



TRT TRASPORTI E TERRITORIO SRL

Low emission zones for transport in the Benelux?

BIVEC – GIBET

Leuven Faculty Club, 28 March 2012

Milano, from pollution charge to congestion charge

Angelo Martino

TRT Trasporti e Territorio

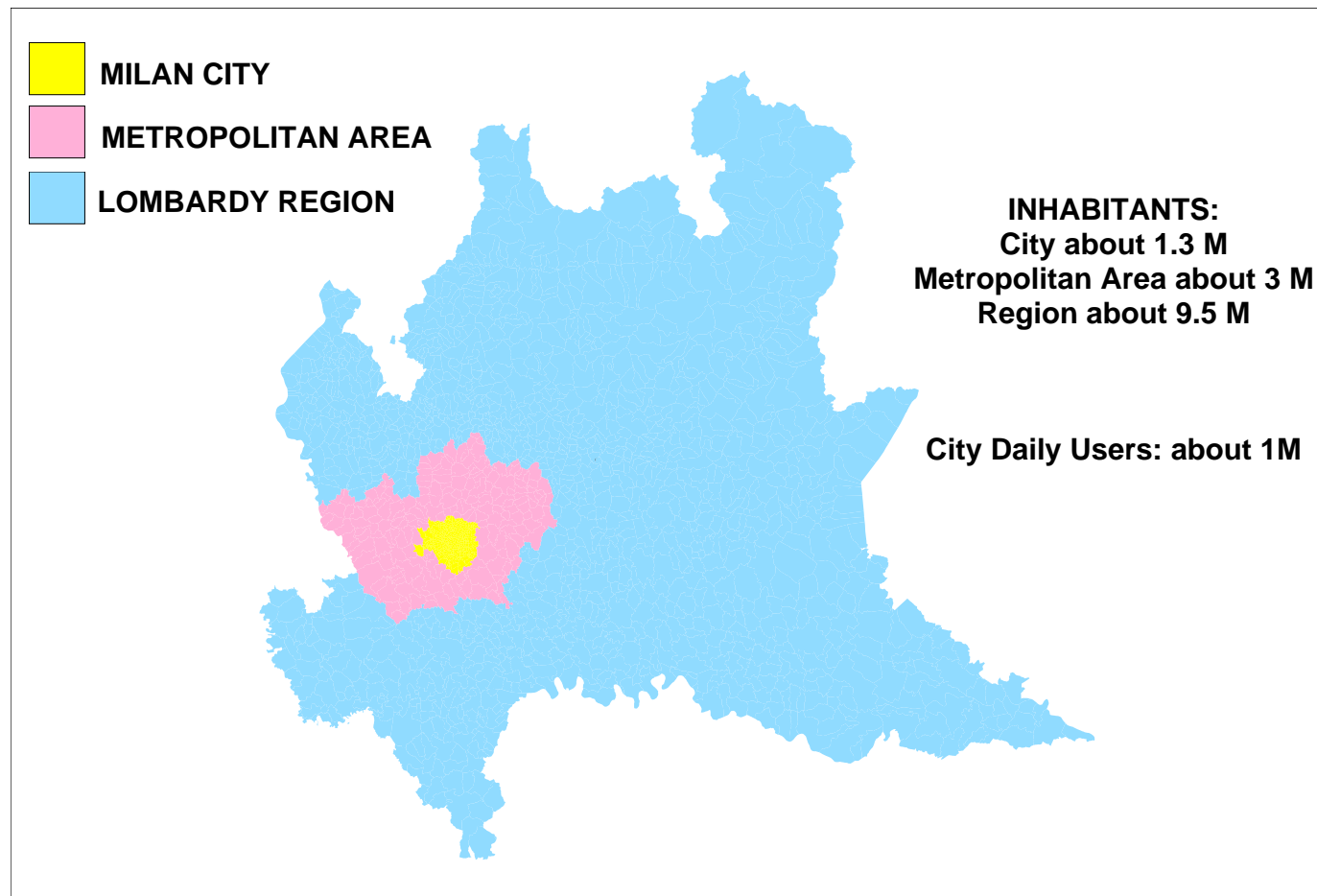




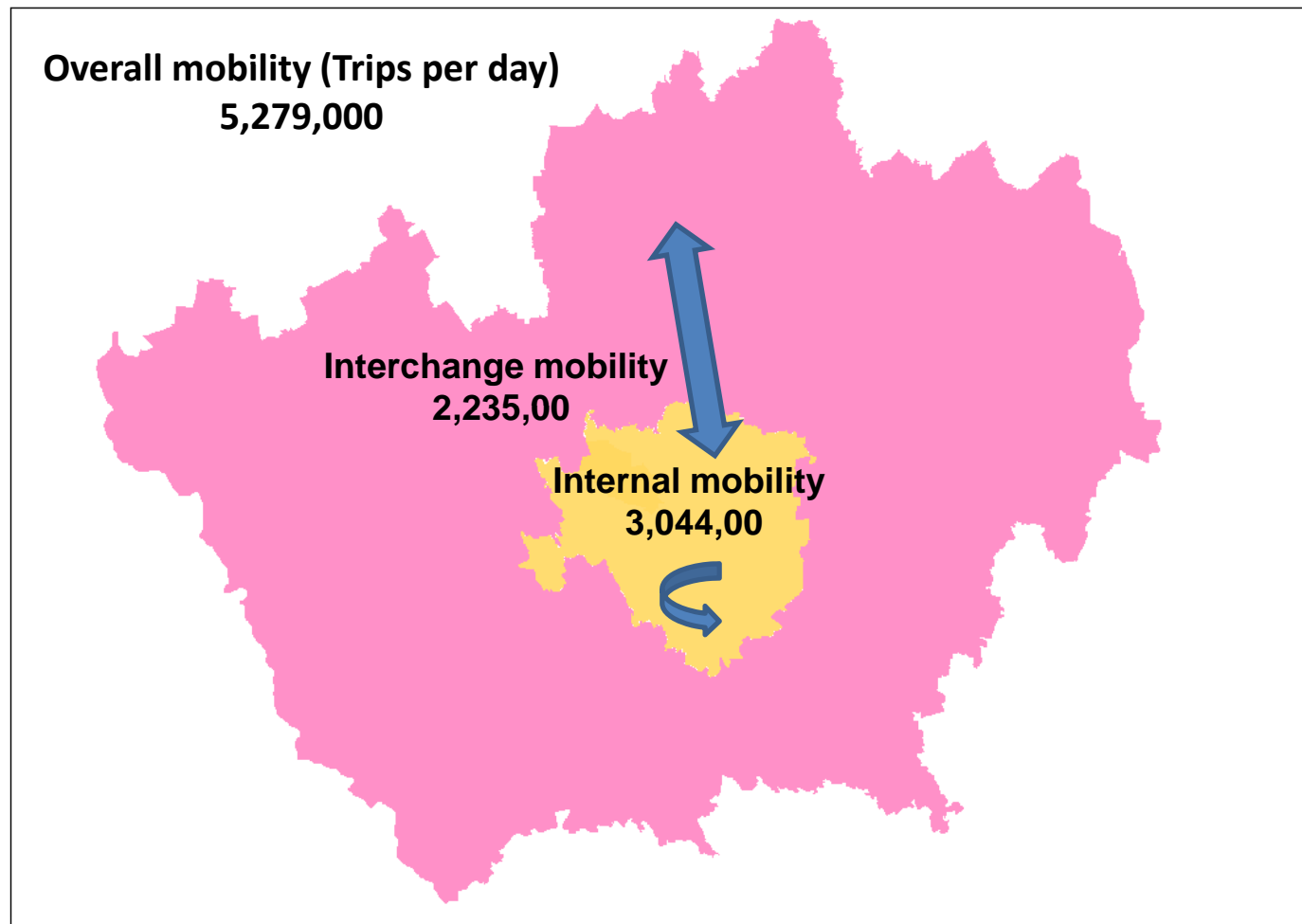
Content of the presentation

- **Mobility in Milan**
- **Ecopass system (2008-2011)**
- **AreaC system (2012-2013)**

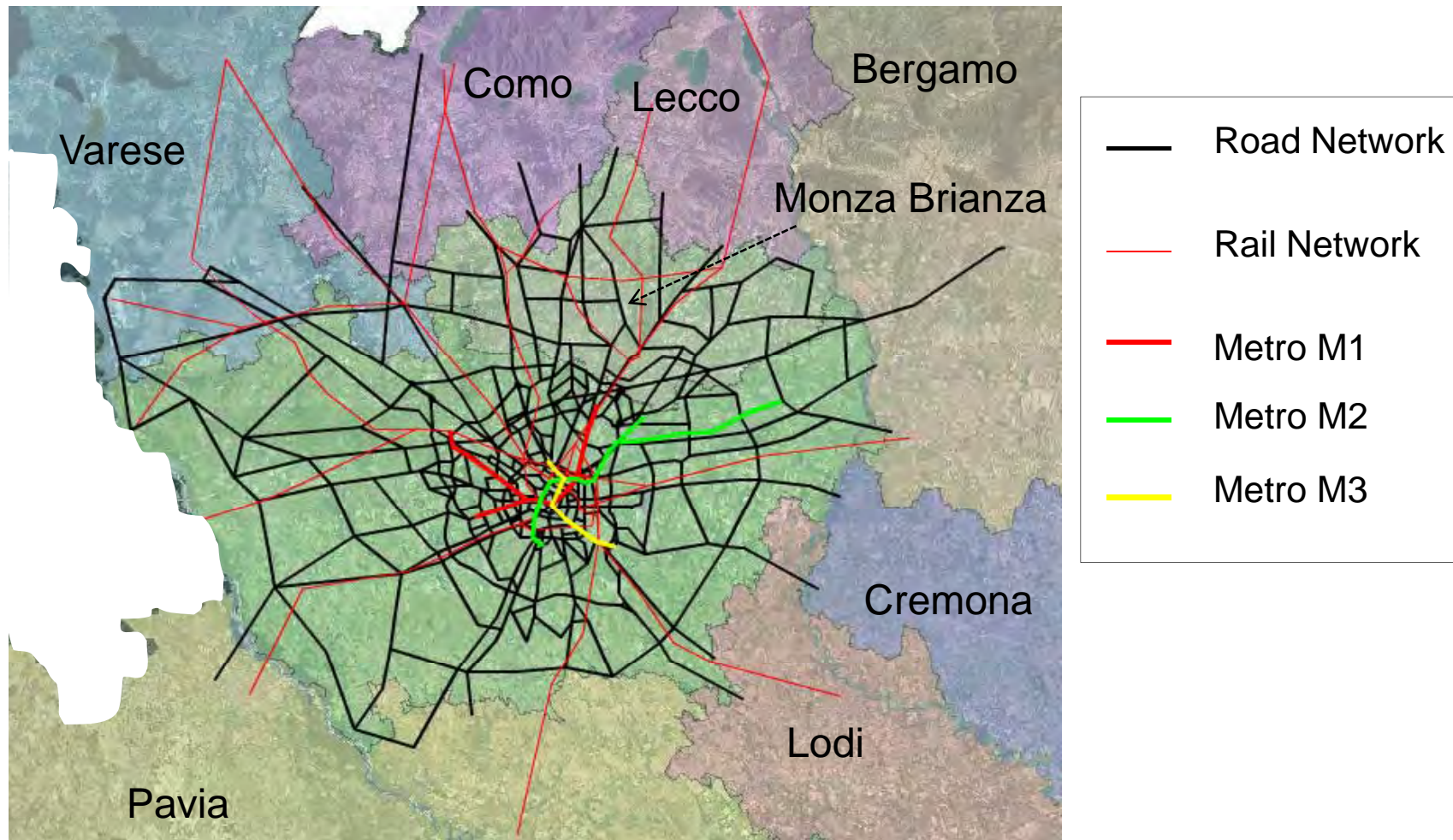
Milan, the metropolitan area and the region



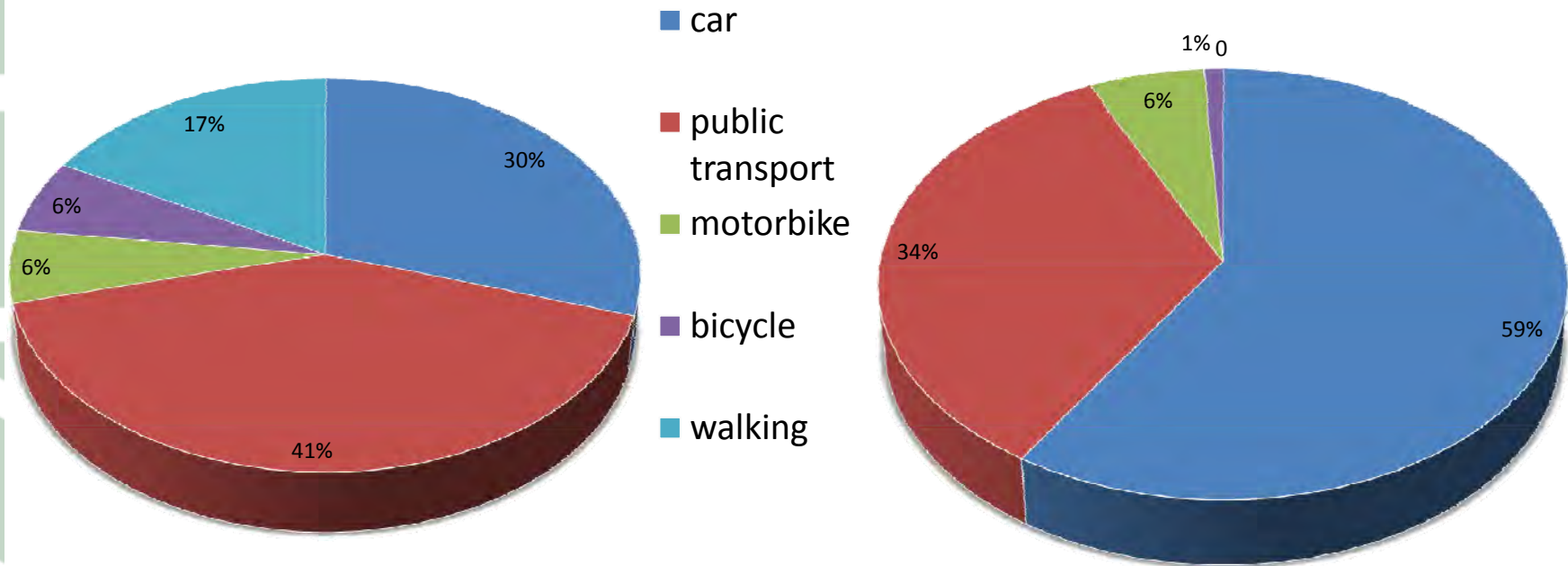
Milan and the metropolitan area



Metropolitan Area Transport Network



Milan: modal split



Internal trips

Interchange trips

2,220,000 trips by car per day

**230,000 trips entries in the central ring
(2007 - before Ecopass - 7 to 9 am)**

The ECOPASS system

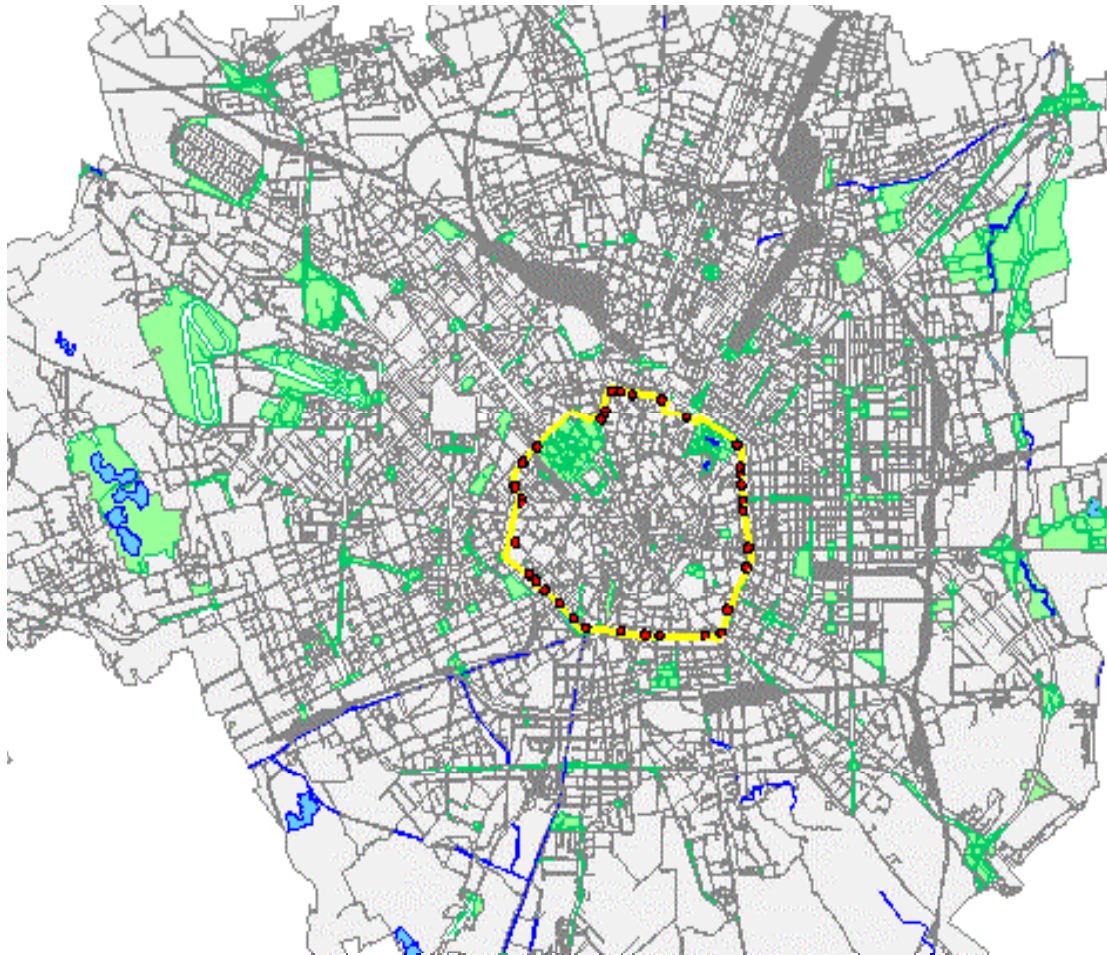


- **ECOPASS** started operating on 2 January 2008 in the Milan central city ring zone known as “Cerchia dei Bastioni”
- **ECOPASS** is a Limited Traffic Zone (LTZ) scheme: vehicles are charged to enter the area and the fee structure is based on the vehicles' emission standards.

Objectives

- ✓ reduce road congestion within the urban area
- ✓ improve transport safety across the modes
- ✓ improve public transport service quality
- ✓ introduce technical innovation
- ✓ improve air quality
- ✓ improve urban freight distribution

ECOPASS charging area «cerchia dei Bastioni»



AREA

- 8.2 Km² (4.5%)
- 77,000 residents (6%)
- 43 entry points

OPERATING TIMES

- Weekdays from 7.30 am to 7.30 pm

Ecopass pollution classes



POLLUTION CLASS	VEHICLE EURO CATEGORY	DAILY ECOPASS
Class 1	gpl - methane - elettrico – hybrid	FREE
Class 2	Euro 3, 4 and 5 petrol cars and goods vehicles Euro 4 and 5 diesel cars Goods vehicles with diesel particulate filter	FREE
Class 3	Euro 1, 2 petrol cars and goods vehicles	2 €
Class 4	pre-Euro petrol cars and goods vehicles Euro 1, 2 and 3 diesel cars Euro 5, 4 and 3 diesel goods vehicles Euro 4 and 5 diesel buses	5€
Class 5	pre-Euro diesel cars pre-Euro, Euro 1 and 2 diesel goods vehicles	10€

Ecopass payment systems



Ecopass entry tickets could be activated:

- ✓ **cash**
- ✓ **credit card**
- ✓ **internet**



Ecopass enforcement



ANPR

Automatic Number Plate
Recognition



ECOPASS impact



Year 2010 compared to year 2007

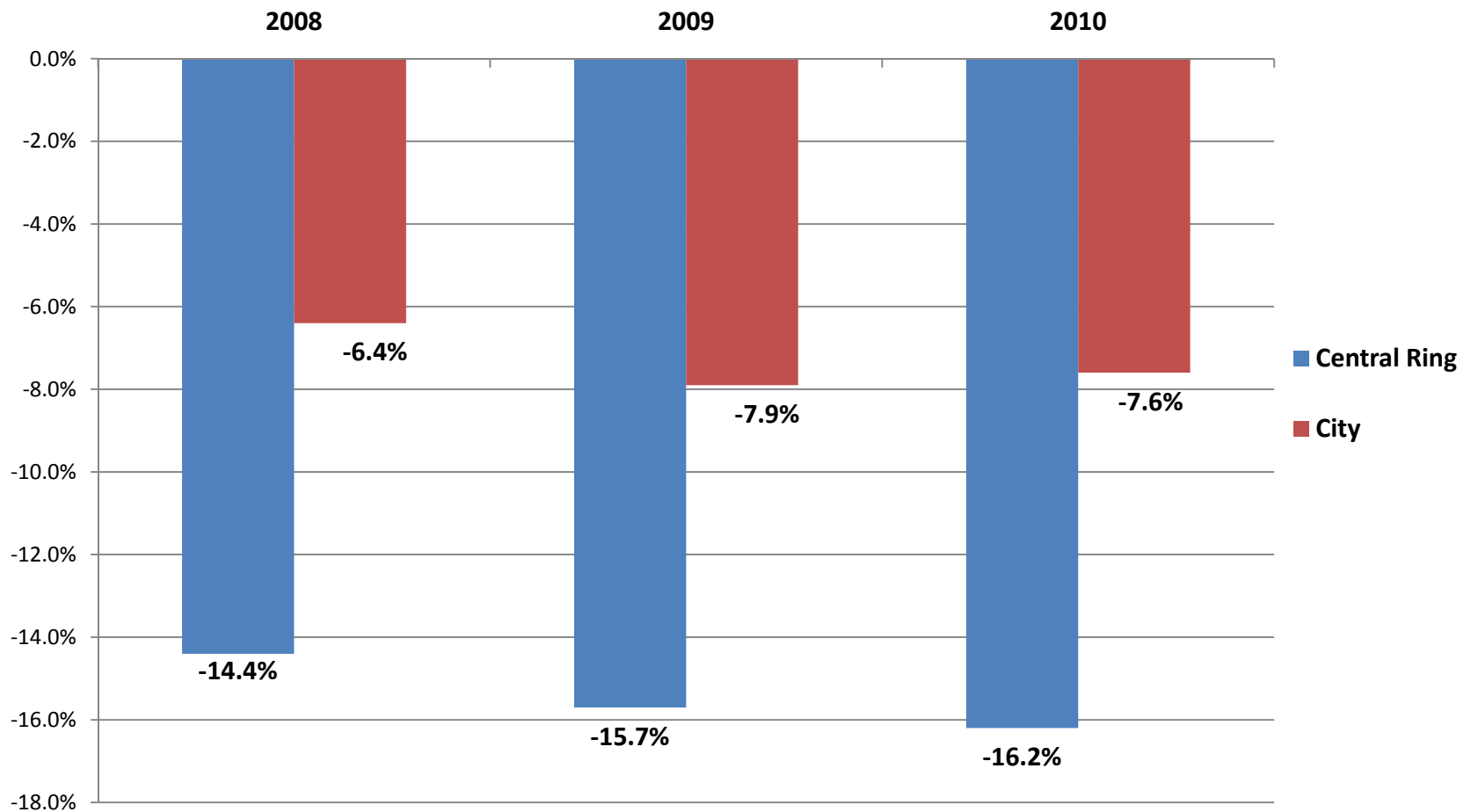
- ✓ Commercial and private traffic during ECOPASS hours - **16.2%**
- ✓ Polluting vehicles (fee-paying classes) - **67.9%**
- ✓ Accidents - **12.8%**
- ✓ Public transport operating speed + **7.9%**
- ✓ Public transport passengers + **8.1 %**
- ✓ Daily average emissions of pollutants in the ECOPASS area:
 - Total PM10 - **15%**
 - Exhaust PM10 - **25%**



ECOPASS impact on traffic



Car trips entering the Ecopass area



ECOPASS impact on vehicle fleet



Vehicles' categories entering the ECOPASS Area

Private	November 2007	February 2008	June 2011
Class 1	1,3%	2,6%	9,0%
Class 2	60,0%	77,3%	76,5%
Class 3	14,0%	8,9%	3,5%
Class 4	24,7%	11,2%	10,9%
Class 5	0,0%	0,0%	0,0%
Paying classes	38,7%	20,1%	14,4%
Commercial	November 2007	February 2008	June 2011
Class 1	0,7%	3,6%	16,9%
Class 2	25,8%	39,3%	47,3%
Class 3	2,7%	2,4%	1,4%
Class 4	50,5%	41,4%	30,2%
Class 5	20,3%	13,2%	4,3%
Paying classes	73,5%	57,0%	35,8%



ECOPASS costs and revenues



	2008	2009	2010
Operation costs (M€)	6.5	n.a.	n.a.
Revenues (M€)	12.5	9.6	8.9
Fines (average n./day)	2960	1960	n.a.
	≈2.6% of total entries	≈2% of total entries	

**Although no precise data are available,
revenues from fines were estimated to be higher
than those from tickets payment**



ECOPASS after 3 years



- ✓ Renewal of the private vehicle fleet
- ✓ Decreasing revenues from ECOPASS
- ✓ Negligeble impacts on air quality
- ✓ Need of additional resources for PT
- ✓ Pressure of environmentalists



ECOPASS referendum - June 2011



REFERENDUM CITTADINO CONSULTIVO DI INDIRIZZO

"Volete voi che il Comune di Milano adotti e realizzi un piano di interventi per potenziare il trasporto pubblico e la mobilità "pulita" alternativa all'auto, attraverso l'estensione a tutti gli autoveicoli - esclusi quelli ad emissioni zero - e l'allargamento progressivo fino alla "cerchia ferroviaria" del sistema di accesso a pagamento, con l'obiettivo di dimezzare il traffico e le emissioni inquinanti?

In particolare gli interventi richiesti sono:

- a. il raddoppio entro il 2012 dell'estensione delle aree pedonali, sia in centro che in periferia, comprendendo per l'intera area della Cerchia dei Navigli a partire dal "Quadrilatero della moda";
- b. il raddoppio entro il 2012 delle aree a traffico moderato - zone a 30 Km/h - e la realizzazione di interventi per la sicurezza stradale dei quartieri residenziali;
- c. la realizzazione entro il 2015 di una rete di piste ed itinerari ciclabili integrati e sicuri di almeno 300 km ed il raddoppio entro il 2012 degli stalli di sosta per le biciclette;
- d. la protezione e "preferenziazione" di tutte le linee di trasporto pubblico entro il 2015, in modo da aumentarne velocità e regolarità;
- e. l'introduzione in tutta la città, a partire dalle aree periferiche, di un servizio diffuso diurno e notturno di "bus di quartiere" in collegamento con le principali fermate del trasporto pubblico, senza costi aggiuntivi rispetto al titolo di viaggio;
- f. l'estensione sull'intero territorio cittadino del servizio di bike sharing, raggiungendo 10.000 bici entro il 2012 e del servizio di car sharing raggiungendo 1.000 auto elettriche entro il 2012;
- g. il prolungamento dell'orario di servizio delle linee metropolitane fino alle ore 1.30 tutte le notti;
- h. il potenziamento del servizio taxi mediante il ripristino del secondo turno che garantisca fino a 8 ore aggiuntive di servizio - "seconda guida" -;
- i. il ripristino del divieto di circolazione e carico e scarico merci nella Cerchia dei Bastioni nelle fasce orarie di picco del traffico mattutine e pomeridiane e la promozione di un sistema di trasporto condiviso con veicoli elettrici;
- j. l'estensione della regolamentazione della sosta in tutta l'area compresa all'interno della "cerchia ferroviaria" e nelle aree circostanti gli assi delle metropolitane, con esclusione del pagamento dei soli residenti e per i veicoli ad emissioni zero;
- k. incentivi a sostegno del trasporto pubblico."

FAC - SIMILE



FAC - SIMILE

Question:

Would you like to extend the charged zone to the whole city and to all vehicles categories to fund policies for sustainable mobility?

Answers: 80% YES

20% NO

(Polling: 49%)



From pollution charge to congestion charge

Spring 2011: administrative elections and new city government

SCENARIOS	VEHICLES	CHARGE
0 – Free	ALL	0 €
1 – Ecopass	As ECOPASS	ECOPASS scheme with increased charges
2a – Congestion Charge	ALL Electric and hybrid free	5 € 7.30 am - 7.30 pm
2b – Congestion Charge	ALL Electric and hybrid free	10 € 7.30 am - 7.30 pm
3 – Time dependent Congestion Charge	ALL Electric and hybrid free	6€ 7.30 am – 11.30 am 3€ 11.30 am – 7.30 pm
4 – Season dependent Congestion Charge	ALL Electric and hybrid free	6€ 15 October – 15 April 3€ 15 April – 15 October



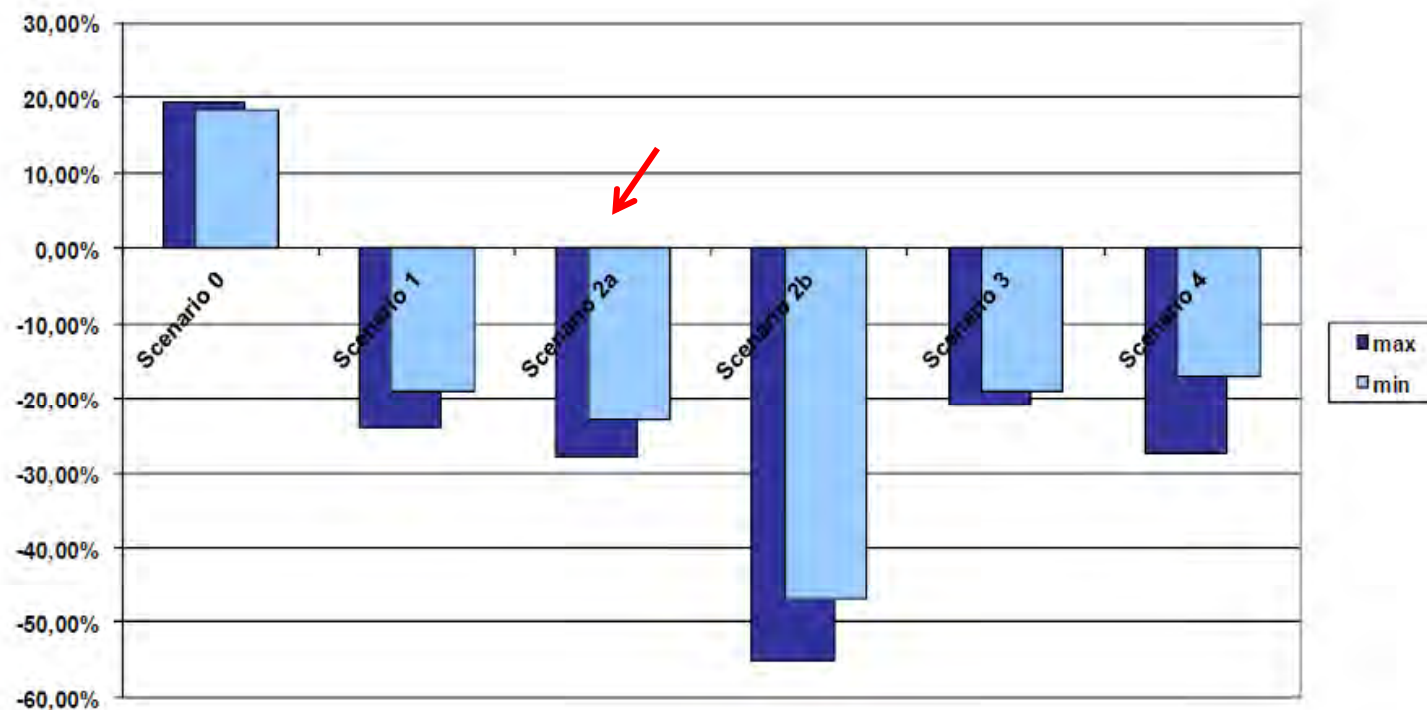
Estimated impact on traffic

Settore Pianificazione Mobilità Trasporti Ambientali
Comune di Milano

Milano

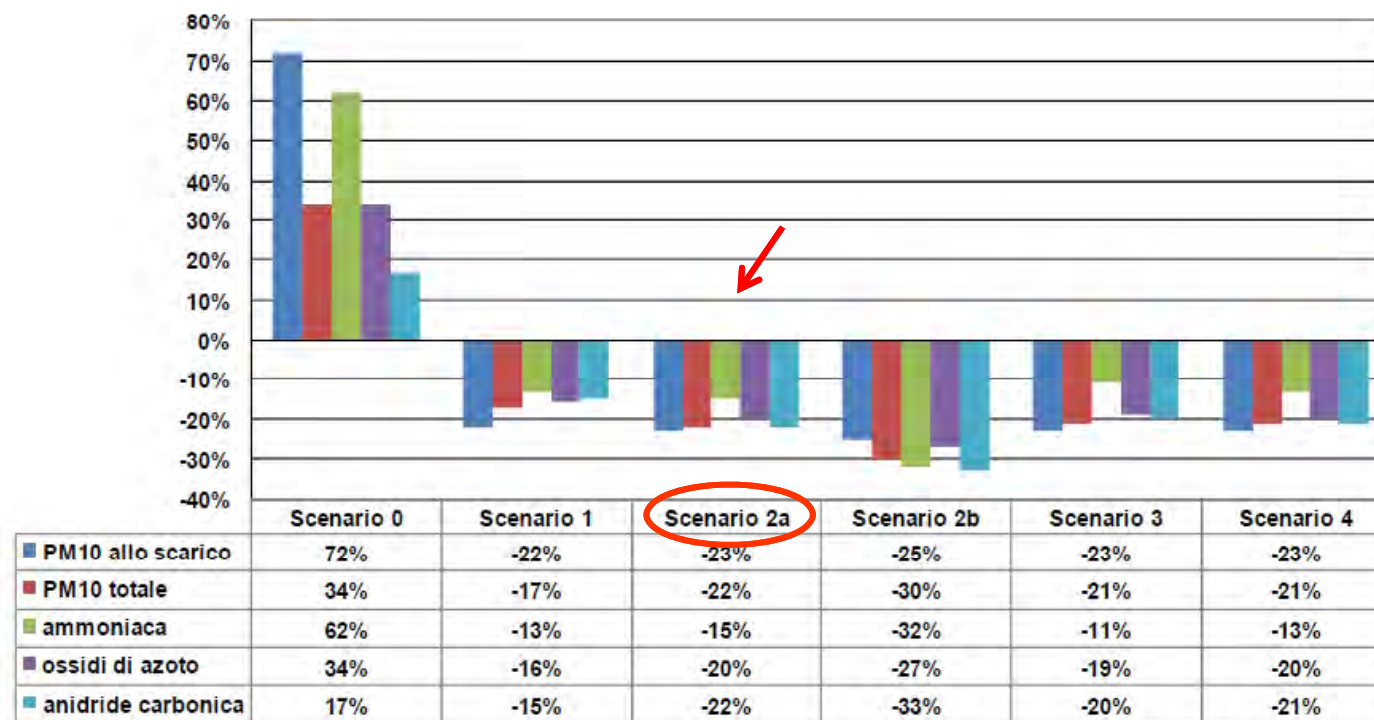


Comune
di Milano



Estimated impact on emissions

Settore Pianificazione Mobilità Trasporti Ambientali
Comune di Milano



Comune
di Milano

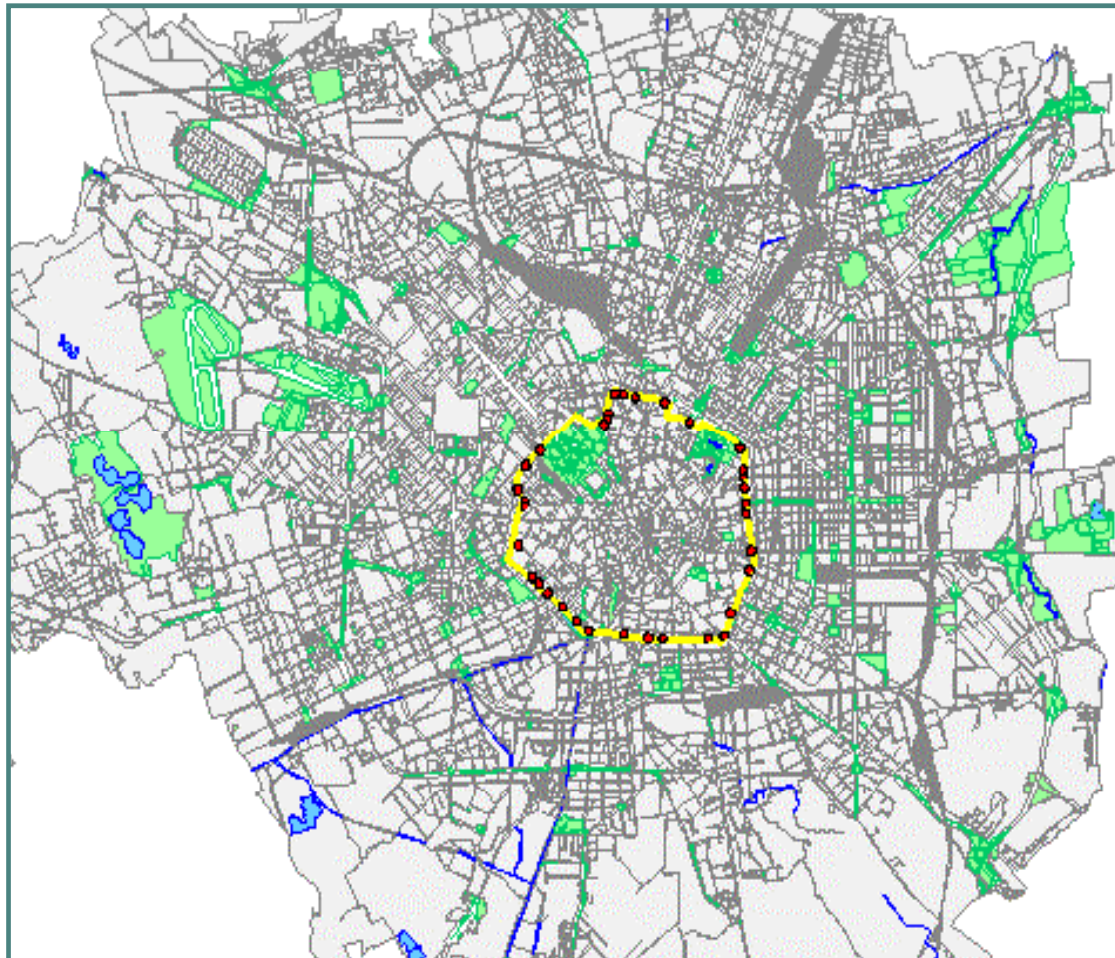


The AreaC system



- **AreaC** started on **16 January 2012** and will be tested for **18 months**
- It is based on the same ECOPASS technology in the same area for the same time period
- For **residents** 40 free entrance are available and then any additional entrance will cost 2€
- For the first 6 months, **goods vehicles** can choose to pay 5€ including parking or 3€ + parking (parking cost in Milan central area is about 2€/h)

AREA C charging area «cerchia dei Bastioni»



AREA

- 8.2 Km² (4.5%)
- 77,000 residents (6%)
- 43 entry points



OPERATING TIMES

Weekdays from 7.30 am to
7.30 pm

The AreaC system



AREA	Central Ring
TIME	7.30 am - 7.30 pm No charge on weekends and public holidays
CHARGE	5 € (the payment allows to travel the whole day in the charged area)
VEHICLES	All <ul style="list-style-type: none">• free entrance for electric and hybrid• entrance forbidden for gasoline pre-euro, diesel pre-euro, Euro I and II)

AreaC - How to pay



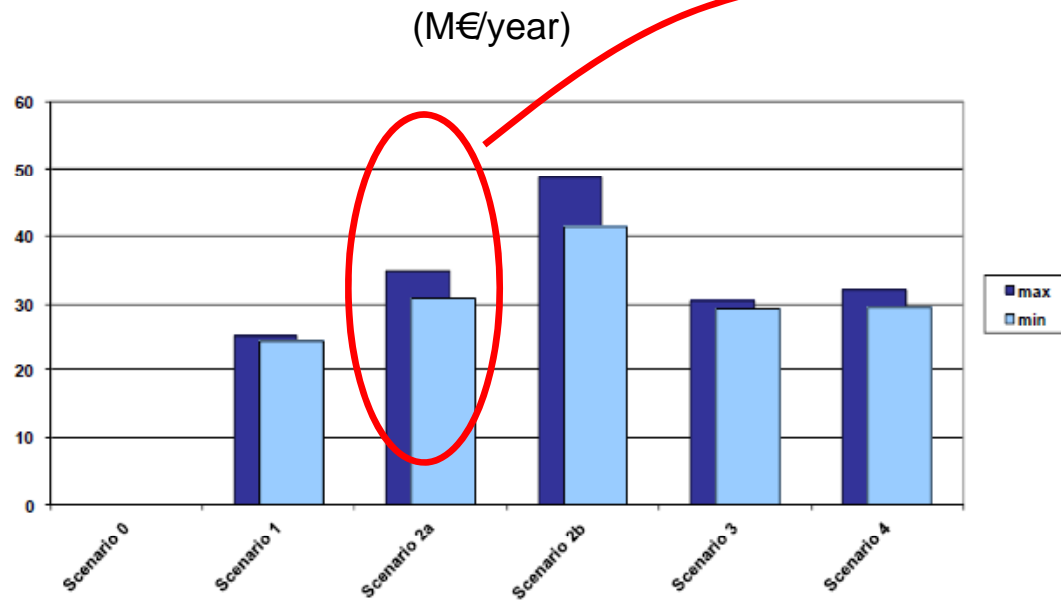
- ✓ Daily ticket or multiple tickets
- ✓ RID – permanent charging on bank account
- ✓ Internet (<https://areac.atm-mi.it/AreaC/iweb/Acquisto.aspx>)
- ✓ Call center Area C: 800.437.437
- ✓ Intesa San Paolo Bank ATMs
- ✓ Parking meters (with PagoBancomat, credit card or cash)



With TELEPASS

- ✓ You can select the option from your reserved area on the website
- ✓ You don't need to have the TELEPASS on your vehicle (the system is based on plate's recognition)

AreaC - Expected incomes



Revenues (31 – 35 M€/year) will be used to support **sustainable mobility** (public transport, walking , cycling) with precise targets for the city administration

AreaC - The NO CHARGE committee



Central area shopkeepers, residents, parkings' owners and other associations has been leading a strong campaign against Area C



All **petitions** have been **rejected** by the Lombardy Administrative Tribunal:
“**Public Health** has to be cared, **prior to private interests.**”

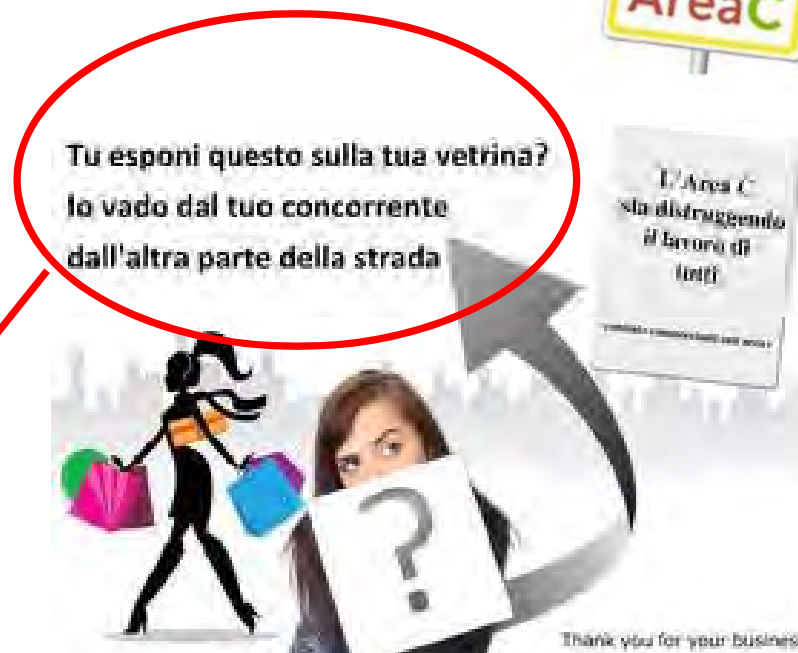
AreaC - The supporters

Shopkeepers favourable to AreaC reacted with a leaflet on facebook



Do you post it on your window?

Ok, I'll go shopping on the opposite side of the road!



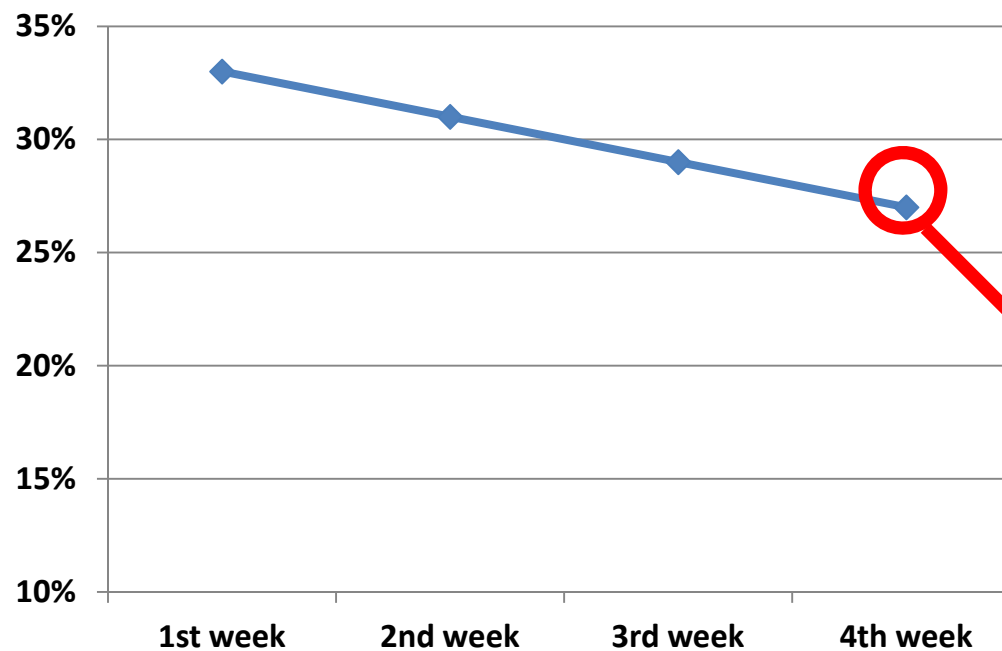
- ✓ Pro-environment associations
- ✓ Cyclists associations
- ✓ Green party
- ✓ etc.



“We need it !”



1 month of AreaC – Traffic volumes

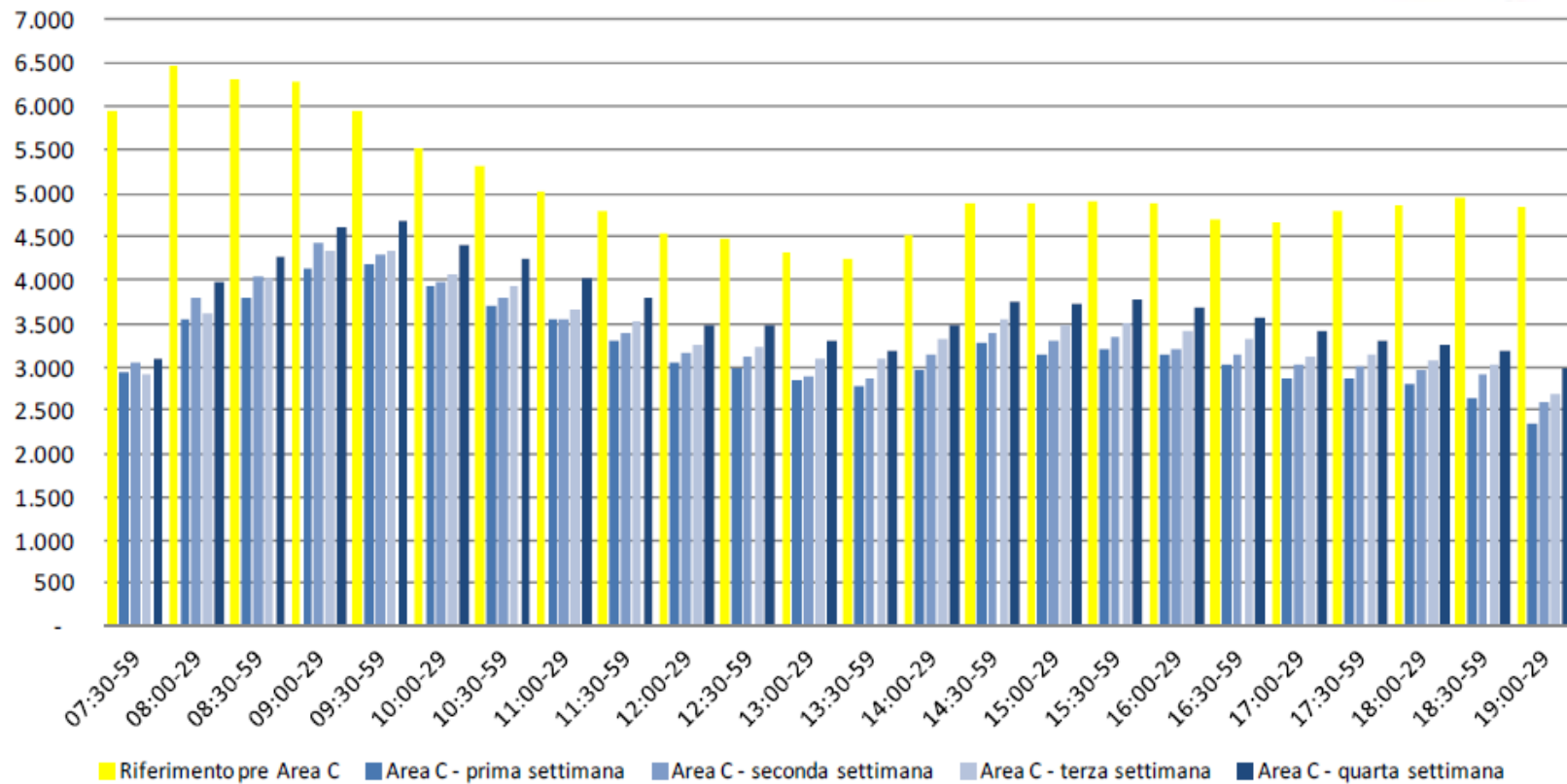


average on 1 month:
- 33%
(\approx 40.000 vehicles less)

4th week: - 27%

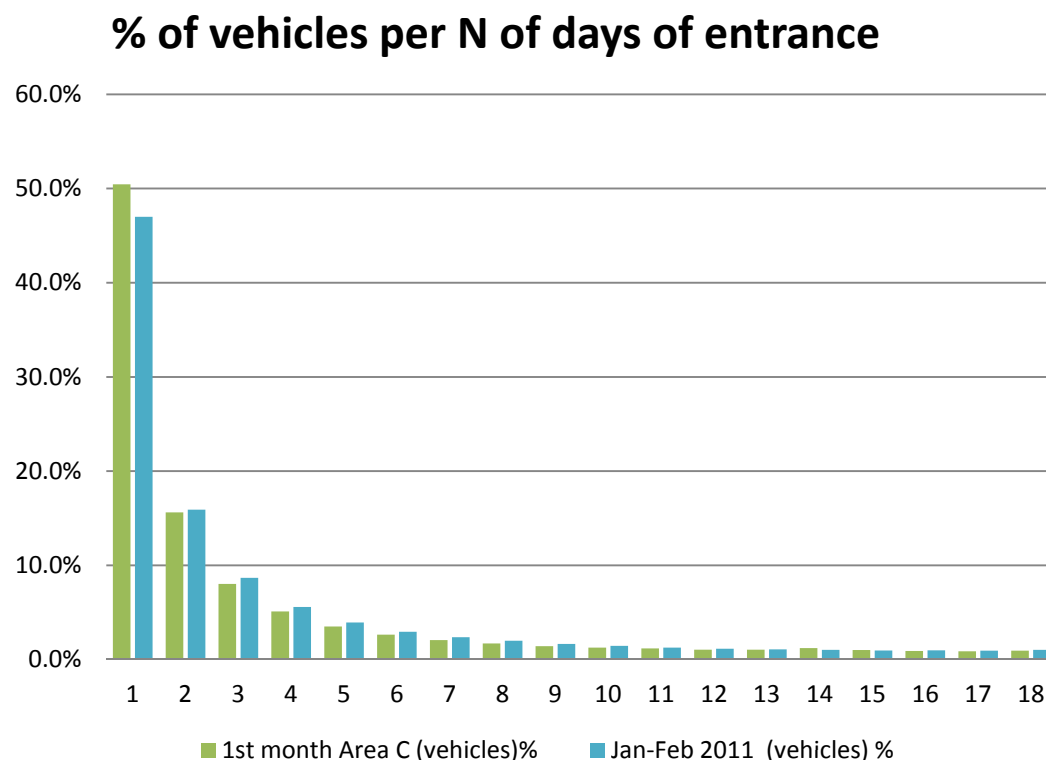
in line with
expected data
(-23% up to – 28%)

1 month of AreaC – Hourly traffic distribution



**- 45% entrances during peak times
7.30am - 9.30am / 5.30pm - 7.30pm**

1 month of AreaC – Entrance frequency



Only **3,5%** are
systematic trips
(n. of entrances ≥ 15 on 18)



More than **70%** are
occasional trips
(with n. of entrances ≥ 1 and ≤ 3)

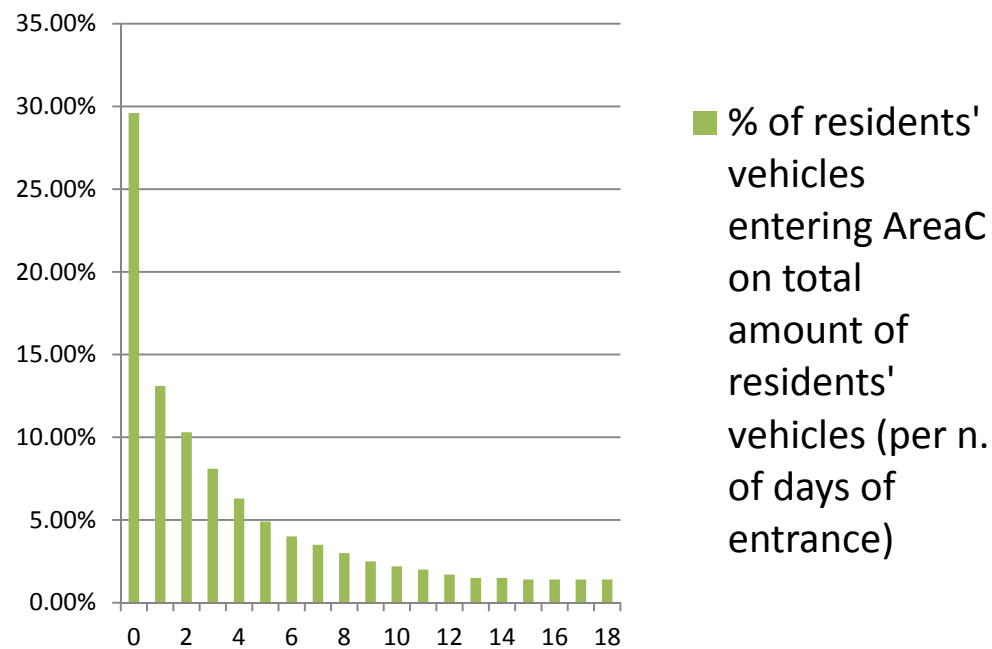
The comparison is made between:

- 18 days in the 1° month - (January 2012);
- 18 days in January 2011

1 month of AreaC – Entrance frequency of residents' vehicles



Residents' vehicles entrance frequency*



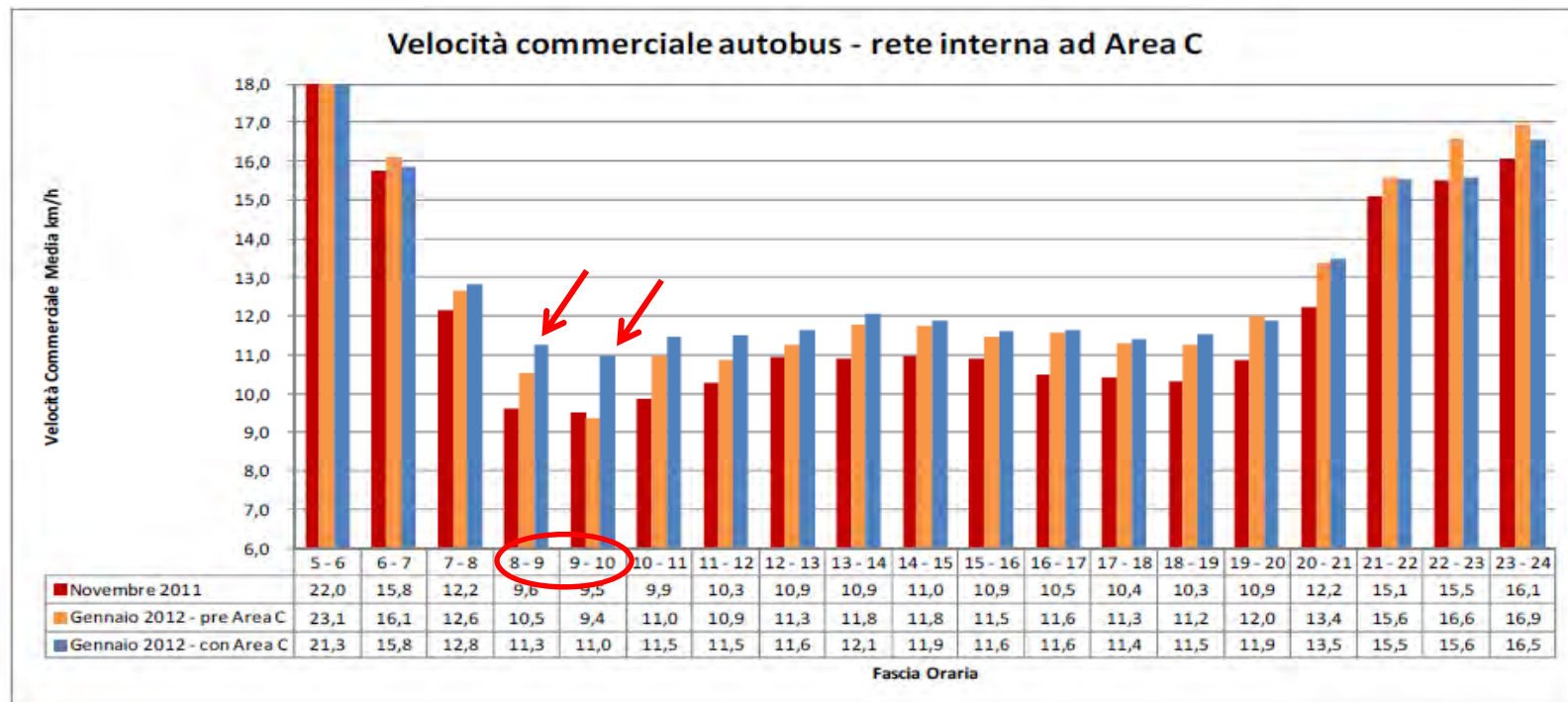
*First 18 days in the 1^o month (January 2012)

✓ Almost **30%** of vehicles has never entered the AREAC in the first 18 days.

✓ **1/3** of those that has entered, has done it **< 3 times**

✓ Only **5%** can be considered **systematic** (n. of entrances ≥ 15 on 18)

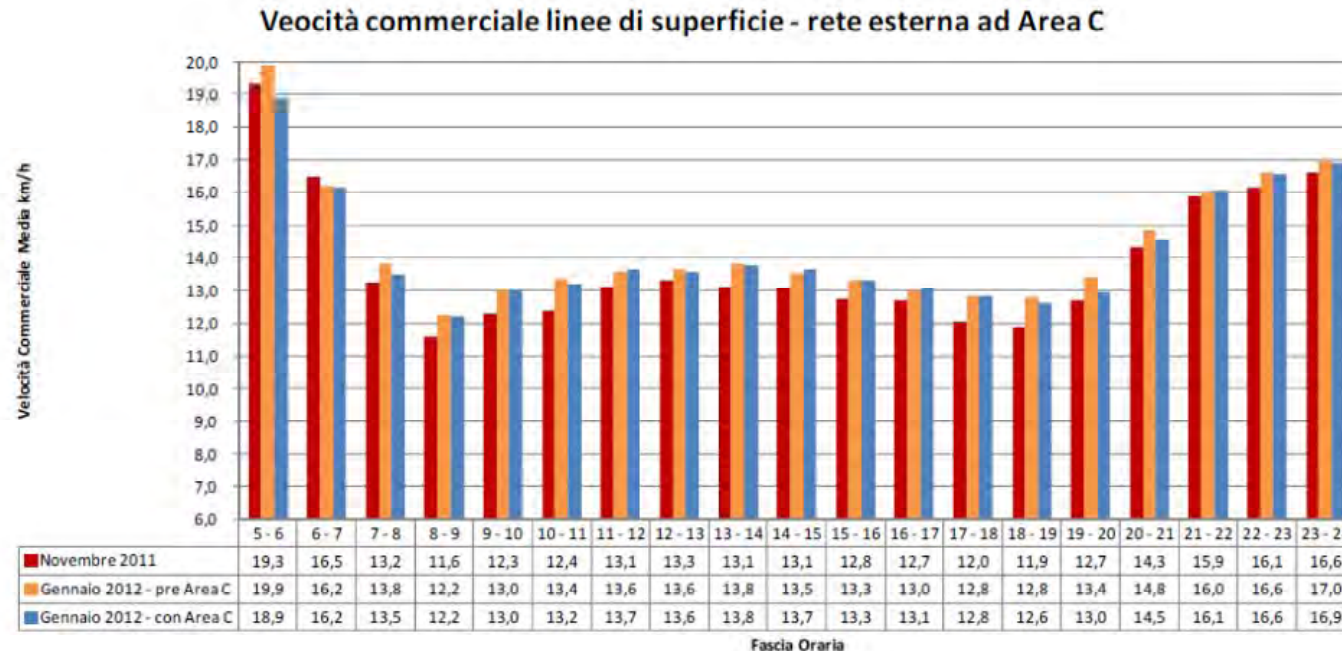
1 month of AreaC – PT (bus) speed



Commercial speed has increased (compared to an average week of November 2011)

- ✓ Average vehicles' speed has increased between **+ 4,3%** and **+ 11,4%**
- ✓ During the morning peak hour the increase is higher (**> 15%**)

1 month of AreaC – PT speed in the whole city



If compared to

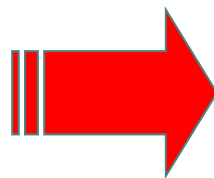
JANUARY 2012

NOVEMBER 2011

PT speed is...

≈

+ 4,9 %



AREA C has not the effect to increase congestion outside its boundaries

There is a general trend of traffic reduction due to the economic crisis and peak in oil prices

AreaC - impact after 2 months



Provisional data 16 January – 16 March 2012
First check of results in June 2012

- ✓ Commercial and private traffic during AREA C hours - **36%**
- ✓ Accidents - **52%** (- 44% in the whole city)
- ✓ Public transport operating speed + **11%**
- ✓ Daily average emissions of pollutants in Area C:
 - Exhaust PM10 - **27%**
 - Ammonia - **45%**
 - Nitrogen oxides - **24%**
 - CO2 - **38%**

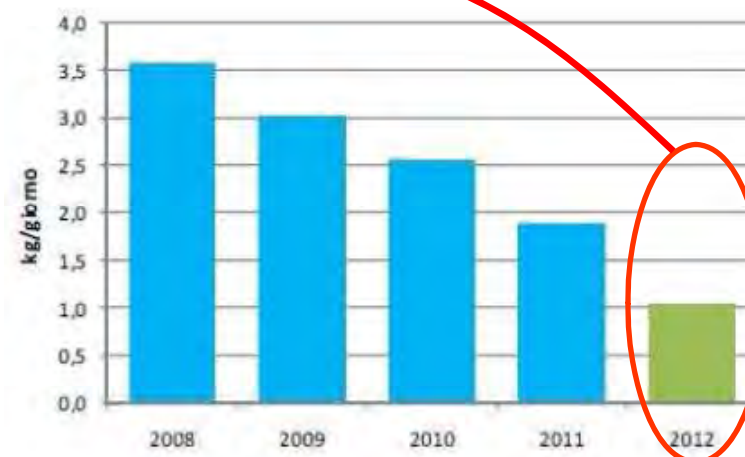


AreaC - impact after 2 months - air pollutants



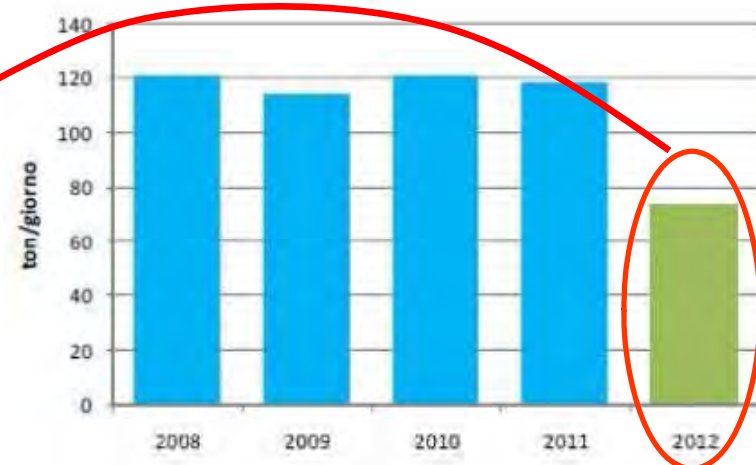
Estimated **PM10** emissions
(kg/day) in AreaC compared with
recent trends (2008-2011)

- 27%



Estimated **CO2** emissions
(ton/day) in AreaC compared
with recent trends (2008-2011)

- 38%

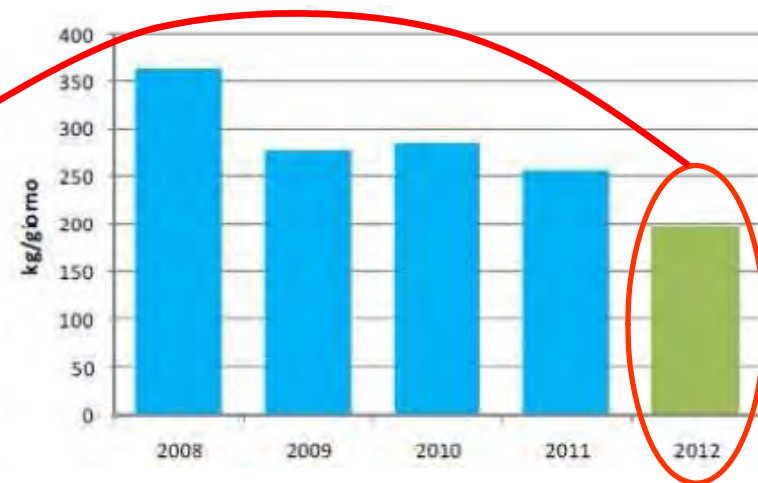


AreaC - impact after 2 months - air pollutants



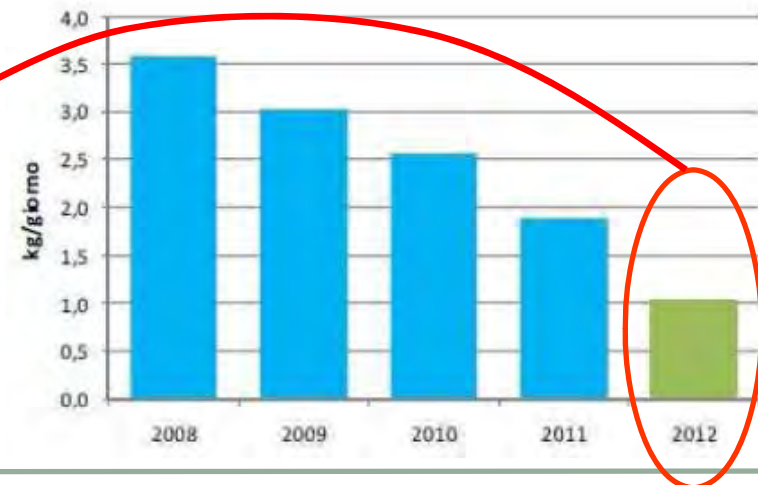
Estimated **Ammonia** emissions
(kg/day) in AreaC compared with
recent trends (2008-2011)

- 45%



Estimated **Nitrogen oxides**
emissions (kg/day) in AreaC
compared with
recent trends (2008-2011)

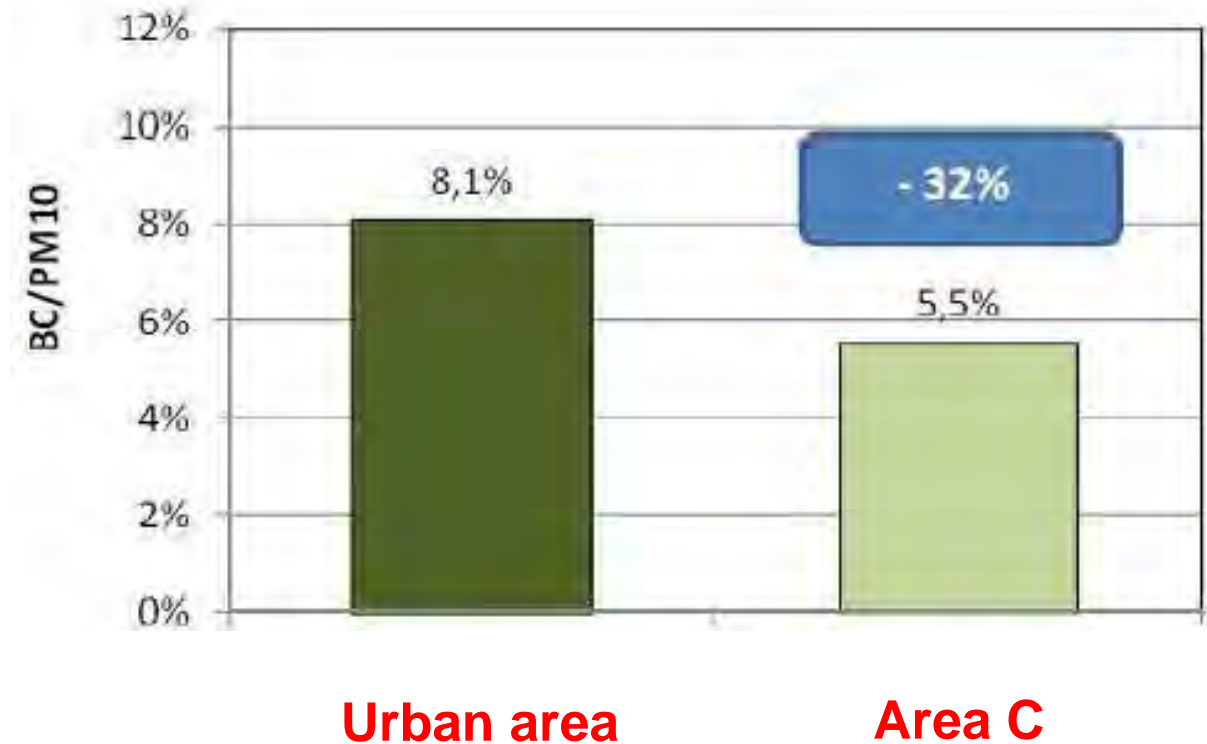
- 24%



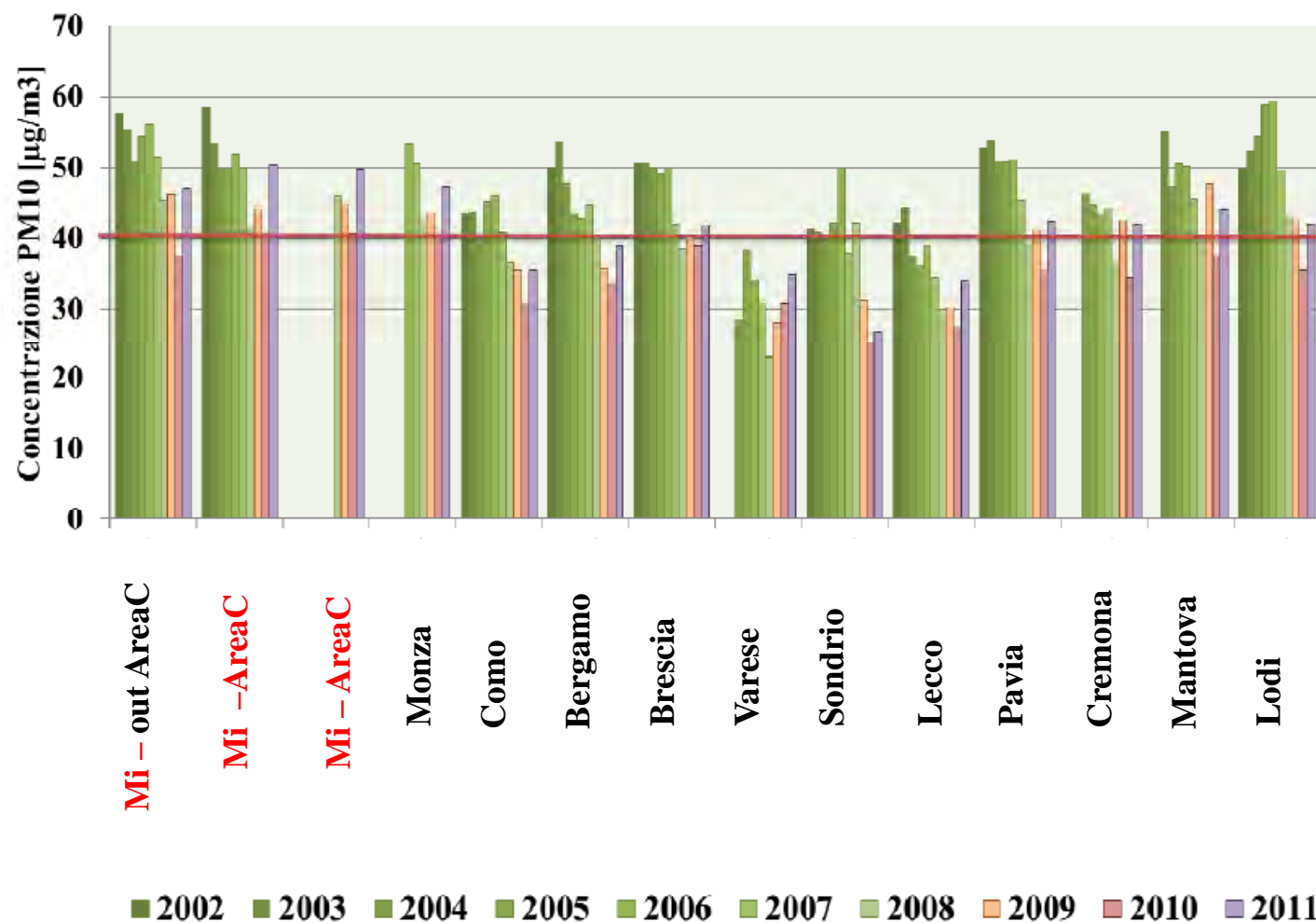
AreaC - impact after 2 months - air pollutants



**Black Carbon
PM10**



PM10 concentration

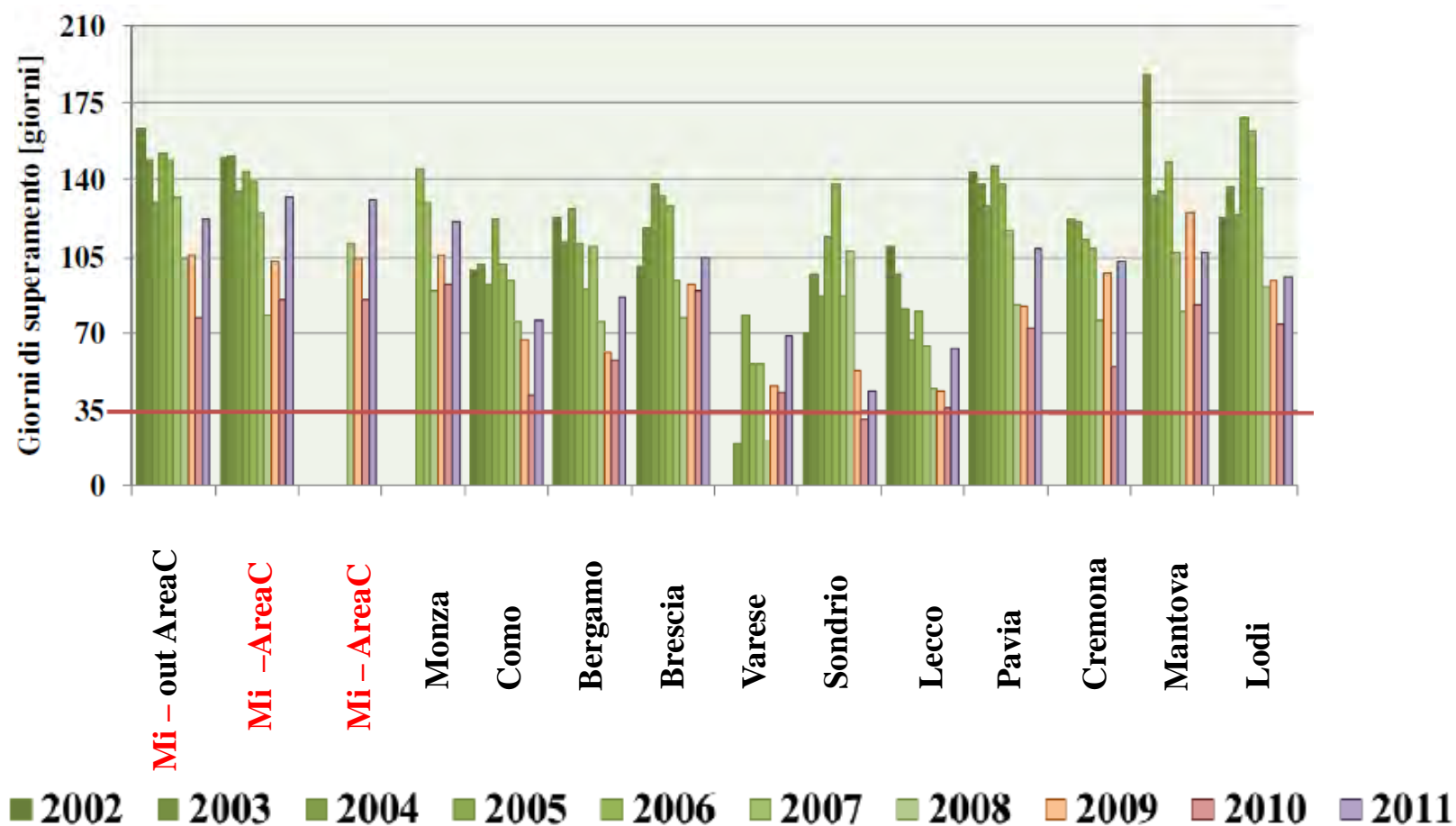


Annual average PM10 concentration in Milan and Lombardy

* Source: www.arpalombardia.it



PM10 concentration



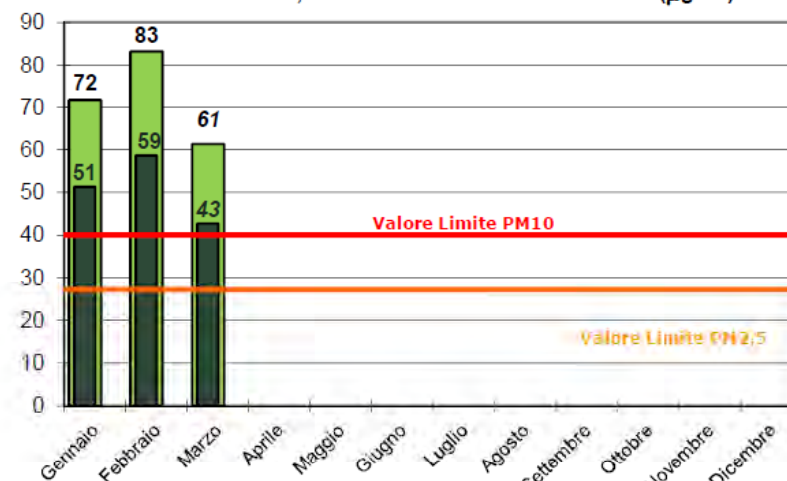
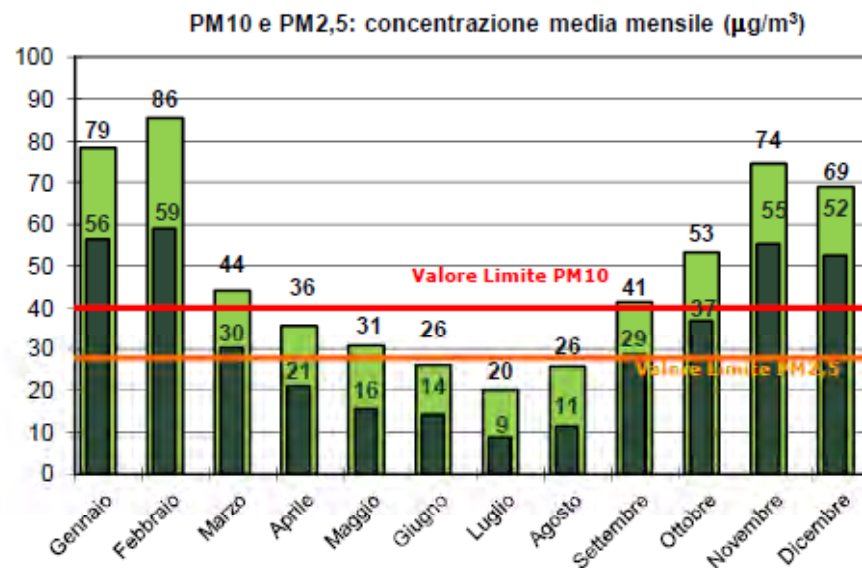
Number of days exceeding the PM10 concentration limit

* Source: www.arpalombardia.it



PM10 concentration in central area

	PM10	PM2,5
Valore Limite ($\mu\text{g}/\text{m}^3$):	40	27
Media 2007:	51	34
Media 2008:	44	31
Media 2009:	45	31
Media 2010:	40	25
Media 2011:	49	33
Media mobile attuale (dal 23/03/2011 al 22/03/2012):	50	33
Media anno 2012 parziale (dal 01/01/2012 al 22/03/2012):	73	51










* Source: www.arpalombardia.it



Recent trends in mobility in Italy

AUDIMOB* - Mobility Survey 2011 (comparison with 2010)

Main indicators	Mode of transport
 - 4,5% in pax/km	 -22,3% bicycle/walking trips
 - 14% total amount of trips	 -15% moped-scooter
 -2,8% mobility rate	 -12,2% car
The crisis affects also mobility demand	 +3,7% PT modal share in big cities

* ISFORT – www.isfort.it





Thank you for your attention

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