

SUPPLEMENTARY TABLE 1. Number of samples and mean concentrations of aluminium and fluoride in drinking water sampling sites in Scotland

2005-2012: the Scottish Mental Survey 1932 cohort

	2005	2006	2007	2008	2009	2010	2011	2012	Overall
Aluminium									
N samples	5285	5367	5356	5273	5232	5197	5062	5096	41868
Mean (sd)	39.2 (44.3)	38.5 (31.7)	38.9 (75.8)	34.0 (29.0)	31.5 (25.5)	31.4 (26.9)	31.3 (28.8)	28.5 (19.6)	34.2 (39.4)
Range	4-1549	2-874	2-5096	4-860	4-878	4-747	4-781	9-222	2-5096
Quartiles	22, 32, 46	22, 32, 47	22, 32, 46	18, 28, 42	81, 26, 39	17, 24, 39	16, 25, 38	16, 23, 35	18, 28, 42
Fluoride									
N samples	1715	1771	1738	1672	1652	1624	1576	1556	13304
Mean (sd)	68.2 (62.7)	44.2 (46.8)	43.6 (35.6)	38.7 (48.6)	36.7 (36.1)	60.0 (37.7)	64.5 (67.2)	80.6 (126.4)	54.2 (65.0)
Range	10-1060	10-1320	10-390	10-1200	10-540	40-610	40-1200	40-2030	10-2030
Quartiles	30, 60, 100	20, 40, 50	20, 30, 50	20, 30, 40	20, 30, 40	40, 50, 70	40, 40, 70	40, 40, 50	30, 40, 60

SUPPLEMENTARY TABLE 2. Adjusted hazard ratios and accompanying 95% confidence intervals for the association between mean aluminium and fluoride levels in drinking water and dementia in men and women: the Scottish Mental Survey 1932 cohort

	N ^a	Dementia N	Hazard ratio ^b (95% confidence interval)				HR ^b (95% CI) per SD increase	P _{trend}
			Q1 (low)	Q2	Q3	Q4 (high)		
Aluminium								
Women: IQ	4262	1350	1 (ref.)	1.37 (1.17, 1.60)	1.30 (1.11, 1.51)	1.41 (1.20, 1.64)	1.09 (1.03, 1.15)	<0.001
Women: IQ and SIMD	4079	1345	1 (ref.)	1.30 (1.11, 1.52)	1.20 (1.03, 1.41)	1.37 (1.17, 1.60)	1.08 (1.03, 1.14)	0.002
Men: IQ	2728	622	1 (ref.)	1.28 (1.01, 1.61)	1.25 (0.99, 1.57)	1.48 (1.18, 1.85)	1.12 (1.03, 1.21)	0.004
Men: IQ and SIMD	2576	619	1 (ref.)	1.22 (0.96, 1.54)	1.17 (0.93, 1.49)	1.42 (1.14, 1.78)	1.10 (1.01, 1.19)	0.014
Fluoride								
Women: IQ	4262	1350	1 (ref.)	0.92 (0.79, 1.07)	1.15 (0.99, 1.34)	2.32 (2.01, 2.68)	1.34 (1.28, 1.41)	<0.001
Women: IQ and SIMD	4079	1345	1 (ref.)	0.88 (0.76, 1.02)	1.11 (0.95, 1.29)	2.18 (1.89, 2.53)	1.32 (1.26, 1.38)	<0.001
Men: IQ	2728	622	1 (ref.)	1.05 (0.84, 1.32)	1.49 (1.19, 1.86)	2.65 (2.14, 3.29)	1.30 (1.22, 1.39)	<0.001
Men: IQ and SIMD	2576	619	1 (ref.)	1.01 (0.80, 1.27)	1.46 (1.16, 1.83)	2.48 (2.00, 3.08)	1.28 (1.20, 1.37)	<0.001

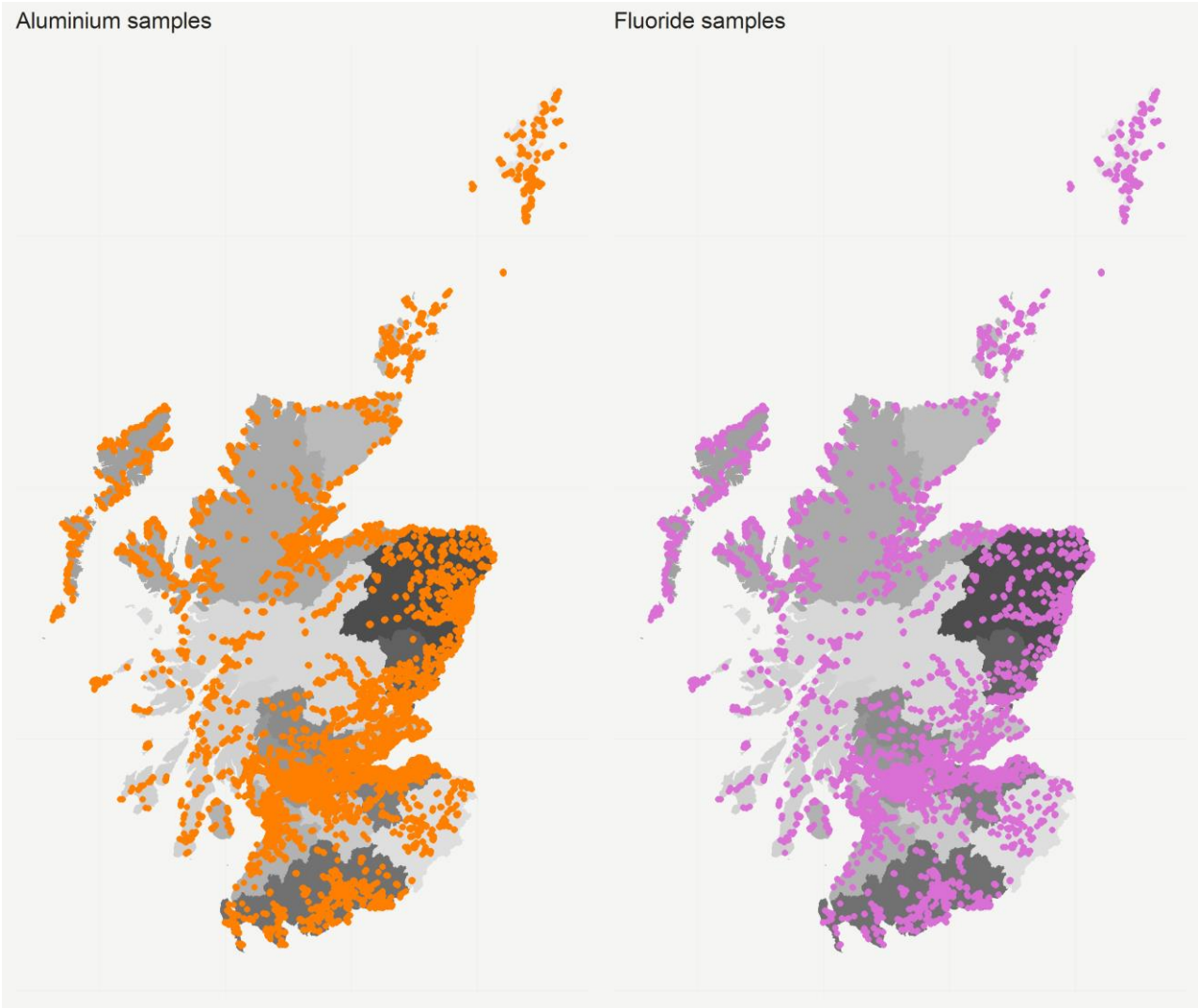
^a SMS1932 participants who survived to 2005 (the start of the exposure period)

^b Hazard ratio adjusted for age 11 mental ability (IQ) or age 11 mental ability and SIMD rank (IQ + SIMD)

Cut points for aluminium quartiles were 30.8, 35.5, and 41.1 µg/L

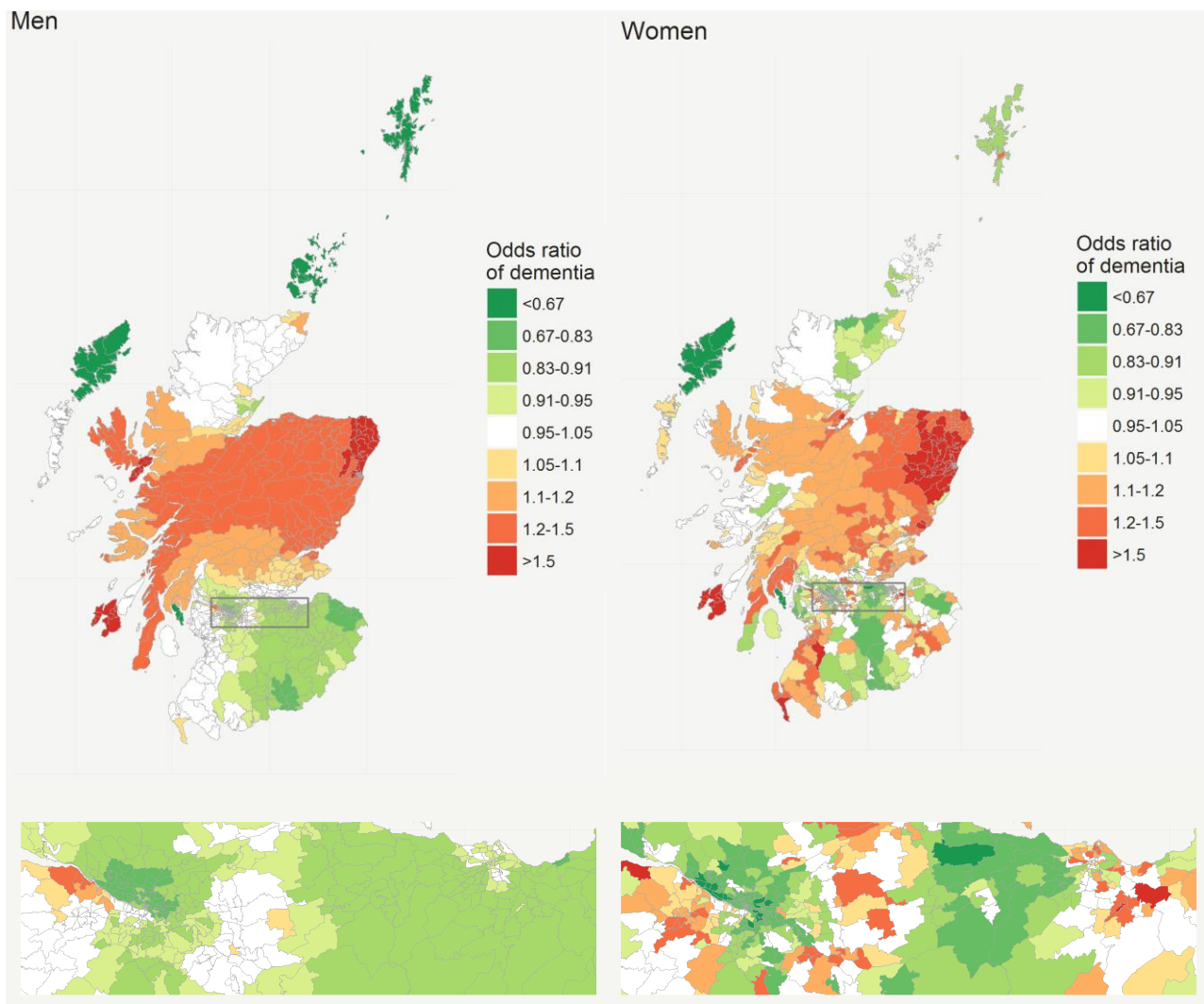
Cut points for fluoride quartiles were 44.4, 48.7, and 56.3 µg/L

SUPPLEMENTARY FIGURE 1. Location of aluminium (left) and fluoride (right) sampling sites in Scottish Drinking Water Quality Regulator data 2005-2012: the Scottish Mental Survey 1932 cohort



Postcode areas are shown in different shades of grey

SUPPLEMENTARY FIGURE 2. Odds ratio of dementia in the SMS1932 cohort by adult location with individual-level effects (age) removed: the Scottish Mental Survey 1932 cohort



Lower panel shows an enlarged view of the Central Belt of Scotland including Glasgow and Edinburgh

Adapted from Russ TC, Gatz M, Pedersen NL, Hannah J, Wyper G, Batty GD, et al. Geographical variation in dementia: examining the role of environmental factors in Sweden and Scotland. *Epidemiology* 2015 26(2): 263-70

SUPPLEMENTARY FIGURE 3. Trends in aluminium and fluoride concentrations in drinking water in Scotland from 2005-2012: the Scottish Mental Survey 1932 cohort

