



International Association of Public Transport
Union Internationale des Transports Publics
Internationaler Verband für öffentliches Verkehrswesen
Unión Internacional de Transporte Público

International Energy
Agency

28-29th January.
2008

Meaningful Indicators for Public Transport

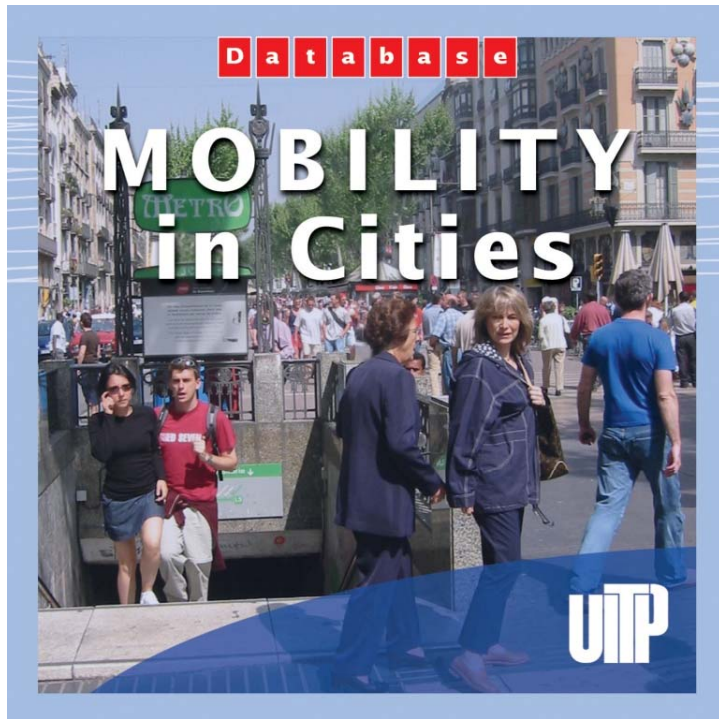
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Better mobility for people worldwide

UITP – Connecting the world of public transport



What is 'Mobility in Cities Database'



- 120 urban mobility indicators collected in 50 cities worldwide.
- Information on urban mobility policies
- Comparisons between 1995 and 2001.
- Specific definitions of indicators and metropolitan areas.
- Project initiated and carried out by UITP, with support from members
- Key source of information for urban transport planners and decision-makers.

Mobility in Cities Database



- Background information on the city
- Private transport infrastructure
- Public transport infrastructure
- Private passenger vehicles: supply and use
- Taxis and collective taxis: supply and use
- Road traffic
- Public transport supply
- Mobility and modal split
- Public transport productivity and operating cost
- Cost of transport for the traveller
- Cost of passenger transport for the community
- Energy consumption for passenger transport
- Passenger transport polluting emissions
- Passenger transport fatalities
- Private motorised transport and public transport (comparisons)

Urban Mobility in Context

Urban sprawl

Motorisation rate

Modal split

Public transport

- Motorisation rate increased by 11% between 1995 and 2001 in European cities (from 375 to 415 cars per 1000 persons).
- Significant variations from one city to another.
- Combination of economic, cultural and policy related factors.

Urban Mobility in Context

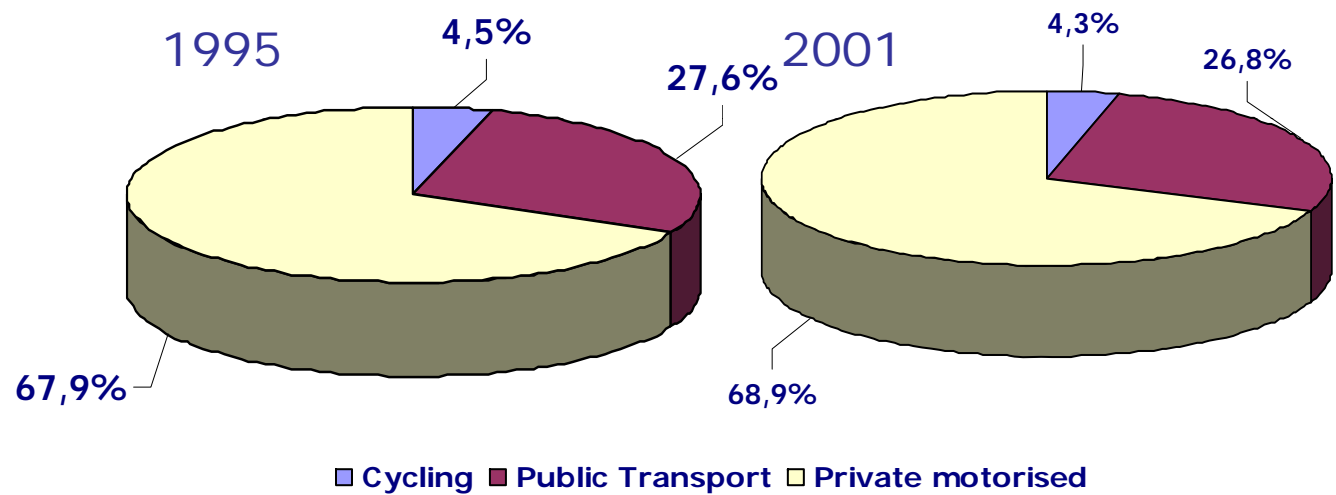
- Modal split stable between 1995 and 2001.

Urban sprawl

Motorisation rate

Modal split

Public transport



Urban Mobility in Context

Urban sprawl

Motorisation rate

Modal split

Public transport

- Frequentation of public transport remained stable at 360 journeys/person/year.
- Volume of supply by inhabitant increased by 7,5%.
- Length of reserved routes for public transport increased by 9% (and speed by 3%).
- Production cost (per vehicle x km) and investment remained stable.

Energy consumption for transport

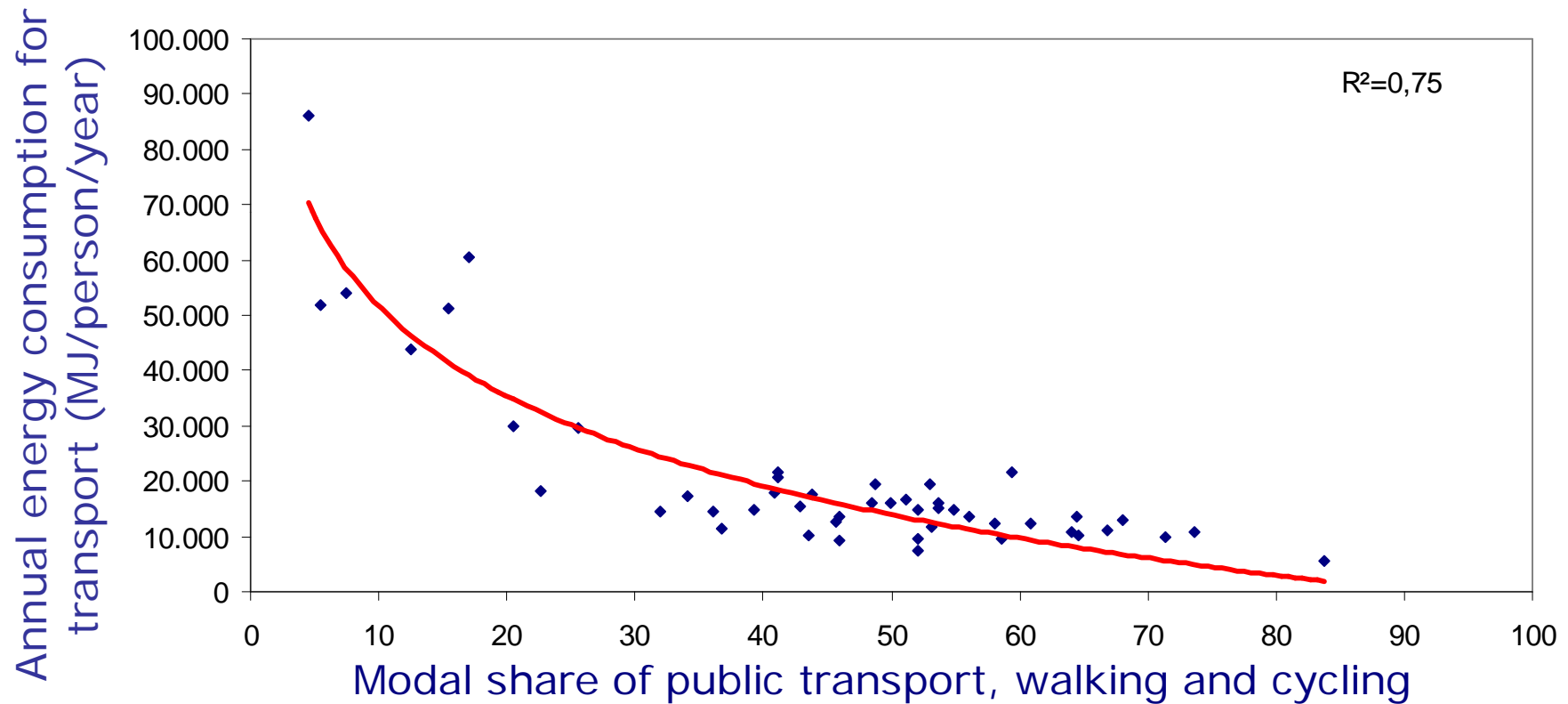
Energy consumption for passenger transport includes public transport and private motorised modes. Electricity consumption is counted “at source” (i.e. taking into account productivity of thermal power stations).

Factors accounting for the level of energy consumption per capita:

- Surface of urban area (44%)
- Population + jobs density (62%)
- Modal share of walking, cycling, and public transport (75%)

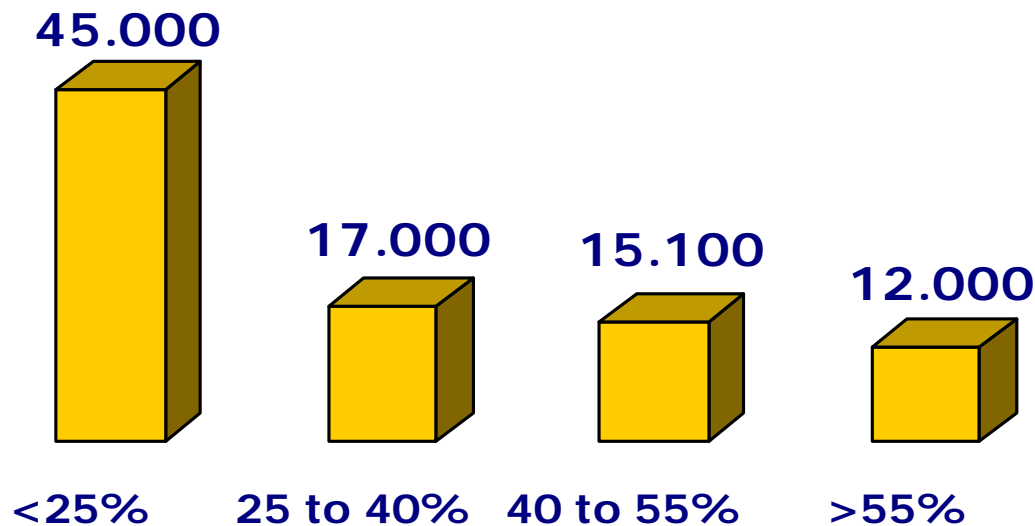
(Between brackets is the strength of the relationship.)

Energy consumption for transport



Energy consumption for transport

Energy consumption per capita is lower in dense cities with a higher modal share of walking, cycling and public transport.



Annual energy consumption for transport (MJ/person/year) vs Modal share of public transport, walking and cycling

Energy consumption for transport

	Modal share of walking, cycling and public transport		Average energy consumption per person (MJ)	
	1995	2001	1995	2001
Athens	34,1	40,9	12.900	12.600
Geneva	44,8	48,8	23.600	19.200
Rome	43,2	43,8	18.200	17.100
Vienna	62	64	10.700	9.050

Cities which managed to increase the modal share of walking, cycling and PT saw a decrease in the consumption of energy for passenger transport per capita.

Energy consumption for transport

Public transport is on average **2,2** times more energy efficient than the private car per passenger x km traveled (consumption at source).

When measuring energy consumption at vehicle, public transport consumes **3,4** times less energy than the private car per passenger x km traveled.

These average figures however conceal major disparities between cities. The best energy performances from public transport, compared to the car, are correlated with the highest average occupancy rate for public transport vehicles, that is, between **25** and **35%** (occupancy rate of the places).

Energy consumption for transport

Energy savings between cities with a high modal share of public transport, walking and cycling, and cities relying mainly on the private car represent around **500** to **600** litres of petrol per capita per year (if we consider an average car, **15** to **20** full tanks of petrol per capita).

Performance and cost of transport

Cost of transport

Energy
consumption

- The cost of transport for the community in cities with a high share of public transport is up to half the cost in cities where the private car is dominant. This difference represents a saving of 2.000 EUR per inhabitant per year.
- Cities characterized by the lowest cost of transport to the community are often those where expenditure in public transport is the highest.

Material available and possible use

Database

Fact sheets

Analysis report

- Set of 30 City Fact Sheets.
- Description of urban mobility policies: urban planning, control of traffic, support to public transport
- Useful to make city descriptions, to illustrate reports, etc.
- Accessible via CD-Rom or on demand.

City Fact sheets

Policies and Actions

Comparison of periods 1990- 2001 & 2001- 2010

- Town planning & Transport
- Control of car traffic
- Development of PT (investment etc)

ATHENS

POLICIES & ACTIONS

	1990 – 2001 PERIOD	2001 – 2010 PERIOD
Town Planning and Transport		
Control of urban sprawl	The Master Plan for Greater Athens (1985) calls for urban regeneration, the slowing of urban sprawl, and the preservation of rural areas.	
Integration of town and public transport planning		
Rules limiting the construction of parking spaces		
Control of Car Traffic		
Parking regulations and restrictions		Roadside parking control is a priority measure of the Transport Plan for Athens (2004).
City centre access control	(Since 1982, alternate traffic scheme in central area based on license plate number – but was followed by sharp increase in car ownership.)	The introduction of restrictions for truck deliveries (peak hour) is a priority measure of the Transport Plan for Athens.
Pedestrian areas and low traffic zones	(Since 1987, development of traffic calming communities in Attica region.) Development of pedestrian areas in Central Business District.	
Urban toll		
Development of Public Transport		
Investment in Public Transport	Development of two new metro lines in 2000 (17.5 km).	Extension of the two new metro lines in 2003 and 2004 (6 km). Further extensions underway and planned. Upgrade of the existing metro line (renewal and increase of rolling stock, improvement of tracks, stations and signaling system). Development of three tramway lines in 2004 (24 km). Further extensions planned. Development of new suburban railway line (32 km) in 2004 (connects airport and Olympic stadium, route partly shared with metro line). Further extension underway. Upgrade of existing suburban railway network. Acquisition of 366 trolleybuses and 283 clean diesel buses. Planned increase of bus fleet.
Extension of reserved routes and public transport priority schemes	Introduction of reserved routes for buses (including contra flow lanes and smart corridors). Test of bus priority scheme.	Extension and enforcement of reserved routes for buses (total 39 km at end 2004); development of express bus lines. Introduction of traffic light priority for the tramways.

EVOLUTION 1995 – 2001

Indicators

EVOLUTION 1995 – 2001

Indicators	1995 VALUES	2001 VALUES
Population density (inhabitants/hectare)	75.2 (1)	65.7
Motorisation rate (vehicles/1,000 inhabitants)	317 (1)	385
Number of parking spaces/1,000 jobs in the CBD	225	225
Length of motorways/inhabitant (km/million inhabitants)	35.7 (1)	39.0
Length of reserved routes/inhabitant (km/million inhabitants)	51.2	53.7
Average PT operating speed (km/h)	22.0 (1)	25.1
PT vehicle x km /hectare	2,590	2,430
PT vehicle x km /inhabitant	34.4 (1)	36.9
PT boardings/inhabitant/year	156 (1)	179
PT market share (mechanised and motorized trips)	24.9	30.1
PT farebox revenue (excl. reimbursement) per boarding (2001 euros)	0.192 (1)	0.298
PT operating costs (excl. depreciation) per boarding (2001 euros)	0.405 (1)	0.453
PT operating costs (excl. depreciation) per vehicle x km (2001 euros)	1.83	2.20
PT investment per year and per inhabitant (2001 euros) (averages 91-95 and 97-01)	47.6 (1)	79.7
Total cost of transport (% GDP)	11.8 (1)	11.1

(1) The original value from the Millennium Cities Database was collected.

ATHENS

SUMMARY

Major public transport infrastructure projects undertaken e.g 2 metro lines, 3 tramway lines, and a suburban railway line (airport link) Olympics

Improving traffic conditions for buses and a general increase in the service quality for all modes (notably new vehicles and higher frequencies).

The steady increase in public transport patronage, observed between 1995 and 2001, has continued since then.

The focus of the new Transport Plan for Athens on the enforcement of roadside parking regulations is an encouraging sign, in a context where illegal parking is endemic.

Statistics on energy consumption for passenger transport

- Need to distinguish energy consumption for passenger and freight transport.
- Need to distinguish energy consumption for different road transport modes.
- Need to highlight penetration rate of various alternative fuels.
- Support to the methodology proposed in Turmes report (structure of vehicle fleet, average annual mileage, average consumption).

Statistics on energy consumption for passenger transport in urban areas

- Need to distinguish energy consumption for urban and interurban passenger transport.
- Development of EU statistics on urban transport might be a priority of forthcoming EU Green Paper on Urban Transport.
- UITP has recently published data on the distribution of the urban bus fleet in the EU-27 according to fuel and drive train technologies.

Are we looking in the right direction?

- How to fill the gap between real life and theory
- Role of international organisations and forums
- Indicators should be relevant rather than easy to collect
- Harmonising approaches in the developed and the developing world
- Increased urgency and possible opening now

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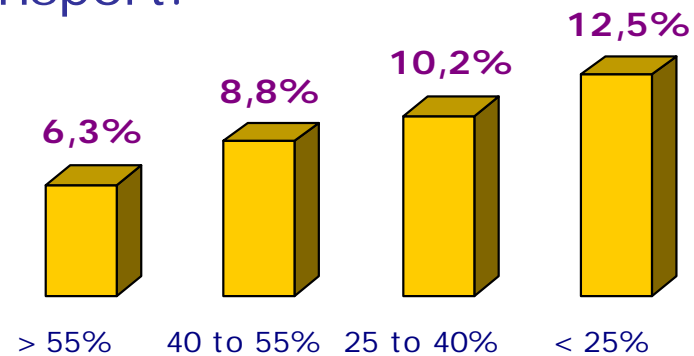
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2b. Performance and cost of transport

Cost of transport

Energy
consumption

- Cost of transport for the community includes public transport operation and investment, road expenditure and car use.
- Cost of transport is lower in dense cities with a higher modal share of walking, cycling and public transport.



Cost of transport for the Community (% of GDP) vs Modal Share of Public Transport, Walking and Cycling

Mobility in Cities Database



Mobility in cities
Database

