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Supplemental Material

Health Effects of Asian Dust: A Systematic Review and Meta-Analysis

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Figure S4. Sensitivity analysis for mortality by three outcomes before and after excluding studies with largely overlapping periods in the same study location (leave-one-out approach). Two studies were conducted in Taipei, Taiwan, for 1995-2000 (Chen et al. 2004) and 1994-2001 (Chan and Ng 2011). The other two studies were conducted in Seoul, the Republic of Korea, during 2001-2009 for both (Lee et al. 2013; Lee et al. 2014). The former study (Lee et al. 2013) reported the pooled estimate across seven cities in the Republic of Korea, including Seoul 2001-2009 (see Excel Table S1). Solid squares represent the pooled point estimates (percent changes), and the whiskers represent the corresponding 95% CIs. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

Figure S5. Random-effects pooled estimates (percent changes) of hospital admissions for respiratory diseases associated with Asian dust exposure, stratified by sex and lag time (see Excel Table S5). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. Arrowheads indicate where the CI extends outside the range allocated. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

Figure S6. Random-effects pooled estimates (percent changes) of hospital admissions associated with Asian dust exposure, limiting the studies to those with time-series and case-crossover designs stratified by outcome and lag time (see Excel Table S6). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

Figure S7. Random-effects pooled estimates (percent changes) of hospital admissions, hospital visits, emergency room visits, and ambulance transports associated with Asian dust exposure, stratified by outcome and lag time (see Excel Table S7). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. Arrowheads indicate where the CI extends outside the range allocated. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

Figure S8. Sensitivity analysis for the pooled associations between hospital admissions (asthma and pneumonia) and Asian dust exposure before and after excluding studies with largely overlapping periods in the same study location (leave-one-out approach). Two studies for asthma were conducted in Taipei, Taiwan, for 1996-2001 (Yang et al. 2005b) and 1995-2002 (Bell et al. 2008). The other two studies for pneumonia were also conducted in Taipei, Taiwan, for 1996-2001 (Cheng et al. 2008) and 1995-2002 (Bell et al. 2008) (see Excel Table S4). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

References

Additional File- Excel Document

Table S1. Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. The criteria used for the quality assessment was marked for each outcome category (mortality/ hospital admission vs symptoms/ dysfunctions) of the studies.

Criteria	Mortality/hospital admission	Symptoms/ dysfunctions
1. Was the research question or objective in this paper clearly stated?	○	○
2. Was the study population clearly specified and defined?	○	○
3. Was the participation rate of eligible persons at least 50%?		○
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?	○	○
5. Was a sample size justification, power description, or variance and effect estimates provided?		○
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?	○ (if lagged associations were examined)	○
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?	○	○
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?	○	○
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	○	○

10. Was the exposure(s) assessed more than once over time?	◯ (if multiple lagged associations were examined)	◯
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	◯ (if defined by International Disease Classification)	◯
12. Were the outcome assessors blinded to the exposure status of participants?		◯
13. Was loss to follow-up after baseline 20% or less?		◯
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	◯ (if major potential confounders such as long-term trends, seasonality and temperature were accounted for)	◯

Source
https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools

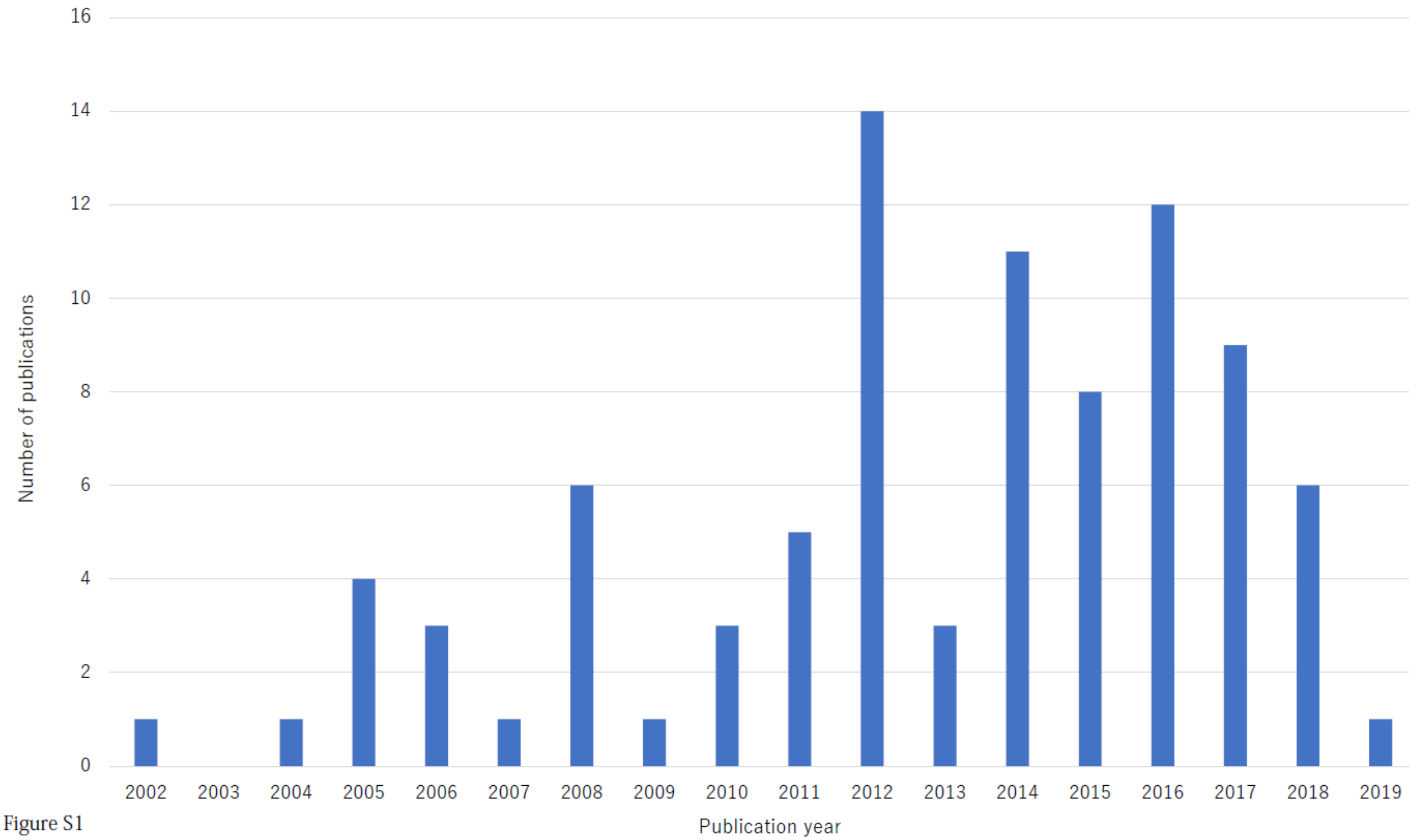


Figure S1

Figure S1. Number of studies by publication year. The number of studies in 2019 is between January and August.

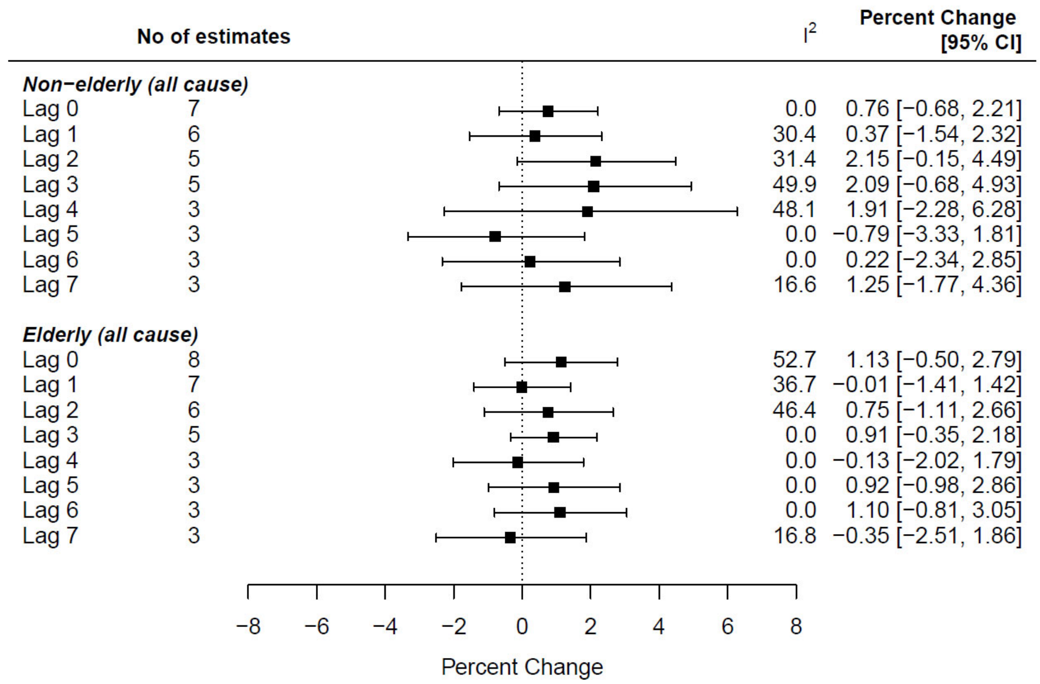


Figure S2. Random-effects pooled estimates (percent changes) of all-cause mortality for Asian dust days vs. non-Asian dust days, stratified by age group (elderly vs non-elderly) in each lag time. The age cut-off of elderly was 65 or 75 years depending on the original study (see Excel Table S2). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% confidence interval (CI). The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

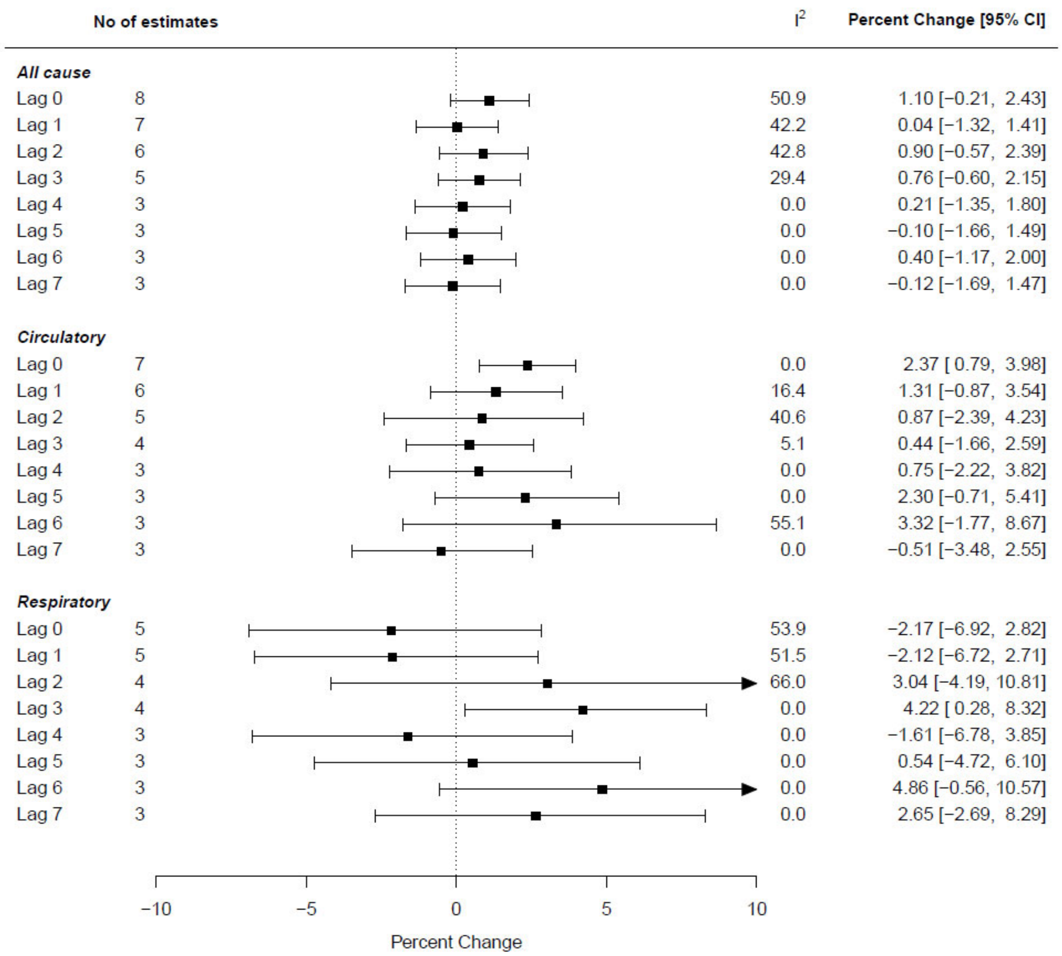
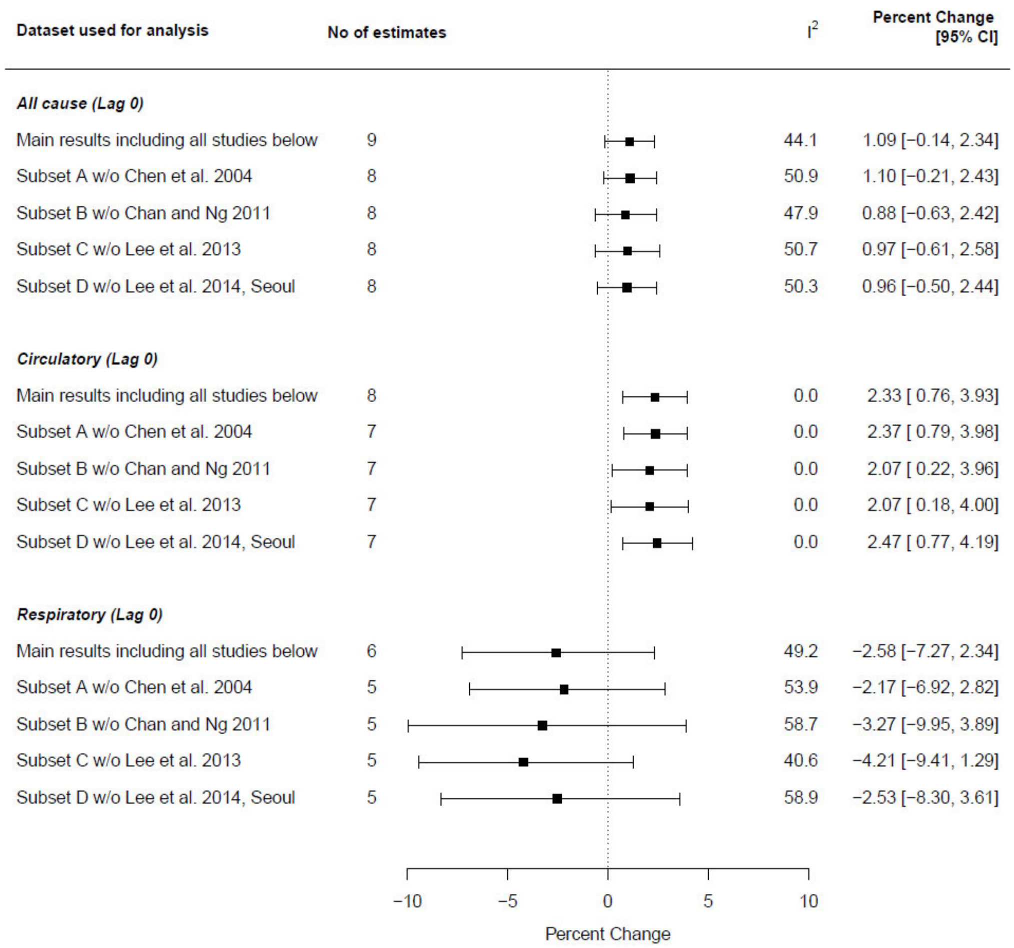


Figure S3. Random-effects pooled estimates (percent changes) of mortality for Asian dust days vs. non-Asian dust days, limiting the studies to those with time-series and case-crossover designs stratified by outcome and lag time (see Excel Table S3). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% confidence interval (CI). Arrowheads indicate where the CI extends outside the range allocated. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.



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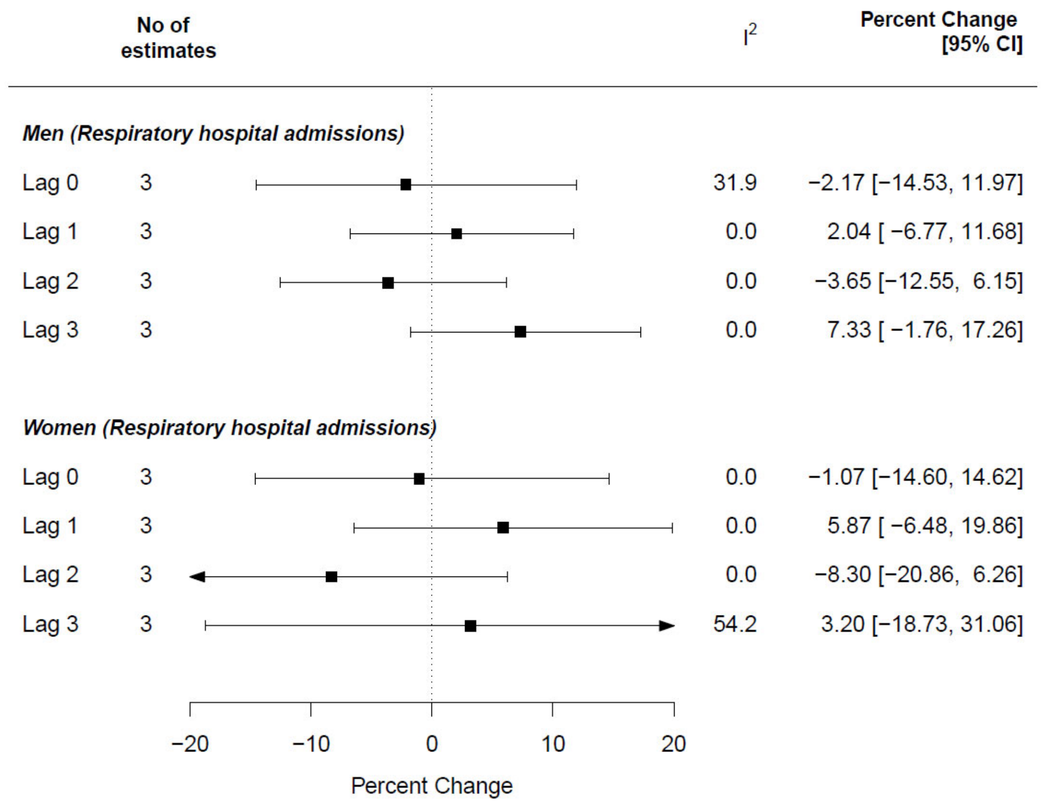


Figure S5. Random-effects pooled estimates (percent changes) of hospital admissions for respiratory diseases associated with Asian dust exposure, stratified by sex and lag time (see Excel Table S5). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. Arrowheads indicate where the CI extends outside the range allocated. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.

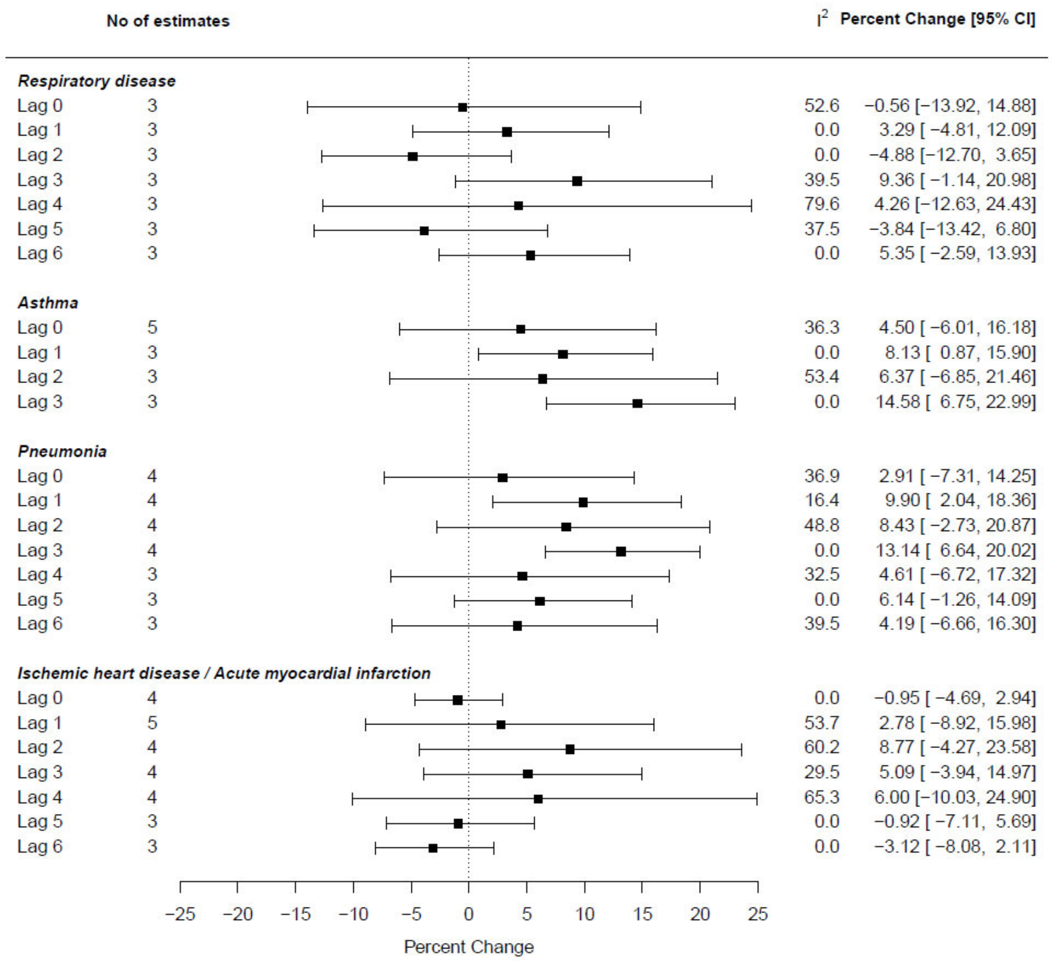
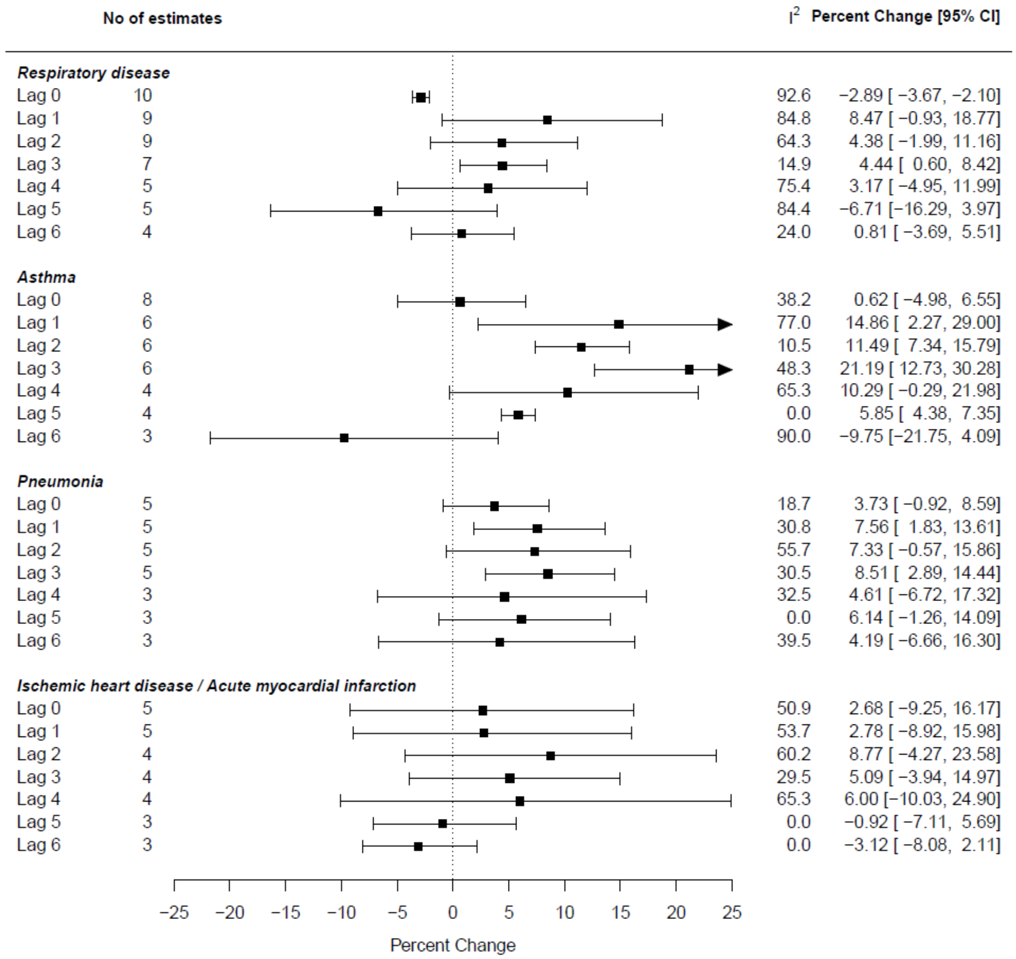


Figure S6. Random-effects pooled estimates (percent changes) of hospital admissions associated with Asian dust exposure, limiting the studies to those with time-series and case-crossover designs stratified by outcome and lag time (see Excel Table S6). Solid squares represent the pooled point estimates, and the whiskers represent the corresponding 95% CIs. The vertical dotted line represents a percent change of 0. Note: CI, confidence interval.



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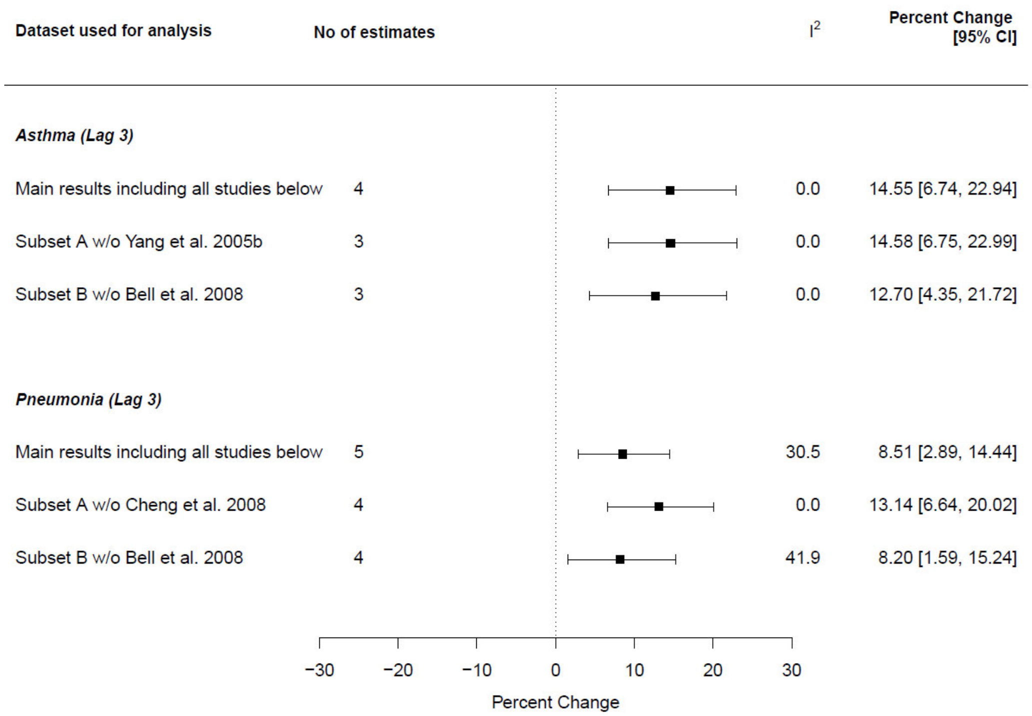

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