Changes in Diabetes prevalence: Decreasing mortality or Increasing incidence?

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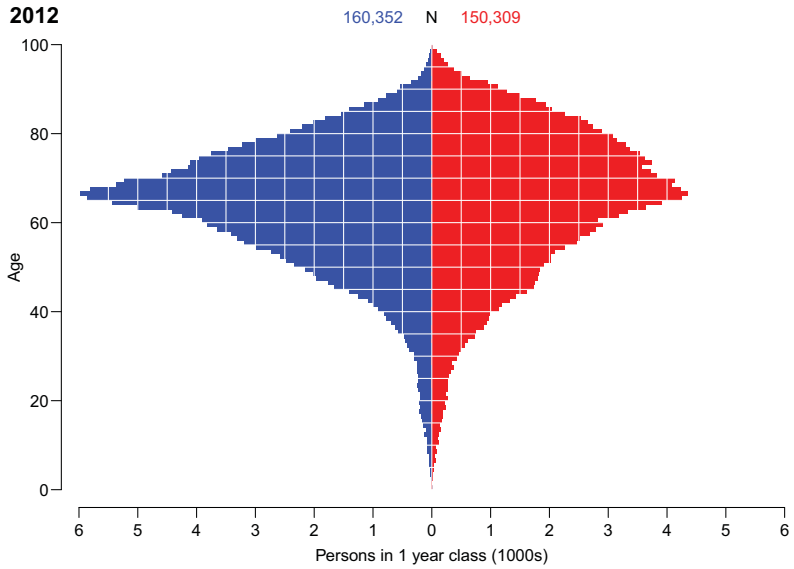
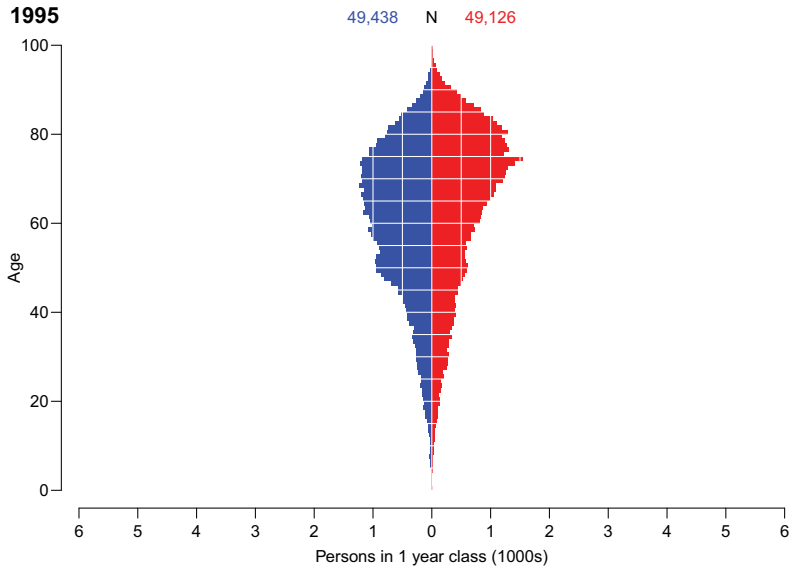
http://BendixCarstensen.com/DMreg/Prevalence

DM patients in Denmark, 2012



Prevalence of DM in Denmark.

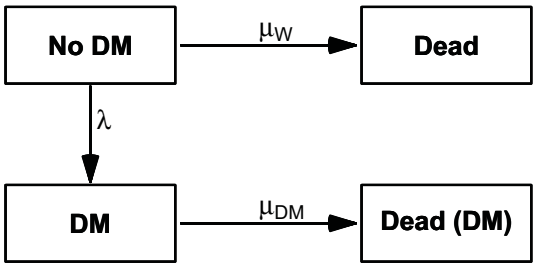


Where do the changes come from?

The period 1995–2012 for men resp. women:

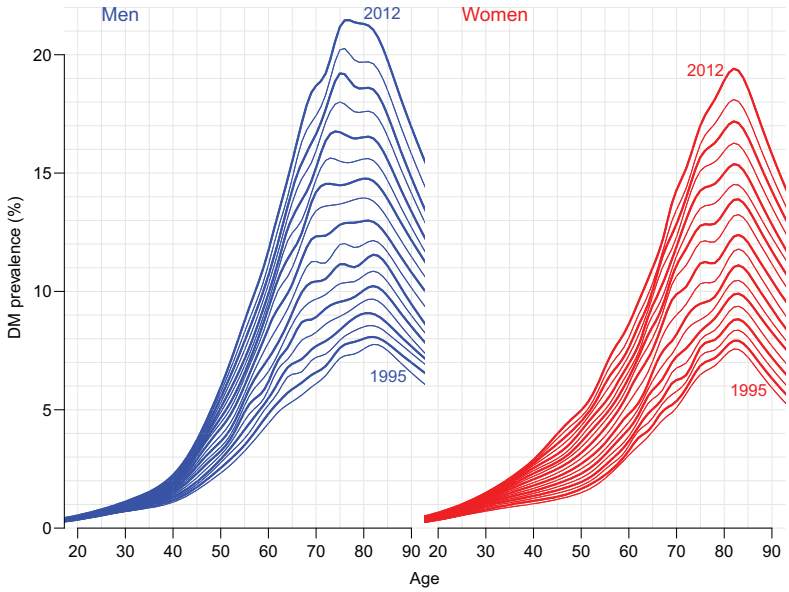
- Increasing diabetes incidence:
  3.8%, 4.1% per year
- Decreasing mortality:
  non-DM: 2.9%, 2.4% per year
  DM-ptt: 4.0%, 3.8% per year
- Aim:
  How much can each factor explain?
- Look at age-specific **prevalences**,
  not the **numbers** of DM-patients.

DM prevalence prediction



- Rates all modeled by APC-models with spline terms
- If we know
  - prevalence of DM in 1995
  - the rates in the period 1.1.1995-1.1.2012
- —then we can predict prevalences at 1.1.2012

Age-specific prevalences 1995–2012:



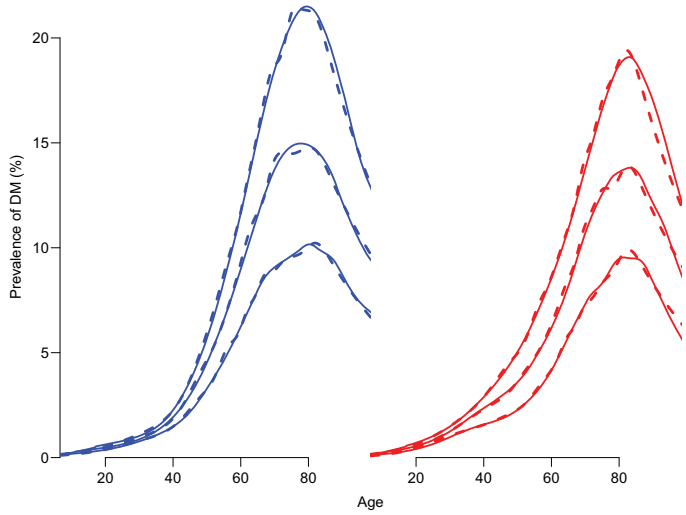
Updating age-specific prevalences:

Each step has as input (year y):

- Prevalences at 1 Jan
- Mortality rates for the year
- Incidence rates for the year

Outputs age-specific prevalences 1 Jan year $y + 1$

Actual updating interval used: $1/10$ year

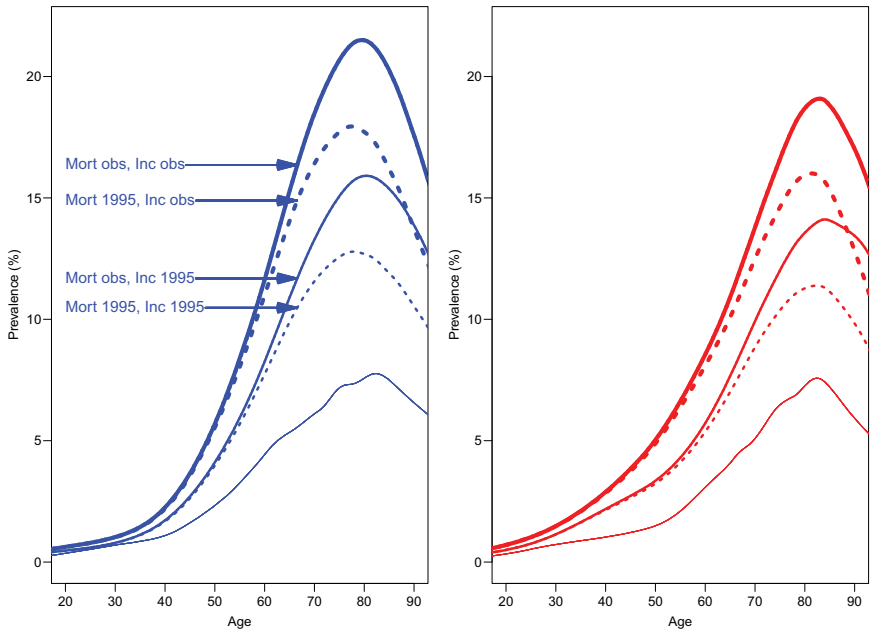


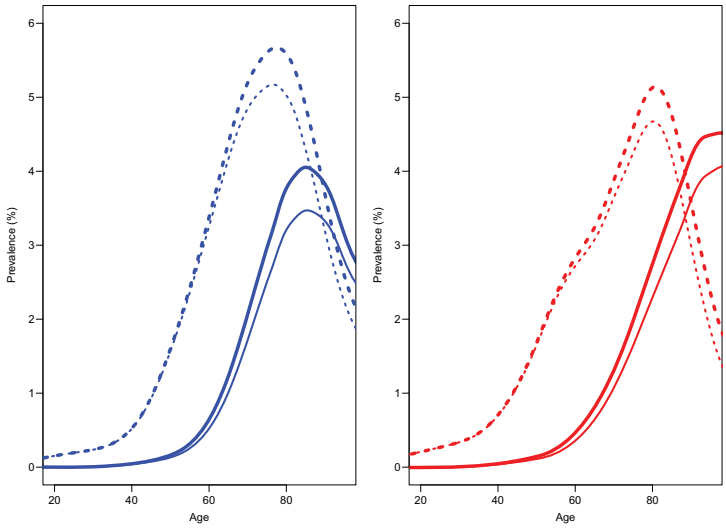
Full: Obs. prevalence 2000, 2006, 2012
Broken: APC-model

DM prevalence components

- Four scenarios:
  - Rates develop as observed
  - Mortality rates fixed at 1995 level
  - Incidence rates fixed at 1995 level
  - Both mortality and incidence rates fixed at 1995 level
- Differences between these can be transformed to 4 **components** of prevalence:

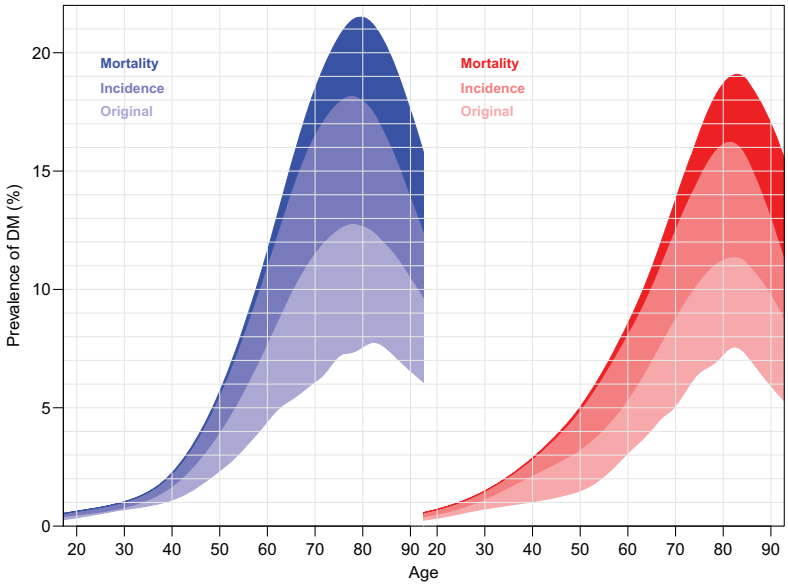
Mort:	DM-ptt. alive because of declining mortality
Inc:	DM-ptt. because of increasing incidence
Const:	DM-ppt. attributable to non-equilibrium in 1995
Org:	DM-ptt. corresponding to 1995 age-specific prevalences





Attributable parts of prevalence:
Full: Mortality; Broken: Incidence.

Age-specific prevalences, 2012:



How many patients?

Recover the **number** of patients in each group by multiplying by the corresponding population size. This is now done for each year 1996–2012