Vision and social and health inequality

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"**Onset of and recovery from visual impairment: analysis of causes and consequences using the English Longitudinal Study of Ageing**"

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Overview of project

- Exploring relationships between socioeconomic factors and visual impairment in later life.
- English Longitudinal Study of Ageing (ELSA)
  - Survey of people aged 50+ living in England
  - Currently spans 14 years with 8 waves (2002-2016)
  - 11,391 respondents at baseline, surveyed every 2 years
- Project used various statistical methods:
  - Risk factors and causes of changes in vision
  - The impact of changes in vision on health and wellbeing.

Background to the topic

- Visual impairment is common at older ages, and rates of deterioration are highest among older populations.
- With an ageing UK population, the rate of sight loss is expected to rise dramatically over the next 25 years (RNIB, 2012).
- Despite the immediate policy relevance of sight loss, we have limited understanding of population factors related to the incidence and consequences of visual impairment.
- Identifying those at risk of onset of visual impairment, and factors that minimise the impact of visual impairment, has important social and economic implications.

Predictors of the onset of visual impairment

Whillans et al. 2015

- Waves 1-6 of ELSA (2002 to 2012-13)
- Individuals aged 50 and over
- Self-reported vision
  - A 5-category variable describing respondents vision (excellent through to poor/blind).
    - Examined changes in these categories over time.
- 'Moderate' and 'severe' vision loss
  - Moderate: 'fair vision'
  - Severe: 'poor vision or blindness'
- Social position
  - Wealth (quintiles) and self-perceived social status
- All models controlled for age group, ethnicity and gender.

Predictors of the onset of visual impairment

Whillans et al. 2015

- Lower wealth:
  - Predicted both moderate and severe visual impairment.
    - Poorest quintile twice as likely to report moderate vision loss and three times as likely to report severe vision loss than wealthiest quintile.
- Lower perceived social status:
  - Predicted both moderate and severe visual impairment.
    - Those in the lowest quintile of social status were 2.4 times more likely to report both severe and moderate vision loss than those in the highest quintile.
- Gender:
  - Females more likely to suffer vision loss than males.
- Age:
  - Risk of visual impairment increased strongly with age.
- Health factors:
  - Smoking, diabetes and hypertension predicted the onset of visual impairment.

Changes in vision over time

Whillans et al. 2015

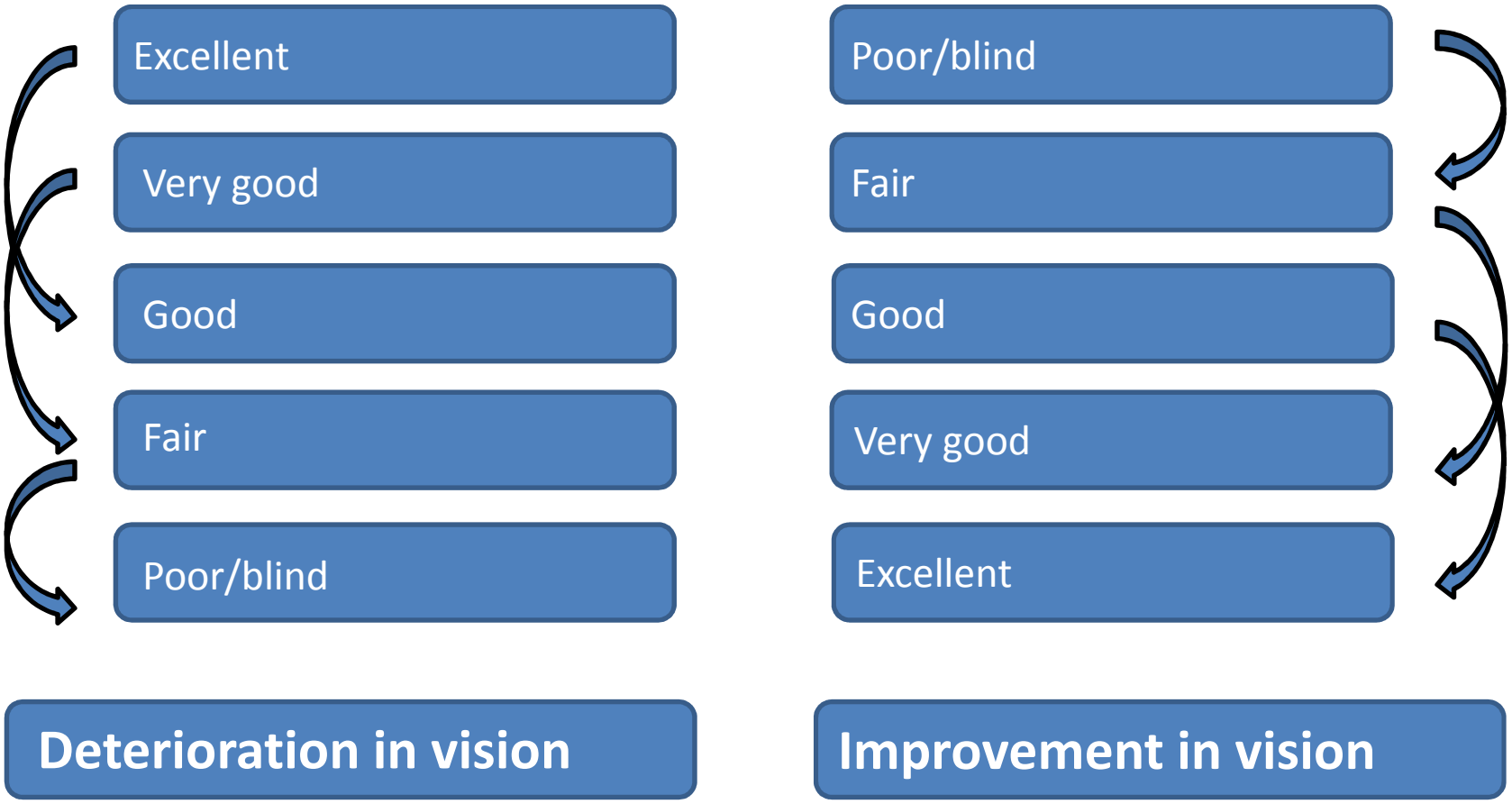
- 8 trajectories of changes in vision identified.
  - Stable, declining and improving
- Gender
  - Women less likely than men to report stable excellent vision.
- Age
  - Older age associated with poorer levels of stable vision and declining vision.
- Social position
  - Those in lower wealth quintiles and with lower perceived social status were more likely to report lower levels of stable vision and declining vision over time.
- Eye disease
  - Strongly associated with lower levels of stable vision and declining vision.

Consequences of changes in vision

Matthews et al. 2015

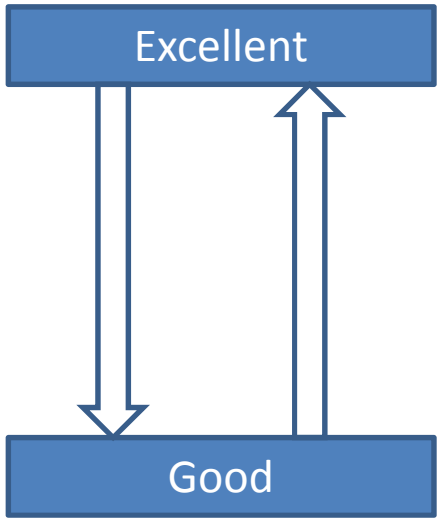
- **What are the consequences of deterioration or improvement in self-reported vision on wellbeing?**
- Waves 1-6 of ELSA (2002 to 2012-13)
- Individuals aged 50 and over
- Self-reported vision
  - A 5-category variable describing respondents vision (excellent through to poor/blind).
    - 6 'changes in vision' categories in the variable used for the analyses.
- 5 outcome variables
  - Depression (CES-D)
  - Satisfaction with life
  - Quality of life (CASP)
  - Organisational engagement
  - Income
- All models control for age, wealth, self-perceived social status, ethnicity, health status and baseline measures of outcome variables.

Changes in vision over time

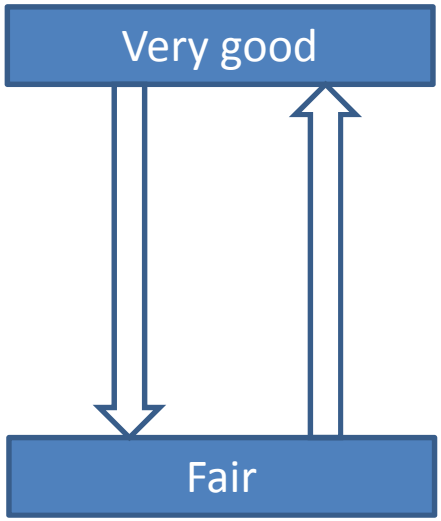


Changes in vision over time

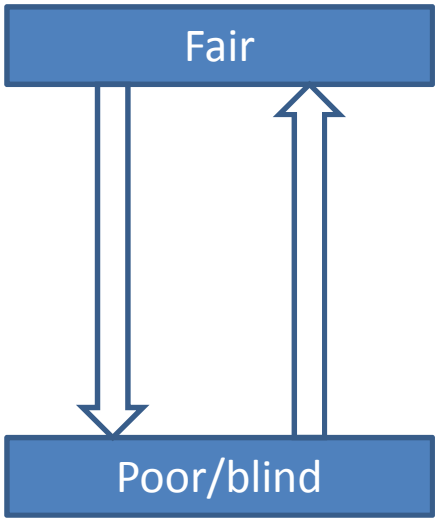
Within optimal



Optimal/ suboptimal



Within suboptimal



Who experiences deterioration or improvement in vision?

- 84.6% of people over 50 had stable vision.
  - 8.3% saw a deterioration (2+ scale points).
  - 7.1% saw an improvement (2+ scale points).
- Women were more likely to have poorer vision.
- Those with higher wealth and social class were more likely to see an improvement or have better baseline vision.
  - Highest wealth and class among those with a decline or improvement that stayed within the optimal categories.
  - Linear decline across levels of vision.
- Age was strongly associated with vision change.
  - Deterioration associated with older groups more than improvement.
  - Poorer vision categories associated with older groups.

Consequences of deterioration and improvement in vision

	Depression	Life satisfaction	Quality of life	Organisational engagement	Income
Deterioration in vision					
Within optimal	0.08	-0.43*	-0.60***	-0.02	-54.41*
Optimal to suboptimal	0.33***	-0.70**	-1.22***	-0.04**	-73.21**
Within suboptimal	0.36***	-0.55	-0.86**	-0.08***	-65.21
Improvement in vision					
Within optimal	-0.04	0.41*	0.57**	0.04**	59.41*
Optimal to suboptimal	0.05	0.25	0.20	0.01	20.36
Within suboptimal	0.15	-0.31	0.44	0.03	-12.65

***p<0.001 **p<0.01 *p<0.05

- Largest effects are on those moving from optimal to suboptimal vision categories.
- Deterioration in vision is associated with increased depression, and lower life satisfaction, quality of life, organisational engagement and income.
- Improvement in vision is only associated with beneficial outcomes among those who had better vision at baseline.

Conclusions

- Changes in vision are strongly linked to socio-demographic and socio-economic characteristics.
  - Poorer social circumstances significantly predict a higher risk of visual impairment.
- Deteriorations in vision are associated with poorer wellbeing, lower social engagement and lower income.
  - This relationship is strongest at the point at which people cross from optimal to suboptimal vision.
- Improvement in vision was only associated with improvement in wellbeing among those with the best vision at baseline.
- Important policy implications:
  - Identify individuals most at risk of vision impairment in later life.
  - Limit subsequent deteriorations in health and wellbeing.