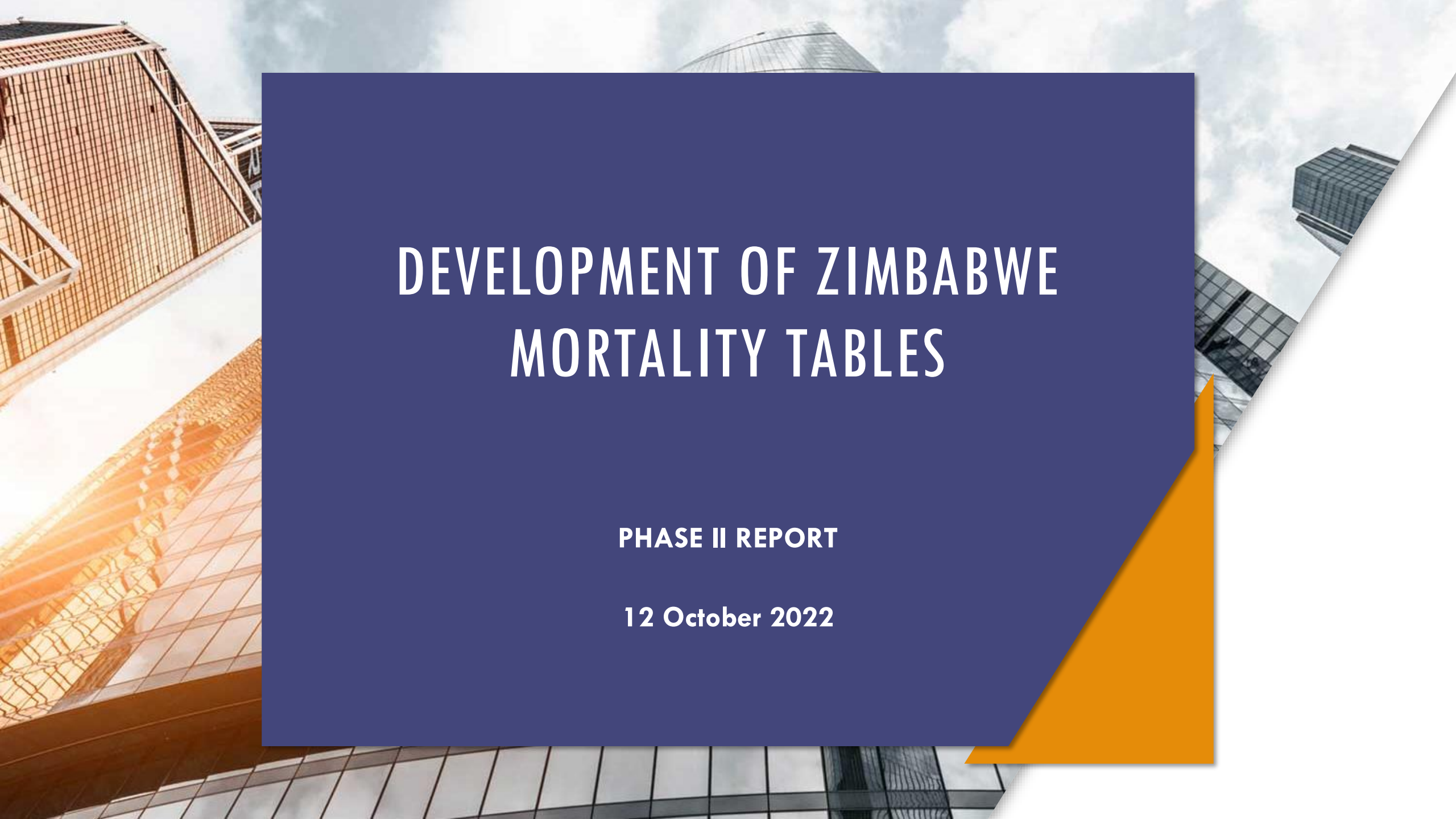




DEVELOPMENT OF ZIMBABWE MORTALITY TABLES

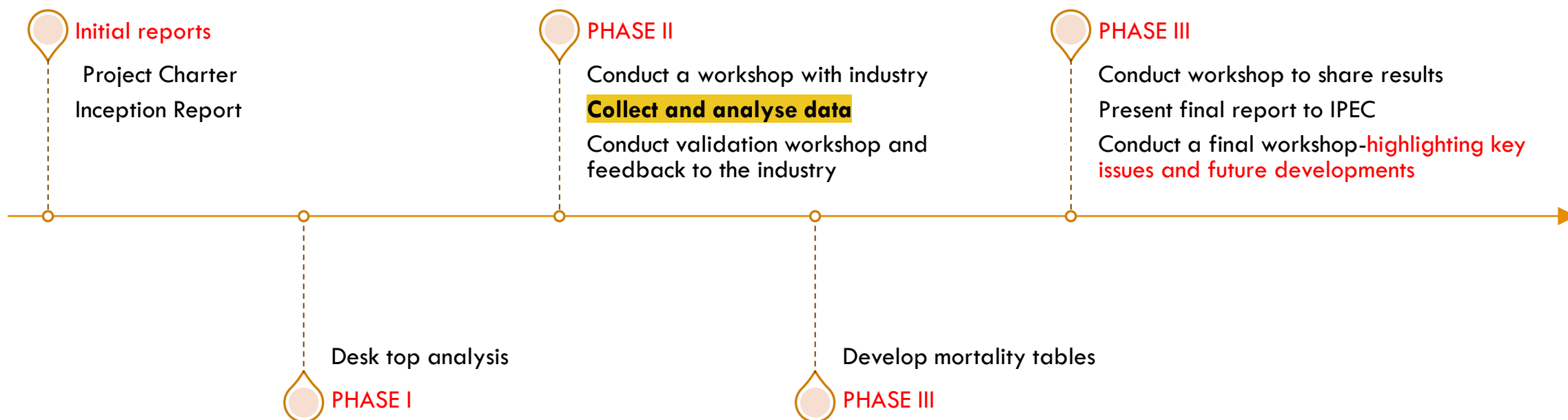
PHASE II REPORT

12 October 2022

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DEVELOPMENT OF MORTALITY TABLES: **ROADMAP**



PHASE II :DATA COLLECTION





DATA COLLECTION

- ✓ The **Census method** was used to collect data
- ✓ Data collection manual and templates were provided to all institutions
- ✓ Initial validation was done at institutional level through an automated functionality built in the respective templates
- ✓ The data was submitted to IPEC then to the Consultants after IPEC had removed the identities of the institutions
- ✓ **Data collection challenges included:** network; Electricity/power, inaccessible files, incomplete or non-validated files, no consolidation of files
- ✓ **Data validation challenges included:** invalid date format; incomplete validation; incorrect templates, corrupt files; etc



DATA COLLECTED



- The data by product, was split between complete and incomplete data.
- In each product analysis, the data that passed validation (complete data) was grossed up by the ratio of the total submitted to total completed.
- We assumed that the data with missing information was distributed in the same way as the data that passed validation. A similar approach was adopted in the ‘Mortality of Members of Group Schemes in South (2013)’, by KA Schriek, PL Lewis, JC Clur and RE Dorrington.



SUMMARY OF THE DATA SUBMITTED

DATA SUBMITTED- EXPOSURE AND DEATH

Category	Product	Complete data		Total submitted data		Percentage of complete data	
		Exposure	Deaths	Exposure	Deaths	Exposure	Deaths
Life Office	Assured Lives	655,263	686	680,462	1,065	96%	64%
	Group Lives Assured	2,578,040	7,367	2,891,733	8,107	89%	91%
	Annuities in Payment	45,900	484	46,828	502	98%	96%
	Retirement Annuities	155,178	188	159,337	291	97%	65%
Total Life Offices		3,434,381	8,725	3,778,360	9,965	91%	88%
Funeral companies & Life Offices	Principals	6,729,993	24,198	7,710,305	30,944	87%	78%
	Spouses	2,161,368	4,166	2,912,540	7,710	74%	54%
	Children	1,958,525	2,092	5,189,520	4,601	38%	45%
	Adult Dependants	5,946,223	35,147	7,861,591	146,203	76%	24%
Total Funeral		16,796,109	65,603	23,673,956	189,458	76%	24%
Insured schemes & Self Insured	Pre- retirement	4,856,608	12,733	5,065,894	13,899	96%	92%
	Post-retirement	526,199	6,075	625,392	11,071	84%	55%
Total Pension		5,382,807	18,808	5,691,286	24,970	95%	75%

DATA ANALYSIS

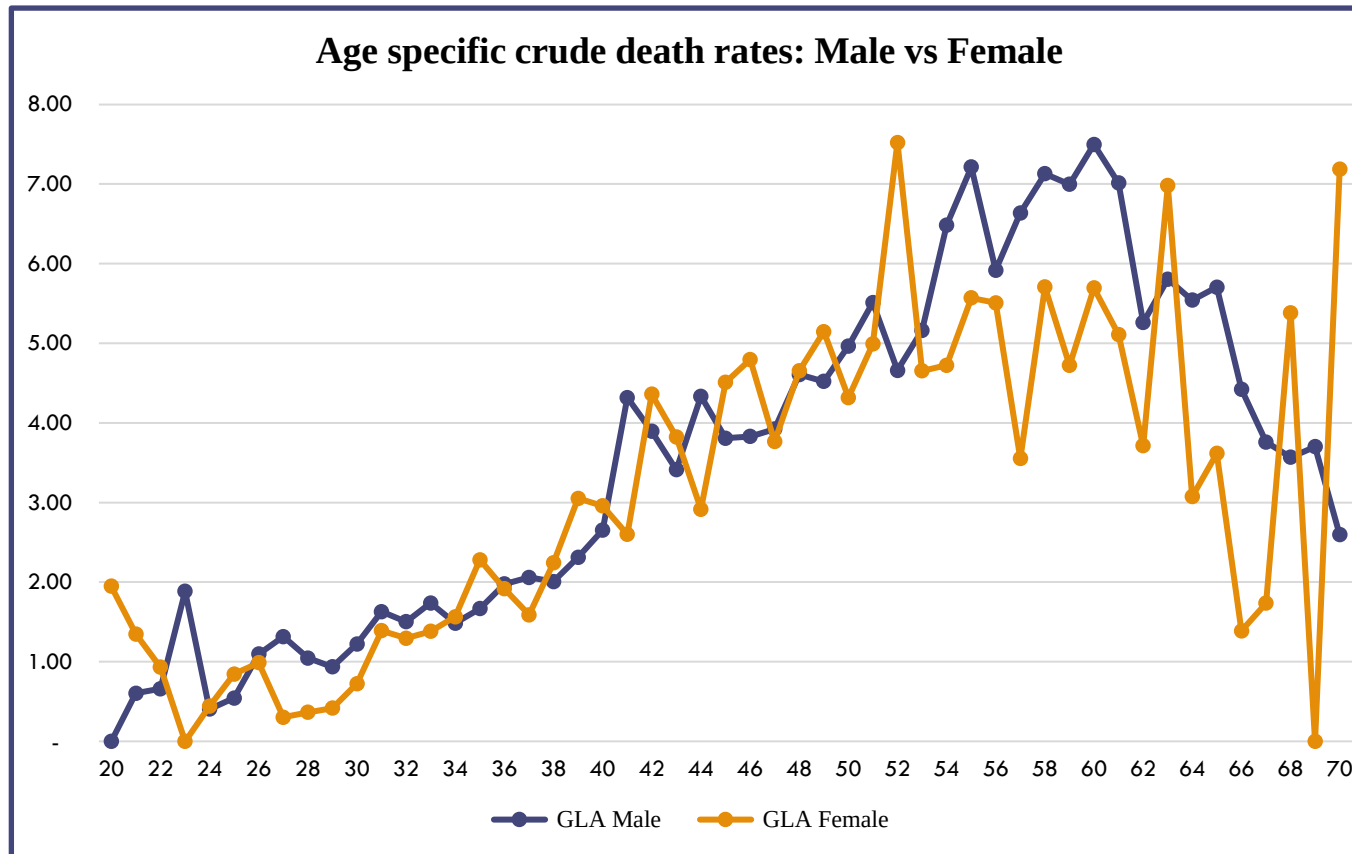


HIGHLIGHTS

- Low volume of data for Retirement-Annuities and Annuities in Payment
- Females have a low exposure data compared to males for most products
- The funeral data was not separated by gender
- Mortality has generally been improving over time for most products/categories
- Most products showed mortality increasing by age for both males and females

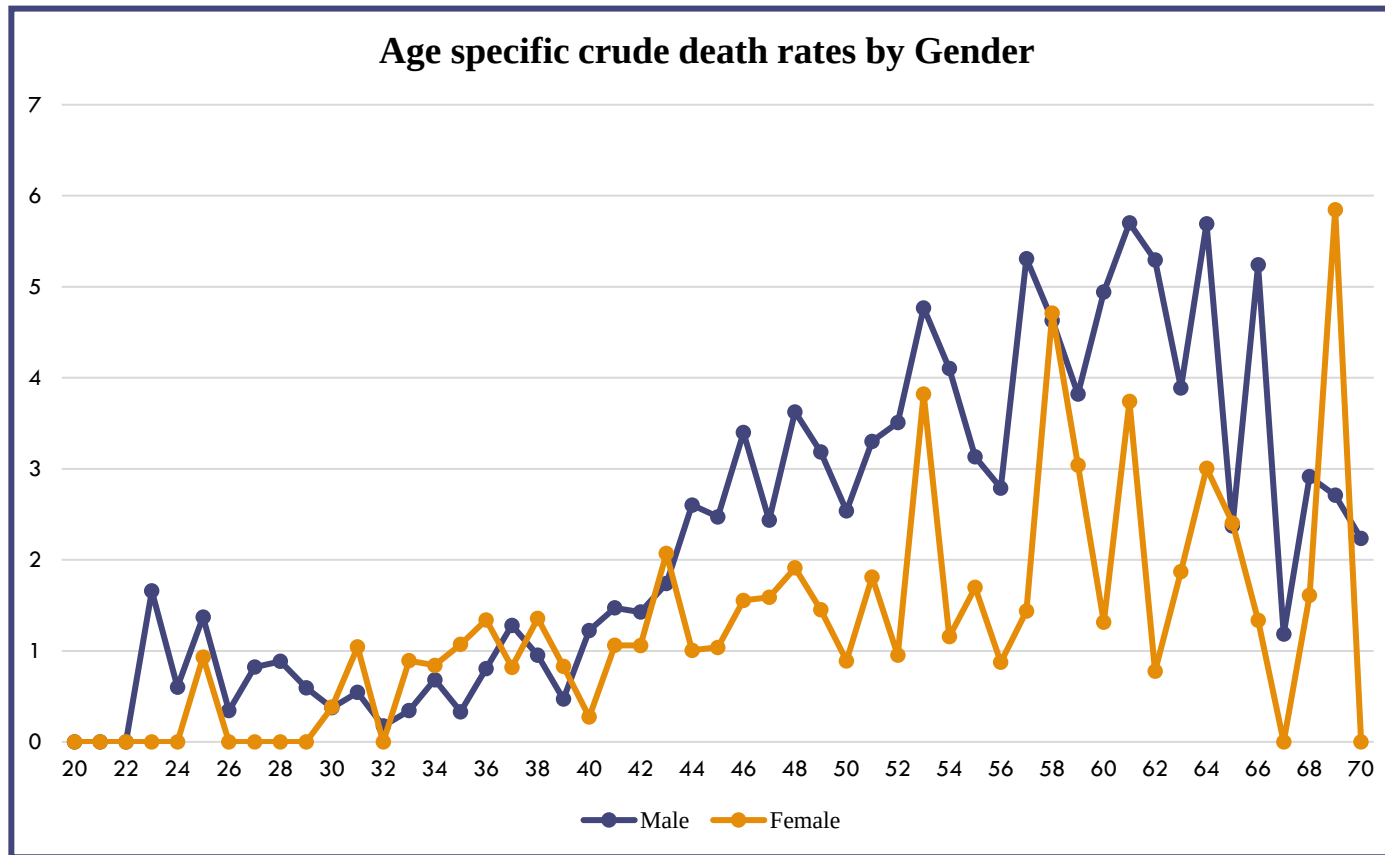


GROUP LIFE ASSURANCE: MALES VS FEMALES



- ✓ The Males & Females graphs have similar shapes
- ✓ Decrease in rates from age 60
- ✓ Observable high volatility at higher ages due to lower exposure

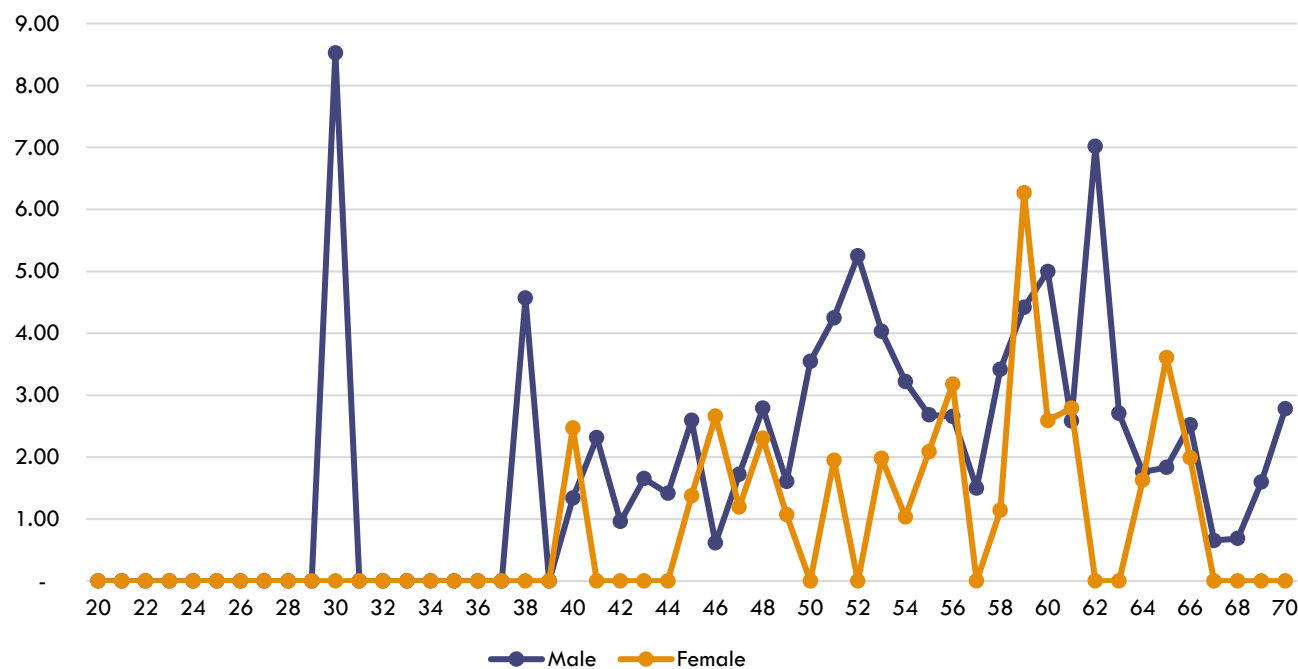
INDIVIDUAL ASSURED LIVES



- All graphs show an upward trend by age
- The rates become very volatile at higher ages, probably due to scanty data

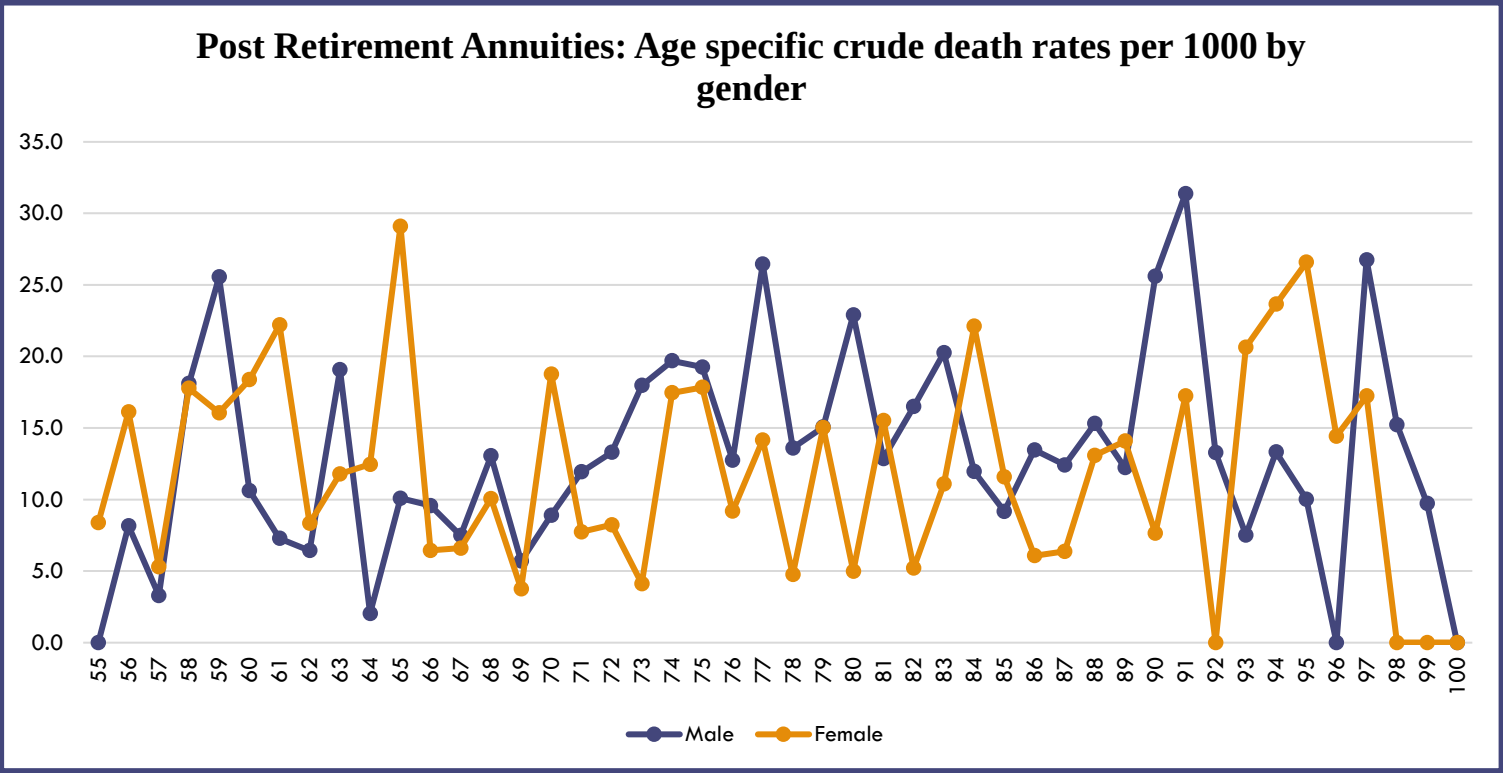
INDIVIDUAL ANNUITIES —PRE-RETIREMENT

Pre-retirement annuities age specific crude death rates by gender



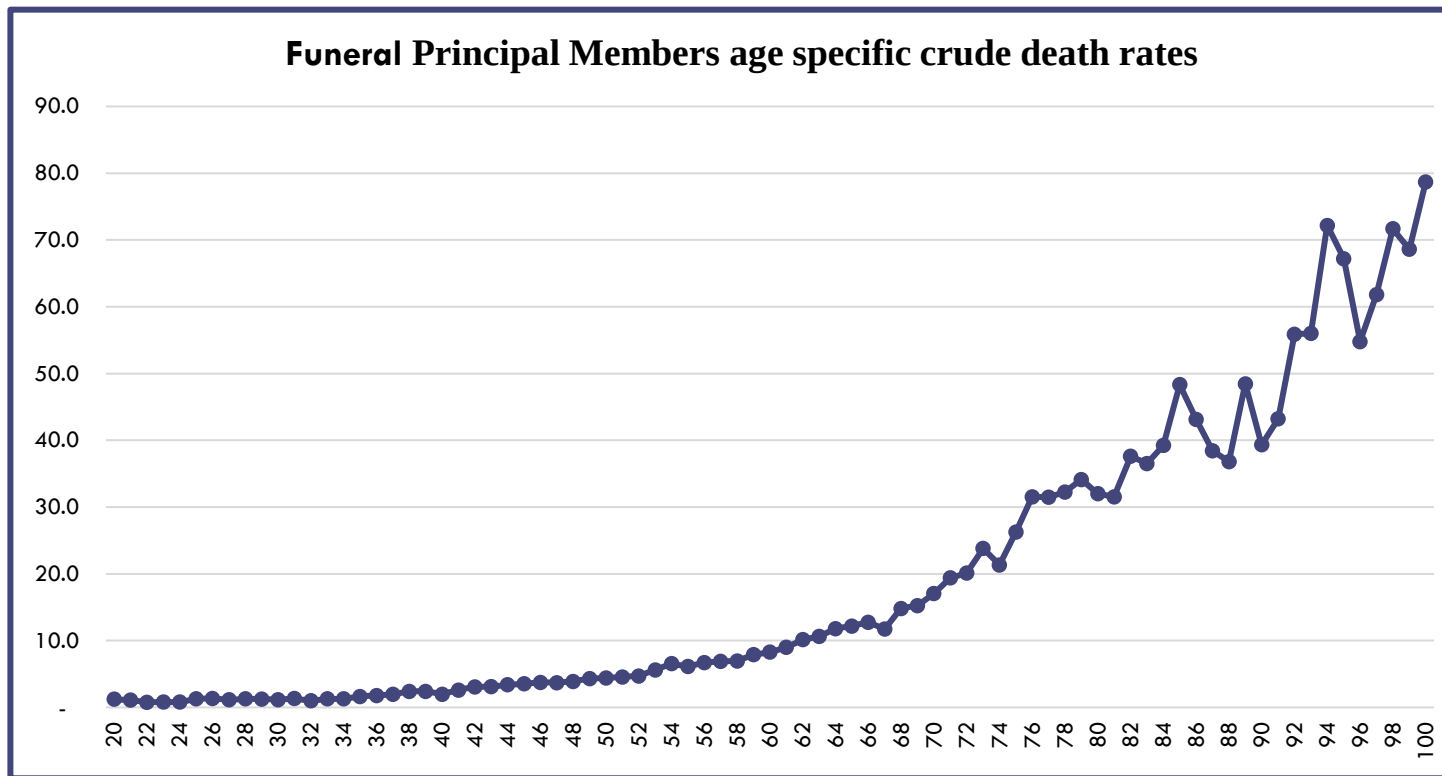
- The crude death rates do not show any consistent pattern for both males and females

INDIVIDUAL ANNUITIES-POST-RETIREMENT



- The crude death rates do not show any consistent pattern for both males and females

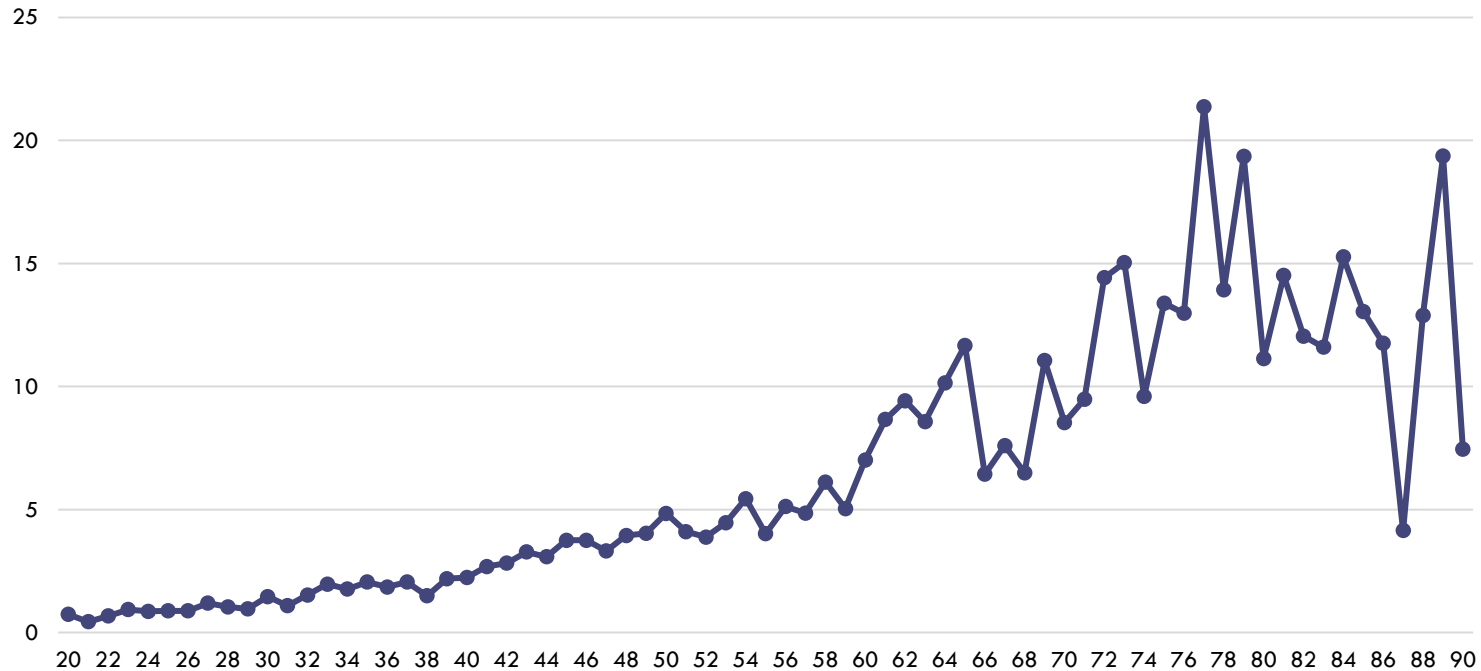
FUNERAL PRINCIPAL MEMBERS



- Mortality is increasing with age from age 20 to age 70
- Thereafter the graph becomes steeper and more volatile

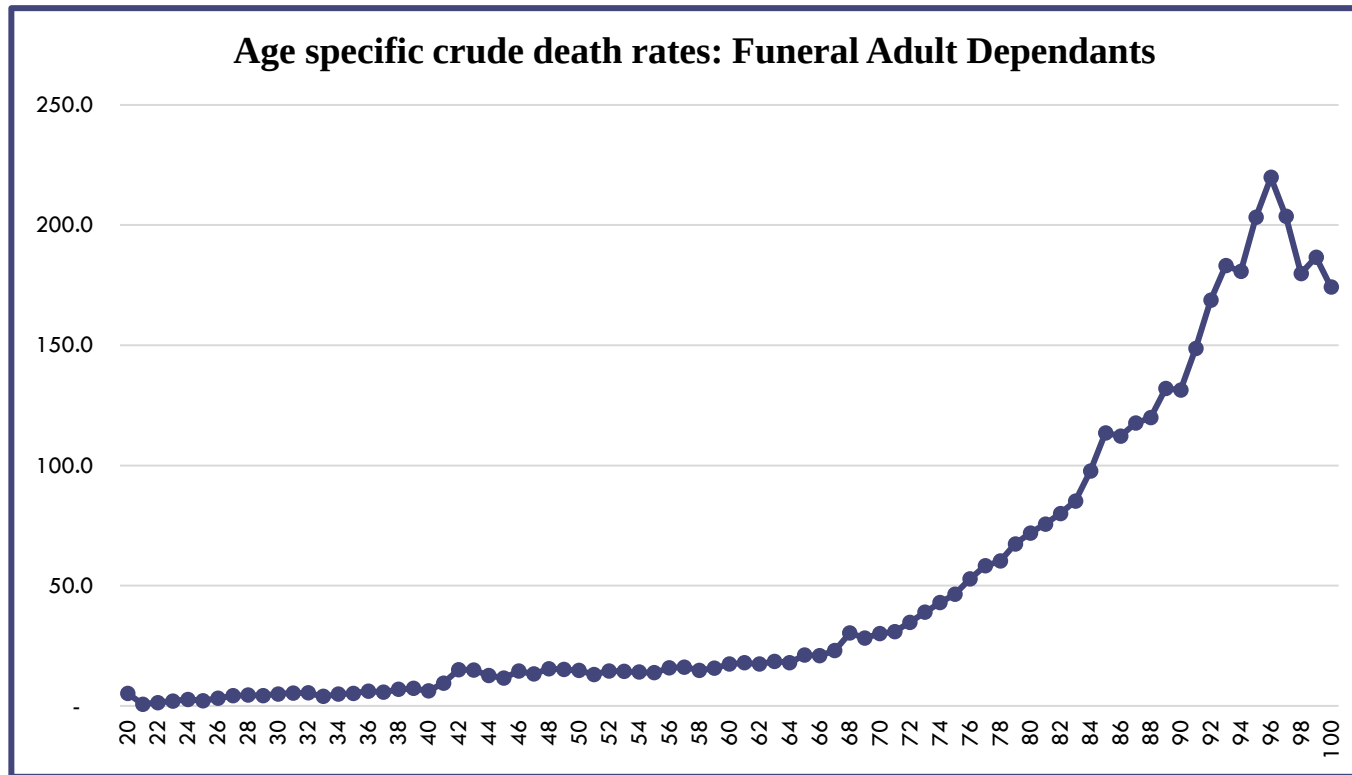
FUNERAL SPOUSES

Funeral Spouses age specific crude death rates



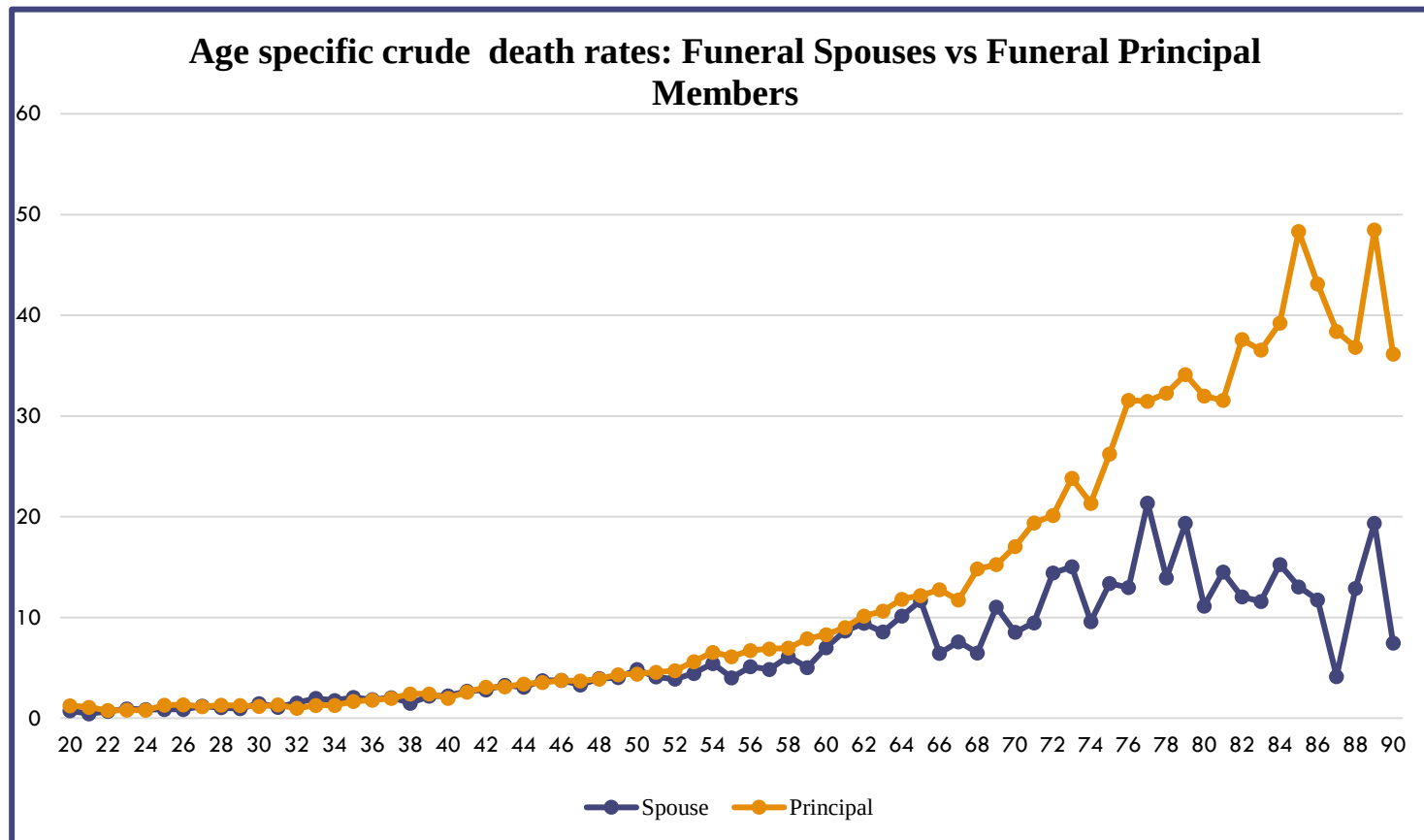
- Mortality is increasing with age from age 20 to age 65
- Thereafter the graph becomes steeper and more volatile

FUNERAL ADULT DEPENDANTS



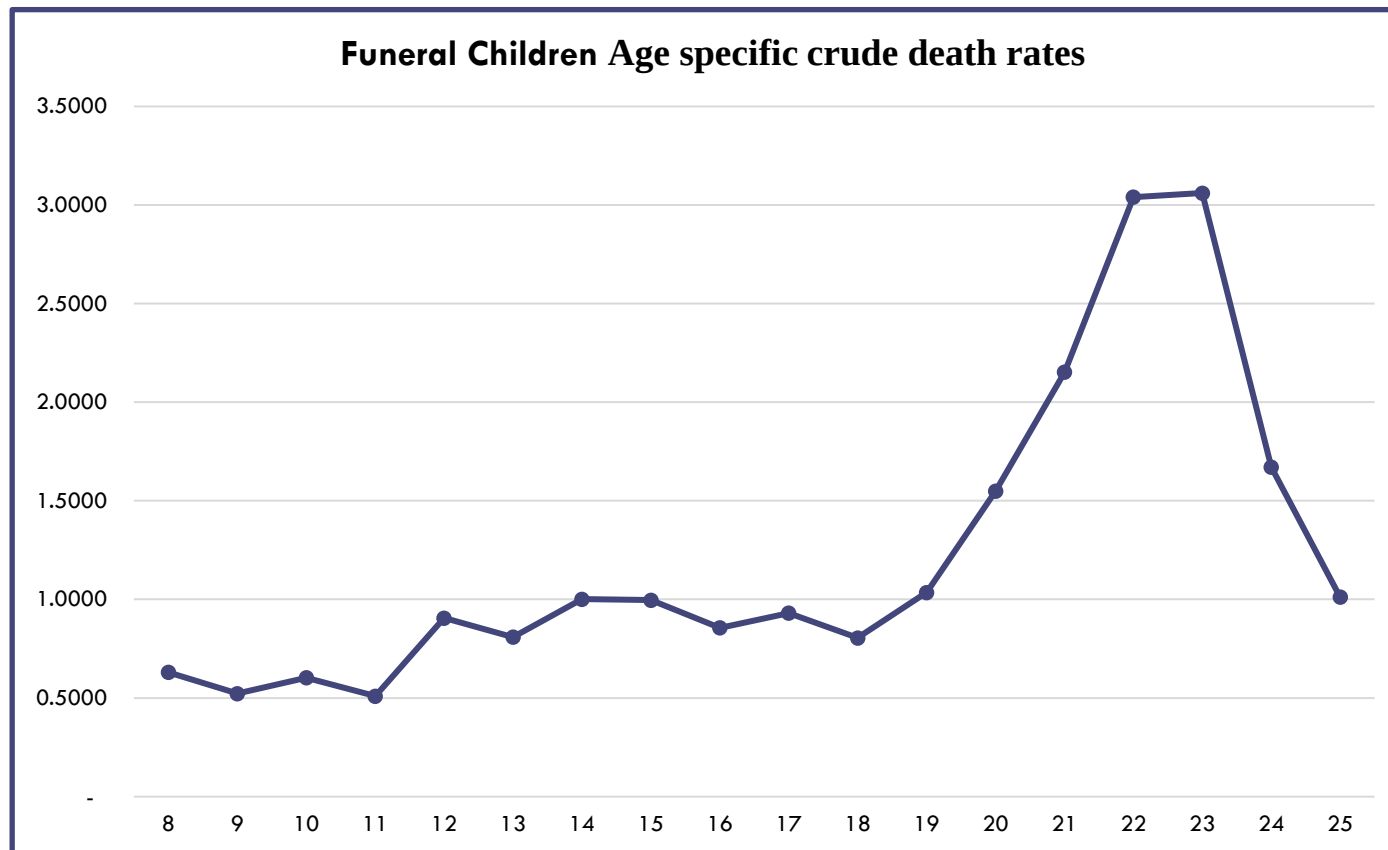
- There is a steady increase from age 20 to 80
- Thereafter, the increase becomes steeper and volatile.

FUNERAL PRINCIPAL MEMBERS VS SPOUSES



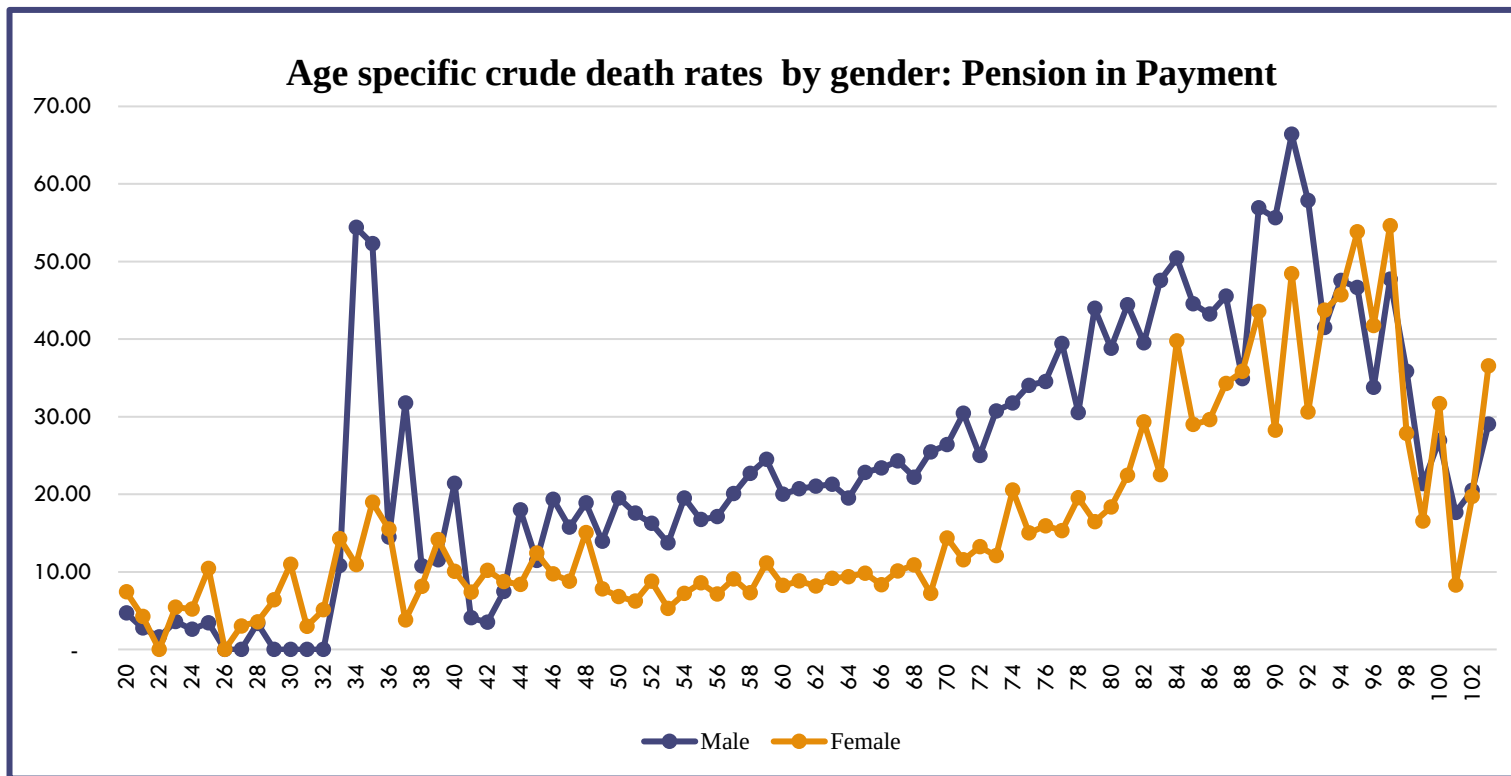
- The spouses' and principal members' graphs are aligned from ages 20 to 65
- Thereafter, the Principal members' graph becomes steeper than the Spouses' graph

FUNERAL CHILDREN



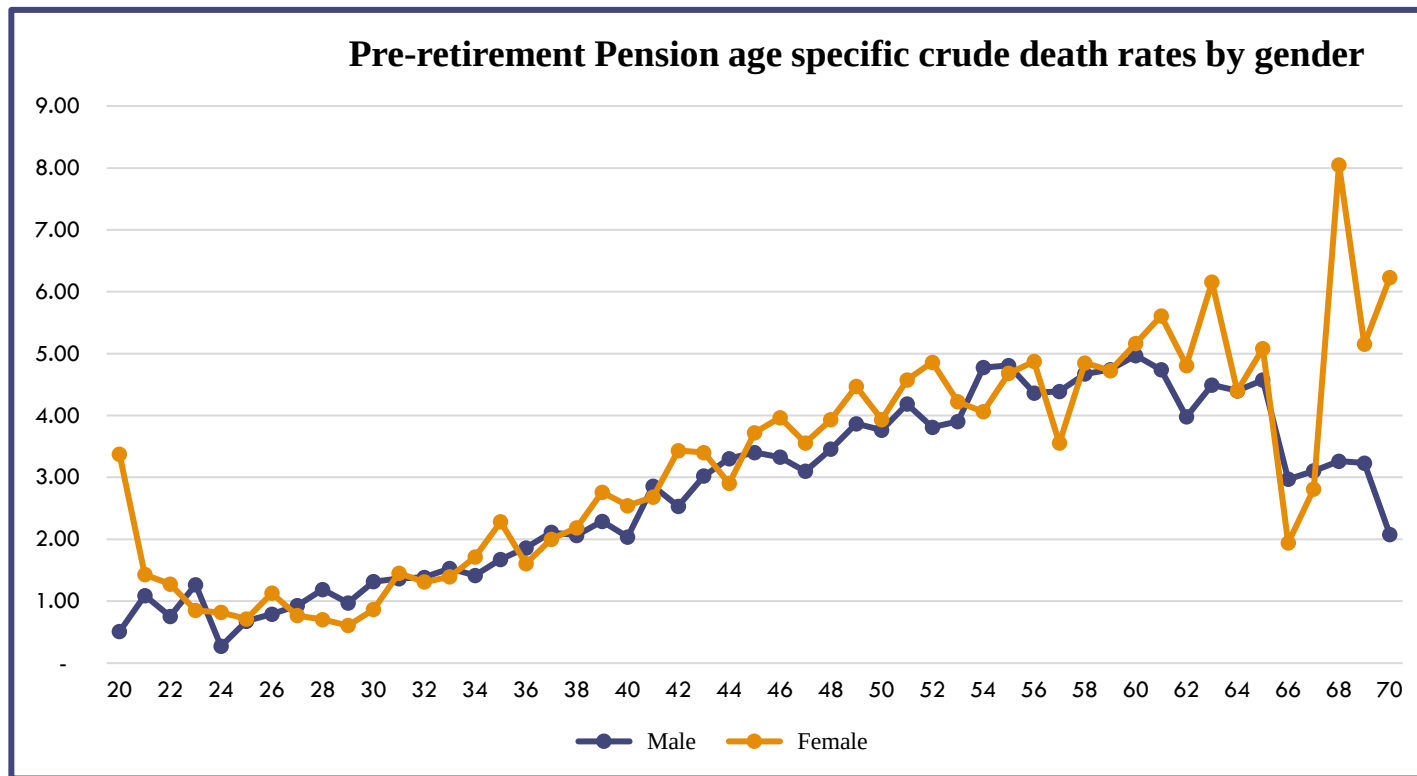
- The funeral crude death rate graph is relatively flat from ages 8 to 18
- The accident hump can be seen from age 19 to 25

PENSION IN PAYMENT



- The graphs have similar shapes, and the female rates are lower than the male rates.
- Both graphs show volatility for ages younger than 50 and older than 85

PRE-RETIREMENT PENSION



- The female rates are higher than male rates for most ages
- The rates for older ages show volatility for both males and females

COMPARISON OF ACTUAL DEATHS AND SELECTED STANDARD MORTALITY TABLES EXPECTED DEATHS

SA56-62

Actual Deaths vs Expected SA56-62 Deaths

Product	Exposure	Actual Deaths	Expected Deaths	Actual/Expected
Group Life Assurance	2,564,396	7,798	9,650	81%
Assured Lives	540,705	1,048	2,166	48%
Funeral Principal Members	6,779,178	30,695	65,317	47%
Funeral SpouseS	2,487,841	7,296	16,437	44%
Funeral Adult Dependants	5,915,208	136,353	166,416	82%

SA85-90

Actual Deaths vs Expected SA85-90 Deaths								
Product	Exposure	Actual Deaths	Expected Deaths			Actual/Expected		
			SA85-90	SA85-90 Light	SA85-90 Heavy	SA85-90	SA85-90 Light	SA85-90 Heavy
Group Life Assurance	2,564,396	7,798	14,998	14,132	22,884	52%	55%	34%
Assured Lives	540,705	1,098	3,402	3,221	5,088	31%	33%	21%

SA67-70

Actual Deaths vs Expected A67-70 Deaths				
Product	Exposure	Actual Deaths	Expected Deaths	Actual/Expected
Funeral Principal Members	6,779,178	30,695	50,436	61%
Funeral SpouseS	2,487,841	7,296	11,610	63%
Funeral Adult Dependants	5,915,208	136,353	151,439	90%
Children	4,332,908	4,066	3,180	128%

A55

Actual Deaths vs Expected a55 Deaths								
Male					Female			
Product	Exposure	Actual deaths	Expected deaths	Actual/Expected	Exposure	Actual deaths	Expected deaths	Actual/Expected
Retirement Annuities	86,075	226	556	41%	38,844	50	131	38%
Annuities in Payment	20,863	292	967	30%	10,307	129	350	37%
Pre-Retirement Pension	3,914,550	11,263	11,949	94%	599,450	1,752	1,109	158%
Post-Retirement Pension	236,230	7,075	9,805	72%	191,051	2,568	4,166	62%



PA(90)

Actual Deaths vs Expected PA(90) Deaths								
Male					Female			
Product	Exposure	Actual deaths	Expected deaths	Actual/Expected	Exposure	Actual deaths	Expected deaths	Actual/Expected
Retirement Annuities	86,075	226	907	25%	38,844	50	159	31%
Annuities in Payment	20,863	292	1,228	24%	10,307	129	470	27%
Pre-Retirement Pension	3,914,550	11,263	18,216	62%	599,450	1,752	1,118	157%
Post-Retirement Pension	236,230	7,075	21,409	33%	191,015	2,568	5,729	45%

CENSUS MALE

Male Actual deaths vs Expected Census Male Deaths

Product	Exposure	Actual deaths	Expected deaths			Actual/ Expected		
			2017	2012	2002	2017	2012	2002
Group Life Assurance	2,145,676	6,727	30,120	34,320	85,350	22%	20%	8%
Assured Lives	358,205	817	1,681	1,763	3,863	49%	46%	21%
Retirement Annuities	86,075	226	1,754	1,768	3,609	13%	13%	6%
Annuities in Payment	18,505	252	1,292	944	1,182	20%	27%	21%
Funeral Principal Members	6,765,315	29,897	100,442	83,476	224,963	30%	36%	13%
Funeral Spouses	2,485,321	7,280	32,196	25,800	80,104	23%	28%	9%
Funeral Adult Dependants	5,817,548	117,822	137,158	122,103	191,902	86%	96%	61%
Children	4,289,427	4,022	10,001	6,324	14,799	40%	64%	27%
Pre-Retirement	3,914,550	11,263	53,975	61,660	154,279	21%	18%	7%
Post-Retirement **	225,758	6,530	12,528	10,191	13,029	52%	64%	50%



CENSUS FEMALE

Female Actual Deaths vs Expected Census Female Deaths

Product	Exposure	Actual deaths	Expected deaths			Actual/ Expected		
			2017	2012	2002	2017	2012	2002
Group Life Assurance	418,719	1,071	5,468	4,559	12,185	20%	23%	9%
Assured Lives	182,500	231	1,383	1,212	2,804	17%	19%	8%
Retirement Annuities	38,844	50	603	478	1,032	8%	10%	5%
Annuities in Payment	9,449	117	395	319	432	30%	37%	27%
Pre-Retirement	599,450	1,752	5,468	4,559	12,185	32%	38%	14%
Post-Retirement**	183,390	2,260	5,362	4,425	6,344	42%	51%	36%



CONCLUSION AND RECOMMENDATIONS

- Phase II Analysis showed that for most products the standard mortality tables that are currently being used in the market overstate the underlying mortality.
- Due to low volume of data for the Retirement Annuities and Annuities in Payment we recommend the following:
- The combination of the Retirement Annuities with the Pre-Retirement data from the Pensions business
- The combination of the Annuities in Payment data with Pensions in Payment data from the Pension Business
- **OR**
- Excluding the products from the development of mortality tables
- The data for the other products is reasonably good and adequate to proceed with the development of the mortality tables.

*Thank
you*

