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The impact of smoking on a long and healthy life

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Background



Smoking kills — Smoking makes sick

If smoking is a strong enough determinant

then smokers should have

shorter life?

shorter healthy life?

longer / shorter unhealthy life?

Research questions



1. **What is the difference in
Life Expectancy (LE)
Disability-Free Life Expectancy (DFLE)
Disability Life Expectancy (DLE)
by smoking status?**

2. **Of the difference in the health expectancy
indicators by smoking status:**
 - * **what is the part due to mortality difference?**
 - * **what is the part due to difference in the
disability prevalence?**

Methods: mortality



- **Follow-up of Health Interview Survey
1997 & 2001 up to 31/12/2008**
Vital Status: Alive
Day of death/emigration
- **Matching to the National Register:
99.7% success**

Follow-up status: HIS 1997 & 2001 by 31/12/2008, 15+



	Vital status	N	%
Males	Mortality	898	9.60
	Emigration	142	1.52
	Alive	8310	88.88
	Total	9350	
Females	Mortality	724	7.31
	Emigration	135	1.36
	Alive	9046	91.33
	Total	9905	

Health Interview Survey 1997 & 2001

Disability

- **7 ADL functions:**
 - getting in/out bed
 - getting in/out chair
 - dressing
 - washing hands/face
 - feeding
 - going to the toilet
 - continence
- **Mobility:** walking distance of maximum 200 m
- **Sensorial:**
 - seeing (with glasses)
 - hearing (with hearing aid)

Health Interview Survey 1997 & 2001

Smoking

- Non-smoker
- Ex-smoker
- Current Smoker

Health expectancy at age 15 by smoking status



- **Age-specific mortality rates:**
Person years: lexis expansion by 1 year age bands
- **DFLE and DLE estimation:**
Sullivan method

Decomposition tool



Assessing if the difference in the health expectancy indicators by smoking status can be attributed to differences in mortality or to differences in disability prevalence

Proportion of differences due to		LE	DFLE	DLE
Inequality in mortality	: Mortality effect	100%	x%	z%
Inequality in disability prevalence	: Disability effect		y%	t%
		100%	100%	100%

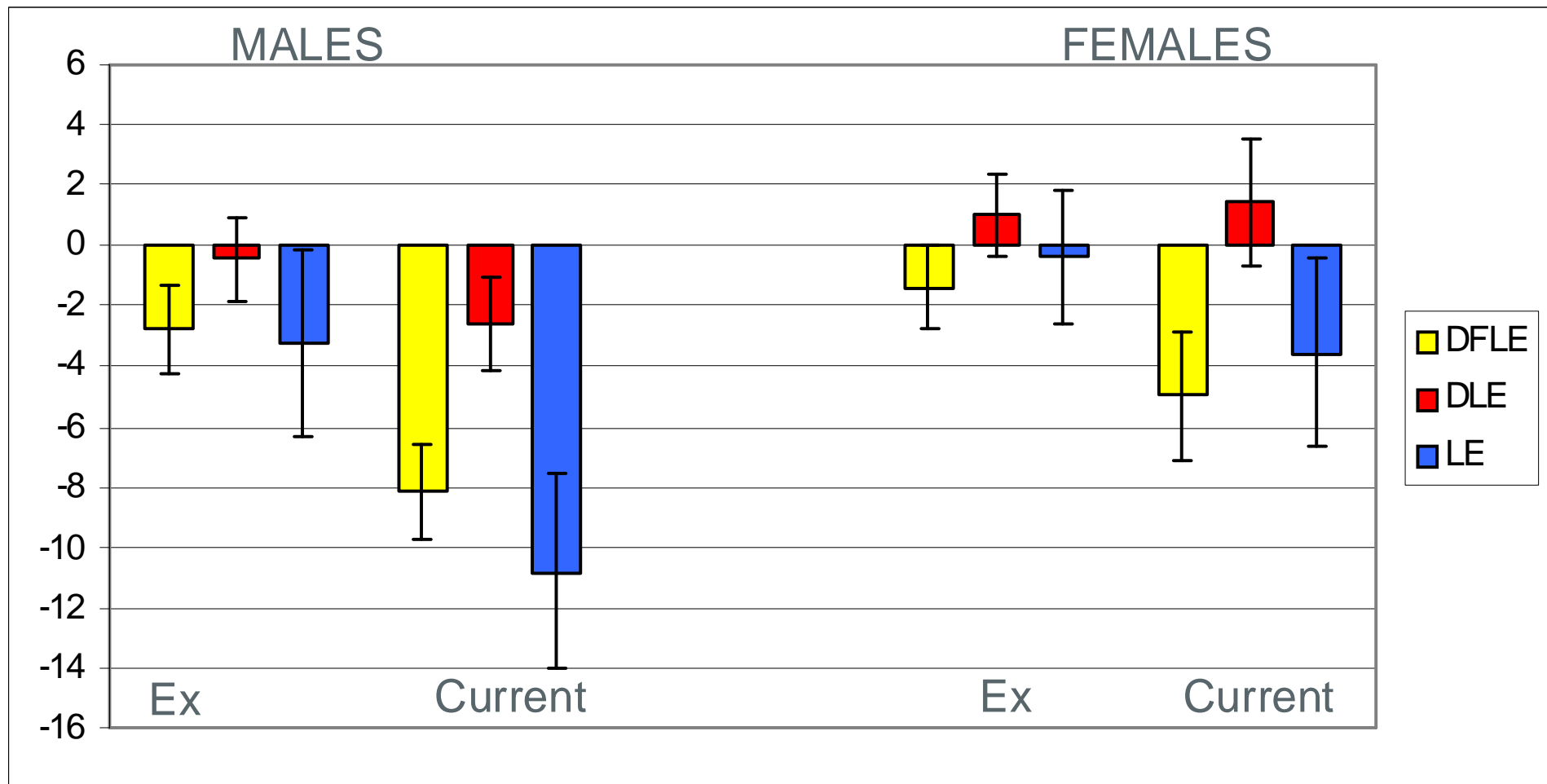
Nusselder WJ, Looman C. Demography 2004;41315-34
R-macro developed within EHLEIS project

LE, DFLE, DLE at age 15 by smoking status



	LE	DFLE	DLE	%DLE
<u>MALES</u>				
Non-smoker	69.05	54.02	15.03	22
Ex-smoker	65.82	51.25	14.57	21
Difference	-3.23	-2.76	-0.46	
Current smoker	58.25	45.85	12.39	22
Difference	-10.80	-8.17	-2.63	
<u>FEMALES</u>				
Non-smoker	71.59	51.98	19.61	27
Ex-smoker	71.25	50.60	20.65	29
Difference	-0.34	-1.38	1.04	
Current smoker	68.03	46.99	21.04	31
Difference	-3.56	-4.99	1.43	

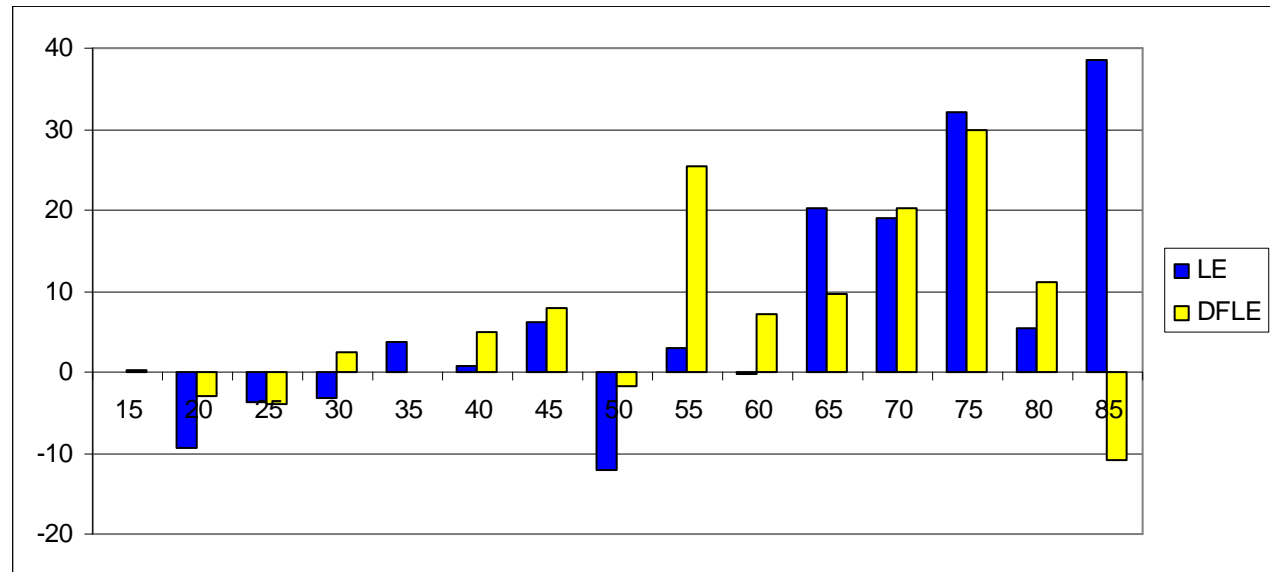
Difference in LE, DFLE, DLE at age 15: ex- or current smoker versus nonsmoker



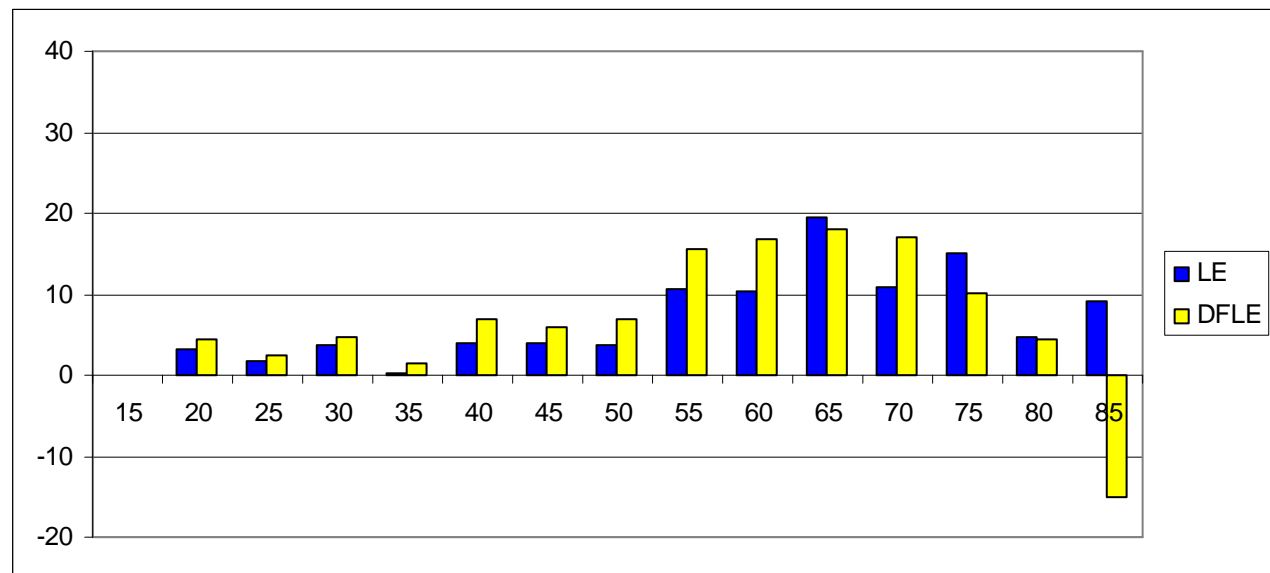
%-contribution of age to the difference in LE, DFLE, DLE at age 15: Non- versus Ex- and Current smokers

Males

Ex-smokers



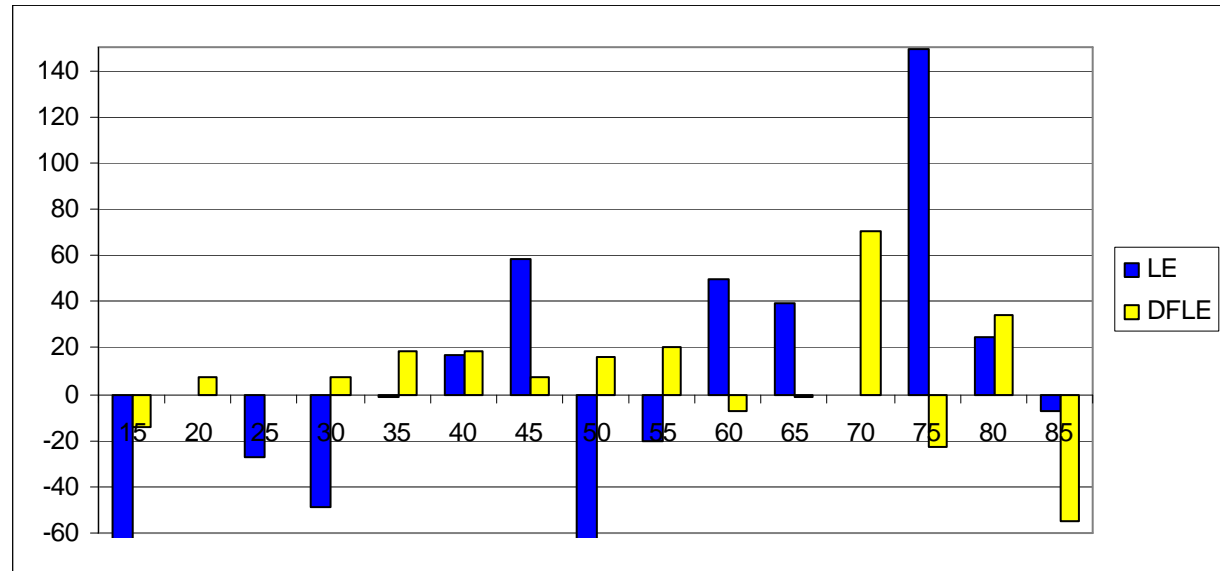
Current smokers



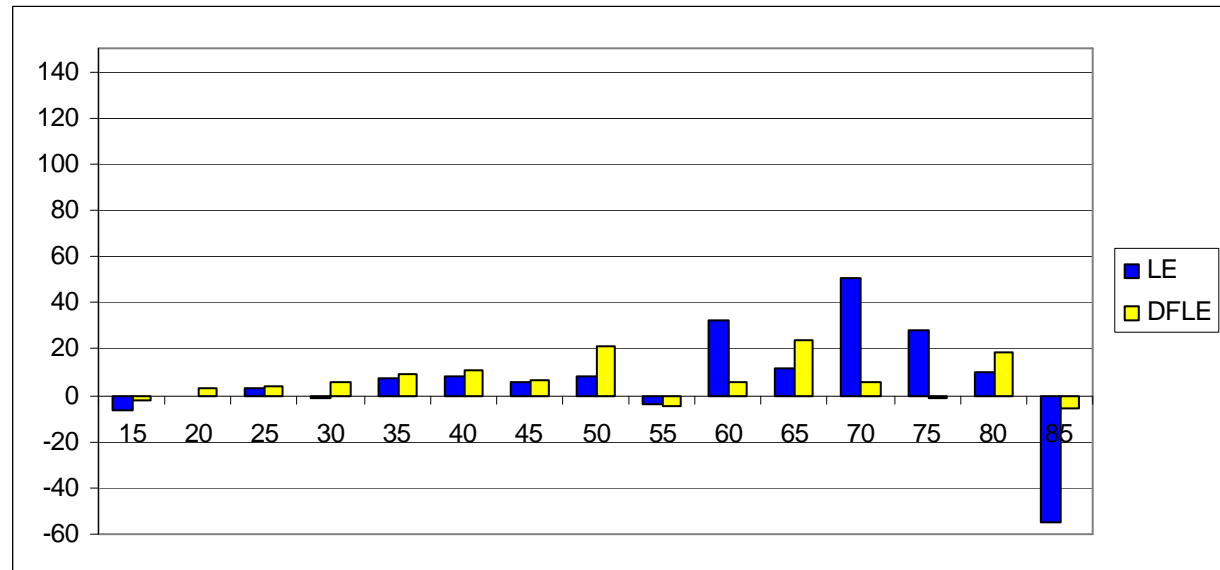
%-contribution of age to the difference in LE, DFLE, DLE at age 15: Non versus Ex- and Current smokers

Females

Ex-smokers



Current smokers



Decomposition into a mortality and disability effect

Males

	LE	DFLE	DLE	%		
				LE	DFLE	DLE
<u>Ex-smoker</u>						
Difference	-3.23	-2.76	-0.46			
Difference due to mortality effect	-3.23	-0.67	-2.55	100	24	554
Difference due to disability effect	0.00	-2.09	2.09	0	76	-454
<u>Current smoker</u>						
Difference	-10.80	-8.17	-2.63			
Difference due to mortality effect	-10.80	-5.33	-5.47	100	65	208
Difference due to disability effect	0.00	-2.83	2.83	0	35	-108

Decomposition into a mortality and disability effect

Females

	LE	DFLE	DLE	%		
				LE	DFLE	DLE
<u>Ex-smoker</u>						
Difference	-0.34	-1.38	1.04			
Difference due to mortality effect	-0.34	0.05	-0.39	100	-4	-38
Difference due to disability effect	0.00	-1.43	1.43	0	104	138
<u>Current smoker</u>						
Difference	-3.56	-4.99	1.43			
Difference due to mortality effect	-3.56	-1.48	-2.08	100	30	-145
Difference due to disability effect	0.00	-3.51	3.51	0	70	245

Limitations



**Estimation of the age-specific
probabilities of death
prevalence of disability**

without adjustment for confounding factors

- **other life style factors (alcohol, obesity)**
- **SES factors (education/income)**
- **....**

No data on causes of death available

Conclusions: Males

Smokers: shorter life and within shorter life

- less years without disability
- less years with disability
- mortality is the major contributor to the difference in DFLE and DLE

→ Mortality selection

Ex-smokers: shorter life and within shorter life

- less years without disability
- less years with disability (NS)
- disability is the major contributor to the difference in DFLE
- mortality is the major contributor to the difference in DLE

→ Combined mortality selection and disability

Conclusions: Females

Smokers: shorter life and within shorter life

- less years without disability
 - more years with disability (NS)
 - disability is the major contributor to the difference in DFLE
 - disability is the major contributor to the difference in DLE
- Combined disability and mortality selection**

Ex-smokers: shorter life (NS) and within shorter life

- less years without disability
 - more years with disability (NS)
 - disability is the major contributor to the difference in DFLE
 - disability is the major contributor to the difference in DLE
- No mortality selection**

Why gender difference?



- **Cohort effect?**

Smoking epidemic started later in time in women compared to men

- **Different way of smoking?**

- Number of cigarettes / day
- Type of cigarettes, different brand
- Inhaling of smoke

- **Gender effect?**

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