



Università
degli Studi
della Campania
Luigi Vanvitelli

L Congresso Associazione Italiana Epidemiologia 2026



Associazione tra Posizione Socio-Economica, Indicatori Antropometrici ed Esiti di Salute in una Coorte Femminile Italiana (Studio EPIC-Italia)

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Framework & Aims

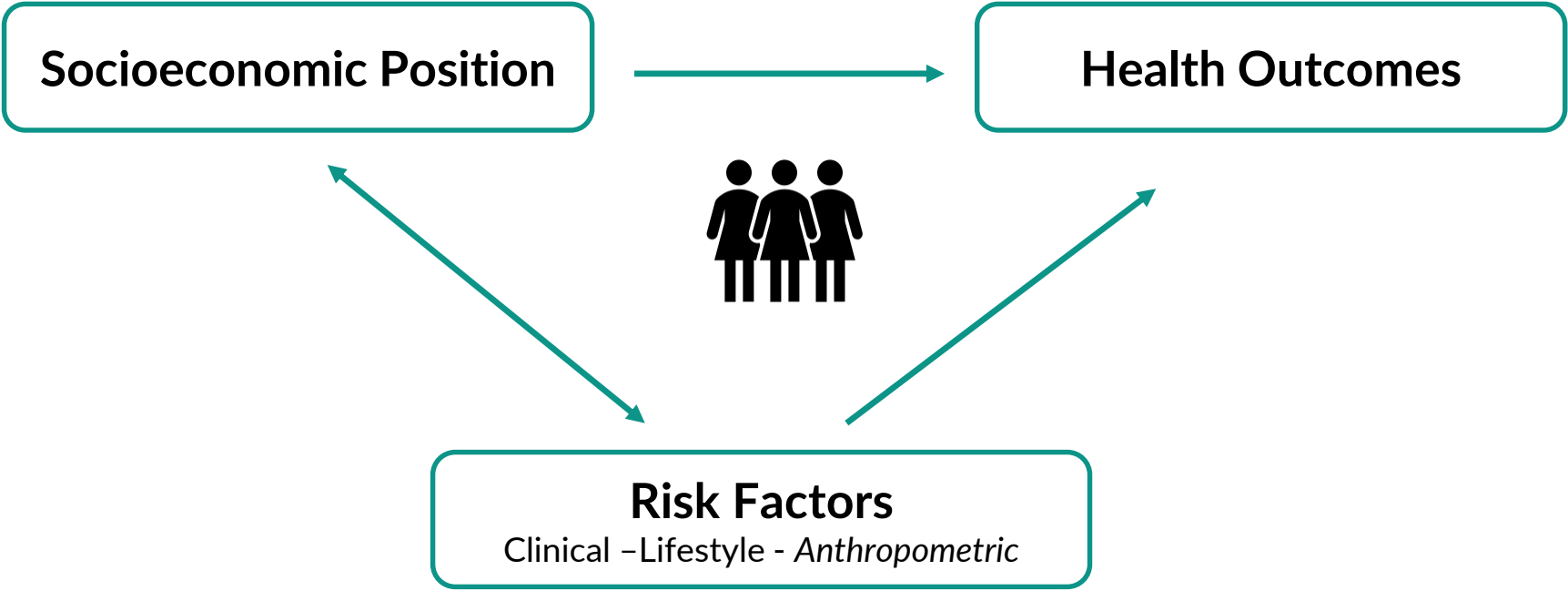


Framework & Aims



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Framework & Aims



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EPIC-Italy study

-  Multicenter prospective cohort study
-  5 centers (**Varese, Torino, Firenze, Napoli and Ragusa**)
-  47.000 healthy participants (males and females) ;
-  Aged between 35 and 70;
-  Recruited between 1992 and 1998.



EPIC-Europe study

The European Prospective Investigation into Cancer and Nutrition (EPIC-Europe) is a long-term, large-scale collaborative project that studies different populations from countries across Europe to investigate the relationships between diet, nutrition, lifestyle, and environmental factors, and the incidence of cancer and other chronic diseases.

-  521,000+ healthy participants
-  10 European Countries
-  30+ years of longitudinal follow-up
-  Focus on nutrition, lifestyle, and disease linkage

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Only 29.494 **women** were included
(those with complete data regarding the study's core variables).



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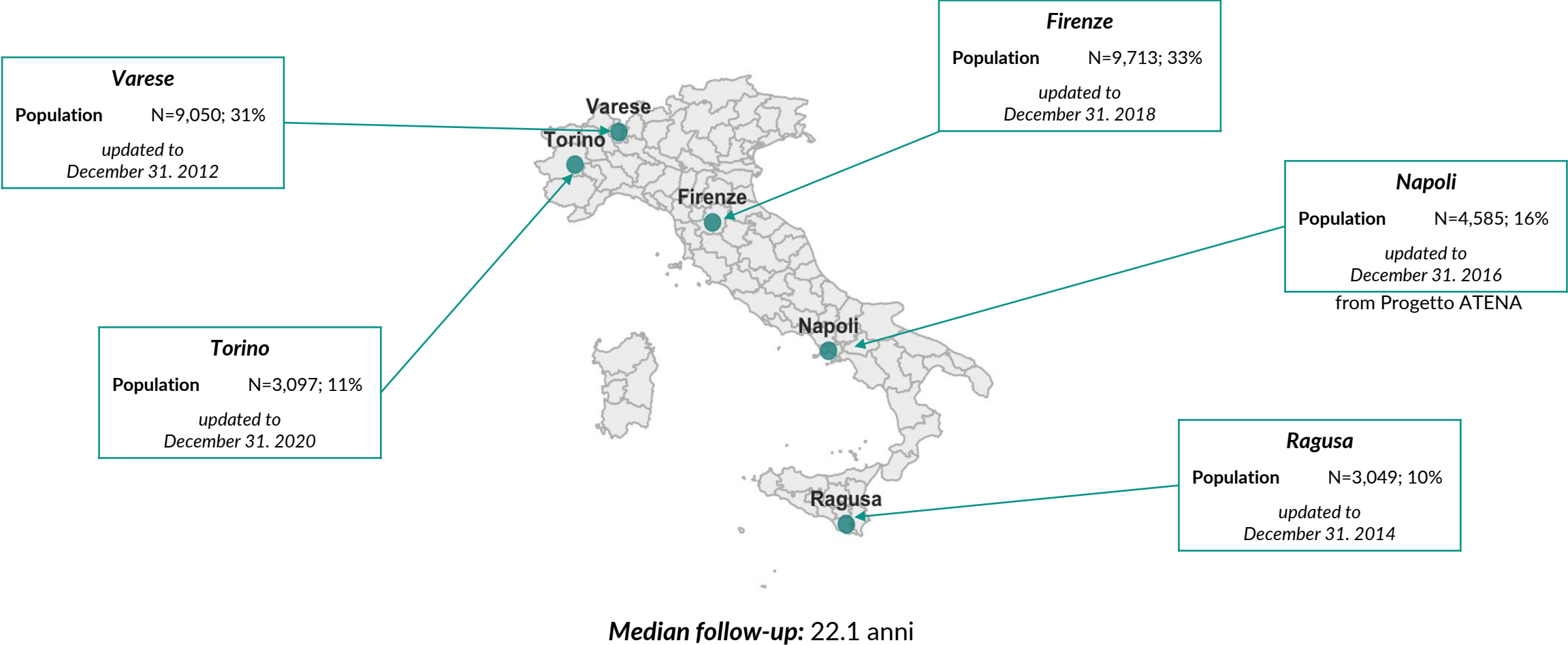


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Socioeconomic Indicators



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Socioeconomic Indicators



Deprivation Index (DI)

2001 Census

- **Territorial** indicator of socioeconomic status;
- Calculated at the census block level and linked to the residential address through georeferencing procedures;
- Quintiles representing *increasing* levels of social deprivation (Q1, Q2, Q3, Q4, Q5).



Relative Index of Inequality (RII)

- **Individual** indicator of socioeconomic position;
- Measure of educational attainment (avoiding the issue of varying distribution of qualifications across different birth cohorts);
- Tertiles representing *decreasing* levels of education (RII 1, RII 2, RII 3).

Repeated measures correlation between indices: $r = 0.16$

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Socioeconomic Indicators

Varese			
Q1	1,670 (18%)	RII 1	2,900 (32%)
Q2	2,512 (28%)	RII 2	3,043 (34%)
Q3	2,431 (27%)	RII 3	3,107 (34%)
Q4	1,629 (18%)		
Q5	808 (8.9%)		

Torino			
Q1	852 (28%)	RII 1	1,139 (37%)
Q2	495 (16%)	RII 2	846 (27%)
Q3	520 (17%)	RII 3	1,112 (36%)
Q4	562 (18%)		
Q5	668 (22%)		



Firenze			
Q1	2,664 (27%)	RII 1	3,099 (32%)
Q2	2,209 (23%)	RII 2	3,281 (34%)
Q3	2,019 (21%)	RII 3	3,333 (34%)
Q4	1,856 (19%)		
Q5	965 (10%)		

Napoli			
Q1	128 (2.8%)	RII 1	1,946 (42%)
Q2	261 (5.7%)	RII 2	1,351 (29%)
Q3	493 (11%)	RII 3	1,288 (28%)
Q4	934 (20%)		
Q5	2,769 (60%)		

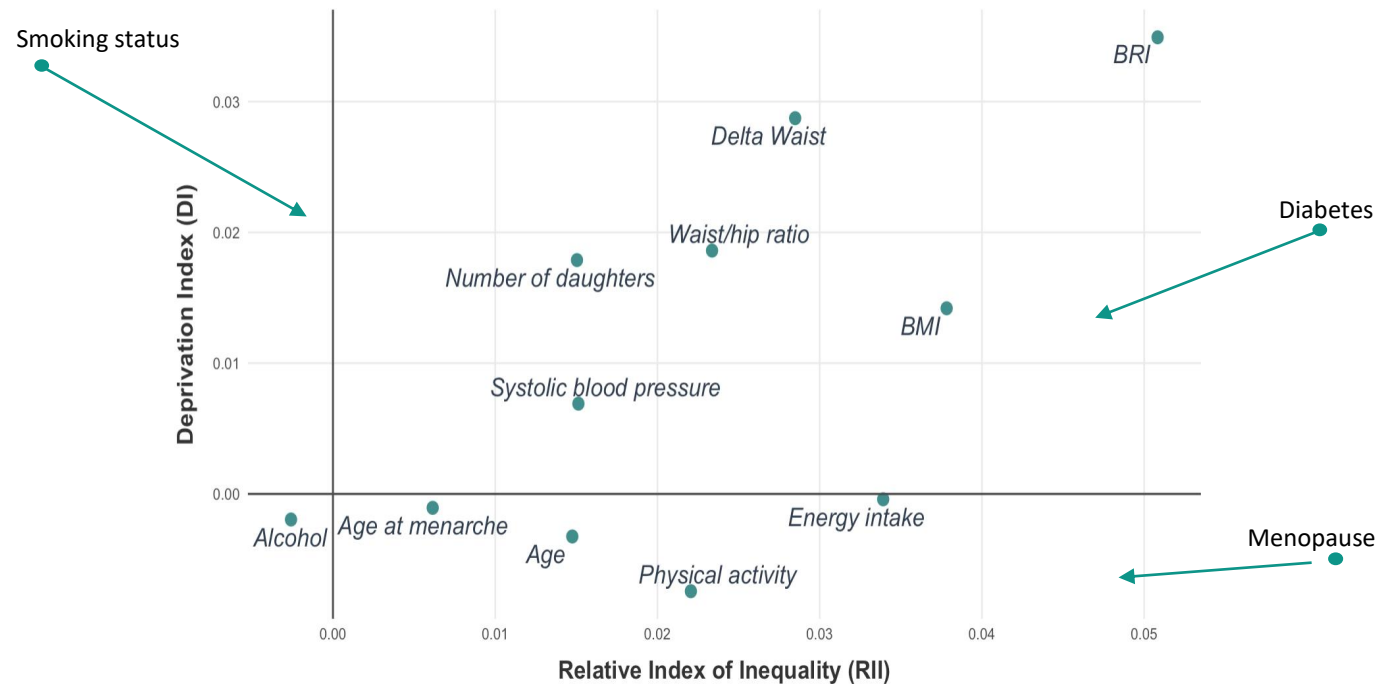
Ragusa			
Q1	568 (19%)	RII 1	729 (24%)
Q2	463 (15%)	RII 2	1,347 (44%)
Q3	452 (15%)	RII 3	973 (32%)
Q4	922 (30%)		
Q5	644 (21%)		

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Baseline Characteristics

Differences between groups were assessed using linear regression models (for continuous variables) and logistic generalized linear models (for categorical variables); p-values were extracted via Type II ANOVA with heteroscedasticity-robust corrections and Chi-square tests, respectively.

The strength of the association was evaluated using eta-squared.



Baseline Characteristics



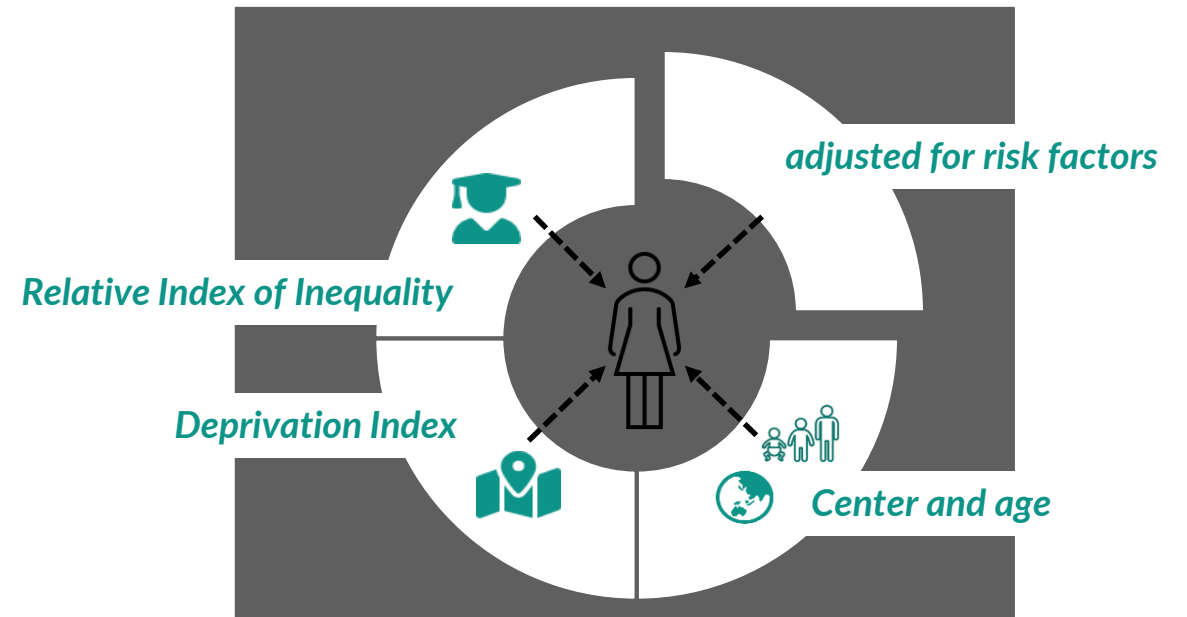
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Survival Analysis

Progressively adjusted **Cox regression models** were used, stratified by age groups and center, to account for risk factors.

Each model included the **Deprivation Index (DI)** and the **Relative Index of Inequality (RII)**.

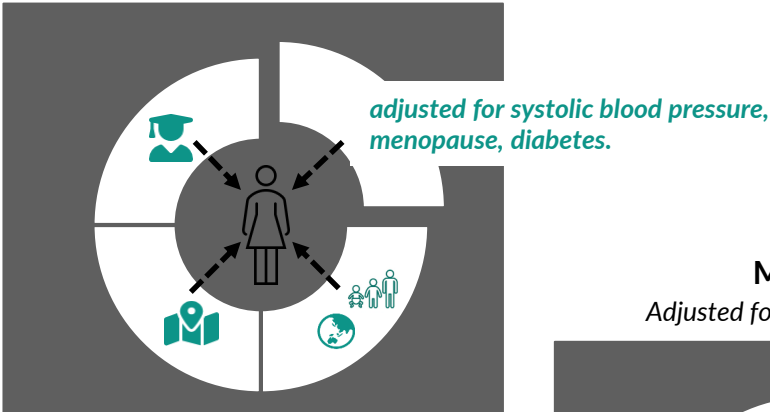
The **proportional hazards** assumption was tested using Schoenfeld residuals.



Survival Analysis

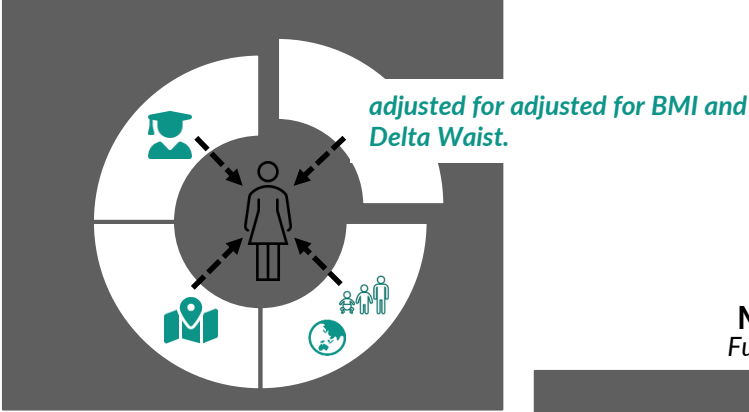
Model 1

Adjusted for clinical risk factors



Model 3

Adjusted for anthropometric risk factors



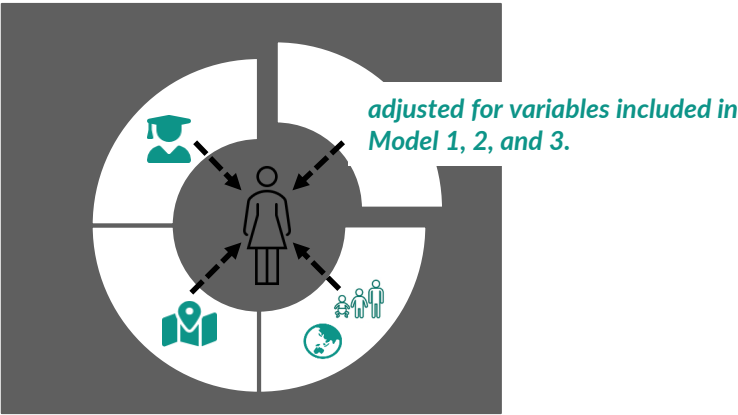
Model 2

Adjusted for lifestyle risk factors



Model 4

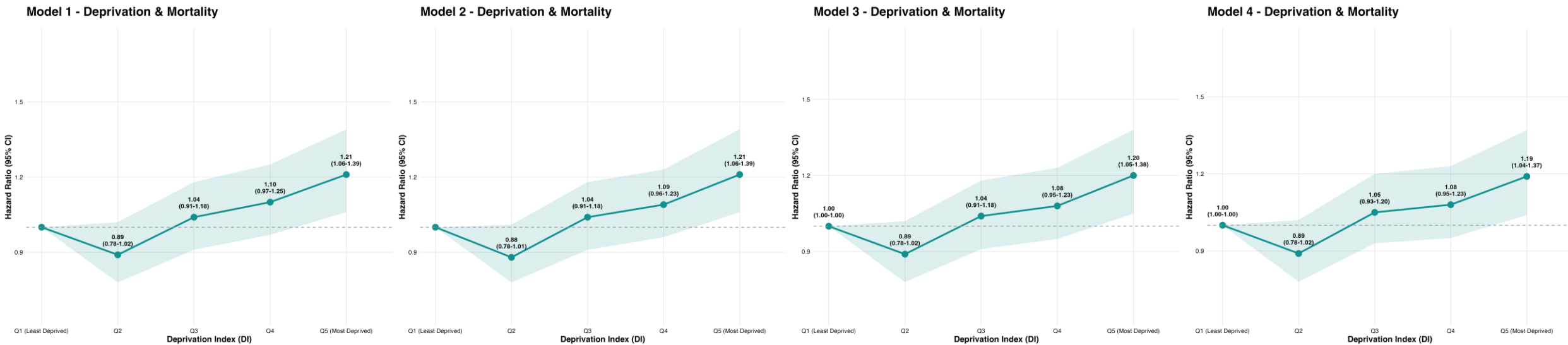
Full-adjusted



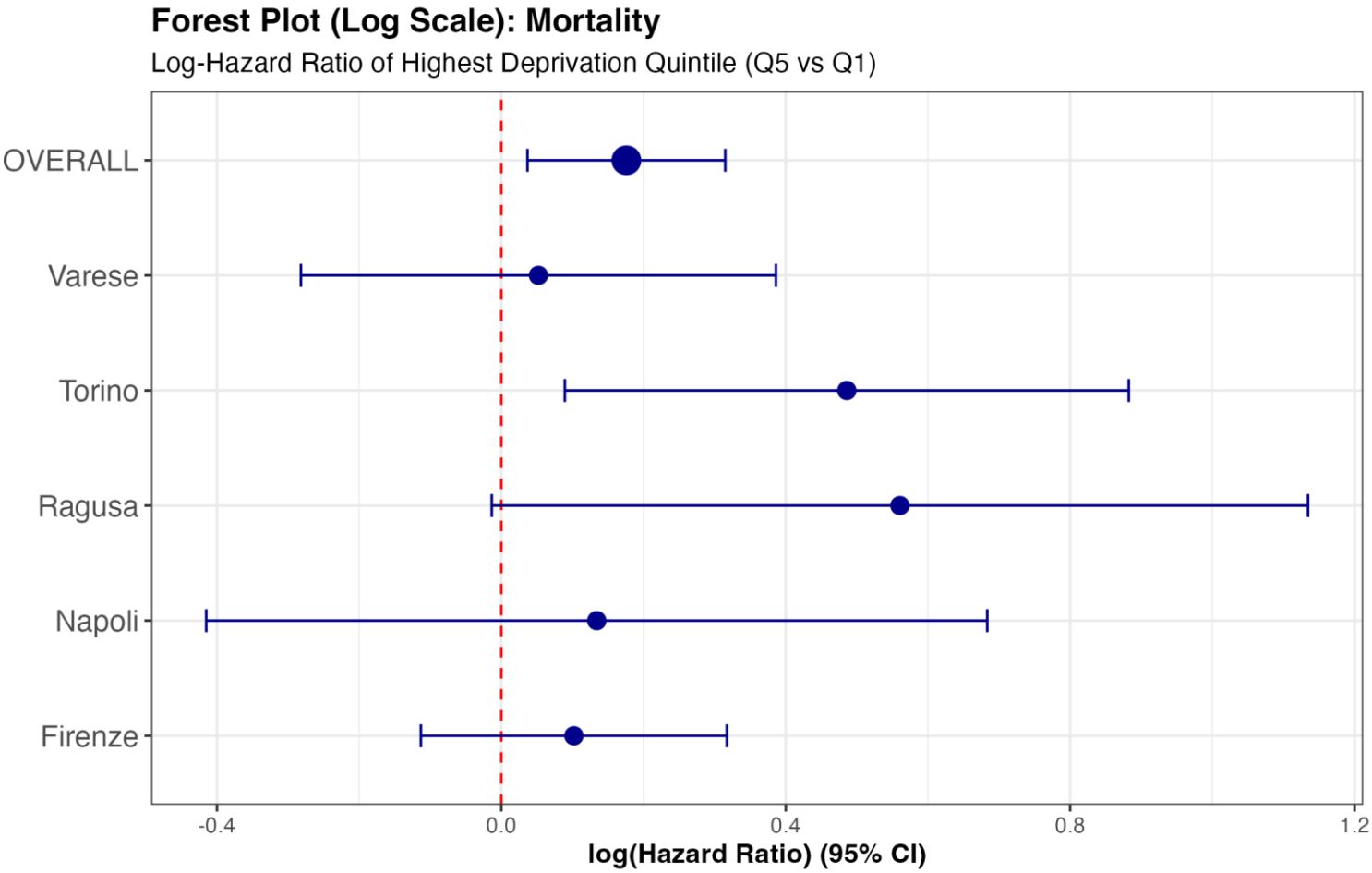
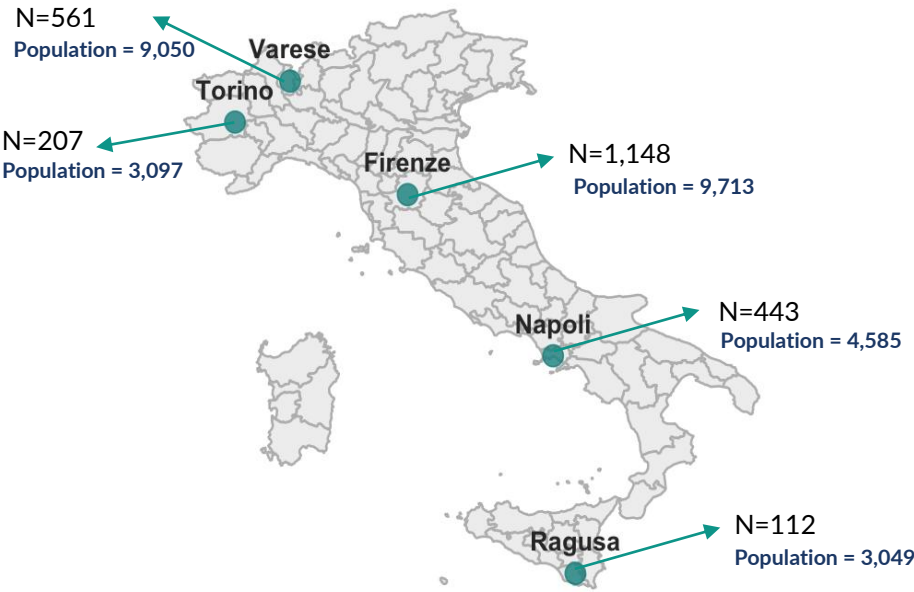
Survival Analysis

Mortality												
	Model 1			Model 2			Model 3			Model 4		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
Deprivation Index												
Q5 vs Q1	<u>1.21</u>	1.06-1.39	0.006	<u>1.21</u>	1.06- 1.39	0.006	1.20	1.05-1.38	0.009	1.19	1.04-1.37	0.013
p-value for trend			<0.001			<0.001			<0.001			0.001

Model 1: adjusted for systolic blood pressure, menopause, diabetes; Model 2: adjusted for physical activity, energy intake, alcohol, smoking status; Model 3: adjusted for BMI and Delta Waist; Model 4: full-adjusted.



Survival Analysis



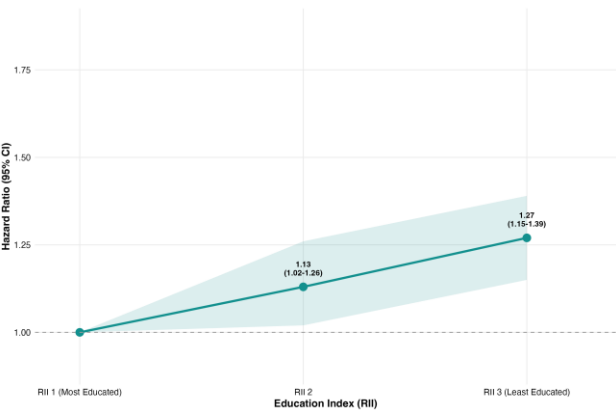
Survival Analysis

Cardiovascular Disease

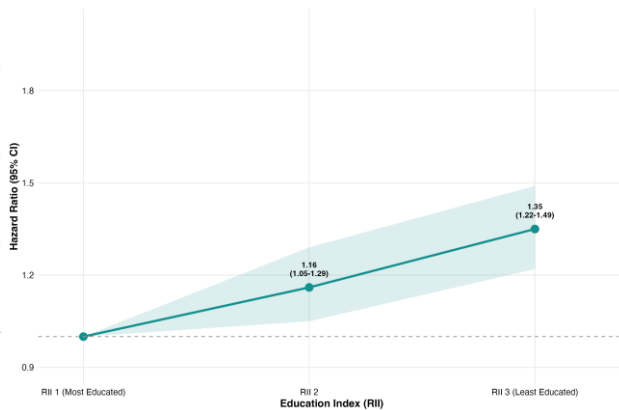
	Model 1			Model 2			Model 3			Model 4		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
<i>Education Index</i>												
RII 2 vs RII 1	1.13	1.02-1.26	0.016	<u>1.16</u>	1.05-1.29	0.003	1.14	1.03-1.26	0.011	1.13	1.02-1.25	0.021
RII 3 vs RII 1	1.27	1.15-1.39	<0.001	<u>1.35</u>	1.22-1.49	<0.001	1.28	1.16-1.41	<0.001	1.23	1.12-1.36	<0.001
p-value for trend			<0.001			<0.001			<0.001			<0.001

Model 1: adjusted for systolic blood pressure, menopause, diabetes; Model 2: adjusted for physical activity, energy intake, alcohol, smoking status; Model 3: adjusted for BMI and Delta Waist; Model 4: full-adjusted.

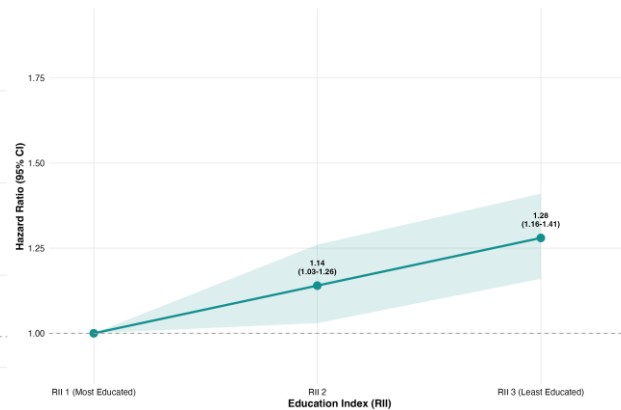
Model 1 - Education & Cardiovascular disease (CVD)



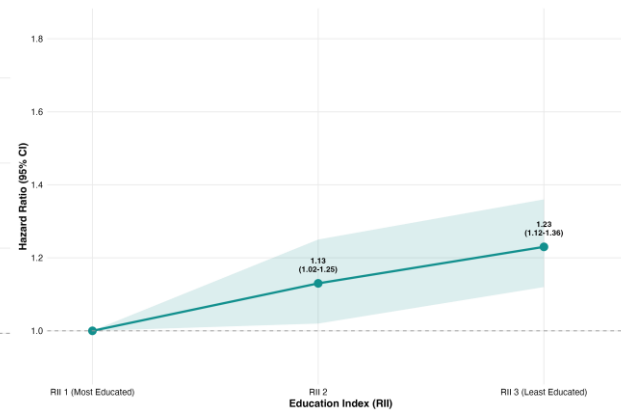
Model 2 - Education & Cardiovascular disease (CVD)



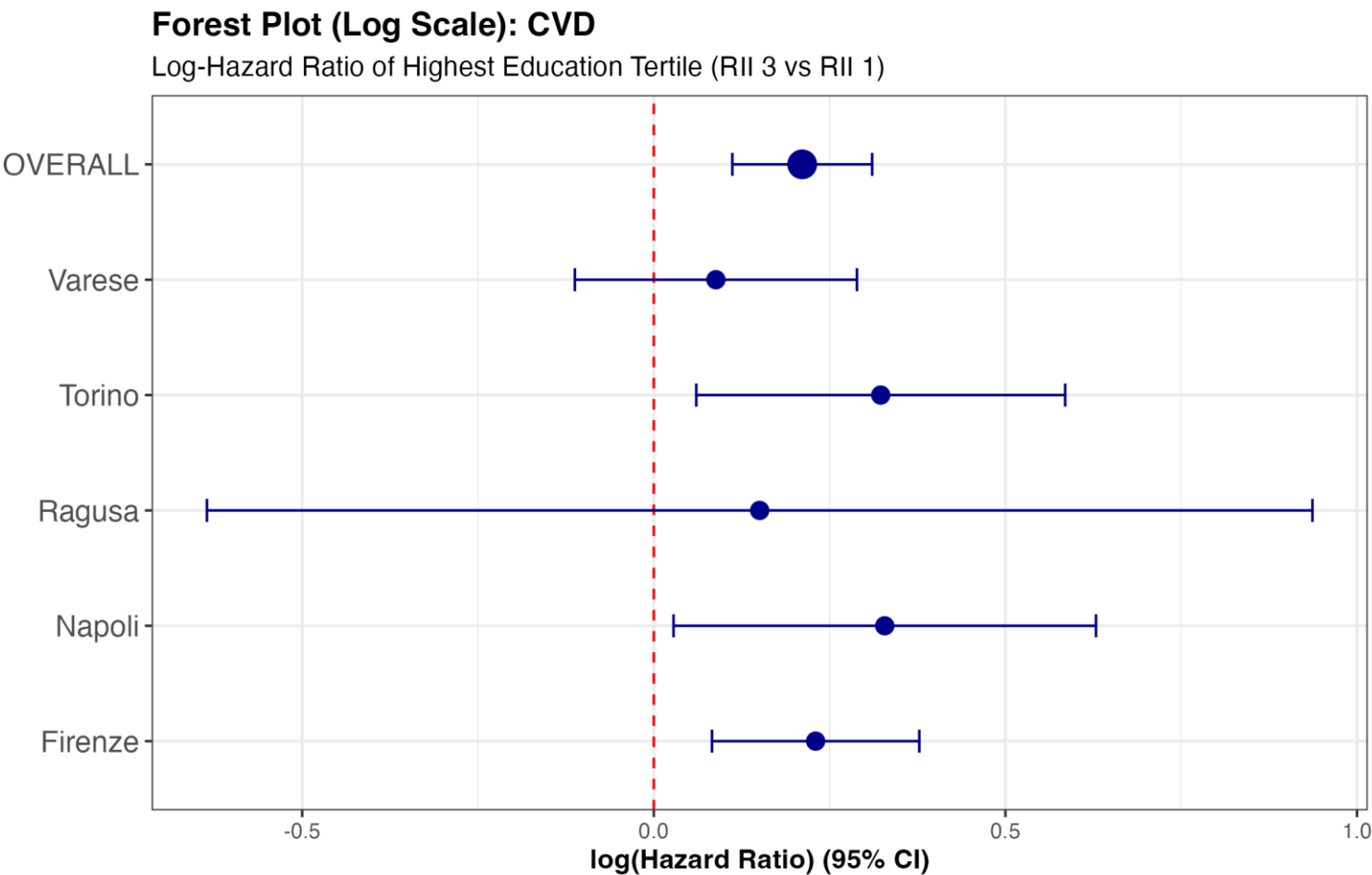
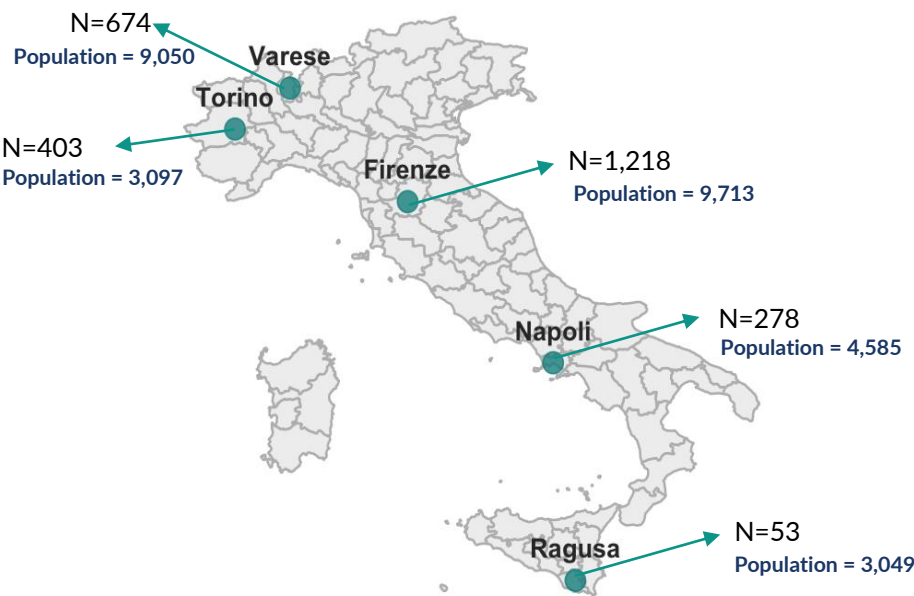
Model 3 - Education & Cardiovascular disease (CVD)



Model 4 - Education & Cardiovascular disease (CVD)



Survival Analysis



Survival Analysis

Coronary Heart Disease

	Model 1			Model 2			Model 3			Model 4		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
Education Index												
RII 3 vs RII 1	1.36	1.19-1.55	<0.001	<u>1.45</u>	1.27-1.66	<0.001	1.34	1.17-1.53	<0.001	1.31	1.14-1.50	<0.001
p-value for trend			<0.001			<0.001			<0.001			<0.001

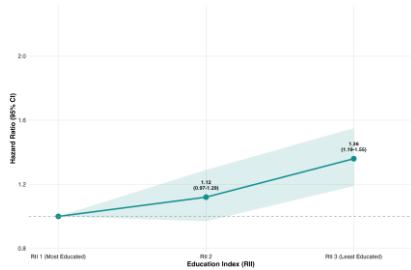
Model 1: adjusted for systolic blood pressure, menopause, diabetes; Model 2: adjusted for physical activity, energy intake, alcohol, smoking status; Model 3: adjusted for BMI and Delta Waist; Model 4: full-adjusted.

Cerebrovascular Disease

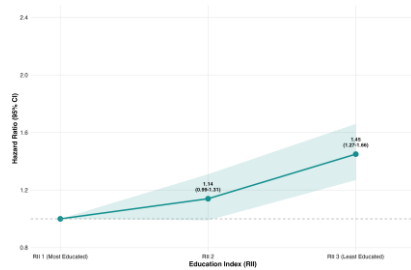
	Model 1			Model 2			Model 3			Model 4		
	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value
Education Index												
RII 2 vs RII 1	1.16	1.01-1.33	0.040	1.19	1.04-1.37	0.012	1.18	1.03-1.36	0.017	1.16	1.01-1.34	0.034
RII 3 vs RII 1	1.20	1.05-1.37	0.007	<u>1.29</u>	1.13-1.48	<0.001	1.26	1.10-1.44	<0.001	1.20	1.05-1.37	0.009
p-value for trend			0.007			<0.001			<0.001			0.010

Model 1: adjusted for systolic blood pressure, menopause, diabetes; Model 2: adjusted for physical activity, energy intake, alcohol, smoking status; Model 3: adjusted for BMI and Delta Waist; Model 4: full-adjusted.

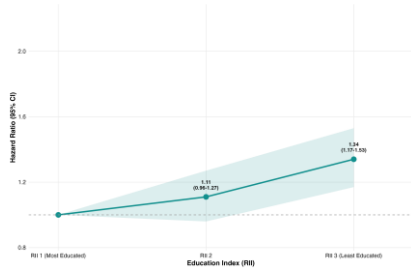
Model 1 - Education & Coronary Heart Disease (CHD)



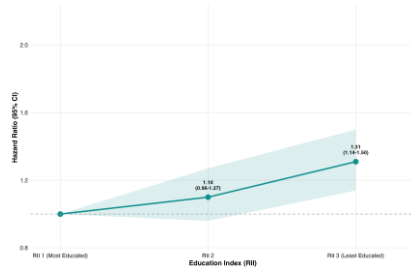
Model 2 - Education & Coronary Heart Disease (CHD)



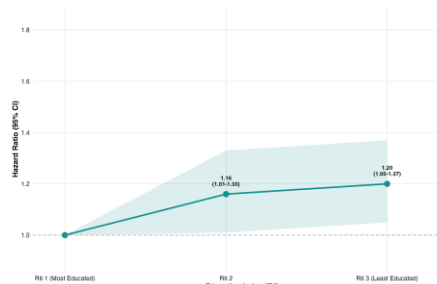
Model 3 - Education & Coronary Heart Disease (CHD)



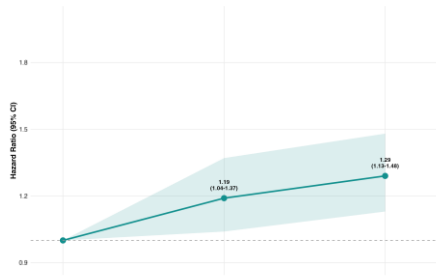
Model 4 - Education & Coronary Heart Disease (CHD)



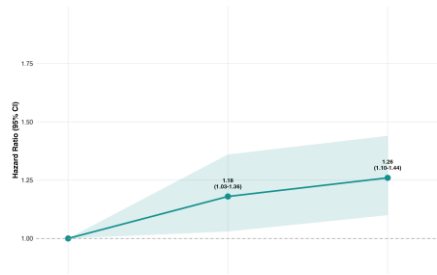
Model 1 - Education & Cerebrovascular Disease (CRV)



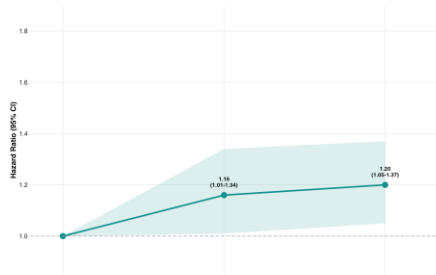
Model 2 - Education & Cerebrovascular Disease (CRV)



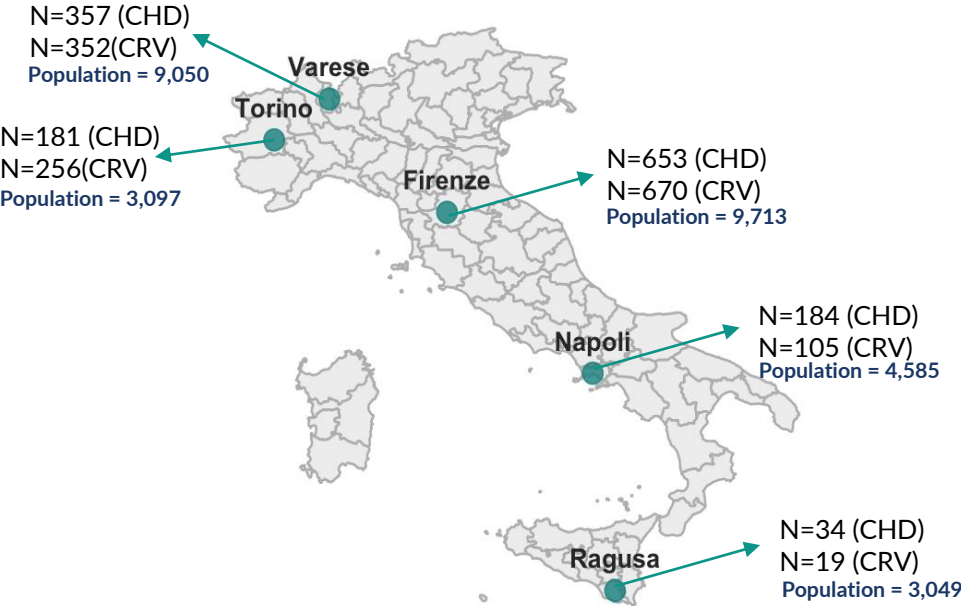
Model 3 - Education & Cerebrovascular Disease (CRV)



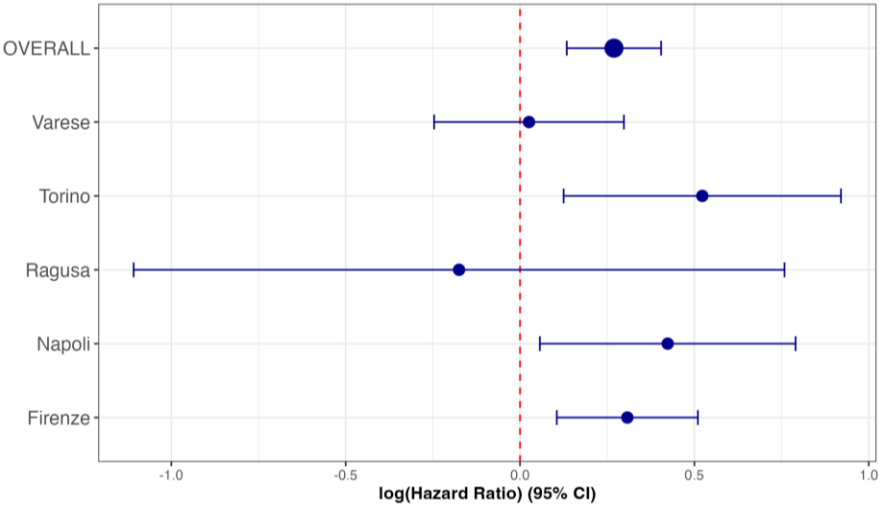
Model 4 - Education & Cerebrovascular Disease (CRV)



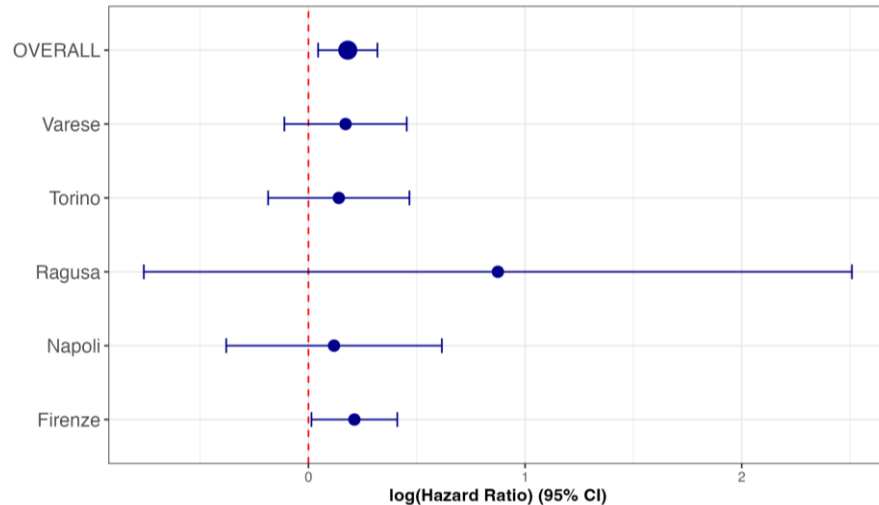
Survival Analysis



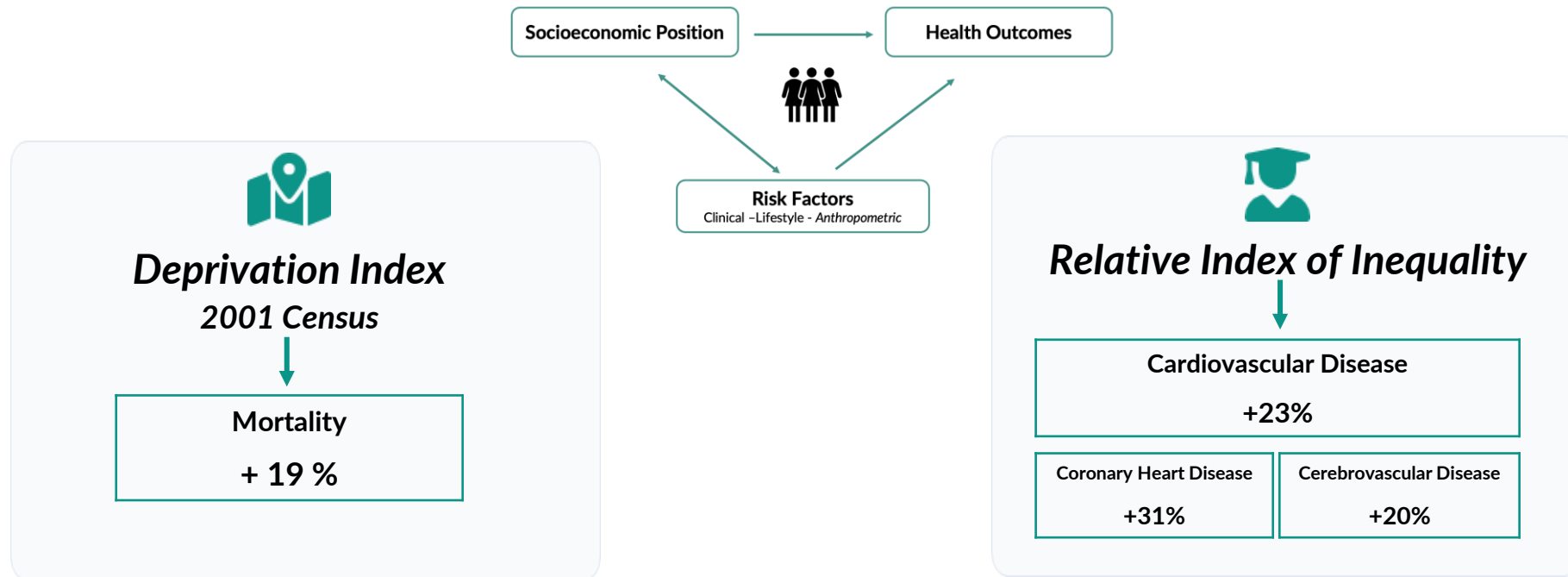
Forest Plot (Log Scale): CHD
Log-Hazard Ratio of Highest Education Tertile (RII 3 vs RII 1)



Forest Plot (Log Scale): CRV
Log-Hazard Ratio of Highest Education Tertile (RII 3 vs RII 1)



Conclusion



*Risk increases estimated by full-adjusted models

- Social disadvantage acts independently of risk factors.
- Improving the quality of the living context.
- Improving access to education.

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Thank You

Thank you all for your attention.

Associazione tra Posizione Socio-Economica, Indicatori Antropometrici ed Esiti di Salute in una Coorte Femminile Italiana (Studio EPIC-Italia)

Teresa Speranza; Vittorio Simeon, Nicola Caranci; Valerio Vitale; Claudia Agnoli; Fulvio Ricceri; Lorenzo Milani; Benedetta Bendinelli; Melania Assedi; Rosario Tumino; Simona Signoriello; Paolo Chiodini.

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