



**II Giornate Italiane Mediche dell'Ambiente**  
**Arezzo 29 Nov. – 1 Dic. 2007**  
**La Pandemia Silenziosa**

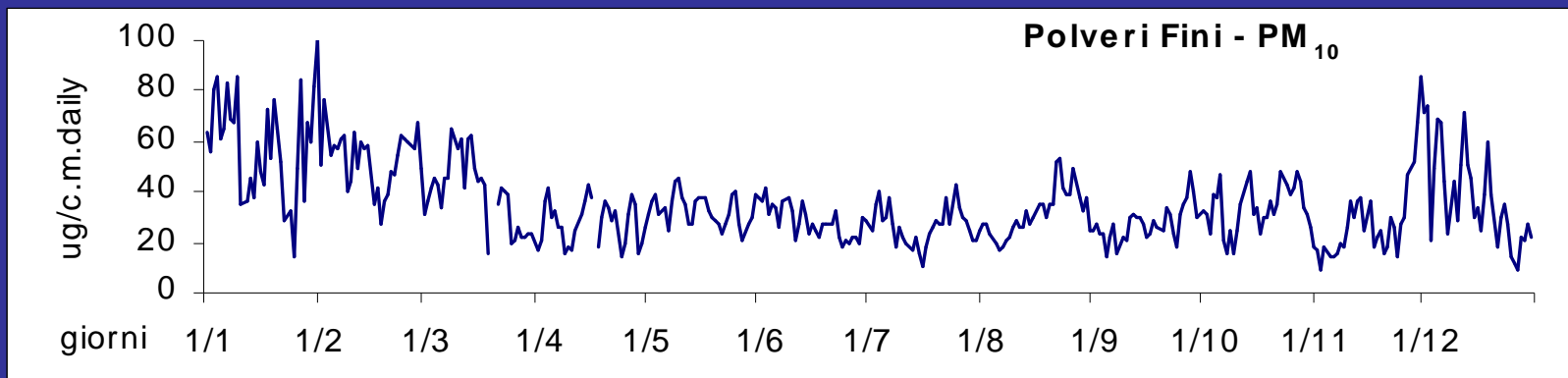
# **Danno respiratorio nei bambini residenti in aree urbane**

## **Effetti acuti**

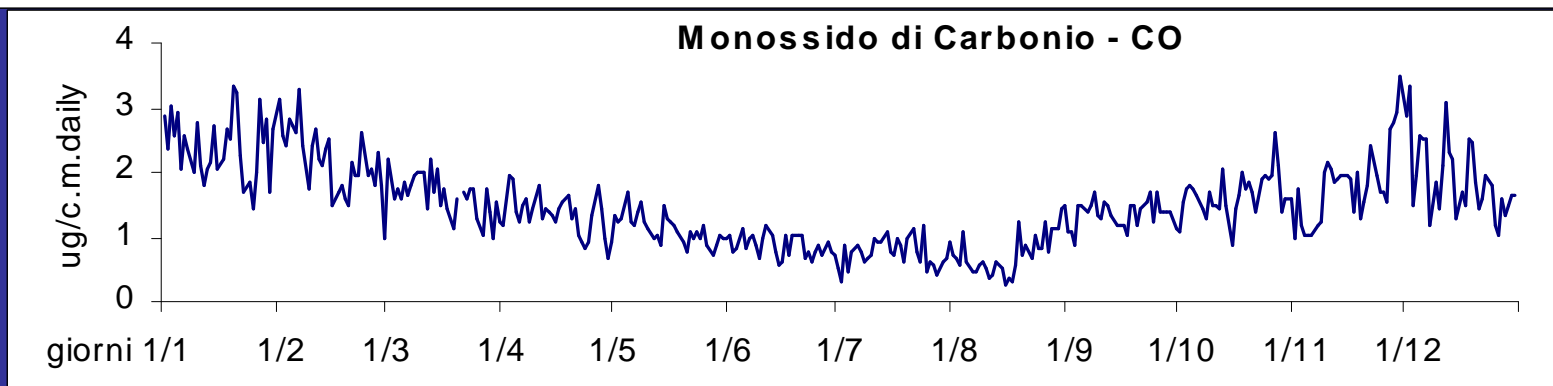
**Maria Angela Vigotti**

**Dipartimento di Biologia -Universita' di Pisa**  
**Unita' di epidemiologia -IFC-CNR-Pisa**

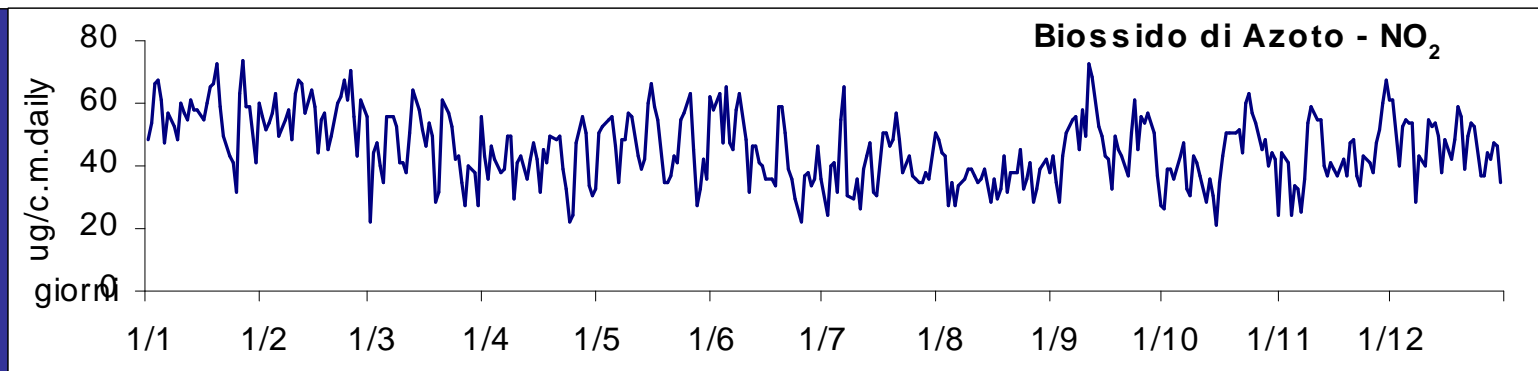
## Medie giornaliere Pisa, nel 2000



**PM<sub>10</sub>**



**CO**



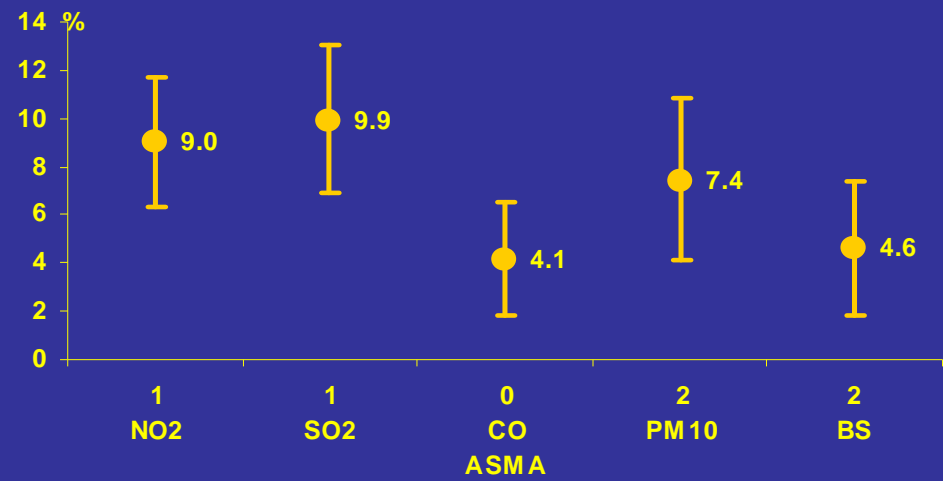
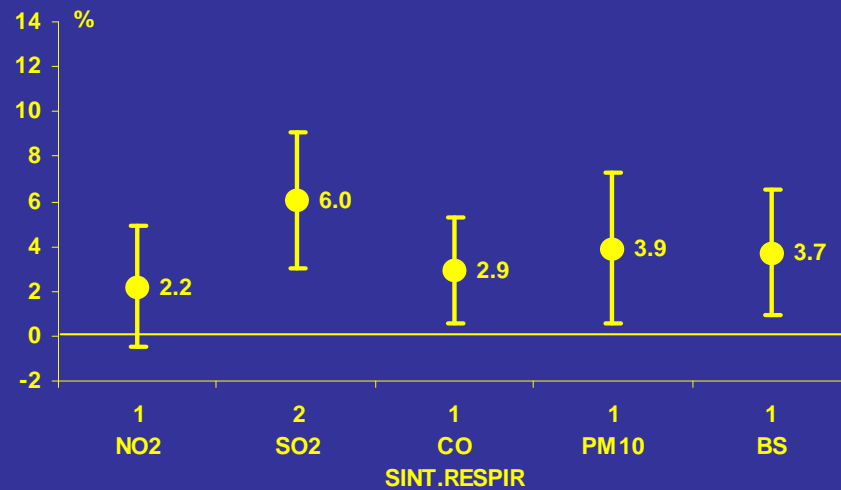
**NO<sub>2</sub>**

# Inquinamento e salute: piramide degli effetti acuti



# Aumento % di ricorsi al PS per sintomi respiratori ed asma, bambini 0-14 anni, Londra, 1992-94

Atkinson RW et al, Eur Respir J, 1999



# Urban Air Pollution and Emergency Visits for Respiratory Complaints in Pisa, Italy

**Ricorsi al pronto soccorso dell'ospedale S. Chiara per sintomi respiratori nel 2000**

**Bambini (<10 anni) e anziani (65+) residenti**

**503 bambini**

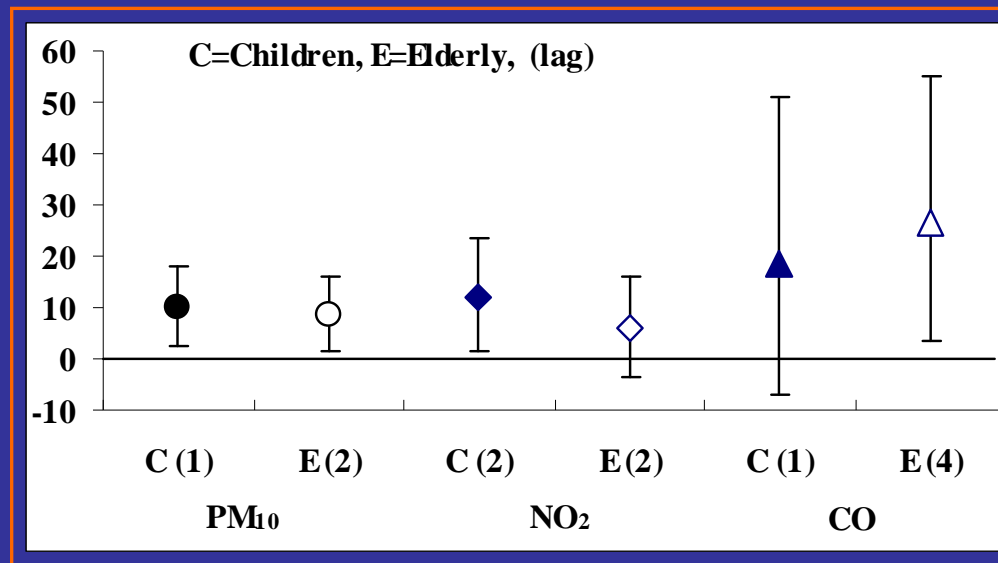
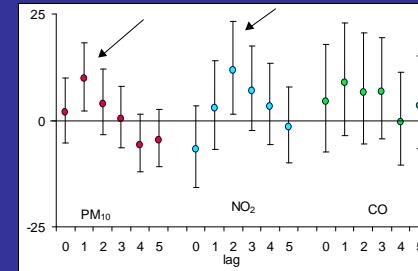
**533 visite (91% singole)**

**Eta' media: 4 anni**

**373 Anziani**

**433 visite (escl. dispnea) (91,7% singole)**

**Eta' media 73 anni**



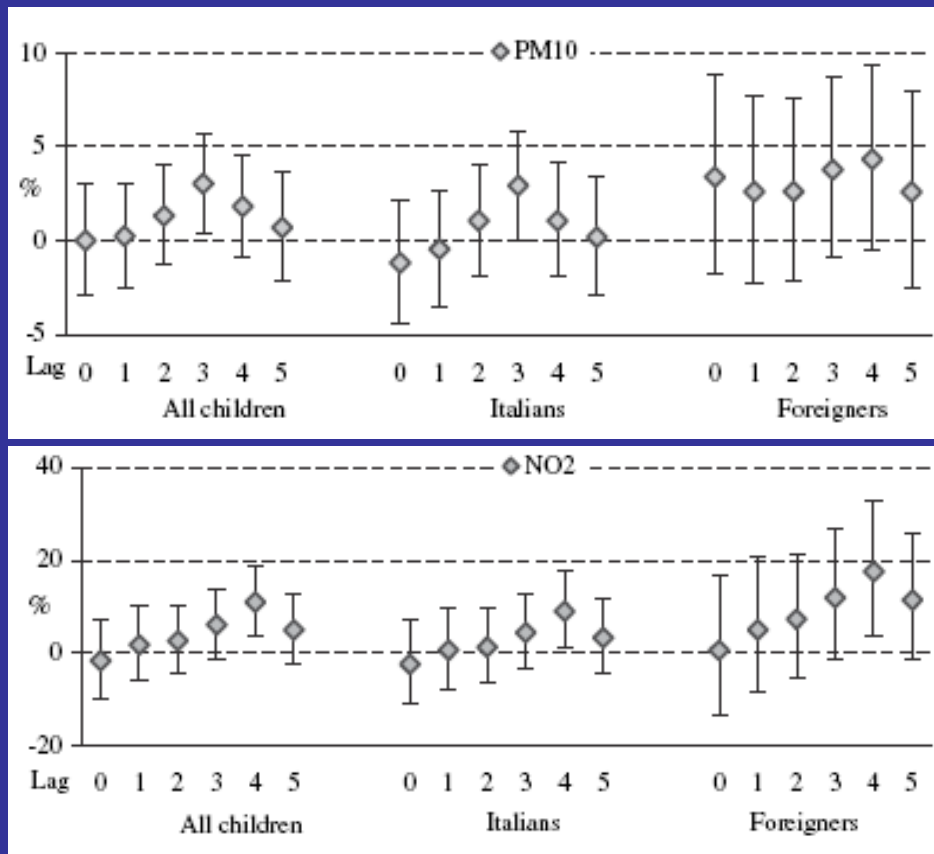
**Aumento % se nei giorni precedenti (lag) si e' verificato un aumento di 10  $\mu\text{g}/\text{m}^3$  di  $\text{PM}_{10}$  o di  $\text{NO}_2$  o di 1  $\text{mg}/\text{m}^3$  di CO**

*MA Vigotti, F Chiaverini, P Biagiola, G Rossi.*

*Journal of Toxicology and Environmental Health, Part A, 70: 266-269, 2007*

## Urban Air Pollution and Respiratory Emergency Visits at Pediatric Unit, Reggio Emilia, Italy

Bambini < 15 anni  
2001-2002  
1051 visite  
497 maschi  
715 una sola visita  
210 stranieri



E Bedeschi, C Campari, S Candela, G Collini, N Caranci, G Frasca, C Galassi,  
G Francesca, MA Vigotti

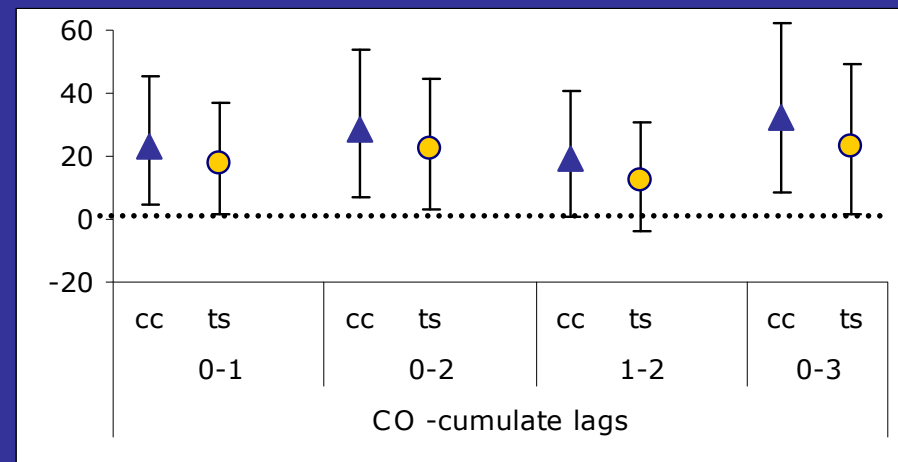
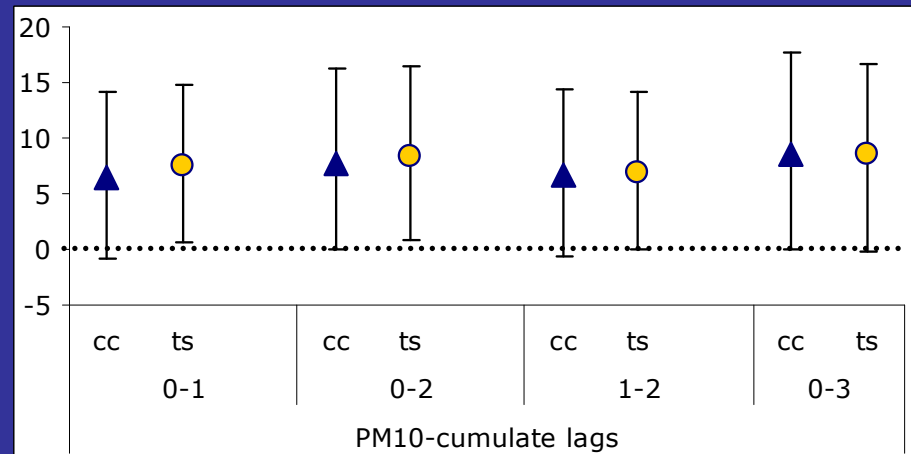
*Journal of Toxicology and Environmental Health, Part A, 70: 261–265, 2007*

**Pisa 1998-2002**  
**Ricoveri respiratori**  
**Bambini <10 anni**

Cause ICD.9= 460-469, 480-519,  
 Escluso influenza ICD 9: 487).

660 bambini  
 400 maschi  
 150 in estate

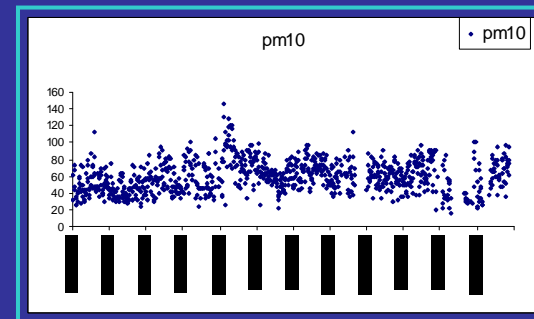
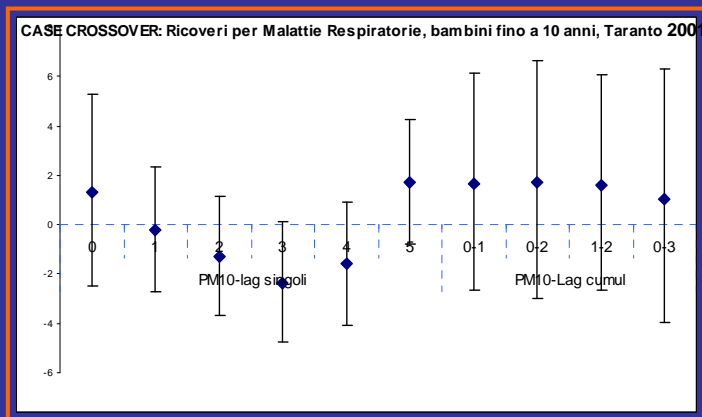
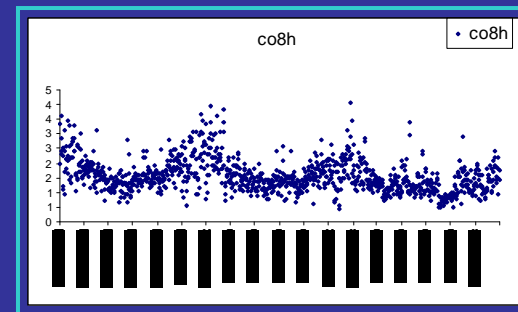
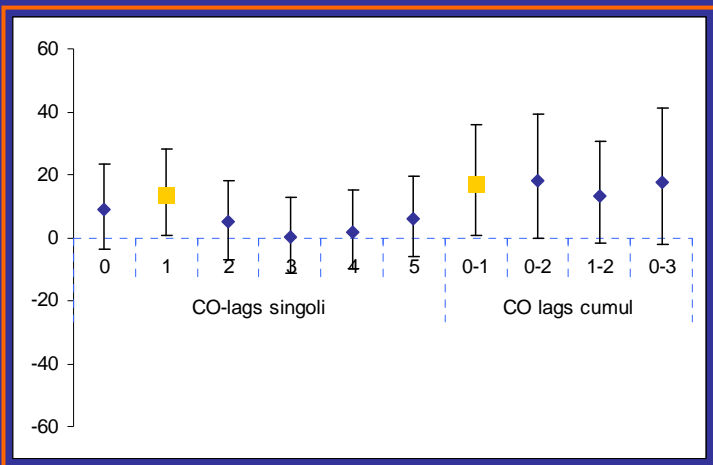
Effetti piu' ampi  
 nei maschi  
 In estate



**Urban Air Pollution and Children Respiratory Hospital Admissions: a case crossover and a time series approach**  
 MA Vigotti, M Serinelli, L Marchini

# Effetti ACUTI:

## Taranto 2001-2003 Ricoveri respiratori Bambini <10 anni



	mean	devst	min	max
PM10	59.64	(18.78)	16	146
CO-8h	1.56	(0.56)	0	4
NO2	34.6	(16.35)	6	123
O3 -8h	68.7	(24.19)	16	153
Humidity	70.0	(14.86)	22	97
Temperature apparente(°C)	16.7	(8.14)	-1	34
pressione (hPa)	1016.2	(7.03)	994	1035

## Effetti ACUTI:

**Ricoveri, 1998-2002: valori% per diagnosi e livelli di PM<sub>10</sub> (lag01)**

**Pisa**

Livello PM-10	Tutti i ricoveri	Malattie Respir.	Malattie Endocr.	Malattie del Sangue
Altissimo	7,8	9,8	10,1	9,3
Alto	24,1	27,8	25,3	26,2
Normale	39,9	37,2	39,4	35,5
Basso	28,2	25,2	25,2	28,9
	100,0	100,0	100,0	100,0

**Circoscrizione n.5**  
Don Bosco,  
Cisanello

Altissimo	7,7	11,5	9,5	9,0
Alto	23,8	28,0	24,5	22,4
Normale	40,7	34,2	39,0	33,7
Basso	27,8	26,2	27,0	34,8

**Circoscrizione n.5**  
Bambini 2-10 anni

Altissimo	9,3	16,5
Alto	25,2	29,1
Normale	37,8	27,8
Basso	27,6	26,9

## Pisa 1998-2002, Analisi delle diagnosi principali dei ricoveri in ospedalieri

# Risultati ottenuti con il Clustering

```
"Temp_Discr" :
"Caldisssimo" -> 0.000392
"Caldo" -> 0.000294
"Freddissimo" -> 0.11165
"Freddo" -> 0.314479
"Fresco" -> 0.429369
"Mite" -> 0.14381
"influ" :
0 -> 0.807666
1 -> 0.192334
"livello So2" :
-> 0.17557
"Altissimo" -> 0.009019
"Alto" -> 0.404471
"Basso" -> 0.052054
"normale" -> 0.358886
"livello No2" :
"Alto" -> 0.772376
"basso" -> 0.005294
"normale" -> 0.222331
"livello Coh8" :
"alto" -> 0.955201
"normale" -> 0.0448
"livello Pm10" :
"Altissimo" -> 0.255857
"Alto" -> 0.577787
"Basso" -> 0.024409
"Normale" -> 0.141947
"livello O38h" :
"Altissimo" -> 0.01294
"Alto" -> 0.042349
"Basso" -> 0.473288
"Normale" -> 0.471424
"livello Pressione" :
-> 0.031566
"Alta" -> 0.596706
"Bassa" -> 0.120674
"Normale" -> 0.251054
"Diagno_Discr" :
"Chemioterapia" -> 0.009215
"Complic_Grav_Abort" -> 0.06068
"Condiz_Morbose_Perinatali" -> 0.013
"Disturbi_Psichici" -> 0.033722
"Malat_Appar_Digeren" -> 0.091266
"Malat_Appar_Respir" -> 0.076071
"Malat_Cute" -> 0.016567
"Malat_Endocrine" -> 0.021664
"Malat_Genito_Urinarie" -> 0.052446
"Malat_Osteomuscol" -> 0.059896
"Malat_Sist_Circolat" -> 0.158613
"Malat_Sist_Nervoso" -> 0.08656
"Malat_del_Sangue" -> 0.007352
"Mese_Discr" :
1 -> 0.229879
10 -> 0.094893
11 -> 0.104696
12 -> 0.147841
2 -> 0.238996
3 -> 0.149692
4 -> 0.015489
6 -> 0.000392
7 -> 0.000294
9 -> 0.01843
```

CLUSTER

Temperatura: Freddo/Fresco  
Livelli di

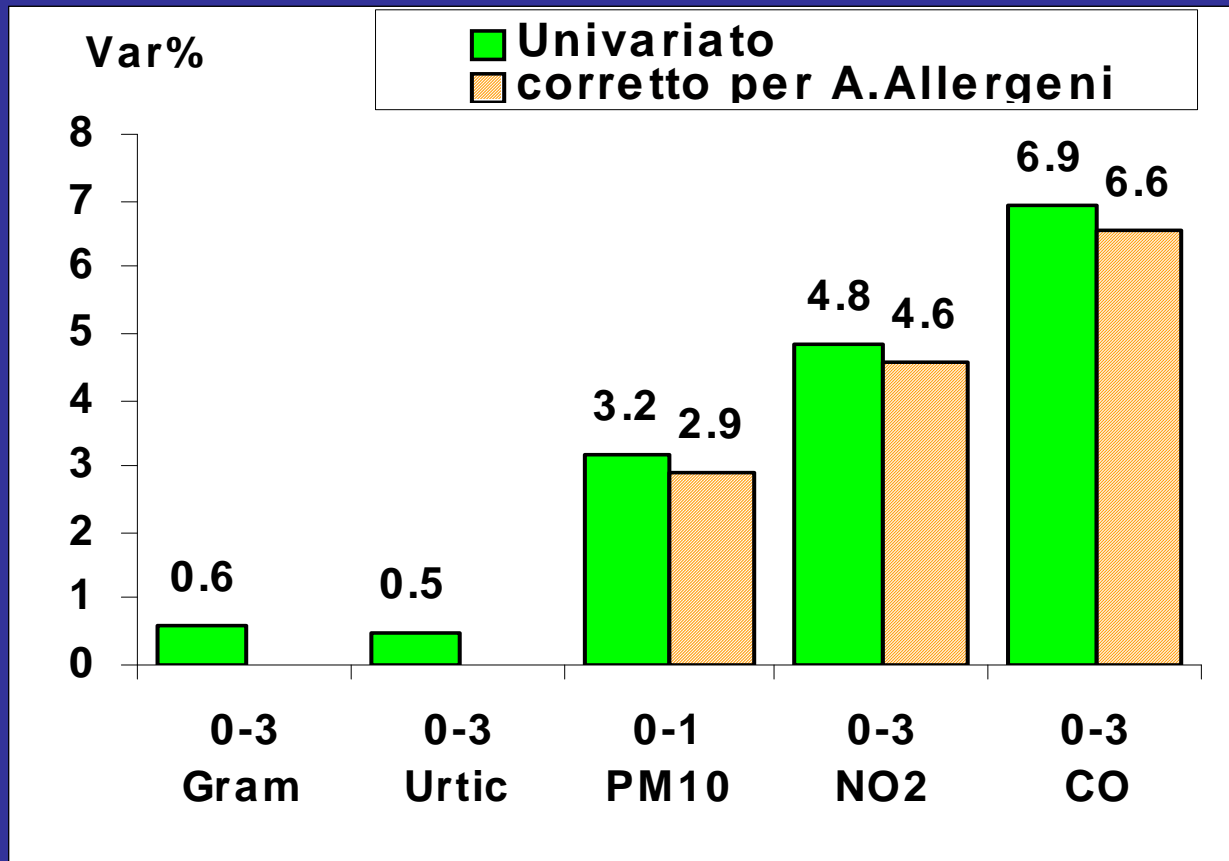
SO<sub>2</sub>: Alto  
NO<sub>2</sub>: Alto  
CO: Alto  
PM10: Alto/Altissimo  
Ozono: Basso  
Pressione: Alta  
Mese: Gennaio/Febbraio

Diagnosi: M.App.Respiratorio

Questo cluster descrive una situazione tipicamente invernale, in cui il freddo e la pressione alta contribuiscono al ristagnare delle sostanze inquinanti nelle città.

In tali condizioni la % di ricoveri per malattie dell'apparato respiratorio risulta più alta (7,6%) rispetto alla media della distribuzione (5,7%)

Aumento % del numero di visite al PS pediatrico per patologie respiratorie con sibilo in bambini 0-2 anni, in cinque città italiane, 1996-1998



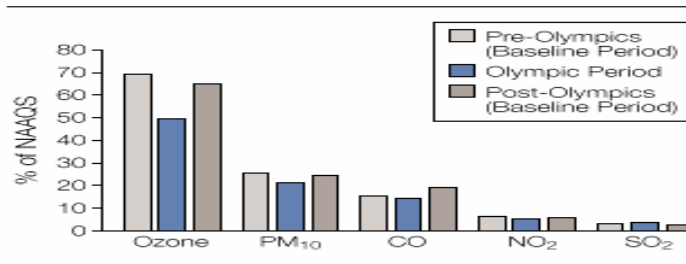
**Table 1.** Acute Asthma Events and Acute Nonasthma Events Among Children and Youth During the 1996 Summer Olympic Games Compared With the 1996 Summertime Baseline Period

Data Source	Type of Asthma Event	Acute Asthma Events			Acute Nonasthma Events		
		Mean (SD) No. of Events Per Day		% Change	Mean (SD) No. of Events Per Day		% Change
		Baseline Period <sup>§</sup>	Olympic Period <sup>†</sup>		Baseline Period <sup>§</sup>	Olympic Period <sup>†</sup>	
Georgia Medicaid claims file	Emergency care and hospitalizations	4.23 (2.81)	2.47 (1.46)	-41.6	100.5 (18.6)	97.4 (16.4)	-3.1
Health maintenance organization	Emergency care, urgent care, and hospitalizations	1.36 (1.63)	0.76 (0.83)	-44.1	37.6 (19.6)	38.1 (18.4)	+1.3
Pediatric emergency departments	Emergency care and hospitalizations	4.77 (2.52)	4.24 (2.49)	-11.1	118.4 (20.5)	115.9 (15.9)	-2.1
Georgia Hospital Discharge Database	Hospitalizations	2.04 (1.53)	1.65 (1.50)	-19.1	19.7 (5.1)	19.9 (3.5)	+1.0

<sup>§</sup>Defined as June 21–July 18 and August 5–September 1, 1996.

<sup>†</sup>Defined as July 19–August 4, 1996.

**Figure 3.** Mean Levels of Major Pollutants Before, During, and After the 1996 Summer Olympic Games as a Percentage of the National Ambient Air Quality Standard (NAAQS)



National Ambient Air Quality Standard at time of study: ozone 1-hour peak average, 120 ppb; particulate matter of 10  $\mu\text{m}$  or smaller (PM<sub>10</sub>) 24-hour average, 150  $\mu\text{g}/\text{m}^3$ ; carbon monoxide (CO) 8-hour average, 9 ppm; nitrogen dioxide (NO<sub>2</sub>) 1-hour peak average, 600 ppb; sulfur dioxide (SO<sub>2</sub>) 24-hour average, 140 ppb.<sup>35</sup>

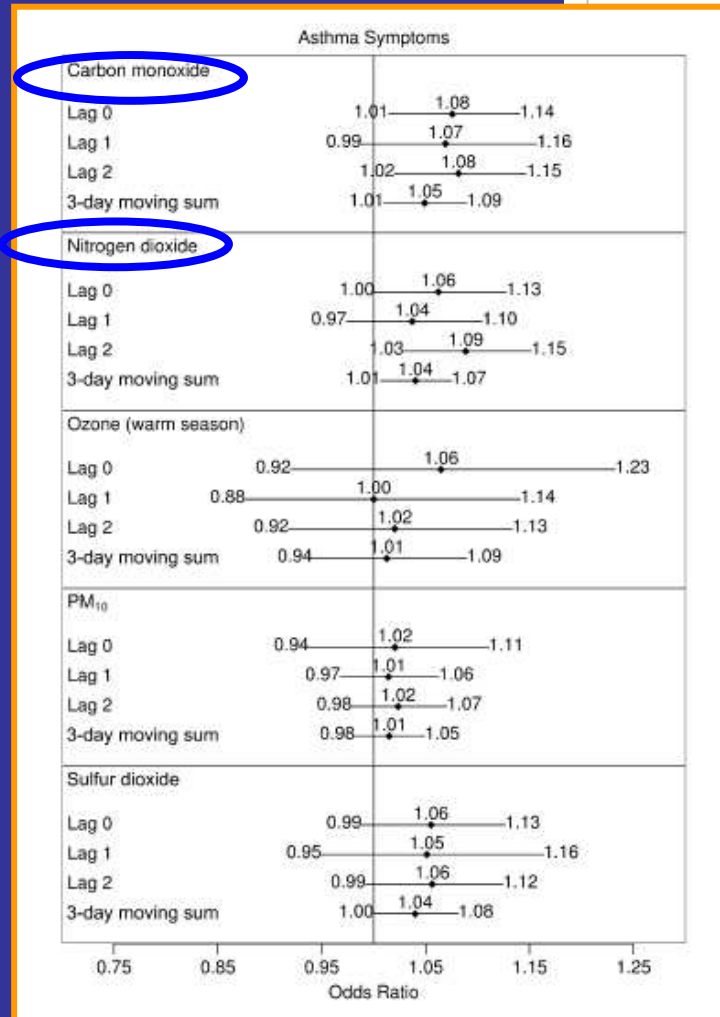
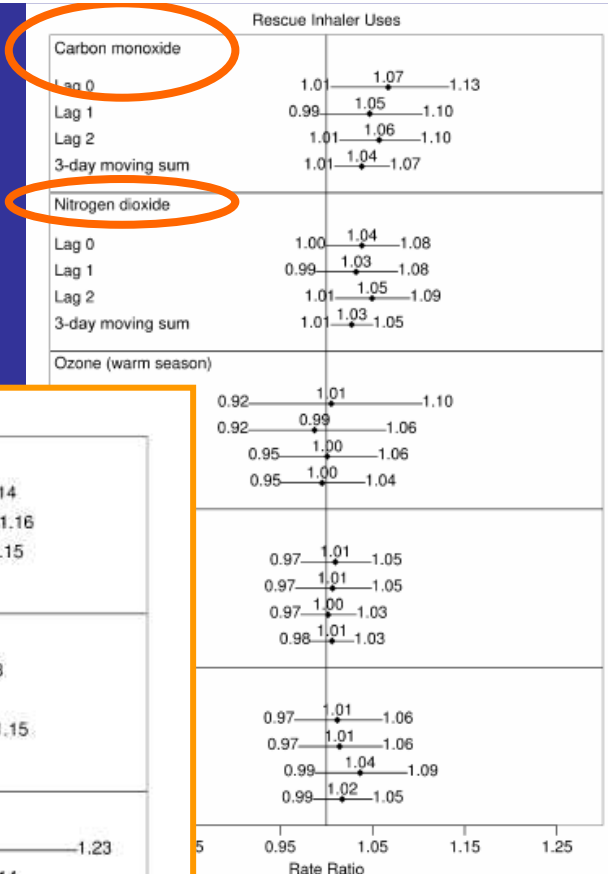
Original Contribution

**Ambient Air Pollution and Asthma Exacerbations in Children: An Eight-City Analysis**

Jonathan S. Schildcrout<sup>1</sup>, Lianne Sheppard<sup>2,3,4</sup>, Thomas Lumley<sup>2,3</sup>, James C. Slaughter<sup>5</sup>, Jane Q. Koenig<sup>3,4</sup>, and Gail G. Shapiro<sup>6</sup>

990 children  
 8 North American cities  
 22-month  
 (Nov. 1993–Sept. 1995)  
 prerandomization phase  
 of the **Childhood Asthma  
 Management Program  
 (CAMP)**

From the time when diary card completion began until randomization, children used albuterol as needed for symptoms and oral prednisone for exacerbations **but were restricted from daily controller medication.**





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Arezzo 29 Nov. – 1 Dic. 2007  
La Pandemia Silenziosa**

**Grazie per l'attenzione**

**Maria Angela Vigotti**

