



QUANTIFYING RISK, ENABLING OPPORTUNITY

Subject:  
AN INVESTIGATION INTO COGNITIVE  
DECLINE AND ITS COSTS IN  
RETIREMENT.

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**Cognitive decline**

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# Background

- My role in the research
  - Wits University
  - Retirement
  - Degrees of inadequacy
- Authors of the paper
  - Matthew McGurk
  - Partha Rambaran

# Aims of research

## Research questions

- Cognitive decline in the context of longevity
- How does retirement affect cognitive decline?
- Should we be saving more to account for additional care during retirement?

## Research aims

- Identify the factors that influence the onset of cognitive decline
- Investigate how dementia affects future expected lifetime
- Estimate the expected costs incurred in retirement due to dementia

# Aims of research

## Research questions

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## Research aims

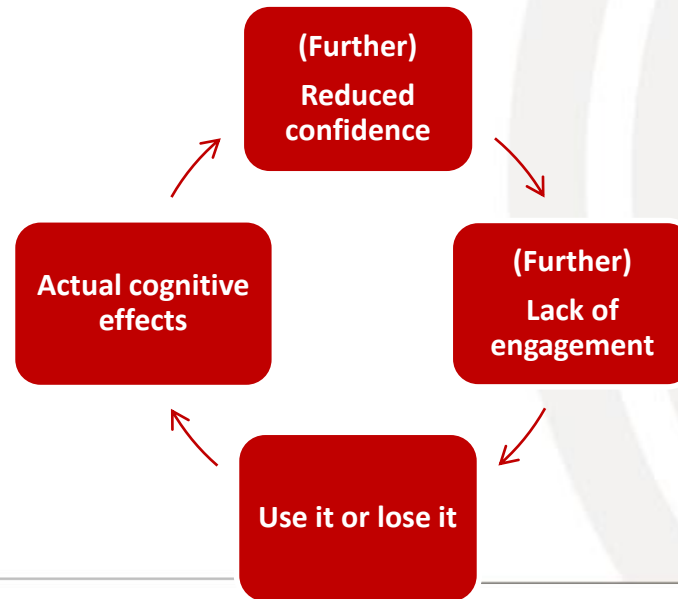
- Identify the factors that influence the onset of cognitive decline
- Investigate how **dementia** affects future expected lifetime
- Estimate the expected costs incurred in retirement due to **dementia**



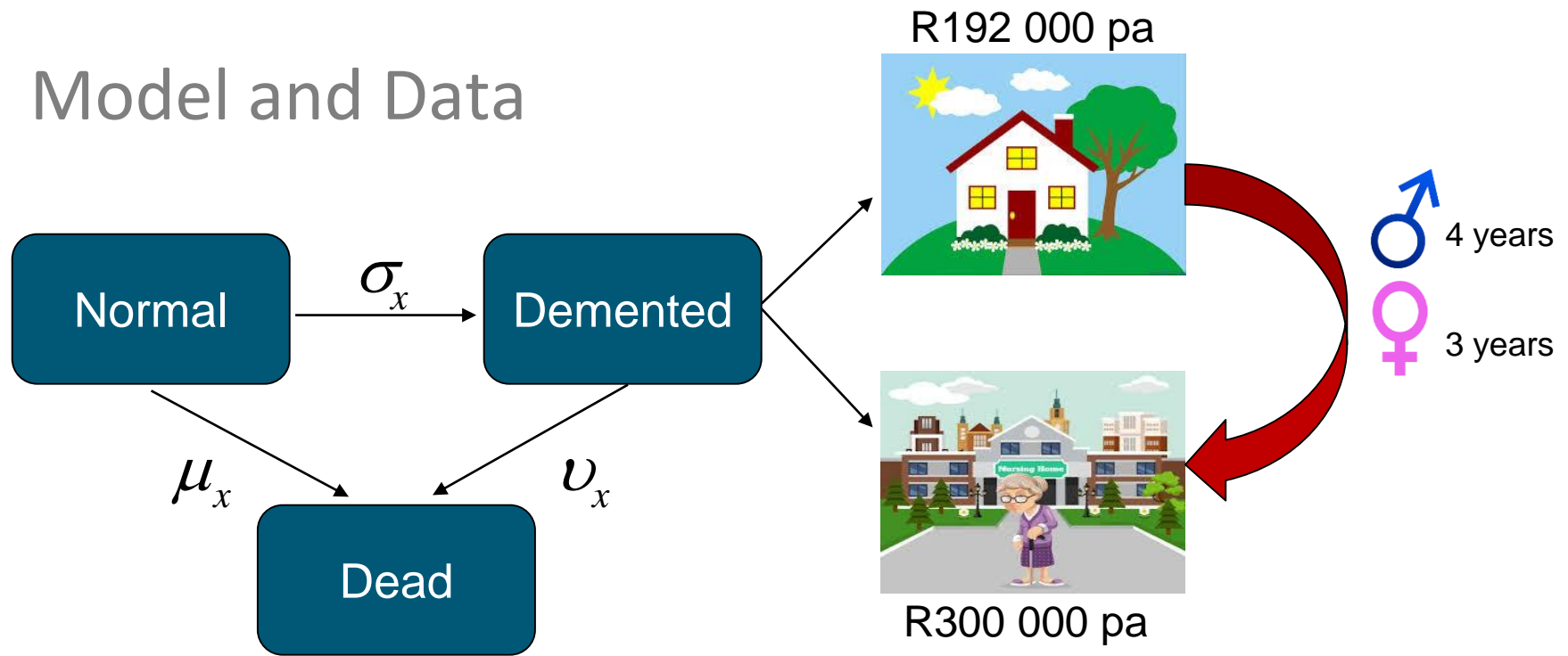
# Cognitive decline

## The effect of retirement

- Beneficial (stress relief) vs Detrimental (“use it or lose it”)
- Difficult to test
  - Reverse causation
  - Time effect → negative causal relationship
  - Occupational heterogeneity → improves cognition for physically strenuous jobs
- The vicious cycle:



# Model and Data



## Assumptions

- Retirement at age 60
- Interest = 9.7% per annum
- Cost increases = 8.71% per annum



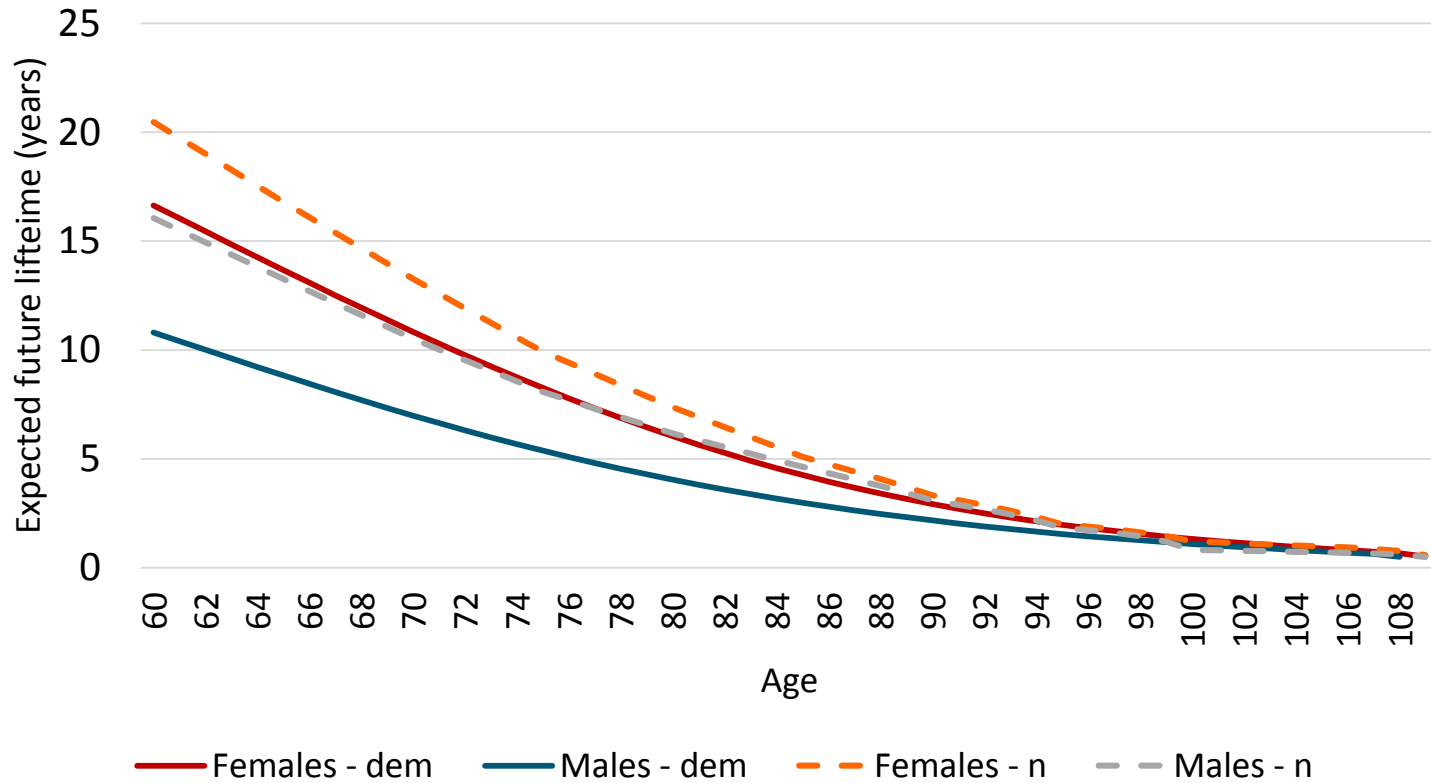
# Model and Data

## Parameters

- $\mu_x$  - ASSA CSI: Pensioner mortality investigation. 2005 - 2010
- $\sigma_x$  - Ott et al. (1998) and Fratiglioni et al. (2000)
- $U_x$  - 20 year study on effect of cognitive decline on mortality: (Gayle, Martyn & Cooper, 1996)
- Cost of care – “A place for mom. Dementia care guide.”  
– “IOL Personal Finance: Frail Care: what you should know.”
- Institutionalisation – Thomas et al. (2004)

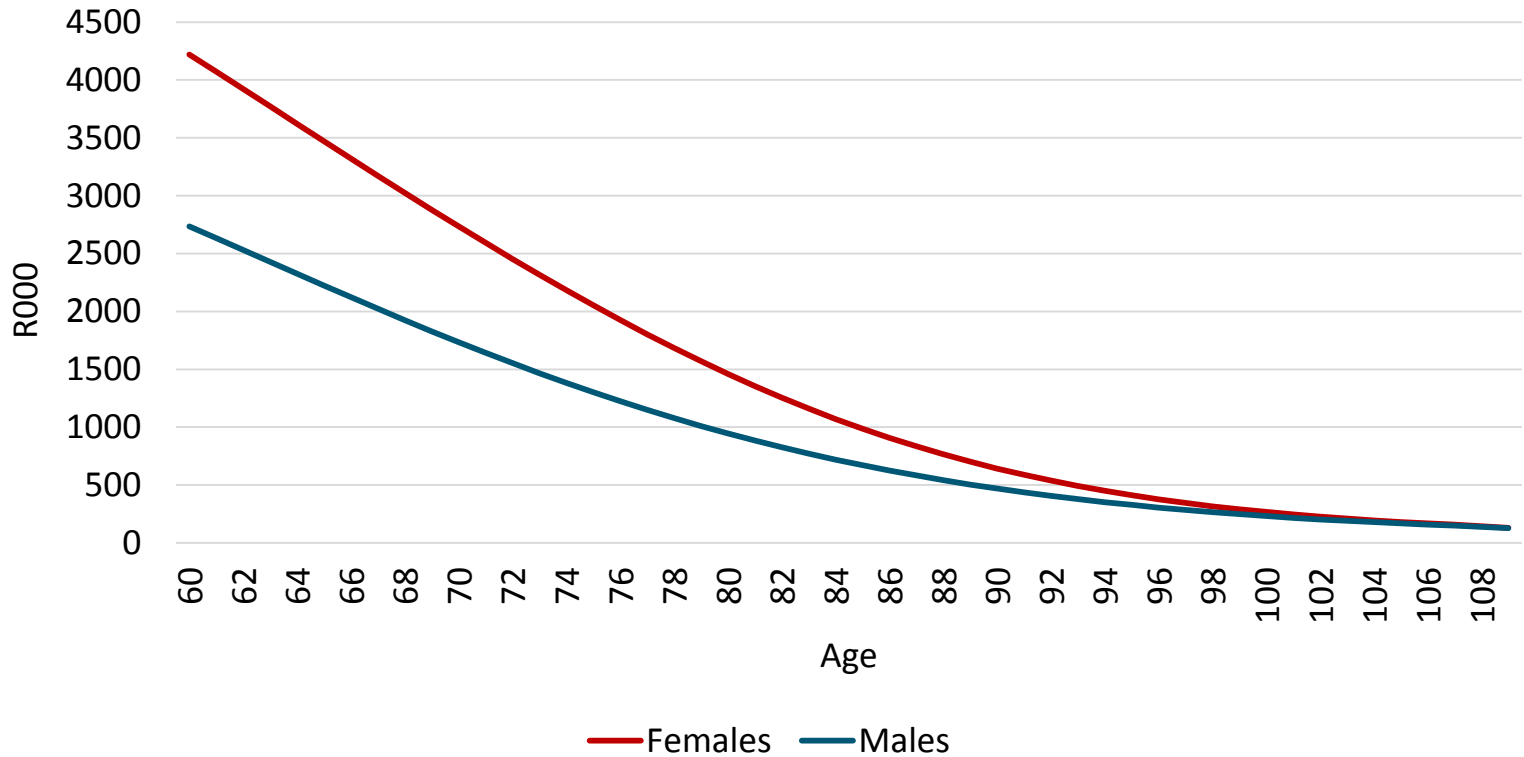
# Results

## Expected future lifetime in the demented state



# Results

## EPV of cost of care per age of dementia onset



# Results

EPV of cost of care given dementia onset at age 60

- Males = R 2 735 000
- Females = R4 220 000

EPV of cost of care if in normal state at age 60

- Males = R 92 000
- Females = R261 000

# Conclusion

- Generally retirement savings are insufficient
- Longevity increases cost of retirement
  - Payments required for longer period (known)
  - Need for full time medical care at older ages
  - Only one element (dementia) considered
  - What else might we have missed?
- Gaps in insurance – is the risk too high?

Conclusion

**Discussion**