

# What Drives the Increase in Health Costs with Age?

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- Aggregate HCE is driven by technological change in medicine, institutional setting, income effect, and Baumoll effect, but age structure remains a significant factor
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## Health care expenditure (HCE) and age

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- HCE-age relation is not trivial
- Changes in morbidity and treatment are more important than changes in mortality for HCE
- Rise of HCE with age is driven by the prevalence of healthcare and intensity of treatment, whereas unit costs are less important
- Age patterns differ greatly with the type of care
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- 98% of Poles entitled for NHS, funded by employer and employee contributions (Bismarck type)
- 60% of HCE financed by NHS, 80% of NHS costs ascribed to age
- Break-down by age, gender, type, and **decedents and survivors**
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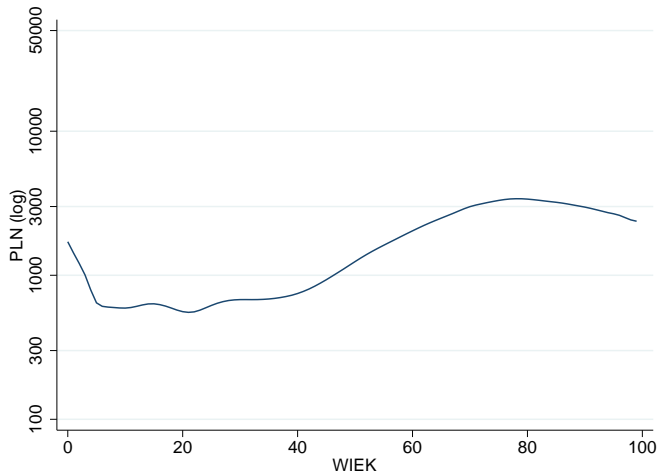
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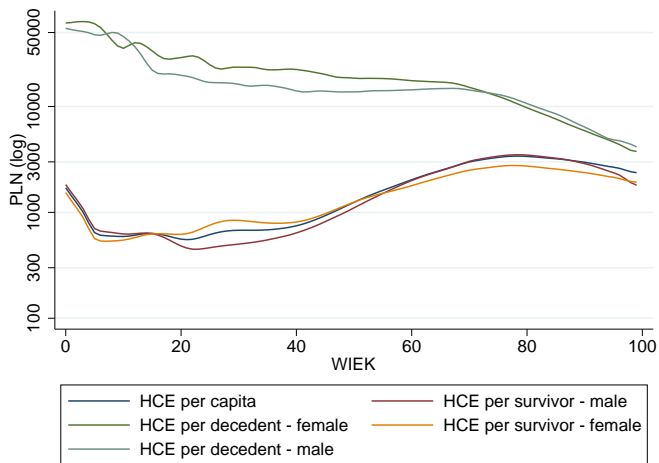
# Is health care expenditure and age relation trivial? . | :

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# Maybe not trivial



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## Decomposition method

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Observing identity (for every age group):

$$H = H^s + H^d = \frac{H^s}{I^s} \frac{I^s}{U^s} \frac{U^s}{S^s} \frac{S^s}{P} P$$
$$+ \frac{H^d}{I^d} \frac{I^d}{U^d} \frac{U^d}{S^d} \frac{D^s}{P} P$$

assuming that each factor is an independent function (process) of age:

$$H(a) = h^s(a) i^s(a) u^s(a) (1 - d(a)) P(a)$$
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and applying the total derivative with respect to age let us disentangle the contribution of every factor to the differences between consecutive age groups

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- ▶ costs of unit of treatment (expenditure per incident)
  - ▶ of survivor user -  $(h_a^{s,u} = \frac{H_a^s}{I_a^s})$ ,
  - ▶ of decedent user -  $(h_a^{d,u} = \frac{H_a^d}{I_a^d})$ ,
- ▶ intensity of treatment (incidents per user)
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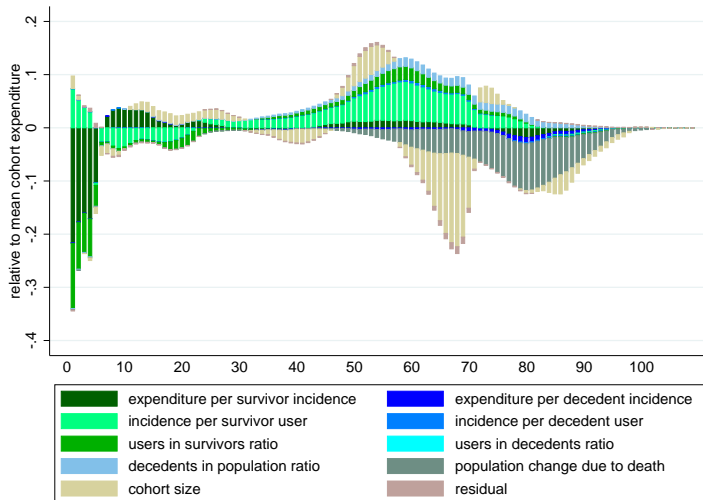
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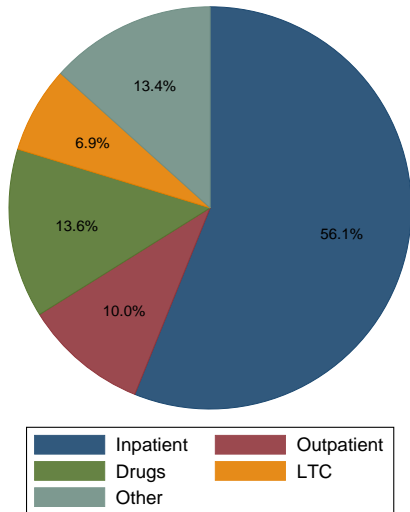
# HCE in general driven by intensity of care



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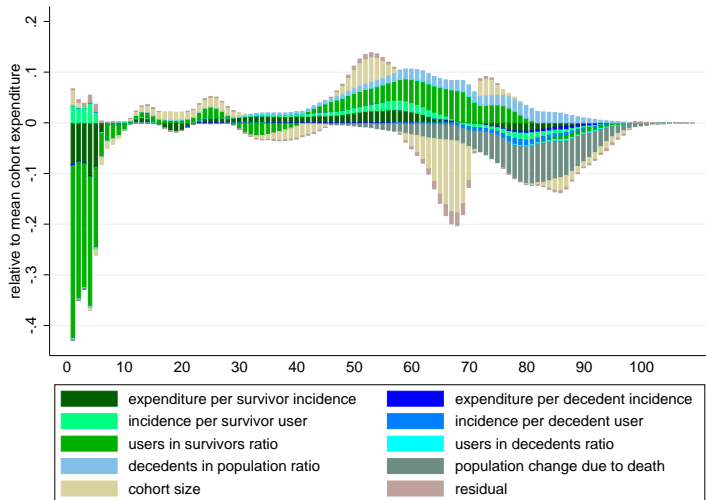
## Hospital outlays dominate HCE

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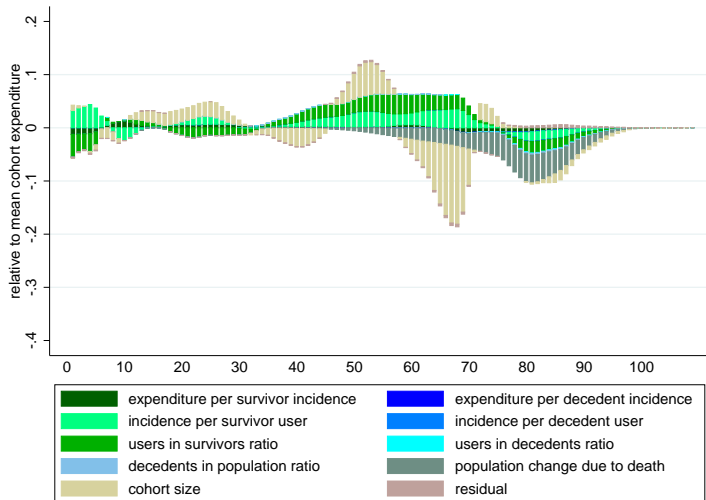




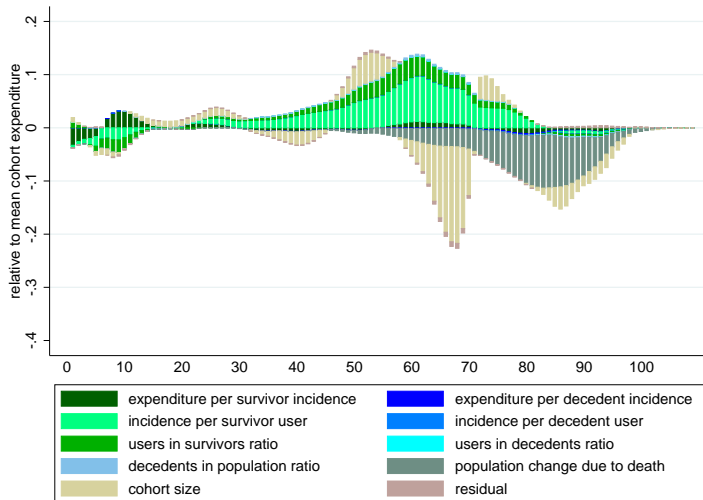
# Hospital expenditures driven by prevalence of illness . | :



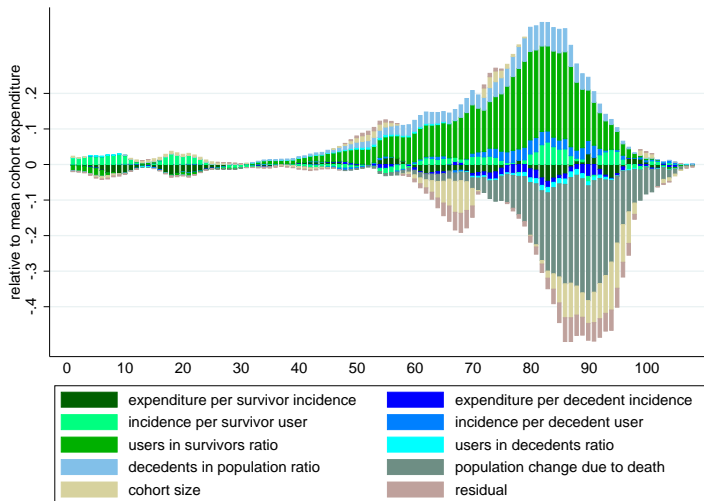
# Ambulatory care driven by intensity and prevalence . | :



# Drug spendings driven by intensity of use



# LTC driven by prevalence and death rate



- Morbidity pattern (prevalence and intensity of treatment) is crucial for age-dependence of HCE
- Mortality drops without a change in morbidity (due to treatment) lead to steepening of HCE with age
- Future changes of morbidity patterns and disease-specific treatment crucial for consequences of ageing on the HCE
- The intensity and unit costs of treatment stop rising at the age-span 70-80

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