



# ***Luftföroreningarna och luftvägseffekter - nya resultat***

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# ESCAPE: Analys av multi-centerkohorter (5) där ECRHS inkluderar Umeå, Uppsala och Göteborg

## Adult lung function and long-term air pollution exposure. ESCAPE: a multicentre cohort study and meta-analysis

Adult lung function and long-term air pollution exposure. ESCAPE: a multicentre cohort study and meta-analysis



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**Abstract** **Objective:** To assess the impact of long-term exposure to ambient air pollution on lung function in adults in the European Study of Cohorts for Air Pollution Effects (ESCAPE). **Design:** A multicentre cohort study and meta-analysis. **Setting:** Five European countries. **Participants:** 100,000 adults from five European countries. **Measurements and Main Results:** We measured lung function (FEV1, FVC, and PEF) and respiratory symptoms (cough, phlegm, and asthma) in 100,000 adults from five European countries. We measured long-term exposure to ambient air pollution (PM2.5, PM10, NO2, and O3) in the same individuals. We found that long-term exposure to ambient air pollution was associated with lower levels of FEV1, FVC, and PEF, and with higher levels of cough, phlegm, and asthma. **Conclusions:** Long-term exposure to ambient air pollution is associated with lower lung function and higher respiratory symptoms in adults in Europe.

**Keywords:** Air pollution, Lung function, Long-term exposure, ESCAPE, Cohort study, Meta-analysis.

**Introduction** Long-term exposure to ambient air pollution is associated with lower lung function and higher respiratory symptoms in adults in Europe.

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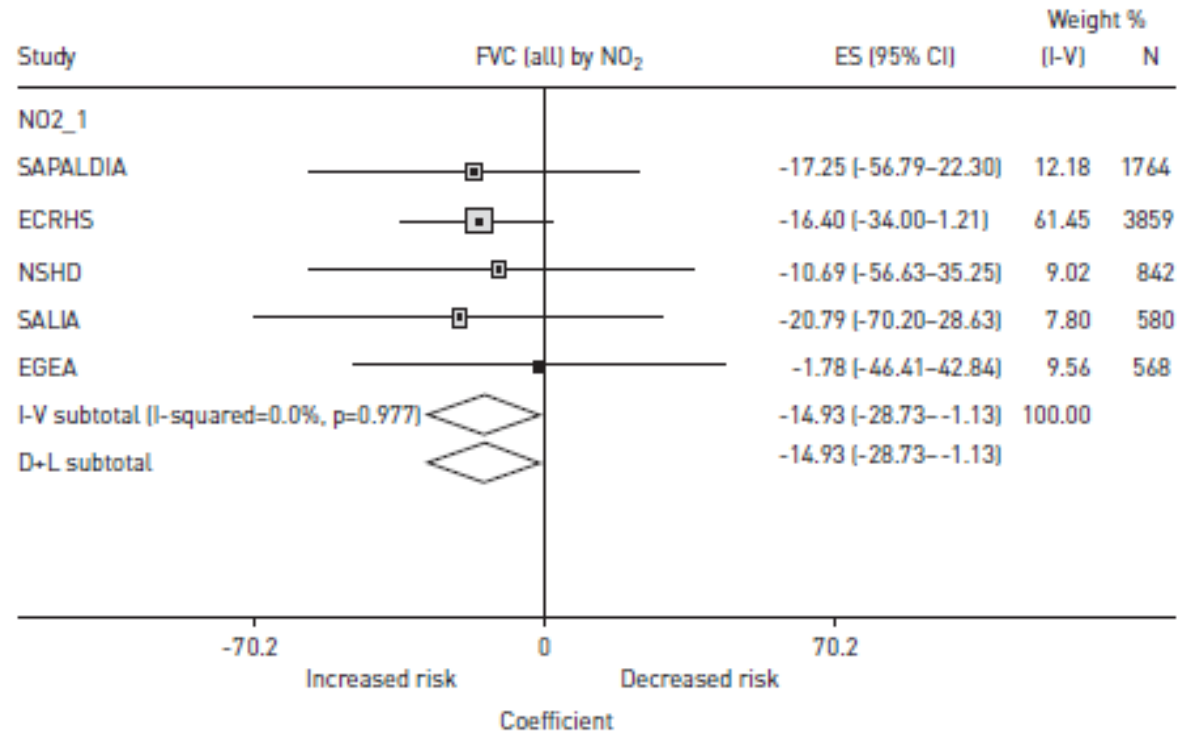
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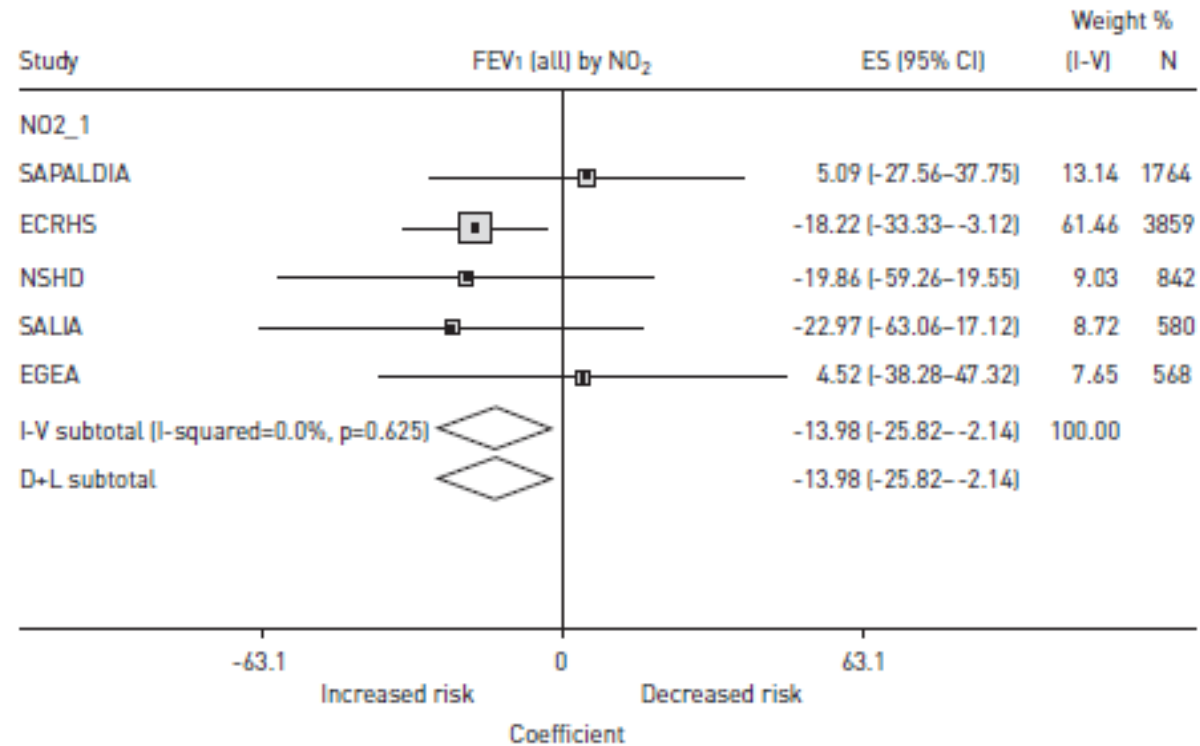
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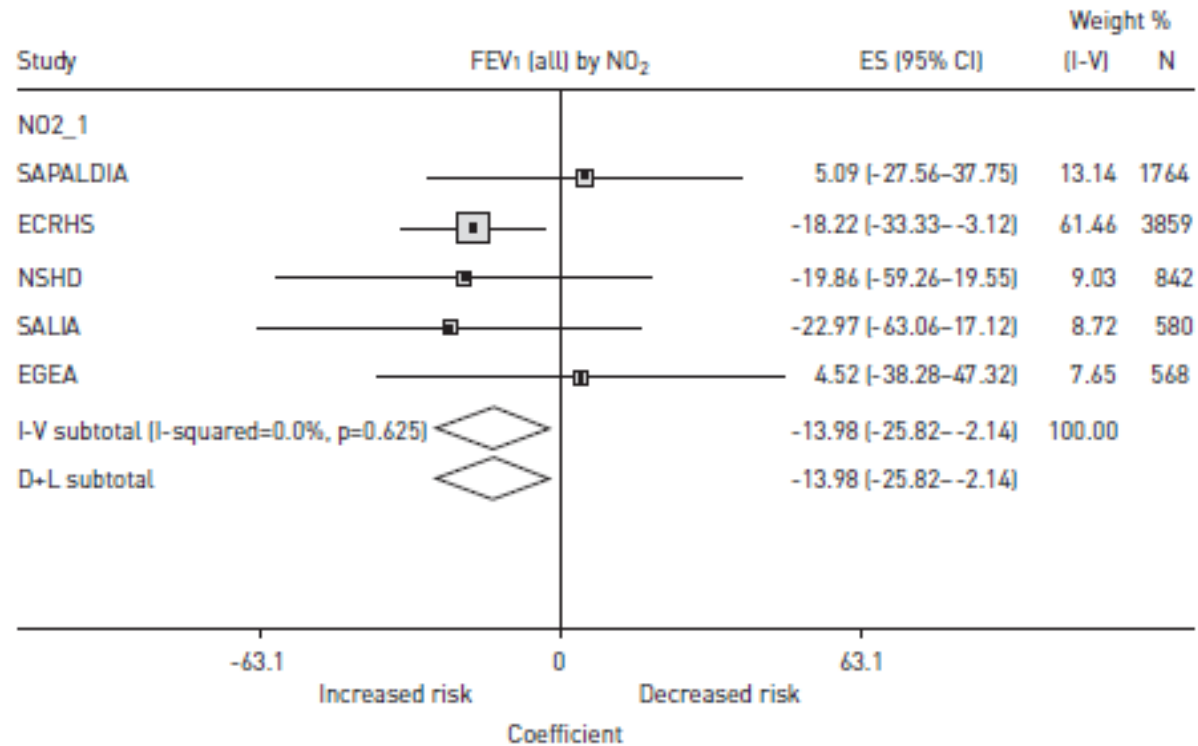
## Signifikant samband mellan NO<sub>2</sub> och vitalkapacitet



## Signifikant samband mellan NO<sub>2</sub> och maximal utandningsvolym på 1 sek



## Signifikant samband mellan NO<sub>2</sub> och maximal utandningsvolym på 1 sek



**>5000 fordon/dygn inom 100 m från bostaden gav också signifikant lägre FEV<sub>1</sub>**

# Mer än dubbelt så stor effekt bland personer med BMI>30

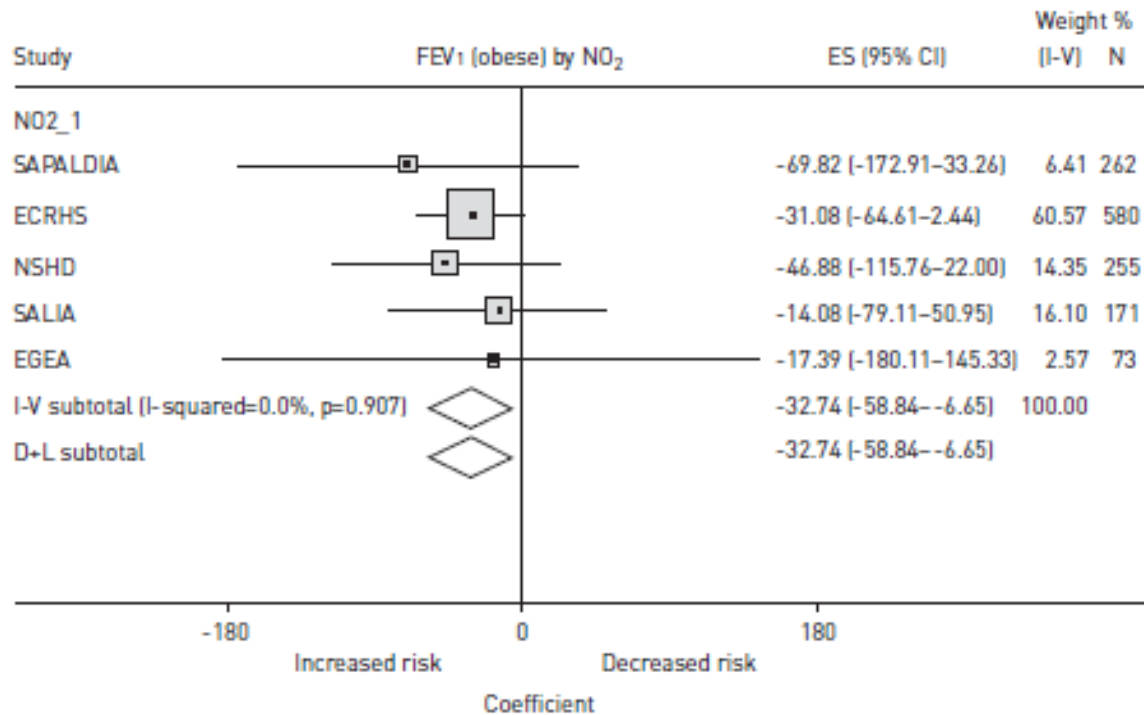


FIGURE 4 Forest plot displaying the study-specific mixed linear regression model estimates of the association of NO<sub>2</sub>



# Olika partikeltypers effekt på akutbesök studerat i Reykjavik

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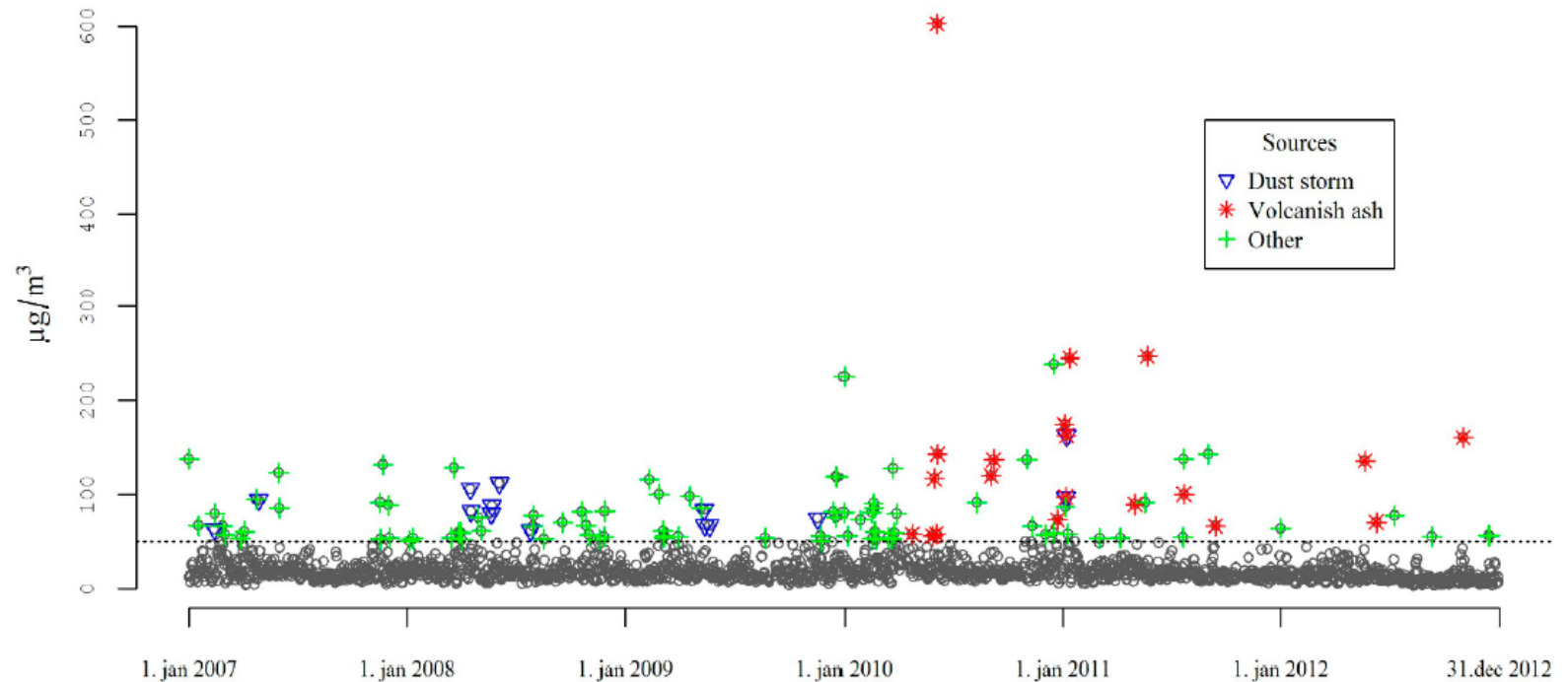
*Article*

## **Emergency Hospital Visits in Association with Volcanic Ash, Dust Storms and Other Sources of Ambient Particles: A Time-Series Study in Reykjavík, Iceland**

Hanne Krage Carlsen <sup>1,2,\*</sup>, Thorarinn Gislason <sup>3,4</sup>, Bertil Forsberg <sup>2</sup>, Kadri Meister <sup>2</sup>,  
Throstur Thorsteinsson <sup>5,6</sup>, Thorsteinn Jóhannsson <sup>7</sup>, Ragnhildur Finnbjörnsdóttir <sup>1</sup>  
and Anna Oudin <sup>2</sup>

# Uppvirvlad vulkanaska har givit höga dygnsmedelvärden av PM<sub>10</sub>

24-hour mean of PM<sub>10</sub> 2007-12

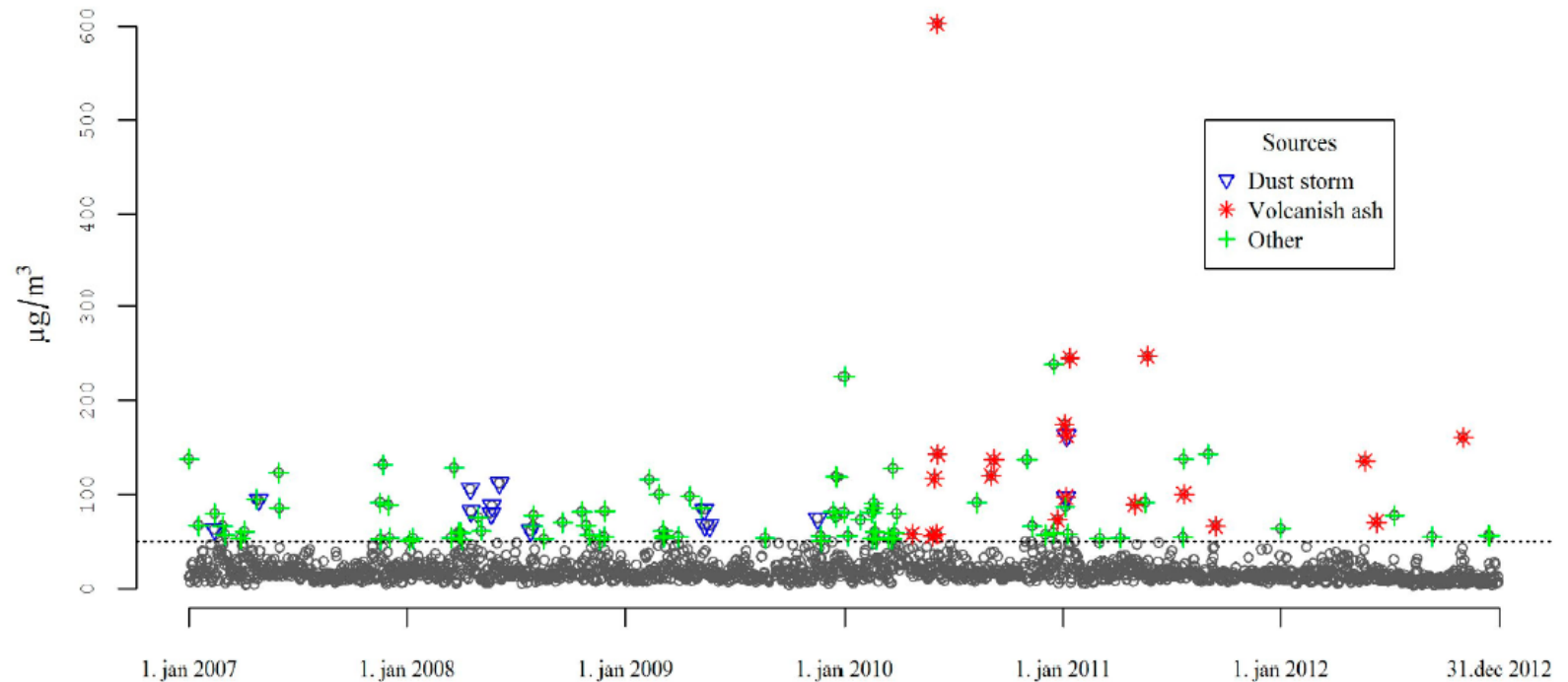


**Figure 1.** Daily (24-h) averages values of PM<sub>10</sub> and its sources during exceedance of the air quality guideline value of 50 µg/m<sup>3</sup> (dotted line).



# Dygn med $> 50 \mu\text{g}/\text{m}^3$ PM<sub>10</sub> uppvirvlat vulkanaska medförde 7% ökning av antal patienter

24-hour mean of PM<sub>10</sub> 2007-12



**Figure 1.** Daily (24-h) averages values of PM<sub>10</sub> and its sources during exceedance of the air quality guideline value of  $50 \mu\text{g}/\text{m}^3$  (dotted line).



# Grova partiklar (vägdamm) och NO<sub>2</sub> gav subklinisk inflammation i lungorna hos skolbarn i Umeå



International Journal of  
*Environmental Research  
and Public Health*



*Article*

## Coarse Fraction Particle Matter and Exhaled Nitric Oxide in Non-Asthmatic Children

Hanne Krage Carlsen <sup>1,2,3,\*</sup>, Peter Boman <sup>1</sup>, Bodil Björ <sup>1</sup>, Anna-Carin Olin <sup>2</sup> and Bertil Forsberg <sup>1</sup>

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# Markören FENO (NO i utandningsluft) mättes hos skolbarn på 2 skolor 2 gånger per vecka

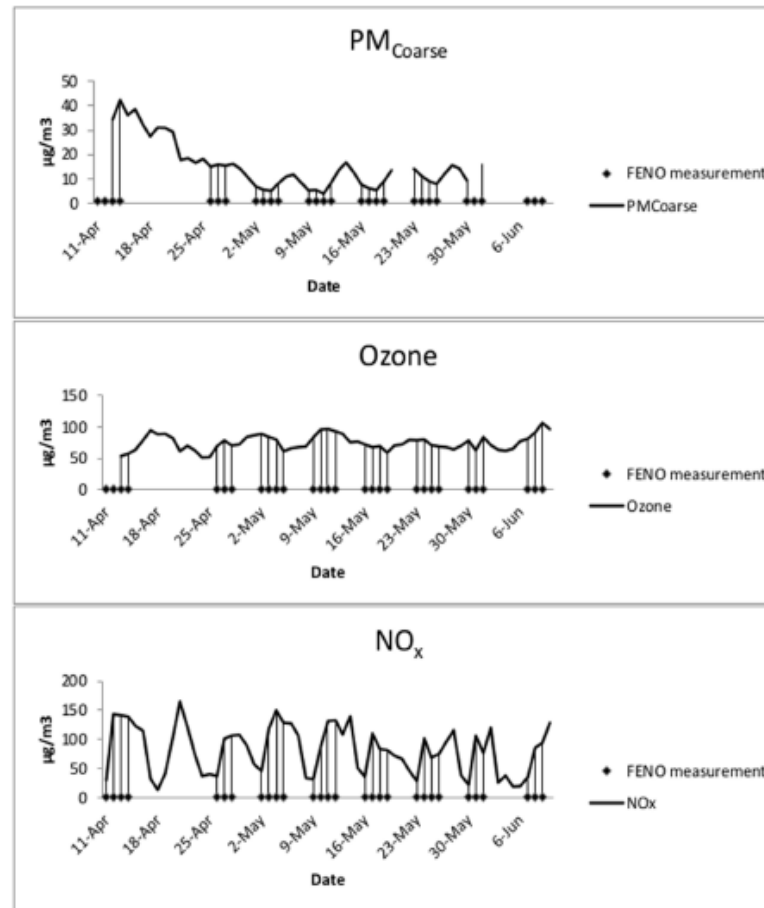


Figure 1. Daily concentrations of NO<sub>x</sub>, O<sub>3</sub> and PM<sub>coarse</sub> during the study period and indications of study days.

## Grova partiklar (PM<sub>2.5-10</sub>) gav en signifikant ökning

In the multi-pollutant models, 24 h PM<sub>coarse</sub> exposure was associated with statistically significant increases in FENO from 6.9 ppb (95% CI 0.0; 14) to 7.3 ppb (95% CI 0.4; 14.9) per IQR, depending on whether the regression was adjusted for for NO<sub>x</sub>, NO<sub>2</sub> or NO. Seventy-two-hour NO<sub>2</sub> was associated with a significantly increased FENO of 7.3 ppb (95% CI 0.6; 14.6) in the models adjusted for PM<sub>coarse</sub>



# HÄMI-rapport om luftföroreningar och akutbesök för andningsorganens sjukdomar i Stockholm, Göteborg och Malmö

Sambandet mellan luftföroreningshalter och akuta vårdkontakter för luftvägssjukdomar som hälsoindikator för luftkvalitet

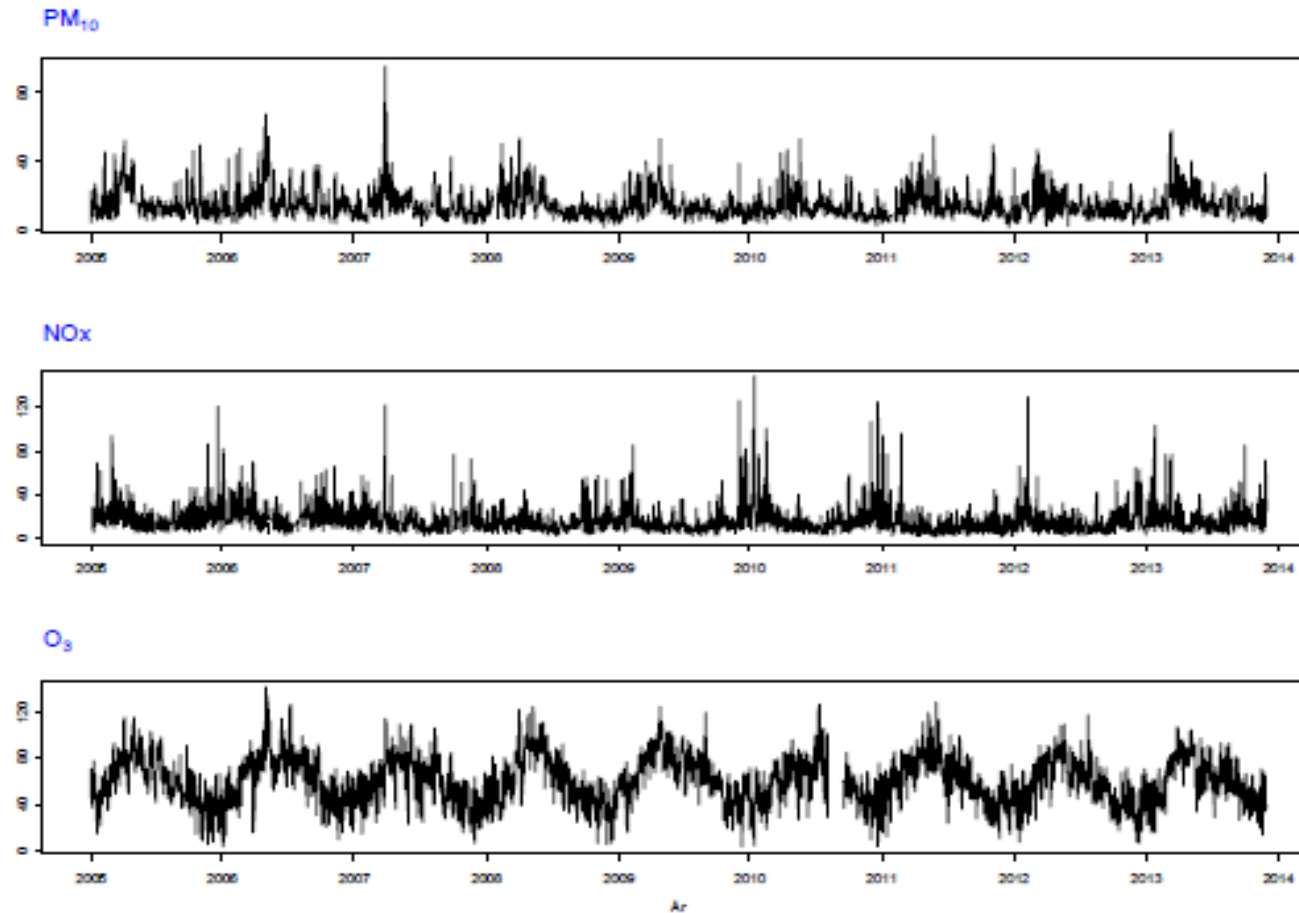
Projektrapport till Naturvårdsverket

Kadri Meister  
Andreas Tornevi  
Bertil Forsberg

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## De direkta effekterna av korta förhöjningar (mv 2 dygn) studeras



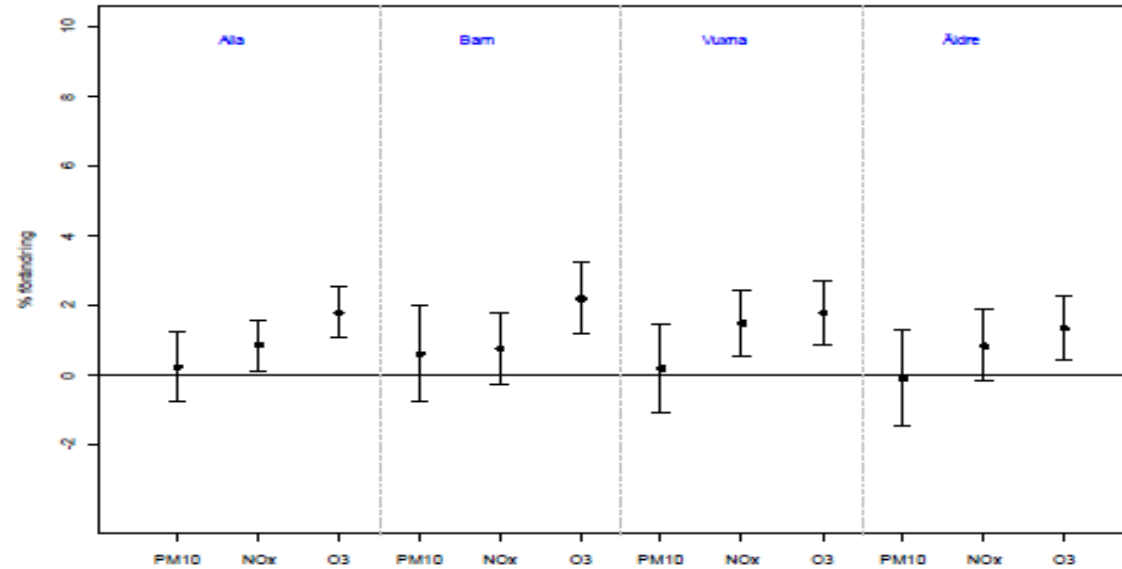
Figur 1. Luftföroreningsalter (dygn) i Stockholm under studieperioden ( $\mu\text{g}/\text{m}^3$ ).

## Antal akuta besök per dygn

Tabell 2. Antal akutbesök för sjukdomar i andningsorganen per åldersgrupp

	Andningsorgan			
	totalt	barn	vuxna	äldre
<b>Stockholm</b>				
Minimum	30	2	9	5
Maximum	387	181	168	86
Medelvärde	136,6	52,8	53,9	29,9
<b>Göteborg</b>				
Minimum	5	0	0	0
Maximum	115	62	54	40
Medelvärde	50,1	17,8	18,4	13,8
<b>Malmö</b>				
Minimum	3	0	0	0
Maximum	118	55	58	47
Medelvärde	41,0	15,0	16,2	9,8

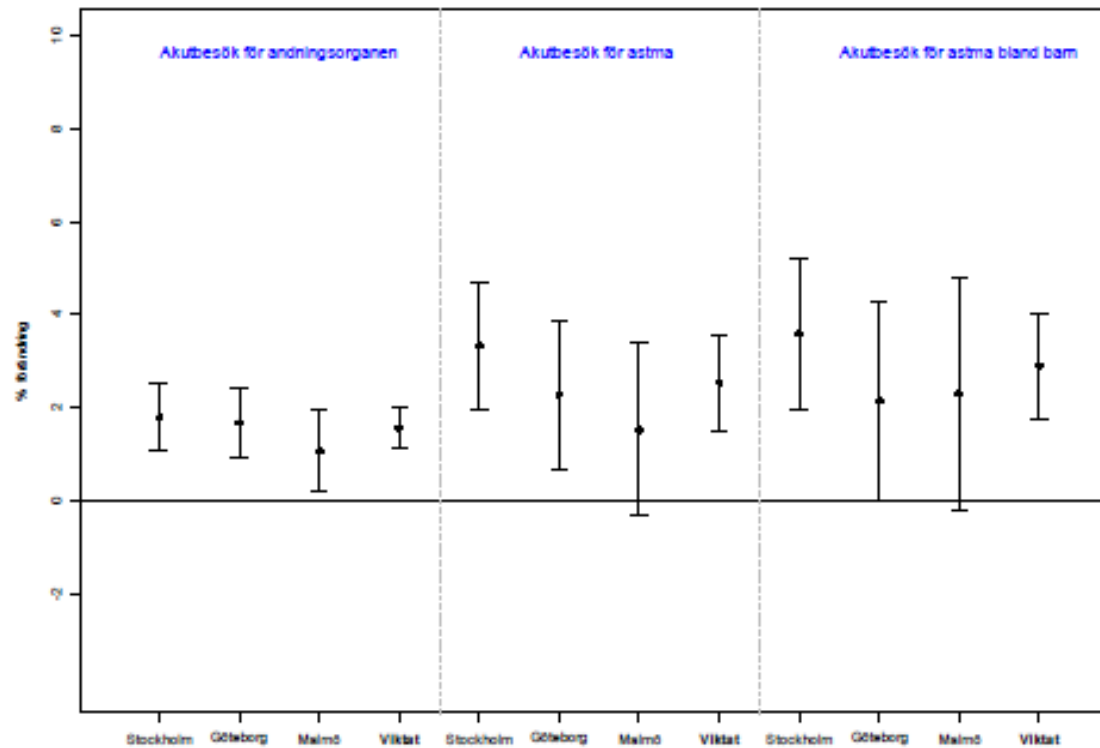
## Resultat: Stockholm alla diagnoser



**Figur 2.** Procentuell förändring (med 95% konfidensintervall) av dagligt antal akutbesök för andningsorganen per 10  $\mu\text{g}/\text{m}^3$  högre halt i Stockholm.

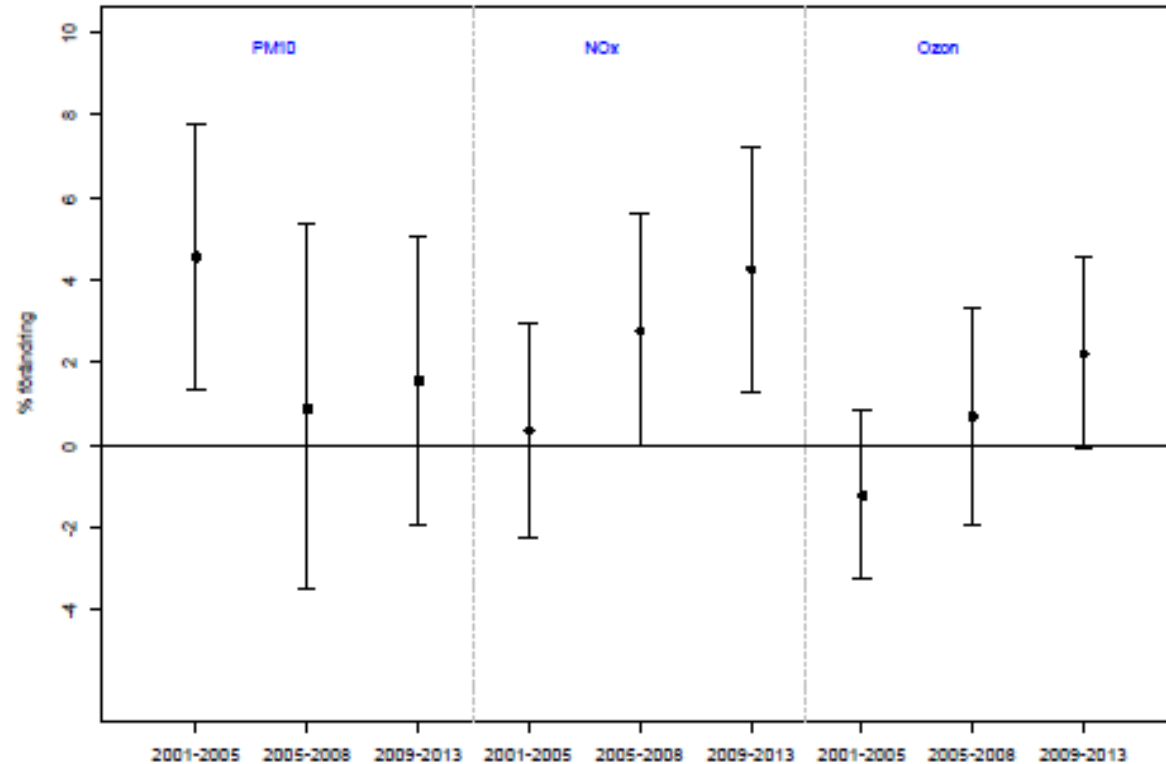


## Resultat: Ozon, alla städer, alla diagnoser



Figur 8. Procentuell förändring (med 95% konfidensintervall) av dagligt antal akutbesök per 10 µg/m<sup>3</sup> högre halt av ozon, per stad och sammanvägt för alla tre städer.

## Resultat: Vissa tidstrender indikeras (här Nox och ozon i Malmö)



Figur 20. Procentuell förändring (med 95% konfidensintervall) av dagligt antal akutbesök för astma per 10 µg/m<sup>3</sup> högre halt i Malmö.



Tack för uppmärksamheten!