Supplemental Digital Content

Effect of change in neighborhood disadvantage on change in smoking behaviors
in adults: a longitudinal within-individual study

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eAppendix. Sample code for the analyses

```
*Main analysis, continuous disadvantage (main Table 3);
*Model a;
proc logistic data=repeated descending;
      by sex;
      *by manual;
      *by age65;
      model smoking = survey_year area_disadvantage;
      strata id; run;


*Model b;
proc logistic data= repeated descending;
      by sex;
      *by manual;
      *by age65;
      model smoking = survey_year  marital_status disease financial_difficulties
working_status area_disadvantage;
      strata id; run;


*Secondary analysis, dichotomous disadvantage (eTable 2);
*Model a;
proc logistic data= repeated_2 descending;
       by sex;
      *by manual;
      *by age65;
       class area_disadvantage2 (ref='1') / param=ref;
      model smoking = survey_year area_disadvantage2;
      strata id; run;


*Model b;
proc logistic data= repeated_2 descending;
       by sex;
      *by manual;
      *by age65;
      class area_disadvantage2 (ref='1') / param=ref;
      model smoking = survey_year  marital_status disease financial_difficulties
working_status   area_disadvantage2;
      strata id; run;
```

eTable 1. Descriptive statistics of the changes in neighbourhood disadvantage using categorized disadvantage score.

Case time point score	Control time point score			
	<-0.5	-0.5 - <0	0 - <0.5	≥0.5
<-0.5	1112	81	55	39
-0.5 - <0	89	704	69	49
0 - <0.5	94	77	499	36
≥0.5	40	67	50	382

eTable 2. Within-individual changes in smoking status in relation to change in neighbourhood disadvantage. Odds ratios for being a smoker when compared to control time point.

Neighbourhood disadvantage, smoker vs. not	Model[a]			Model[b]		
	OR	95% CI		OR	95% CI	
All (n=2681)						
< national mean	1			1		
≥ national mean	1.28	1.03	1.58	1.25	1.00	1.56
Men (n=641)						
< national mean	1			1		
≥ national mean	1.34	0.87	2.06	1.52	0.96	2.41
Women (n=2040)						
< national mean	1			1		
≥ national mean	1.26	0.99	1.61	1.17	0.90	1.51
<65 years (n=2437)						
< national mean	1			1		
≥ national mean	1.31	1.06	1.64	1.25	0.99	1.57
≥65 years (n=244)						
< national mean	1			1		
≥ national mean	1.14	0.43	3.01	1.72	0.61	4.86
Non-manual (n=2290)						
< national mean	1			1		
≥ national mean	1.29	1.02	1.63	1.24	0.97	1.59
Manual (n=371)						
< national mean	1			1		
≥ national mean	1.14	0.65	2.02	1.15	0.61	2.15

[a] Model adjusted for survey year
[b] Model adjusted for all time-variant covariates: survey year, marital status, chronic disease, severe financial difficulties and work status.

eTable 3. Within-individual changes in smoking intensity in relation to change in neighbourhood disadvantage. Odds ratios for being a heavy/moderate smoker when compared to control time.

Neighbourhood disadvantage, Heavy/moderate vs. light	Model[a]			Model[b]		
	OR	95% CI		OR	95% CI	
All, (n=762)						
< national mean	1			1		
≥ national mean	1.20	0.83	1.74	1.18	0.81	1.72
Men (n=141)						
< national mean	1			1		
≥ national mean	1.32	0.52	3.31	1.16	0.42	3.15
Women (n=621)						
< national mean	1			1		
≥ national mean	1.17	0.78	1.75	1.18	0.78	1.80
< 65 years (n=682)						
< national mean	1			1		
≥ national mean	1.32	0.91	1.94	1.27	0.86	1.88
≥65 years (n=80)						
< national mean	1			1		
≥ national mean	na			na		
Non-manual (n=604)						
< national mean	1			1		
≥ national mean	1.26	0.83	1.91	1.18	0.77	1.80
Manual (n=152)						
< national mean	1			1		
≥ national mean	1.00	0.45	2.24	1.38	0.53	3.56

[a] Model adjusted for survey year
[b] Model adjusted for all time-variant covariates: survey year, marital status, chronic disease, severe financial difficulties and work status

eTable 4. Between-individual association of change in neighborhood disadvantage and being a smoker. Results are presented as odds ratios (OR) with 95% confidence intervals (CI) those staying in a disadvantaged neighborhood serving as the reference group.

Change in neighborhood disadvantage	N	Smoking			
		Model 1		Model 2	
		OR	95% CI	OR	95% CI
remained low[a]	30 676	1		1	
high[b] to low	2195	1.09	0.90-1.33	1.06	0.87-1.29
low to high	1937	1.27	1.04-1.56	1.24	1.01-1.51
remained high	12785	1.35	1.22-1.48	1.26	1.14-1.39

[a] national disadvantage score ≤ 0; [b] national disadvantage score >0
Model 1= adjusted for age, sex and baseline smoking status
Model 2= adjusted for age, sex, occupational status and baseline smoking status