

MIT

Transit and Parking Policy

Massachusetts Institute of Technology

Urban Transportation Planning

MIT Course 1.252j/11.380j

Fall 2006

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MIT

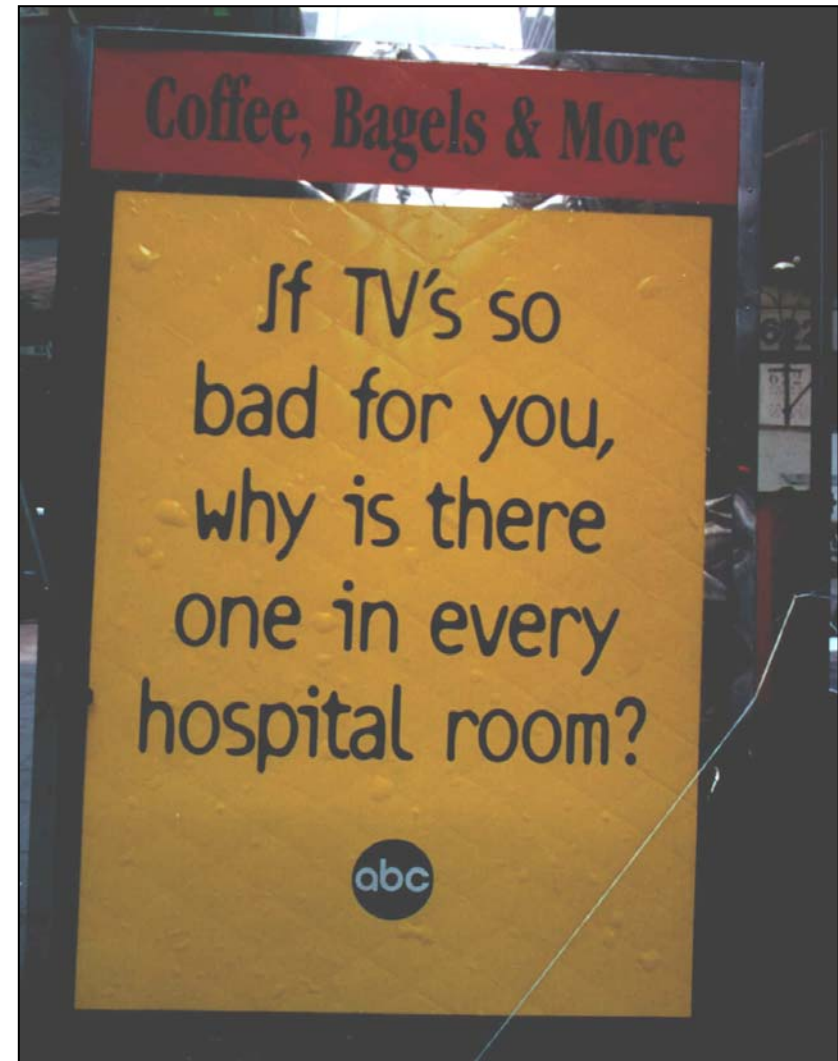
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- A Parking Tour
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Parking: Is it in the eye of the beholder?

Is it indeed that bad?



The lesson from EPA parking freeze in Boston

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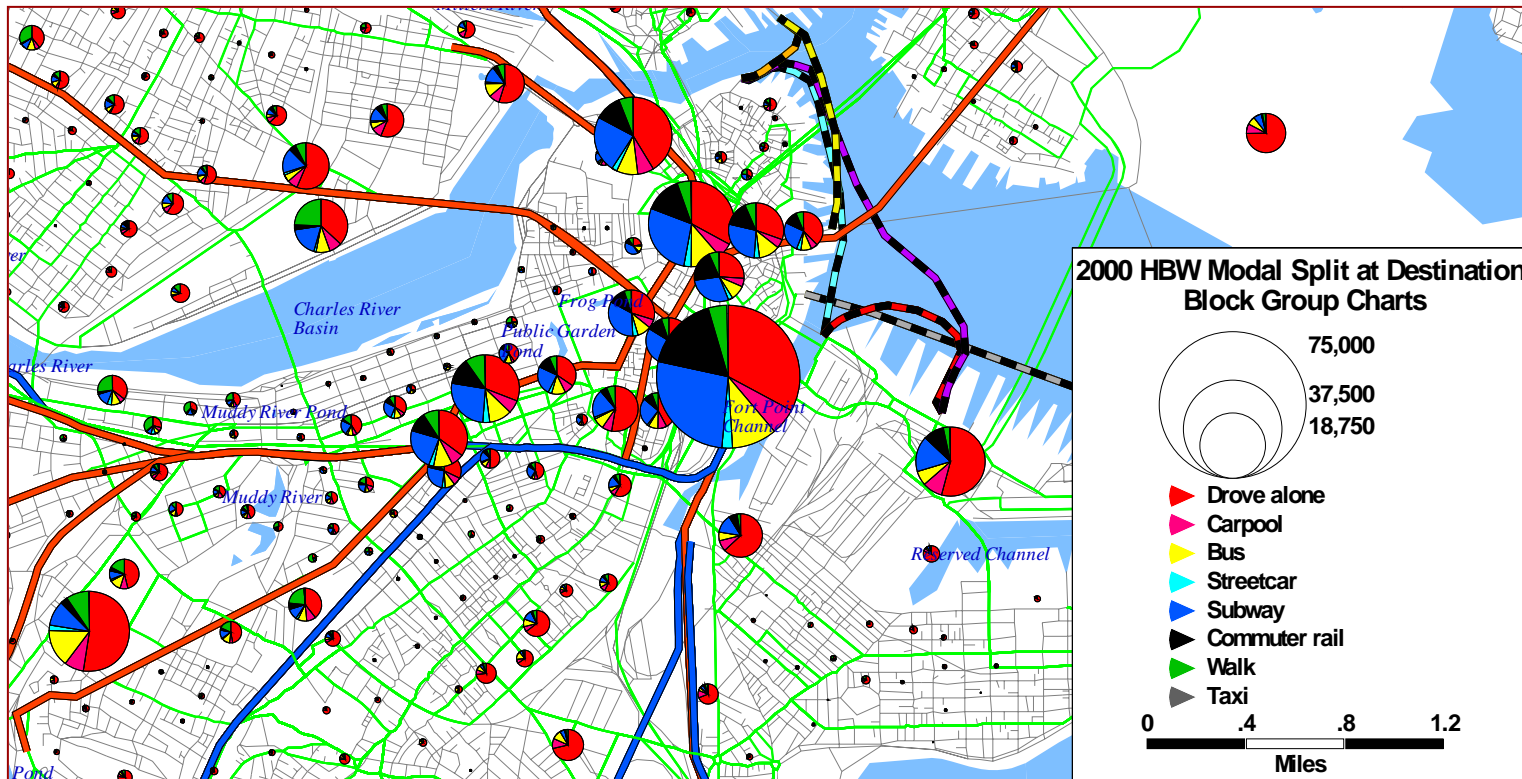


Photographs courtesy of Ken Kruckemeyer, MIT. Used with permission.

Parking freeze at 1973 levels plus 10% with exceptions for off-street parking “based on need” (ie. hotels) and residential parking.
And in spite of it, the skyline changed dramatically!

Parking and Modal Split The Example from MIT Campus

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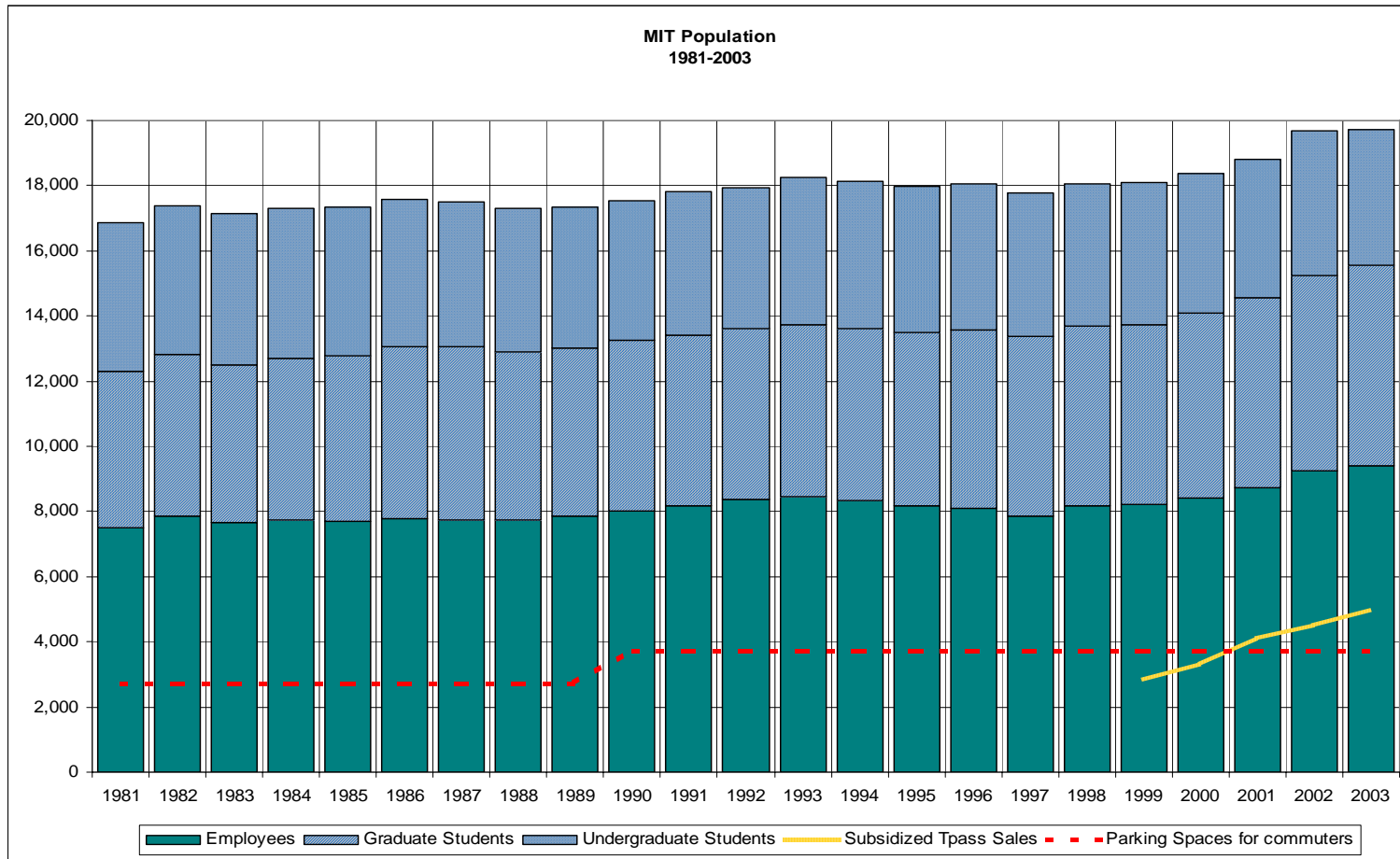


Can we explain modal split at MIT (35-40% auto share) based on MIT's parking supply and cost??



MIT Population vs. Parking

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Some facts from MIT from John M. McDonald, Director



Parking – MIT Inventory

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Inventory Allowed:

Commuter	3,711
Residential	<u>1,103</u>
	4,814

Spaces in Use

Commuter	3,500
Residential	<u>900</u>
	4,400

Some facts from MIT from John M. McDonald, Director

Parking – External Constraints

Federal Clean Air Act – 1973
Limits parking to 36% of commuters

Cambridge – Determination of Exclusion
Parking inventory capped at 4,814

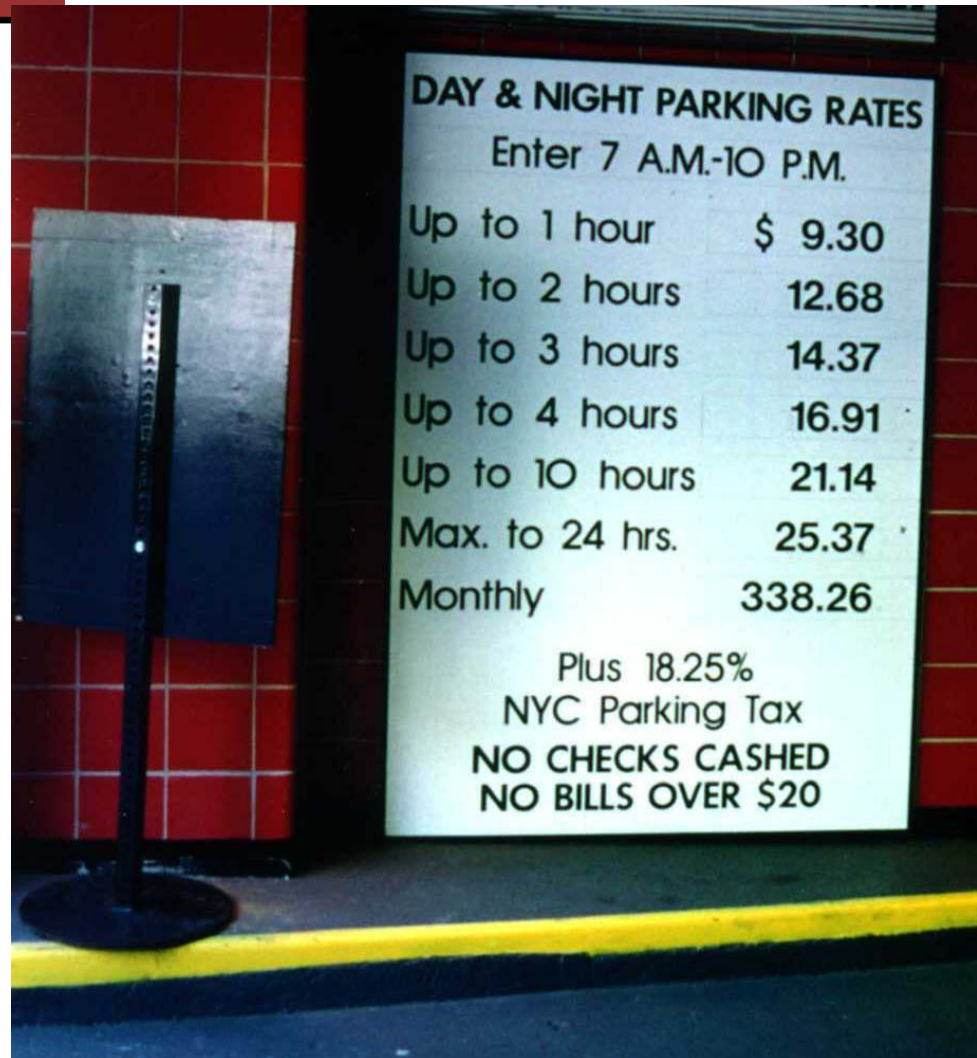
Massachusetts – Rideshare Reporting
Required reporting and PTDM 'penalty'

Some facts from MIT from John M. McDonald, Director

Parking Tour: Manhattan

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- If you come, don't drive or you'll pay for the tunnels and the bridges
- If you drive, park only once and don't bother us!





Parking Tour: Manhattan

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If you park in the wrong place, you might get a \$205 ticket



Parking Tour: Getxo

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- Parking Goals:
 - To enhance the economic and social vitality of Getxo's downtown areas by improving access to local shops and services
 - To discourage home-to-work trips by automobile to Getxo's downtown
 - To encourage use of public transport and non motorized trips

Parking Tour: Getxo New On-Street Parking Scheme

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- Specifications:
 - Low price for short stays (shopping...) and expensive for long stays
 - Flexibility to cater for a wide range of needs
 - User friendly
 - It avoids meter feeding by computer-controlled plate number registration
 - It provides feedback on performance



Parking Tour: Getxo

Areas with controlled on-street parking

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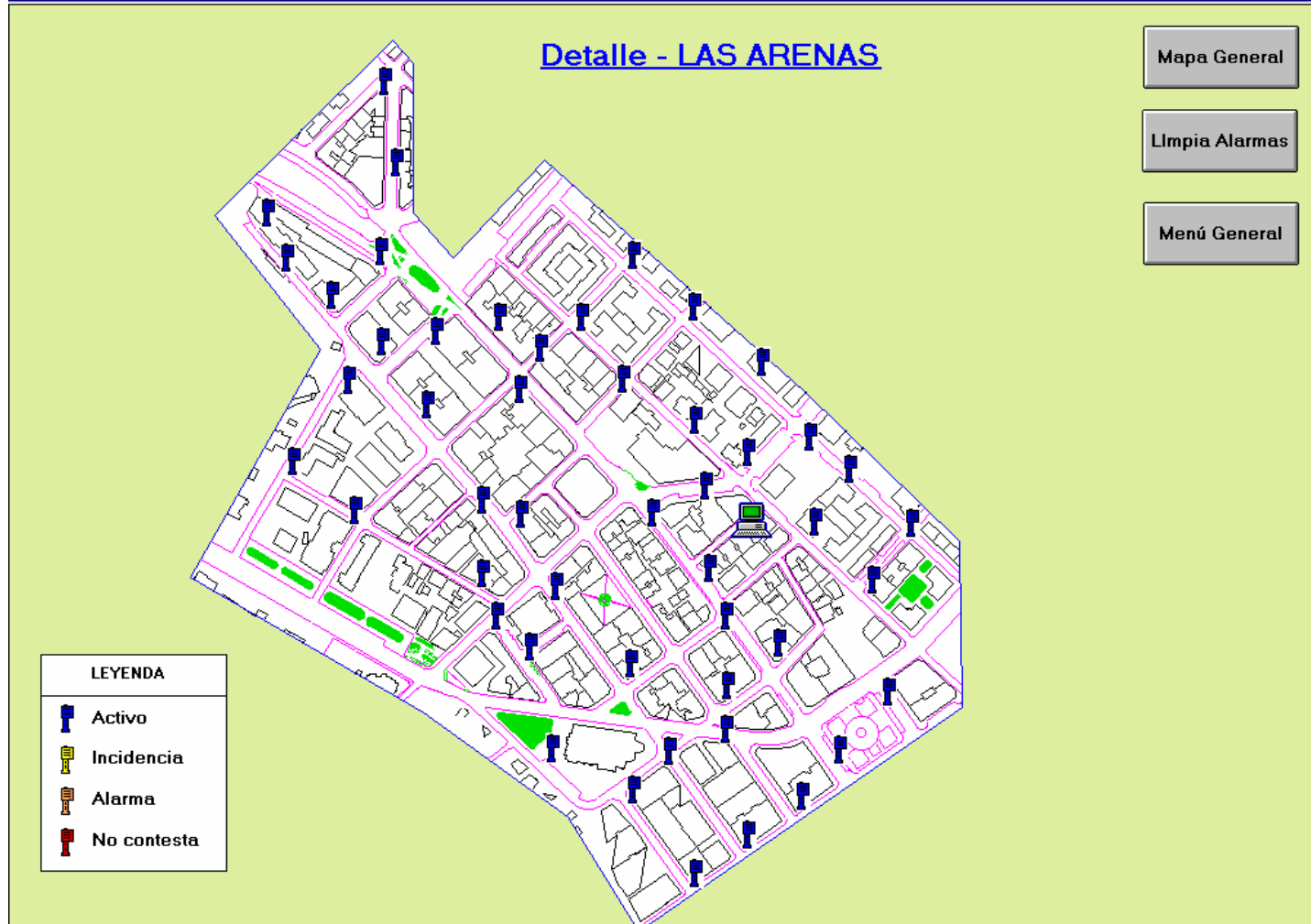


Parking Tour: Getxo

Computer control of meters at Las Arenas

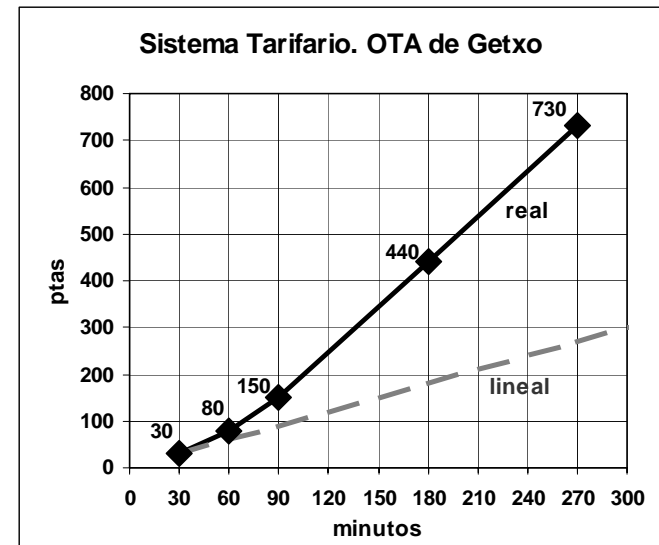
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Mapa ZONA 1



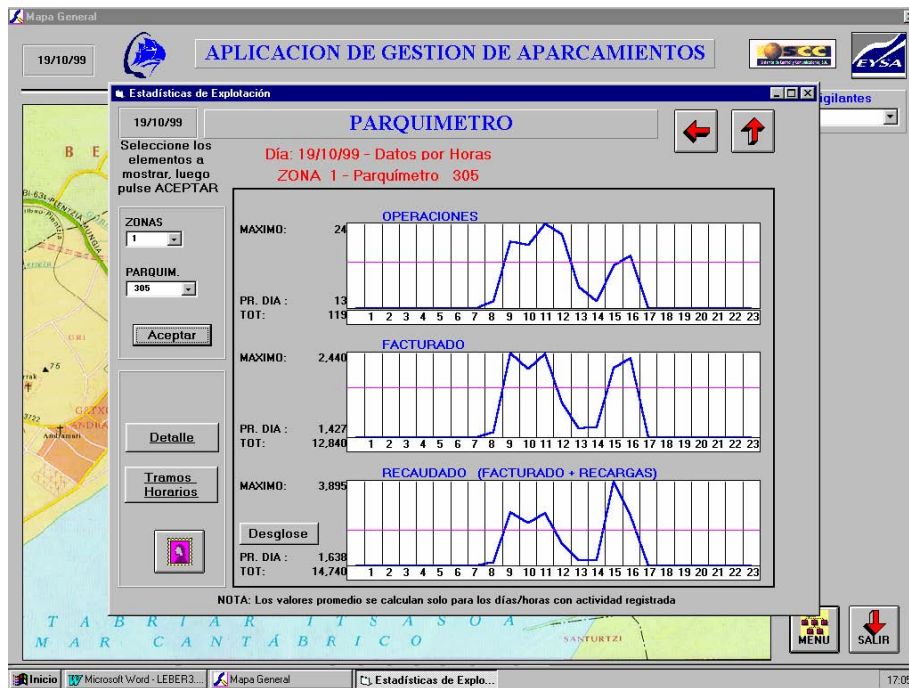
Parking Tour: Getxo Panel, Smart Card and Non Linear Cost

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Parking Tour: Getxo Occupancy, income, plate numbers...

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APLICACION DE GESTION DE APARCAMIENTOS
19/10/99

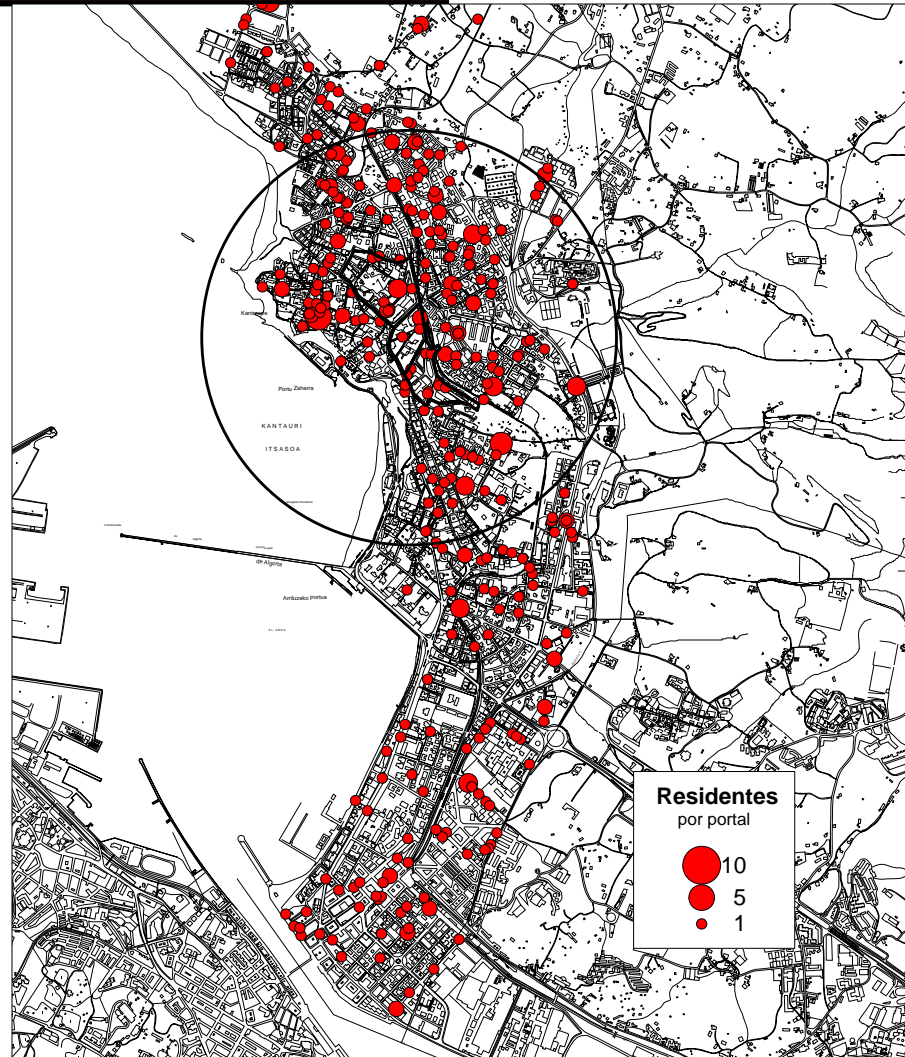
TRANSACCIONES - Parquímetros
19/10/99
Número Líneas: 95
Plazas Ocupadas: 221

TIPO	Z	PQ	Fecha	Hora	Min	Matricula	Mon	Tarj	FP	Cod	Tarjeta	Saldo	Ticket	FechaF	HoraF
Pago	1	306	19/10/99	16:39	152	CA-9743-O	350	0	1	--	--	0	S	19/10/99	19:11
Pago	1	403	19/10/99	16:36	33	M-9267-OJ	35	0	1	--	--	0	S	19/10/99	17:09
Cancelación	1	104	19/10/99	16:35	0	LO-7156-S	0	0	1	--	--	0	N	--	--
Pago	1	307	19/10/99	16:35	69	O-9401-CC	100	0	1	--	--	0	S	19/10/99	17:44
Pago	1	103	19/10/99	16:33	69	S-30-25-AN	100	0	1	--	--	0	S	19/10/99	17:42
Cancelación	2	501	19/10/99	16:32	0	O-6116-AW	0	0	1	--	--	0	N	--	--
Pago	1	307	19/10/99	16:31	30	LO-46074	30	0	1	--	--	0	S	19/10/99	17:01
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Cancelación	1	106	19/10/99	16:27	0	VI-1721-O	0	0	1	--	--	0	N	--	--
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Cancelación	2	501	19/10/99	16:18	0	LO-46074	0	0	1	--	--	0	N	--	--
Cancelación	2	611	19/10/99	16:09	0	M-6068-OJ	0	0	1	--	--	0	N	--	--
Pago	1	209	19/10/99	16:07	137	O-4020-BZ	300	0	1	--	--	0	S	19/10/99	18:24
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Cancelación	1	410	19/10/99	15:54	0	UUDJ	0	0	1	--	--	0	N	--	--
Cancelación	1	405	19/10/99	15:51	0	9-O-8-O	0	0	1	--	--	0	N	--	--
Pago	1	203	19/10/99	15:39	90	BIO-48-OCN	150	0	1	--	--	0	S	19/10/99	17:09
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Pago	1	311	19/10/99	13:22	30	B1-252-O	30	0	1	--	--	0	S	19/10/99	15:52

Parking Tour: Getxo

Residence location of those parked at Algorta

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F.Salvucci & M.Murga

Parking Policy: A Moving Target

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- In Getxo, the real goal was to attract shopping trips by car in order to protect the local shops
- The reason was that a nearby municipality chose to build a new regional shopping center with ample supply of free parking

Parking Tour: New Bilbao Exhibition Center

- For the new Bilbao Exhibition Center, we managed to convince the property to reduce the plans for an underground parking from 10,000 to 3,000 (+1,000) spaces
- The reason being simply that road congestion would not allow to release 10,000 cars in less than an hour into the road system

Parking Tour: New Bilbao Exhibition Center

- The argument was supported on a new subway station planned by the new Exhibition Center main entrance
- ... And they accepted that with every entry ticket, people would also get a subway ticket

Parking Tour: New Bilbao Exhibition Center

- However, the parking demand was probably close to 10,000!
- The challenge was therefore how to discourage drivers from creating a waiting queue in the expressway
- The recommendation called for phone/internet reservation of a parking space based on a credit card and the vehicle plate numbers

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Parking Tour: New Master Plan in Bilbao by Zaha Hadid

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The new master plan for Zorrotzaurre in Bilbao by a world class architect is so constrained by zoning regulations related to density and parking supply, that the successful Bilbao downtown could not be replicated!

Parking Tour: The Zürich Experience

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- Limiting parking for commuters in the downtown area



Parking Tour: Three Messages from Zürich

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- 1.- If you ask the residents which transport policy to adopt, they will not choose the car. They are far more intelligent than what politicians and opinion leaders believe
- 2.- The future lies not in expansion but in a more intelligent use of the existing system, using new telecoms
- 3.- Economy and Ecology are not contradictory. Zürich as an example of promotion of public transport, at the expense of private transport, to achieve a high degree of economic development

Parking Policy: Every trip ends in a parking maneuver...

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- Then while debating “Congestion Pricing”, why is parking policy not being used to achieve the same goal?? Even though Mayor Livingstone has the power to tax work-centers parking!
- TCRP Report 40 “Strategies to Attract Auto Users to Public Transportation”, TRB-NRC 1998 ⇒ Parking Policy

Parking Policy

Strategies to Attract Auto Users to Public Transportation

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- Cities with restrictive parking practices tend to have better transit service and higher transit ridership rates.
- Factors related to parking price have a stronger effect on mode choice than do factors related to transit service

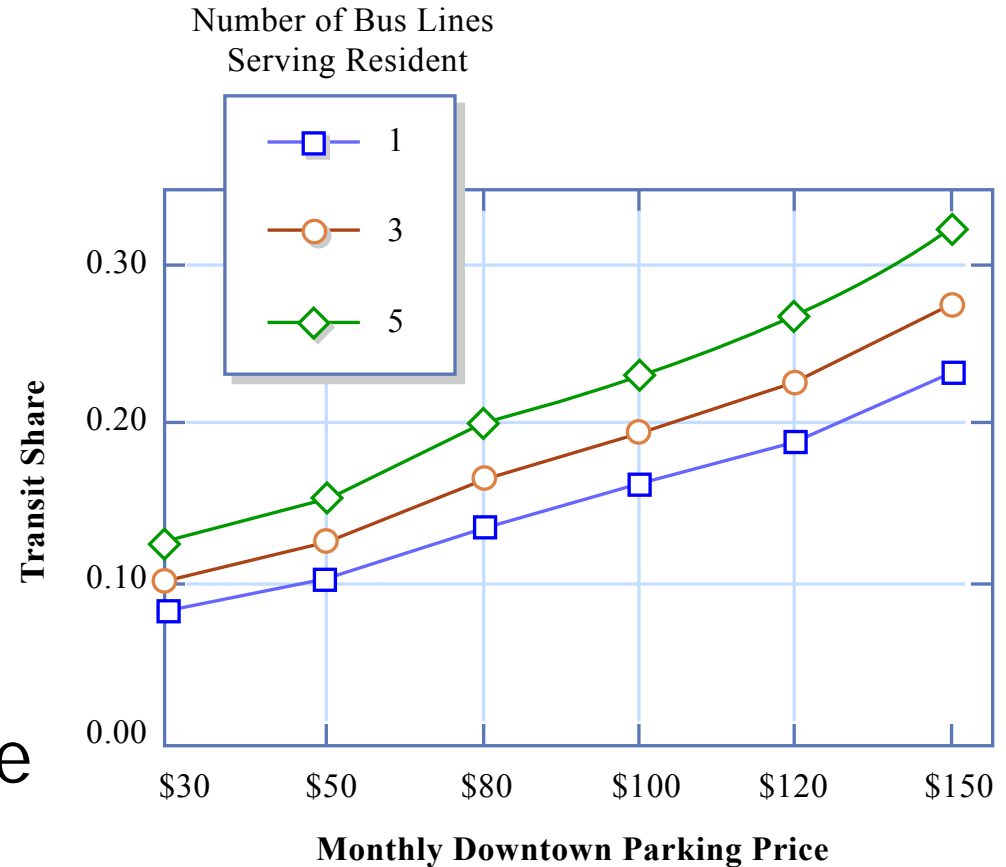


Figure by MIT OCW.

Parking Policy: Probably The Most Critical Transport Issue

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- Parking policy may influence:
 - Mode choice
 - Transit supply
 - Destination
 - Frequency
 - Car occupancy
 - Development types
 - Development costs
 - Traffic Congestion
 - Urban Quality
- Two basic types:
 - Commuter
 - Shoppers
- Parking Mgt Programs:
 - Caps in CBD
 - Max rates, not min
 - Parking tax on off street parking
 - Max hourly rates
 - Supply and cost of on street parking
 - Parking controls
 - Residential permits

Parking Policy: Resulting parking criteria

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- Parking policies which discriminate against long-stay parking in favor of short-stay shopping and business users
- Maximum (Not MINIMUM!) parking standards at trip attractors specified during the development planning processes.
- Note that the ITE standards are minimum parking requirements according to current US practice

Parking Policy: Maximum (not minimum) parking ratios

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- Portland, OR policies have reduced the number of parking spaces per 1,000 square feet of office/commercial space from 3.4 in 1973 to 1.5 in 1990
- San Francisco limited to 7% the floor area devoted to parking resulting in only 17% driving alone to work
- By contrast suburban office and business parks offer from 3 to 4 parking spaces per 1,000 square feet

It might take time to go from minimum to maximum parking ratios...

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- Commercial off-street parking facilities may be traced to Los Angeles in 1917
- City of Los Angeles banned parking on downtown streets in 1919 to relieve traffic congestion
- By 1935, Los Angeles requested through zoning, a covered garage for all new two-family houses and multi-family units
- By 1946 off-street parking requirements extended to hotels, clubs, churches..
- By 1954, there were 311 communities with off-street parking requirements in their local ordinances

Parking Policy: The Dutch A-B-C policy in terms of parking

- The Dutch Ministry of Land Use and Transportation tried to regulate the location of new employment based on the quality of the transit network
- Location type A (high quality transit) for type A centers (high no of employees): parking 10 spaces per 100 employees
- Location type B: 20 spaces per 100 employees
- Location type C (no transit but near expressway interchanges) for type C Centers (goods movement): 40 spaces per 100 employees

Parking Management: A Moving Target

- One of the main obstacles is that ratios are not enough to describe the system
- The real issue is the total supply of parking spaces

Parking Management: Where??

- In areas :
 - With overall clear attraction potential
 - With high quality transit service
 - Where it is not easy to move employment centers elsewhere

Parking Management: Parking supply and pricing

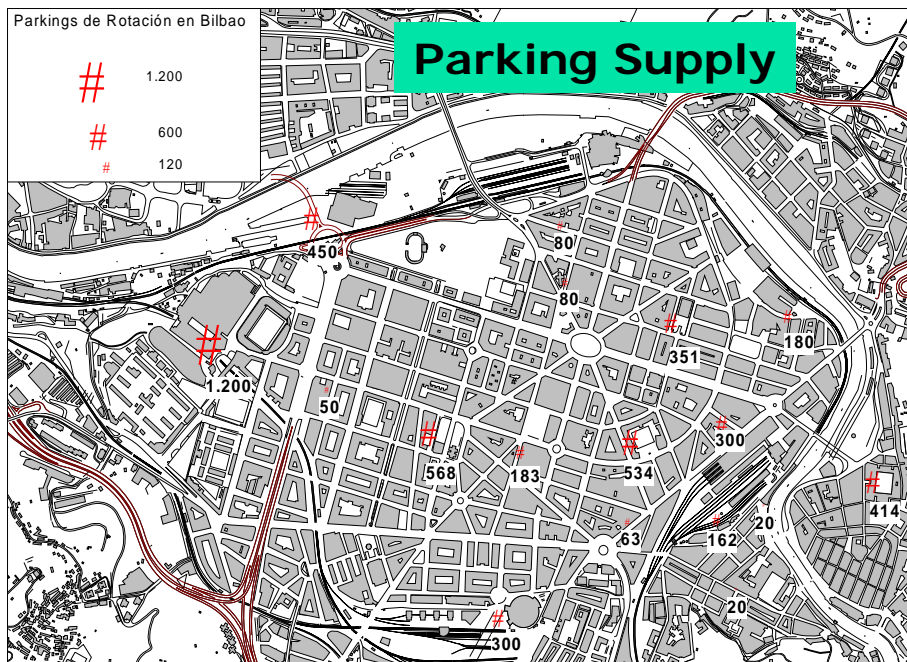
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- They go hand in hand as the Boston experience clearly shows
- Hard to establish which one is more influential
- In dense areas, supply is limited thus forcing up the price

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Parking Management: Based on parking behavior, you can estimate total number of car trips...

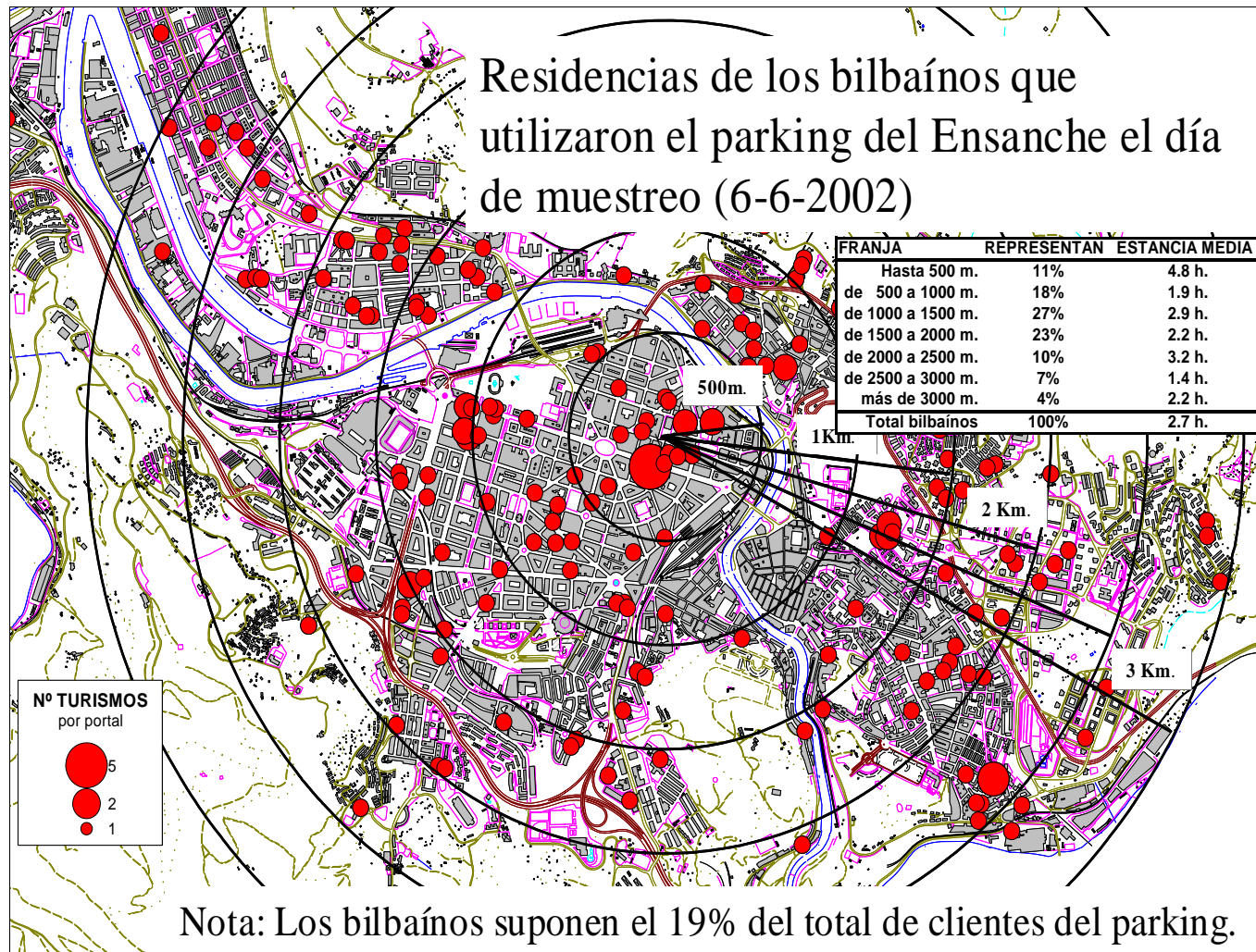
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- Parking supply and average stay define the resulting incoming and outgoing traffic flow!
- Very different figures for commuter and shoppers trips

Parking Management: If you record the plate numbers of cars going into a parking lot, you can learn a lot

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Parking Management: Shared-parking

- Sometimes, the difference in usage of two facilities may be complementary:
 - A shopping center parking near a rail station, thus working as P&R for commuters who may become shoppers upon their return

Parking Management:

Convenient walking from parking...

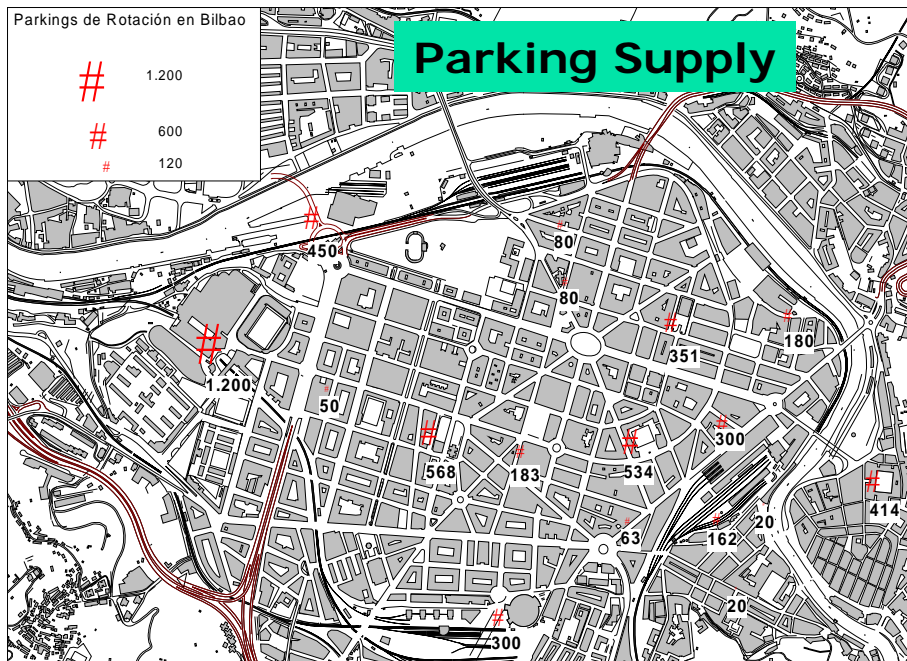
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Size of urbanized area	Work	Shopping	Personal business	Other
10,000 to 100,000	360	280	240	220
100,000 to 250,000	500	470	390	340
250,000 to 500,000	670	570	450	380
500,000 to 1,000,000	650	560	590	500
Boston	972	800	844	985
Distances in feet				
Sources: Committee on Parking (1971), Weant and Levinson (1990), TDA inc (1988) and Wilbur Smith (1974) as from TCRP Report 95 Chapter 18				

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Parking Management: You can explain to a shopkeeper that...

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- 10 parking spots can be used for:
 - 10 commuters who stay for 10 hours, or for
 - 100 shoppers who stay one hour each from 9 am till 7 pm

Parking Management: Spill-over effects

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- When regulating on-street parking, spill over effects may force you to:
 - Extend gradually the area subjected to parking fees, or to
 - Create a buffer only for residents
- The South End has a working mix of arterials with free parking and local streets with “residents only” signs

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Parking Management: Parking can be used as a traffic calming technique...

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Parking Management: Modeling will help to..

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... estimate the consequences of new parking policies, since they may involve:

- new types of parking
- new locations of parking
- new duration for parking
- new mode of travel
- different car occupancy
- new destination
- new frequency of trip making
- new time for travel
- new route

You will even find microscopic models such as PARKSIM to simulate the search for a parking spot, based on experience, available information, etc.