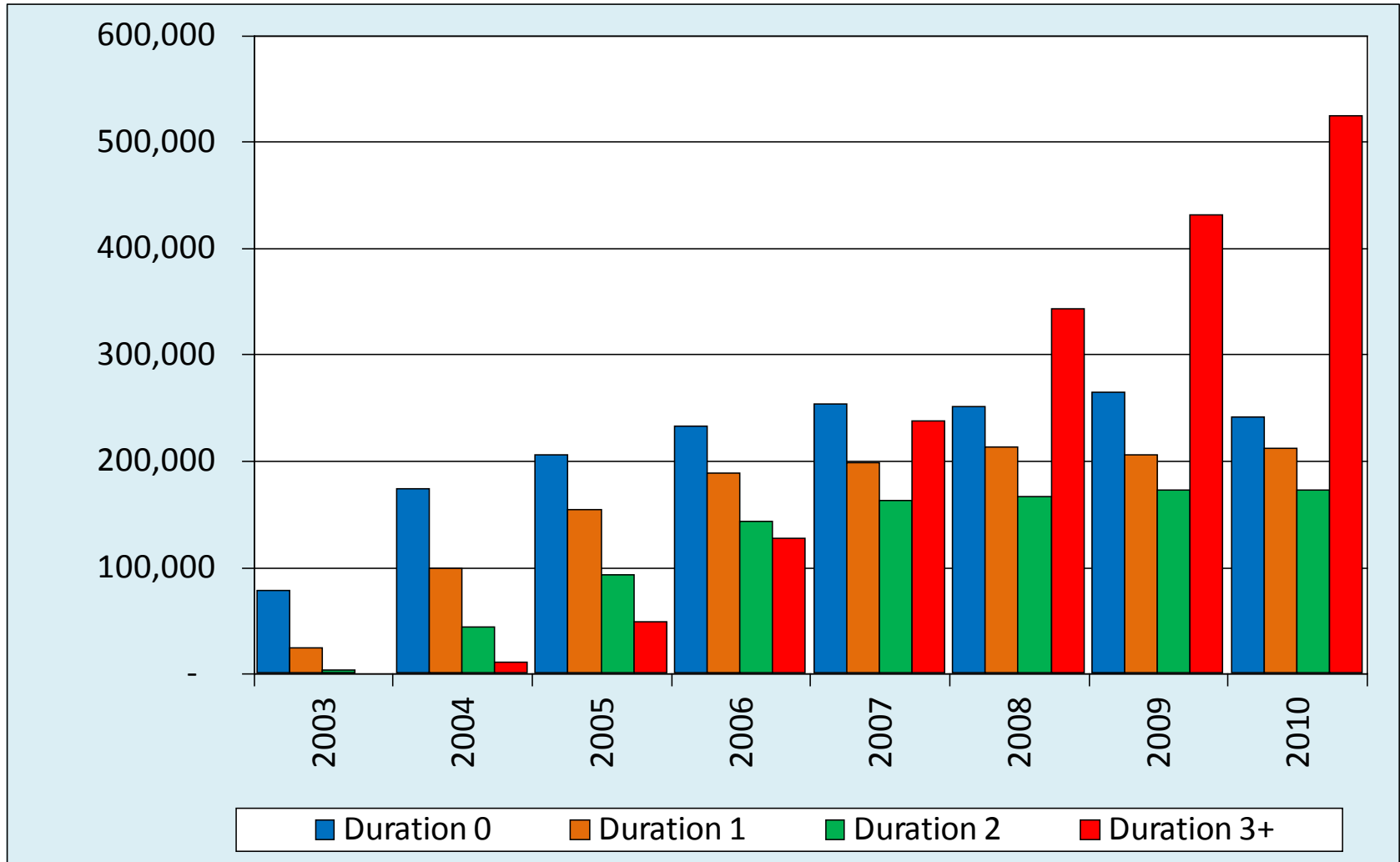
New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - by Socio-Economic Class: Males

Mortality as a Percentage of class A



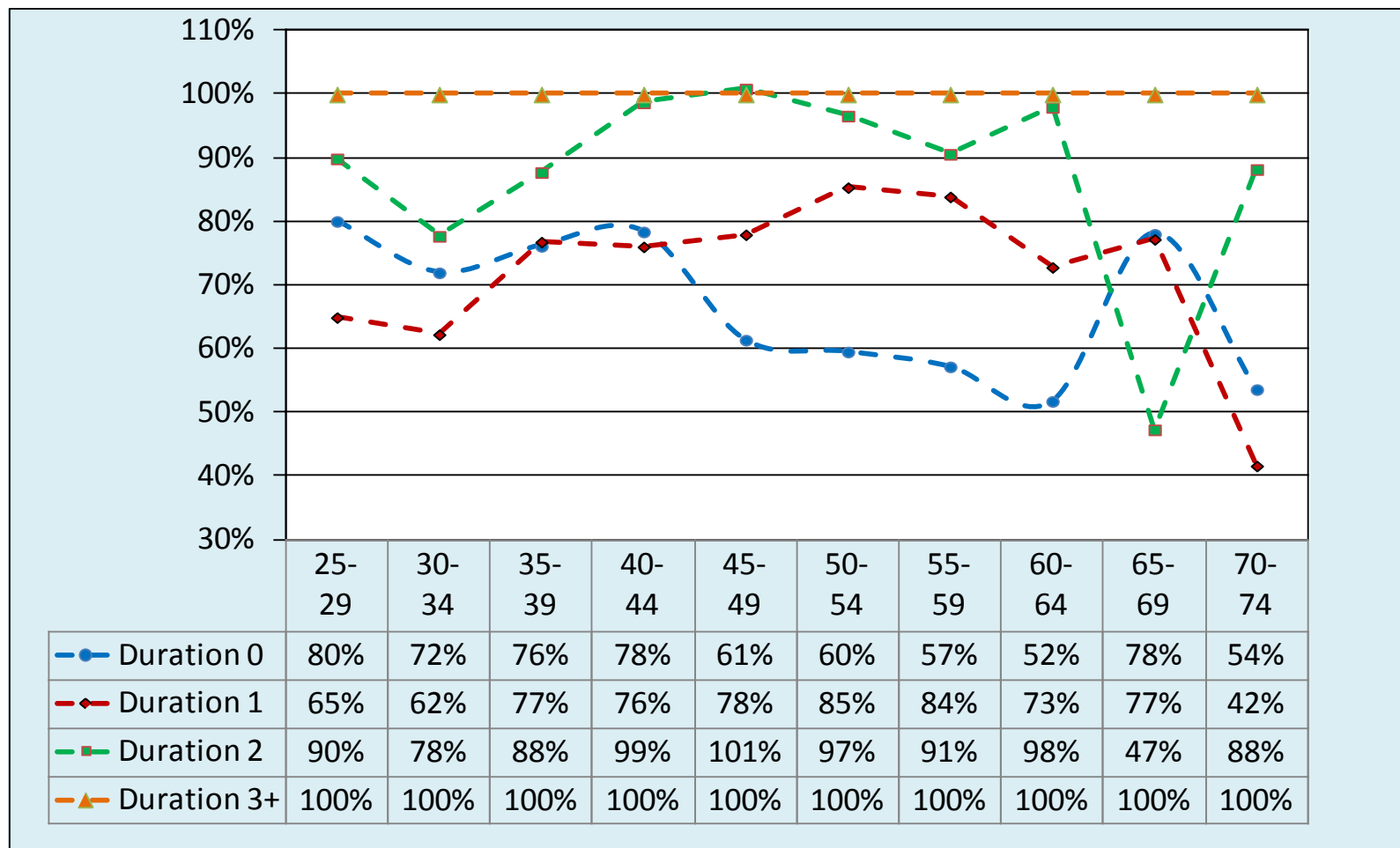
New Gen Assured Lives 2003 – 2010: Analysis of Exposure - by Duration

Total Central Exposure by Duration and by Year



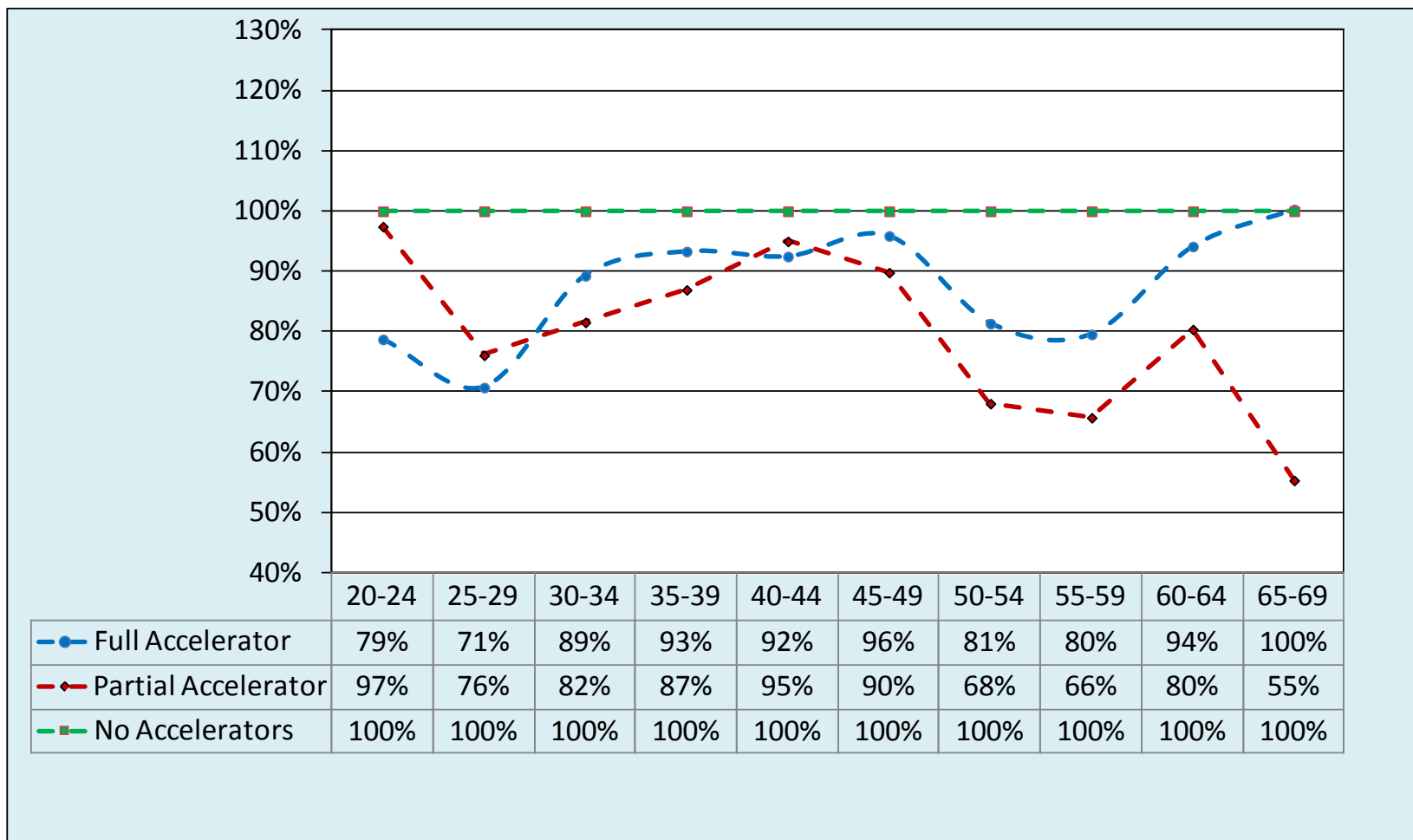
New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - by Duration: Males

Male Mortality as a Percentage Ultimate Mortality



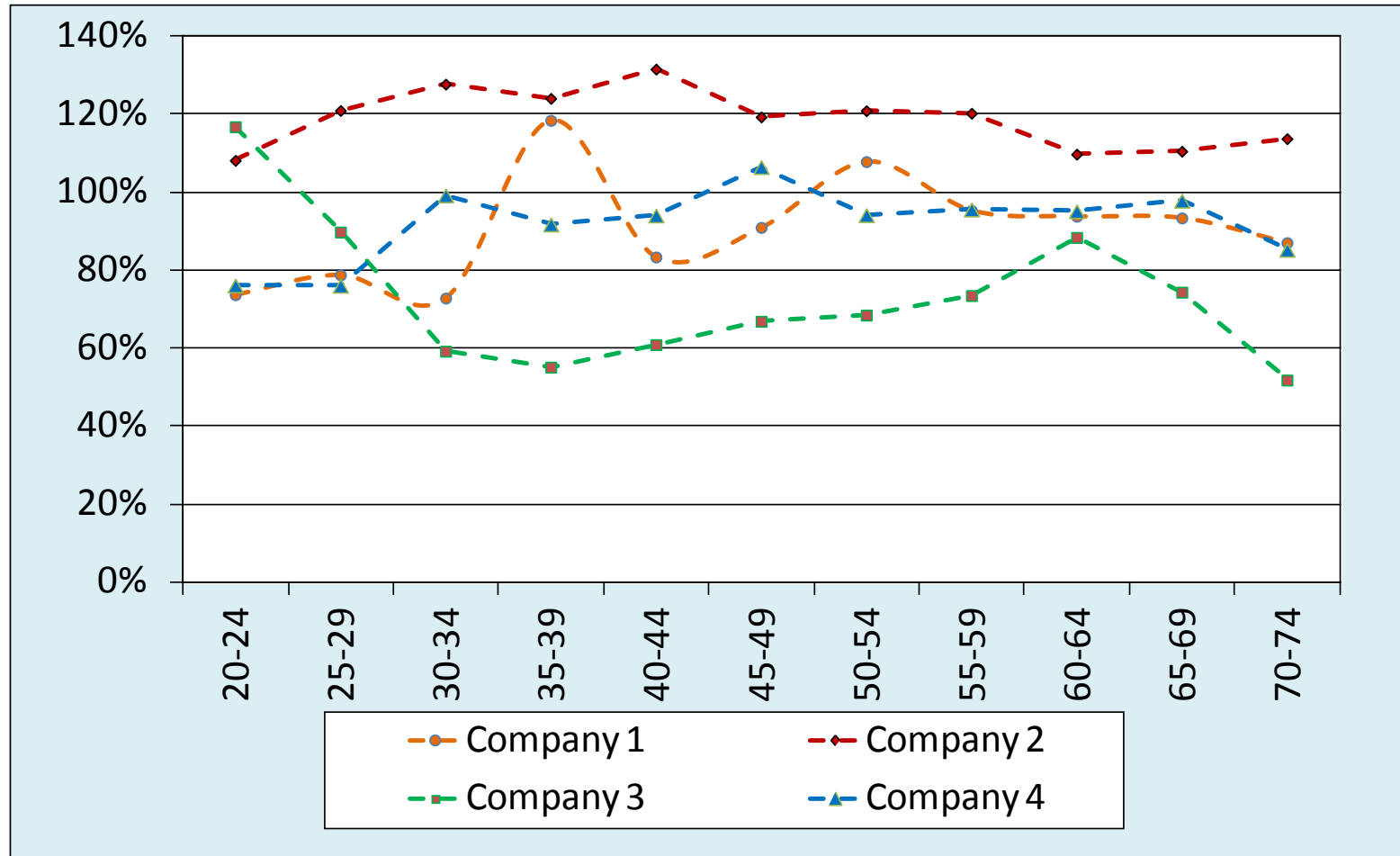
New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - by Accelerator

Observed Mortality as a Percentage of No Accelerator Mortality Rates (combined)



New Gen Assured Lives 2003 – 2010: Analysis of Observed Rates - by Company

Observed Mortality as a Percentage of Overall Mortality Rates (combined)



New Gen Assured Lives 2003 – 2010

- Publishing of report
- Graduation of New Generation Data

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2005-2010 in-fund pensioner mortality study

Gary Velcich (and Chessman Wekwete)
Pensioner mortality sub committee

Background to analysis

- First study of SA in-fund pensioner mortality
- Six year period 2005 to 2010
- Includes 21 largest defined benefit funds
- And largest pensioner payroll administrator

Data by industry

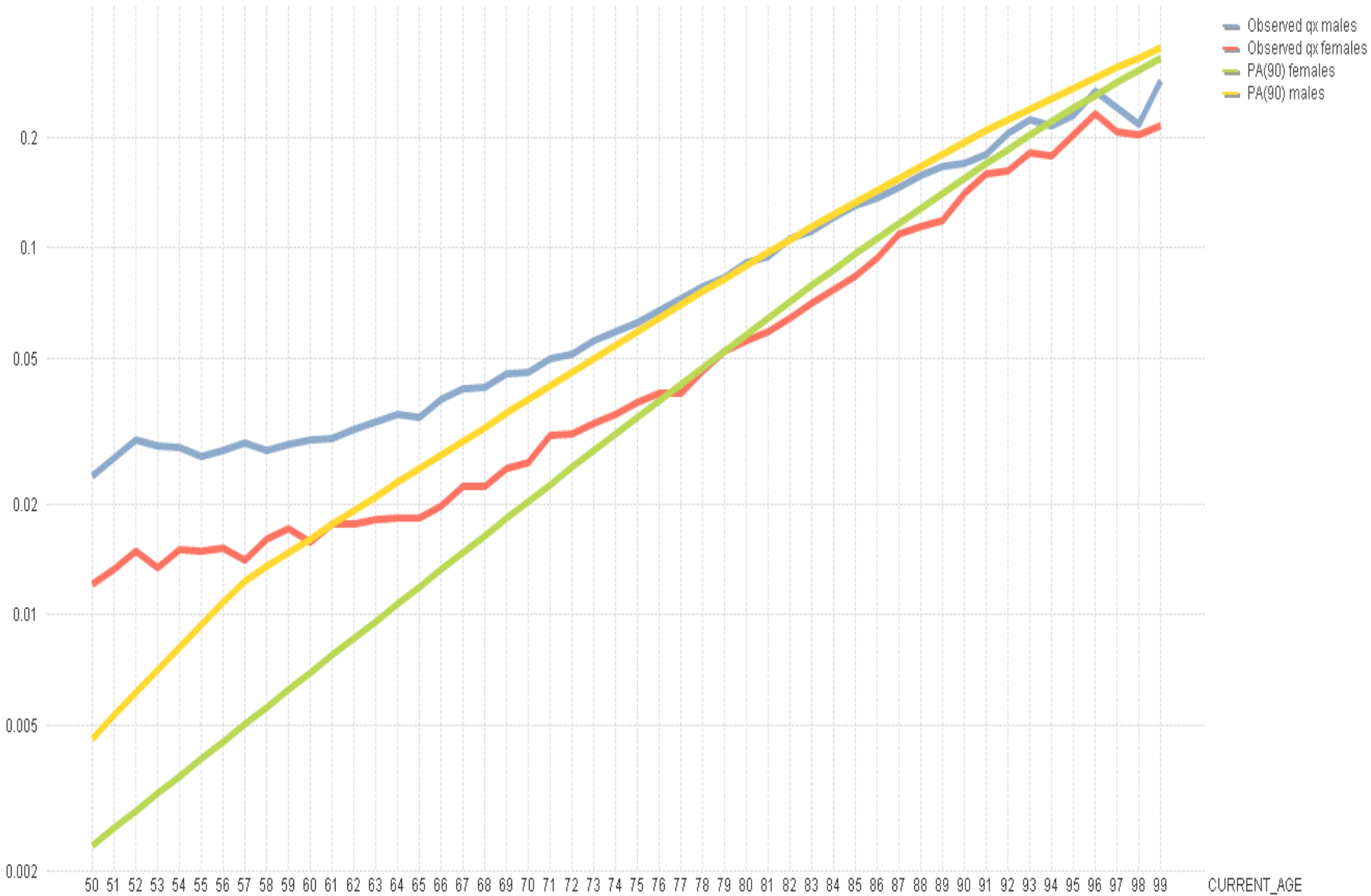
Industry classification	Total 2005 - 2010	
	Exposure	Deaths
Government	1 242 166	44 488
Transportation	416 398	22 565
Engineering	276 291	14 556
Mining and minerals	220 387	10 192
Local government	132 601	7 542
Energy	129 941	5 235
Post and telecommunications	85 611	2 447
Financial services	51 338	1 853
Timber, paper & packaging	47 268	2 511
Other and unknown	289 942	12 306
	2 891 942	123 695

Summary of findings

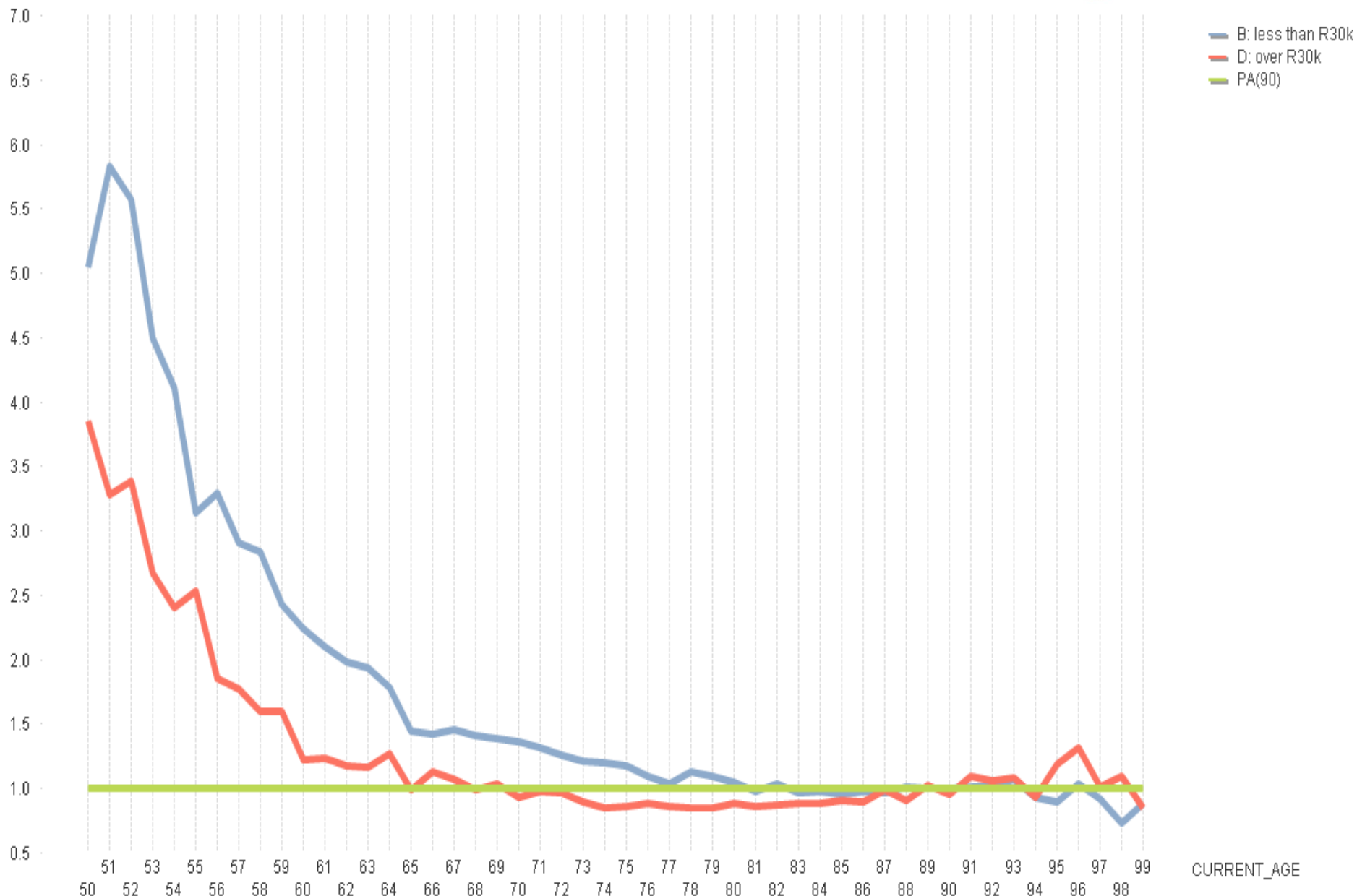
1. PA(90) is not a good fit
 - Shape is wrong
 - At least for ages before 60 (males) and 63 (females)
2. Mortality by amounts is significantly lower than by lives
3. Industry plays large role in post retirement mortality
 - Even after adjusting for pension amount
4. Type of retirement (early, normal, ill health) is important
5. Mortality by pension type (main, spouse) is not important

1. $PA(90)$ is not a good fit

Shape is wrong...



PA(90) fit is better for larger amounts

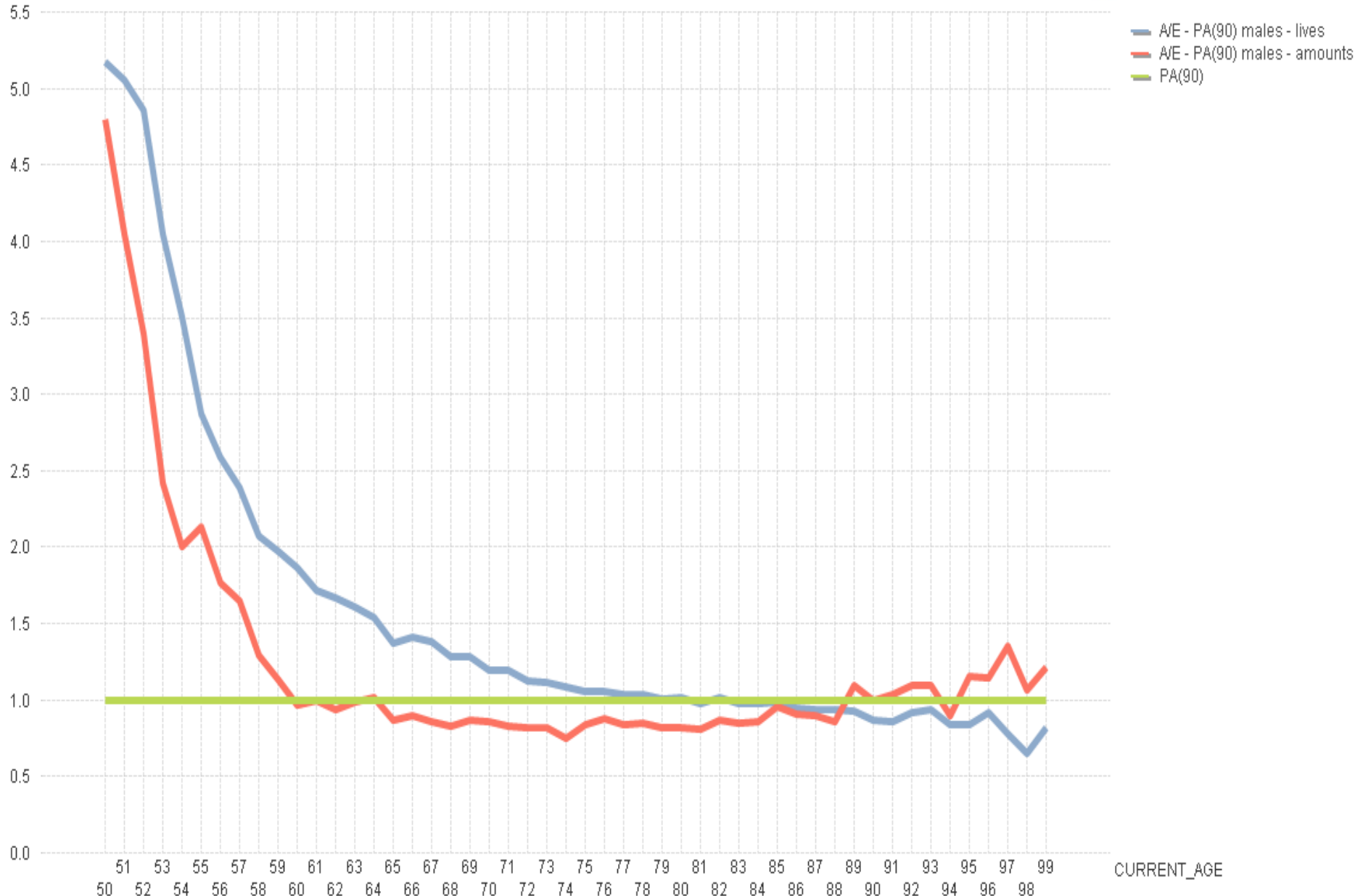


1. PA(90) is not a good fit

- We don't believe that ill health ret. the sole explanation
 1. Group schemes mortality study: rates far closer to our results than to PA(90) for members approaching retirement
 2. Counter intuitive for post retirement mortality to be *materially lighter* than pre retirement.
 3. Effect of very high mortality (relative to PA(90)) is evident in normal, early and ill health retirement
 4. Other studies, such as immediate annuitants, have shown same effect
- We recommend a table based on PA(90), blended into group scheme mortality below age 60

2. Amounts vs. lives

Amounts mortality lighter than lives



2. Amounts vs. lives

- Socio economic benefits of higher income; indicator of higher education, easier lifestyle, access to healthcare
- And could reflect extent of manual labour pre retirement
- Effect is around 20 percent lighter for both sexes
- Effect lasts for almost whole age range
- But curiously reverses from late 80s for both sexes

3. Effect of industry

3. Effect of industry on mortality

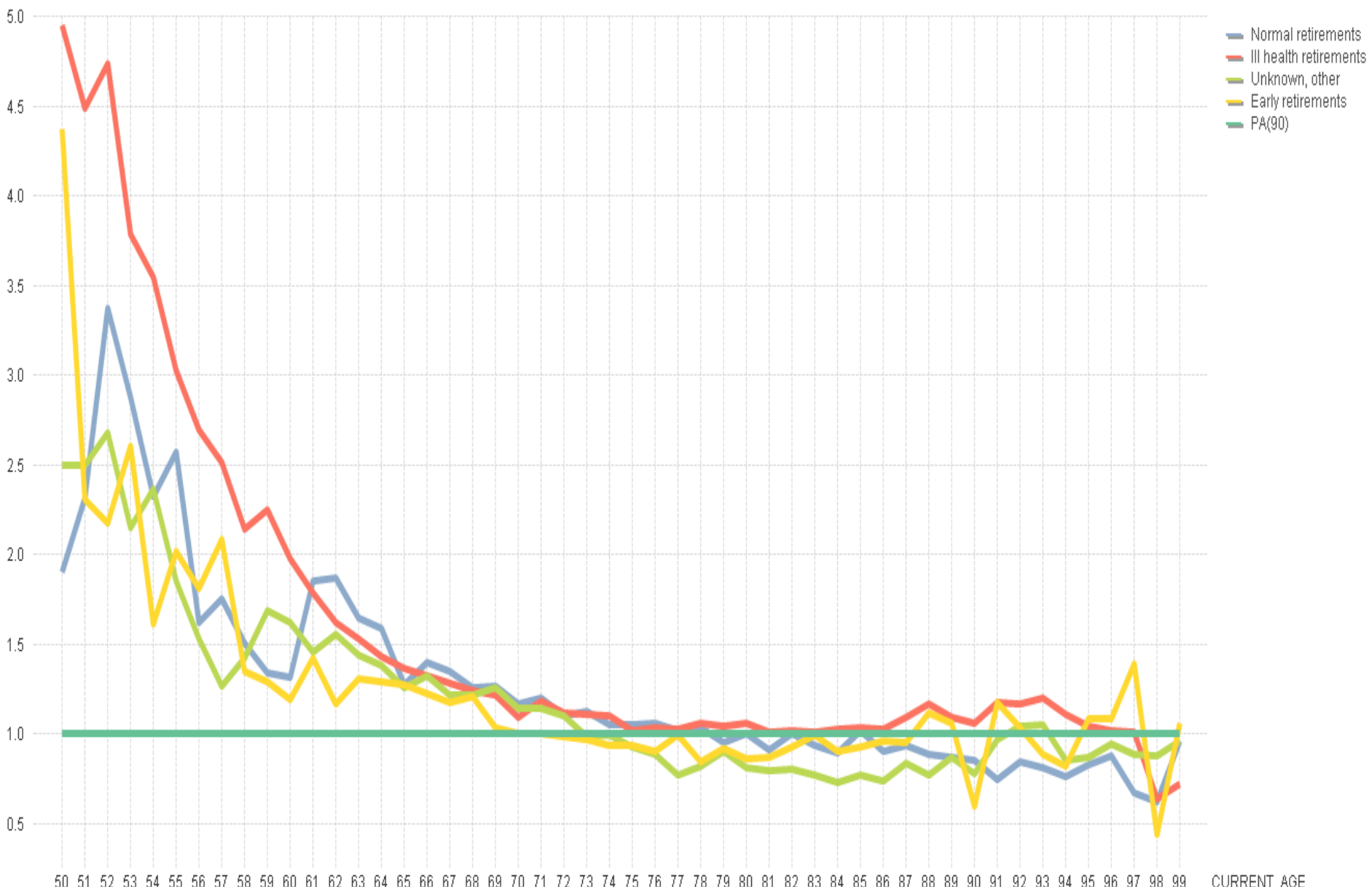
Industry classification	A/E to PA(90) based on lives
Energy production	1.49
Mining and minerals	1.36
Post and telecommunications	1.14
Engineering	1.22
Local and national government	1.17
Transportation	1.13
Motor vehicle industry	1.10
Petrochemical industry	1.05
Retail	1.05
IT and computer services	1.04
Financial services	0.92
Food and beverage	0.73
	1.16

3. Effect of industry on mortality

- Working career affects mortality post retirement
- Generalised linear modelling show industry a significant factor, even controlling for pension amount
- Effect possibly both socio economic (including work related illnesses) and result of years of labour on body
- Highest levels: parastatals , mining industries, engineering, and government.

4. Mortality by retirement type

Normal, ill health and early retirement

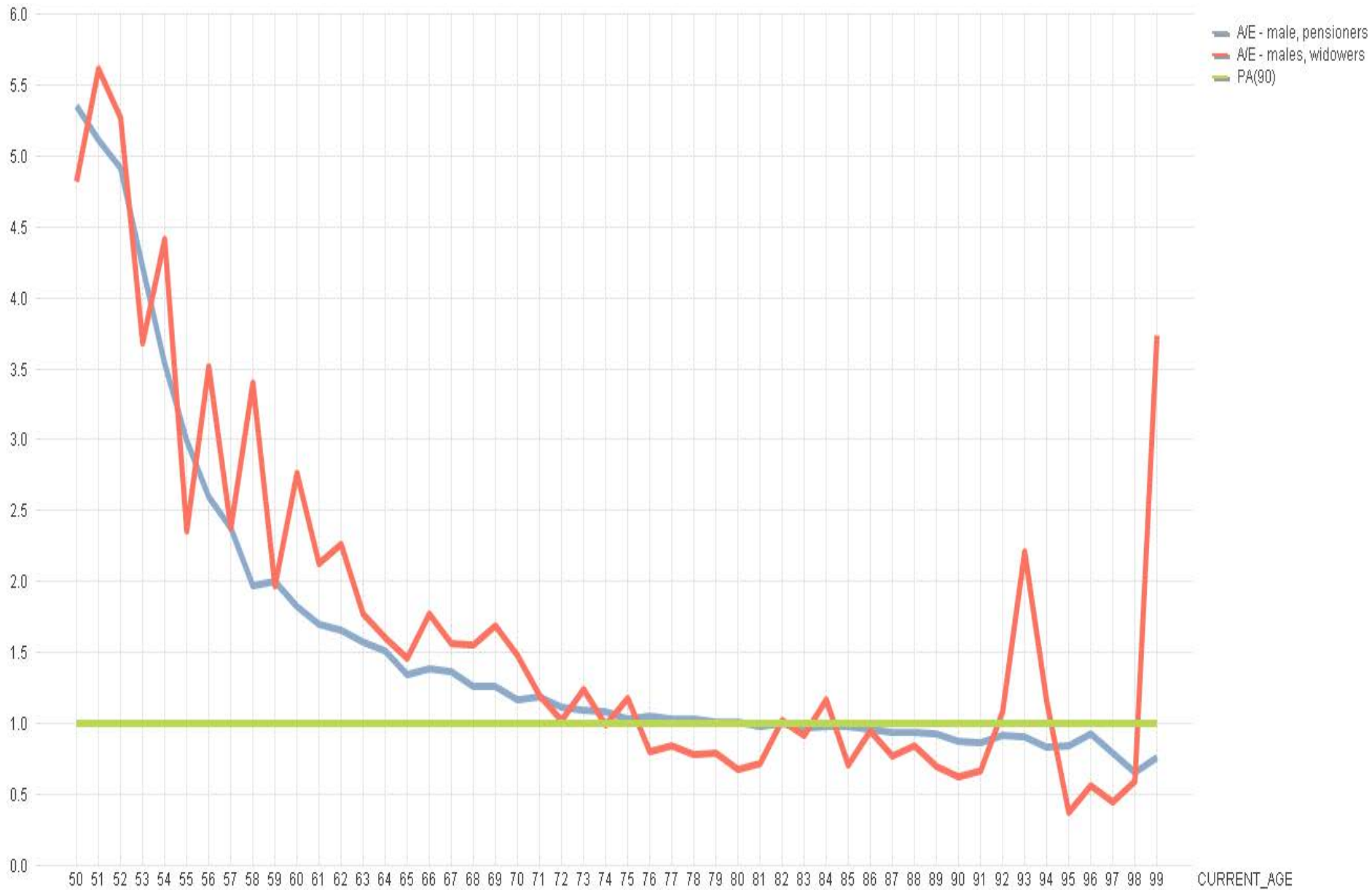


4. Mortality by retirement type

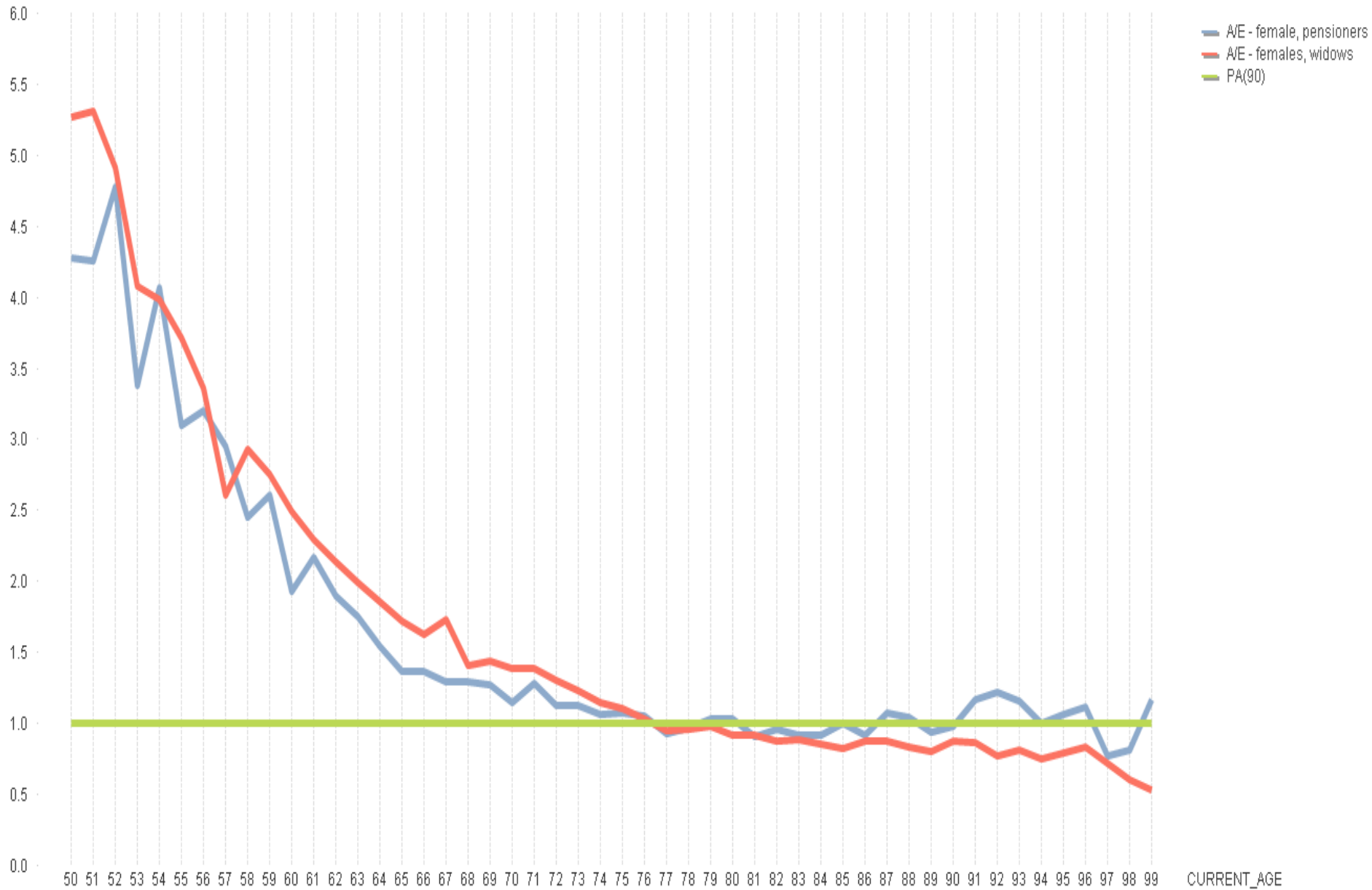
- Ill health early retirement 40 percent higher than normal retirement mortality to age 65
- Thereafter mortality is surprisingly close until age 85, after which again around 25 percent higher
- No meaningful differences in mortality of early, normal and other / unknown retirements

5. Mortality by pension type

Male pensioner and widower mortality



Female pensioner and widow mortality



5. Mortality by pension type

- No significant difference between the mortality of a male pensioner and a widower, and a female pensioners and a widow.

Next steps

1. Study outputs

- Feedback of results to each contributing fund
- CSI report
- Paper for next convention?

2. Produce standard table

Thank you

Questions?