

Belgian Cancer Registry



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tegen Kanker



The impact of income & socio-economic inequalities on colon & lung cancer survival in Belgium

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Socio-economic status (SES) and cancer

- Overall: negative impact of SES on disease incidence/mortality
- Cancer: deprivation gap in survival differs by cancer type

No/small variation in survival:

- Malignant melanoma
- Ovarian cancer
- Childhood malignancies



Disparities in survival:

- Lung cancer
- Oesophageal cancer
- Colorectal cancer

Thyroid cancer
Prostate cancer

- Objective:

- Study the effect of SE factors on cancer survival in Belgium
- Can differences in survival be explained by other factors as well (stage, morphology, age, sex, comorbidities) ?

Material and methods : DATA

- **Belgian Cancer Registry (BCR):** incidences 2006-2013
 - Cancer types (12): colon and lung
 - Random sample: 2/3
 - Patients: age ($\geq 25y$), gender, comorbidities
 - Cancer: stage, subtype, treatment

- **Crossroads Bank Social Security :** data-warehouse labour market
 - 1:1 linkage on unique patient identifier (UPI)
 - Data on individual-level & neighbourhood-level SES: year preceding diagnosis

Material and methods : DATA

Colon Cancer (n=20,149)

Males (%)	57
Median age (years)	74
Combined stage (%)	
I	16
II	30
III	26
IV	19
X	9
Comorbidities (%)	
Cardiovascular	57
Respiratory	6
Diabetes	16
5-years OS* (%)	52
Median survival (months)	65

Lung Cancer (n=27,668)

Males (%)	76
Median age (years)	69
Combined stage (%)	
I	16
II	7
III	20
IV	37
X	20
Histological subtypes (%)	
SCLC	15
NSCLC	78
Other and NOS**	7
5-years OS* (%)	15
Median survival (months)	10

Material and methods : SES

- **Income**

- Individual & family income (by 5000€ increments)
- Median income at neighbourhood-level: low, middle & high

- **Household type**

- Couple with/without child(ren), single-parent, single-person, other

- **Marital status (2009-2013)**

- Living together, single, separated, widowed

- **Urbanisation degree of residence**

- Low, middle & high

- **Level of education & employment status**

- Not known

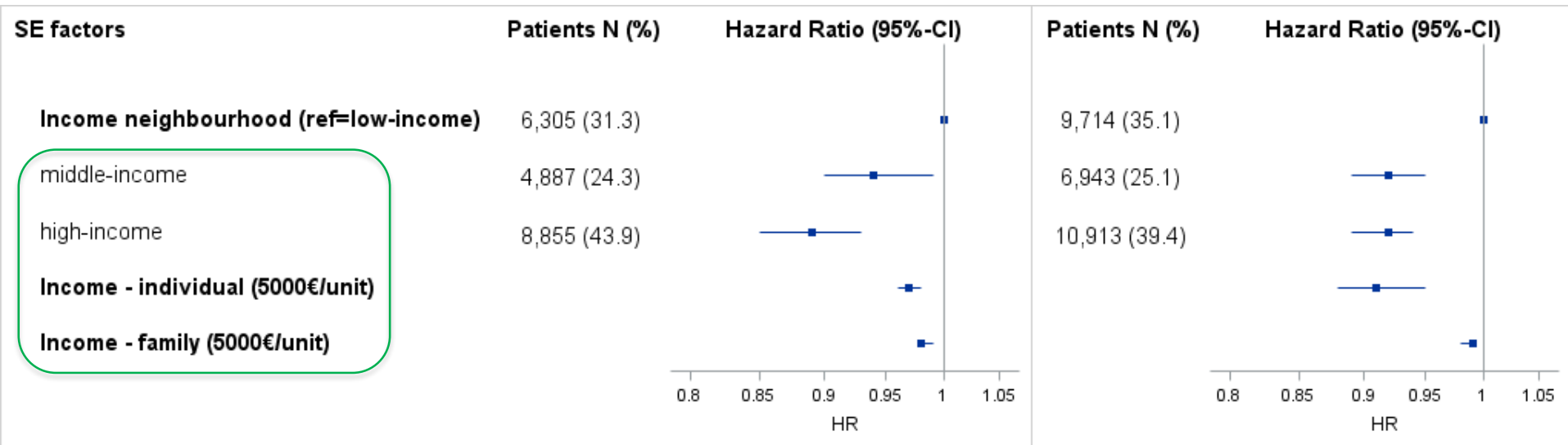
Material and methods : SURVIVAL

- **Multivariable Cox proportional-hazard regression models**
 - Vital status until July 1st 2016
 - Observed survival according to SE factors
 - Adjusted for patient and tumour characteristics
 - Backward selection of two-way interactions ($p < 0.01$)

Results : INCOME

Colon cancer*

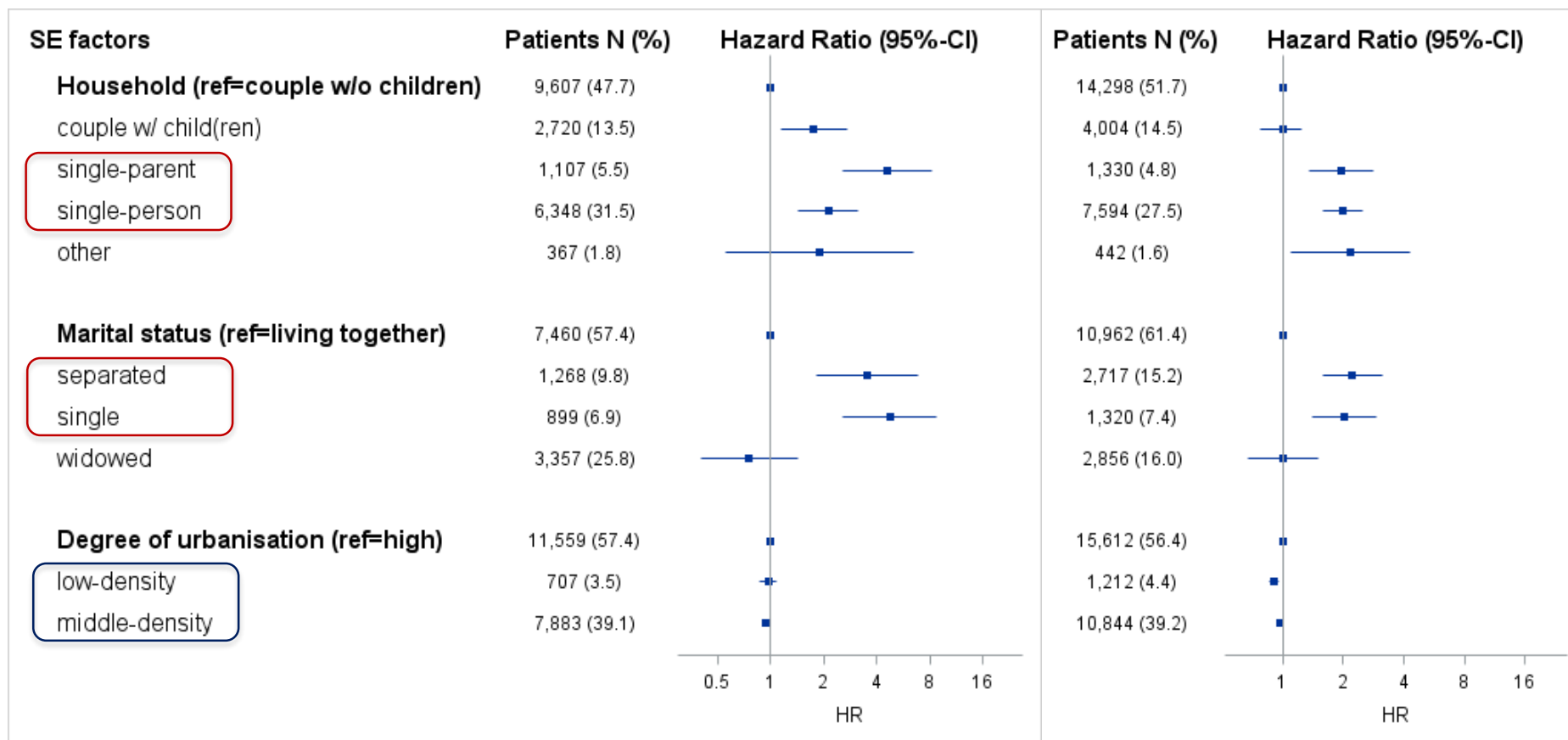
Lung cancer**



Results : HOUSEHOLD, MARITAL & URBANISATION

Colon cancer*

Lung cancer**



Conclusion

- First population-based study on SES and cancer survival in Belgium
- High-resolution SES data available & linkage on UPI (administrative database)
- Differences in survival according to income, household & marital status for colon & lung cancer
- No differences in survival between patients living in urban and rural areas
- Similar results found in literature (Standury et al. 2016, Riaz et al. 2011, Lin et al. 2018, Aizer et al. 2013, Chen et al. 2017, ...)

On the agenda ...

- Other cancer types, treatment patterns & additional SE factors
- Relative & cancer-specific survival
- Towards an integrated and standardized SES index (EDI, Guillaume et al. 2016)
- Understanding the mechanisms by which SE inequalities affect outcome

Thank you for your attention

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