

*EPC 2018*

POTENTIAL GAINS IN LIFE EXPECTANCY BY  
REDUCING INEQUALITY OF LIFESPANS IN DENMARK

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- ▶ Females born in 1919-1939 → **high levels of smoking and alcohol consumption.**

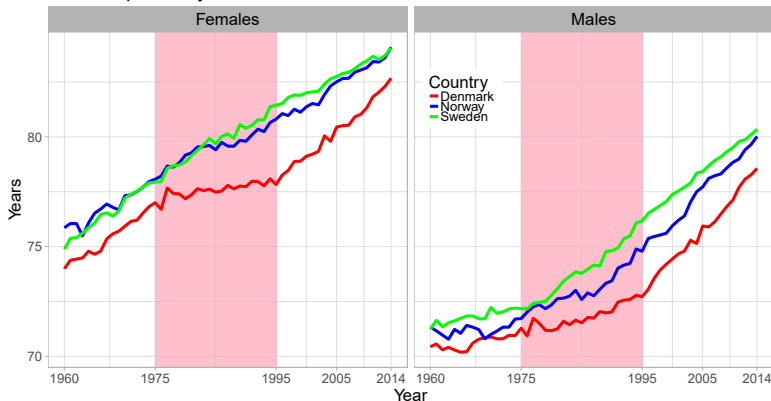
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**What does Denmark need to close the gap in  $e_0$  through lifespan inequality?**

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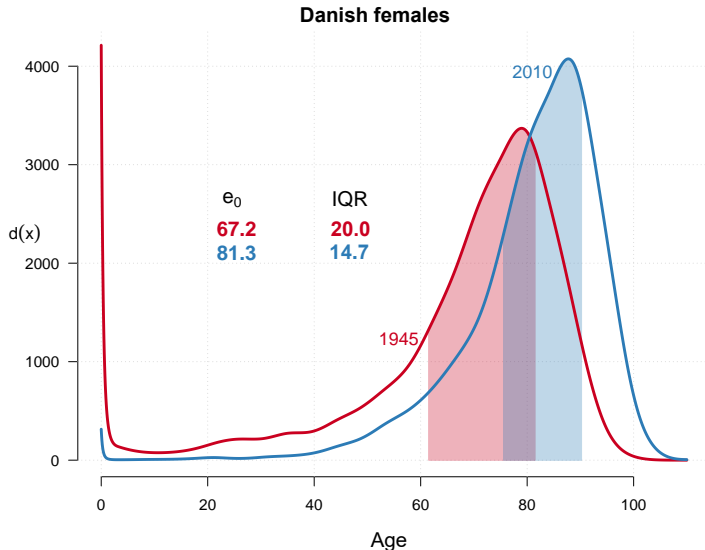
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- ▶ **Uncertainty** in the timing of death at the **micro level**
- ▶ We make **decisions** based on both.

# Why lifespan inequality?





# Data

- ▶ **Period lifetables** from HMD for Denmark, Sweden and Norway from 1960-2014.
- ▶ **Cause of death** data from WHO database.

# Classification of deaths

1. Cancer sensitive to smoking
2. Cancer non-sensitive to smoking
3. Cardiovascular conditions
4. Non-infectious respiratory diseases
5. Infectious respiratory diseases
6. External causes
7. Rest.

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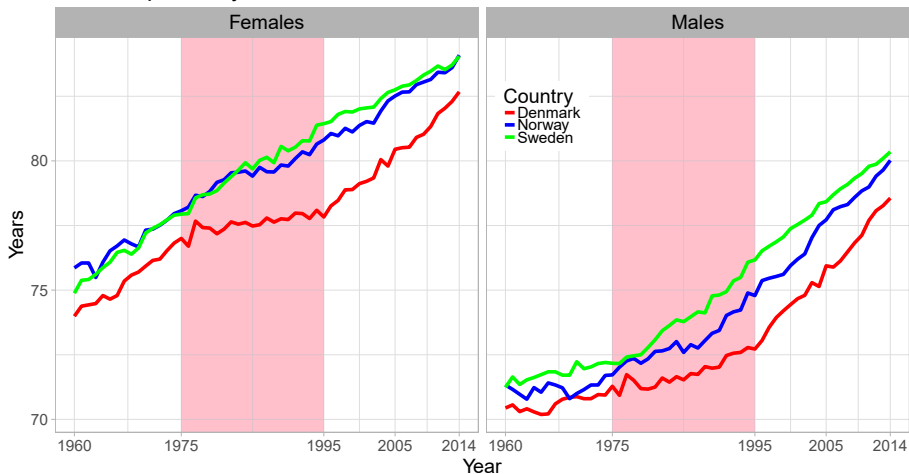
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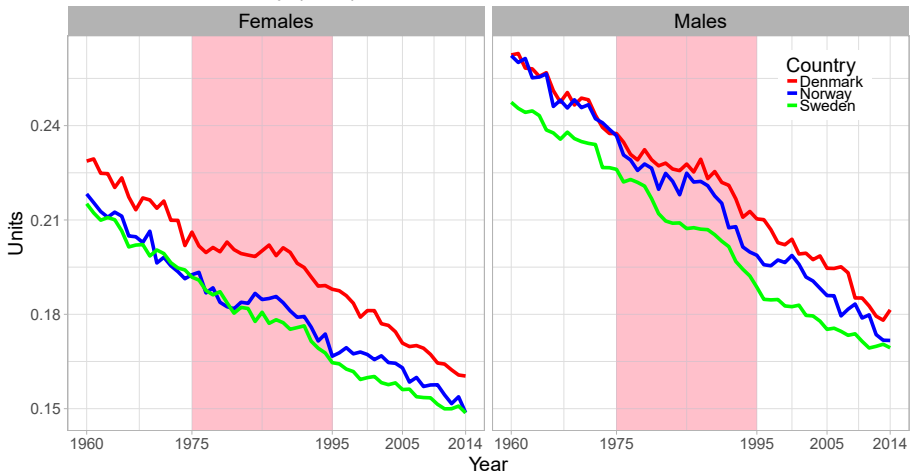
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- ▶ Captures the **dimensionless** of the shape of aging.
- ▶ **Easy** to interpret.
- ▶ Allows to separate ages and causes that **decrease** from those that **increase** inequality.

## A Life expectancy at birth

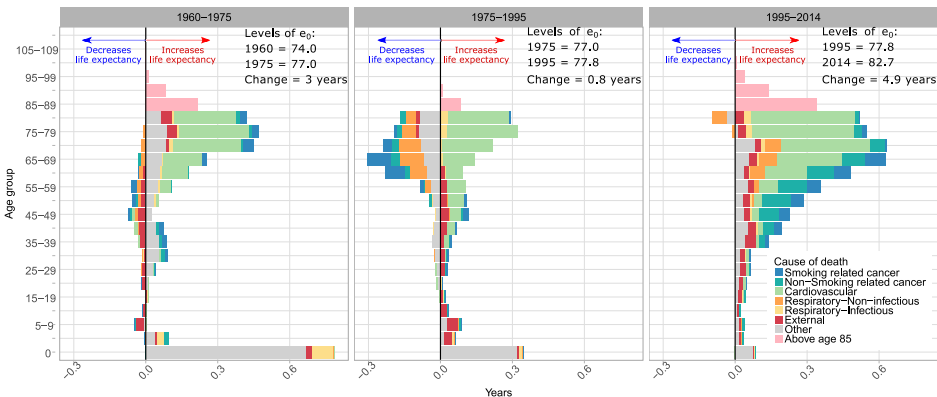


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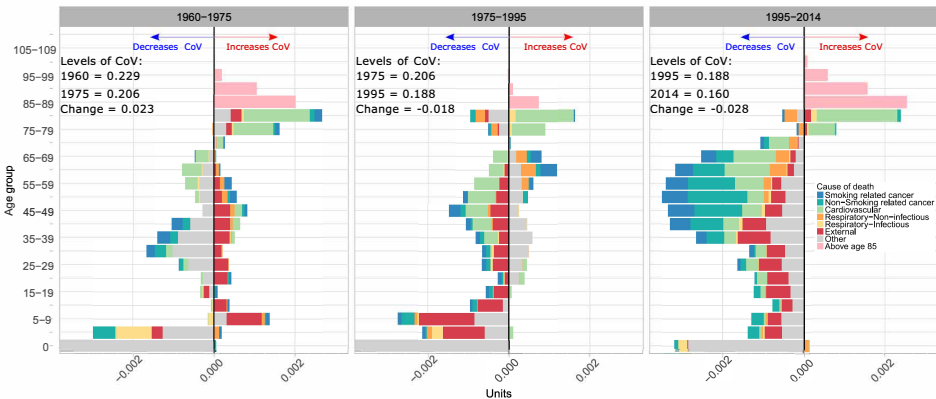




# A Decomposition of life expectancy

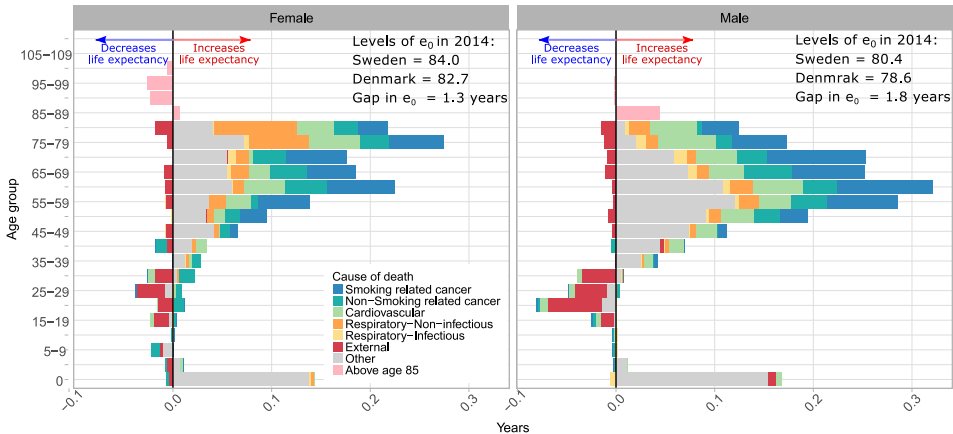


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Sweden – Denmark, 2014.



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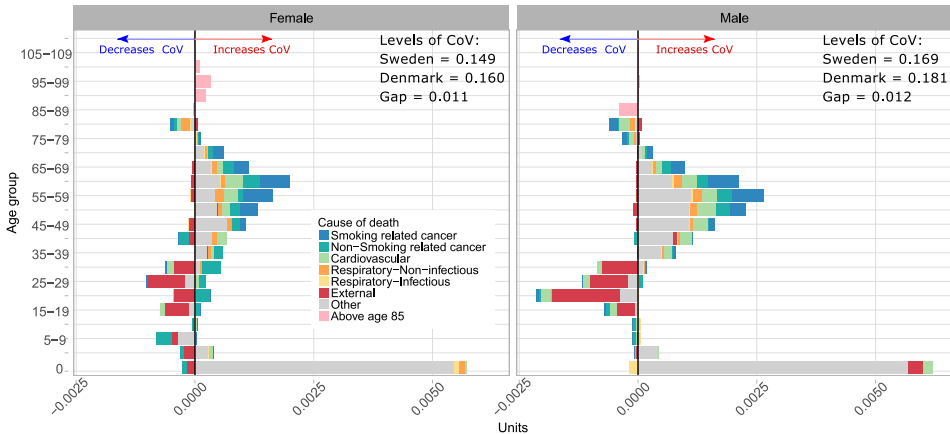


Table 1. Potential gains in life expectancy in Denmark if inequality is reduced (%%) to Swedish levels in 2014 by cause of death.

Sex	Cause of death category and mortality above age 85	Reduce gap with Sweden in CoV (%)	Reduction in life expectancy gap (%)	Potential Gains in life expectancy (years)
Females	1 Smoking-related cancer	18%	25%	0.35
	2 Non-Smoking related cancer	13%	16%	0.22
	3 Cardiovascular	10%	15%	0.21
	4 Respiratory-Infectious	2%	2%	0.03
	5 Respiratory-Non-infectious	7%	17%	0.23
	6 External	-26% *	-11% **	-0.15
	7 Other	71%	40%	0.55
	Above age 85	5%	-3% **	-0.05
Males	1 Smoking-related cancer	15%	26%	0.47
	2 Non-Smoking related cancer	7%	10%	0.19
	3 Cardiovascular	10%	19%	0.33
	4 Respiratory-Infectious	1%	3%	0.05
	5 Respiratory-Non-infectious	5%	7%	0.12
	6 External	-26% *	-11% **	-0.19
	7 Other	92%	43%	0.77
	Above age 85	0.0	0.0	0.04

\* Increases the gap with Sweden. Represents potential gains for Sweden if they achieve the levels of Denmark.

\*\* Increases the gap with Sweden in life expectancy.

Note: the sum of percentages differ to 100% due to rounding.

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- ▶ **Infant mortality** → contributor to the 2014 Danish-Swedish **lifespan inequality difference**.

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  1. **heterogeneity** in ages at death.
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- ▶ **Cancer mortality** → biggest contributor to Danish-Swedish **life expectancy difference**.
- ▶ **Infant mortality** → contributor to the 2014 Danish-Swedish **lifespan inequality difference**.
- ▶ **Denmark** can ↓ inequality in lifespans and ↑ life expectancy through a consistent policy target: **reducing cancer and infant mortality**.

# Potential gains in Denmark: Cancer and Infant Mortality

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Shinyapp: [https://jmaburto.shinyapps.io/DK\\_App/](https://jmaburto.shinyapps.io/DK_App/)

Lifespan inequality in Denmark, Sweden and Norway

