

# Housing, Transport and Cities – Some Myths and Realities

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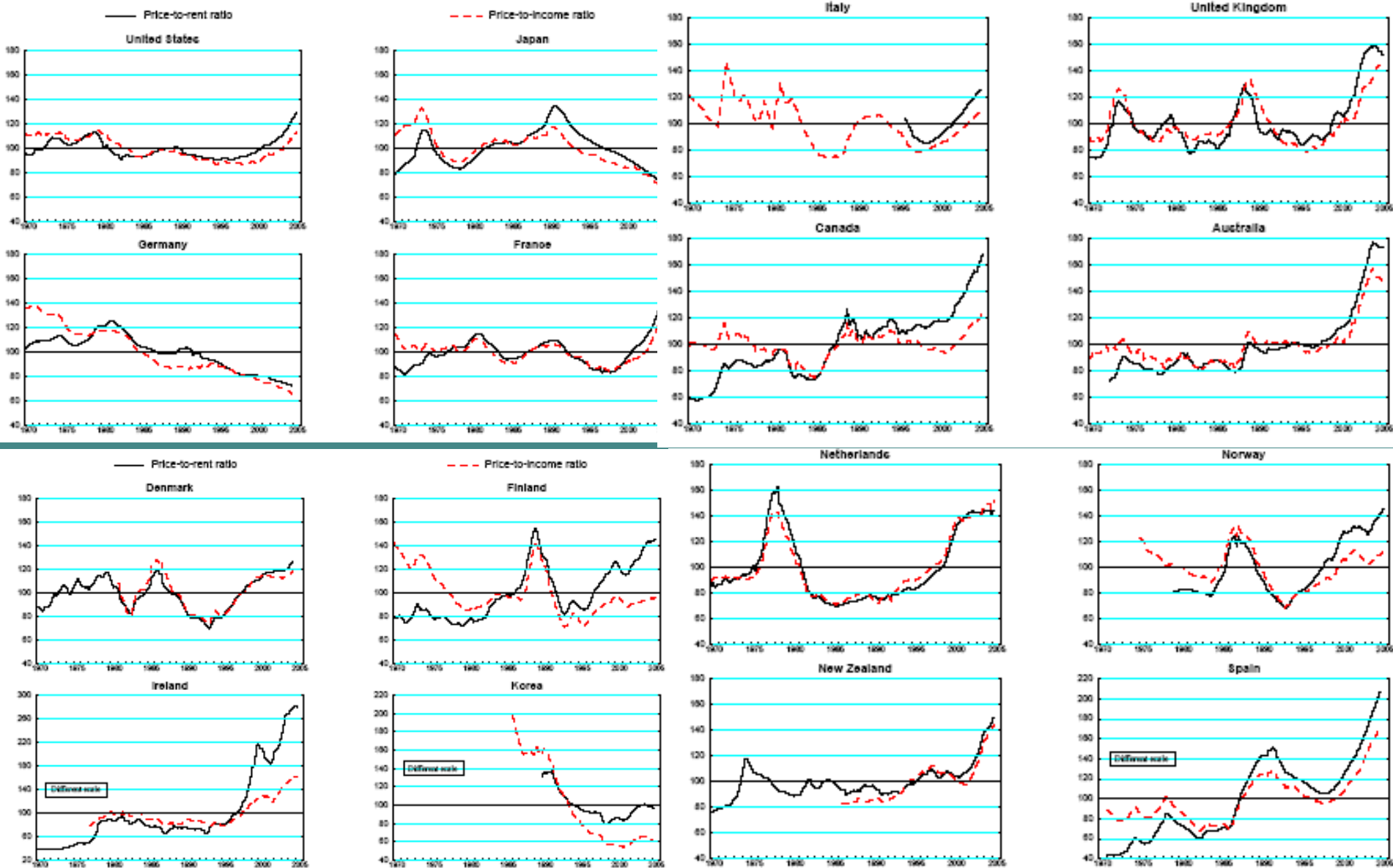
University of Technology, Sydney

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  - Urban consolidation will destroy our cities

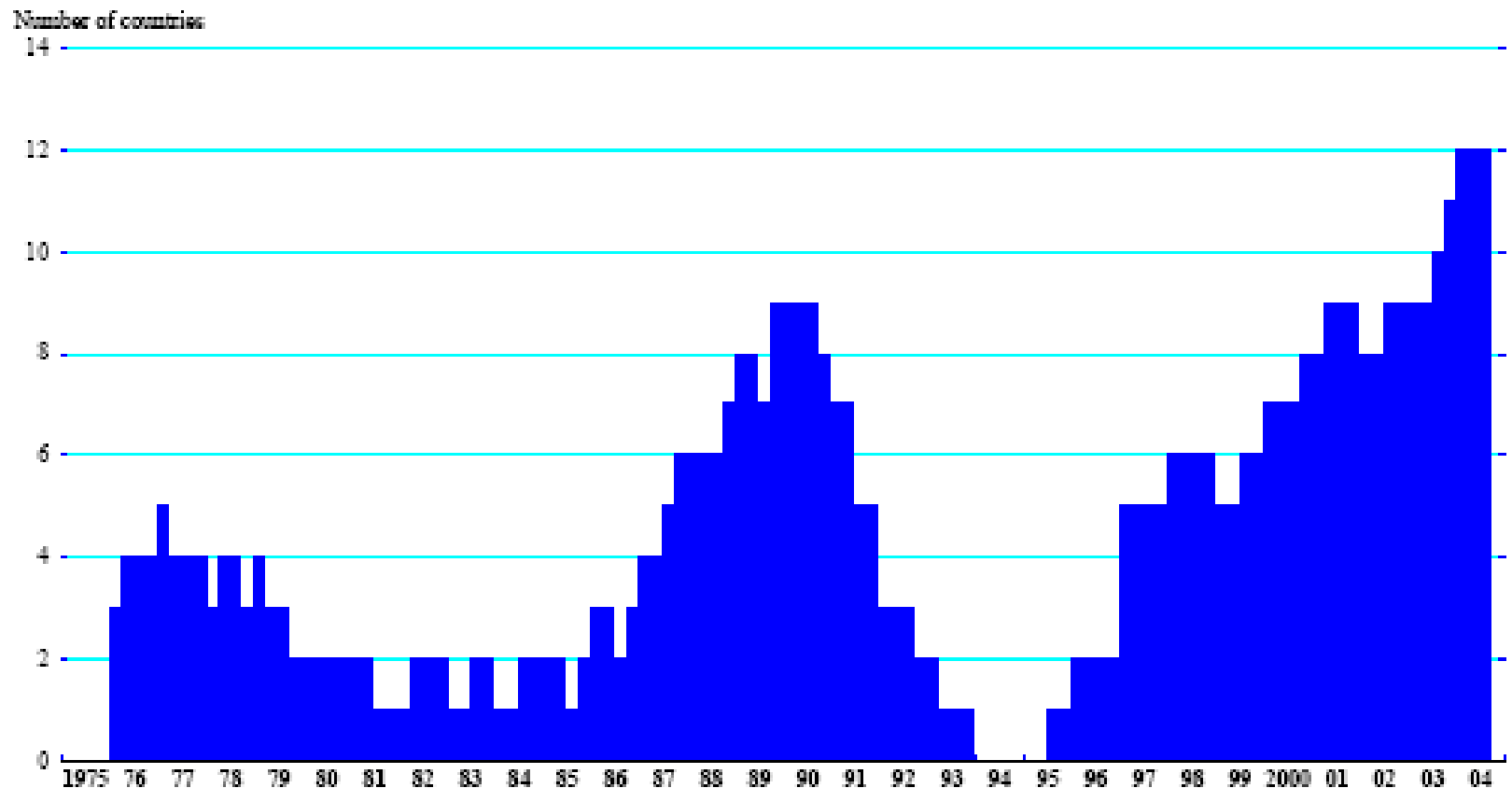
- ◆ Myth #1: Housing Affordability Problems are primarily due to Urban Consolidation
- ◆ Reality: Housing prices reflect many factors
  - Demand (population growth, demographic shifts, changes in housing preferences, incomes and income distribution etc)
  - Supply (land supply, density controls etc)
  - Finance (interest rates, money supply etc)
  - State of the economy
  - Costs (developer charges, inflation, cost of building, cost of land)
  - Accessibility and Environmental attributes

# Real housing prices have varied in OECD countries



# But the recent trends to rapid increases in house prices are quite general

**Figure III.3. Cross-country coincidence of real house price increases**  
Number of countries (out of 17) with over 25% increase in real prices over the previous five years



Source: OECD (2005)

# Housing is expensive in Australia but not as much as in some other countries

Table III.1. Households mortgage debt and interest burden

Source: OECD (2005)

	Mortgage debt			Interest payments			Variable interest rates
	% of household disposable income						% of all loans
	1992	2000	2003	1992	2000	2003	2002
United States	58.7	65.0	77.8	4.9	5.2	4.5	33 <sup>1</sup>
Japan	41.6	54.8	58.4	2.5	1.3	1.4	n.a.
Germany	59.3	84.4	83.0	3.9	4.0	3.0	72 <sup>2</sup>
France	28.5	35.0	39.5	1.7	1.4	1.1	20
Italy	8.4	15.1	19.8	0.7	0.8	0.7	56
Canada	61.9	68.0	77.1	5.9	5.7	4.9	35-45 <sup>1</sup>
United Kingdom	79.4	83.1	104.6	4.4 <sup>1</sup>	3.7	3.0	72
Australia	52.8	83.2	119.5	4.8	6.4	7.9	73 <sup>1</sup>
Denmark	118.6	171.2	188.4	10.6	9.9	8.3	15 <sup>2</sup>
Finland	56.7	65.3	71.0	7.1	2.9	1.9	97
Ireland	31.6	60.2	92.3	2.3	3.0	2.5	70 <sup>2</sup>
Netherlands	77.6	156.9	207.7	5.0	8.4	8.2	15
New Zealand	67.0	104.8	129.0	6.9	9.3	9.4	n.a.
Spain	22.8	47.8	67.4	1.6	2.2	1.7	75
Sweden	98.0	94.4	97.5	5.0 <sup>4</sup>	4.2	3.3	38 <sup>2</sup>

# Land supply and building controls

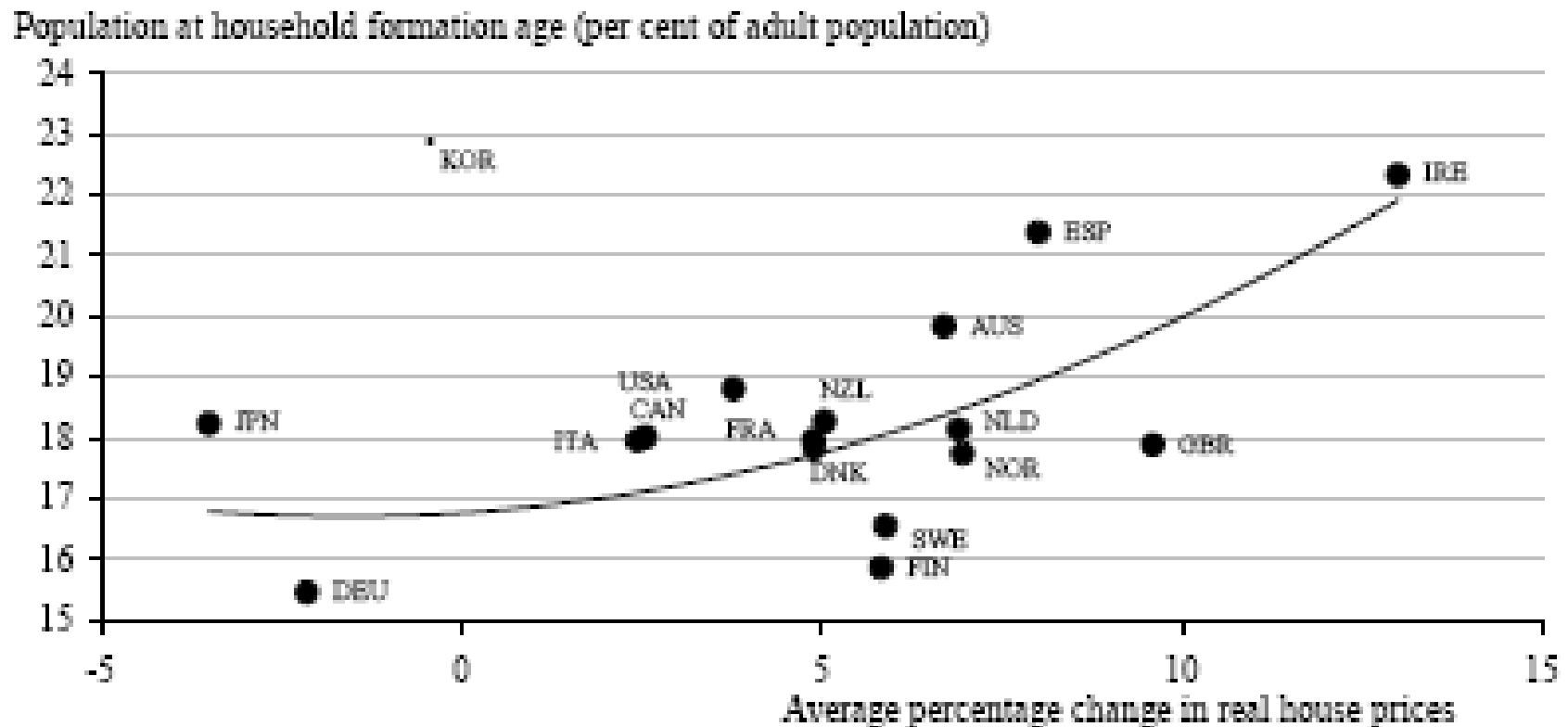
These are one factor..

In the United Kingdom, complex and inefficient local zoning regulations and a slow authorisation process are among the reasons for the rigidity of housing supply, underlying both the trend rise of house prices and their high variability.<sup>20</sup> In Ireland and the Netherlands<sup>21</sup> similar factors affect house price dynamics. In Korea, government limitations on urban land supply (Restricted Development Zone) have been important causes of the rapid rise in housing prices.<sup>22</sup> Heavy land-use regulations in some US metropolitan areas have been associated with considerably lower levels of new housing construction which have restricted housing supply and thus increased house prices in the regulated municipalities as well as in neighbouring towns (Box III.2).

## Demographic factors

The percent of the population in household formation ages are also important. For example this is relatively high for Australia

Figure III.6. Population and house prices  
1995-2004

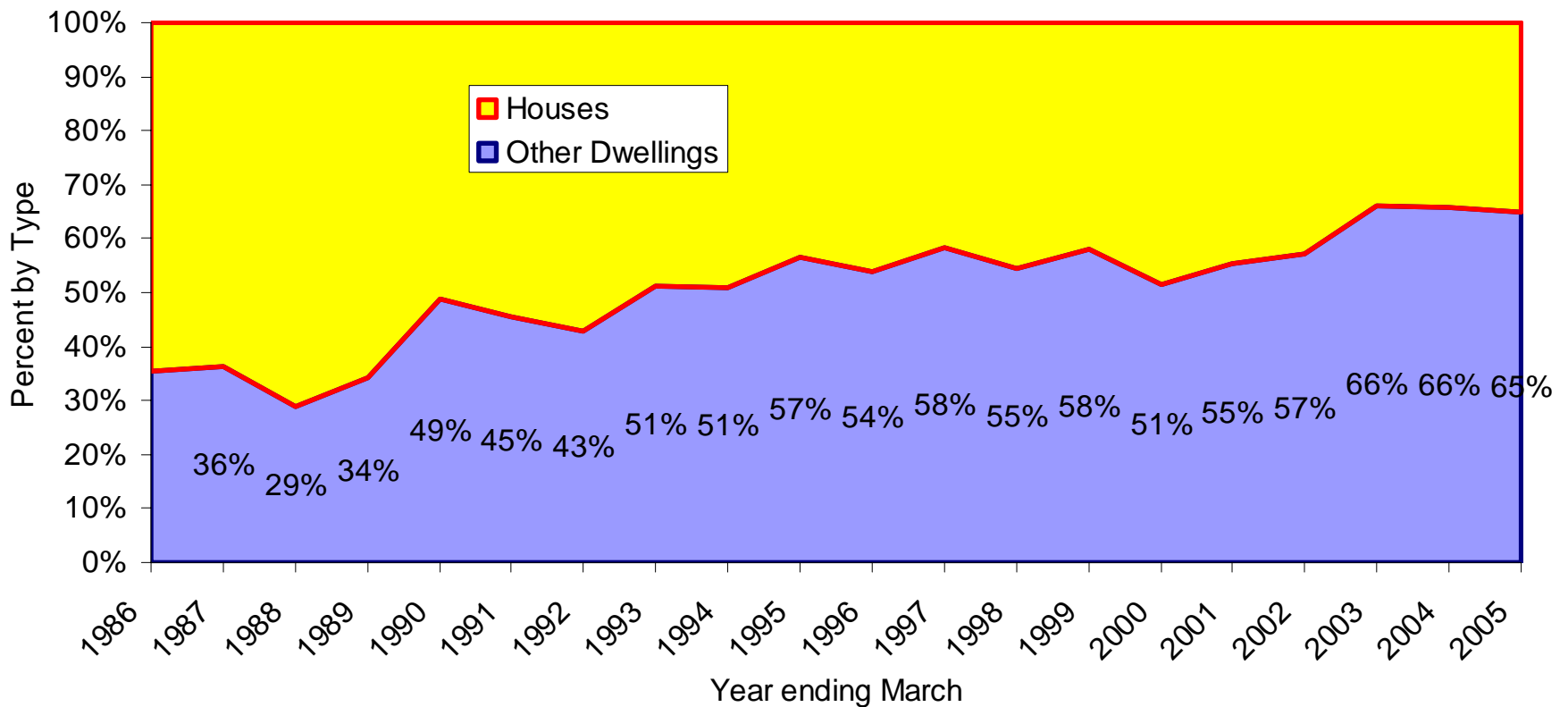




# Demographic factors

Ageing of the population, declining family sizes, changes in lifestyle have helped shift housing demand

Dwelling Approvals, Sydney Statistical Division



Source: ABS

# Economic Factors

- ◆ Sydney has long been the most expensive city in Australia for housing, usually followed by Canberra and Melbourne
- ◆ In the last year, Perth housing prices have risen rapidly to become the second most expensive in Australia
- ◆ Brisbane has also caught up to Sydney significantly over the 2000- 2005 period
- ◆ **These trends reflect the booming state economies in WA and Qld from resources and the sluggish NSW state economy.**

# Housing Finance

- ◆ In recent years there have been significant innovations and a general freeing up of housing finance across many countries, including Australia
- ◆ Twenty-five years ago, for example, banks tended to consider only the first income in a household (almost always the male “breadwinner” and limited loans so that repayments on a 25 year loan did not exceed 30% of that income
- ◆ Now both incomes are considered, the 30% is no longer enforced, no-deposit loans are common, repayments are flexible (eg if people have a child, repayments can be deferred) etc. This has followed bank deregulation and the entrance of new home mortgage originators

Table III.3. Recent mortgage product innovations in selected countries

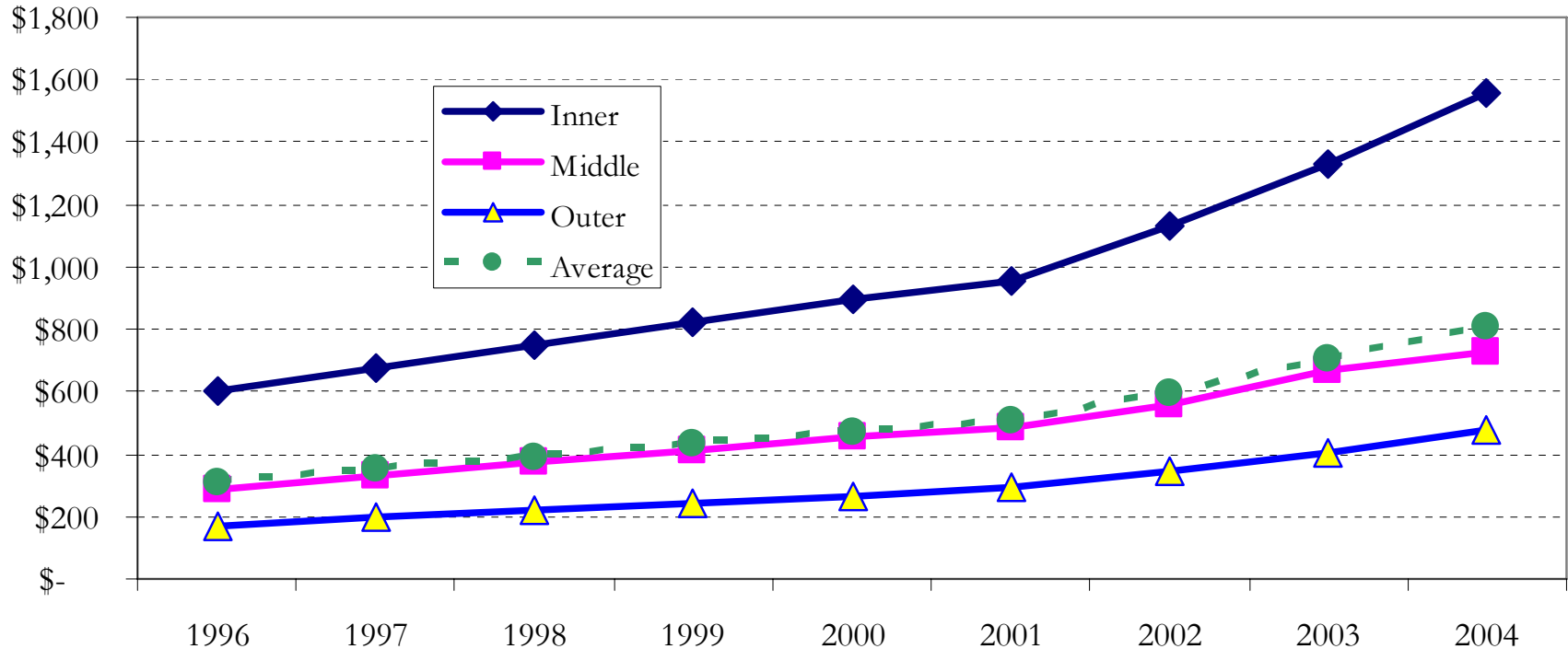
Country	Recent innovations
United States	Interest-only loans; Flexible mortgages with variable repayments.
Germany	New Pfandbriefe Law abolishing penalties for early mortgage pay-offs
France	Variable payment mortgages; Lengthening mortgage terms.
United Kingdom	Flexible mortgages; Offset mortgages (savings and mortgage held in same/linked accounts, with savings offset against mortgage balance); Base rate trackers.
Canada	Shorter-term mortgages, initial fixed-rate period shortened from five years to one year; Skip-a-payment, early mortgage renewal and flexible payment schedules.
Australia	Flexible mortgages with variable repayments; Split-purpose loans (splits loan into two sub-accounts, giving tax advantages); Deposit bonds (insurance company guarantees payment of deposit at settlement); Non-conforming loans; Redraw facilities and offset accounts; New providers including mortgage originators and brokers.
Denmark	"Interest-adjusted" loans: interest rate set at regular intervals by sale of bonds; Capped-rate loans; BiligXloans: interest adjusted every six months with reference to ten-day average of CIBOR; Interest-only loans.
Finland	Lengthening mortgage terms; Introduction of state guarantee for mortgages.
Netherlands	Savings or equity mortgages: part of payment covers interest, part goes into fixed interest savings account or equity account (confers tax advantages); Interest-only mortgages.

Source: Scanlon and Whitehead (2004), Canada Mortgage and Housing Corporation (2005) and OECD.

# Planning... Land Values

- ◆ Land Values in Sydney are rising rapidly, driven by demand side factors (global Sydney, harbour land) and supply side (land supply, developer contributions)..

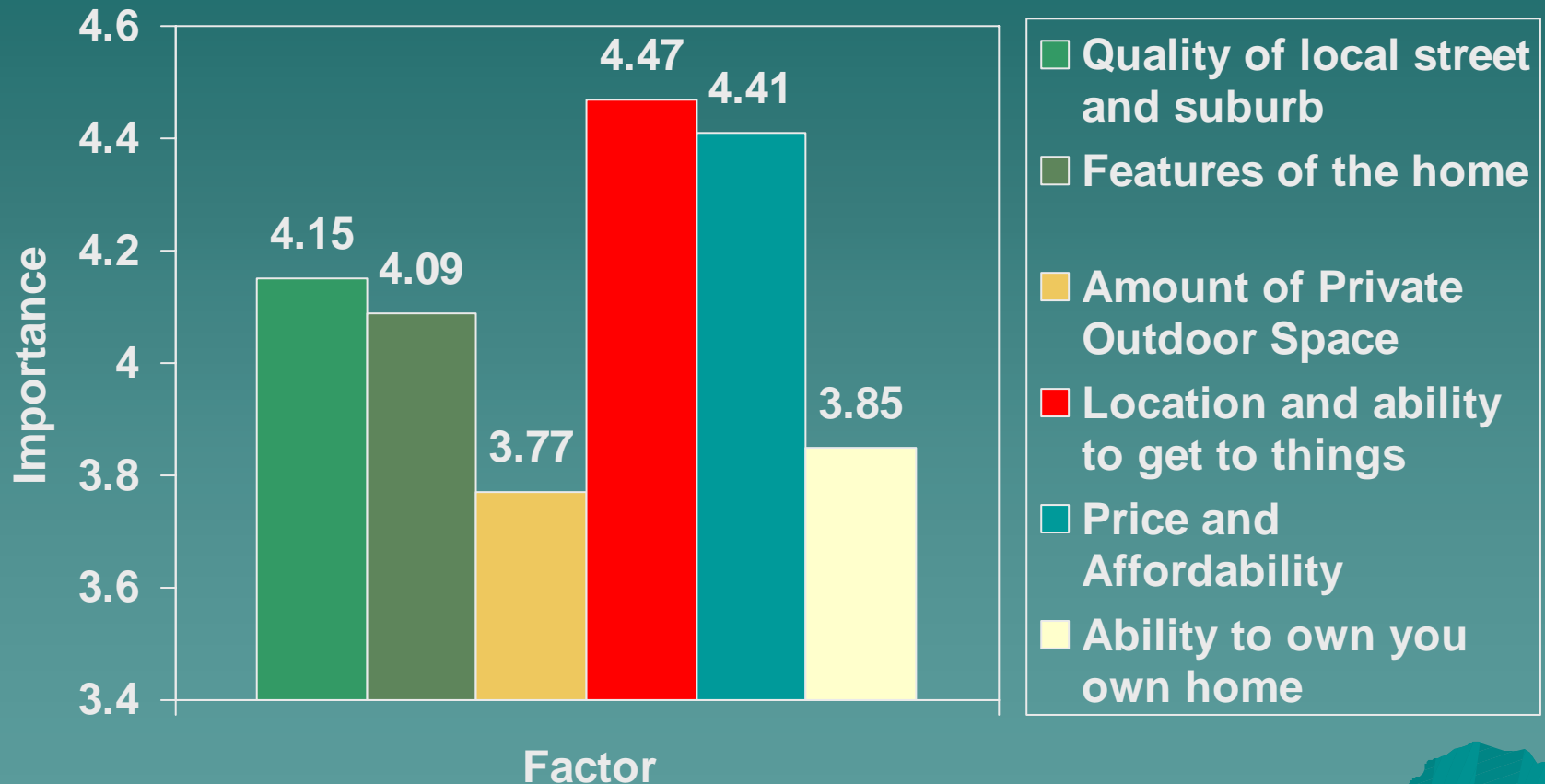
Land Values Per Sq M in Sydney



Source: NSW Valuer-General

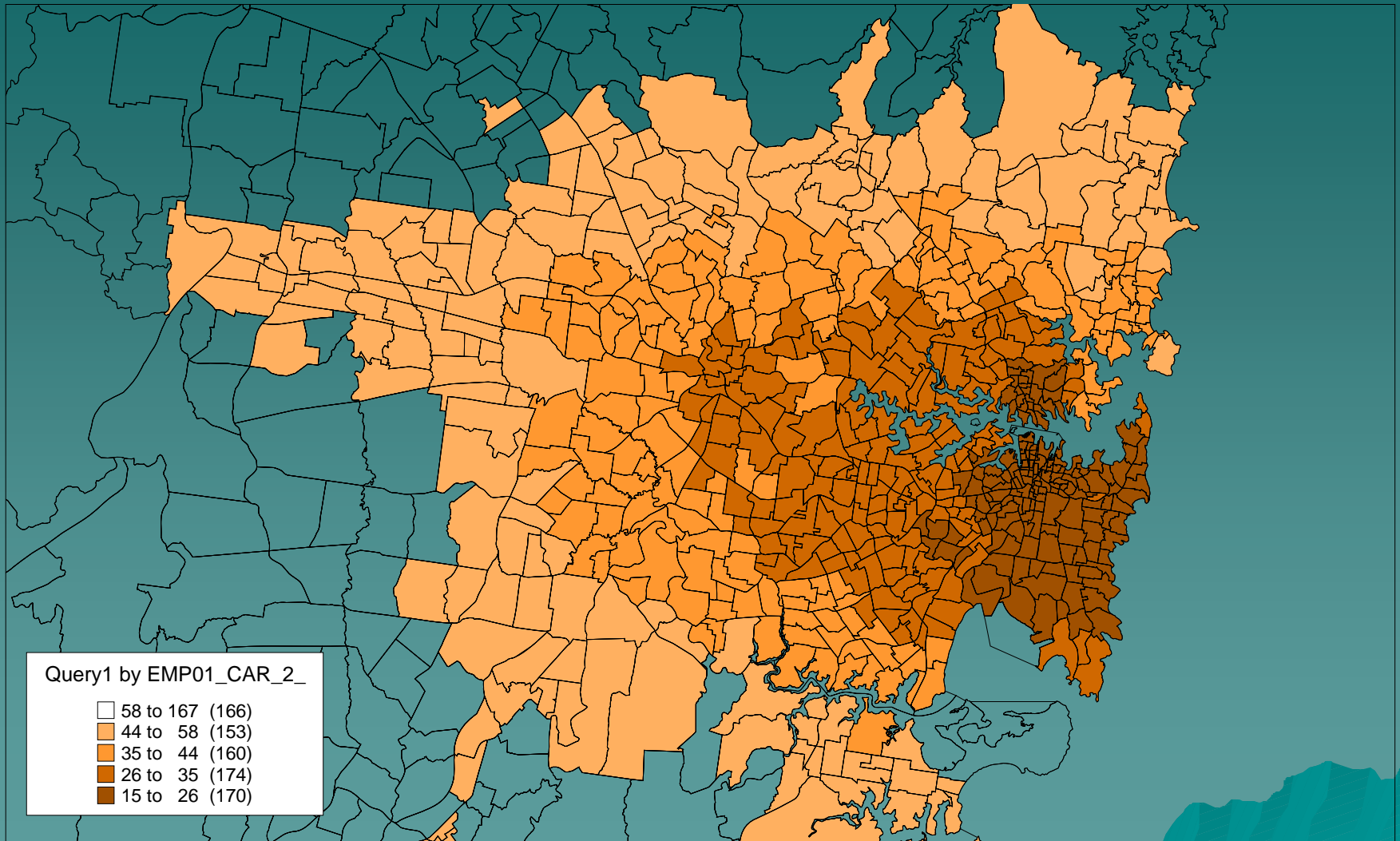
# Lifestyle Choices and Housing Preferences

Accessibility is the most important single factor in housing choice



Source: Glazebrook 2003b

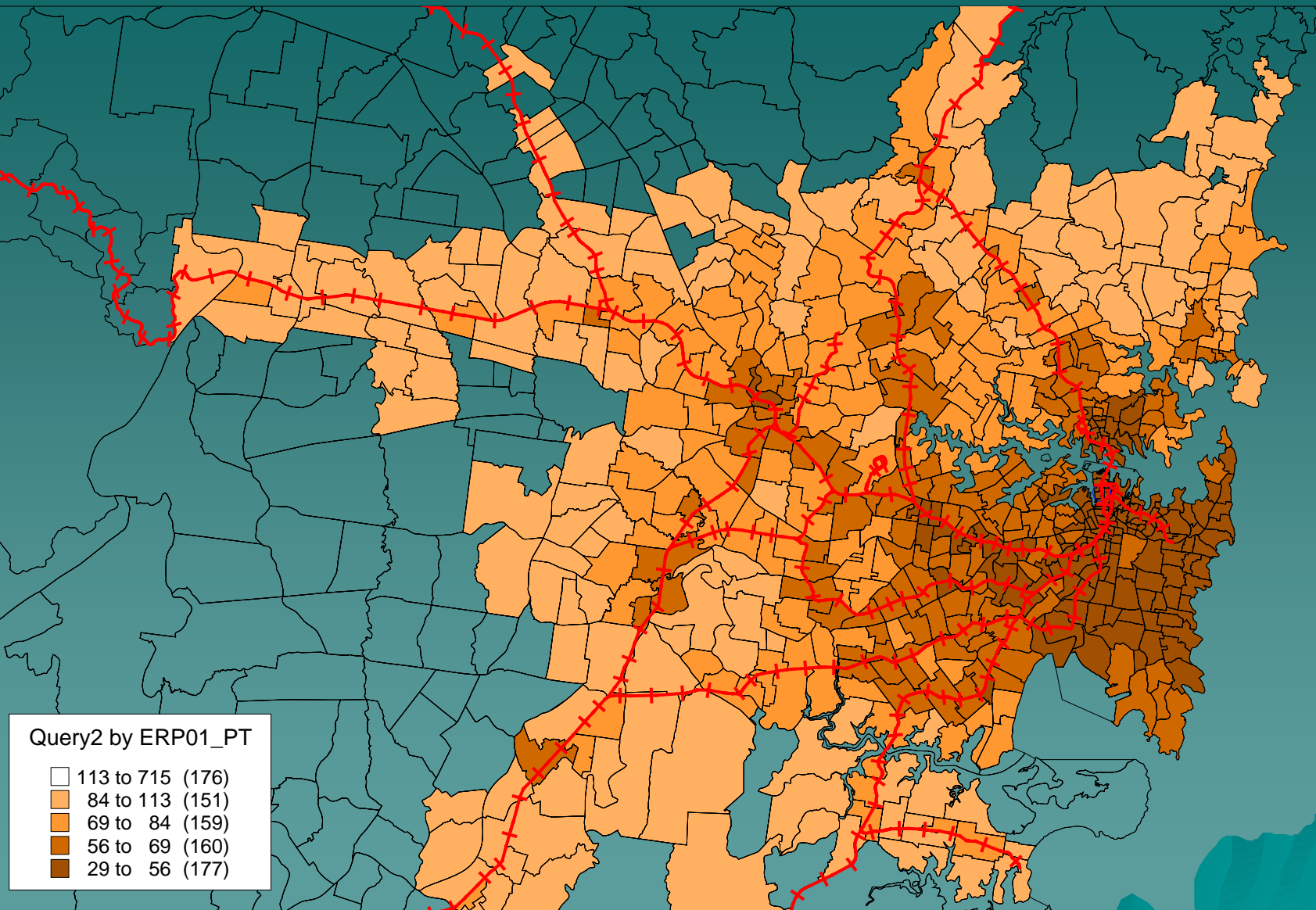
# Access to jobs by car (2001)



Source: Glazebrook 2003b



# Access to the population by public transport



Source: Glazebrook 2003b



# Conclusion on Housing Affordability

- ◆ Cities and countries show strong housing price cycles
- ◆ Generally upward trend in recent years across OECD
- ◆ Many factors involved in determining housing prices
- ◆ Urban consolidation and land supply only one factor. In case of Sydney, more important is the Government policy of charging developers for infrastructure. Fringe development was previously heavily subsidized.
- ◆ Housing affordability needs to consider both housing and access costs since these are traded off.
- ◆ High prices near city centres are due to higher accessibility (reinforced in case of Sydney by higher amenity – the “harbour effect”)
- ◆ Rising petrol prices will place even higher premiums on accessibility

# Myth #2: Car-based cities are the future

## Reality

- ◆ While public transport declined generally between 1920 and 2000, there is now a leveling off or increase in patronage and increased investment again in public transport.
- ◆ This is driven by changes in housing, jobs, and concern at the environmental, health, economic impacts of over-reliance on cars.
- ◆ Cars will remain very important. But a better balance in urban transport is now being sought generally

# Trips per capita on public transport – Melbourne

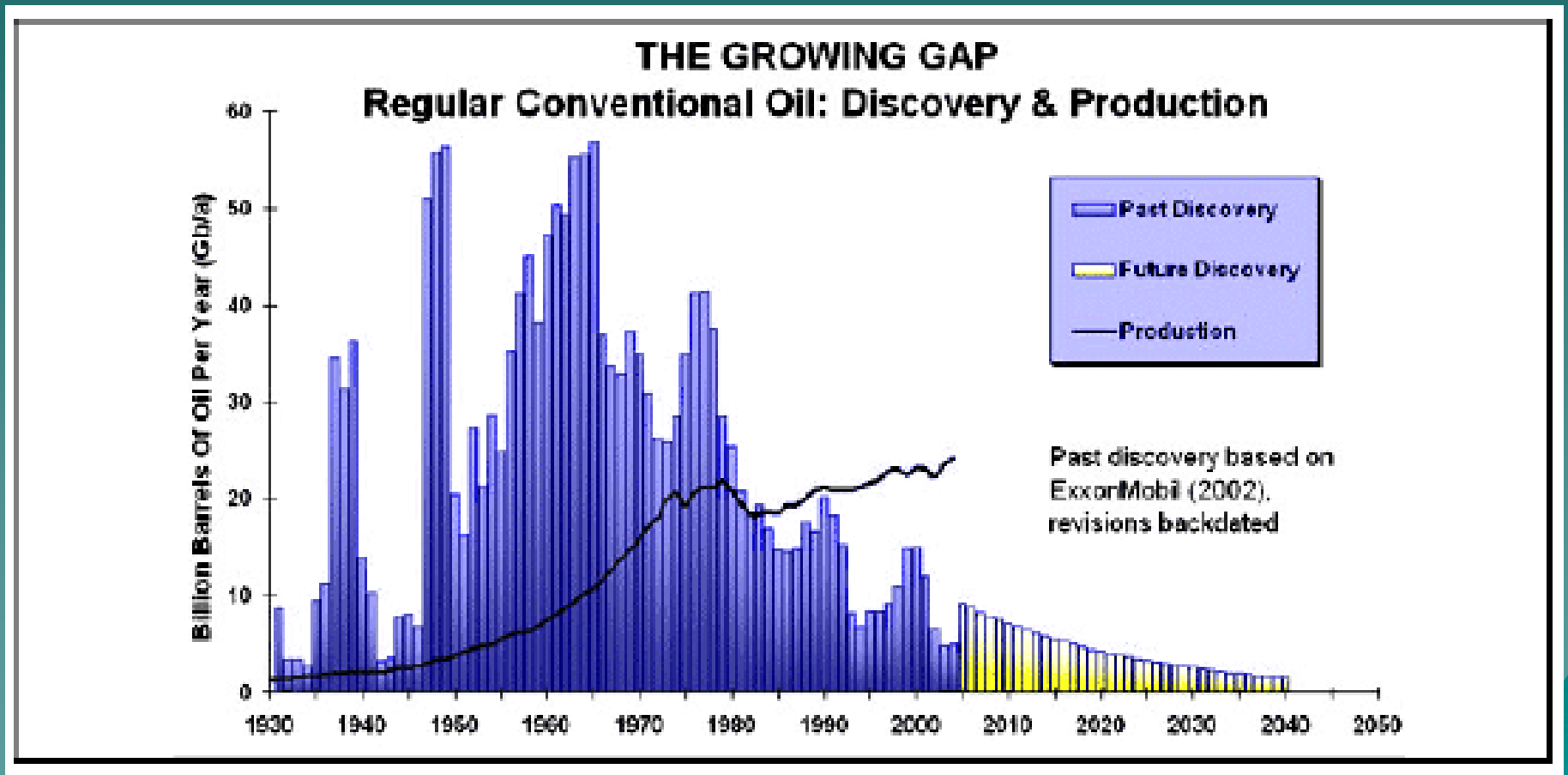
- ◆ Trips per capita and patronage fell rapidly until 1980
- ◆ Trips per capita have stabilised since then and patronage increased
- ◆ Government is now aiming to increase mode share for walk, cycle and PT, which could raise PT patronage from 370 million trips pa to over 1 billion p.a.



# Peak Oil

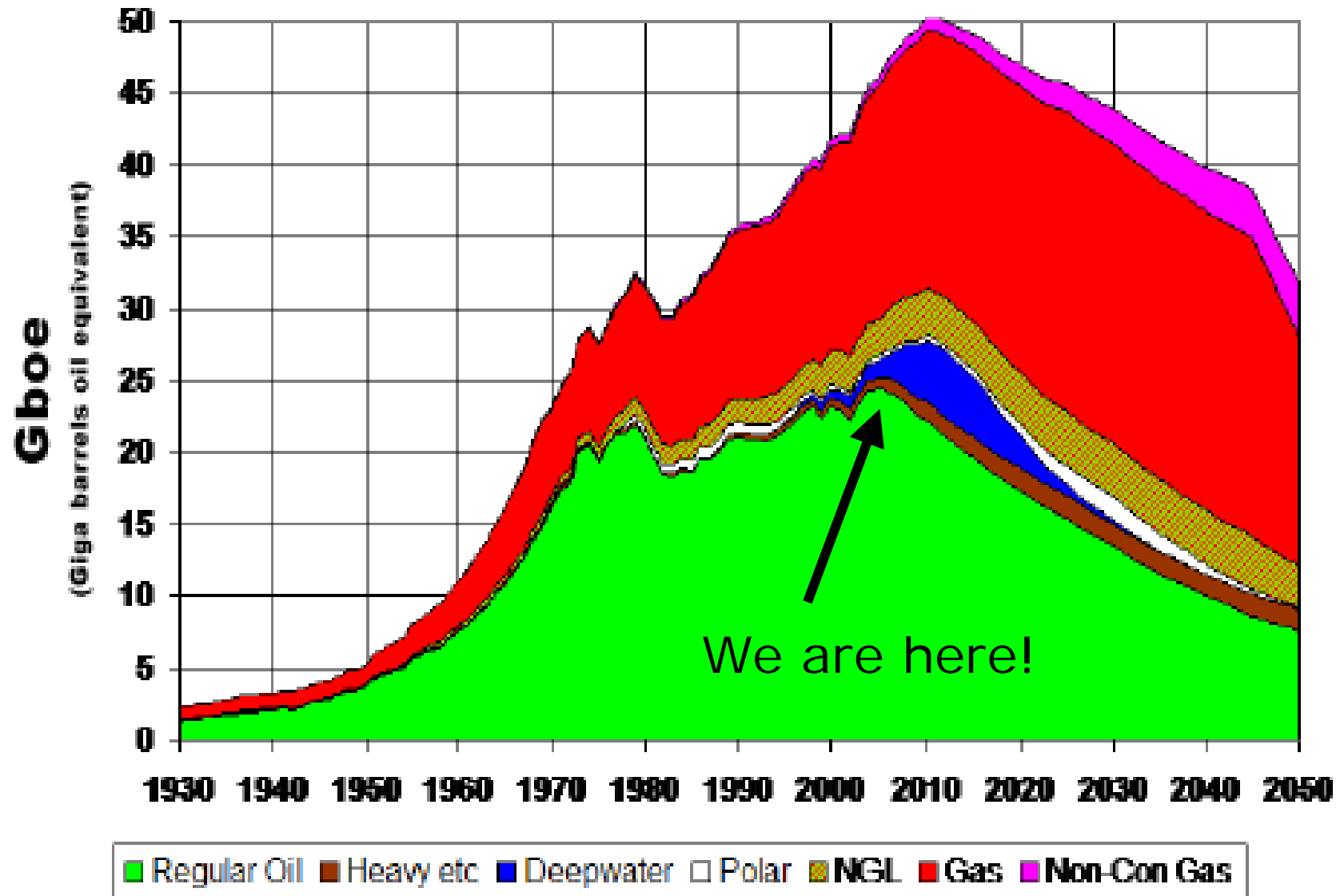
- ◆ The world is fast approaching peak oil production
- ◆ Many producers have passed peak production (US in 1970, North Sea in 2000, Bass Strait etc)
- ◆ Mega fields are increasingly rare
- ◆ Oil consumption has been consistently higher than new discoveries since 1980
- ◆ Even tar sands in Canada, gas etc will only delay peak production for a short while
- ◆ Meanwhile Chinese demand is rapidly increasing. China is tying up production agreements with many African countries

# Peak oil



Source: ASPO Australia

# Peak Oil



Source: ASPO 2006 from Exxon Mobil

# Peak Oil

- ◆ China's demand for petrol is rising rapidly. In 1996 China had only 10 million motor vehicles (8 per thousand head of population).
- ◆ By 2005, some 5.7 million vehicles were sold in China, with a forecast of 9.6 million by 2010 (ASPO USA 2006).
- ◆ For the first 4 months of 2006, Chinese oil imports were running at 3 million barrels a day, up 17% from a year earlier.

Source: Rutledge (2005), and ASPO  
USA

# Greenhouse

- ◆ Australia has the highest per capita CO<sub>2</sub> production in the world
- ◆ CO<sub>2</sub> emissions from transport are rising rapidly
- ◆ Carbon trading is commencing for power stations
- ◆ If extended to oil and transport fuels will put further pressure on cities to adapt to lower energy systems
- ◆ Public transport in Sydney is 3 times more energy efficient than cars

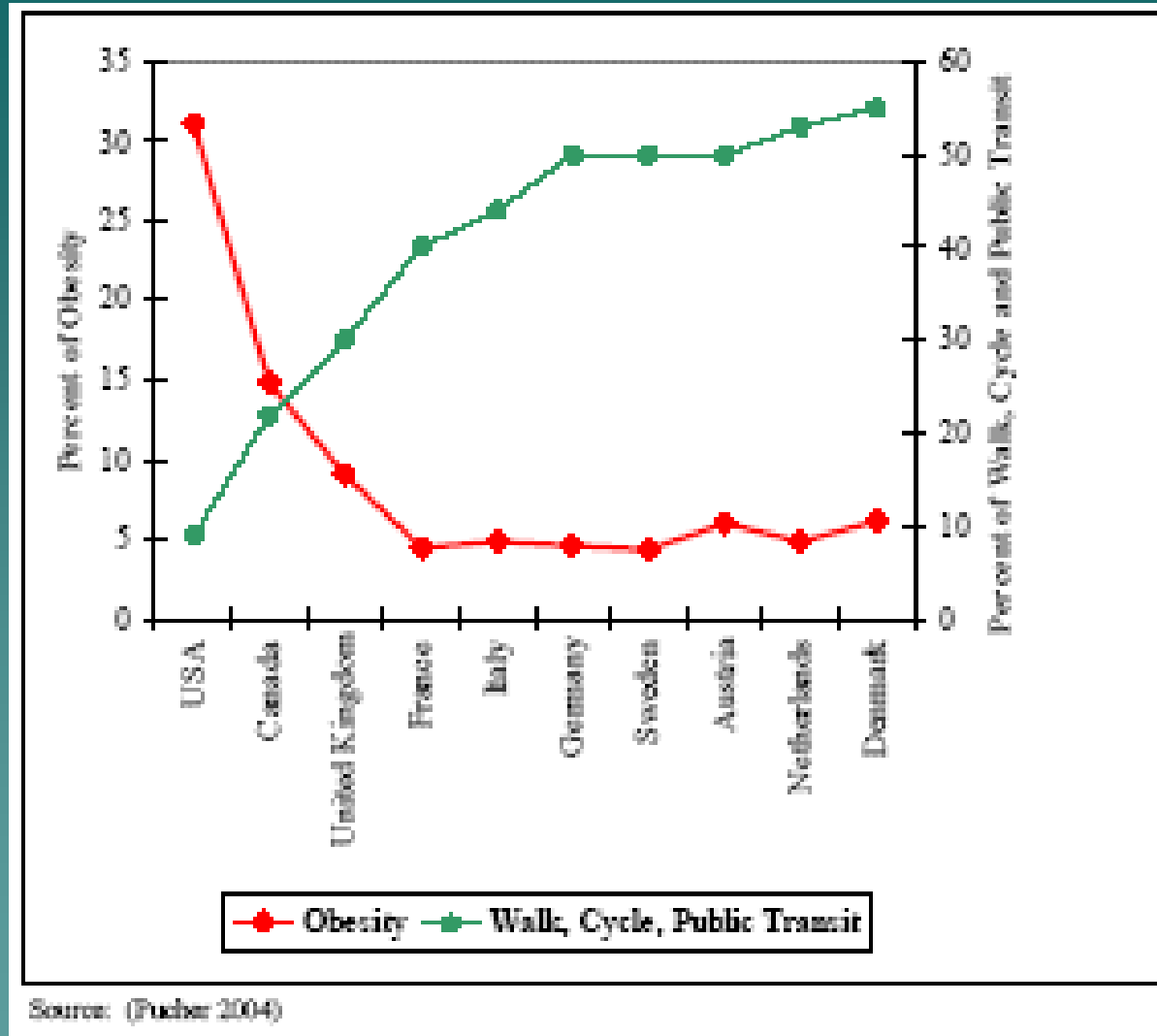


# Australian CO2 emissions 1990-2003

Source	Emissions CO2 (Million Tonnes)		
	1990	2003	% Change
Energy	286.1	374.3	31%
Stationary	195.4	268.1	37%
<b>Transport</b>	<b>61.9</b>	<b>79.8</b>	<b>29%</b>
Fugitive Emissions	28.8	26.4	-8%
Industrial Processes	28	32.3	15%
Agriculture	93.6	97.3	4%
Land use	126.2	34.8	-72%
Waste	10.2	11.4	11%
<b>TOTAL</b>	<b>544.1</b>	<b>550</b>	<b>1%</b>

Source: Australian Greenhouse Office

# There is also growing concern at the health effects of obesity and its links with urban travel



Source: Pucher (2004)

# Myth # 3: Buses are the only sensible public transport

## Reality

- ◆ In Sydney, rail is the lowest cost mode per pass-km, cheaper than buses and much cheaper than cars.
- ◆ Buses are important and have their place. But internationally there has been a big trend back to light rail for medium sized cities, or for selected corridors in larger cities
- ◆ Many cities are also building metros
- ◆ In reality a sensible PT system uses the most appropriate mode in specific places, and integrates them into a seamless system.
- ◆ In Sydney we need:
  - Extensions to heavy rail for outer NW and SW suburbs
  - Light Rail in inner suburbs
  - More cross-regional bus services

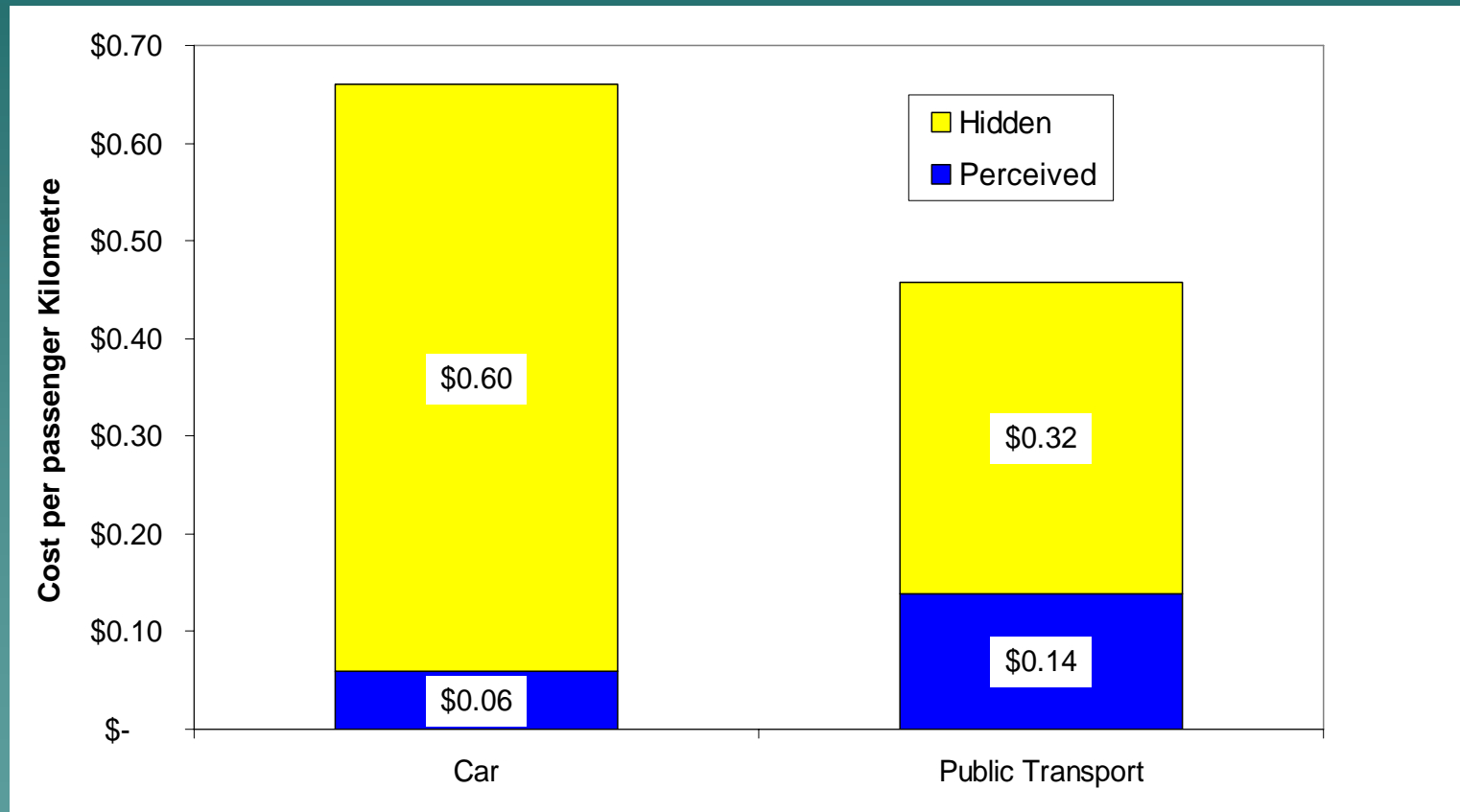
# Economics...public transport

	Cityrail	STA Bus	Priv Bus	Total Bus
Annual Patronage (mill)	273	198	142	340
Av Trip Length (km)	18.7	6.2	8.8	7.3
Total Pass- Km (billlion)	5.11	1.23	1.25	2.48
Total Cost pa (\$m)	\$1970	\$532	\$517	\$1049
<b>Total Cost / pass-km</b>	<b>39c</b>	<b>43c</b>	<b>41c</b>	<b>42c</b>
Farebox Revenue \$m	\$518	\$275	\$254	\$529
Farebox Rev / pass-km	10c	22c	20c	21c
Cost of Main Infrastructure Included?	Yes	No	No	No

Source: Glazebrook (2005), NSW Ministry of Transport (2003) and NSW Transport Data Centre

# Economic...

- ◆ All modes in Sydney have marginal costs well below total social costs (including externalities etc). There is thus an incentive to consume too much transport, particularly car-based transport.

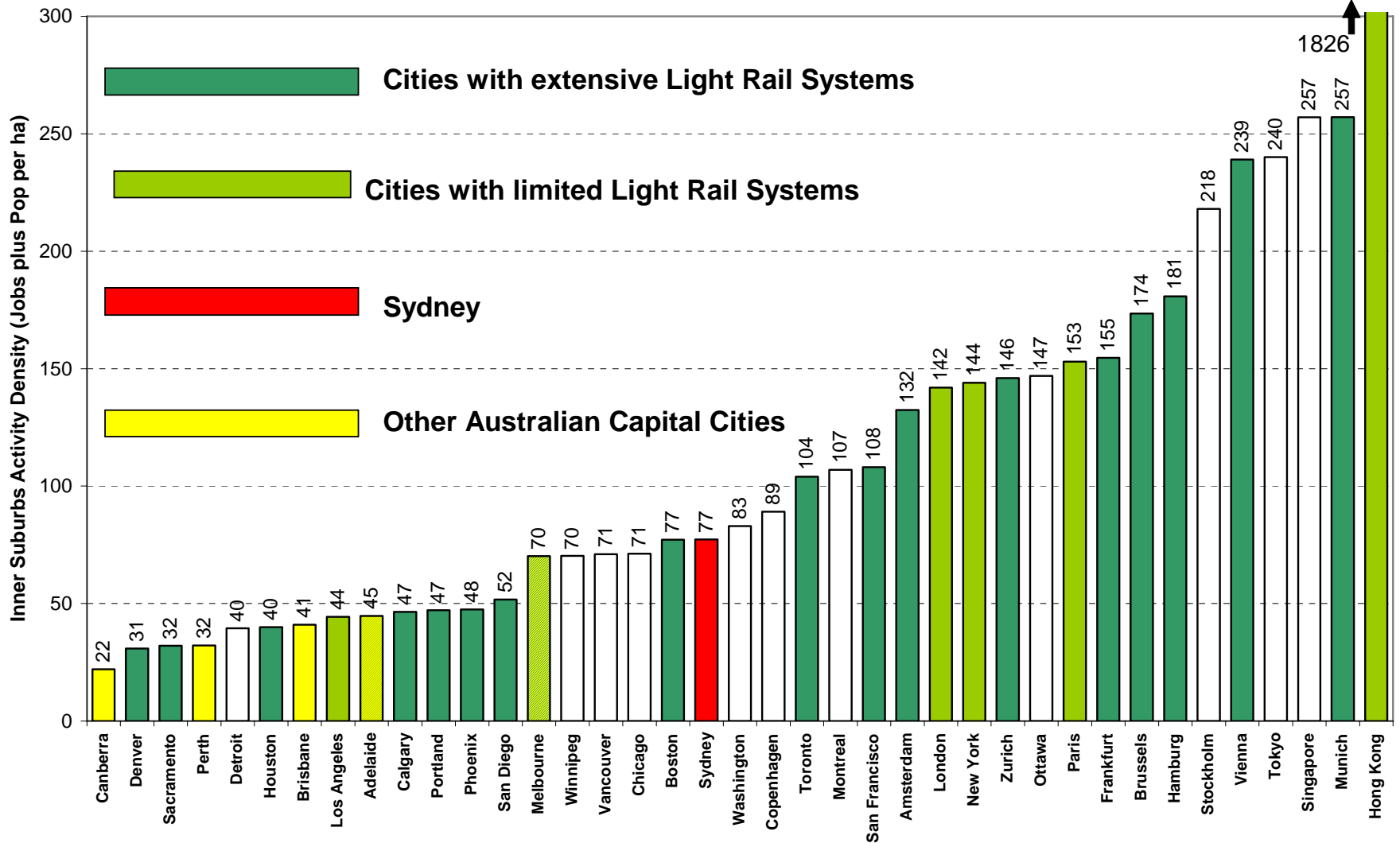


- ◆ Source: Glazebrook (2005). Data for 2002/3 (before recent rises in petrol prices, congestion)

100 cities world wide have built new or expanded light rail between 1994-2004. There are only 9 guided busway systems (some quite old)

<i>LIGHT RAIL (new or expanded systems since 1994)</i>						G. BUSES
Melbourne	Istanbul	Berlin	Birmingham	Barcelona	Baltimore	Adelaide
Sydney	Izmir	Bremen	London	Valencia	Boston	Essen
Beijing	Konya	Cologne	Manchester	Stockholm	Cleveland	Mannheim
Changchun	Linz	Erfurt	Nottingham	Geneva	Dallas	Leeds
Hong Kong	Vienna	Freiburg	Sheffield	Zurich	Denver	Clermont-Ferrand
Mashad	Antwerpen	Gotha	Dublin	Tunis	Houston	Caen
Kochi	Bordeaux	Hanover	Milan	Buenos Aires	Jersey City	Rouen
Osaka	Grenoble	Karlsruhe	Naples	Rio De Janeiro	Los Angeles	Nancy
Tokyo	Lyon	Kassel	Rome	Guadalajara	Minneapolis	Las Vegas
Manila	Montpellier	Muelheim	Turin	Maxico City	Newark	
Novosibirsk	r	Munich	Amsterdam	Monterrey	Pittsburg	
St Petersburg	Orleans	Neurberg	Rotterdam	Valencia	Portland	
Moscow	Nantes	Rostock	Utrecht	Calgary	Sacramento	
Singapore	Paris	Saarbrücken	Poznań	Edmonton	Salt Lake City	
Adana	Rouen	Stuttgart	Lisbon	Toronto	San Diego	
Ankara	St Etienne	Athens	Porto		San Francisco	
Bursa	Strasbourg	San Jose			St Louis	
	Augsburg					

# Inner Metropolitan Activity Density by Presence of Light Rail





**O-bahn**



**GLT**



**Civis**



**STE**



**TVR (Nancy)**

# Other cities...Guided Buses

Type	Guidance	Vehicles	Applications
O-bahn (Mercedes, Volvo)	Physical (side)	Diesel single & artic	Adelaide, Leeds, Essen, Leeds
GLT (Bombardier)	Physical (rail)	Electric (single wire)	Caen
CIVIS (Irisbus)	Optical	3 unit Diesel, CNG	Las Vegas, Rouen, Clermont-Ferrand
STE (Translohr)	Physical (rail)	Electric, 3, 4 artic	Clermont-Ferrand (2005)
TVR (Bombardier)	Physical (rail)	Electric (2-wire), 3 unit artic	Nancy
Phileas (APTS)	Magnetic loops	2-unit artic	Being developed in Eindhoven
STREAM (AnsaldoBreda)	Magnetic		Being tested in Trieste
AEG (Cegelec)	Inductive cable		Channel Tunnel Shuttle



# Busways and Guided Buses

- ◆ A number of cities have installed busways (BRT Bus Rapid Transit) or guided bus systems.
- ◆ Eg Brisbane built the SE Transitway and Northern Busway, based on the Ottawa model. Sydney has built the Liverpool- Parramatta transitway and is building the NW Transitway.
- ◆ Busways can cause problems in inner city areas. For example Brisbane has built an underground bus station under Queen Street, and is now building a \$140m tunnel linking it to the inner northern busway to reduce the impact of buses on city streets



- ◆ Technical problems with some of the guided bus systems, including guidance systems, and blown tires.
- ◆ UITP estimates no cost advantage for electrically powered guided busways compared with light rail
- ◆ Ottawa and Adelaide (both with busways) are now building light rail systems

# Other cities...Asia

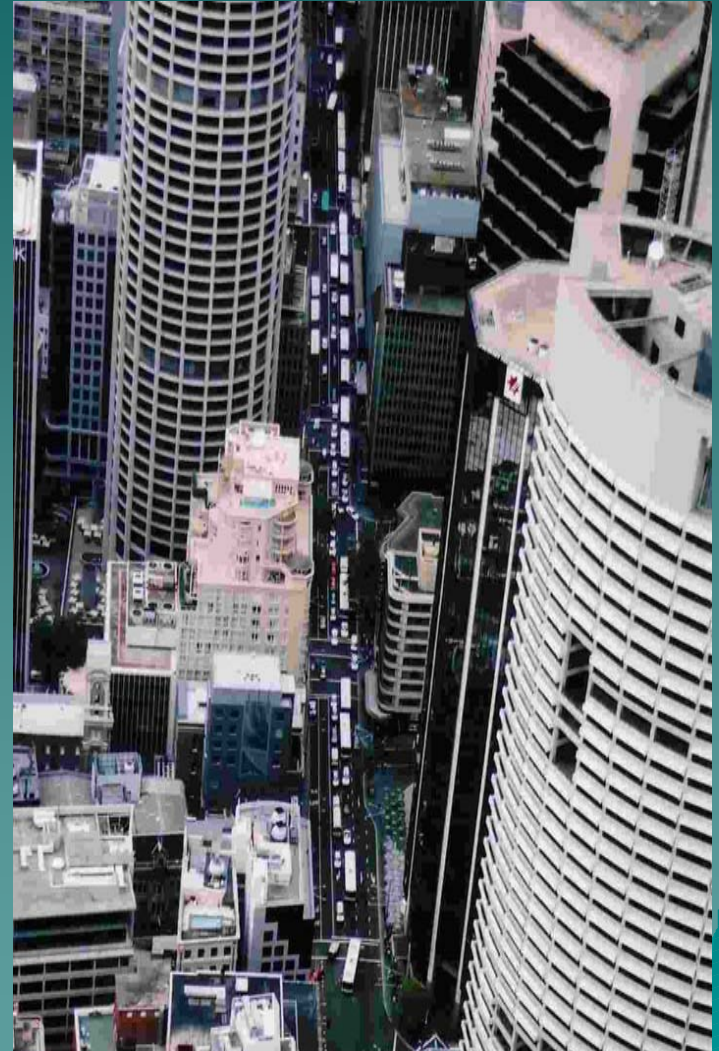
- ◆ Hong Kong and Singapore which had virtually no rail systems in 1990 now have some of the world's largest and most efficient systems, with 99.9% on-time running
- ◆ Shanghai has the worlds fastest train (Mag Lev) and is building a large scale metro network.
- ◆ First line opened in 1995, 95km now completed, 200km to be completed by 2012, and 400km by 2025. This will make it larger than London's, Paris' or New York's systems
- ◆ 30 cities in China are building or planning to build metros and/ or light rail





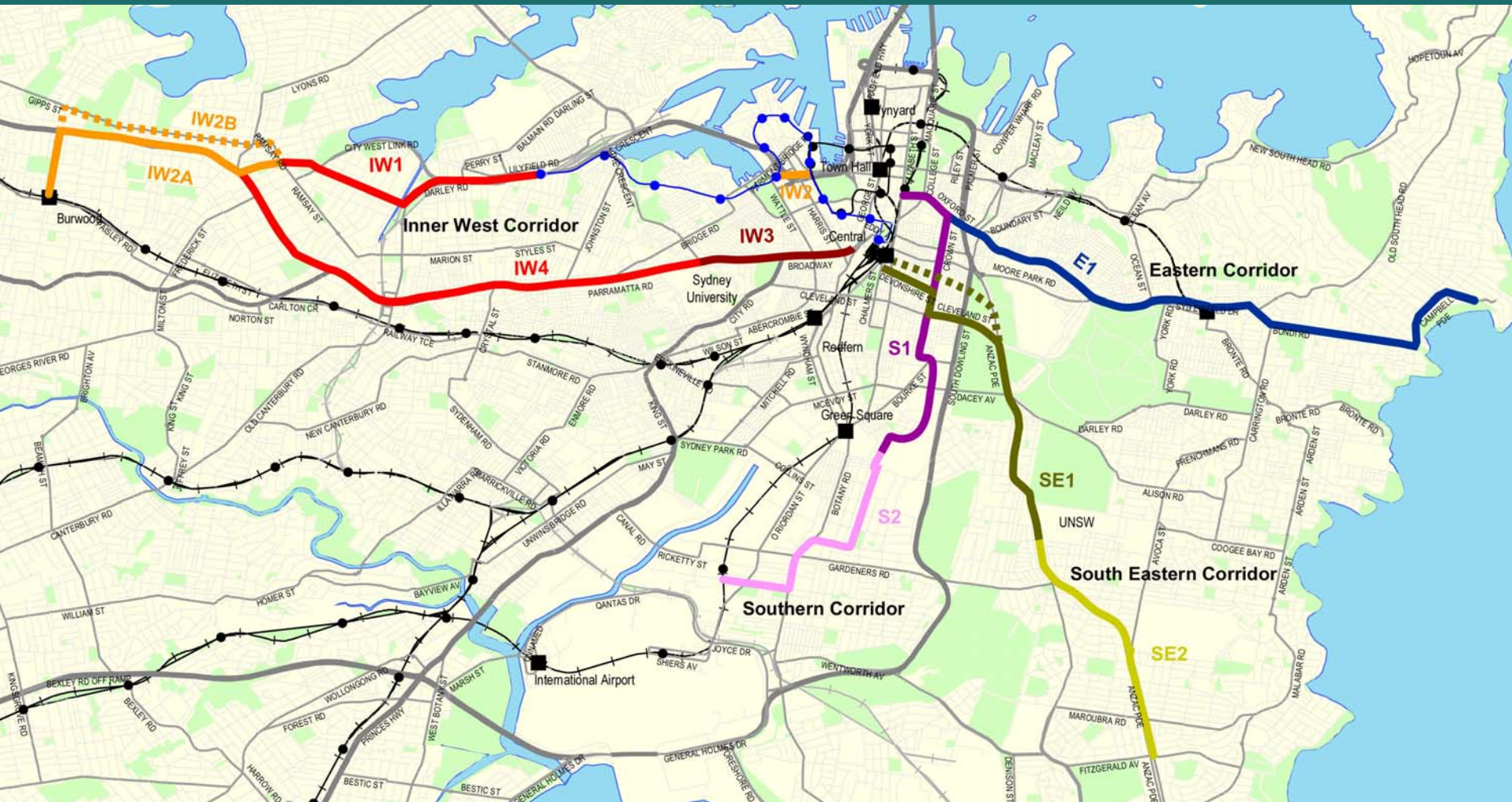
# Sydney – need for light rail

- ◆ 7400 STA buses a day through CBD (plus private buses and coaches) – highly inefficient and impacts adversely on amenity
- ◆ Traffic has grown 20% in inner suburbs in last few decades despite (because of) new roads
- ◆ 30% more public transport capacity is needed in inner suburbs in next twenty-five years to prevent gridlock
- ◆ A new electrically powered higher capacity mode required for inner parts of Sydney





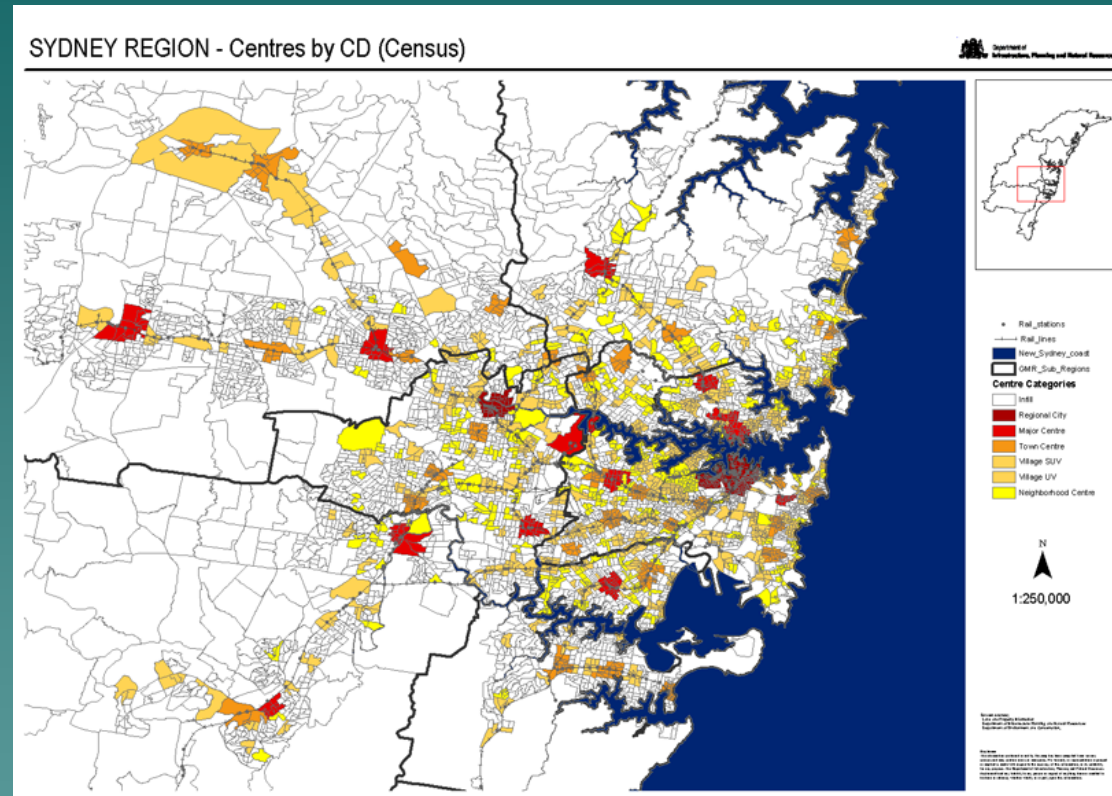
# Light Rail Network for Inner Suburbs



Source: City of Sydney (2005)

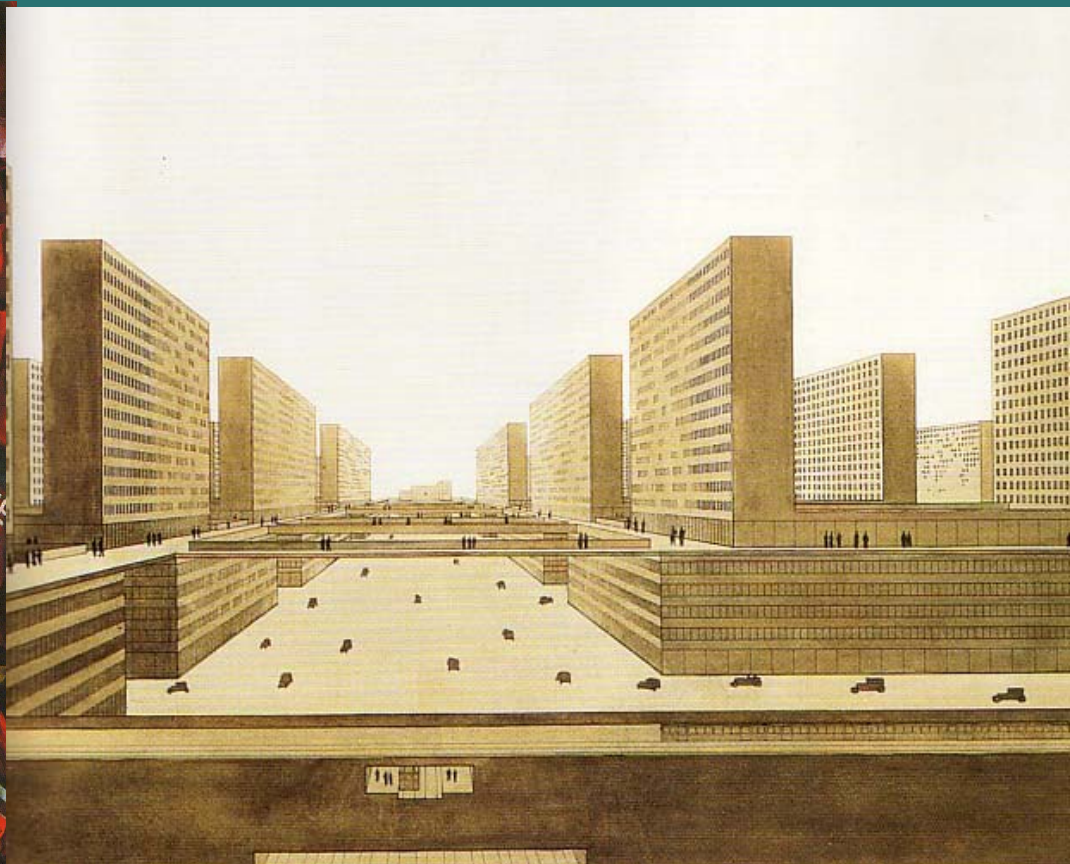
# Heavy rail extensions needed for SW and NW

- ◆ Government is now buying land for these corridors
- ◆ Cross-harbour tunnel will provide 50% increase in capacity in total rail network and allow rest of the system to be made faster and more reliable
- ◆ New release areas should be designed on TOD principles from the outset.
- ◆ Other development can be focused on key locations on the rail network





# Myth # 4: Urban consolidation will destroy our cities

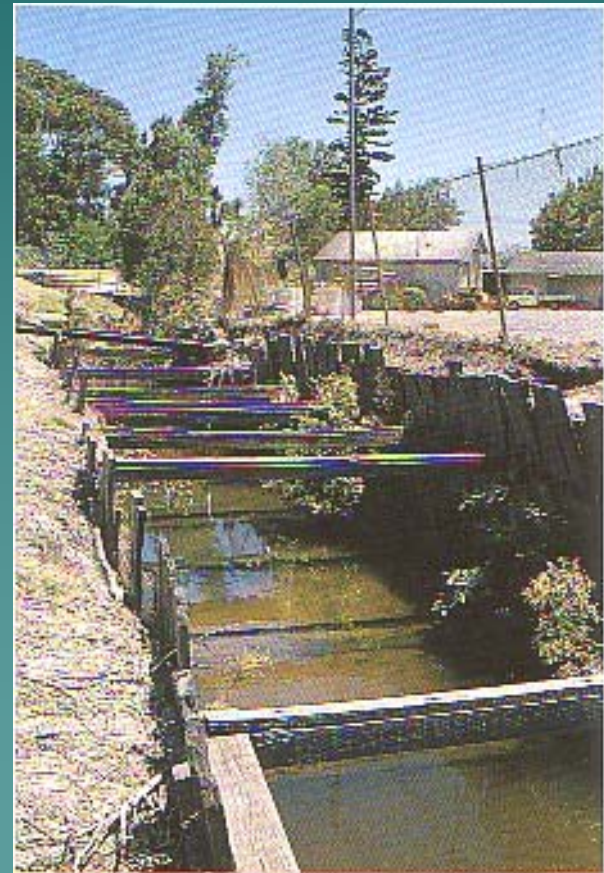




# But urban consolidation can be done well...



East Perth before redevelopment





East Perth today...

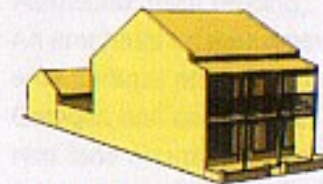
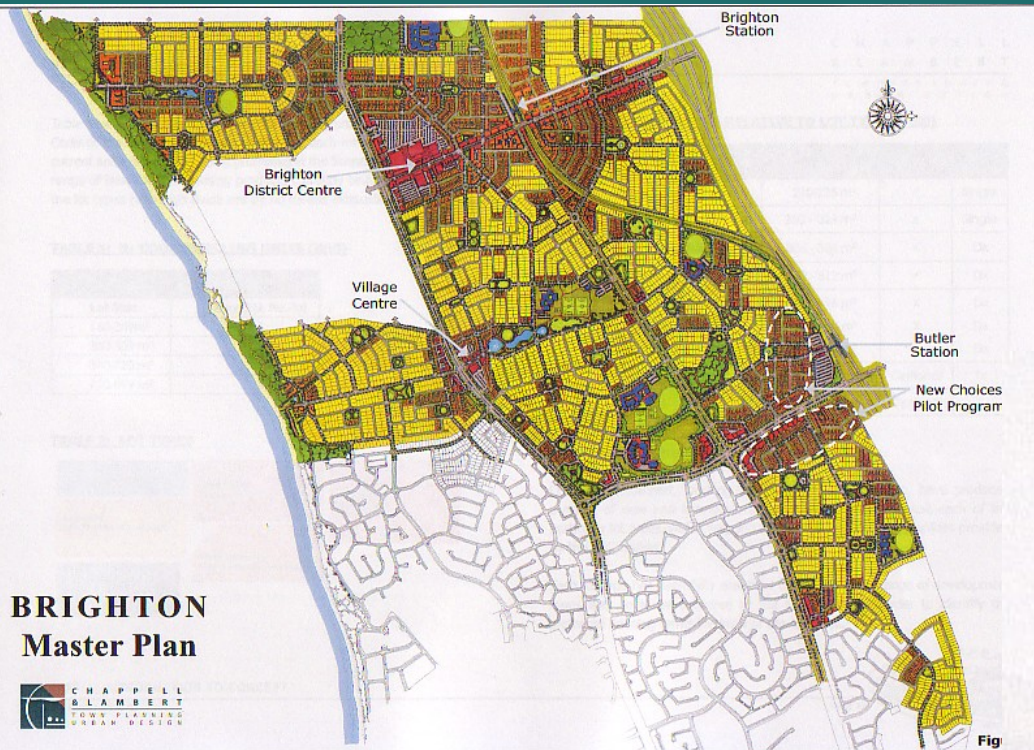




# Subiaco



# NW Transit-Oriented Development in Perth



Terrace Lot



Terraced Cottage Lot



Duplex Mansion



Triplex Mansion

# Mixing residential with retail and civic in the US



Source: Kaufman (2005)

# Conclusion..

- ◆ Cars are our most expensive form of urban transport. Rising petrol prices and concerns at obesity and global warming highlight the need to reduce car dependence..
- ◆ This means more emphasis on walking, cycling, public transport and building sustainable communities
- ◆ Urban consolidation will play a role in this, both in new and existing areas
- ◆ Good design can reduce negative effects
- ◆ Far from destroying our cities, this is in fact the future of our cities

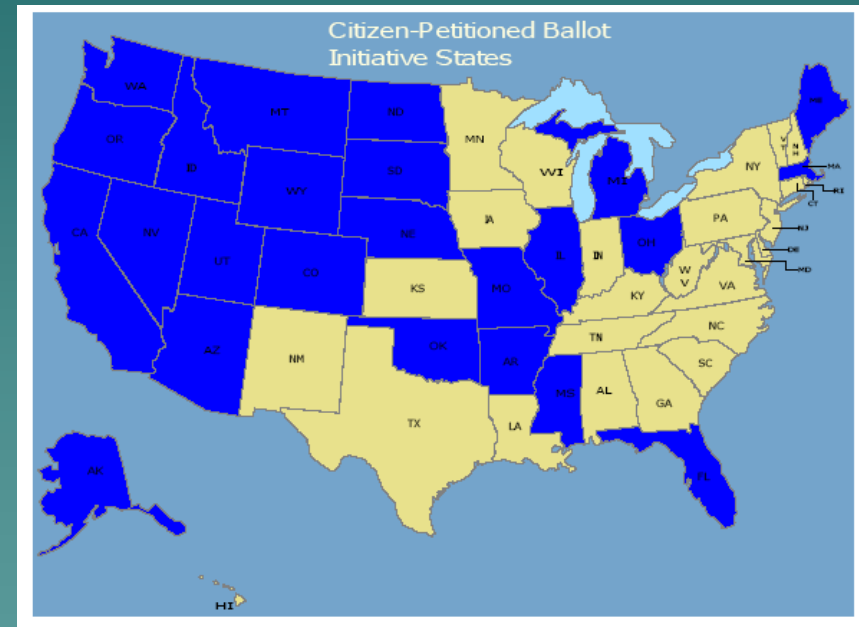


The alternative is more dependence on the car and the Middle East, worsening health, a potentially savage contest for dwindling oil resources, not to mention further acceleration of climate change.



# US Trends

- ◆ The US is turning away from freeway-only cities
  - Since 2000, voters in US have approved more than 200 transportation ballot initiatives, with 70% passing (cf 34% for ballots generally) Many include light rail and other transit. Many have been citizen - initiated
  - Eg Denver recently passed a comprehensive \$4.7 billion plan involving 119 miles of new light rail, 31 new park and ride facilities (21,000 spaces), 24% more bus service, 18 miles of bus rapid transit as well as commuter rail. The Denver Regional Transportation District has a population of 2.5 million.



# References

- ASPO Australian Association for the Study of Peak Oil
- BTCE (2000): "Urban Congestion – the Implications for Greenhouse Gas Emissions". Information Sheet 16
- BTCE (1999): "Urban Transport – Looking Ahead". Information Sheet 14.
- City of Sydney (2005): "Integrated Transport Strategy – Mass Transit for CBD and Inner Sydney". February 2005.
- Glazebrook, G (2003): "A Public Transport Strategy for Sydney". University of Sydney Warren Centre Project "Sustainable Transport for Sustainable Cities".
- Glazebrook, G (2003b): "Accessibility in Sydney: Patterns, Prospects and Profiles". University of Sydney PhD Thesis.
- Kenworthy J. and Laube F. (2000): "An International Sourcebook of Automobile Dependence in Cities 1960 – 1990" University of Colorado NRMA (2004): "Survey of Vehicle Operating Costs".
- Newman, P. (2005) "Sustainability and Cities: The Business Case for Rail"
- NSW Department of Infrastructure, Planning and Natural Resources (2004): Population Projections
- NSW Ministry of Transport (2003): "Review of Bus Services in NSW – Interim Report".
- NSW Transport Data Centre (2002): "Travel in Newcastle and Wollongong". Transport NSW.
- NSW Transport Data Centre (2001): "Train Users in Sydney". Transport NSW.
- NSW Transport Data Centre (2002b): "Bus Users in Sydney". Transport NSW.
- NSW Valuer-General (2005): Land Values for Vacant land in Selected Sydney Suburbs.
- OECD (2005): Report on Housing.
- Planning Research Centre (2005): "Let it Ride: Some Perspectives on Sydney's Transport". Presentation by Garry Glazebrook, May 25, 2005.
- Railcorp (2005): Annual Report.
- Rutledge, Ian (2005): "Addicted to Oil. America's Relentless Drive for Energy Security". Taurus and Co., London.
- Simmons, Matt (2005): "Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy". J Wiley and Sons, New Jersey.
- SRA (2003): Submission to Parry Inquiry.
- Warren Centre (2000): "Sustainable Transport for Sustainable Cities - The Way We Live". University of Sydney.
- Some websites: [www.uitp.org](http://www.uitp.org); [www.vtpi.org](http://www.vtpi.org); [www.uli.org](http://www.uli.org); [www.dse.vic.gov.au](http://www.dse.vic.gov.au); [www.aspo-australia.org.au](http://www.aspo-australia.org.au); [www.smartgrowth.org](http://www.smartgrowth.org); [www.NRDC.org](http://www.NRDC.org); [www.lightrailnow.org](http://www.lightrailnow.org).