

**Supplementary Figure E1:** Distribution of pollen counts (particles/m<sup>3</sup>) for non-zero pollen days on a linear scale for alder (A) and birch (B), and the same distributions on a log base ten scale for alder (C) and birch (D) for visualisation purposes. Red lines indicate the placement of the strata cut-offs. These are low (alder: 1-5; birch: 5-50), medium (alder: 5-20; birch: 50-200), and high (alder: 20+; birch: 200+) on the linear scale.

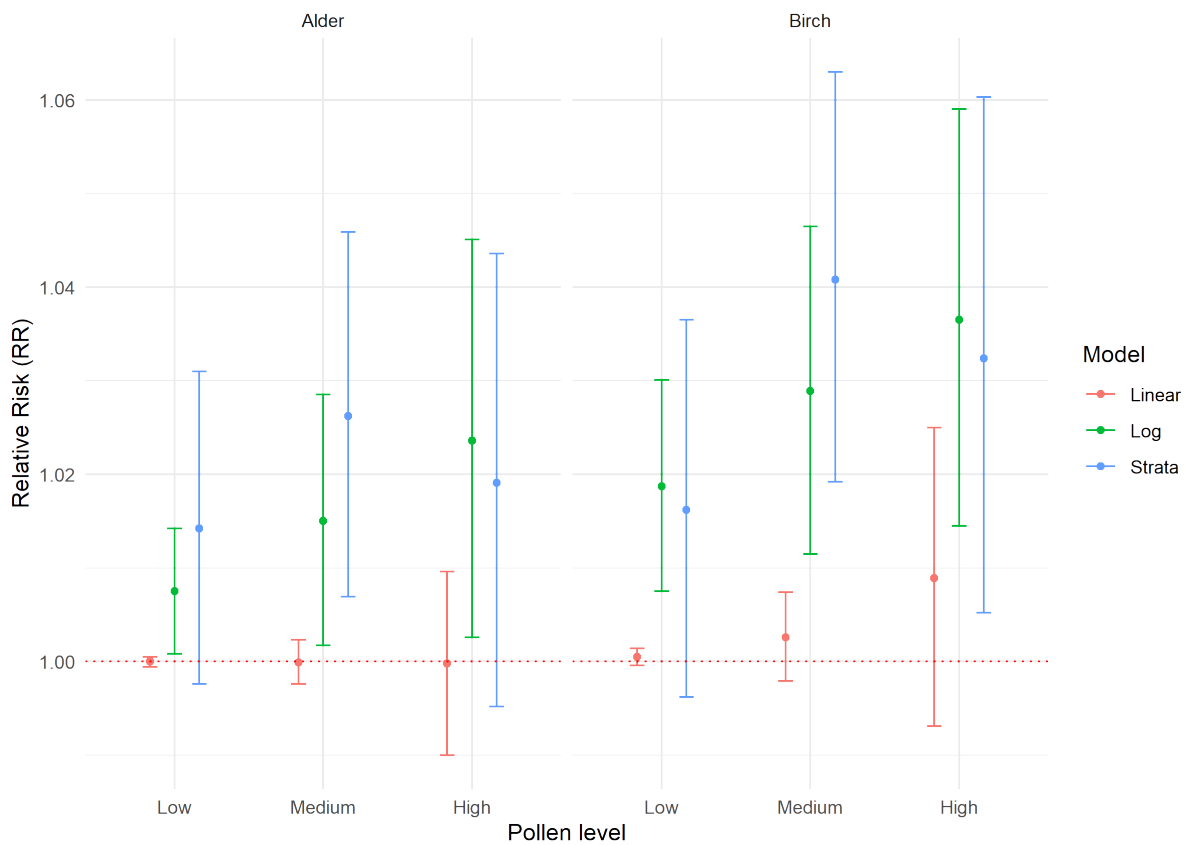
| Age group | Pollen level | Estimate              |
|-----------|--------------|-----------------------|
| all       | Low          | 1.014 (0.998, 1.031)  |
|           | Medium       | 1.026 (1.007, 1.046)* |
|           | High         | 1.019 (0.995, 1.044)  |
| 0-4       | Low          | 1.010 (0.964, 1.059)  |
|           | Medium       | 1.047 (0.993, 1.105)  |
|           | High         | 1.016 (0.951, 1.086)  |
| 5-14      | Low          | 0.975 (0.940, 1.011)  |
|           | Medium       | 1.112 (1.066, 1.159)* |
|           | High         | 1.122 (1.065, 1.183)* |
| 15-29     | Low          | 1.051 (1.006, 1.098)* |
|           | Medium       | 1.006 (0.956, 1.059)  |
|           | High         | 1.029 (0.965, 1.098)  |
| 30-44     | Low          | 1.032 (0.990, 1.076)  |
|           | Medium       | 1.016 (0.968, 1.066)  |
|           | High         | 0.960 (0.904, 1.020)  |
| 45-59     | Low          | 1.013 (0.974, 1.054)  |
|           | Medium       | 0.992 (0.947, 1.039)  |
|           | High         | 0.978 (0.923, 1.036)  |
| 60+       | Low          | 1.020 (0.983, 1.057)  |
|           | Medium       | 0.982 (0.942, 1.024)  |
|           | High         | 0.999 (0.948, 1.052)  |

**Supplementary Table E1:** Result for alder exposure as presented in Figure 1. \* Indicates significance at the 95% level. Exposure levels for alder are low: 1-5, medium: 5-20 and high: 20+ particles/m<sup>3</sup>.

| Age group | Pollen level | Estimate              |
|-----------|--------------|-----------------------|
| all       | Low          | 1.016 (0.996, 1.037)  |
|           | Medium       | 1.041 (1.019, 1.063)* |
|           | High         | 1.032 (1.005, 1.060)* |
| 0-4       | Low          | 1.002 (0.947, 1.060)  |
|           | Medium       | 1.131 (1.066, 1.201)* |
|           | High         | 1.196 (1.111, 1.280)* |
| 5-14      | Low          | 1.050 (1.005, 1.097)* |
|           | Medium       | 1.079 (1.029, 1.131)* |
|           | High         | 1.078 (1.014, 1.148)* |
| 15-29     | Low          | 1.060 (1.005, 1.118)* |
|           | Medium       | 1.090 (1.031, 1.152)* |
|           | High         | 1.043 (0.972, 1.120)  |
| 30-44     | Low          | 1.007 (0.958, 1.059)  |
|           | Medium       | 0.989 (0.938, 1.043)  |
|           | High         | 0.975 (0.912, 1.042)  |
| 45-59     | Low          | 0.989 (0.942, 1.038)  |
|           | Medium       | 0.986 (0.937, 1.038)  |
|           | High         | 0.977 (0.916, 1.043)  |
| 60+       | Low          | 0.991 (0.948, 1.035)  |
|           | Medium       | 1.004 (0.959, 1.052)  |
|           | High         | 0.979 (0.924, 1.038)  |

**Supplementary Table E2:** Result for birch exposure as presented in Figure 1. \* Indicates significance at the 95% level. Exposure levels for alder are low: 5-50, medium: 50-200 and high: 200+ particles/m<sup>3</sup>.

### RR Estimates by Pollen Type and Model (Age group: all)



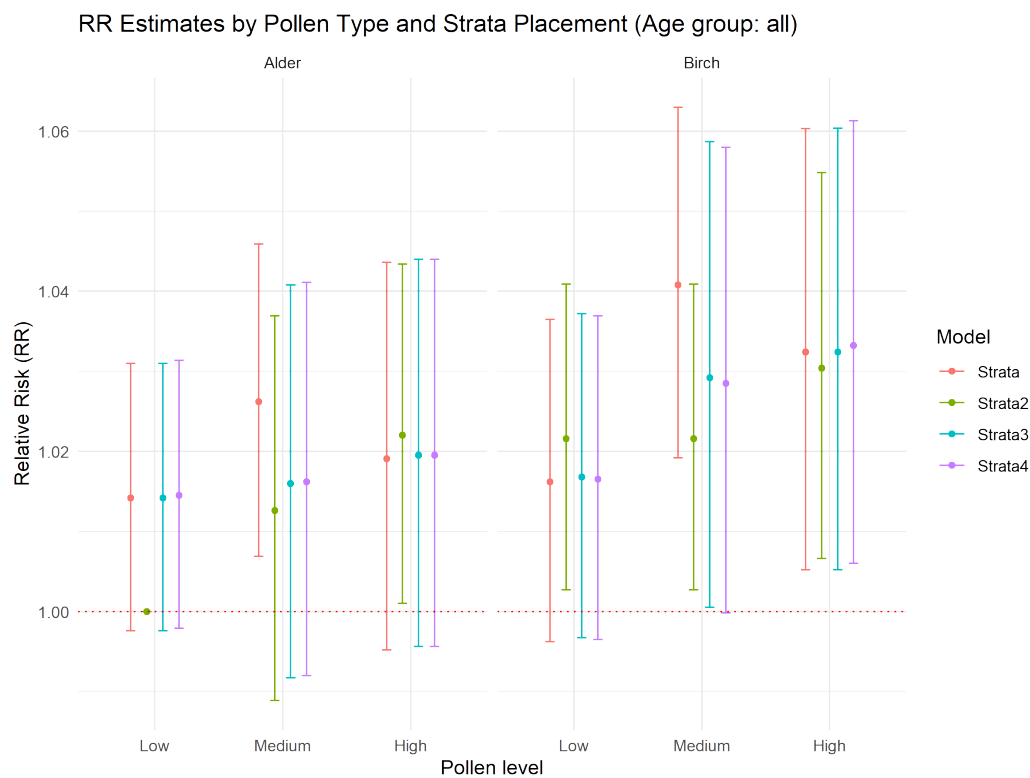
**Supplementary Figure E2:** Sensitivity analysis of different model types. Exposure levels for each pollen type are low (alder: 1-5; birch: 5-50), medium (alder: 5-20; birch: 50-200), and high (alder: 20+; birch: 200+). The relative risks are plotted at the median point of each strata (alder: 2.26, 9.53 and 39.2; birch: 19.1, 98.5, 331 particles/m<sup>3</sup>)

| Model name                             | Number of strata | Cut offs         |
|--|------------------|------------------|
| <b>Strata (presented in main text)</b> | <b>3</b>         | <b>1, 5, 20</b>  |
| Strata2                                | 3                | 5, 10, 15        |
| Strata3                                | 4                | 1, 5, 10, 20     |
| Strata3                                | 5                | 1, 5, 10, 15, 20 |

**Supplementary Table E3:** Alternative definitions for strata definitions for alder (cut-offs reported as particles/m<sup>3</sup>).

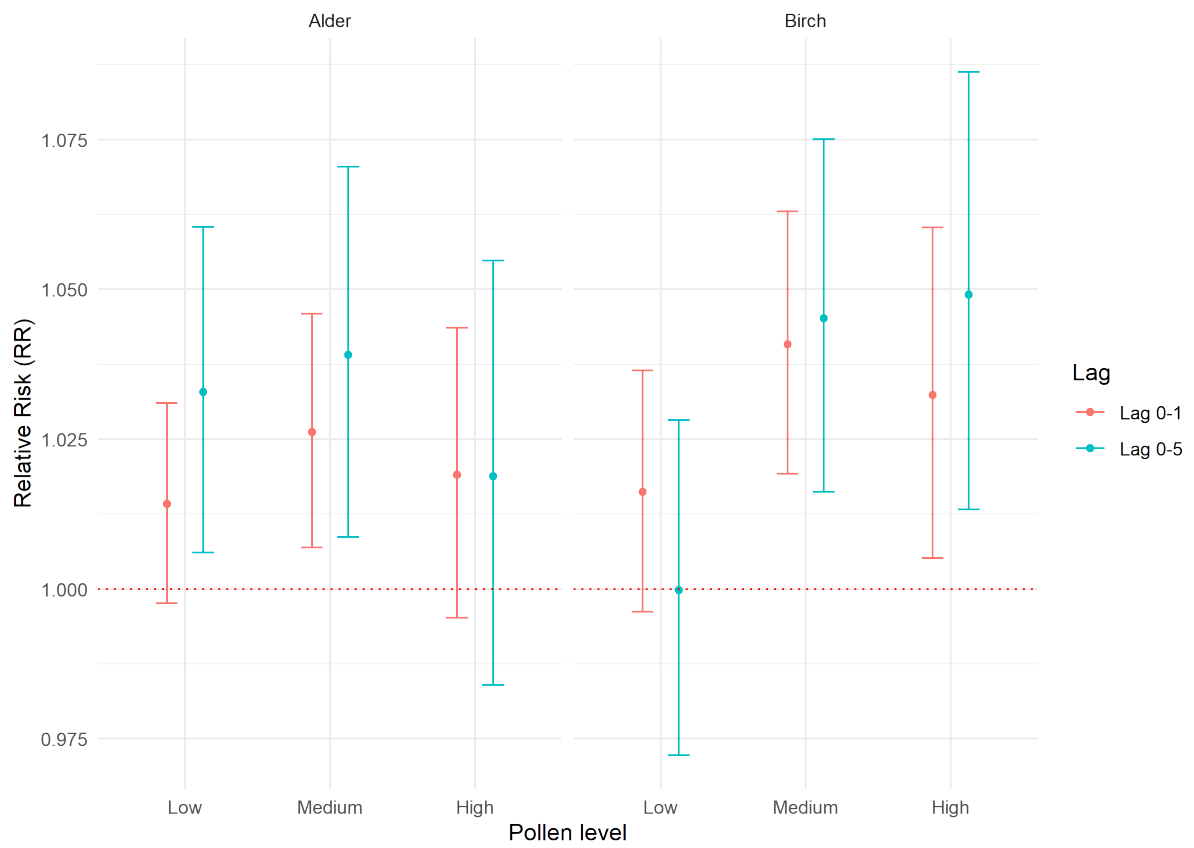
| Model name                             | Number of strata | Cut offs             |
|--|------------------|----------------------|
| <b>Strata (presented in main text)</b> | <b>3</b>         | <b>5, 50, 200</b>    |
| Strata2                                | 3                | 10, 100, 150         |
| Strata3                                | 4                | 5, 50, 100, 200      |
| Strata3                                | 5                | 5, 50, 100, 150, 200 |

**Supplementary Table E4:** Alternative definitions for strata definitions for birch (cut-offs reported as particles/m<sup>3</sup>).

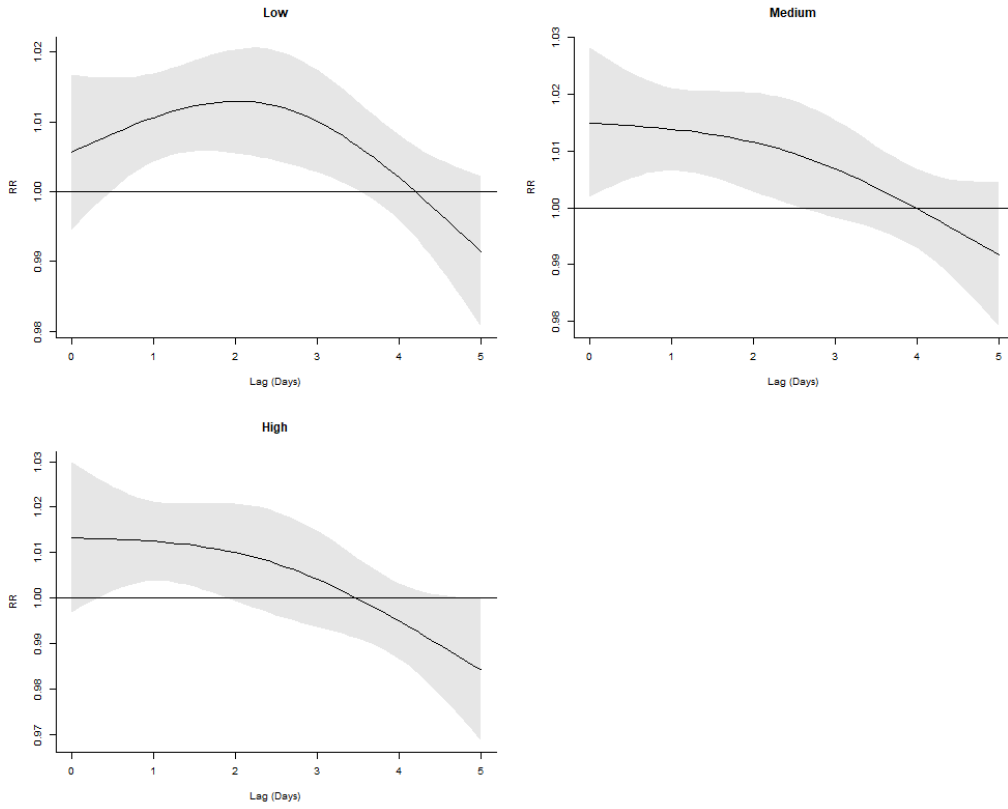


**Supplementary Figure E3:** Sensitivity analysis of different strata placement. The relative risks are plotted at the median point of each of the strata model (alder: 2.26, 9.53 and 39.2; birch: 19.1, 98.5, 331 particles/m<sup>3</sup>).

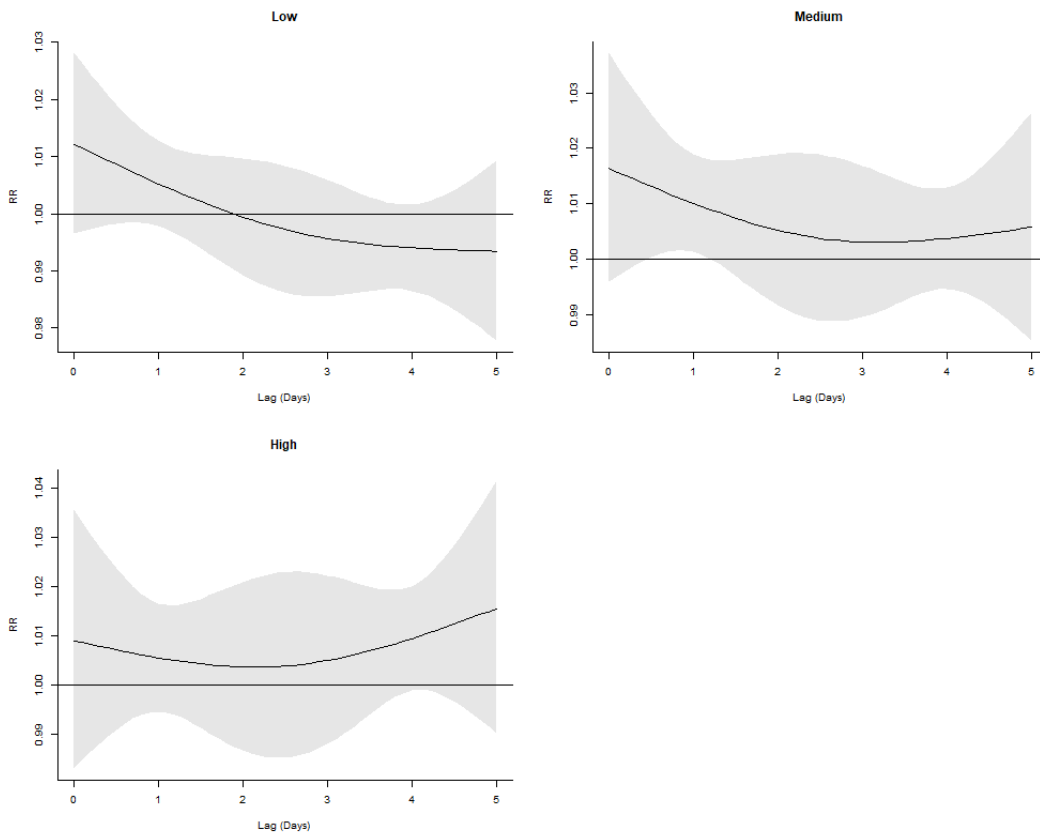
### RR Estimates by Pollen Type and Length of Lag (Age group: all)



**Supplementary Figure E4:** Sensitivity analysis of different lag windows.



**Supplementary Figure E5:** The lag-response relationship for alder with a maximum lag of 5 days.



**Supplementary Figure E6:** The lag response for birch with a maximum lag of 5 days.