The shape of total and healthy life expectancies

Fiona Matthews and
Ardo van den Hout

MRC | Biostatistics Unit

UNIVERSITY OF CAMBRIDGE

Talk outline

- Background
- Methods
- Examples
- Conclusions

Background

- Historically one value given for life expectancy and healthy life expectancy
- At best we give 95% confidence intervals
- People always say "But my granny lived to 106 …" !!!

- What do they look like?

Methods

- Continuous time Markov Model
- Bayesian framework for full likelihood modelling
- Micro simulation with random effects

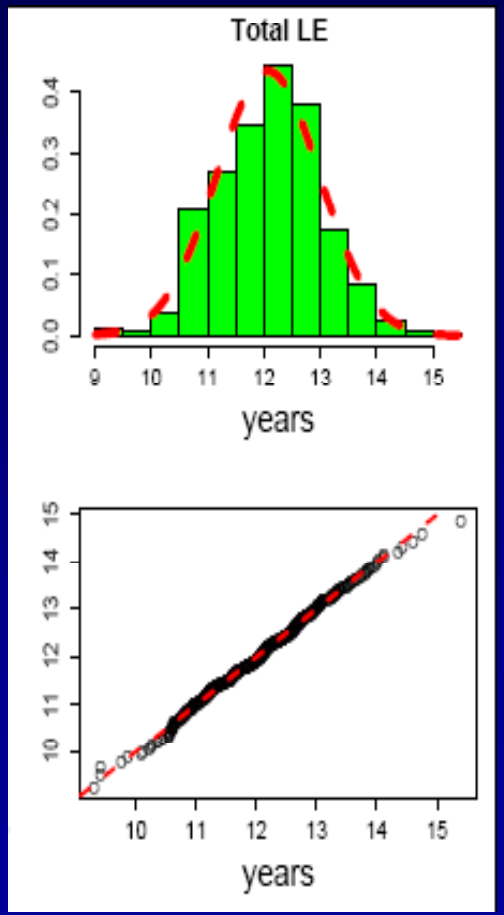
Examples

Men only

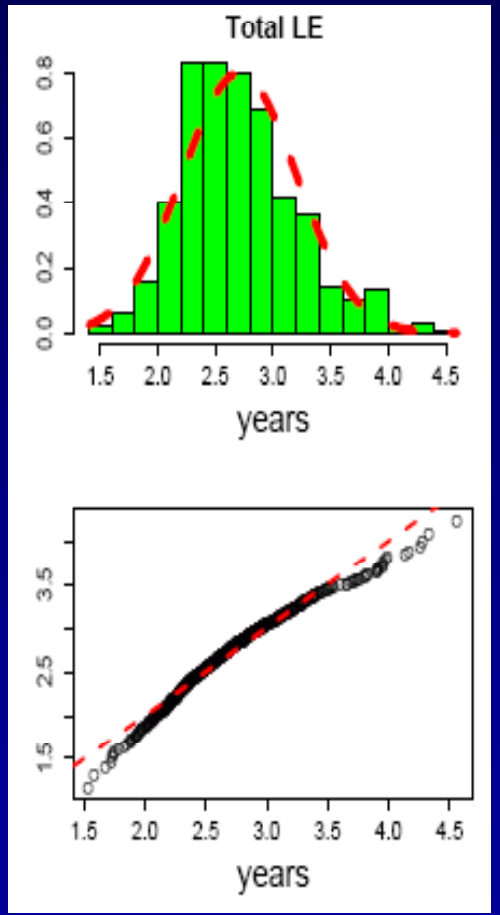
1. Dementia life expectancy in patients with Parkinson's disease
2. Life expectancy with stroke in general population
3. Cognitive impaired life expectancy in general population

Total life expectancy (Parkinson)

Age 60

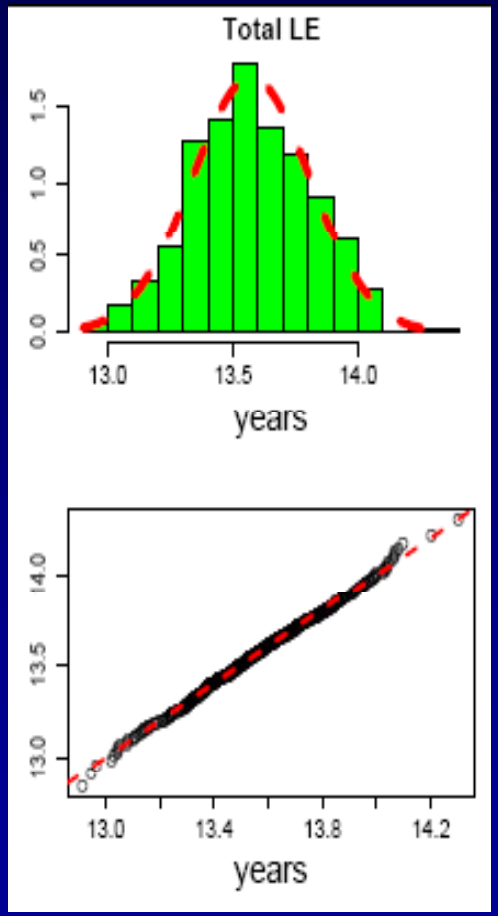


Age 90

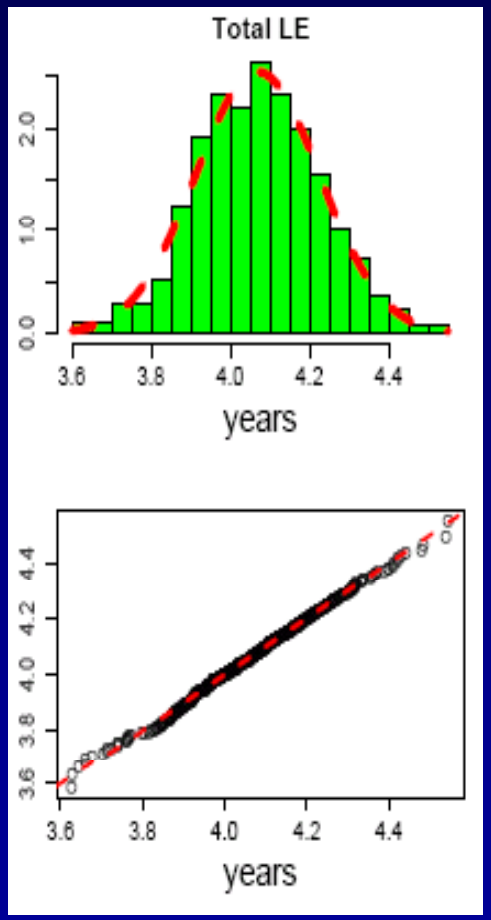


Total life expectancy (General population)

Age 65

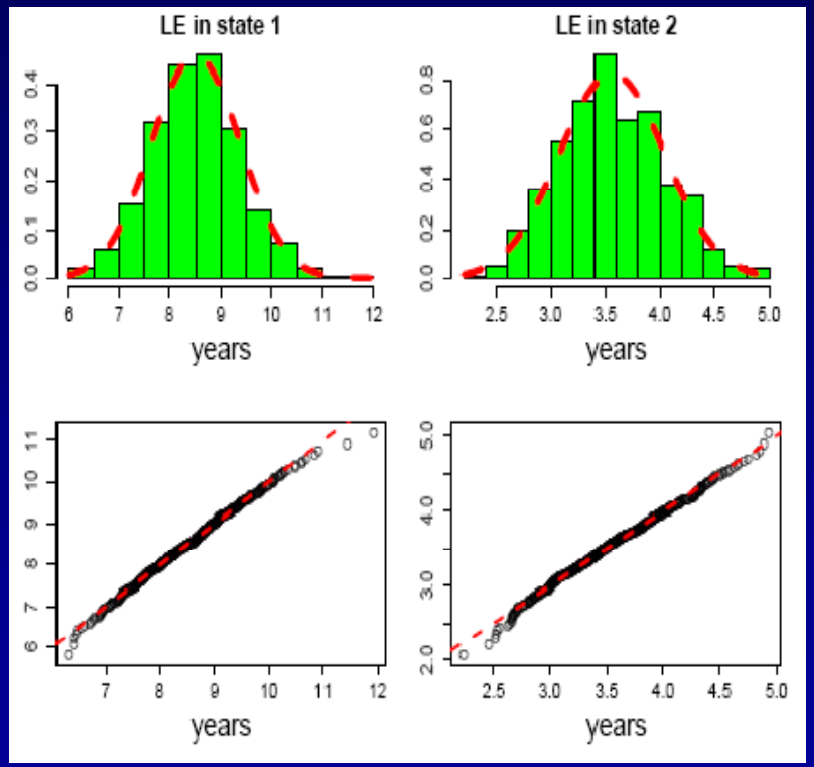


Age 90

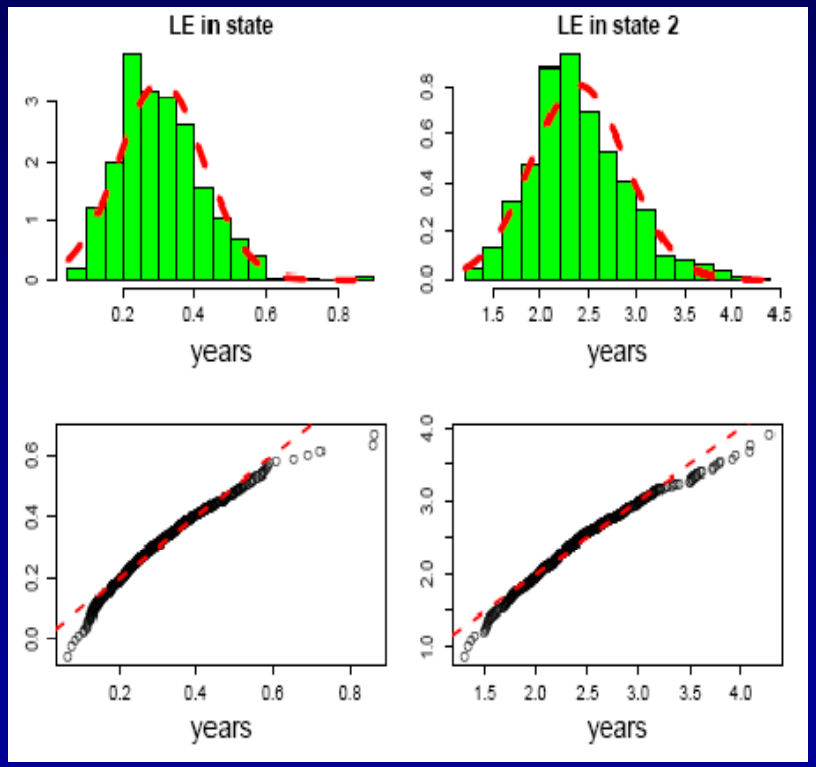


Healthy and impaired life expectancies (dementia in Parkinson's disease)

Age 60

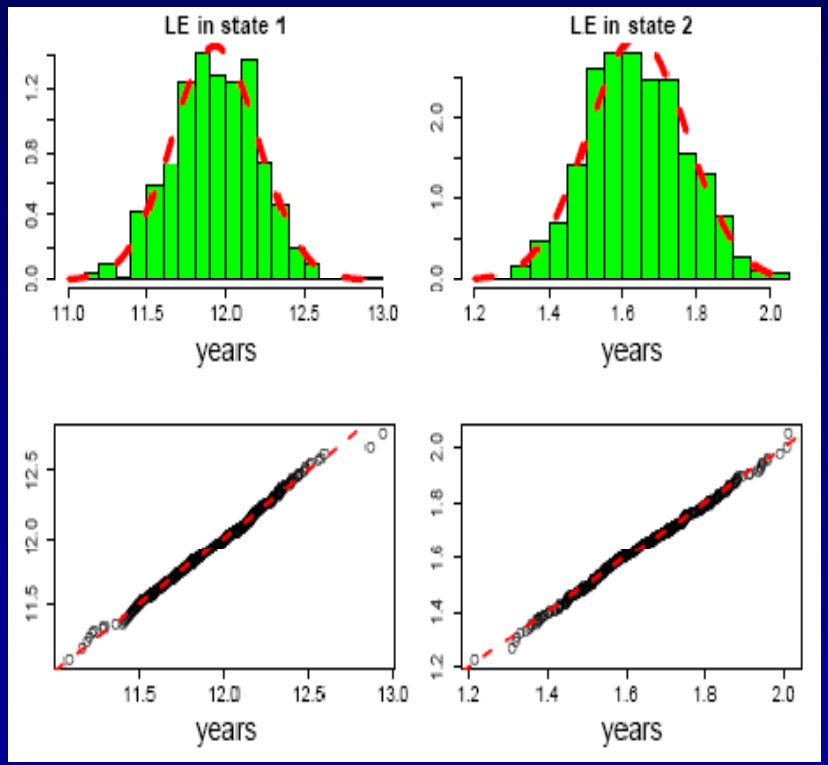


Age 90

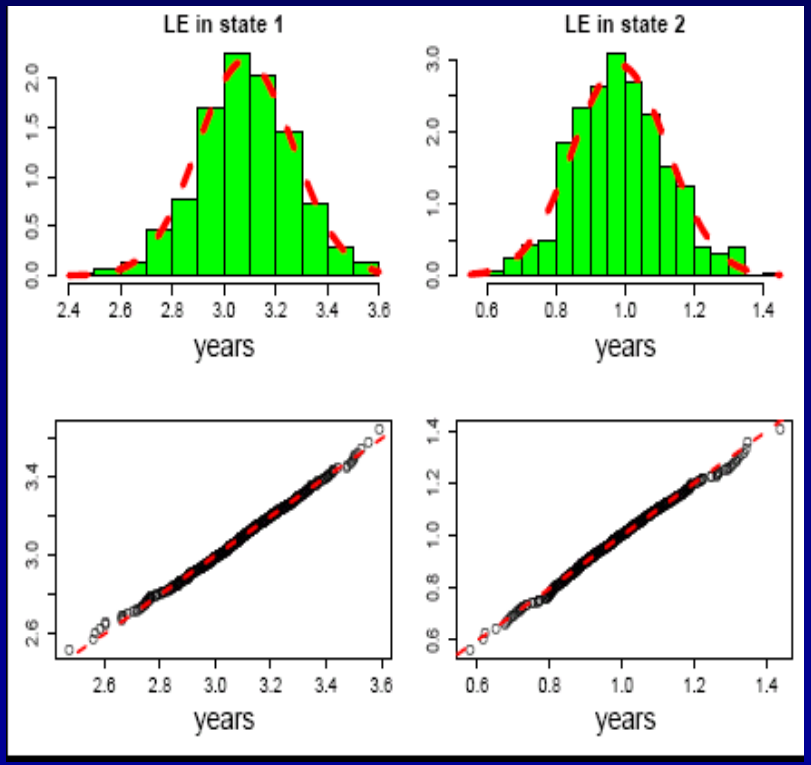


Healthy and impaired life expectancies (stroke)

Age 65

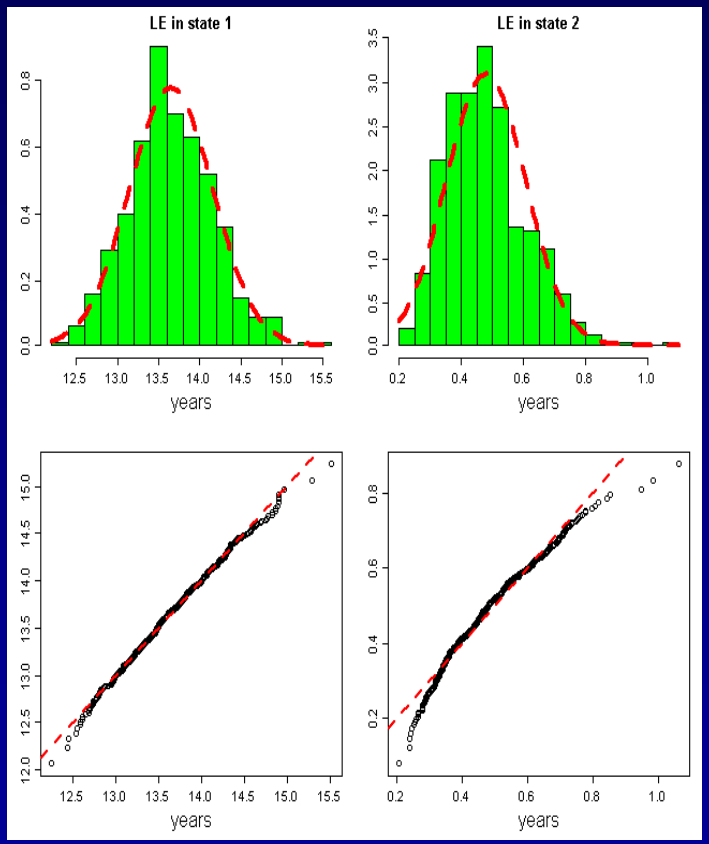


Age 90

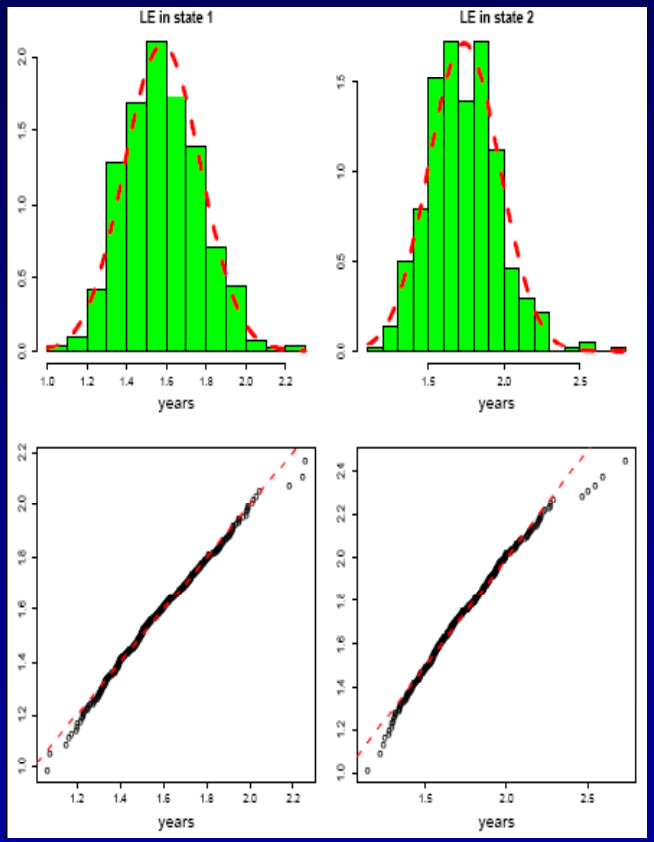


Healthy and impaired life expectancies (cognitive impairment)

Age 65



Age 90



Conclusions

- Life expectancy was normally distributed in general population, but not in diseased cohort
- Healthy and impaired life expectancy were often peaked, but sometimes skewed

- The mean / median may not represent the correct value
- Confidence intervals need to reflect true variance