# DEVELOPMENT OF ZIMBABWE MORTALITY TABLES

PHASE I WORKSHOP

14 APRIL 2022

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# INTRODUCTION

# MORTALITY TABLES TO BE DEVELOPED

- Individual/retail life business- for the insured lives. These will include, wholelife, term assurance, endowment, and any other individual life products
- Annuity Business- for individual lives who have purchased insured annuity products
- Pre- Retirement Pension Business-self-administered pension schemes and insured pension schemes active members and deferred pensioners
- Post – Retirement Pension Business- for people who are receiving pensions in insurance companies and self-administered pension schemes
- Group Assured Lives- For people covered under an employer group insurance scheme
- Funeral Assurance/Micro Insurance- for people insured by funeral and micro insurance companies

# AFRICAN COUNTRIES THAT HAVE DEVELOPED MORTALITY TABLES

- Egypt
- South Africa
- Uganda
- Kenya

# DEVELOPMENT OF MORTALITY TABLES: TIMETABLE

Initial reports

Project Charter

Inception Report

PHASE I

Desk top analysis

PHASE II (April-May 2022)

Conduct a workshop  for industry

Collect and analyse data

Conduct validation workshop and feedback to the industry

PHASE III (June-July 2022

Develop mortality tables

Conduct a workshop to share results

PHASE III (cont)

Conduct workshop to share results

Present final report to IPEC

Conduct a final workshop-highlighting key issues and future developments

# PHASE I :DESKTOP ANALYSIS

# STANDARD MORTALITY TABLES IN THE MARKET

# MAIN STANDARD MORTALITY TABLES IN USE IN THE MARKET

**Individual/Retail lives**

SA1956-62 SA72-77

SA85-90 A1967-70

**Post Retirement and Annuities**


A55

PA90

**Funeral Assurance**


SA85-90

# ADJUSTMENTS TO THE STANDARD MORTALITY TABLES

AIDS/HIV loading

- Most of the standard mortality tables were developed pre-Aids/HIV era

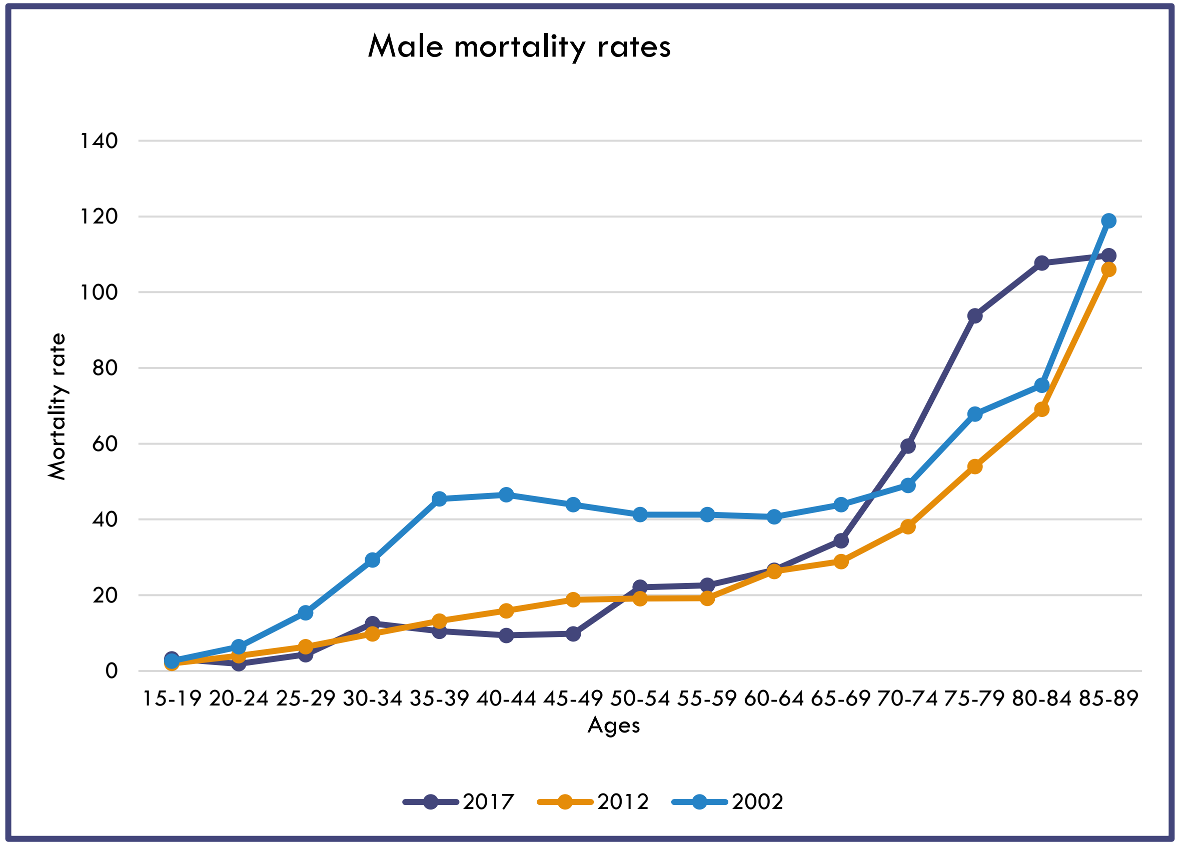

Mortality Experience of the underlying population

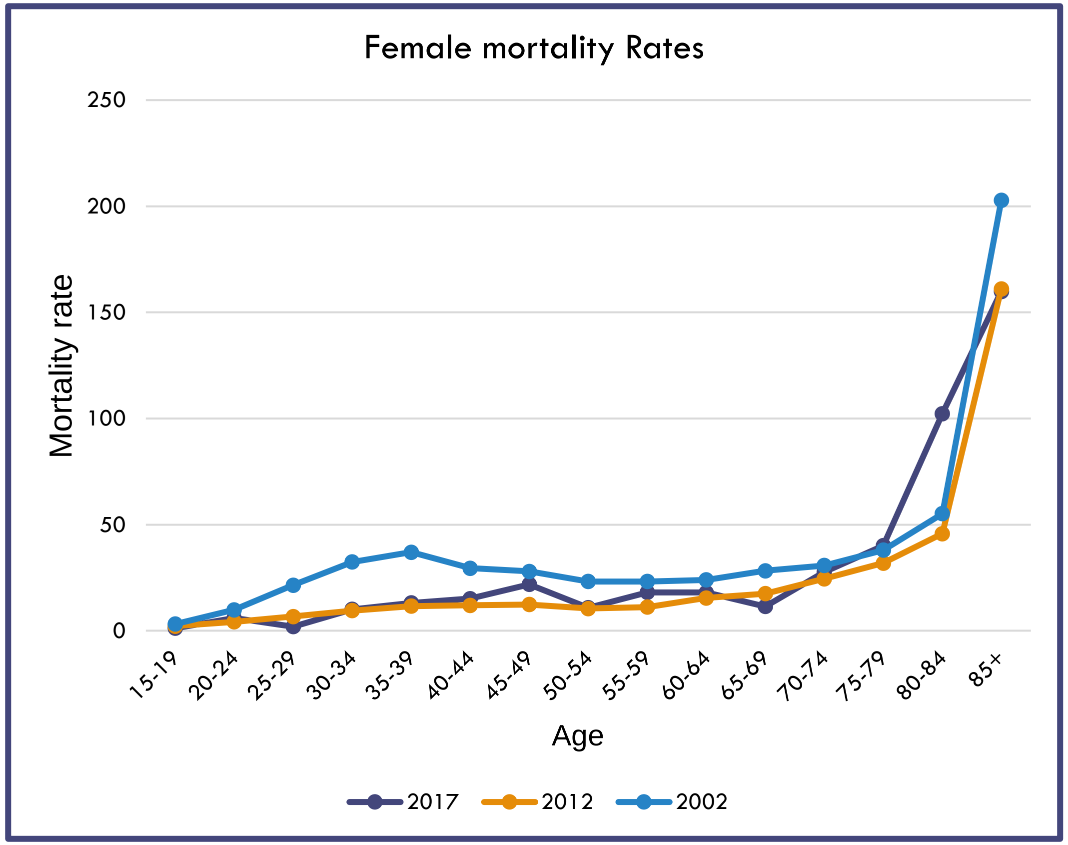
# REVIEW OF SAMPLE OF MORTALITY  TABLES DEVELOPED ELSEWHERE

- SA 1956-62- for white males in SA and Namibia
- Mortality of members of Group Schemes in South Africa 2005-2009
- Kenya Mortality tables : KE 2001-2003
- Mortality tables for Uganda Assured lives 2015-2019
- SA Annuitants standard mortality tables – 1996-2000 (SAIML 98 & SAIFL98)
- Pensioner Mortality 2005-2009
- Assured lives funeral mortality investigation 2001-2002

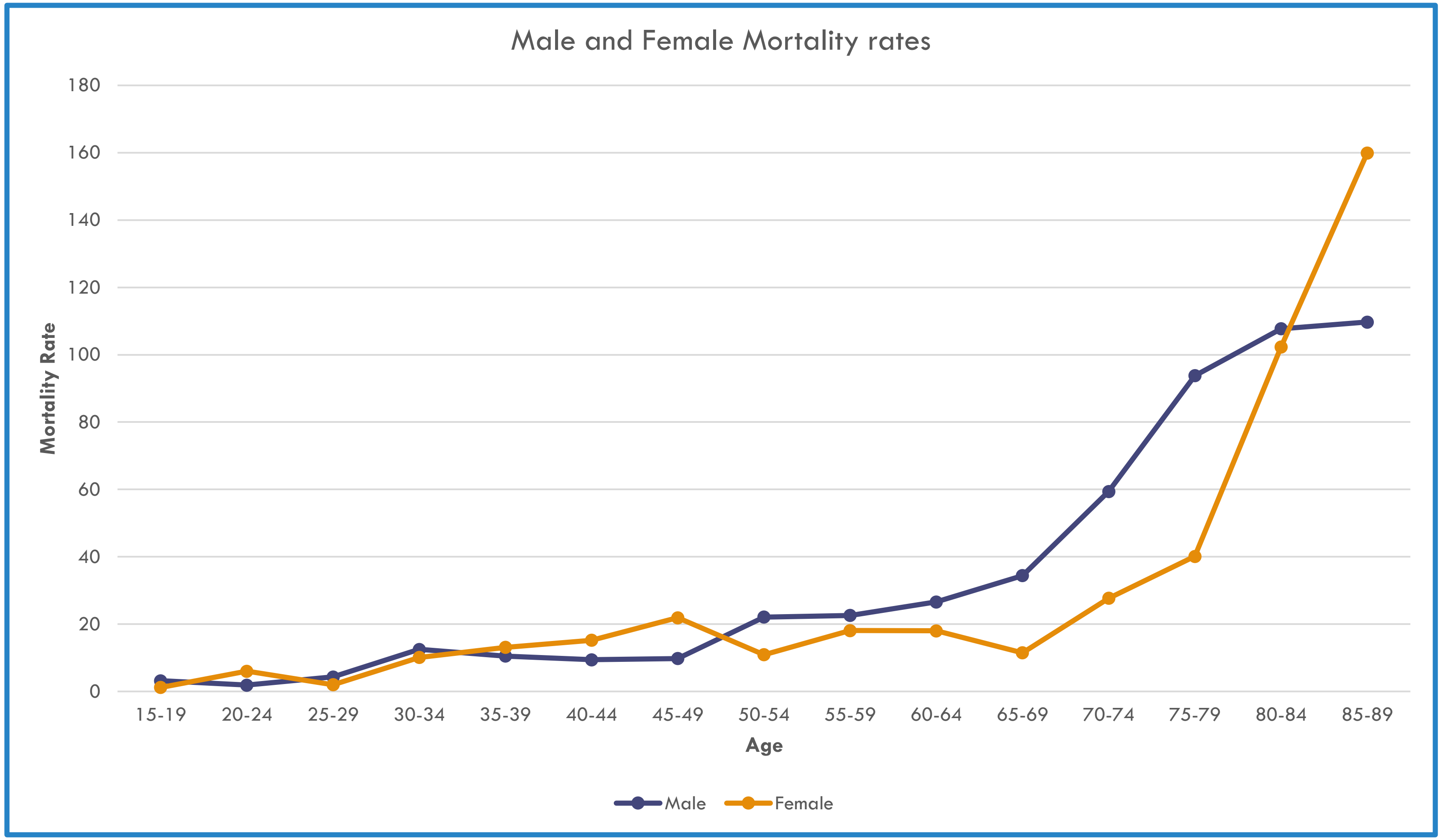
# MORTALITY OF THE GENERAL POPULATION

# GENERAL POPULATION MORTALITY RATES AT EACH CENSUS



# MALE AND FEMALE MORTALITY RATES: 2017 INTER-CENSUS SURVEY



# COMPARISON OF STANDARD MORTALITY TABLES AND GENERAL POPULATION MORTALITY TABLES

## General Population

- Latest mortality rates for the general population
- But likely to over-estimate mortality of the assured lives and pension scheme members

## Standard Tables

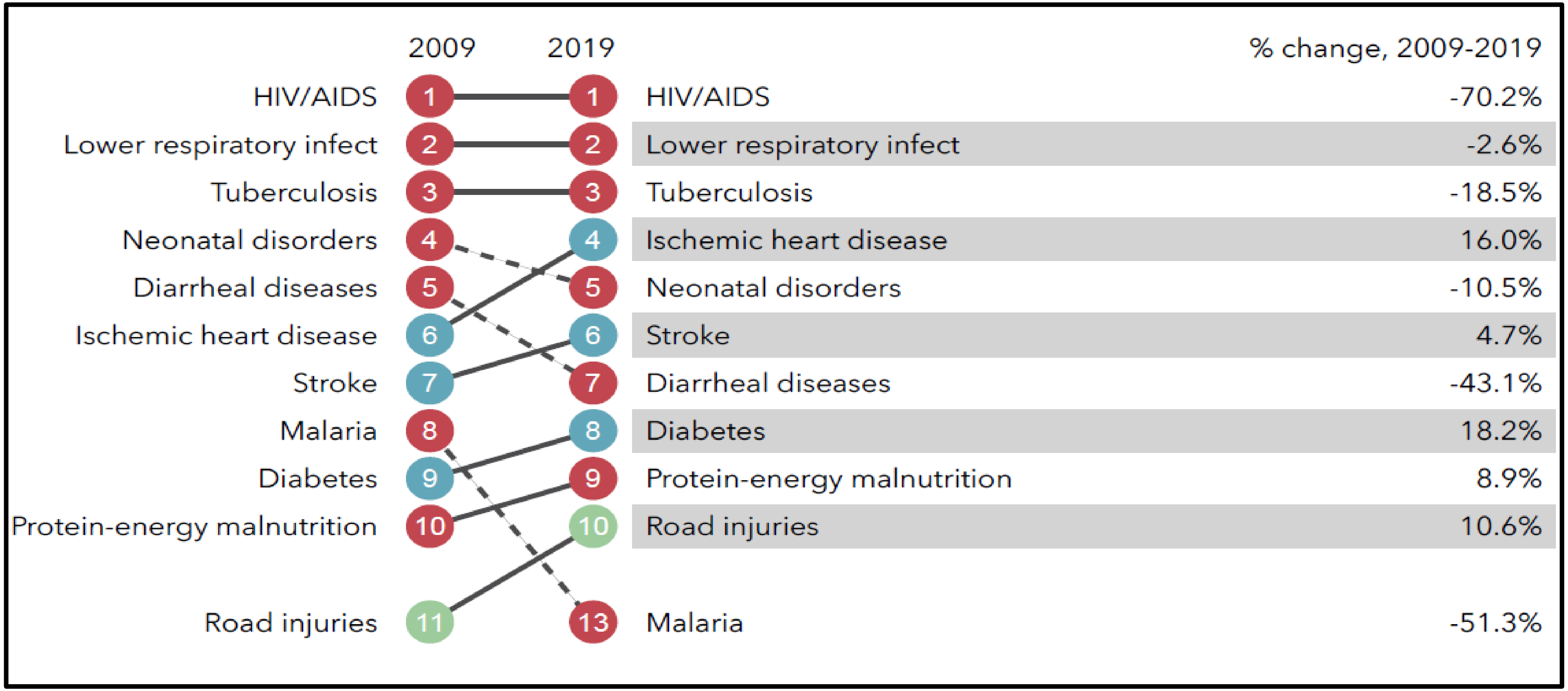
- Provides a lighter mortality
- However, the mortality shape might be different due to difference of the mortality of the underlying lives

# MAJOR CAUSES OF DEATH IN ZIMBABWE

# TOP TEN CAUSES OF DEATH IN ZIMBABWE

| | |
|---|---|
| Communicable diseases | • HIV /AIDS; Lower respiratory infection<br>• Tuberculosis; malaria |
| Non-communicable diseases | • Ischemic heart disease; stroke<br>• Diabetes |
| other | • Neonatal disorders; Road traffic<br>• Protein-energy malnutrition |

# CHANGES IN THE TEN CAUSES OF DEATH 2009-2019



# HIV AIDS

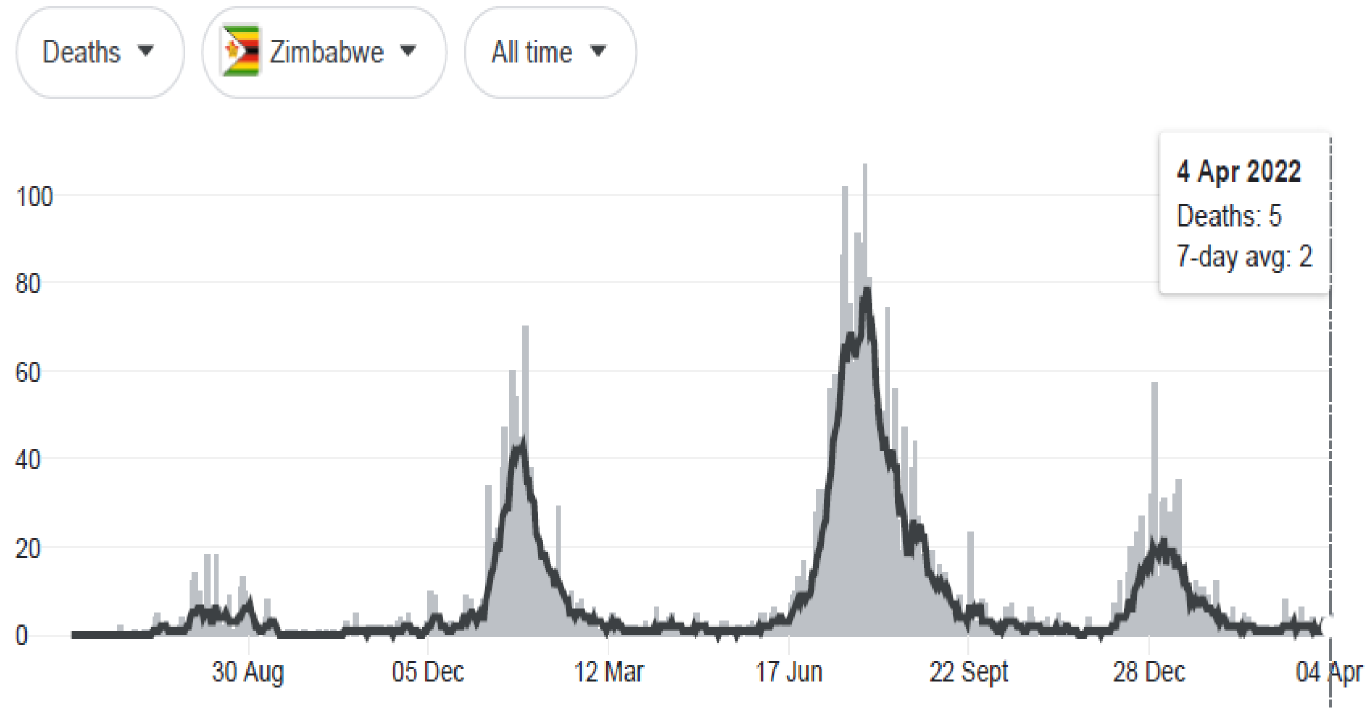
- In 2019 1.3 million people were living with HIV
- Aids related deaths decreased from 120,000 in 2001 to 20,000 in 2019
- In 2019 85% of adults with HIV/AIDs were on antiviral program

# COVID-19-DEATHS

Short term  effect on mortality

Long- term effect damage to

- Lungs
- Kidneys
- Heart
- Brain



# IMPACT OF INCORRECT MORTALITY TABLES

**Incorrect**

- Premiums
- Pension contributions for a DB
- Pension cost at retirement
- Profit reporting
- Capital requirement determination

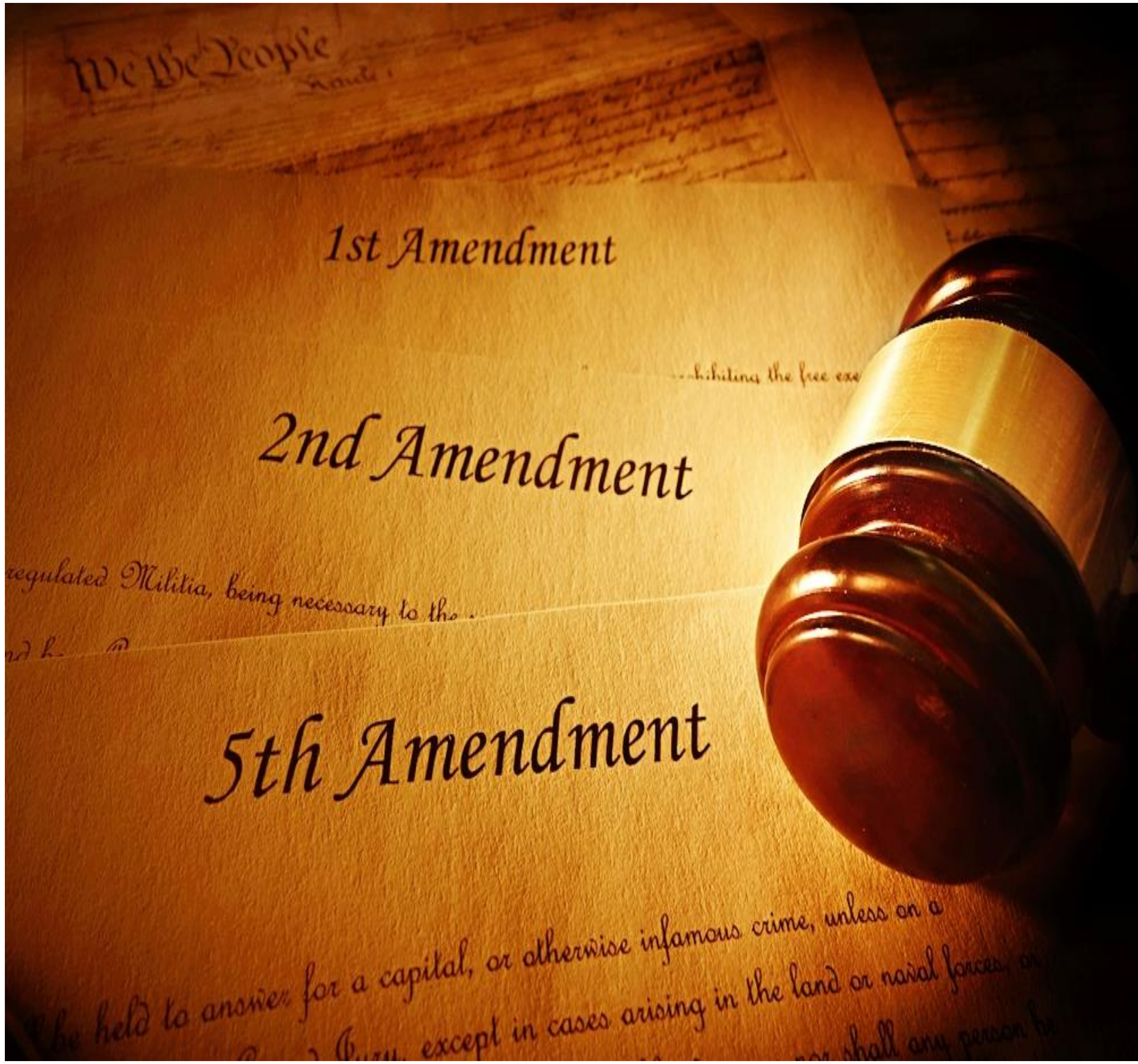
# CURRENT LEGAL AND REGULATORY FRAMEWORK

# CURRENT LEGAL & REGULATORY FRAMEWORK

- Insurance Act and Insurance Bill
- Pension Act and Pension Bill
- Circular 6 of 2016- development of insurance products
- Statutory Instrument 95 of 2017
- Justice Smith Commission of Inquiry
- Guideline for Insurance and Pensions Industry on adjusting insurance and pension values
- ZiCARP TS62- Determination of life underwriting risk capital

# AMENDMENTS THAT MIGHT BE REQUIRED TO THE LEGAL & REGULATORY FRAMEWORK

- The Insurance and Pensions Bills gives the Commission power to prescribe assumptions and methods to be applied for the actuarial work- pricing, valuation, capital and profit reporting
- The Commission will have to give details of the respective assumptions and methods through guidance notes including mortality tables to use
- The guidance notes can be changed from time to time depending on the prevailing market conditions.



# PROPOSED METHODOLOGICAL APPROACH

# METHOD OF COLLECTING THE EXPOSURE DATA

Census method

Policy data and not lives

# DATA VALIDATION FOR:

- Incomplete data ; Incorrect data; Inconsistent data

# ANALYSIS OF DATA

Comparison of deaths from this investigation to expected deaths from

- Standard mortality tables
- Population mortality tables

# DEVELOPMENT OF THE MORTALITY TABLES

Crude Mortality rates

Graduation method –Formula vs standard mortality table

Goodness of Fit methods

- Probable error test; standardised deviation test
- Chi-square test; Deviation sign-change test
- Serial correlation; Group of sign test
- Absolute deviation test; Cumulative deviations test
- Steven’s/group of signs test

# FUTURE MORTALITY INVESTIGATIONS

Proposed monitoring and evaluation framework

# FUTURE MORTALITY INVESTIGATIONS

| | |
|---|---|
| Custodian? | • In SA and UK- Actuarial Committees |
| Frequency? | • Kenya- every 5 years; UK  every 10 years |
| Who ? | • UK and SA- Actuarial Committees<br>• Kenya, Uganda and Egypt- Consultants |

# DATA


data
information
development
may
also
new
time
analysis
big
challenges
social
Google
Global
mobile
online
specific
use
one
different
digital
help
real-time
streams
large
many
users
research

# “QUOTES ON DATA”

“ It is a capital mistake to theorize before one has data”
Sherlock Holmes

“ Above all else, show the data”
Edward R Tufte

“Data really powers everything that we do” Jeff Weiner

# DATA CHALLENGES FACED BY PREVIOUS MORTALITY DEVELOPMENT PROJECTS

- No dedicated staff in the institutions to provide data and answer queries
- Incomplete data, for example, no date of birth
- Incorrect data for example date of birth later than start date
- Inconsistent data, for example date of birth the same as date of inception of the policy

# SUPPLIERS OF DATA

- Life Insurance Companies
- Pension schemes/administrators
- Funeral/Micro insurance Companies


# DATA REQUIREMENTS

## Exposure Data

Policy data as at 31 December xxxx

- by product
- By gender- male/female
- Date of birth
- Inception date

## Deaths Data

Deaths that occurred in year 20xx

- by product
- By gender- male/female
- Date of birth
- Inception date

# ESTIMATED EXPOSURE DATA (FROM IPEC REPORTS)

| | 2018 | 2019 | 30 June 2021 |
|---|---|---|---|
| **Pension Schemes** | 795,444 | 809,176 | 889,103 |

| | 2019 | Dec 2020 |
|---|---|---|
| Life Insurance | 2,189,617 | 2,381,575 |

# DATA COLLECTION

Detailed Manual will be provided.

- Each exposure data should have corresponding deaths data.
- The 2019 data should be submitted first, once this is checked then the rest of the data should be submitted.
- Data can be submitted through email or shared drive.
- Institution to provide dedicated staff to provide data and answer queries
- Data collection is estimated to take four weeks


# DISCUSSION POINTS WITH SUPPLIERS OF DATA

# DISCUSSION POINTS WITH DATA SUPPLIERS

What period the data is available?

| | |
|---|---|
| A | 2009-2019 |
| B | 2014-2019 |
| C | 2017-2019 |

What are the gaps in your data?

| | |
|---|---|
| A | Date of Birth |
| B | Sex |
| C | Start date |

# DISCUSSION POINTS WITH DATA SUPPLIERS

Do you have dedicated staff to supply data?

| | |
|---|---|
| A | Yes |
| B | No |

What timeline do you have to supply the data?

| | |
|---|---|
| A | one week |
| B | two weeks |
| C | four weeks |

# Thank you