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Exposure to Ambient Air Pollution and Onset of Dementia

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This study used Census data from Northern Ireland linked to administrative data on prescriptions between 2010 and 2016, to examine the association between ambient air pollution exposure and the risk of dementia onset. It contributes to this literature by providing new evidence in a comparatively low pollution context, using rich and nationally representative cohort data with comprehensive information on dementia disease medications dispensed over an extended period. We estimated Cox Proportional Hazards models for the association between pollution exposure and dementia onset as proxied by first receipt of dementia medication, controlling extensively for potentially confounding factors. Estimates are presented in the form of hazard ratios for the effect of long-term PM2.5

and NO2 exposure (define as 5-year moving average exposure in the primary model) on the risk of dementia onset. There was a clear unadjusted and adjusted association between long-term exposure to ambient pollution and the risk of developing dementia, with those experiencing higher exposures being at greater risk. There was evidence of a positive association with both PM2.5 and NO2 exposure for subsamples by age and sex with more tentative associations for those under 70 years of age. This study contributes to an emerging literature examining the association between ambient PM2.5 and NO2 pollution and onset of dementia. We found strong evidence for positive associations even in the relatively low-pollution context of Northern Ireland.

