

Appendix

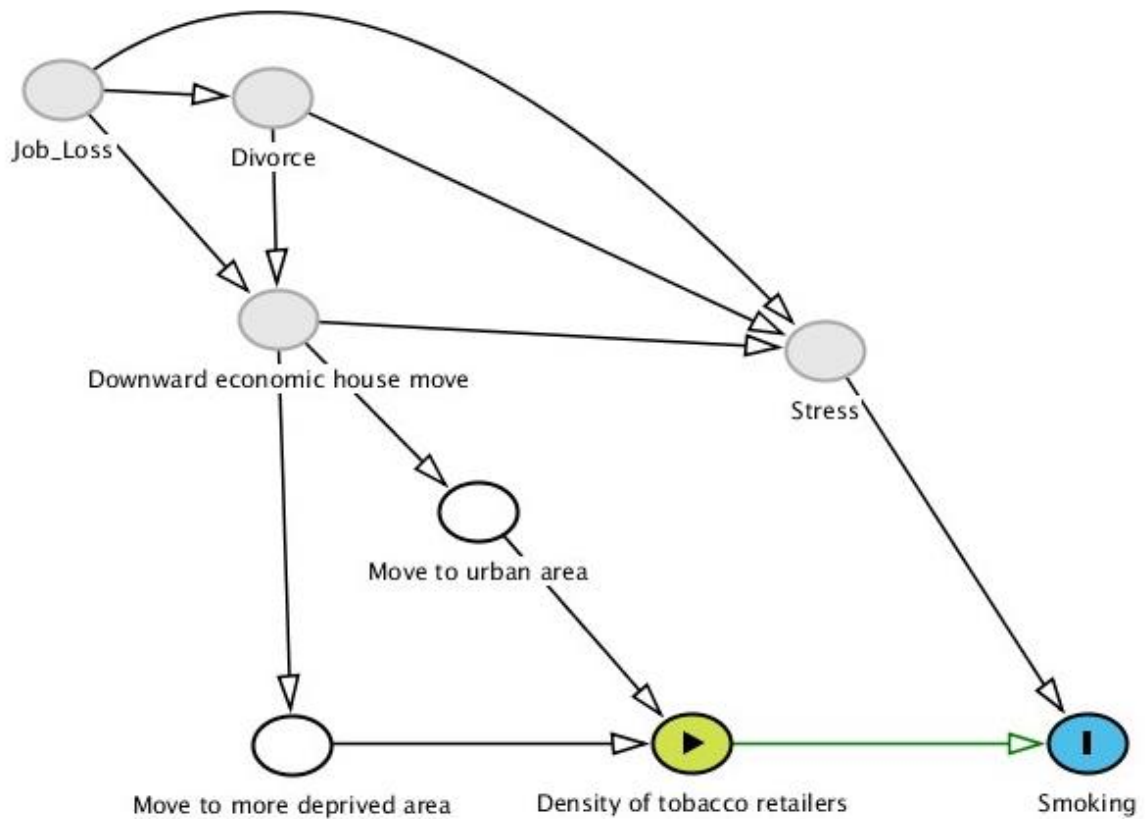


Figure A1: Our proposed DAG representation of the underlying causal structure. We argue, based on this particular conceptual structure, that adjustment for the variables labelled with white circles removes confounding due to unmeasured variables (represented in grey circles) leaving an unconfounded pathway (green arrow path) between the green circle (change in exposure to tobacco outlet density) and the outcome in the blue circle (change in smoking)

Table A1: Pregnancy-level descriptive statistics for both exposure (retailing density) and covariates for the full population of pregnancies in Scotland.

	Full Population		
	Smoking Status		
	No (row %)	Yes (row %)	Total (Col %)
Tobacco Retailer Density (outlets per km²)			
	51,869 (88.60)	6,672 (11.40)	58,541 (7.77)
Group 0 (Zero Outlets)	274,665 (79.42)	71,169 (20.58)	345,834 (45.92)
Group 1 (>0 - <=4.2)	174,514 (72.90)	64,877 (27.10)	239,391 (31.78)
Group 2 (>4.2 - <=10.5)	46,725 (77.08)	13,893 (12.92)	60,618 (8.05)
Group 3 (>10.5 - <=18.9)	39,948 (81.84)	8,863 (18.16)	48,811 (6.48)
Group 4 (>18.9)			
Neighbourhood Maternal Smoking Prevalence			
	17,950 (93.78)	1,190 (6.22)	19,140 (2.54)
Group 0 (Zero prevalence)	135,701 (90.04)	15,015 (9.96)	150,716 (20.01)
Group 1 (>0% - <=10%)	174,362 (82.56)	36,831 (17.44)	211,193 (28.04)
Group 2 (>10% - <=20%)	141,613 (75.46)	46,060 (24.54)	187,673 (24.92)
Group 3 (>20% - <=30%)	118,095 (64.02)	66,378 (35.98)	184,473 (24.49)
Group 4 (>30%)			
SIMD			
	80,272 (61.62)	49,993 (38.38)	130,265 (17.29)
Quintile 1 (Most deprived)	108,027 (70.09)	46,096 (29.91)	154,123 (20.46)
Quintile 2	121,152 (78.06)	34,053 (21.94)	155,205 (20.61)
Quintile 3	133,934 (85.56)	22,602 (14.44)	156,536 (20.78)
Quintile 4	144,336 (91.90)	12,730 (8.10)	157,066 (20.85)
Quintile 5 (Least deprived)			
Mothers age			
	20,297 (56.19)	15,828 (43.81)	36,125 (4.80)
18-19	90,363 (64.84)	48,994 (35.16)	139,357 (18.50)
20-24	159,536 (78.03)	44,921 (21.97)	204,457 (27.15)
25-29	191,376 (84.79)	34,325 (15.21)	225,701 (29.97)
30-34	104,749 (85.57)	17,664 (14.43)	122,413 (16.25)
35-39	20,496 (85.57)	3,631 (14.43)	24,127 (16.25)
40-44			

	(84.95)	(15.05)	(3.20)
45+	904	111	1,015
	(89.06)	(10.94)	(0.13)
Urban and Rural			
Large Urban	209,001	54,518	263,519
	(79.31)	(20.69)	(34.99)
Other urban	213,889	68,970	282,859
	(75.62)	(24.38)	(37.55)
Accessible small town	53,772	15,436	69,208
	(77.70)	(22.30)	(9.19)
Remote small town	17,798	6,577	24,375
	(73.02)	(26.98)	(3.24)
Accessible rural	65,591	13,489	79,080
	(82.94)	(17.06)	(10.50)
Remote rural	27,670	6,484	34,154
	(81.02)	(18.98)	(4.53)
Total	587,721	165,474	753,195
	(78.03)	(21.97)	(100)

Table A2: Pregnancy level descriptive statistics for continuous exposures and covariates for the full population of pregnancies in Scotland.

	Smoking pregnancies		Non-smoking pregnancies	
	Mean	SD	Mean	SD
Tobacco Retailer Density (outlets per km²)	6.34	7.29	6.19	8.75
Neighbourhood prevalence (proportion of intermediate datazone)	0.40	0.19	0.17	0.17

Table A3: Full model outputs for conditional logistic regression models of smoking during pregnancy associated with neighbourhood tobacco retailer density quintiles (quintile 4 represents an area of the highest density) adjusting for mothers age, urban and rural residence, birth year trend and SIMD income deprivation quintiles (model 1) and additionally Neighbourhood Maternal Smoking Prevalence (model 2).

	Model 1		Model 2	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Tobacco Retailer Density (outlets per km²)				
Group 1 (>0 - <=4.2)	1.16	1.02,1.33	1.15**	1.01,1.31
Group 2 (>4.2 - <=10.5)	1.14	0.99,1.31	1.12	0.97,1.28
Group 3 (>10.5 - <=18.9)	1.31	1.12,1.54	1.32***	1.13,1.54
Group 4 (>18.9, Highest density)	1.37	1.15,1.63	1.39***	1.17,1.66
Neighbourhood Maternal Smoking Prevalence				
Group 1 (>0% - <=10%)			1.14	0.96,1.37
Group 2 (>10% - <=20%)			1.47***	1.23,1.75
Group 3 (>20% - <=30%)			1.57***	1.31,1.88
Group 4 (>30%, Highest prevalence)			1.84***	1.53,2.21
Year of Delivery	0.94	0.92,0.95	0.94***	0.93,0.95
Mothers age				
20-24	1.20***	1.11,1.3	1.19***	1.11,1.29
25-29	1.18**	1.05,1.33	1.17**	1.04,1.32
30-34	1.08	0.91,1.28	1.07	0.90,1.27
35-39	0.85	0.68,1.07	0.85	0.67,1.06
40-44	0.67**	0.49,0.91	0.66**	0.48,0.91
SIMD Area Income Deprivation				
Quintile 2	0.95	0.88,1.01	0.99	0.92,1.06
Quintile 3	0.88***	0.82,0.96	0.97	0.89,1.05
Quintile 4	0.94	0.86,1.02	1.07	0.98,1.18
Quintile 5 (Least deprived)	0.83***	0.75,0.92	1.02	0.91,1.14
Urban and Rural				
Other urban	1.00	0.9,1.12	0.97	0.87,1.09
Accessible small town	0.90	0.78,1.03	0.87*	0.76,1.00
Remote small town	1.22*	0.98,1.51	1.15	0.93,1.43
Accessible rural	0.96	0.84,1.11	0.96	0.83,1.10
Remote rural	1.24**	1.01,1.54	1.24*	1.00,1.53

*** p < 0.01 ** p < 0.05 * p < 0.1