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Air pollution and Test Scores: Impacts and Heterogeneity

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This paper studies the effects of daily variation in outdoor air pollution on student test scores in an environment with low levels of pollution. We utilize Danish register data of the full population of elementary and lower secondary school students, who take mandatory national tests in math and reading. We match the home address of students to a 1x1 km grid of air pollution to obtain measures on test dates and of lifetime pollution. We find that an increase in fine particles (PM2.5), corresponding to the change from a very clean to an average polluted day, reduces student performance in math by 1.5% of a standard deviation and 0.8% of a standard deviation in reading. We also document that effects are more negative for children with pre-existing respiratory and cardiovascular diseases and that they vary by lifetime exposure.