**Supplementary Material 1.** Beta coefficients of logistic regression models by each air pollution variables and lag periods after adjusting covariates.

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| --- | --- | --- | --- | --- |
| No | Air pollution | Lag | Beta | *P* |
| 1 | PM10 | lag 0 day | 0.009 | 0.630 |
| 2 | PM10 | lag 1 day | -0.002 | 0.927 |
| 3 | PM10 | lag 2 days | -0.006 | 0.734 |
| 4 | PM10 | lag 3 days | -0.015 | 0.433 |
| 5 | PM10 | lag 4 days | -0.009 | 0.633 |
| 6 | PM10 | lag 5 days | -0.008 | 0.682 |
| 7 | PM10 | lag 6 days | 0.008 | 0.654 |
| 8 | PM10 | lag 7 days | -0.026 | 0.157 |
| 9 | PM10 | lag 8 days | -0.029 | 0.126 |
| 10 | PM10 | lag 9 days | -0.034 | 0.067 |
| 11 | PM10 | lag 10 days | -0.007 | 0.703 |
| 12 | PM10 | lag 11 days | 0.001 | 0.974 |
| 13 | PM10 | lag 12 days | -0.017 | 0.359 |
| 14 | PM10 | lag 13 days | -0.020 | 0.271 |
| 15 | PM10 | lag 14 days | -0.008 | 0.651 |
| 16 | PM10 | lag 1 month | -0.008 | 0.694 |
| 17 | PM10 | lag 2 months | -0.012 | 0.532 |
| 18 | PM10 | lag 3 months | -0.002 | 0.929 |
| 19 | PM10 | lag 4 months | 0.004 | 0.823 |
| 20 | PM10 | lag 5 months | 0.013 | 0.493 |
| 21 | PM10 | lag 6 months | 0.014 | 0.475 |
| 22 | **PM10** | **lag 1 year** | **0.047** | **0.010\*** |
| 23 | **PM10** | **lag 2 years** | **0.051** | **0.005\*** |
| 24 | PM10 | lag 3 years | 0.033 | 0.070 |
| 25 | PM10 | lag 4 years | 0.009 | 0.610 |
| 26 | PM10 | lag 5 years | -0.059 | 0.001 |
| 27 | PM2.5 | lag 0 day | 0.021 | 0.243 |
| 28 | PM2.5 | lag 1 day | 0.010 | 0.586 |
| 29 | PM2.5 | lag 2 days | 0.001 | 0.939 |
| 30 | PM2.5 | lag 3 days | 0.005 | 0.771 |
| 31 | PM2.5 | lag 4 days | 0.005 | 0.806 |
| 32 | PM2.5 | lag 5 days | 0.003 | 0.855 |
| 33 | PM2.5 | lag 6 days | 0.016 | 0.393 |
| 34 | PM2.5 | lag 7 days | -0.034 | 0.064 |
| 35 | PM2.5 | lag 8 days | -0.029 | 0.110 |
| 36 | PM2.5 | lag 9 days | -0.029 | 0.113 |
| 37 | PM2.5 | lag 10 days | -0.015 | 0.429 |
| 38 | PM2.5 | lag 11 days | 0.007 | 0.716 |
| 39 | PM2.5 | lag 12 days | -0.017 | 0.342 |
| 40 | PM2.5 | lag 13 days | -0.020 | 0.280 |
| 41 | PM2.5 | lag 14 days | 0.003 | 0.870 |
| 42 | PM2.5 | lag 1 month | -0.012 | 0.534 |
| 43 | PM2.5 | lag 2 months | 0.000 | 1.000 |
| 44 | PM2.5 | lag 3 months | 0.005 | 0.789 |
| 45 | PM2.5 | lag 4 months | 0.013 | 0.474 |
| 46 | PM2.5 | lag 5 months | 0.024 | 0.182 |
| 47 | PM2.5 | lag 6 months | 0.030 | 0.103 |
| 48 | **PM2.5** | **lag 1 year** | **0.072** | **0.000\*** |
| 49 | **PM2.5** | **lag 2 years** | **0.065** | **0.000\*** |
| 50 | **PM2.5** | **lag 3 years** | **0.036** | **0.046\*** |
| 51 | PM2.5 | lag 4 years | 0.008 | 0.650 |
| 52 | PM2.5 | lag 5 years | -0.039 | 0.028 |
| 53 | SO2 | lag 0 day | -0.011 | 0.564 |
| 54 | SO2 | lag 1 day | -0.035 | 0.068 |
| 55 | SO2 | lag 2 days | -0.042 | 0.031 |
| 56 | SO2 | lag 3 days | -0.049 | 0.012 |
| 57 | SO2 | lag 4 days | -0.034 | 0.085 |
| 58 | SO2 | lag 5 days | -0.030 | 0.125 |
| 59 | SO2 | lag 6 days | -0.011 | 0.559 |
| 60 | SO2 | lag 7 days | -0.034 | 0.087 |
| 61 | SO2 | lag 8 days | -0.039 | 0.047 |
| 62 | SO2 | lag 9 days | -0.063 | 0.001 |
| 63 | SO2 | lag 10 days | -0.036 | 0.066 |
| 64 | SO2 | lag 11 days | -0.024 | 0.223 |
| 65 | SO2 | lag 12 days | -0.043 | 0.027 |
| 66 | SO2 | lag 13 days | -0.050 | 0.012 |
| 67 | SO2 | lag 14 days | -0.047 | 0.018 |
| 68 | SO2 | lag 1 month | -0.055 | 0.008 |
| 69 | SO2 | lag 2 months | -0.056 | 0.005 |
| 70 | SO2 | lag 3 months | -0.066 | 0.001 |
| 71 | SO2 | lag 4 months | -0.060 | 0.002 |
| 72 | SO2 | lag 5 months | -0.057 | 0.003 |
| 73 | SO2 | lag 6 months | -0.057 | 0.003 |
| 74 | SO2 | lag 1 year | -0.050 | 0.009 |
| 75 | SO2 | lag 2 years | -0.052 | 0.006 |
| 76 | SO2 | lag 3 years | -0.054 | 0.004 |
| 77 | SO2 | lag 4 years | -0.065 | 0.000 |
| 78 | SO2 | lag 5 years | -0.085 | 0.000 |
| 79 | NO2 | lag 0 day | -0.005 | 0.810 |
| 80 | NO2 | lag 1 day | -0.028 | 0.157 |
| 81 | NO2 | lag 2 days | -0.007 | 0.709 |
| 82 | NO2 | lag 3 days | -0.007 | 0.740 |
| 83 | NO2 | lag 4 days | -0.013 | 0.538 |
| 84 | NO2 | lag 5 days | -0.001 | 0.964 |
| 85 | NO2 | lag 6 days | 0.003 | 0.901 |
| 86 | NO2 | lag 7 days | -0.030 | 0.133 |
| 87 | NO2 | lag 8 days | -0.025 | 0.222 |
| 88 | NO2 | lag 9 days | -0.031 | 0.130 |
| 89 | NO2 | lag 10 days | -0.020 | 0.335 |
| 90 | NO2 | lag 11 days | -0.003 | 0.886 |
| 91 | NO2 | lag 12 days | -0.024 | 0.236 |
| 92 | NO2 | lag 13 days | -0.008 | 0.702 |
| 93 | NO2 | lag 14 days | -0.006 | 0.765 |
| 94 | NO2 | lag 1 month | -0.018 | 0.417 |
| 95 | NO2 | lag 2 months | -0.014 | 0.508 |
| 96 | NO2 | lag 3 months | -0.013 | 0.540 |
| 97 | NO2 | lag 4 months | -0.015 | 0.462 |
| 98 | NO2 | lag 5 months | -0.015 | 0.479 |
| 99 | NO2 | lag 6 months | -0.014 | 0.487 |
| 100 | NO2 | lag 1 year | -0.014 | 0.488 |
| 101 | NO2 | lag 2 years | -0.024 | 0.253 |
| 102 | NO2 | lag 3 years | -0.024 | 0.229 |
| 103 | NO2 | lag 4 years | -0.041 | 0.034 |
| 104 | NO2 | lag 5 years | -0.070 | 0.000 |
| 105 | CO | lag 0 day | 0.032 | 0.096 |
| 106 | CO | lag 1 day | 0.017 | 0.386 |
| 107 | CO | lag 2 days | 0.019 | 0.346 |
| 108 | CO | lag 3 days | 0.011 | 0.580 |
| 109 | CO | lag 4 days | 0.004 | 0.823 |
| 110 | CO | lag 5 days | 0.024 | 0.236 |
| 111 | CO | lag 6 days | 0.012 | 0.547 |
| 112 | CO | lag 7 days | -0.015 | 0.448 |
| 113 | CO | lag 8 days | -0.028 | 0.155 |
| 114 | CO | lag 9 days | -0.022 | 0.268 |
| 115 | CO | lag 10 days | -0.008 | 0.706 |
| 116 | CO | lag 11 days | 0.032 | 0.119 |
| 117 | CO | lag 12 days | 0.000 | 0.992 |
| 118 | CO | lag 13 days | 0.016 | 0.429 |
| 119 | CO | lag 14 days | 0.001 | 0.976 |
| 120 | CO | lag 1 month | 0.004 | 0.880 |
| 121 | CO | lag 2 months | 0.027 | 0.239 |
| 122 | CO | lag 3 months | 0.014 | 0.518 |
| 123 | CO | lag 4 months | 0.025 | 0.214 |
| 124 | CO | lag 5 months | 0.019 | 0.326 |
| 125 | CO | lag 6 months | 0.030 | 0.110 |
| 126 | **CO** | **lag 1 year** | **0.051** | **0.007\*** |
| 127 | **CO** | **lag 2 years** | **0.062** | **0.001\*** |
| 128 | CO | lag 3 years | 0.033 | 0.075 |
| 129 | CO | lag 4 years | 0.004 | 0.814 |
| 130 | CO | lag 5 years | -0.049 | 0.007 |
| 131 | O3 | lag 0 day | -0.042 | 0.046 |
| 132 | O3 | lag 1 day | -0.023 | 0.280 |
| 133 | O3 | lag 2 days | -0.029 | 0.163 |
| 134 | O3 | lag 3 days | -0.040 | 0.055 |
| 135 | O3 | lag 4 days | -0.017 | 0.429 |
| 136 | O3 | lag 5 days | -0.038 | 0.069 |
| 137 | O3 | lag 6 days | -0.051 | 0.016 |
| 138 | O3 | lag 7 days | -0.036 | 0.091 |
| 139 | O3 | lag 8 days | -0.027 | 0.208 |
| 140 | O3 | lag 9 days | -0.033 | 0.116 |
| 141 | O3 | lag 10 days | -0.057 | 0.007 |
| 142 | O3 | lag 11 days | -0.030 | 0.159 |
| 143 | O3 | lag 12 days | -0.040 | 0.064 |
| 144 | O3 | lag 13 days | -0.038 | 0.080 |
| 145 | O3 | lag 14 days | -0.048 | 0.027 |
| 146 | O3 | lag 1 month | -0.051 | 0.036 |
| 147 | O3 | lag 2 months | -0.031 | 0.267 |
| 148 | O3 | lag 3 months | -0.012 | 0.694 |
| 149 | O3 | lag 4 months | 0.012 | 0.689 |
| 150 | O3 | lag 5 months | 0.010 | 0.706 |
| 151 | O3 | lag 6 months | 0.023 | 0.316 |
| 152 | O3 | lag 1 year | -0.021 | 0.276 |
| 153 | O3 | lag 2 years | -0.033 | 0.085 |
| 154 | O3 | lag 3 years | -0.042 | 0.026 |
| 155 | O3 | lag 4 years | -0.042 | 0.022 |
| 156 | O3 | lag 5 years | -0.060 | 0.001 |

Logistic regression models were calculated with a binary dependent variable, which consisted of the normal population as a reference and the restrictive lung disease group as the event after adjustment for age, sex, residential area, education level, household income, smoking status, obesity, temperature, and relative humidity. The air pollution variables were categorized into quartiles, and the first quartile was the reference group.

\* p < 0.05 and positive beta