

Supplementary Material

Is Engagement in Intellectual and Social Leisure Activities Protective Against Dementia Risk? Evidence from the English Longitudinal Study of Ageing

Supplementary Table 1. Sub-hazard ratios and 95% confidence intervals of the competing risk models indicating the incidence of dementia for clustered variables.

Individual leisure activities (clustered)	Model 1	Model 2	Model 3	Model 4
Club or organization				
A political party, trade union or environmental group: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.99 (0.74-1.32)	1.07 (0.80-1.45)	1.08 (0.80-1.46)	1.10 (0.81-1.48)
Tenant groups, resident groups, neighborhood watch: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.88 (0.69-1.13)	0.95 (0.73-1.24)	0.97 (0.74-1.26)	0.97 (0.75-1.27)
Other organizations clubs or societies: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.97 (0.77-1.22)	1.04 (0.82-1.32)	1.05 (0.83-1.34)	1.07 (0.84-1.35)
Social				
Social club: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.86 (0.68-1.09)	0.85 (0.67-1.08)	0.86 (0.68-1.09)	0.88 (0.69-1.11)
Meet with friends: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.88 (0.68-1.15)	0.89 (0.69-1.16)	0.92 (0.71-1.19)	
Cultural engagement				
Cinema theatre: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.98 (0.72-1.33)	1.07 (0.78-1.46)	1.09 (0.80-1.50)	1.13 (0.82-1.55)
Theatre concert or opera: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.89 (0.70-1.14)	0.98 (0.76-1.25)	1.01 (0.79-1.30)	1.04 (0.81-1.34)
Gallery or museum: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	1.08 (0.83-1.40)	1.21 (0.92-1.58)	1.24 (0.95-1.63)	1.30 (0.99-1.71)
Volunteering				
Charitable associations: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	1.00 (0.78-1.28)	1.10 (0.84-1.43)	1.12 (0.86-1.46)	1.14 (0.87-1.49)
Voluntary work: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes				
Travel				
Holiday in the UK in the last 12 months: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.85 (0.69-1.04)	0.89 (0.73-1.09)	0.93 (0.76-1.14)	0.95 (0.77-1.17)
Holiday abroad in the 12 months: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.82 (0.66-1.02)	0.88 (0.71-1.08)	0.91 (0.74-1.13)	0.95 (0.77-1.19)
Daytrip or outing in the last 12 months: No	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Yes	0.84 (0.68-1.04)	0.88 (0.71-1.09)	0.92 (0.75-1.14)	0.95 (0.76-1.18)

Model 1: Sex and marital status. Model 2: Model 1 + education and wealth. Model 3: Model 2 + physical health covariates and depression. Model 4: Model 3 + lifestyle factors. *p<0.05, **p≤0.001

Supplementary Table 2. Subhazard ratios and 95% confidence intervals of the competing risk models for individuals with a doctor diagnosis of dementia, N= 7,897 participants (279 observations)

Domains	N	Model 1	Model 2	Model 3	Model 4
Intellectual activities					
Married	5,423	0.83 (0.74-0.93)**	0.84 (0.73-0.95)*	0.86 (0.75-0.97)*	0.86 (0.75-0.98)*
Single or divorced	1,282	1.03 (0.78-1.38)	1.06 (0.78-1.44)	1.14 (0.86-1.53)	1.17 (0.85-1.62)
Widowed	1,192	1.00 (0.83-1.21)	0.96 (0.78-1.19)	0.96 (0.78-1.19)	0.97 (0.78-1.20)
Social leisure activities	7,897	0.95 (0.87-1.03)	0.96 (0.87-1.05)	0.97 (0.89-1.07)	0.98 (0.89-1.08)

Sub-hazard ratios with 95% confidence intervals. * $p < 0.05$, ** $p \leq 0.001$.

Model 1: Sex and marital status. Model 2: Model 1 + education and wealth. Model 3: Model 2 + physical health covariates and depression. Model 4: Model 3 + lifestyle factors.

Supplementary Table 3. Sub-hazard ratios and 95% confidence intervals of the competing risk models for participants joining at wave 1 only, N=7,733 participants (410 dementia cases)

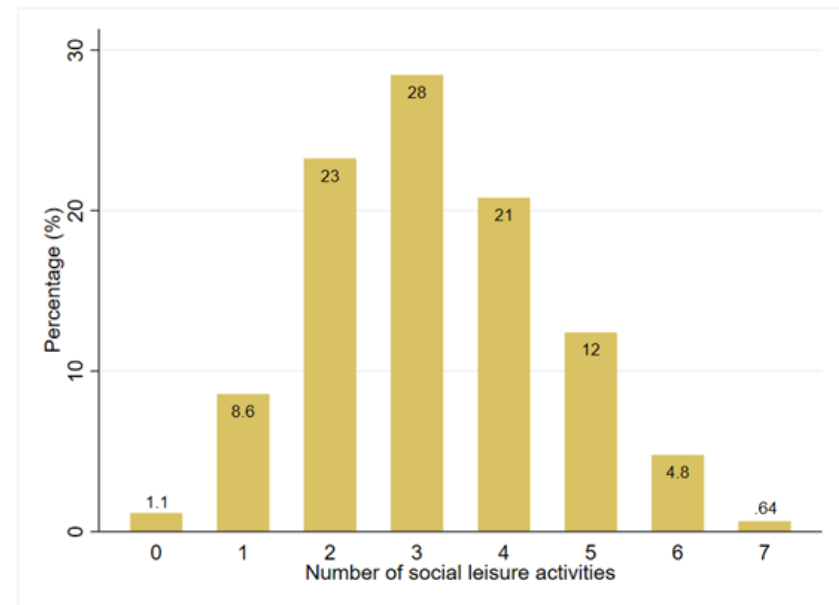
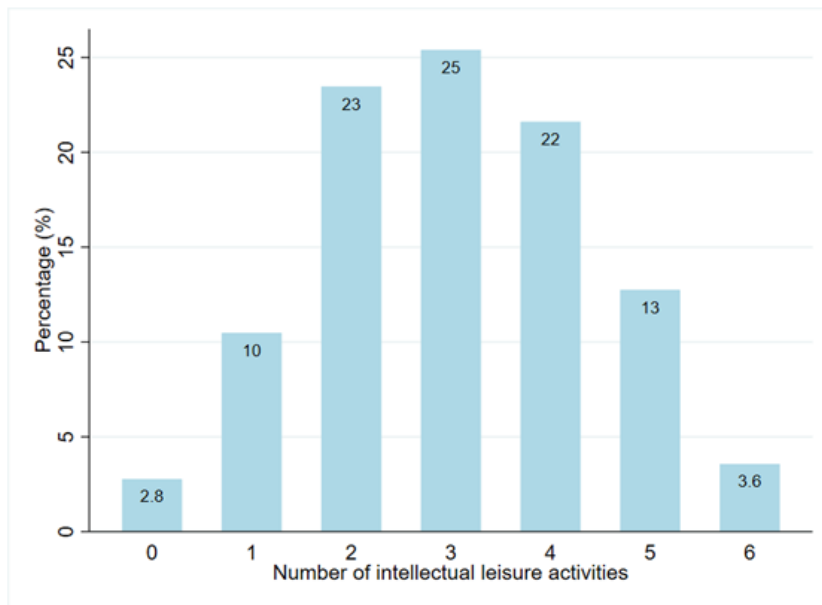
Domains	N	Model 1	Model 2	Model 3	Model 4
Intellectual leisure activities					
Married	5,285	0.80 (0.73-0.89)**	0.82 (0.74-0.92)**	0.84 (0.75-0.94)*	0.85 (0.76-0.96)*
Single or divorced	1,230	0.99 (0.79-1.23)	0.99 (0.78-1.27)	1.07 (0.84-1.36)	1.11 (0.85-1.45)
Widowed	1,218	0.96 (0.82-1.11)	0.96 (0.82-1.13)	0.97 (0.83-1.14)	0.99 (0.83-1.17)
Social leisure activities	7,733	0.93 (0.86-0.99)*	0.95 (0.88-1.03)	0.97 (0.89-1.05)	0.98 (0.91-1.07)

Sub-hazard ratios with 95% confidence intervals. *p<0.05, **p≤0.001.

Model 1: Sex and marital status. Model 2: Model 1 + education and wealth. Model 3: Model 2 + physical health covariates and depression. Model 4: Model 3 + lifestyle factors

Supplementary Table 4. Analytic sample size and attrition rates by each wave of data collection

Characteristics	Wave 1 (2002-2003)	Wave 2 (2004-2005)	Wave 3 (2006-2007)	Wave 4 (2008-2009)
Analytical sample-core members				
Sample	7,733	7,106	6,158	5,565
Refreshment sample	-	-	92	205
Interviewed	7,733	7,106	6,250	5,770
Dropped out		627	948	625
% Attrition		8	13	10



Supplementary Figure 1. Engagement in cognitive and social leisure activities in the sample