



2009

Differences in Longevity in the
Population –
Underwriting Perspective

10 June 2009

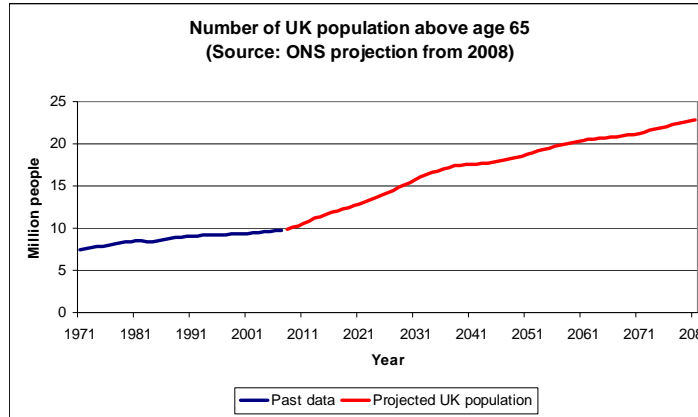
Joseph Lu
Mortality Risk Actuary

Agenda



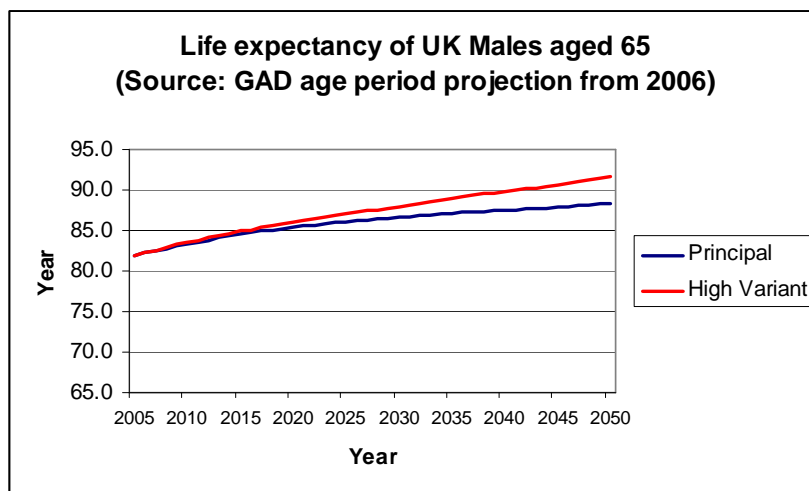
- Background
- Differences in mortality rates
- Differences in rates of mortality improvement
- Differences in trends in different causes of death
- Conclusion

Population above age 65 is increasing

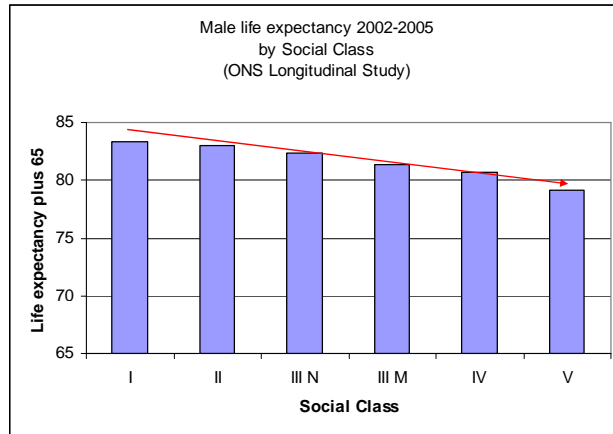


Hence, longevity is of interest to many.

People are living longer

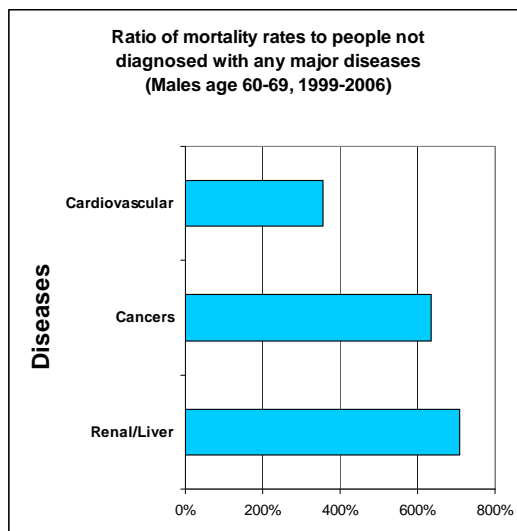


But there are differences in longevity between sub-groups

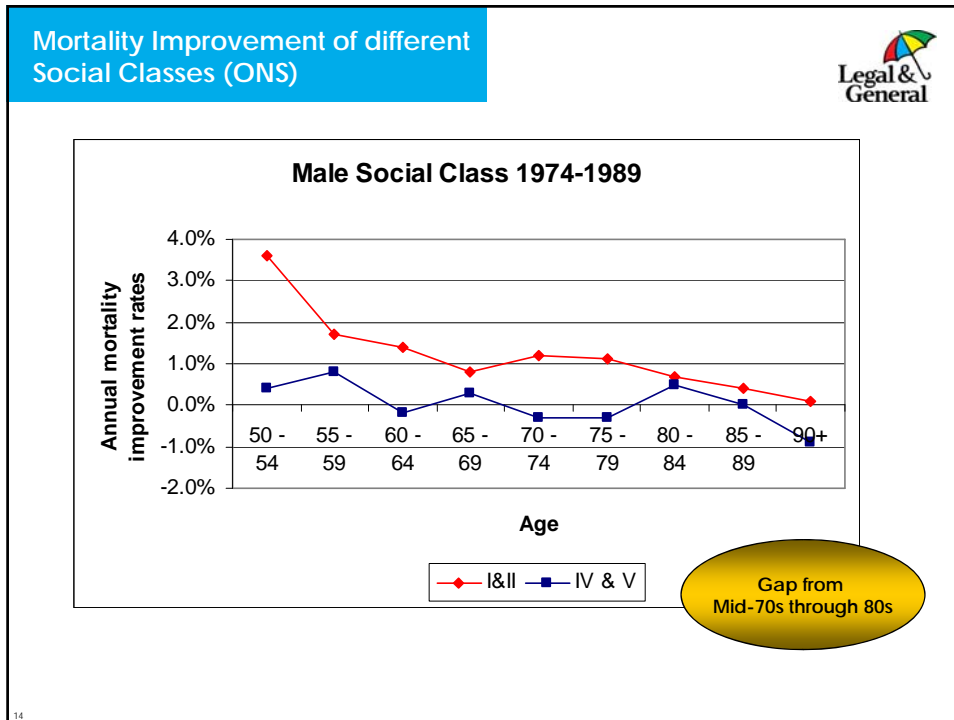
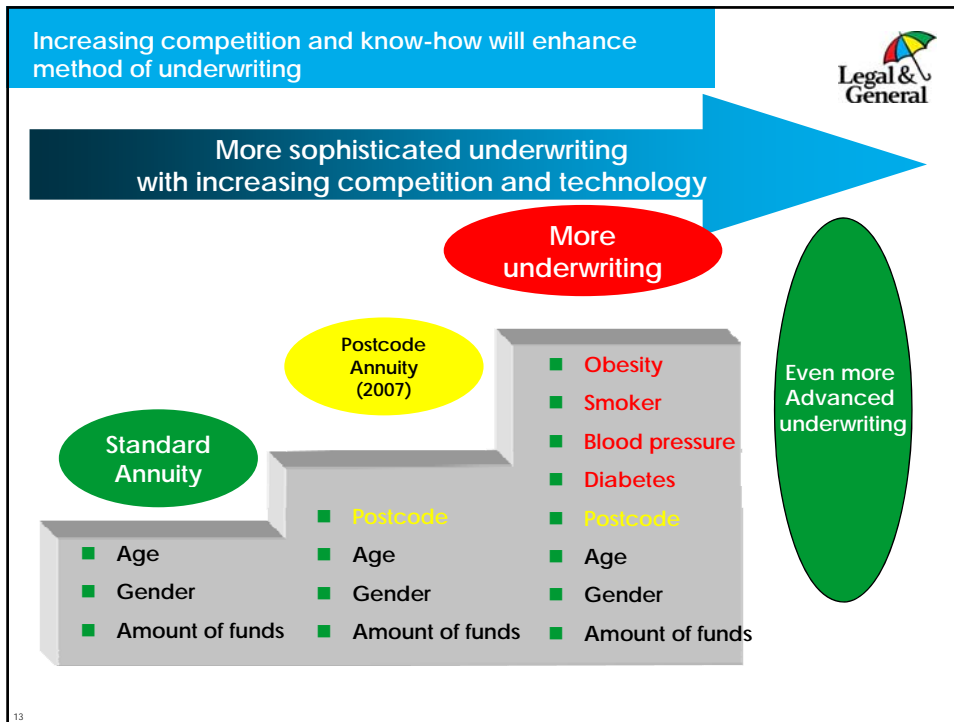


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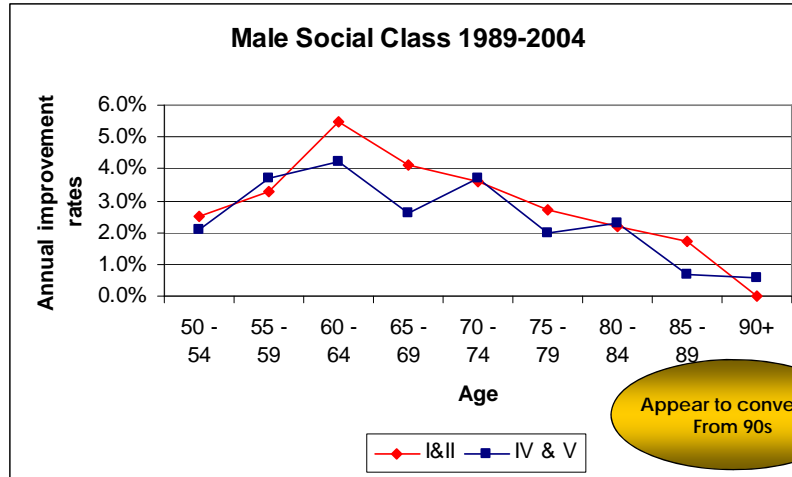
People with different diseases have different mortality rates



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Mortality Improvement of different Social Classes (ONS)



Appear to converge From 90s

What about the future?
So, there is scope for competitive views and pricing

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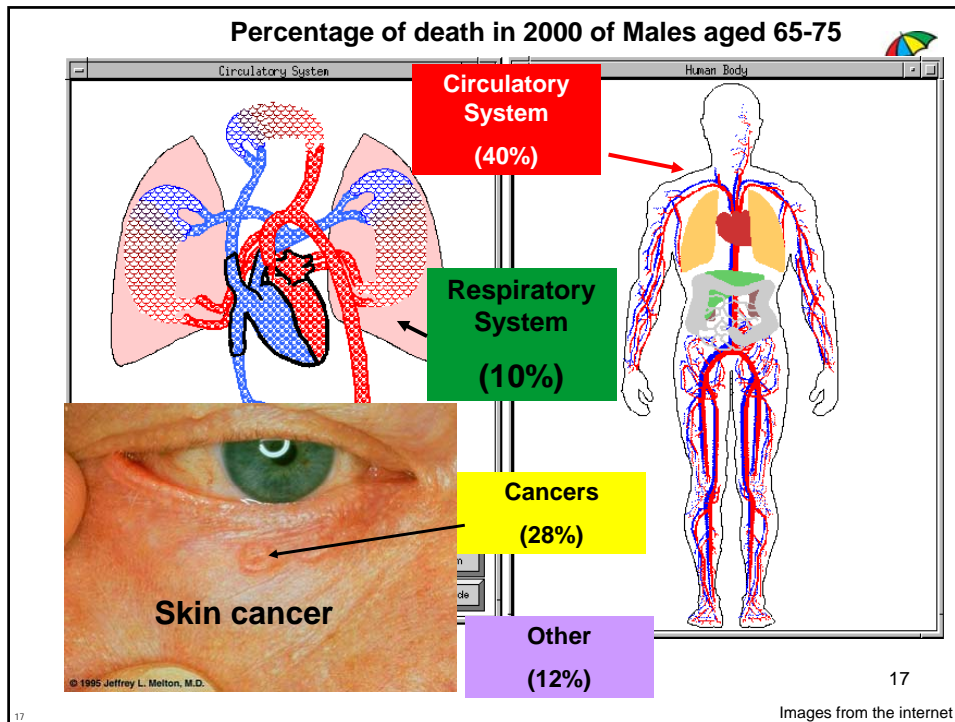
What kill people?



1. We investigate trends of causes of death in the UK, USA, Japan, France, Canada, Sweden and Germany:
2. Cause of death categorised as:
 - Diseases of the circulatory system
 - Diseases of the respiratory system
 - Cancers
 - Other


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Two key observations

Key observati

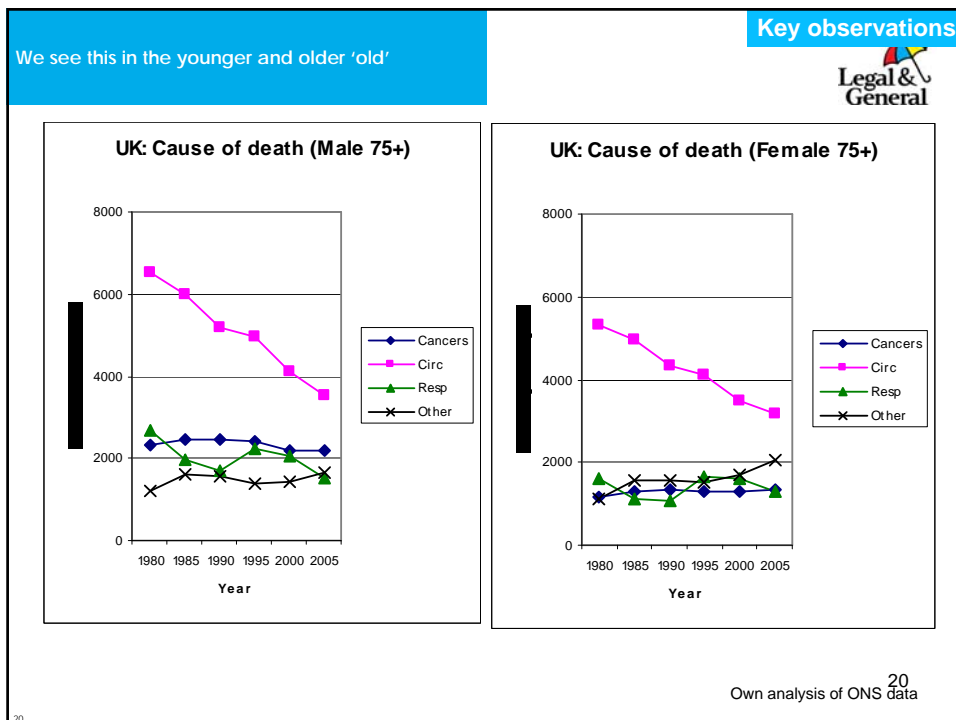
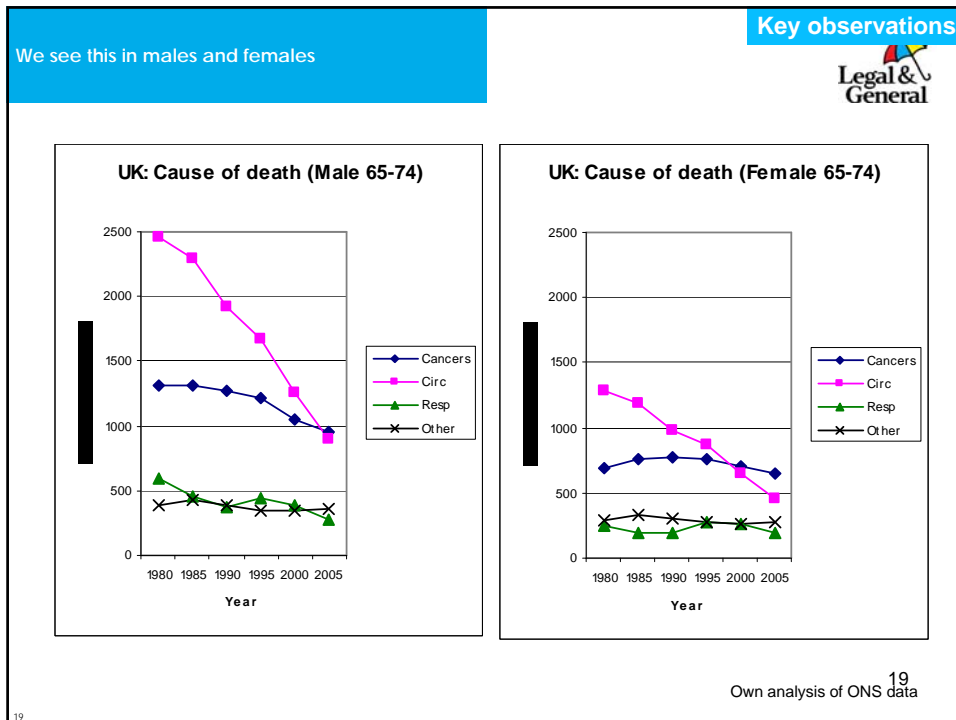


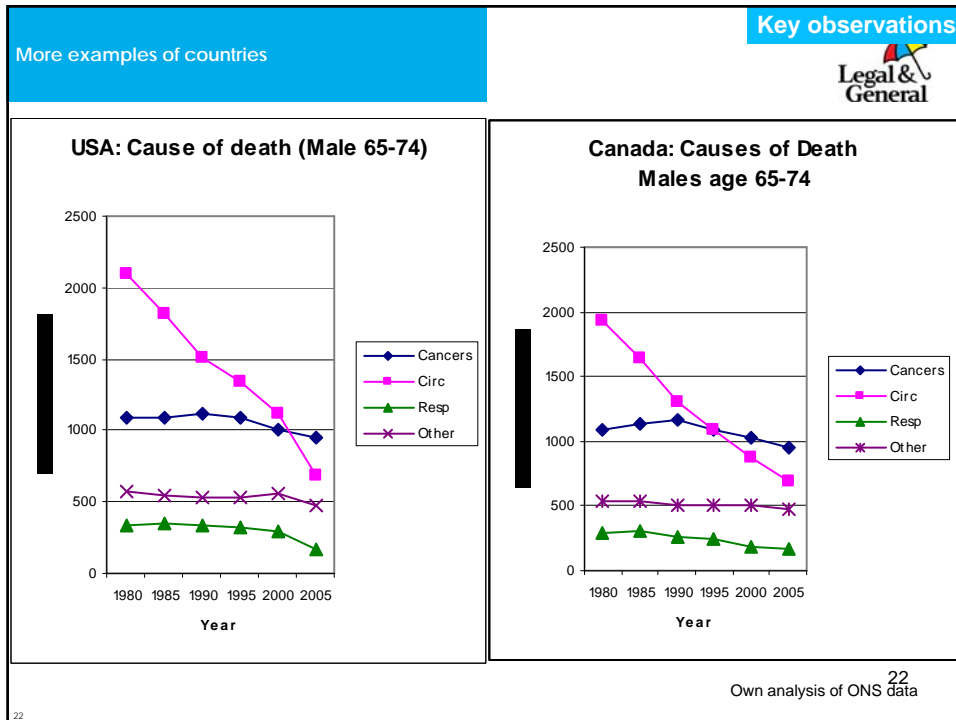
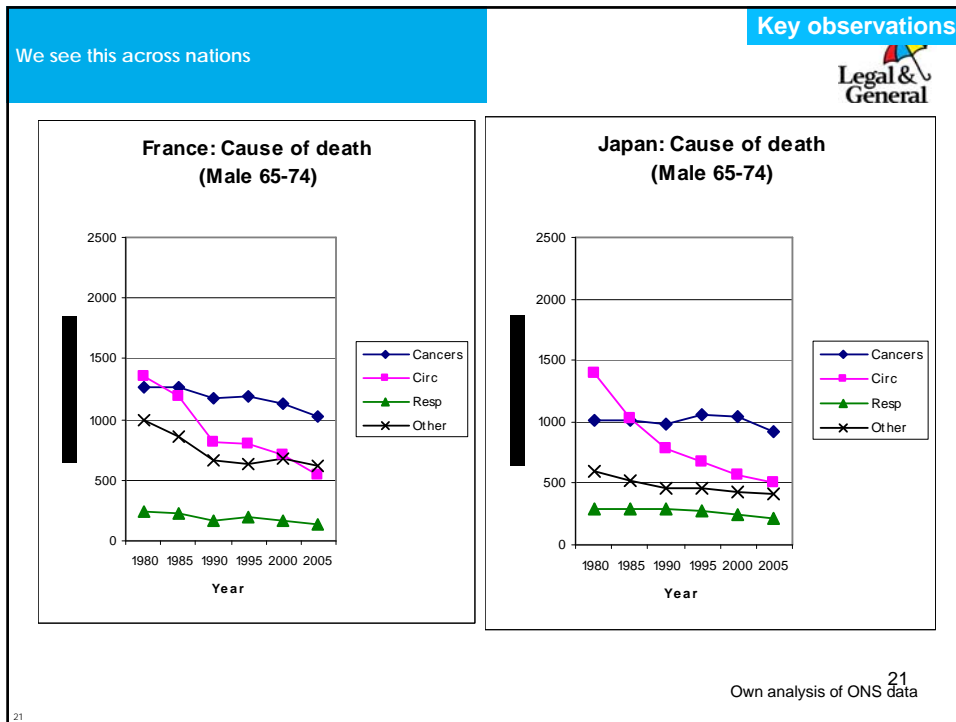
1. Dramatic decline in deaths relating to circulatory diseases from 1980 to 2005 in:
 - UK, USA, Japan, France, Canada, Sweden and Germany.
 - A large part of mortality improvement of UK males (age 65-74) between 1990 and 2000 is attributable to decline in death relating to circulatory diseases:

2. Relatively modest decline in deaths relating to cancers, respiratory diseases and 'other' diseases. (With increases in some causes)


Total fall in mortality	Attributable to circulatory diseases	Attributable to other diseases
18%	14%	4%

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Causes of improvements



Why have heart attack deaths fallen?
Fall in occurrence or fatality rates?


2/3rd
due to prevention of occurrence of heart attack (i.e. don't get it in the first place)

1/3rd
due reduced fatality rates (i.e. survival after getting a heart attack)

Tunstall-Pedoe et al. (2000)

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Causes of improvements

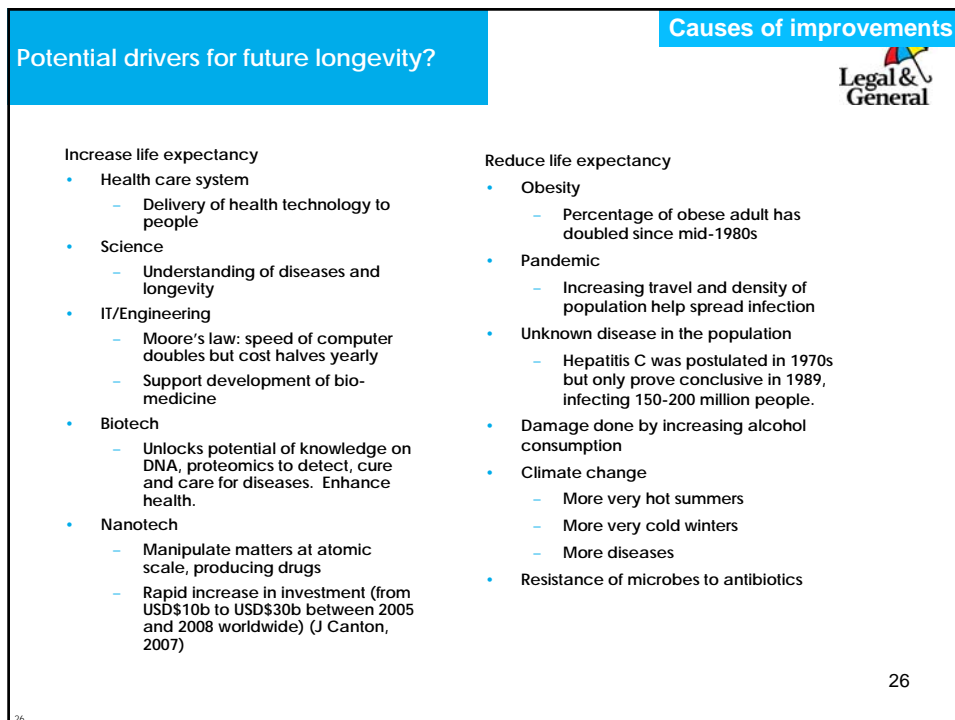
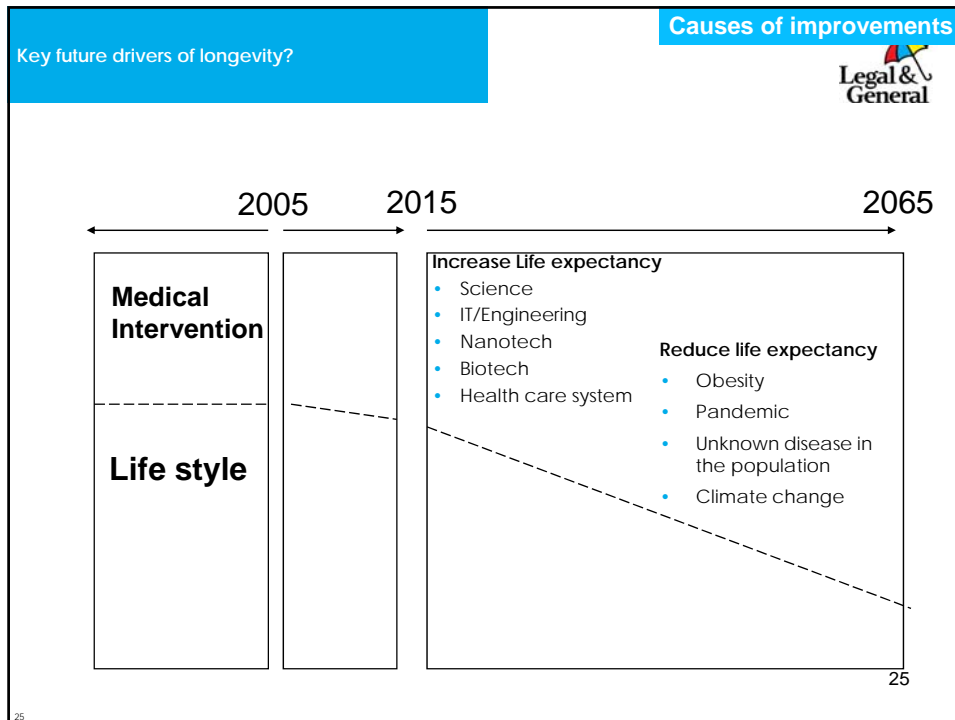


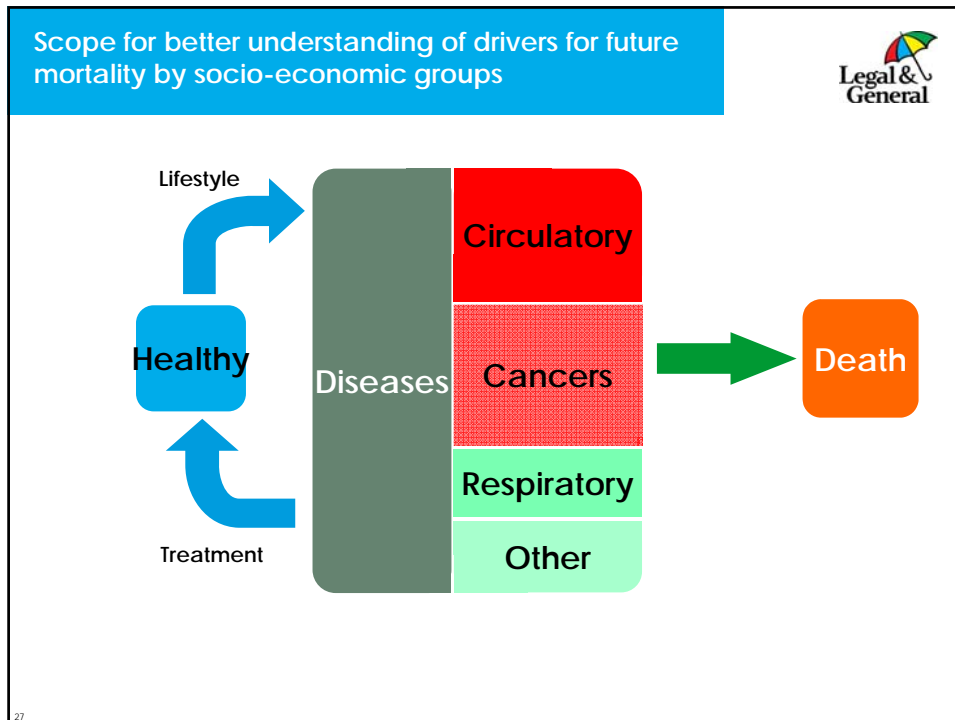
Why have heart attack deaths fallen?
Medical or not?
Contribution to improvement in heart attack mortality:


	Britain	Examples
Medical treatment	40%	Treatments for heart failure, heart attack, hypertension. Secondary prevention, aspirin, CABG
Life style	60%	Smoking cessation. Improvement in the level of blood pressure, cholesterol, deprivation, nutrition, infection, other.

Adapted from Capewell et al. (1999, 2000), Unal et al. (2004)

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- Conclusion
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- Different groups of people have different longevity.
 - Hence, there is scope for more advanced way of differentiating people with different life expectancy.
 - Different groups of people may have different future rates of mortality improvement
 - Beneficial to tap into scientific knowledge relating to socio-economic influence on health
 - Underwriting and pricing has future potential of...
 - To be more and more reliant on scientific and medical evidence
 - Hence, enhance competition
 - And leads to more products that are more suited for different customers.
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