Institute and Faculty of Actuaries

Bupa

Mortality experience of long-term care residents of Bupa care homes 2016-2019

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Contents

Acknowledgements

- Joint work between the Mortality Research Steering Committee of the Institute & Faculty of Actuaries & Bupa

- Adele Groyer, FIA

Introduction

- Life Expectancy in England & Wales 2017-2019
  - Males: 79.4 years
  - Females: 83.1 years

- **Long-Term Care (LTC)** includes a broad range of personal, social, and medical services and support that ensure people with, or at risk of, a significant loss of intrinsic capacity (due to mental or physical illness and disability) can maintain a level of functional ability consistent with their basic rights and human dignity.

(WHO 2024 - https://www.who.int/europe/news-room/questions-and-answers/item/long-term-care)

Introduction – LTC Costs

- LTC facilities represent the most expensive form of LTC

- Costs for LTC facilities:
  - Care Costs – personal and medical care
  - Hotel Type Costs – accommodation, food etc.

- Funding for LTC in the UK is means tested

UK LTC state funding thresholds 2022

	Costs	Lower Threshold	Upper Threshold
England	Care + Hotel	£14,250	£23,250
Northern Ireland	Care + Hotel	£14,250	£23,250
Wales	Care + Hotel	£50,000	£50,000
Scotland	Hotel Only	£18,500	£29,750

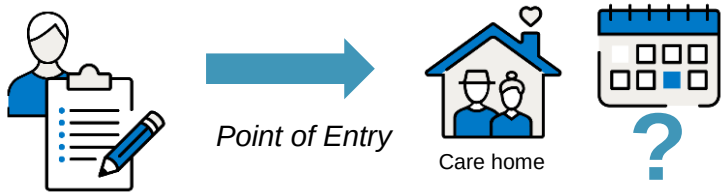
Introduction – LTC Funding

- Dilnot Commission – 2010
- Proposed Care Cap in England - £86,000
- Risk of catastrophic care costs?
- Future?

Problem Statement

Question:

Given factors captured on admission, how do these influence length of stay in the care home?



Definitions & Key Assumptions:

Permanent Residents Only

Included those 'observed' in care between 1st January 2016 and 31st December 2019

Two definitions of durations:

A. Average days until death (as per original report)

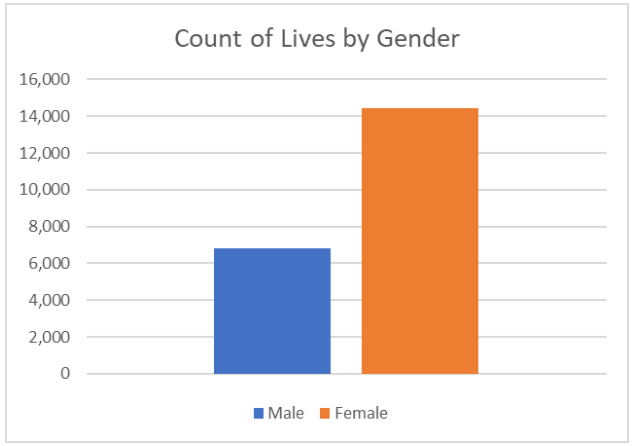
B. Predictive analysis for new entrants (Initial Exposure to Risk)

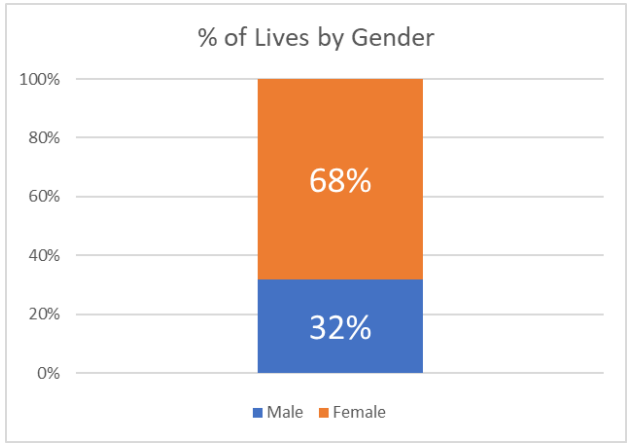
Factors Considered:

- Age
- Gender
- Condition on Admission (Dementia, End-of-Life Care, Frail Elderly)
- Care Required (Nursing or Residential)
- Funding Status (Private or Public)

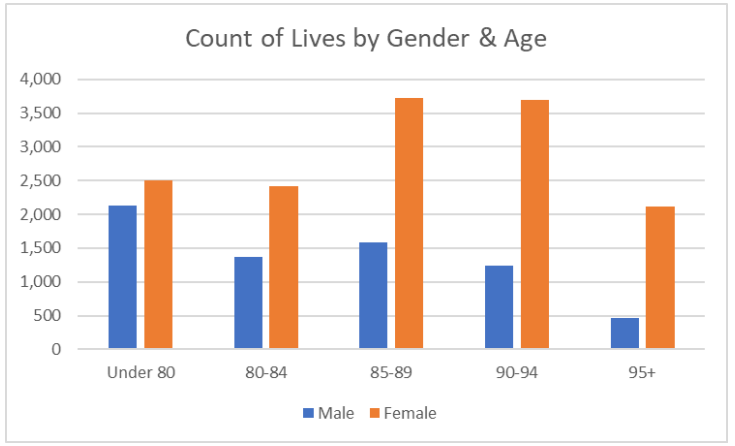
Exploratory Data Analysis

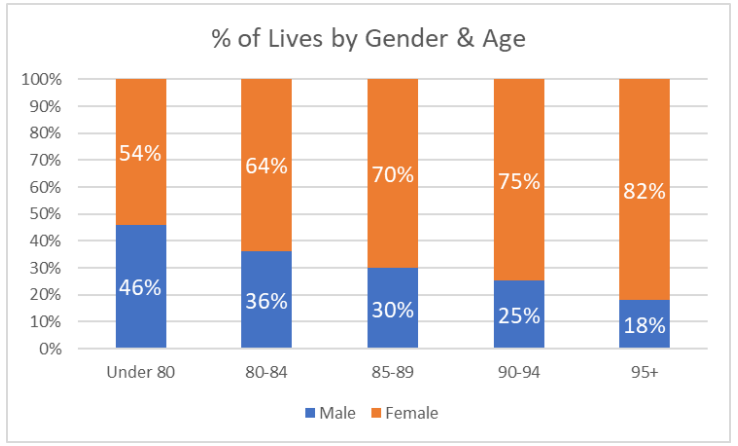
Gender disclosed on admission to home





Gender & Age





Average Age

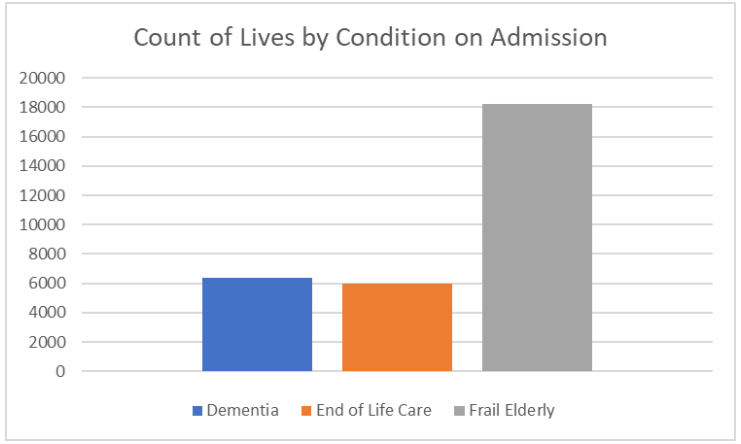
Male 82.9

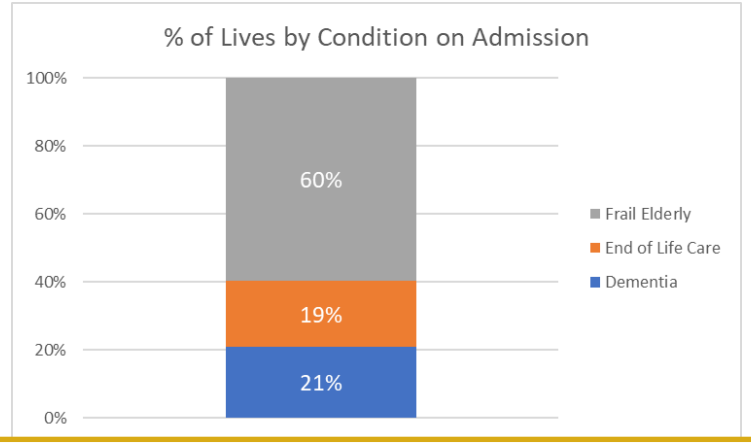
Female 86.7

Greater exposure for females at all age categories with increasing proportion with increased age

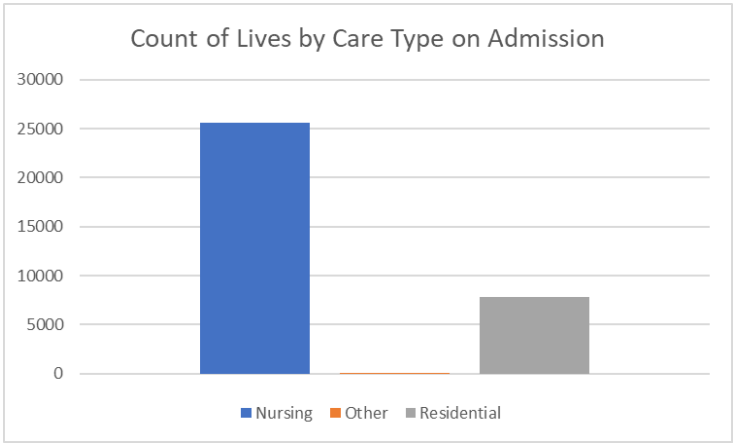
Exploratory Data Analysis

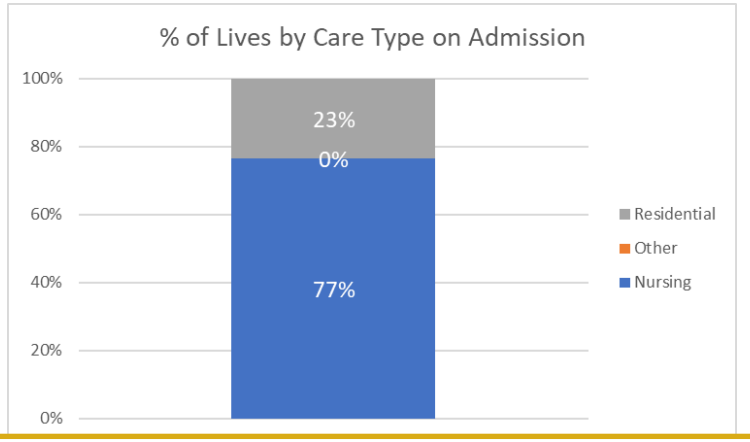
Care Condition Categorisation





Care Type Categorisation

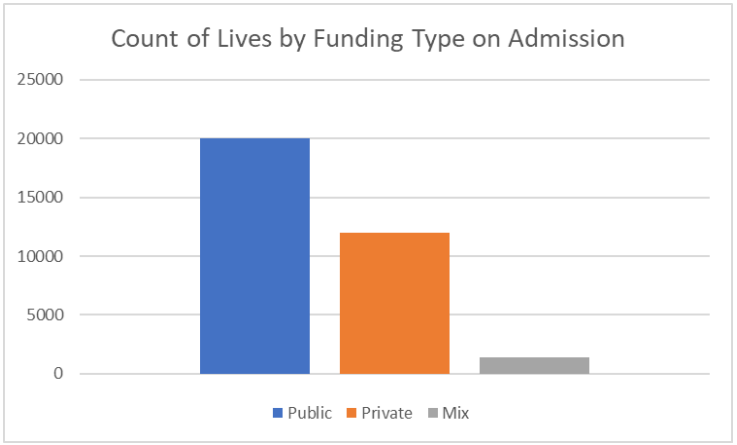


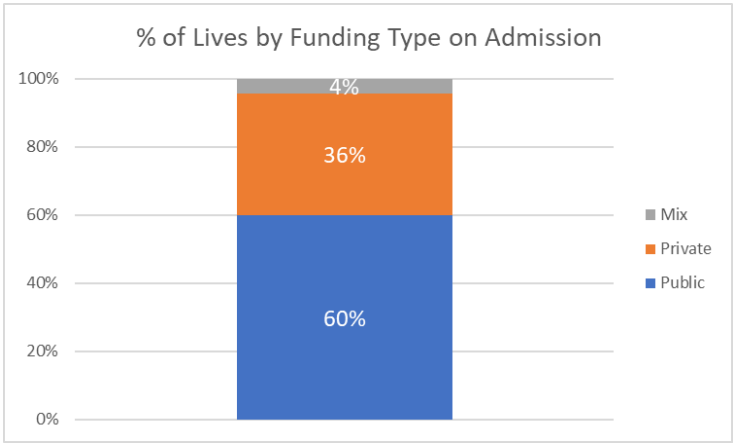


Exposure spread across three main categorisations with majority in 'Frail Elderly', with over ¾ requiring 'Nursing' care

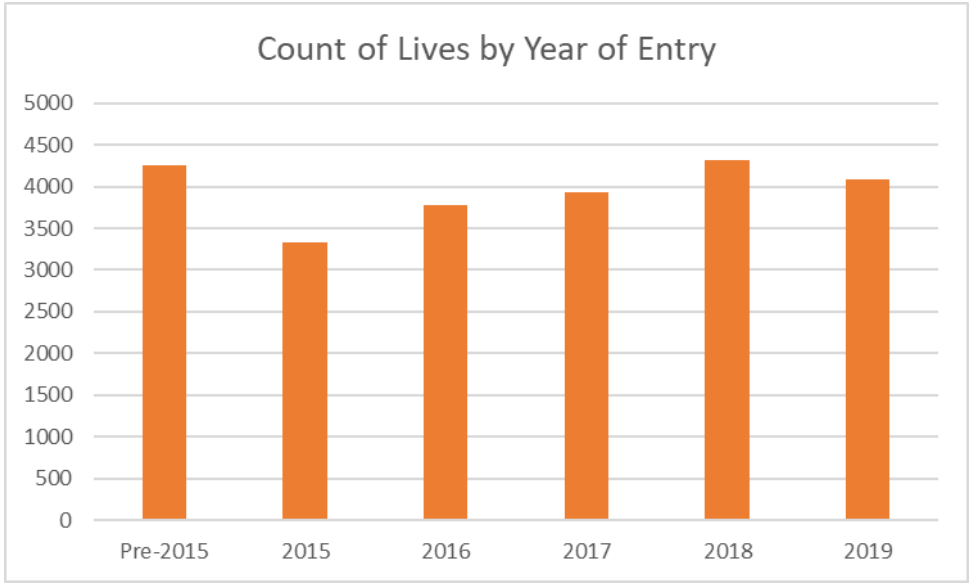
Exploratory Data Analysis

Funding Status on Admission





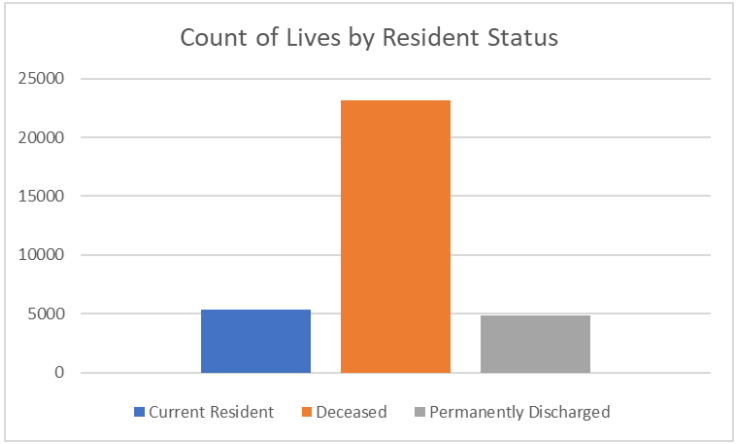
Split of Data by Year of Entry into the Care Home

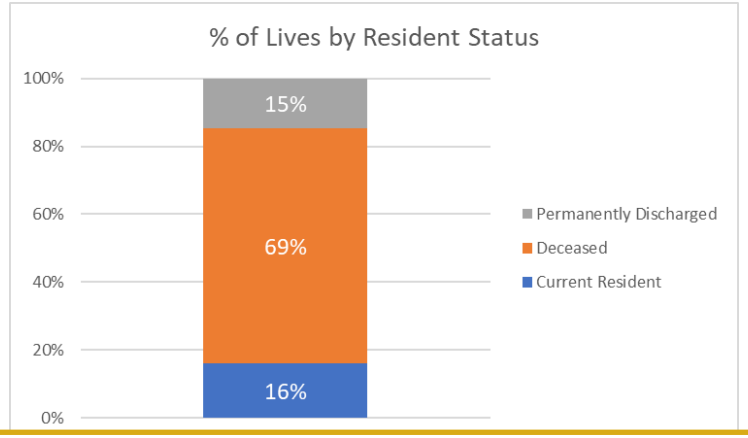


Majority enter home with 'Public Funding'. Distribution of exposures across years is broadly consistent

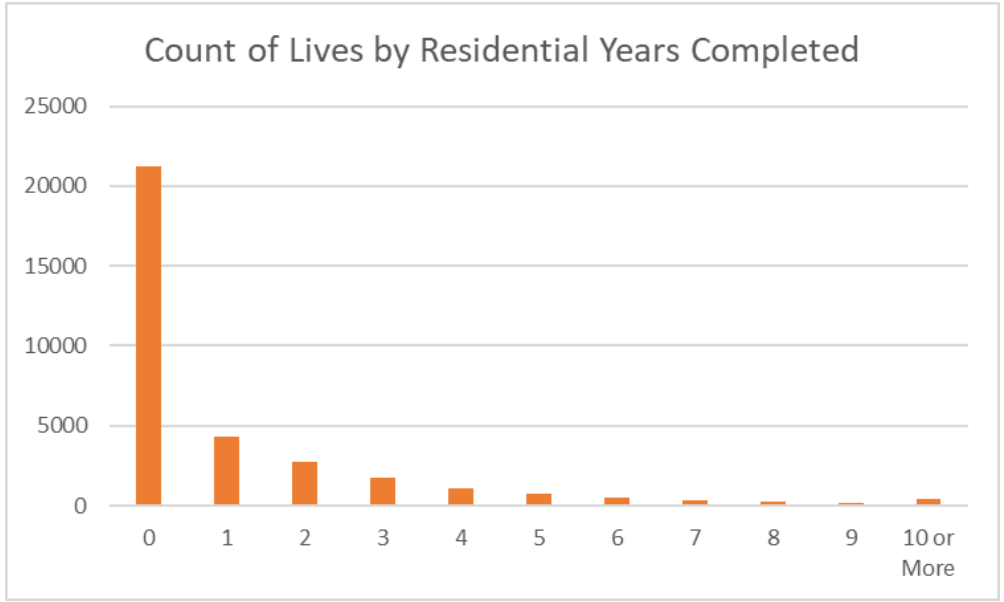
Exploratory Data Analysis

Latest Residency Status



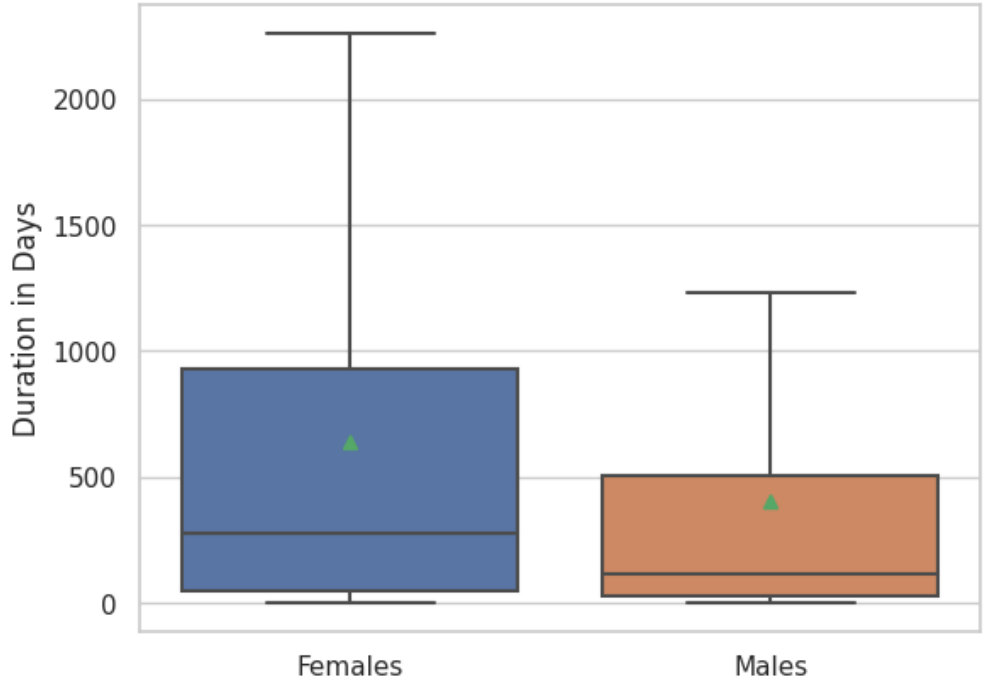


Split of Data by number of years completed on death



Observing 69% of exposures are captured as 'Deceased', which when analysed by duration indicating a stay of less than 1 year for majority of residents

Duration in days in Bupa LTC facilities for deceased residents



Average length of stay prior to death

Females:	**636 days (1.7 Yrs)**
Males:	**397 days (1.1 Yrs)**

Average Age at Death

Females:	**87.0**
Males:	**83.5**

Females observed to have stayed in Carehome for approximately 8 months longer, whilst also being older on average

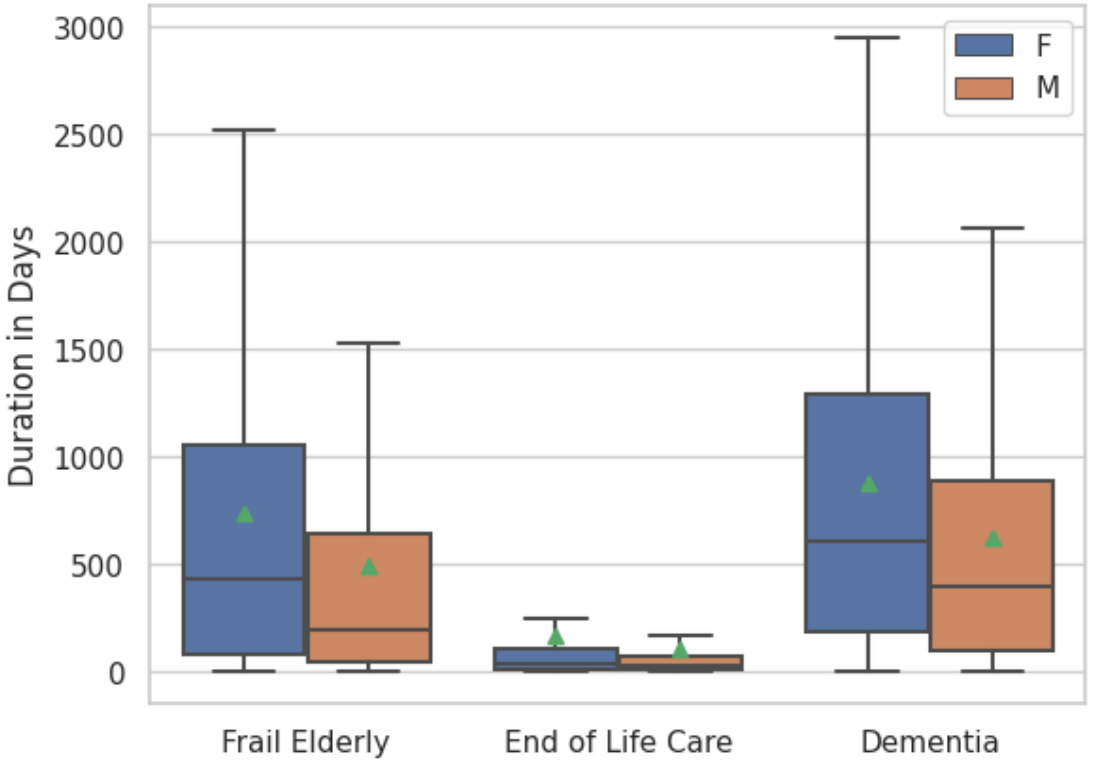
Duration in days by condition on admission for deceased residents

Female minus Males Average Duration:

Frail Elderly: 8 months

End of Life: 2 months

Dementia: 8 months



Dementia minus Frail Elderly Average Duration:

Females: 3 months

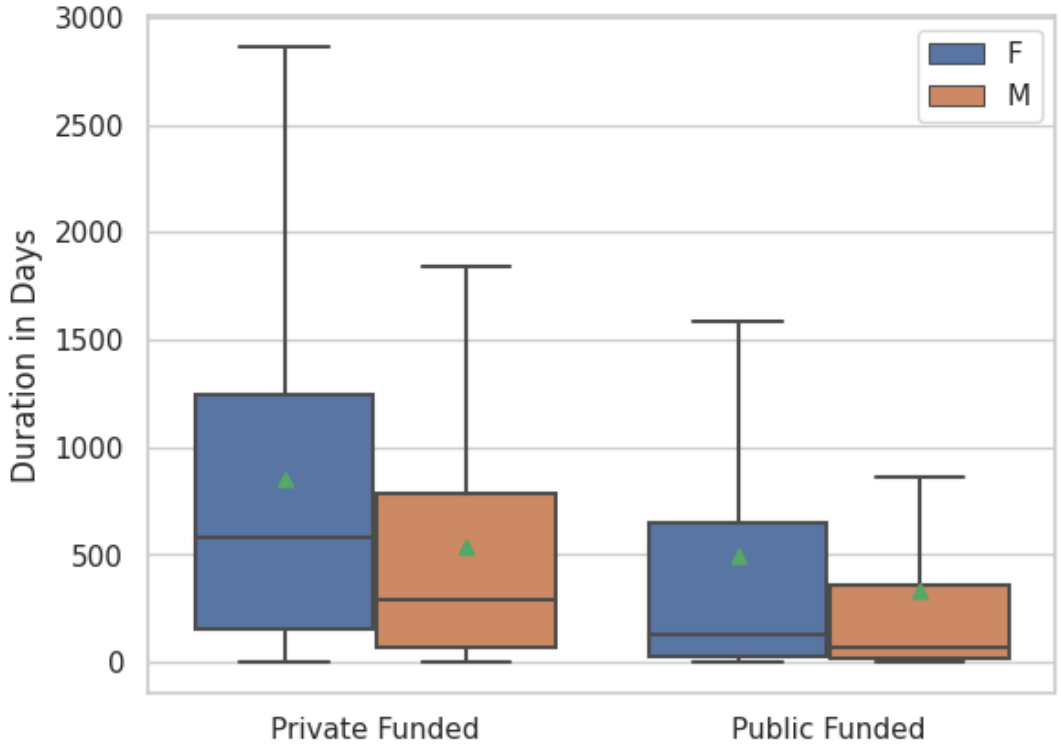
Males: 3 months

All conditions show a longer average stay for Females over Males, whilst dementia residents generally have longer durations

Duration in days by funding status on admission for deceased residents

Female minus Males Average Duration:

Private:	**10 months**
Public:	**3 months**



Private minus Public Funding Average Duration:

Females:	**10 months**
Males:	**5 months**

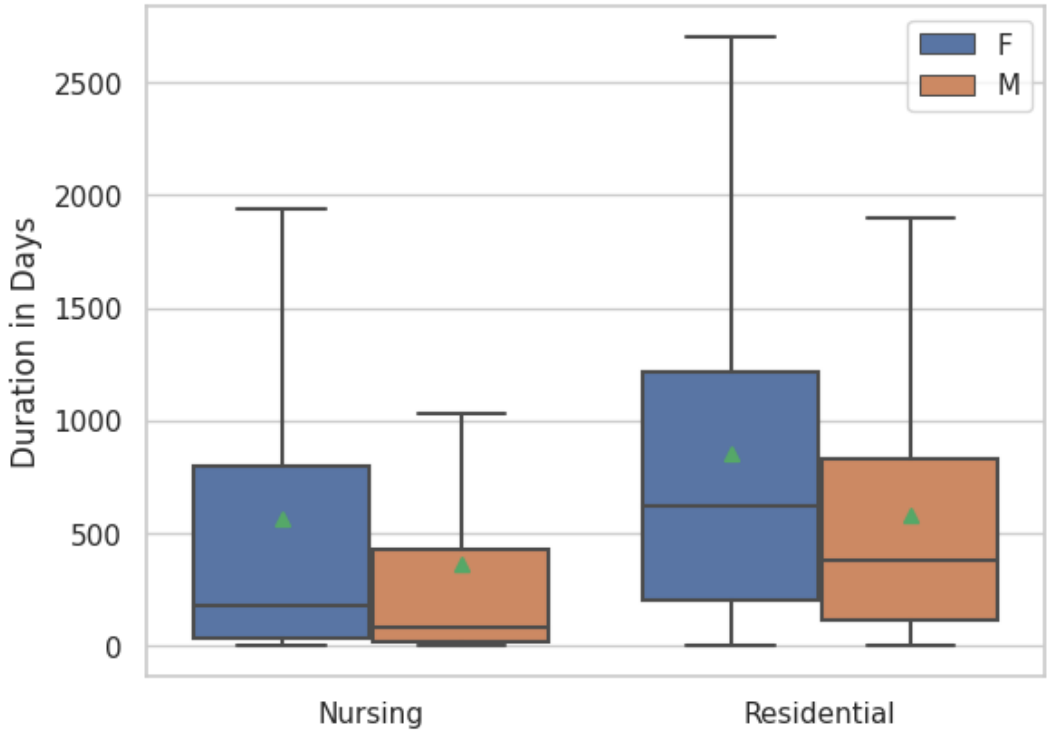
Private Funded residents demonstrating a longer duration versus Public Funded, with Females continuing to have longer durations

Duration in days by care type on admission for deceased residents

Female minus Males Average Duration:

Nursing: 10 months

Residential: 3 months



Residential minus Nursing Average Duration:

Females: 10 months

Males: 4 months

Private Funded residents demonstrating a longer duration versus Public Funded, with Females continuing to have longer durations

Mortality Experience of Bupa Residents 2016-2019

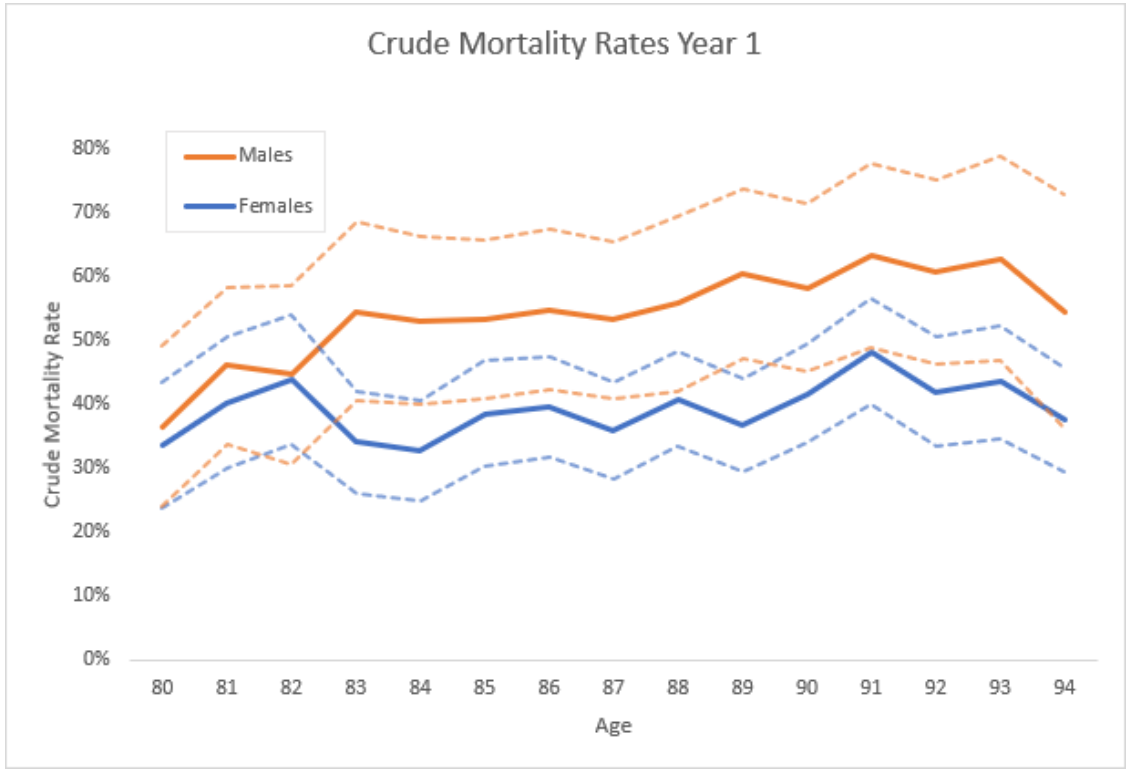
- Mortality experience analysed for ages 80-95 over the period 01/01/2016-31/12/2019
- Excluding ‘End of Life’ condition
- Crude Mortality Rates
  - Year 1 post admission mortality:

$$q_{x,1} = \frac{d_{x,1}}{E_{x,1}}$$

  - Year 2+ post admission mortality:

$$q_{x,2+} = \frac{\sum_{i=2}^{20} d_{x,i}}{\sum_{i=2}^{20} E_{x,i}}$$

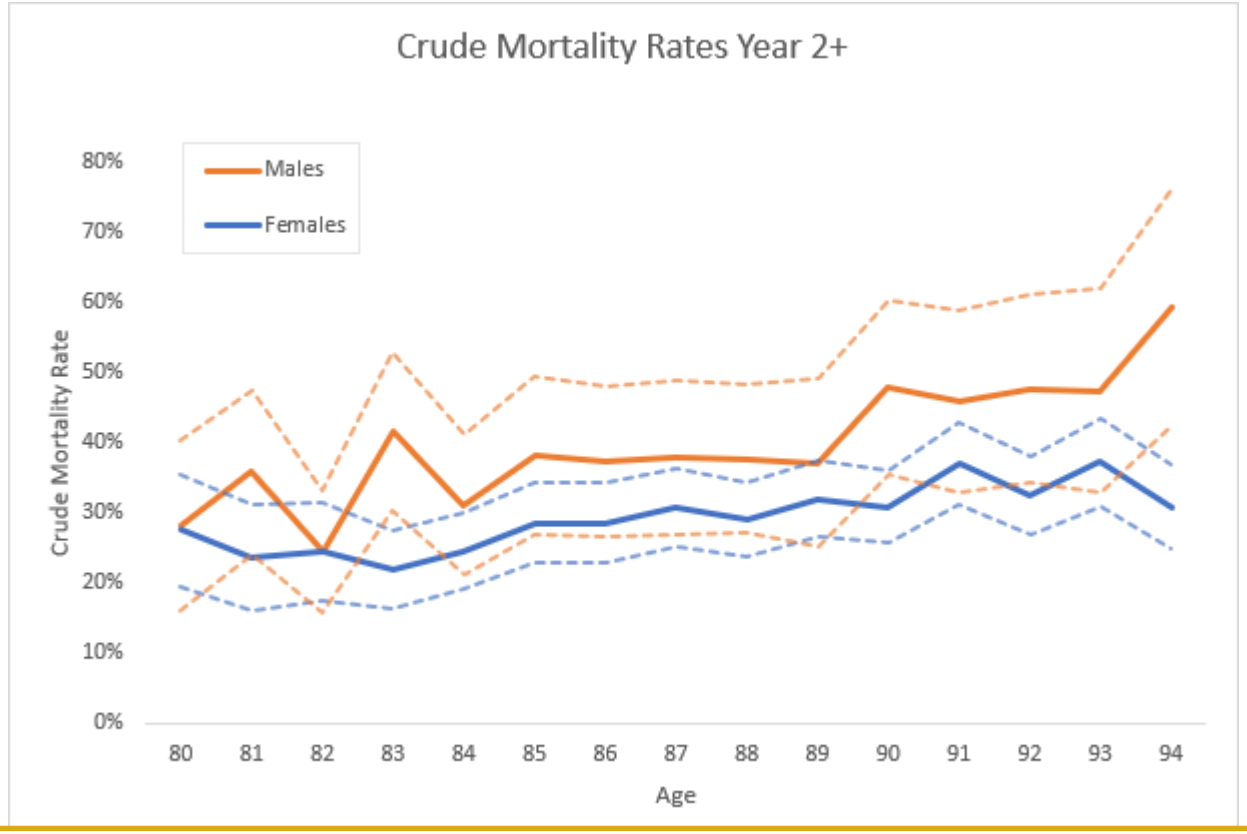
Year 1 post admission crude mortality rates



Confidence Intervals are broad due to limited data for each age

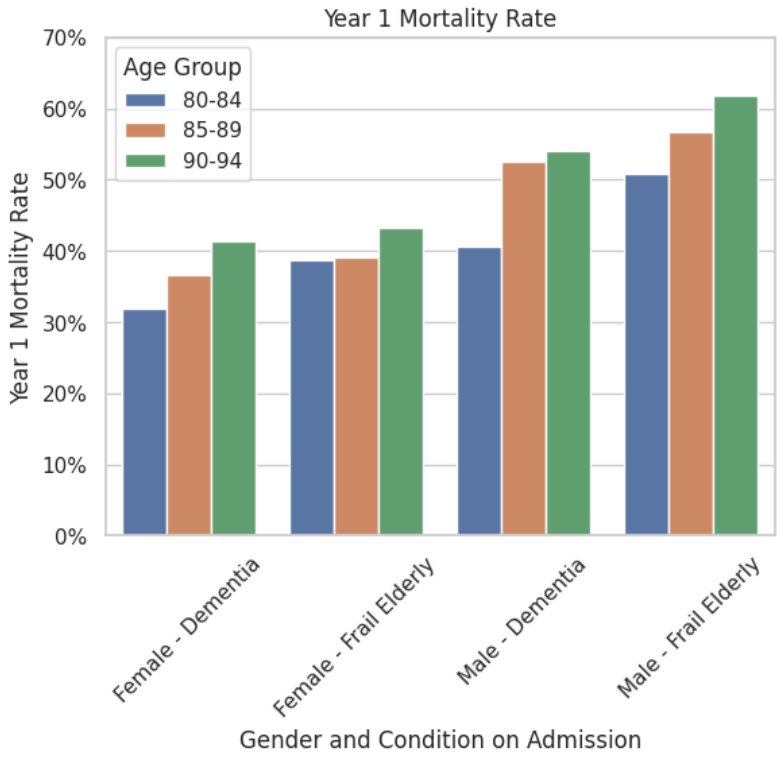
For males, mortality rates increase by age, however females are relatively flat

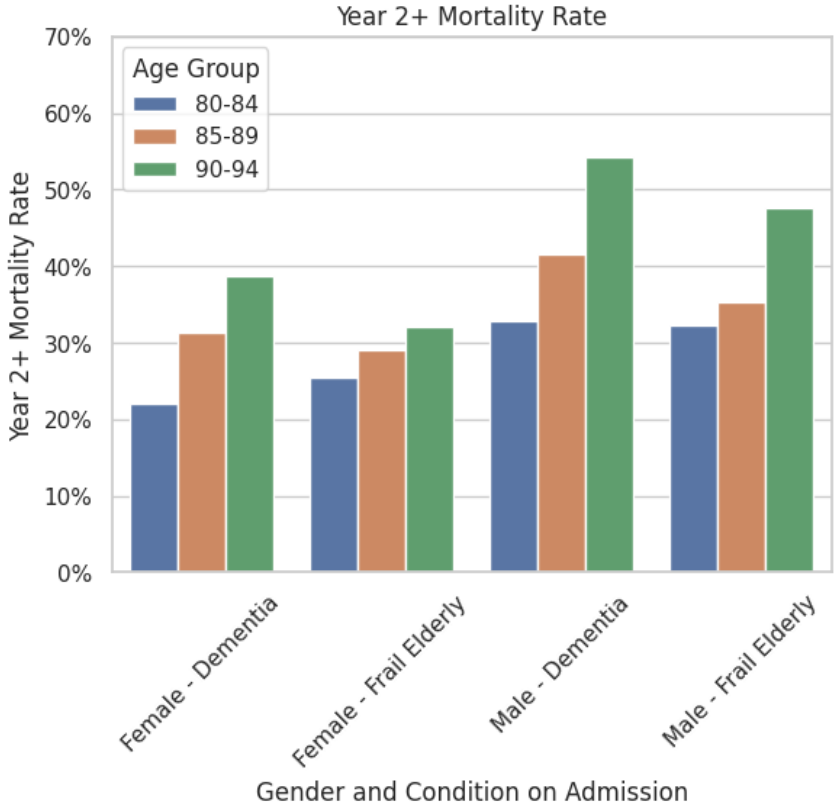
Year 2+ post admission crude mortality rates



Post year 1, c50% reduction in mortality rate with more age graduation

Crude mortality rates by condition on admission in year 1 and year 2+ post admission

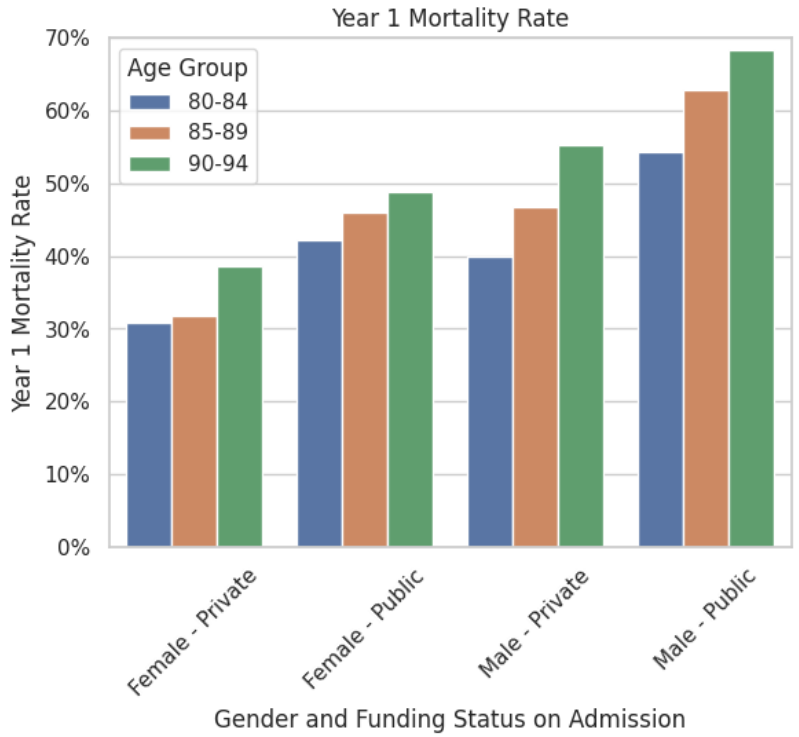


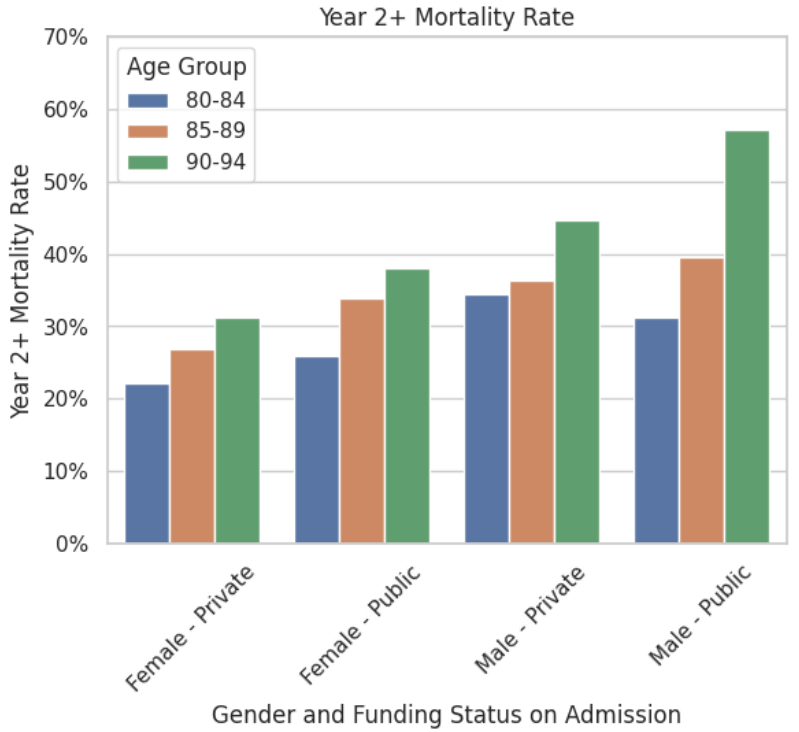


‘Frail Elderly’ residents experience higher mortality compared to ‘Dementia’ in Year 1

‘Dementia’ residents generally experience higher mortality compared to ‘Frail Elderly’ Year 2+

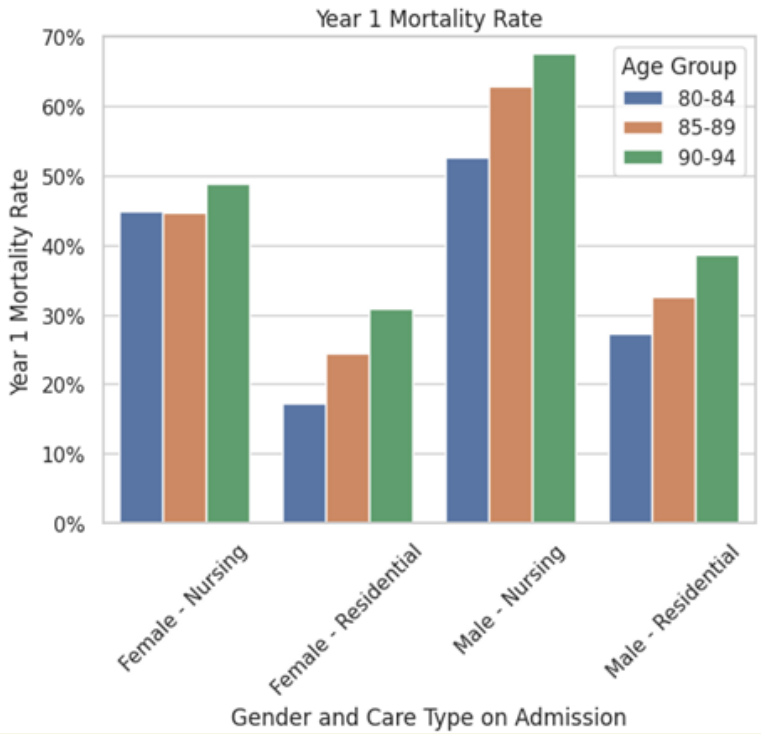
Crude mortality rates by funding status on admission

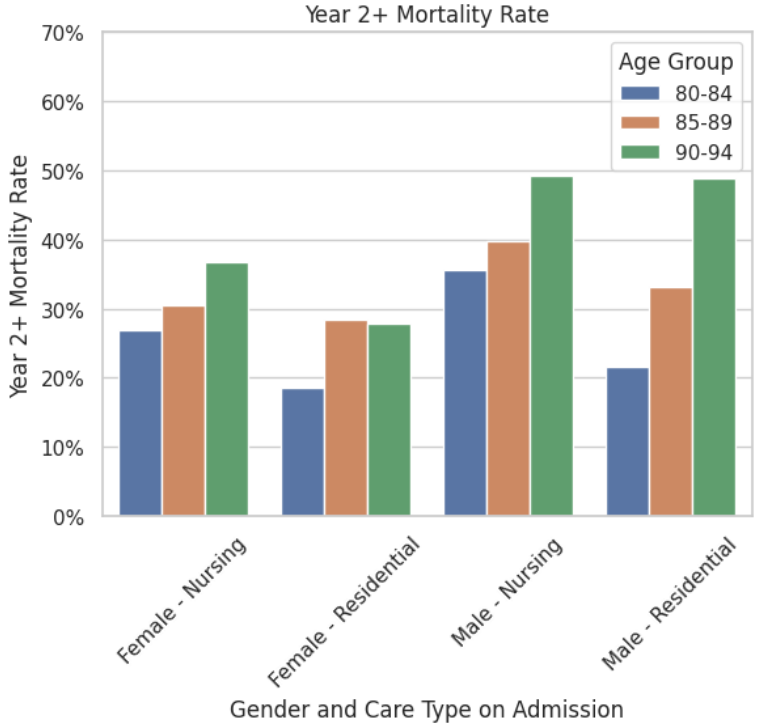




Generally, 'Publicly funded' residents experience higher mortality relative to privately funded residents with the gap greatest in year 1

Crude mortality rates by care type on admission





Mortality for those admitted for nursing care is higher than that for residents admitted for residential care in all cases with the gap greatest in year 1

Conclusions

- LTC gender differences:
  - Majority of residents were female and had a higher average age profile compared to males
  - Duration of stay tended to be longer for female residents

- New residents experienced higher mortality than existing residents of the same age.

- Future work:
  - Multivariate analysis
  - Multi state models

Conclusions - continued

- Future issues in LTC?
  - Trends in dementia
  - Informal v formal LTC
  - Impact of Covid-19 on LTC

- Data quality

Questions?