Functional Ability and the Duration of Dependence in the Oldest-old Residents of Zagreb Nursing Homes

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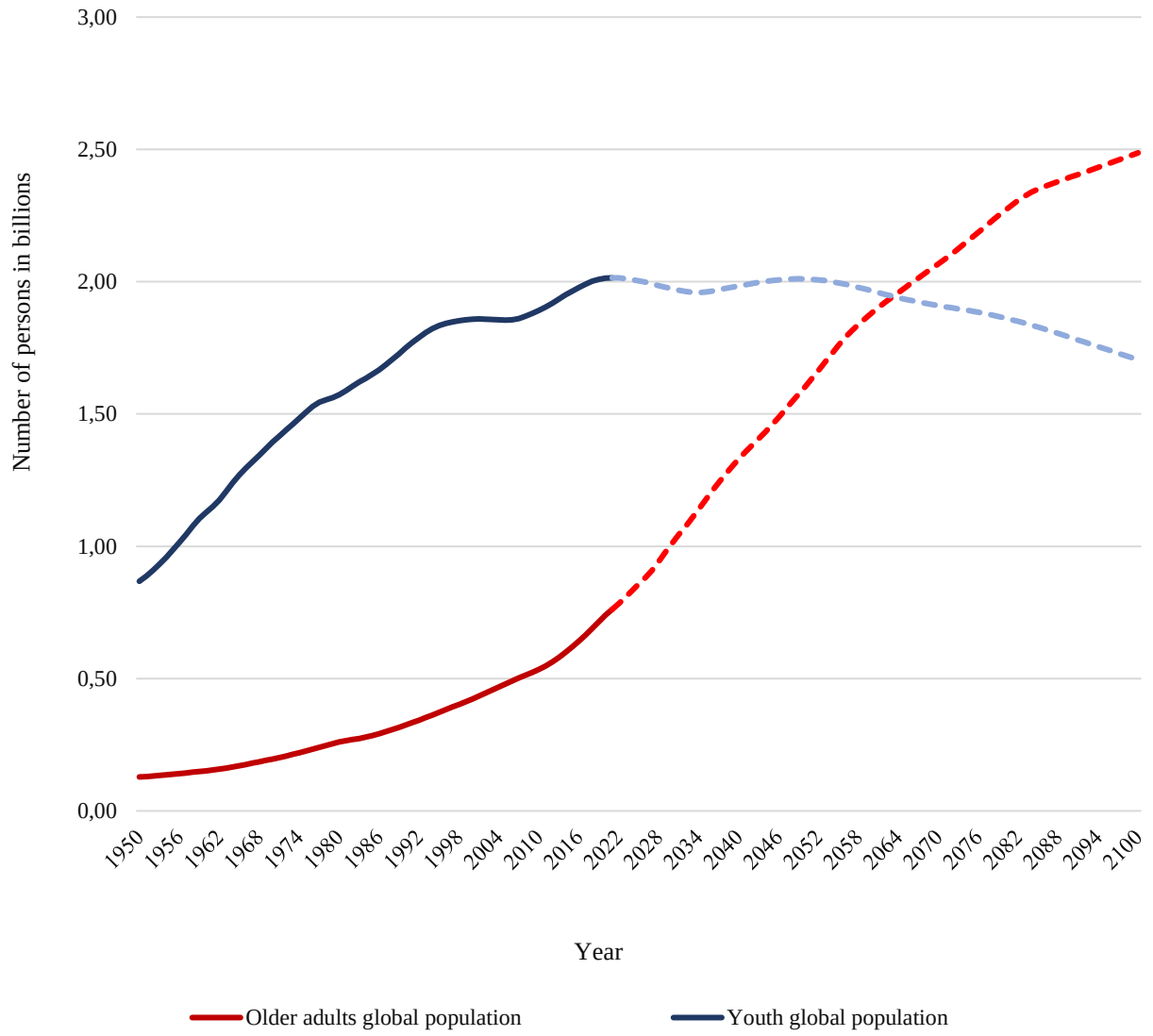
- In 2020, there were about 727 million people aged 65+ worldwide, and in the next 30 years, that number will almost double



In the year 2050

The World in 2050

children under the age of 5

2x

children under the age of 12

=

65 and older

Methodology and data

- 13 nursing homes in Zagreb (11 public of the City Zagreb and 2 private in Zagreb County)
- The target variable was the functional ability (mobility and independence)
- Ten years follow-up
- “Zdravstvene, kulturne i biološke odrednice dugovječnosti: antropološka studija preživljenja u dubokoj starosti” (“HEalth, CUltural, and Biological determinants of longevity: Anthropological perspective on survival in very old age — HECUBA project”) granted to Škarić-Jurić, T.

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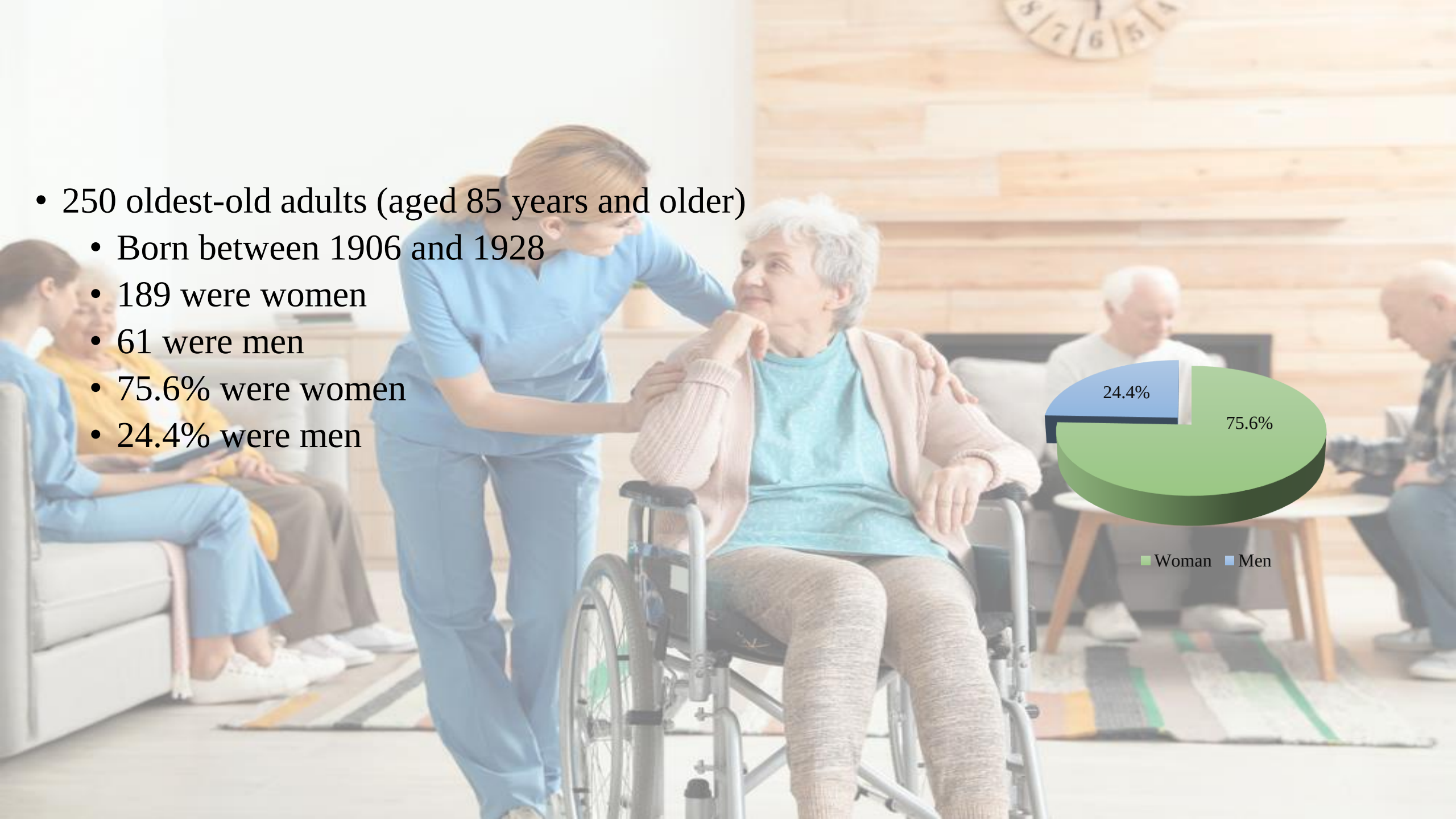
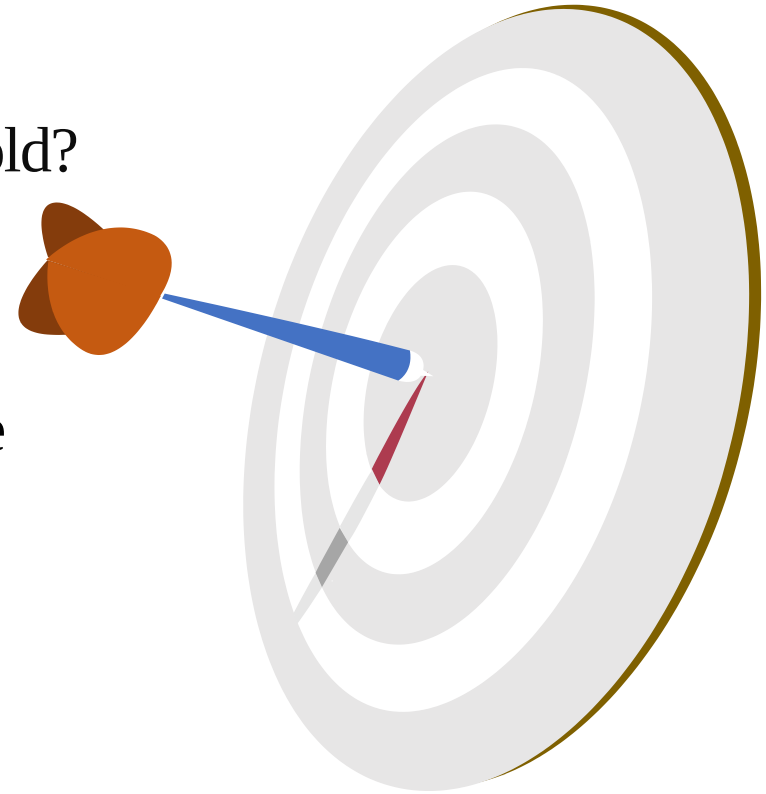
- 250 oldest-old adults (aged 85 years and older)
  - Born between 1906 and 1928
  - 189 were women
  - 61 were men
  - 75.6% were women
  - 24.4% were men



Study questions

1. Does the level of mobility and independence predict the duration of life in institutionalized oldest-old?



2. Is sex a significant predictor of the duration of life in the oldest-old age category?

3. Do sex differences in the oldest-old persons play any role in the duration of dependence on other people's help?

Descriptive statistics of qualitative characteristics related to longevity and functional ability (level of mobility and independence) in oldest-old residents of nursing homes in Zagreb (N = 250), sex differences are tested by Pearson's chi-squared test

Variable	Categories	N (%)	p-value
Sex	men	61 (24.4)	
Longevity in years	90.0+	169 (67.6)	0.099
Extreme longevity in years	95.0+	64 (25.6)	0.586
Mobility at the initial interview			
	permanently immobile	9 (3.6)	
	permanently limitedly mobile	45 (18.0)	0.419
	limitedly mobile	87 (34.8)	
	fully mobile	109 (43.6)	
Dependence at the initial interview			
	cannot answer	2 (0.8)	
	permanently dependent	11 (4.4)	0.622
	limitedly independent	33 (13.3)	
	fully independent	202 (81.5)	

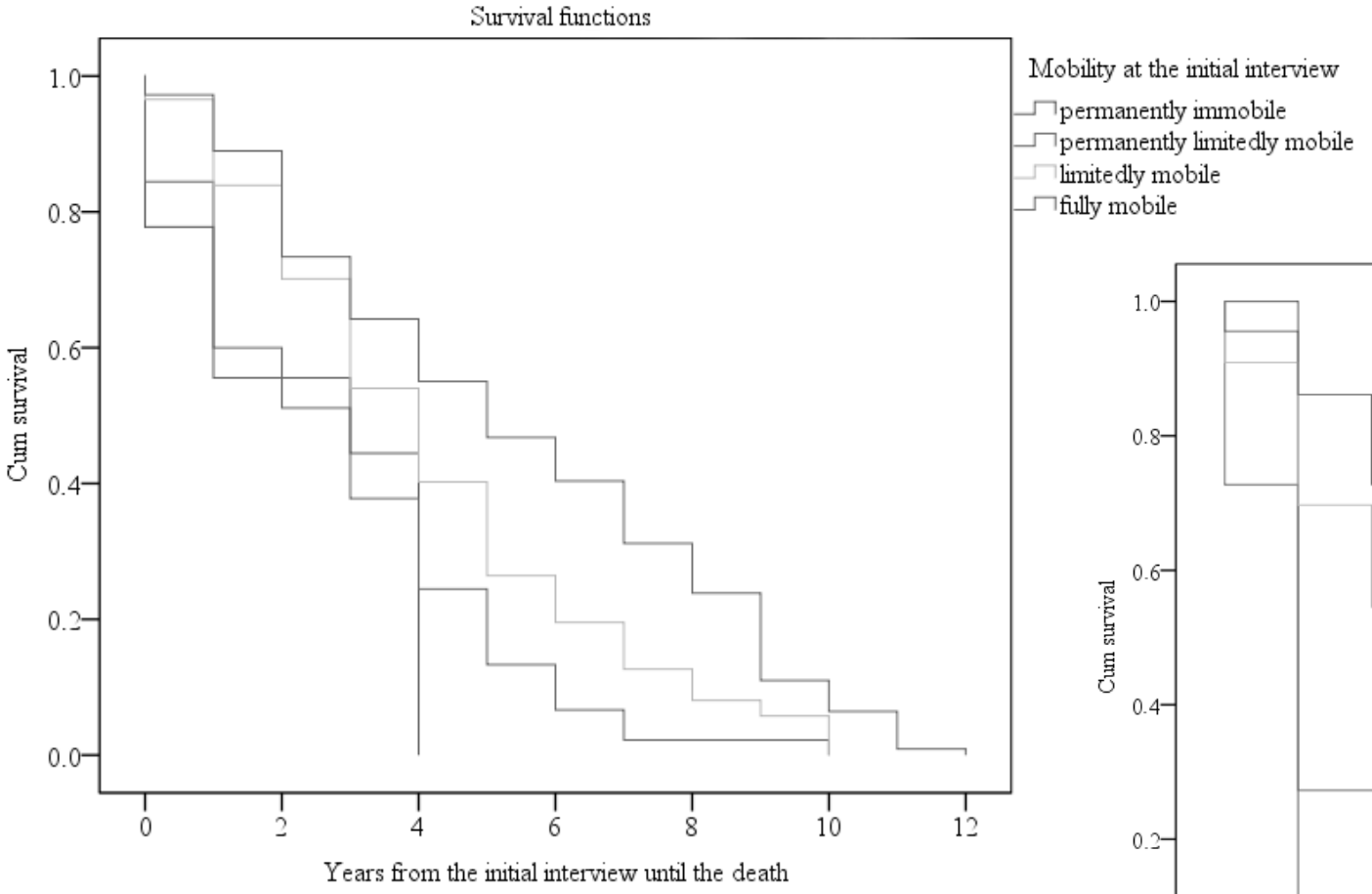
Note: N = total sample size; % = percent; ** = indicates a statistical significance level of 1%; *** = indicates a statistical significance level of 5%; [a] = or one year earlier if the data are not collected in the year of death.

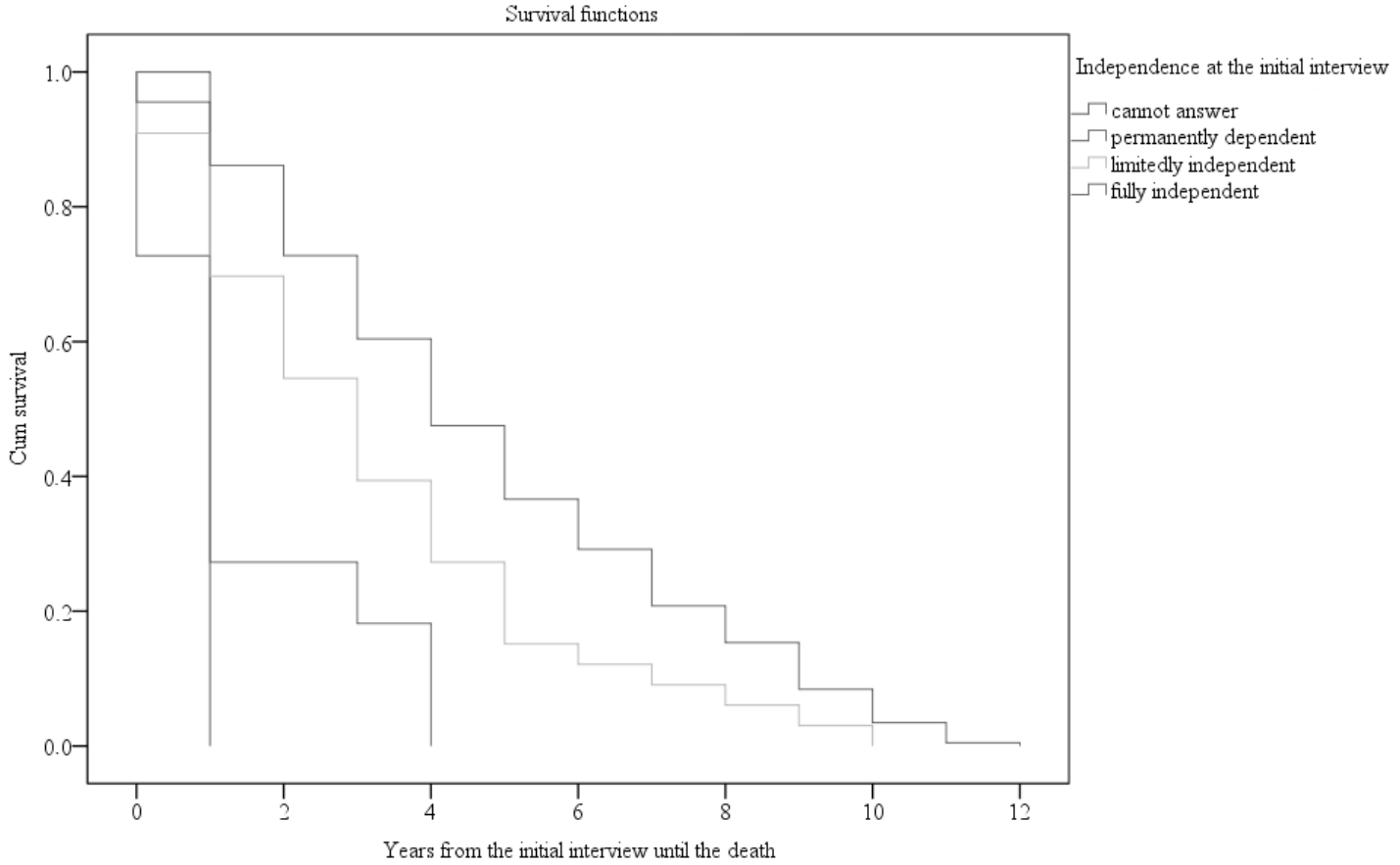
Descriptive statistics of quantitative characteristics related to age, longevity, and functional ability (mobility and independence) in oldest-old residents of nursing homes in Zagreb (N = 250), sex differences are tested by Student's t-test

Variable in years	M ± SD (Min-Max)	p-value
Age at the initial interview	88.24 ± 3.26 (81.91–100.87)	0.266
Age at death	92.54 ± 3.97 (84.84–103.43)	0.461
Years from the initial interview until the death	4.40 ± 3.01 (0–12)	0.020***
Age at the beginning of immobility	91.72 ± 3.97 (84.20–102.89)	0.956
Age at the beginning of dependence	91.70 ± 3.97 (84.56–102.89)	0.688
Duration of immobility (years from the beginning of immobility until the death)	0.92 ± 1.59 (0–9)	0.013***
Duration of dependence (years from the beginning of dependence until the death)	0.90 ± 1.62 (0–9)	0.234
Duration of mobility (years from the initial interview until the beginning of immobility)	3.48 ± 2.89 (0–11)	0.152
Duration of independence (years from the initial interview until the beginning of dependence)	3.48 ± 2.80 (0–11)	0.037***

Note: N = total sample size; M = arithmetic mean; SD = standard deviation; Min = minimum; Max = maximum; *** = indicates a statistical significance level of 5%.

Estimated probability of survival for four different groups of the oldest-old Zagreb nursing homes residents grouped according to their level of mobility and independence





Kaplan-Meier test of equality of the survival distributions for the different levels of mobility and independence, as well as sex

Variable		Median survival time (years)			p-value
		EST	SE	95% CI	
Mobility at the initial interview	permanently immobile	3	2.981	0.00–8.844	<0.001*
	permanently limitedly mobile	3	0.650	1.725–4.275	
	limitedly mobile	4	0.373	3.269–4.731	
	fully mobile	6	0.712	4.604–.396	
	Overall	4	0.240	3.530–4.470	
Independence at the initial interview	cannot answer	1			<0.001*
	permanently dependent	1	0.295	0.421–1.579	
	limitedly independent	3	0.561	1.900–4.100	
	fully independent	4	0.302	3.409–4.591	
	Overall	4	0.239	3.532–4.468	
Sex	Men	3	0.353	2.309–3.691	0.012***
	Women	4	0.318	3.376–4.624	
	Overall	4	0.240	3.530–4.470	

Note: EST = estimate; SE = standard error; 95% CI = 95 percent confidence interval; < less than; * = indicates a statistical significance level of 0.1%; *** = indicates a statistical significance level of 5%.

Cox proportional hazards regression model estimating hazard risk in relation to the different levels of mobility and independence. In both cases, the referent is the fourth level category (having the best value), fully mobile/fully independent

Variable		HR	95% CI	p-value
Mobility at the initial interview	permanently immobile	3.319	1.649–6.680	0.001*
	permanently limitedly mobile	2.526	1.752–3.641	<0.001*
	limitedly mobile	1.586	1.179–2.134	0.002**
Independence at the initial interview	cannot answer	6.170	1.491–25.526	0.012***
	permanently dependent	4.061	2.173–7.589	<0.001*
	limitedly independent	1.687	1.162–2.448	0.006**

Note: HR = hazard ratio; 95% CI = 95 percent confidence interval; < less than; * = indicates a statistical significance level of 0.1%; ** = indicates a statistical significance level of 1%; *** = indicates a statistical significance level of 5%.

Cox proportional hazards multivariate regression model estimating hazard risk of mobility, independence, and sex

Variable	HR	95% CI	p-value
Mobility at the initial interview	0.698	0.587–0.831	<0.001*
Independence at the initial interview	0.668	0.513–0.869	0.003**
Sex	0.668	0.497–0.898	0.007**

Note: HR = hazard ratio; 95% CI = 95 percent confidence interval; < less than; * = indicates a statistical significance level of 0.1%; ** = indicates a statistical significance level of 1%.

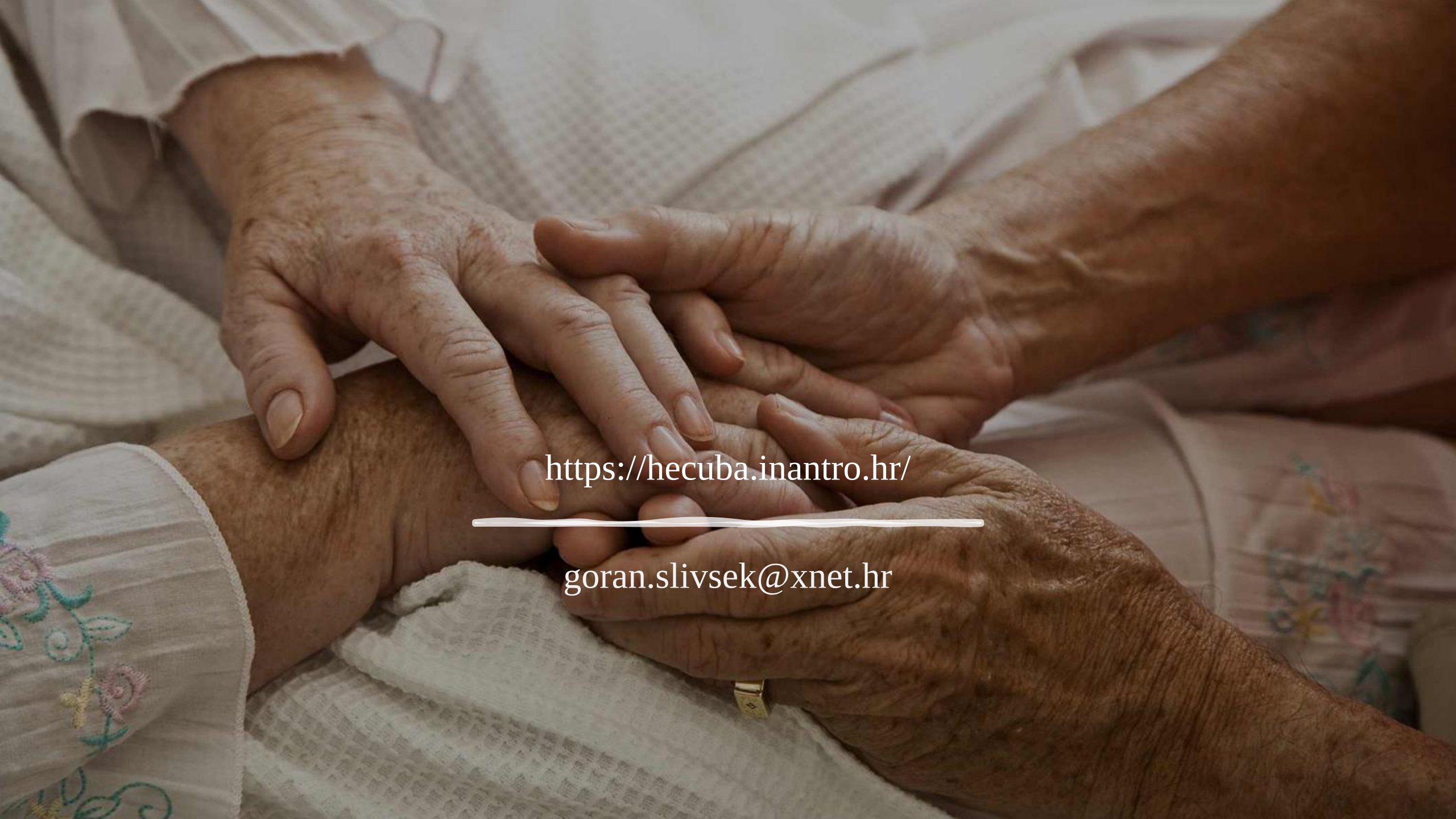
Cox proportional hazards multivariate regression model estimating hazard risk of age at death, mobility in the year of death, independence in the year of death, age at the beginning of immobility and age at the beginning of dependence related to mobility and of dependence

Variable	HR	95% CI	p-value
Sex	0.612	0.448–0.836	0.002*
Age in years at death	0.814	0.754–0.879	<0.001*
Mobility at the initial interview	0.754	0.627–0.907	0.003**
Independence at the initial interview	0.695	0.530–0.913	0.009**
Mobility in the year of death	0.890	0.722–1.098	0.278
Independence in the year of death	1.251	0.953–1.642	0.106
Age in years at the beginning of immobility	1.004	0.900–1.120	0.939
Age in years at the beginning of dependence	1.012	0.914–1.120	0.818

Note: HR = hazard ratio; 95% CI = 95 percent confidence interval; < less than; * = indicates a statistical significance level of 0.1%; ** = indicates a statistical significance level of 1%.

Conclusion

- The results presented here show that in the group of institutionalised oldest-old, level of mobility and independence, as well as sex, are significant predictors of the number of surviving years



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