

# Towards Priorities for Aging Research

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LEADING  
TECHNOLOGY  
GROUP



# Who & Why?

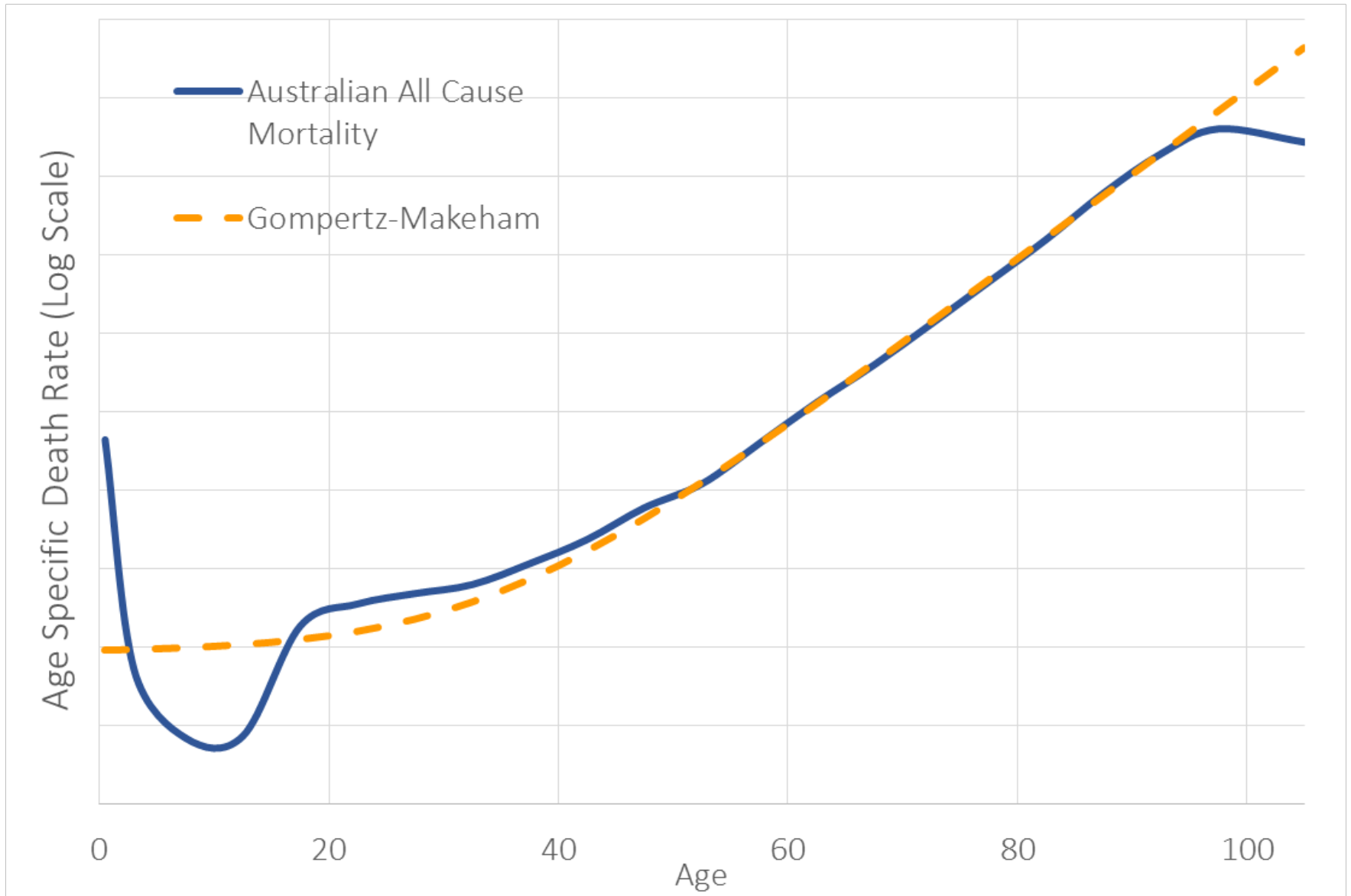
- Leading Technology Group has been investing in life sciences field
- Our future investment focus is on SENS type opportunities, in particular vascular aging
- Here we discuss the prioritisation approach that lead to this decision



# Aim: Priorities for Aging Research

- Ideally, with a SENS view, we would prioritise instances of aging damage
- No standard definitions or demographic data on damage, so we prioritise disease
- We use Australian Burden of Disease Data
- Here we briefly review the path to our approach and the results

# Character of Mortality



# Disease Curves Vary

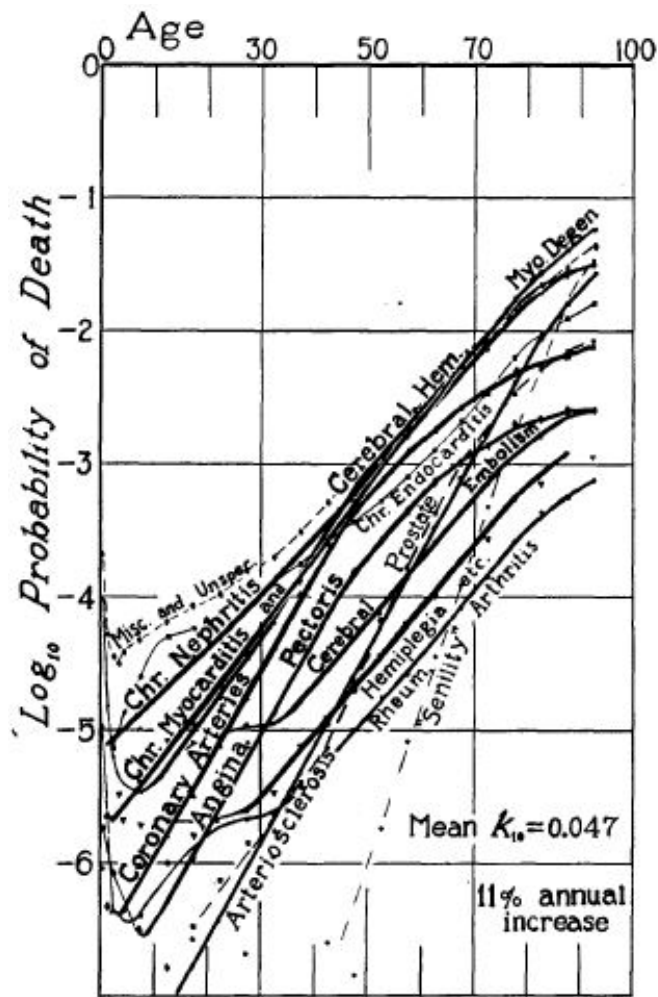


FIG. 5. Cardiovascular-Renal Diseases (Group B).

(Simms 1946)

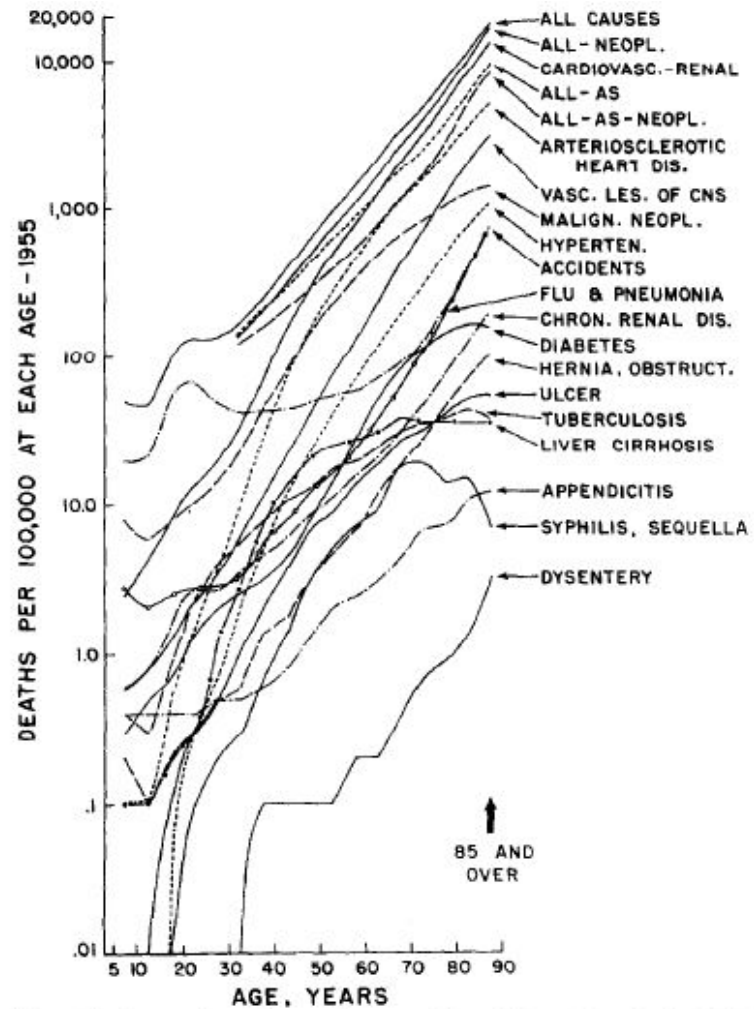
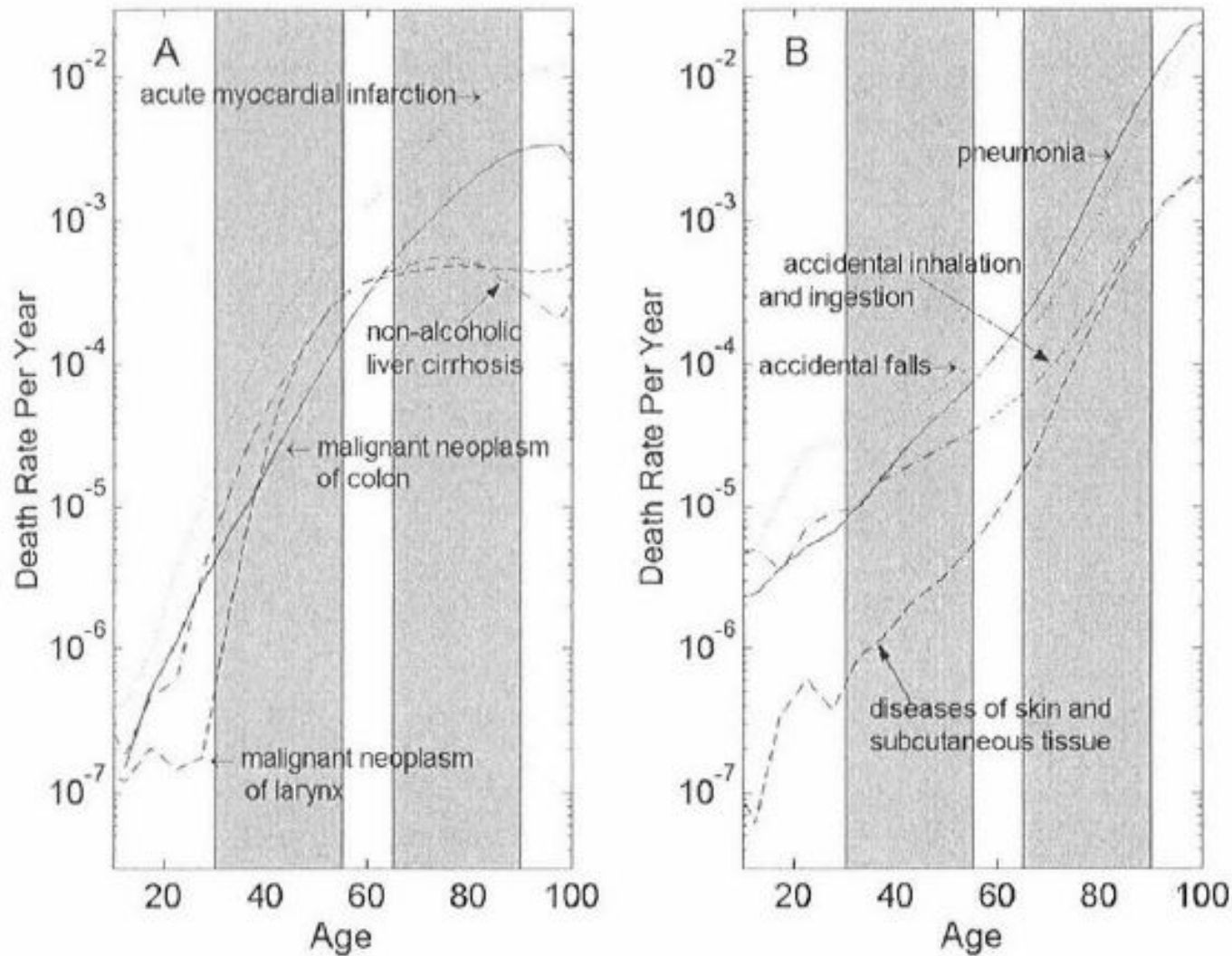


FIG. 1. Mortality from selected causes by age. Plotted from data in the U.S. National Office of Vital Statistics report [1].

(Kohn 1963)

# Disease Curves Vary Over Lifespan



(Horiuchi, Finch et. al. 2003)



# High-level Findings

1. Accelerate in old age/post reproductive:
  - Dementia (Vascular & Alzheimer's)
  - Several infectious diseases (Influenza)
  - Accidental injuries associated with frail musculoskeletal system (Falls, Suffocation etc)
  - Digestive system (Bowel obstruction)
  - Genital/urinary system (Kidney disease)
2. Decelerate in old age/post reproductive
  - Life style: heavy drinking (Liver disease), smoking (Lung cancer), and obesity (Type 2 Diabetes)
  - Disease history (Rheumatic heart disease, Hepatitis)
  - Genetic factors (Multiple sclerosis, some Cancer)



# Summary Interpretation

1. Accelerating: dominated by senescent processes from normal metabolism
  2. Decelerating: dominated by individual specific risk factors
- With a focus on aging, our ranking should
    - Over weight diseases that accelerate
    - Under weight diseases that decelerate

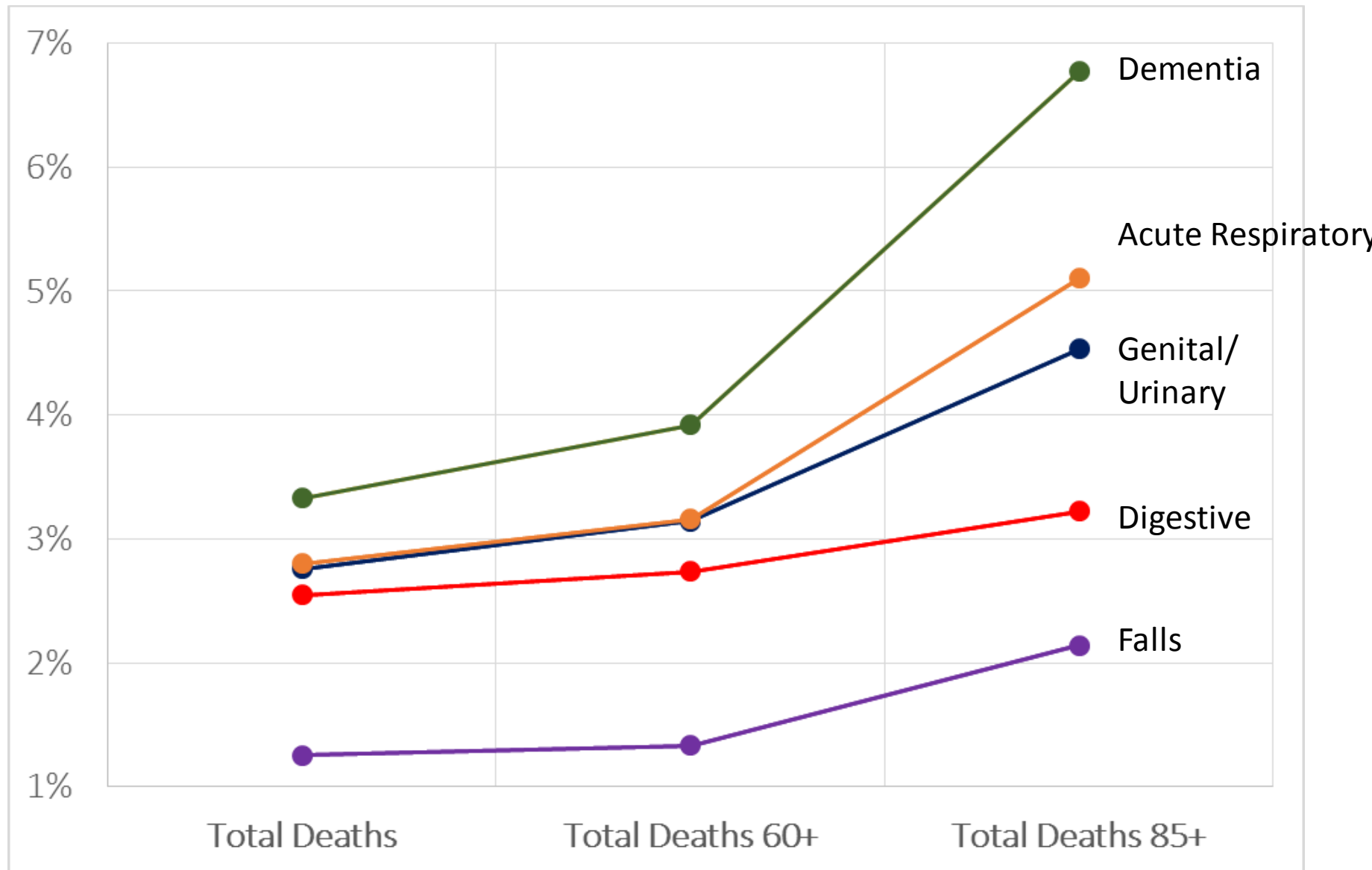




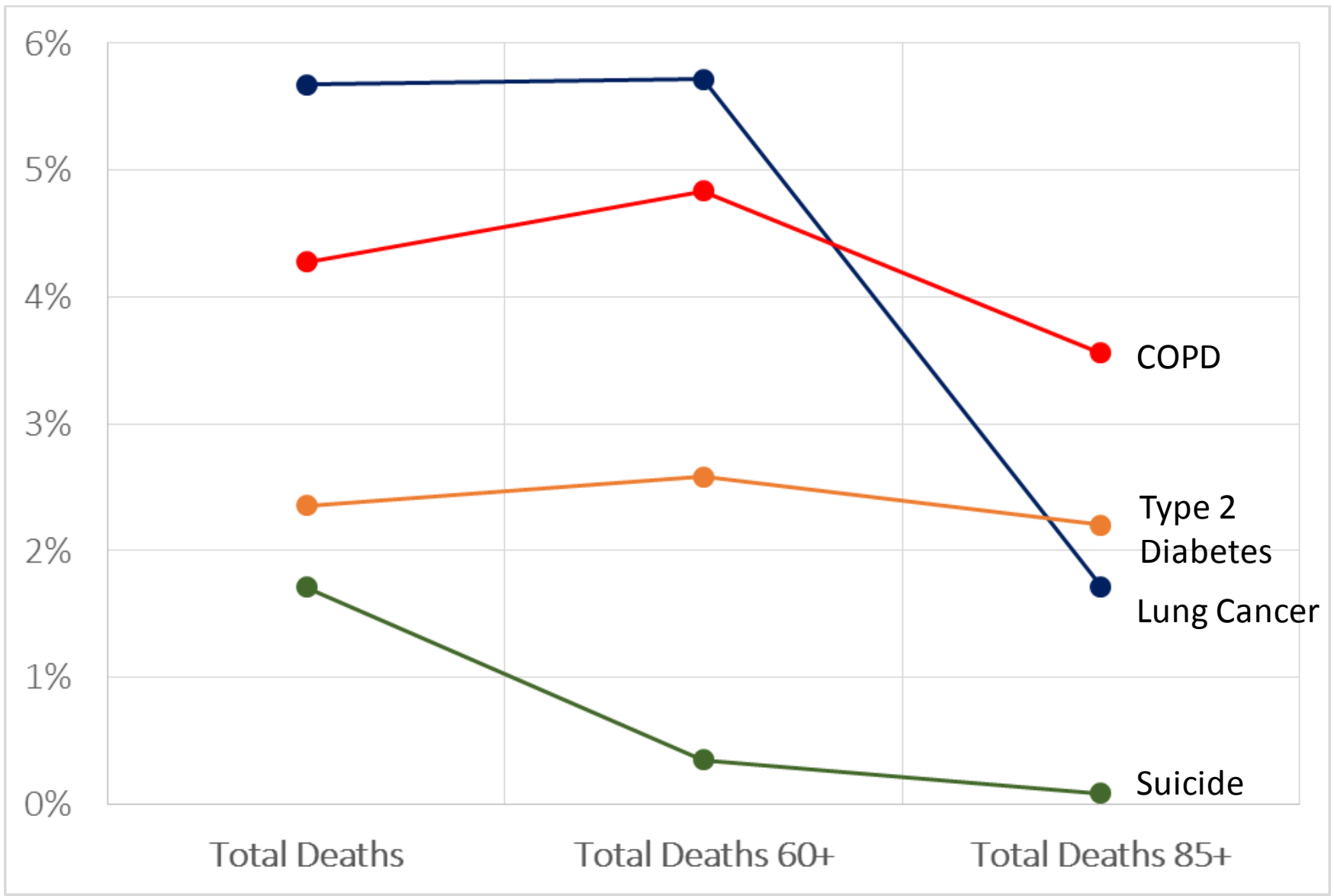
# Prioritisation

- Several methods were considered:
  - Rank by old age mortality growth rate and acceleration
  - Exclude risk factor associated deaths
- Two simple ranking methods chosen. Diseases are ranked by their relative:
  1. % of Deaths for Ages 60+, post reproductive
  2. % of Deaths for Ages 85+, oldest old
- DALYs too, largely aligned

# Increasing Ranking

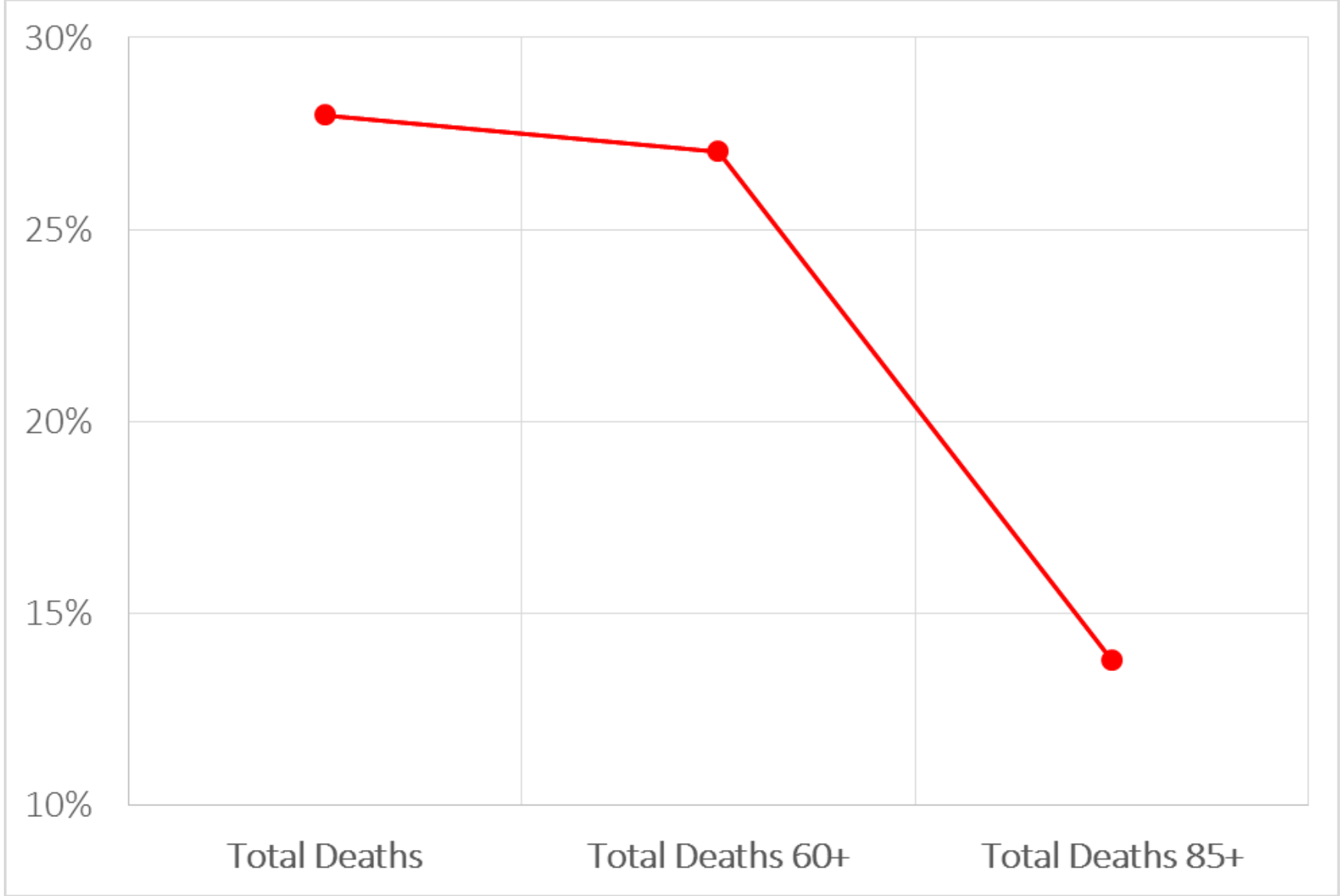


# Steady-Decreasing Ranking

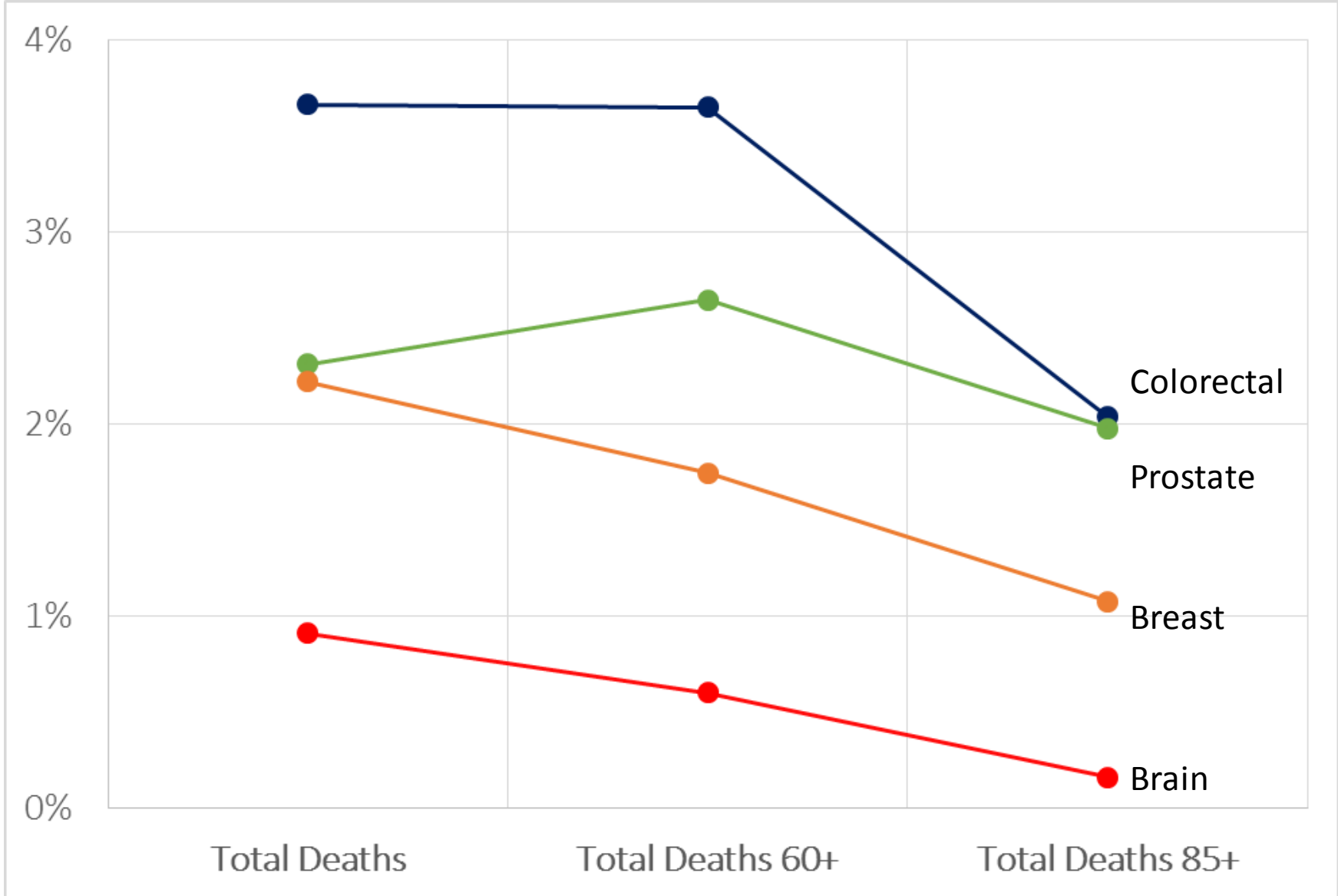




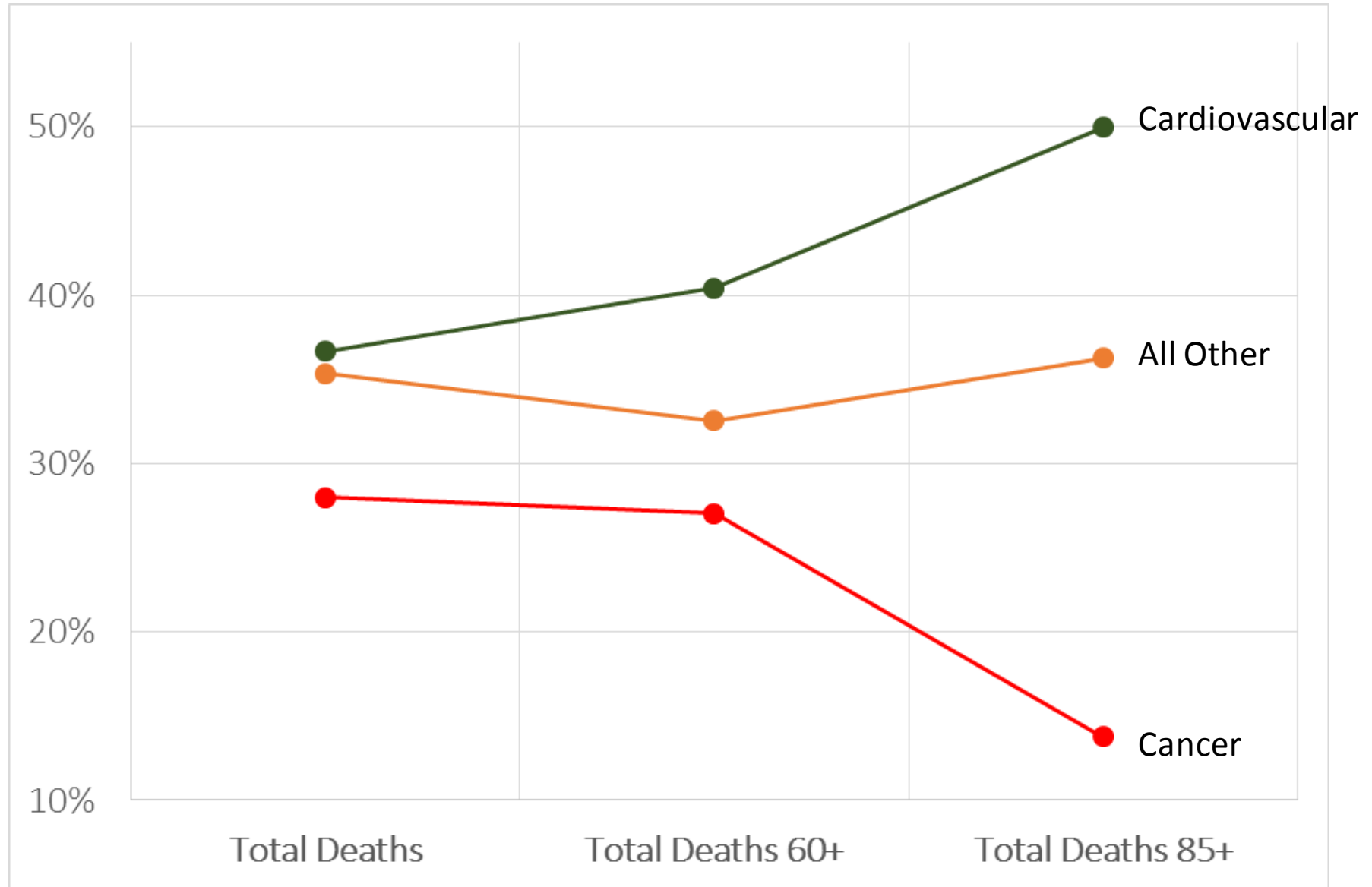
# Cancer



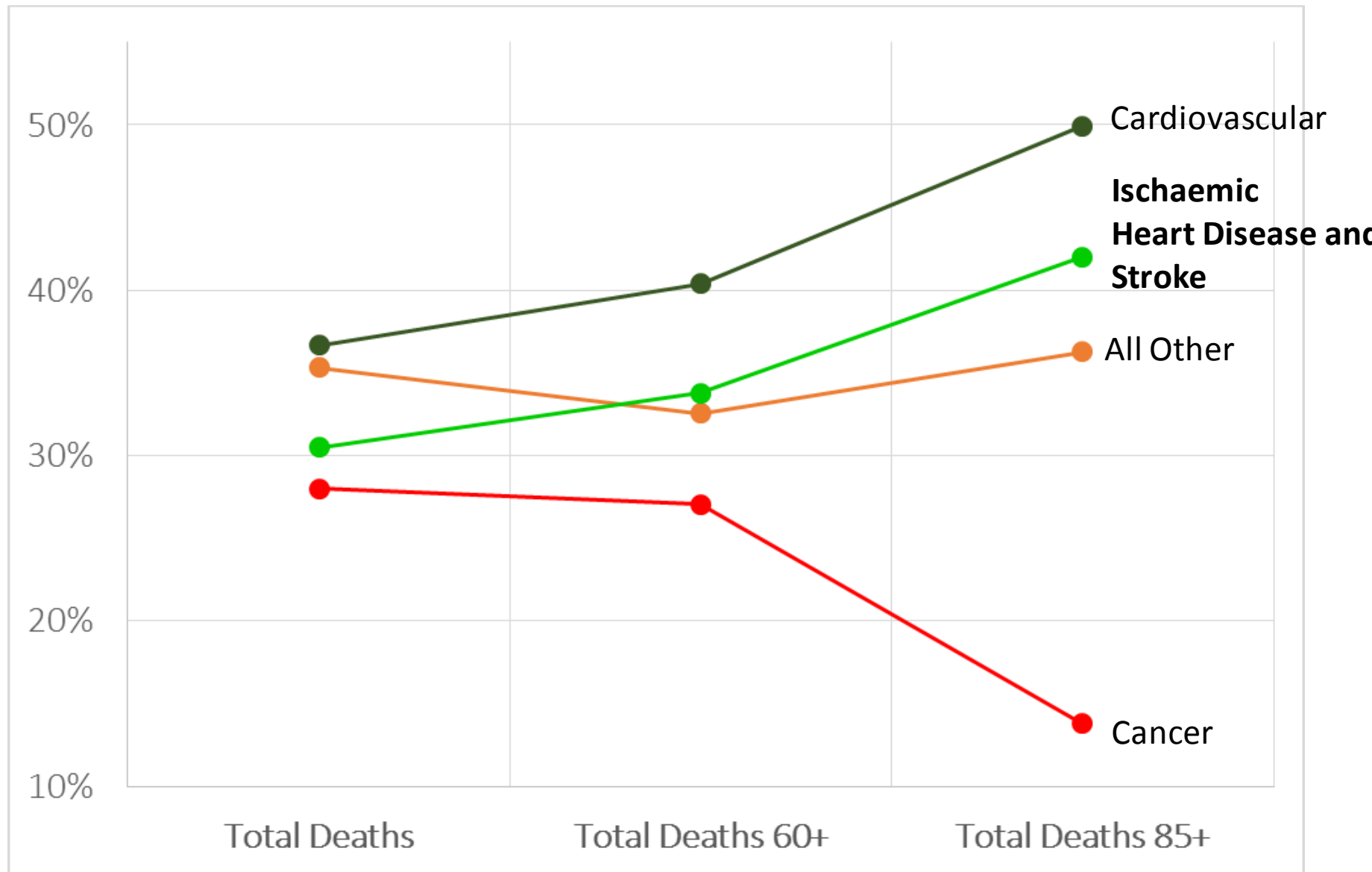
# Cancer



# Cardiovascular

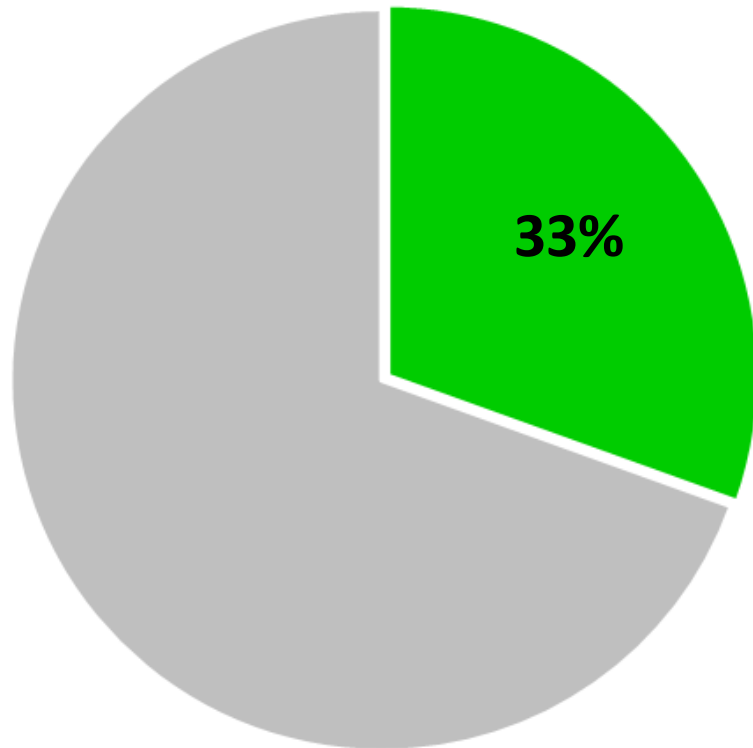


# Vascular Aging

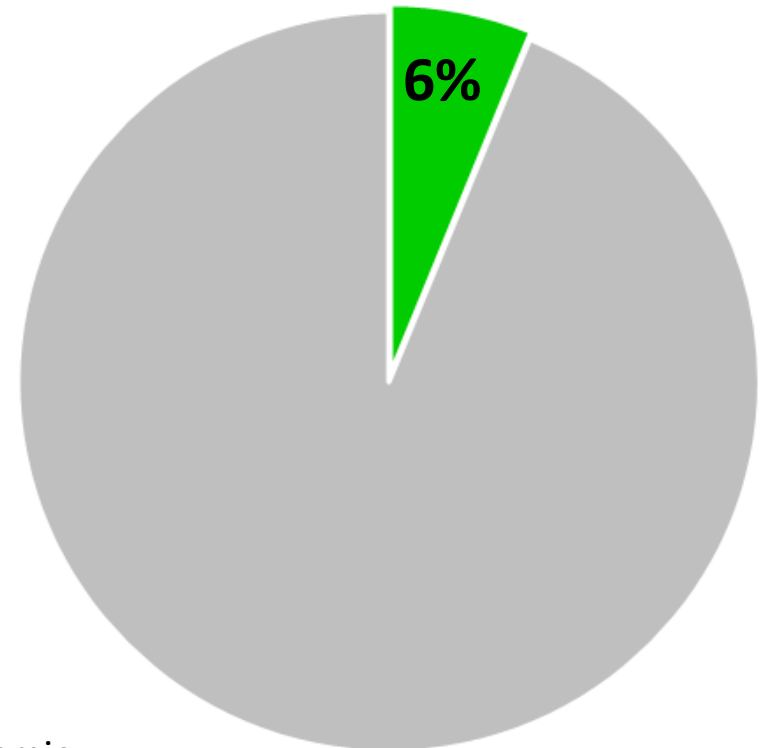


# Current Research Funding

Mortality (All Ages)



Funding (NIH)



Ischaemic  
Heart Disease and  
Stroke

(Gillum, Gouveia et al. 2011)