Centre for Transport Research (CTR), University of Aberdeen
Tuesday 22nd January 2008

Olympic Transport Planning – lessons for London (and Glasgow)

Professor Graham Currie
Chair of Public Transport, Institute of Transport Studies, Monash University
Senior Associate, Booz Allen Hamilton

Me – Professor Graham Currie, Monash University, Melbourne Australia

- **Geordie Australian**
- **Ex Cranfield University Transport Planning Msc (UK)**
- **Ex London Buses/ West Midlands PTE**
- **Australia since 1988 – Public Transport Consultant – Booz Allen Hamilton since 1996 (Still Part Time Employee)**
- **Australias First Professor of Public Transport since 2003**
- **Major Special Events Transport Planning Experience**
  - Melbourne F1 Grand Prix 1994 – Spectator Transport Access Strategy
  - Melbourne Commonwealth Games 2006 – Infrastructure
  - Summer Olympics
    - Atlanta 1996 – Independent Transport Review
    - Sydney 2000 – Transport Access Plan (for NSW DoT)
    - Sydney 2000 – Independent Transport Review (for ATHOC)
    - Athens 2004 – Olympic Family Transport Planning (for ATHOC)
    - Beijing 2008 – Presentation on Olympic Transport Planning to China Academy of Transportation Sciences
    - Monash University Olympic Games Knowledge Services
    - London 2012 – Synthesis of TDM Impacts – Summer Olympic Games

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)

Agenda

1. **Introduction**

2. **Background**

3. **Approach**

4. **Performance**

5. **Lessons**

MONASH University
Engineering

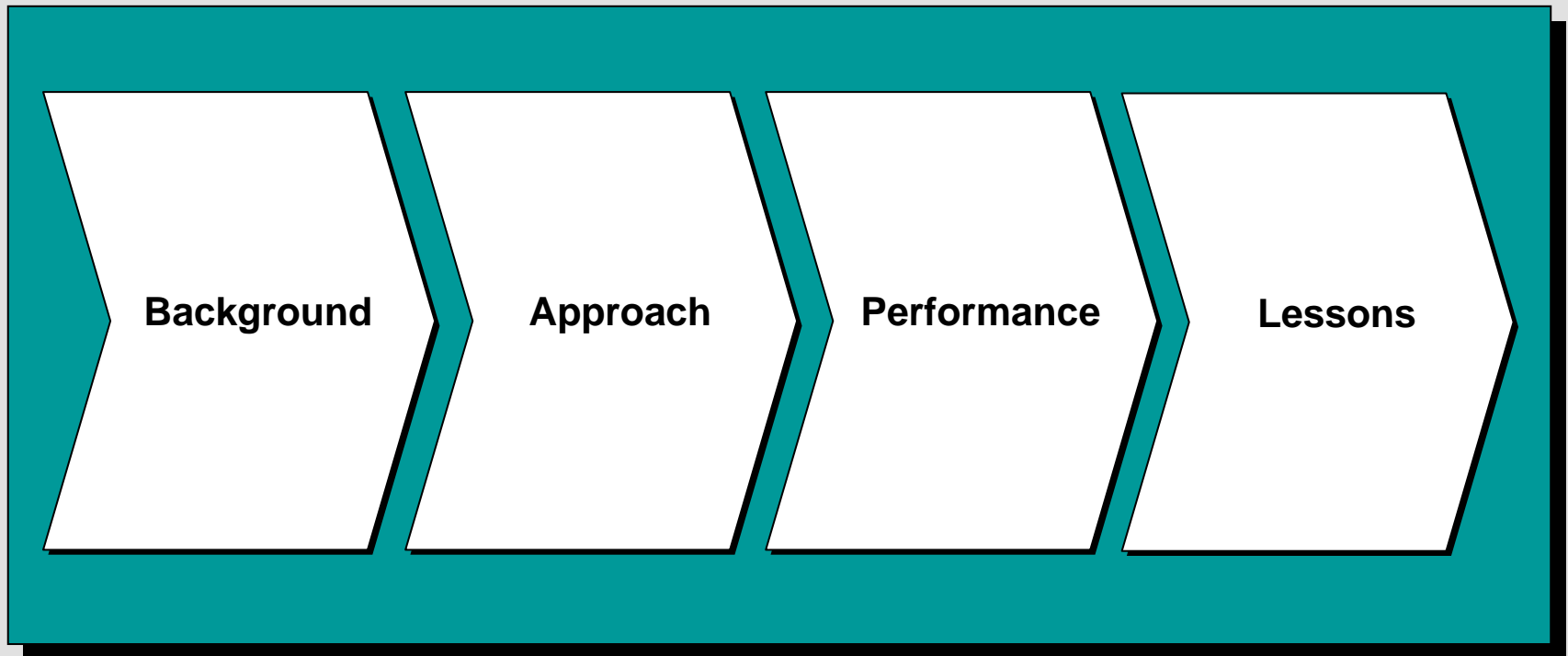**Institute of Transport Studies**

ITS (Monash)

This is a review of Atlanta, Sydney and Athens Olympic Games transport planning as input for planning of London 2012/ Glasgow 2014

- **It concerns the planning and performance of all forms of transport related to the games**

- **Reference to transport planning issues in Beijing will also be made**

- **A major focus will be on important lessons for future games planners**

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)

Olympic transport planning is extremely interesting from a professional viewpoint

- **The rules change**

- **Public Transport becomes essential**

- **One of the worlds most powerful countries did not perform well – why?**

- **The Olympic games is an excellent experimental platform to explore long term approaches to urban planning**

- **The games have a long term legacy which is far more significant than 2 weeks of sport**

It is structured as follows:

Background → **Approach** → **Performance** → **Lessons**

Agenda

1. **Introduction**

2. **Background**

3. **Approach**

4. **Performance**

5. **Lessons**
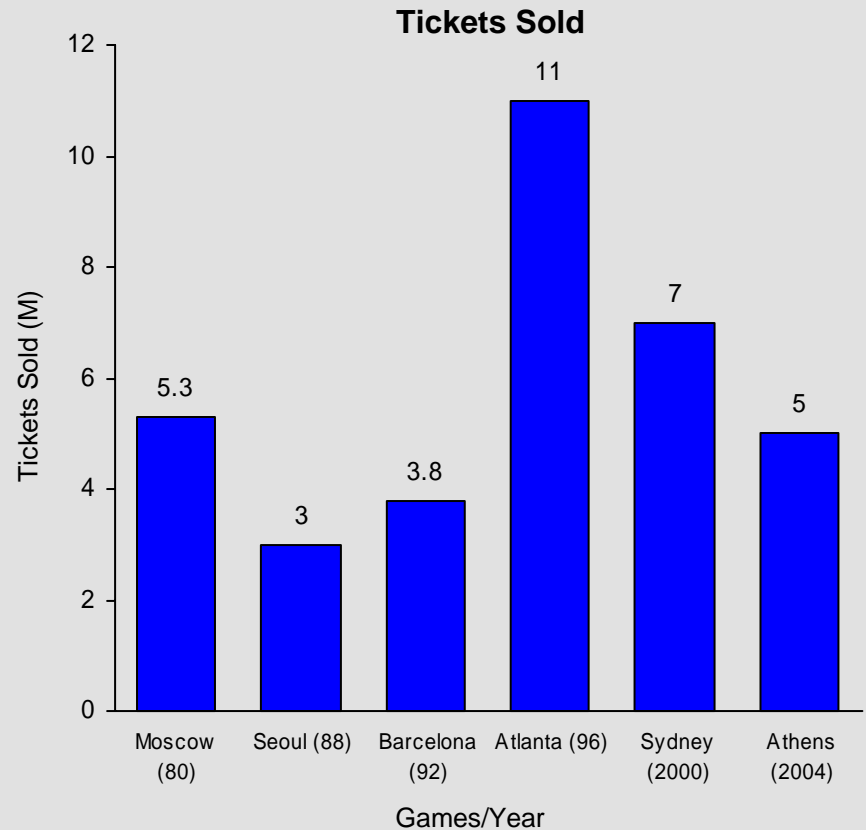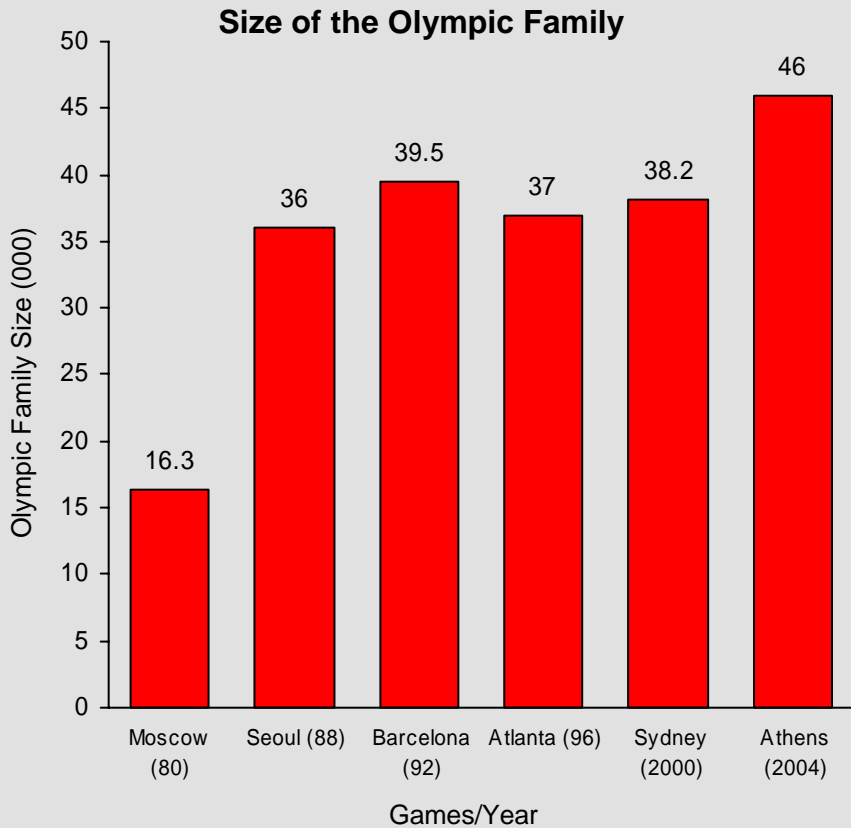
MONASH University
Engineering

Institute of Transport Studies

ITS (Monash)

The summer Olympic games represents the biggest urban transport planning challenge in the world

- **Cities will experience the largest demand for travel in their history**
- **In addition to catering for the millions of games related trips, planners must also maintain an effective city transport system for residents**
- **Media scrutiny means the actions of planners are watched by a worldwide audience**

MONASH University
Engineering

Institute of Transport Studies

ITS (Monash)

Transport must be provided for 40K athletes/officials each day and >3-11 M spectators over 2 weeks

Size of the Olympic Family

Olympic Family Size (000)

Games/Year	Size
Moscow (80)	16.3
Seoul (88)	36
Barcelona (92)	39.5
Atlanta (96)	37
Sydney (2000)	38.2
Athens (2004)	46

Tickets Sold

Tickets Sold (M)

Games/Year	Tickets
Moscow (80)	5.3
Seoul (88)	3
Barcelona (92)	3.8
Atlanta (96)	11
Sydney (2000)	7
Athens (2004)	5

A range of markets must be catered for using substantial and diverse transport resources

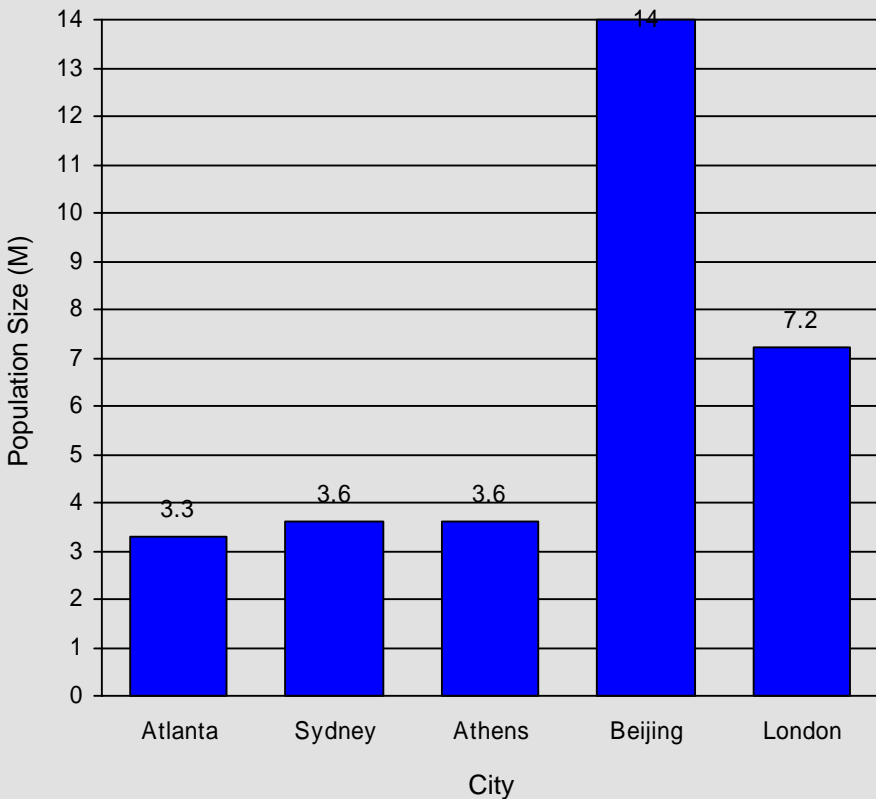**Scale of Participants and Transport Resources – Sydney 2000**

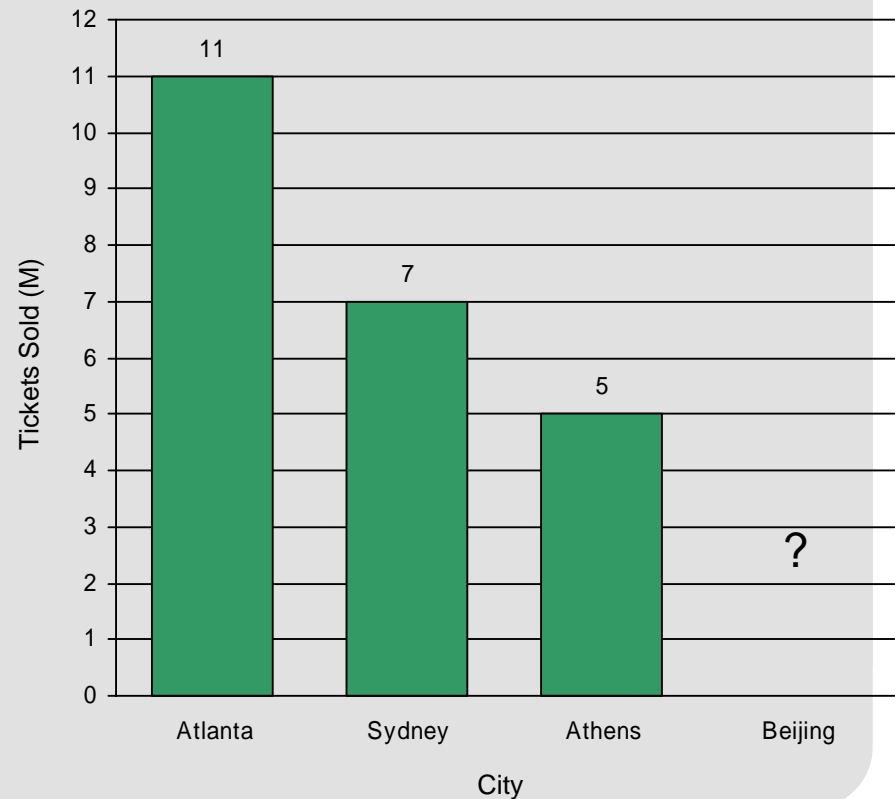| Market	Size	Services	
T1-T3 – Olympic VIP's	4,650	Olympic Car Fleet – 4,700 vehicles	
T4 – Athletes	10,800	Athlete Bus Network	
T4 – Officials	7,600	Officials Bus Network	3,850 Buses
T5 – Media	19,800	Media Bus Network	
Spectators	7,000,000	Public Transport	

Source: Based on Bovy, P. 'Transport and Exceptional Public Events' ECMT Feb 2002

There are big differences in the circumstances for the games in each city…..
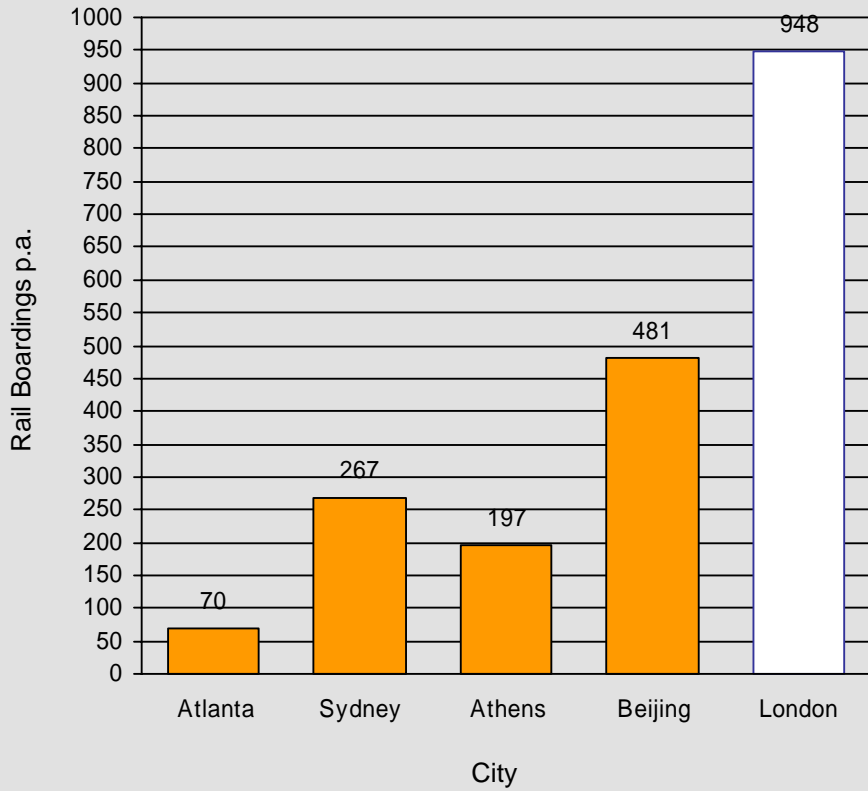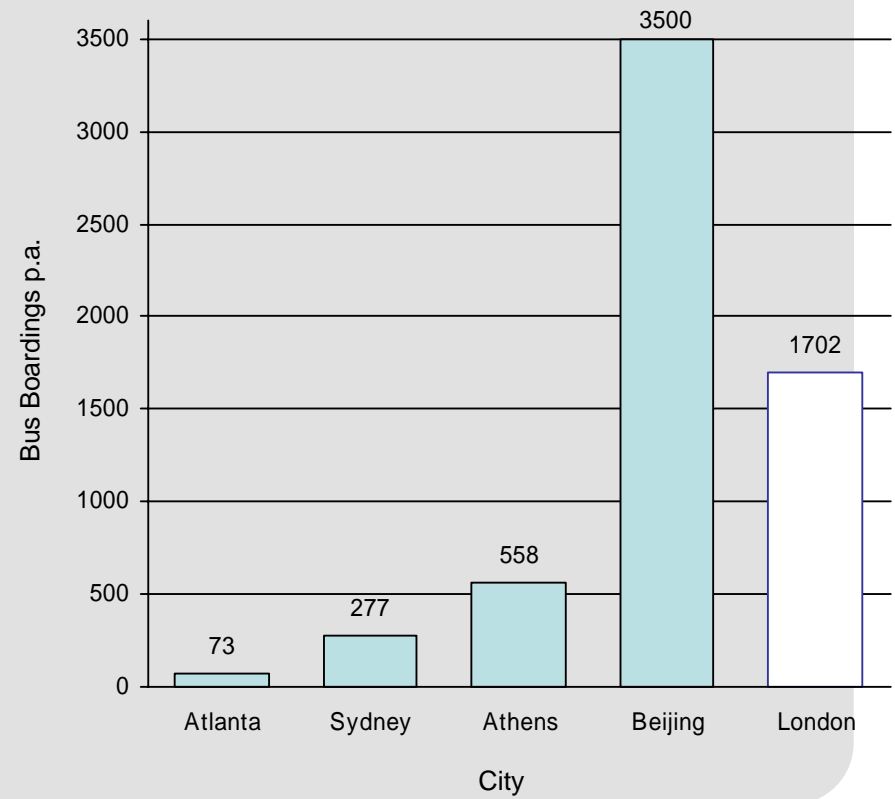

Comparative Population

Population Size (M) / City

- Atlanta: 3.3
- Sydney: 3.6
- Athens: 3.6
- Beijing: 14
- London: 7.2

Comparative Olympic Task

Tickets Sold (M) / City

- Atlanta: 11
- Sydney: 7
- Athens: 5
- Beijing: ?

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)

These require different approaches and explain variations in games transport performance

Rail Trips p.a.

Rail Boardings p.a. / City

Atlanta: 70, Sydney: 267, Athens: 197, Beijing: 481, London: 948

Bus Trips p.a.

Bus Boardings p.a. / City

Atlanta: 73, Sydney: 277, Athens: 558, Beijing: 3500, London: 1702

Agenda

1. **Introduction**

2. **Background**

3. **Approach**

4. **Performance**

5. **Lessons**

MONASH University
Engineering

Institute of Transport Studies

ITS (Monash)

All Olympic transport strategies aim to maximise available transport capacity

Maximize Available Transport Capacity →
- Increase Supply → Transit Orientation
- Lower Base Load → Demand Management
- Lower Service Quality Expectations → Demand Management

Each games transport system emphasises mass transit over the private car

- Every games system has emphasised public transport access
- Most have banned any other access mode particularly the private car
- This has been a harder path to follow for cities with small/little mass transit systems
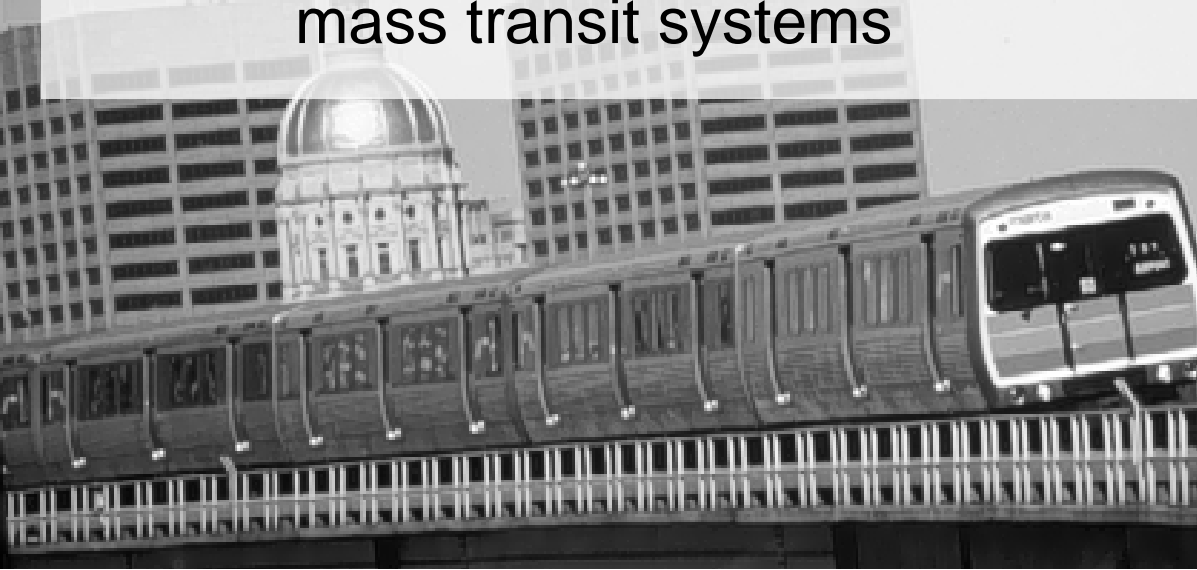
This includes a range of measures to enhance the supply of services available

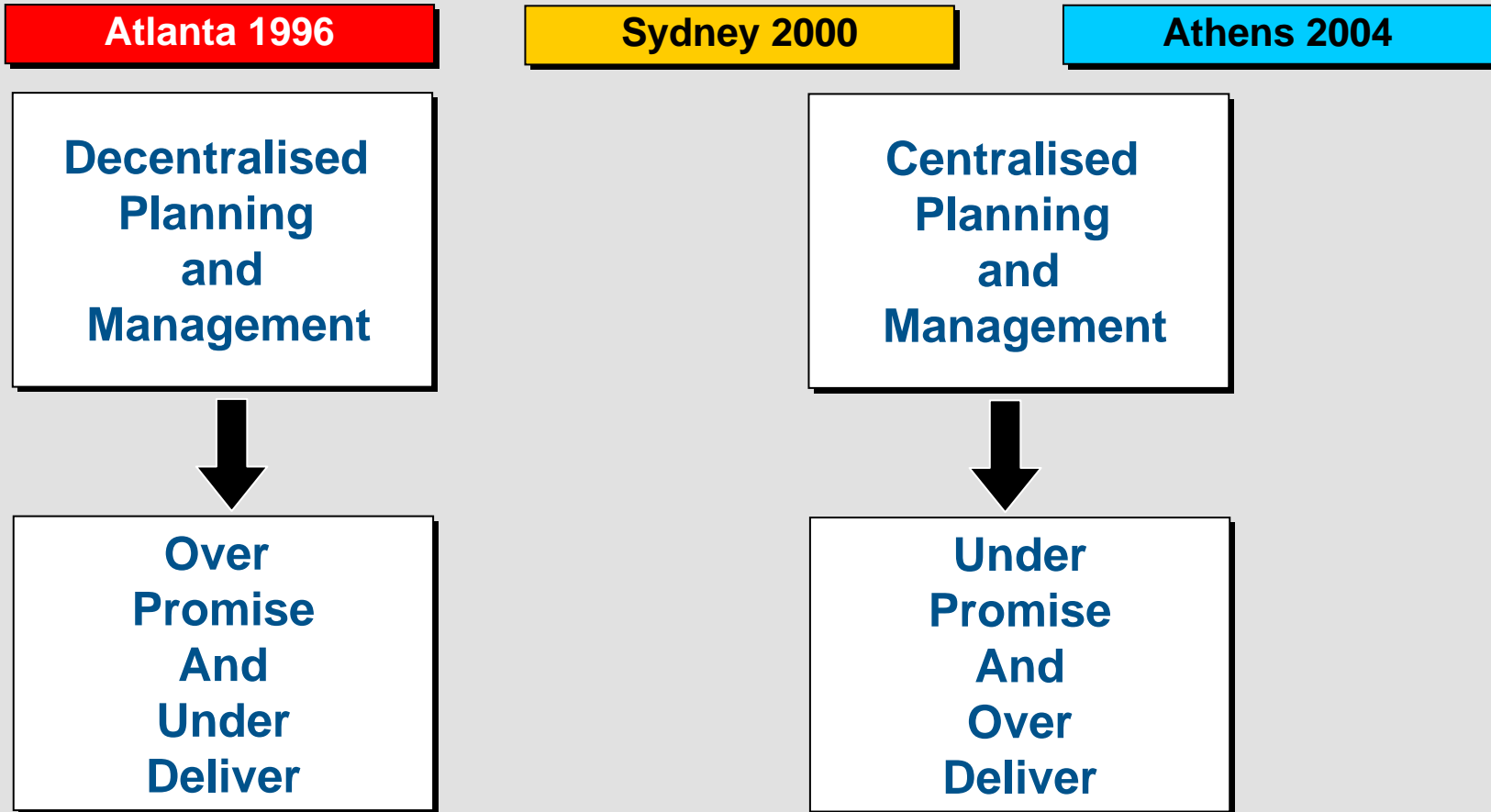**Measures to Increase Transport Supply**

Transport Supply Measure	Atlanta 1996	Sydney 2000	Athens 2004
Expanded Railway	✓	✓	✓
Enhanced Rail Capacity	✓	✓	✓
Expanded Bus System	✓	✓	✓
Olympic Lanes	✗	✓	✓
New Technology Systems	✓	✗	✗

Demand management is now a core feature of all major event planning
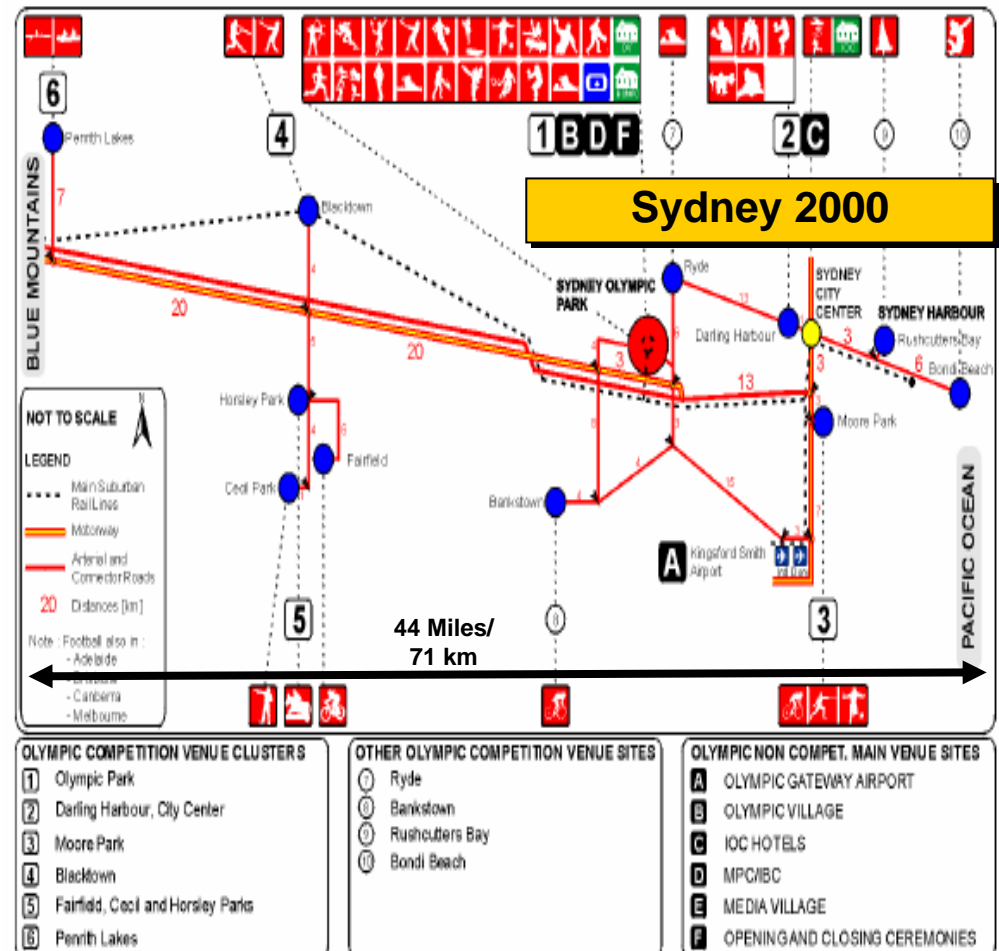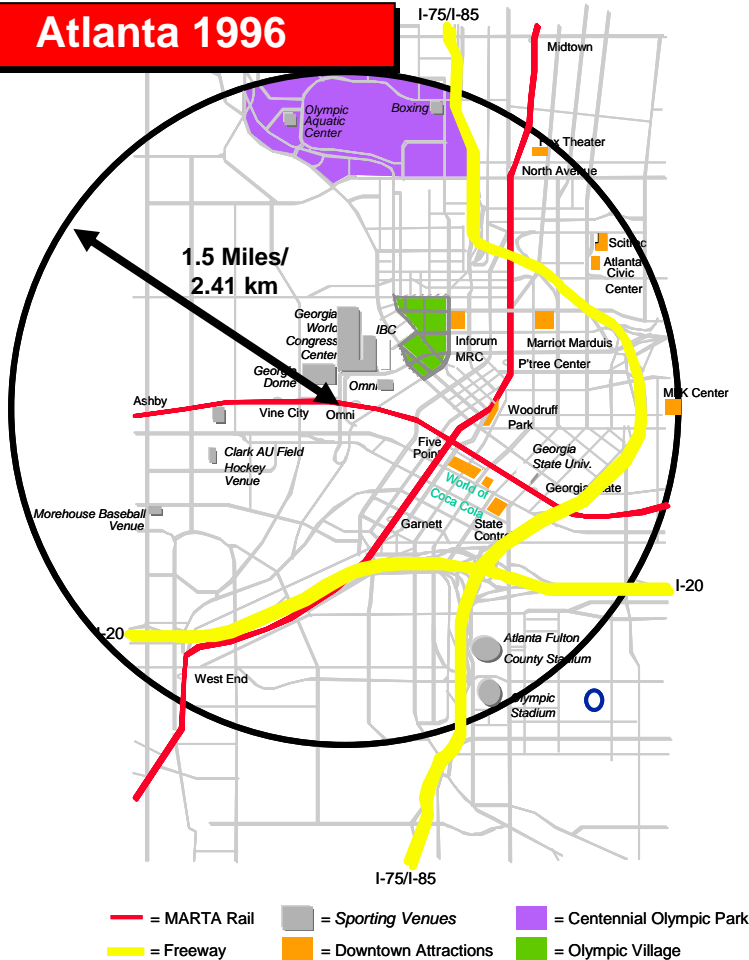
Demand Management Strategies

Transport Supply Measure	Atlanta 1996	Sydney 2000	Athens 2004
The Big Scare	✓	✓	✓
Employee Travel Planning	✓	✓	✓/?
Public Info. Campaign	✓	✓	✓
Test Events	✗	✓	✓
School Vacation Retiming	✗	✓	✓
New Technology Systems	✓	✗	✗

There were two key differences in the approach to public information management

| Atlanta 1996 | Sydney 2000 | Athens 2004 |

Atlanta 1996

Decentralised Planning and Management

⬇

Over Promise And Under Deliver

Athens 2004

Centralised Planning and Management

⬇

Under Promise And Over Deliver

Atlanta and Sydney had a central concentrated event site and transport network

Athens didn't follow this model - Beijing will..

Athens 2004
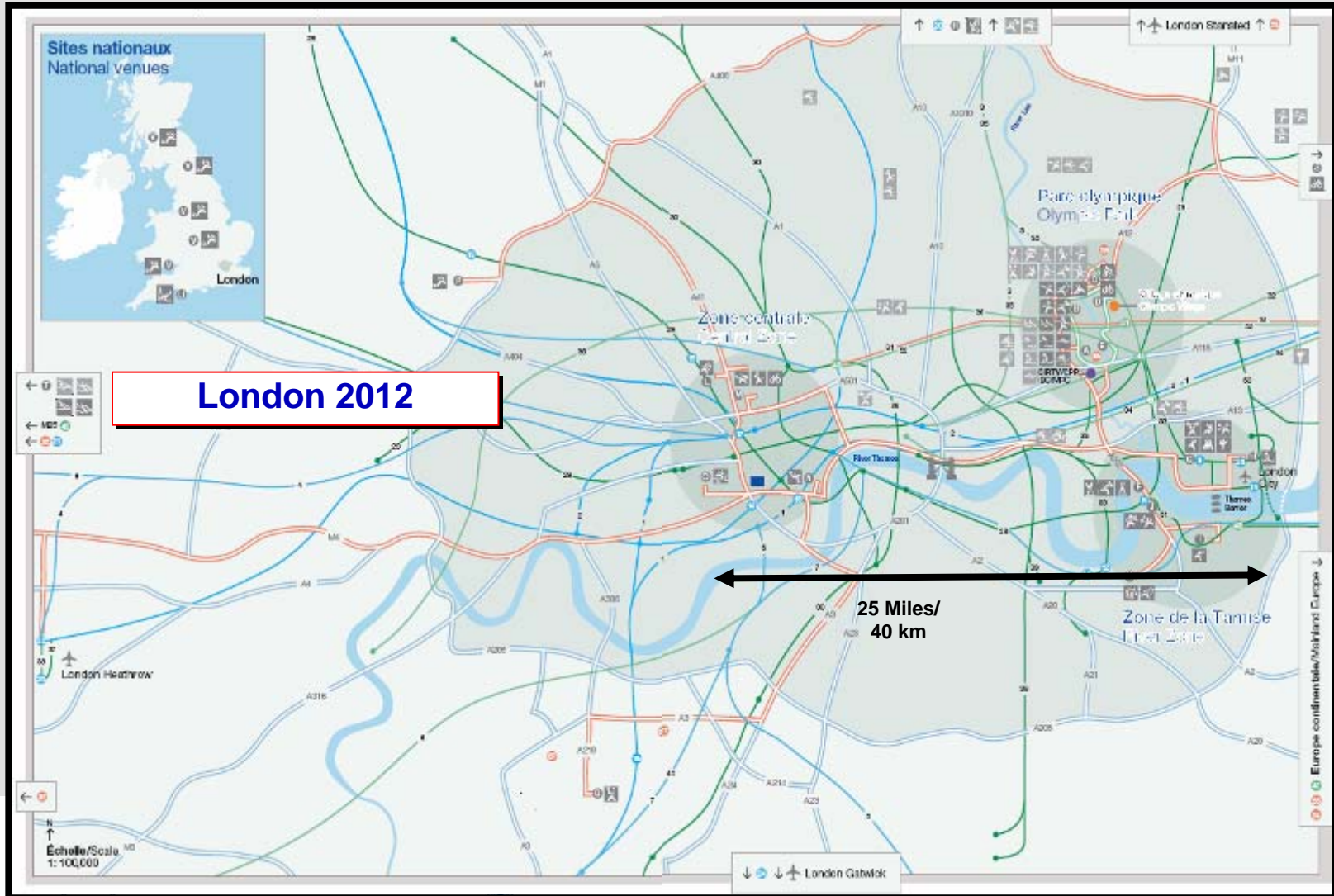
9 Miles/
15 km

Beijing 2008

15 Miles/
24 km

OV	Olympic Village
IOC	IOC Headquarters Hotel
JV	Judges' Village
MV	Media Village
MPC	Main Press Center
IBC	International Broadcasting Center

Road and Expressway
Olympic Subway
Subway and Light Rail
Existing Competition Site
Planned Competition Site
Competition Site Built for 2008 Olympic Games

Olympic Green
Forbidden City

Other cities

Geographical Location

…and so will London

London 2012

**25 Miles/
40 km**

Agenda

1. **Introduction**

2. **Background**

3. **Approach**

4. **Performance**

5. **Lessons**

MONASH University
Engineering

Institute of Transport Studies
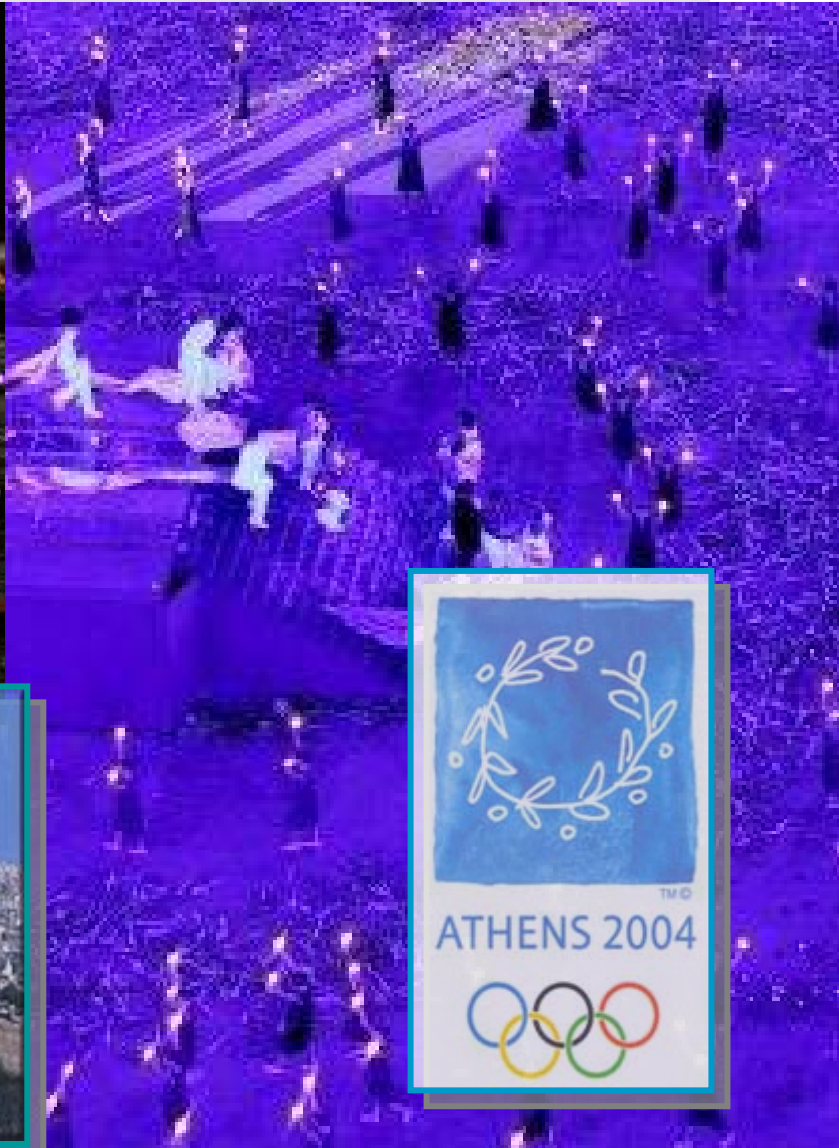ITS (Monash)

The Sydney, Atlanta and Athens Olympic games were successful

- All events followed the planned schedule and were enjoyed by athletes and spectators worldwide

- Every Olympic games has at least some problems – it is impossible to undertake such an enormous task without some problems emerging

However Sydney has been acclaimed as the 'best ever' in terms of organisation – transport was a big part of this

BUT IT WAS <u>NOT</u> PERFECT

Athens 2004 was designated the 'dream games'

# Atlanta had crowding problems on its transit system and many complaints regarding Olympic family access

The emphasis on heavy rail was a key success factor in Sydney

Normal Base Rail Demand and Actual Olympic Loadings per Day - Sydney Metropolitan Region

Total Sydney Rail Boardings per Day

Days Over Olympic Period
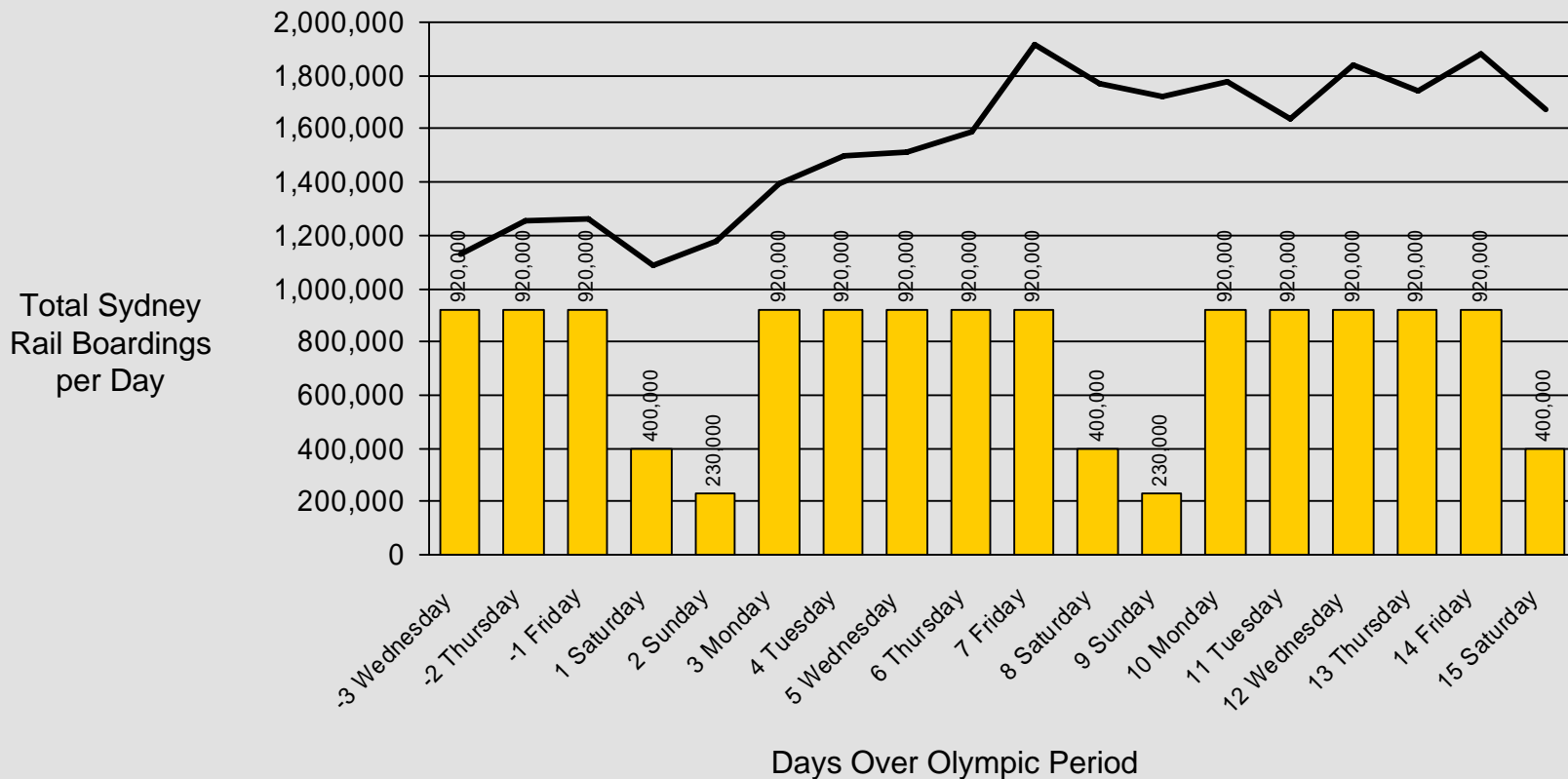
Sydney Olympic Park Station was a key part of this
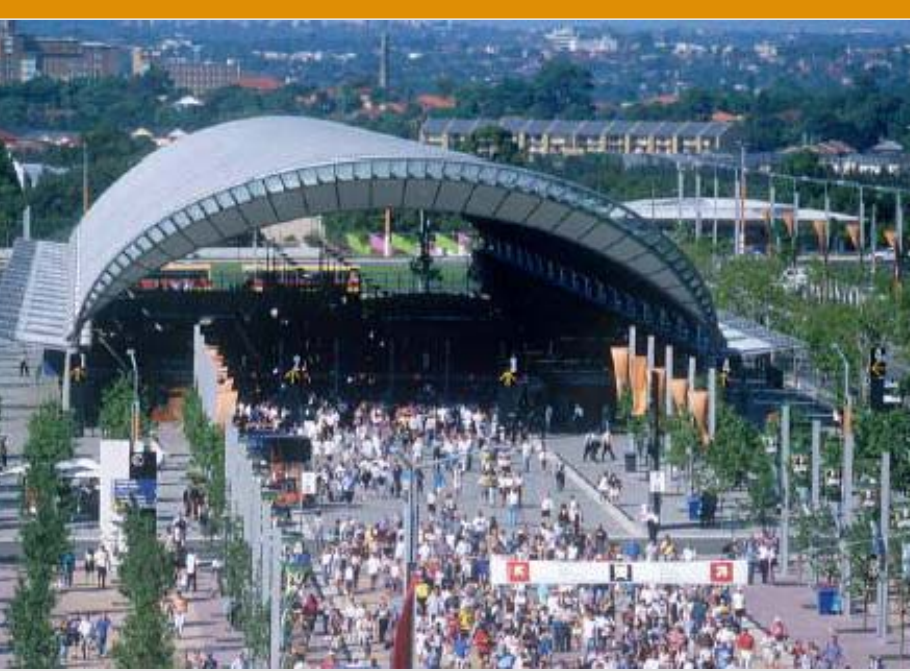
Key Features

- **Well designed crowd handling**
- **Separate platform loading/unloading**
- **Estimated Capacity = 50,000 pax/ hour**

BUT (like Munich)

- **Too close to event sites**

Institute of Transport Studies

ITS (Monash)

Example of station location proximity mistakes

Volume bus access also needs careful management

Don't Do This

Do This

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)
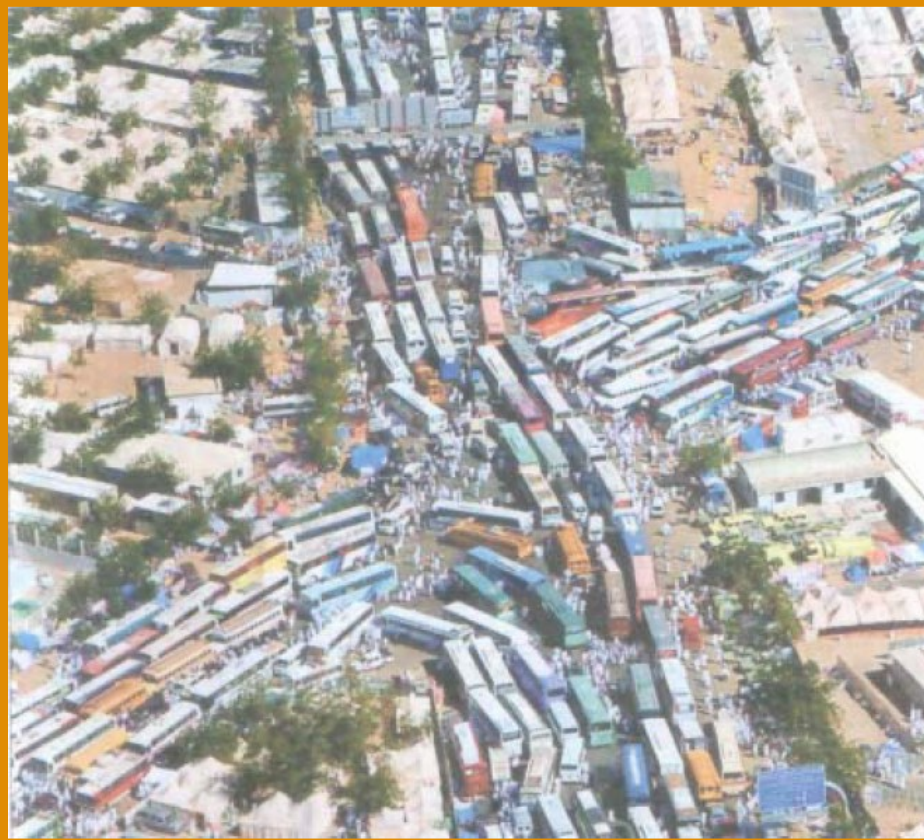
New Public Transport Systems were a major investment for the Athens games

Public Transport System Development

New Tram System

- **Two Major Routes (Started July 19th)**

Metro System Development

- **New Line to the Airport Opened (Started August 9th)**
- **Major refurbishment of One line**
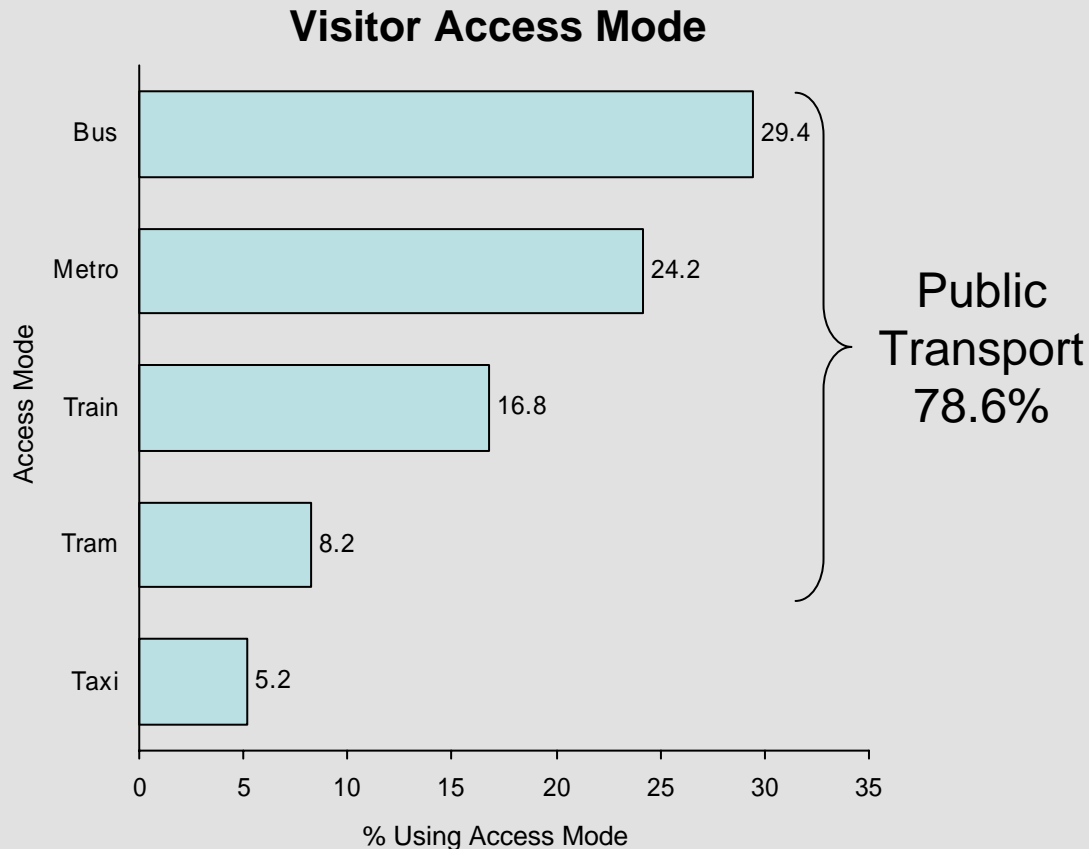
Urban Bus System Development

- **400 new buses**
- **21 Olympic Bus Lines**

Regional Inter-city buses

- **Renewal of fleet**

Increased spans on all services

Athens public transport, mainly bus, access dominated spectator travel, like Sydney
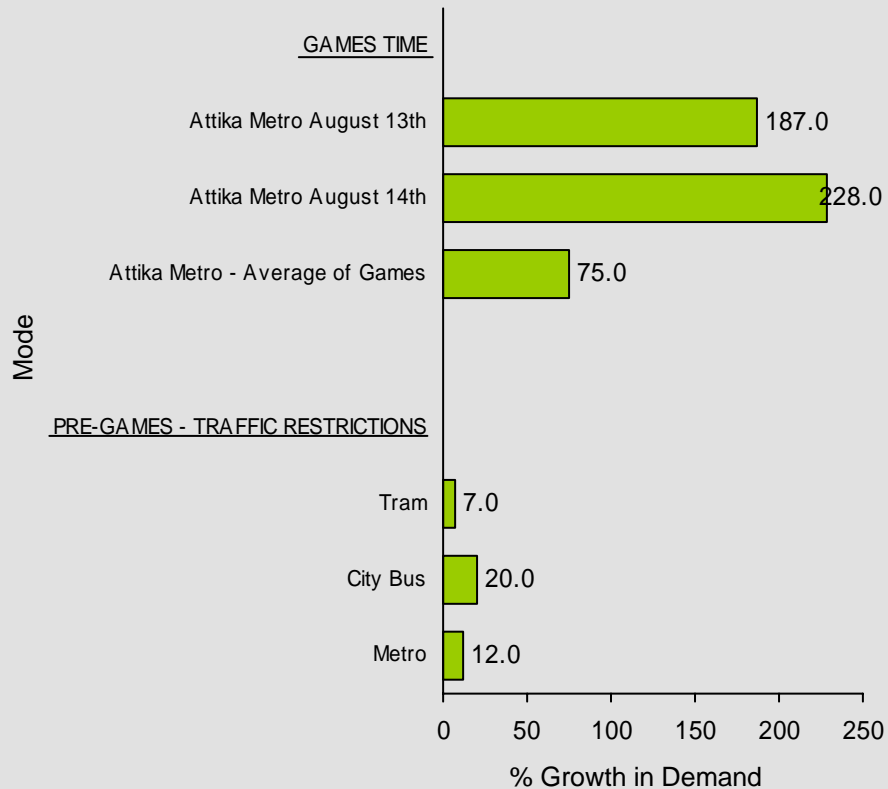
Visitor Access Mode

Public Transport 78.6%

- **Sydney claimed 100% but this was just at Olympic Park with 75% rail, 25% bus**
- **Athens figures probably similar to Sydney except that bus dominates in Athens**

Source: MRB Hellas SA, VPRC and Research International Visitor Satisfaction Poll Early Results

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)

Public transport demand growth was enormous

Growth in Public Transport Usage

Horizontal bar chart. X-axis: % Growth in Demand (0 to 250). Y-axis labeled "Mode".

GAMES TIME
- Attika Metro August 13th: 187.0
- Attika Metro August 14th: 228.0
- Attika Metro - Average of Games: 75.0

PRE-GAMES - TRAFFIC RESTRICTIONS
- Tram: 7.0
- City Bus: 20.0
- Metro: 12.0

- **Bus still carrying the bulk of demand**
- **Usage during games claimed at (per day):**
  - Bus 1,500K
  - Metro 550K
  - Rail 450K

Source: Kathemerini August 26th

Olympic (priority) lanes were not abused and proved successful (even in Athens!)

But Olympic family bus crewing was mighty tight

- **Target service levels were 'slashed' (particularly media)**
- **Many compromises were made**
- **Some very tired and angry bus drivers**
- **Behind the scenes tactical planning was 'chaotic'**

Targets for Driver Ratios

Targets	Drivers per Bus
Original Plan	2.0
ATHOC Realistic Outcome	1.5
Actual	1.2

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)
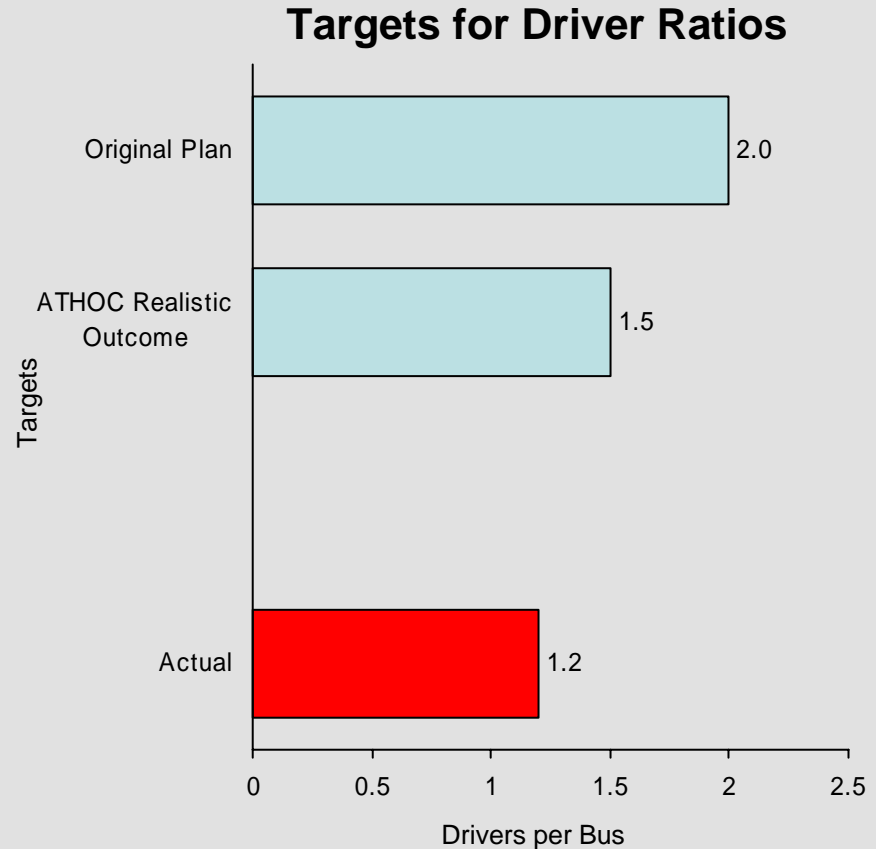
Many anecdotes of poor media network performance resulted

August 14th

- **'Drivers slept in' – 5:30-8:30 a.m. bus departures to shooting events didn't turn up – drivers working on opening ceremony crowd last night to 4a.m.**

August 25th

- **Buses arrive later and later. When it arrives it parks and waits to fill up taking 1.5 hours. On 2 occasions I have witnessed media members loose their cool and storm off the bus**

August 27th

- **Media started the day at 2:30a.m. to get to Ancient Olympia, hundreds of media congregated at 9p.m. to get home and only one bus came!**

Selected Examples

A few Athlete and Technical Official issues also emerged – all were early in the games
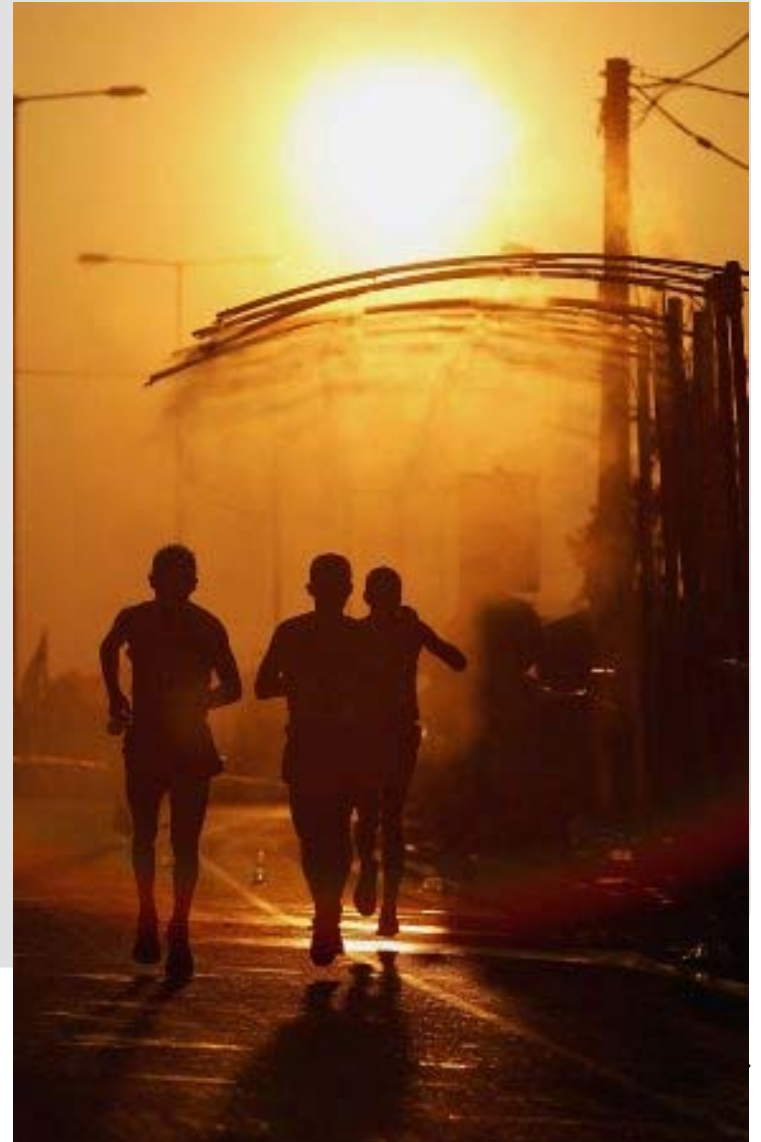
Pre-Games

- **Canada, Poland, France protest about transport to Schinias rowing course**

Pre-Games

- **Australian OC boss John Coates "transport was pretty quick.. we were going well until a Greek policeman stopping in the Olympic lane to get a coffee"**

August 26th

- **UK Athlete "there were a few problems with transport at the beginning, but the Greek authorities got it together"**

However the overwhelming view was that Athens Olympic Family transport was effective

August 24th

- **Panos Protopsaltis "Our surprises have all been positive surprises"**
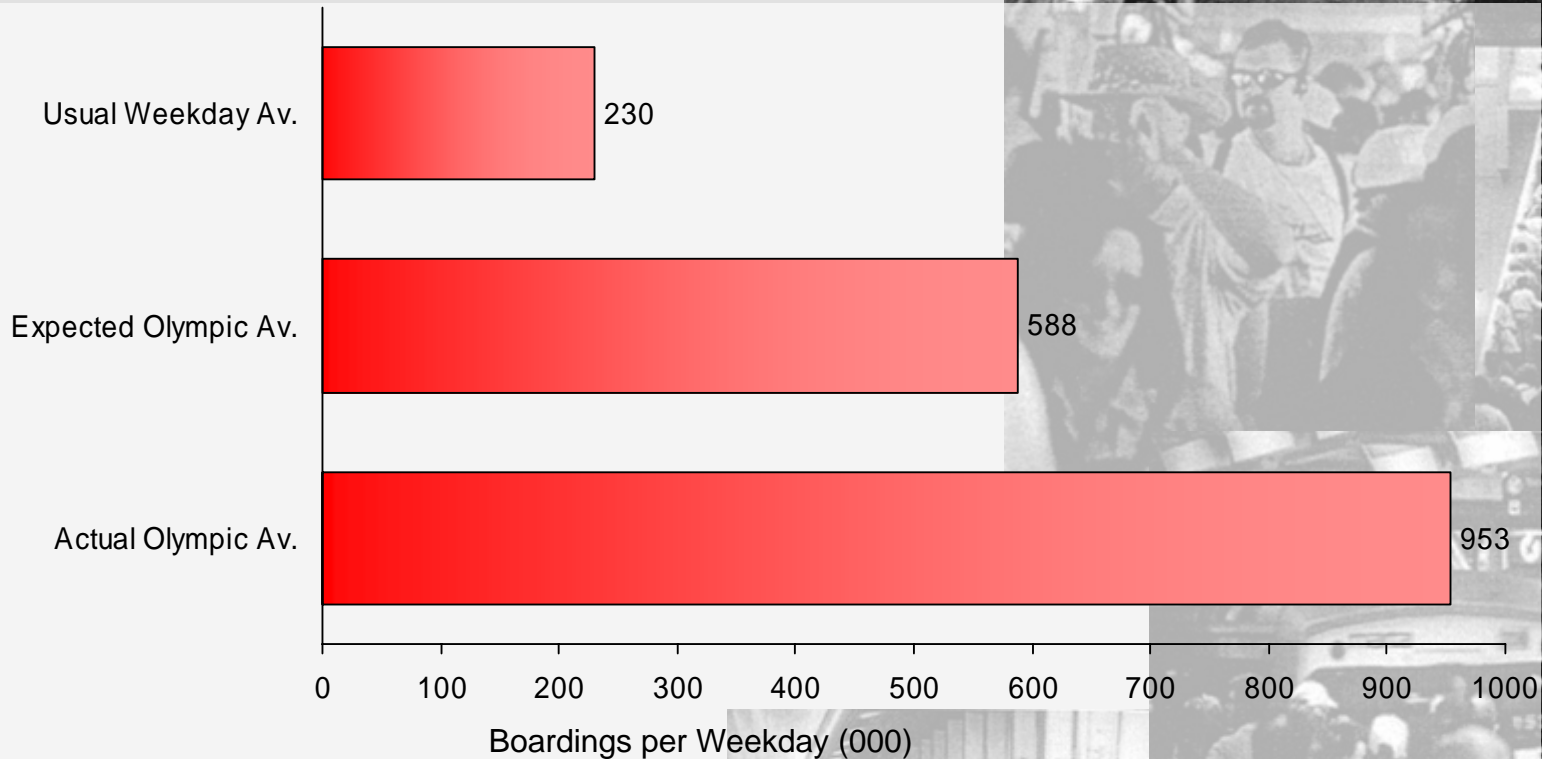
International Media

- **All highly positive**

Athletes

- **All highly positive**

The Atlanta rail system carried enormous loadings

Atlanta 1996

Chart: Boardings per Weekday (000)

Category	Boardings
Usual Weekday Av.	230
Expected Olympic Av.	588
Actual Olympic Av.	953

Boardings per Weekday (000)

Source: Booz Allen Hamilton 'Olympic Transportation System Management, Systems and Operations Review' January 1997

But Atlanta lacked bus capacity – this led to many compromises on network design

Atlanta - Bus Capacity Problems

- **Some 200 Buses Short of Requirements**
- **Poor maintenance performance**
- **Poor driver availability**
- **Many lost drivers**
- **Problems of a 600 bus operator trying to run 2,400 vehicles**

Resulted in:

- **Many Compromises in Network Design**
- **Lower than expected service levels**
- **Media amongst those affected**

Sydney nearly had similar problems – but these were addressed (at a very late stage)

BUS 2000

Late Driver Shortage

- **Poor Training**
- **Poor Driver Accommodation/ Meals**
- **Badly planned/ managed Regents Park Depot**

The Solution

State Transit

- **State Transit Buses**
- **Redeploy Regional Bus Services and some tourist buses**
- **Deploy experienced management**
- **Employ 'navigator' volunteers**

Demand management was successful in reducing traffic in all cities

Atlanta 1996

- **Perceived that peak congestion reduced by 30%**
- **Radial traffic down 4-6%**
- **Peaks more spread**

Sydney 2000

- **Peak road travel times reduced by 50%**
- **Road traffic between 10-20% less than normal**

Athens 2004

- **Travel time reductions of up to 66% reported by media (2hrs to 40 mins for travel across city)**
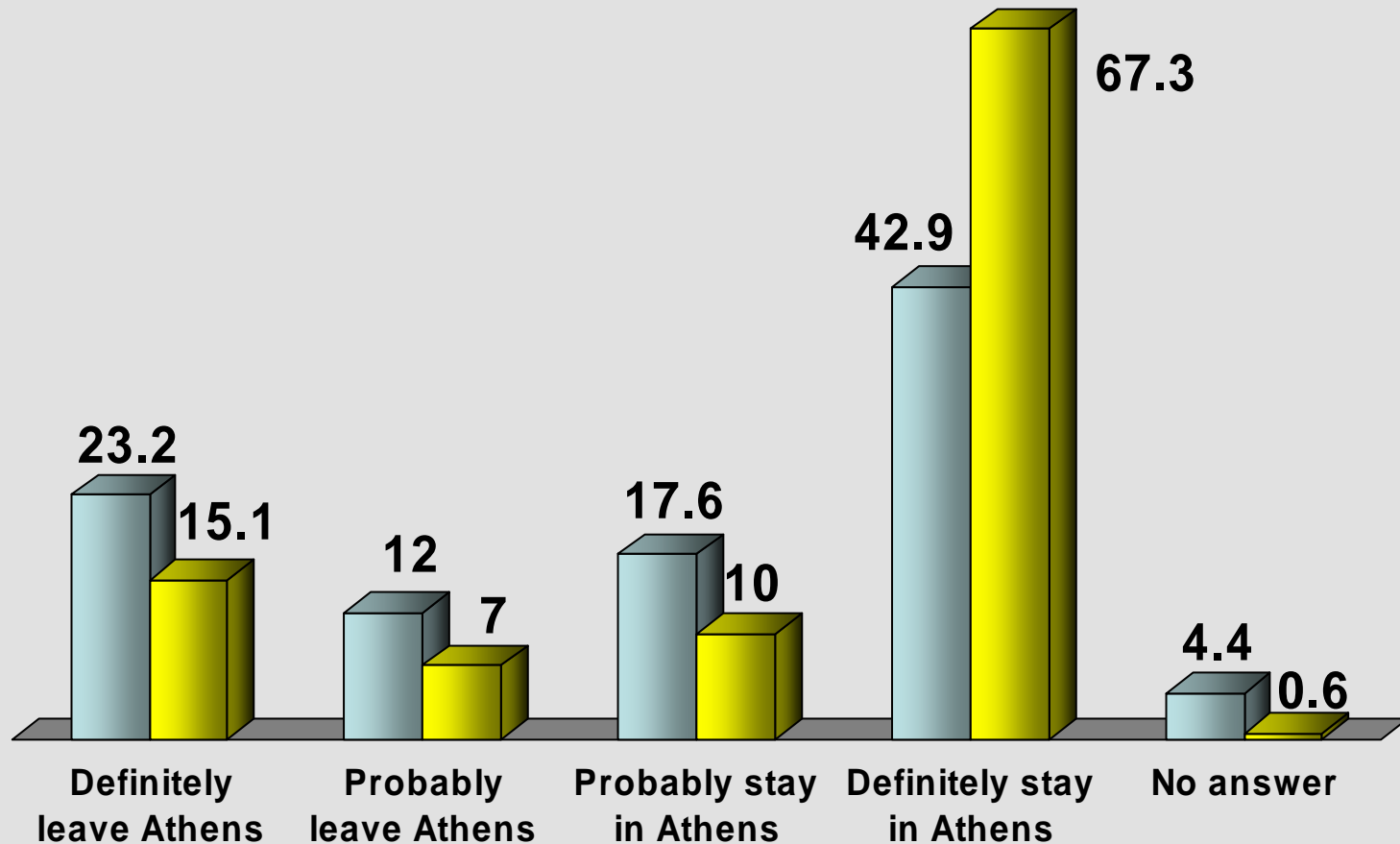- **F Dimou – Coutroubas reports 30% base load reduction on main roads**

Impacted Rail and Road

Surveys Indicate Resident Response to Olympic Demand:

	Urban	Suburban
Take Leave	33%	18%
Peak Spread Change	15%	7-12%
Location	3-6%	2-5%

MONASH
Engineering

Institute of Transport Studies

42

Research for Traffic Measures during Olympic Games – ATHENS 2004
What are you personally planning to do during Games time?

	Definitely leave Athens	Probably leave Athens	Probably stay in Athens	Definitely stay in Athens	No answer
June 04	23.2	12	17.6	42.9	4.4
August 04	15.1	7	10	67.3	0.6

MONASH University
Engineering

Institute of Transport Studies
ITS (Monash)

43
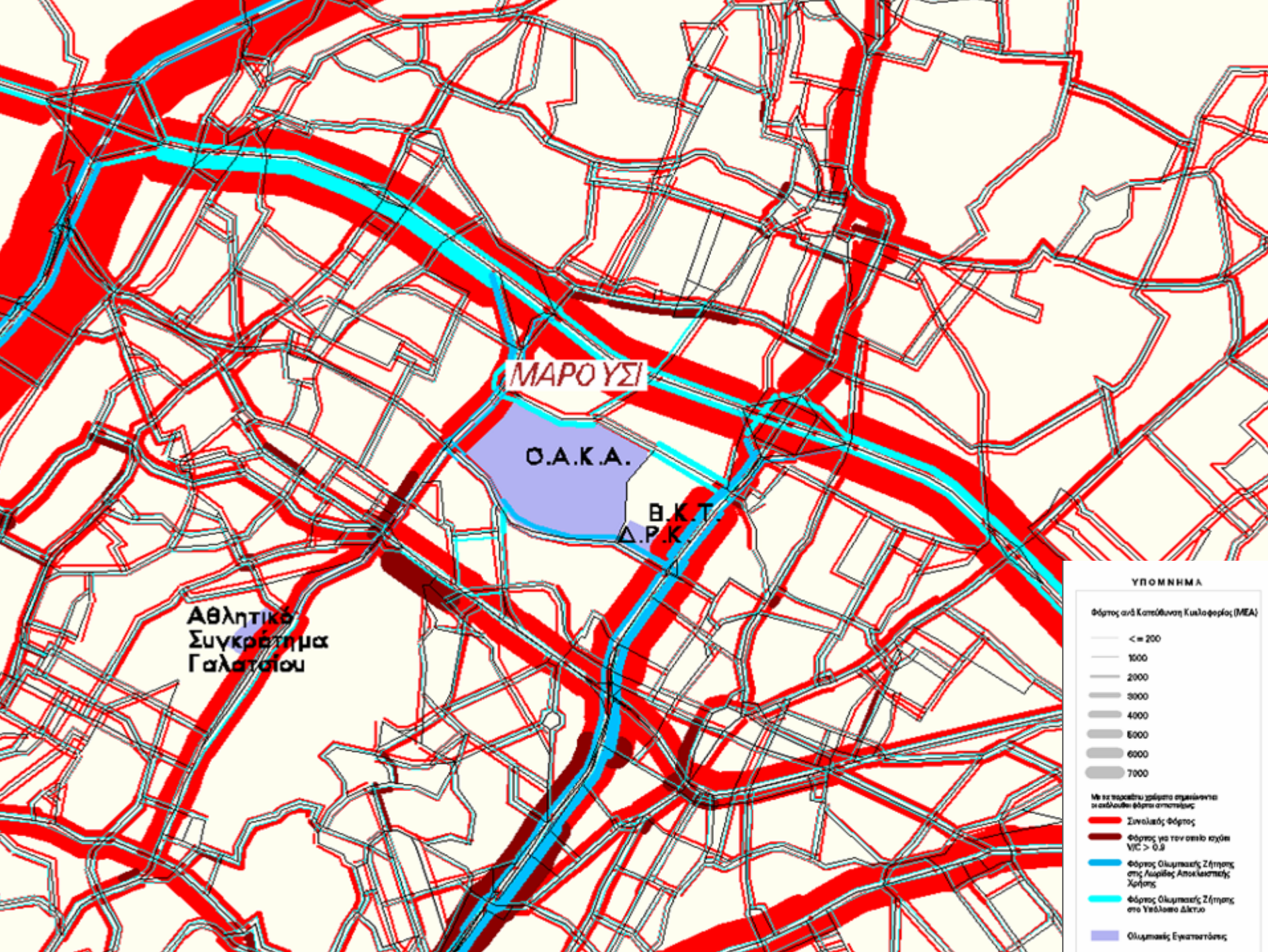
ΜΑΡΟΥΣΙ

Θ.Α.Κ.Α.

Β.Κ.Τ.
Δ.Ρ.Κ.

Αθλητικό
Συγκρότημα
Γαλατσίου

In hindsight Atlanta's transit system was far too small and the demand far too great

Size of Transit System

Atlanta 1996
- Rail Cars: 238
- Buses: 704
- Ferries: 0

Sydney 2000
- Rail Cars: 1,457
- Buses: 4,721
- Ferries: 27

Athens 2004
- Rail Cars: 537
- Buses: 2,183

Transit Mode (y-axis)
No. of Vehicles/Vessels/ Rail Cars (x-axis: 0, 1000, 2000, 3000, 4000, 5000)

Scale of Demand

Tickets Sold (M)
- Atlanta: 11
- Sydney: 7
- Athens: 3.6

(x-axis: 0, 2, 4, 6, 8, 10, 12)

Olympic Family Size (000)
- Atlanta: 37
- Sydney: 38
- Athens: 46

(x-axis: 0, 10, 20, 30, 40, 50)

Where Sydney did have problems it was related to excess car access

Sydney 2000

- **The size of demand is too large to make car access feasible**
- **Sydney's biggest problem at Horsley Park (Day 3) was caused by excessive car access**
- **Car access to Park and Ride Sites was consistently problematic since it was difficult to predict**
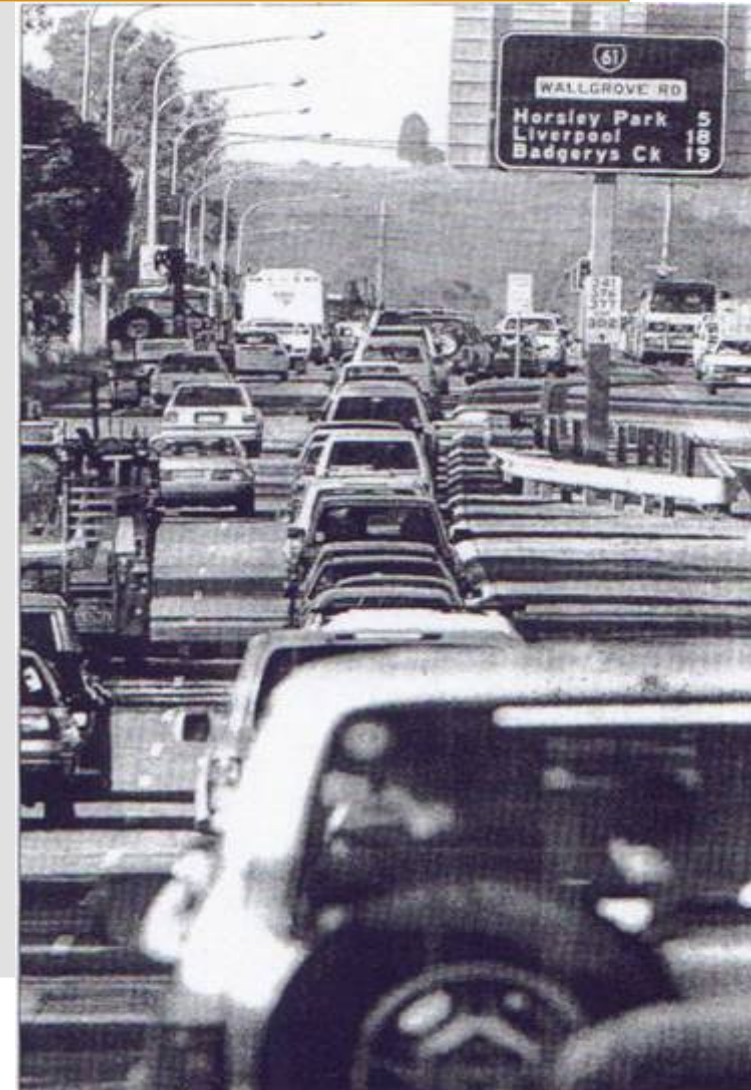
Olympic gridlock . . . traffic came to a virtual standstill on Wallgrove Rd on Monday because too many people ignored public transport options

Agenda

1. **Introduction**

2. **Background**

3. **Approach**

4. **Performance**

5. **Lessons**

MONASH University
Engineering

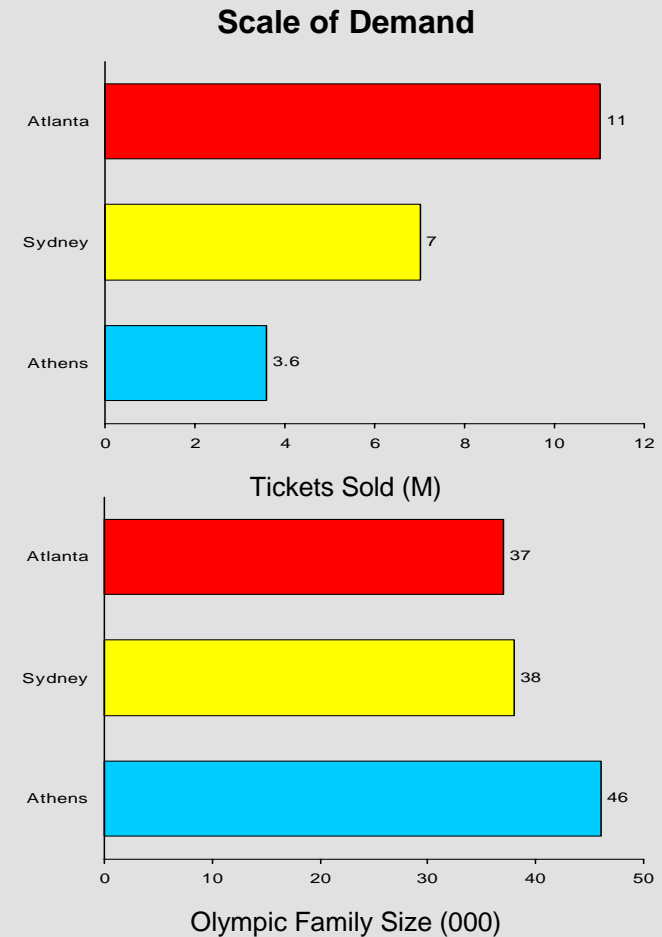**Institute of Transport Studies**

ITS (Monash)

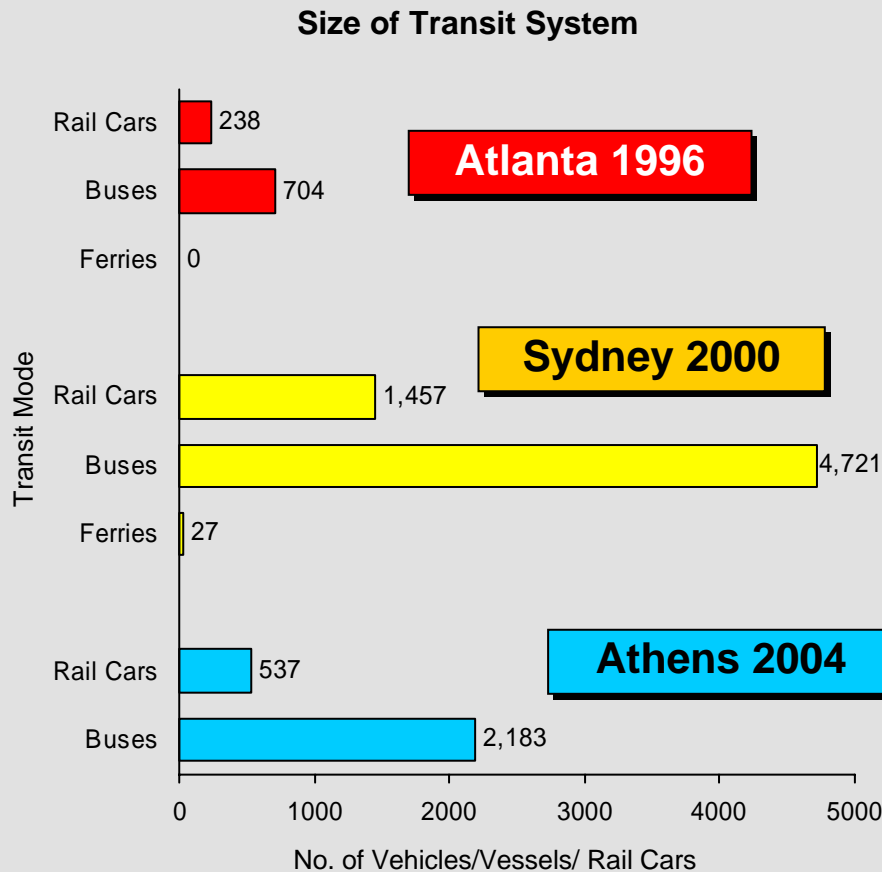# A number of factors made Sydney and Athens successful

A number of factors made Sydney successful

- **Testing - early infrastructure completion (Sydney) - correlation between success and testing**
- **Keeping it simple - low tech – e.g. the millennium train deferral**
- **Centralised planning but decentralised control - e.g. bus service dedication - ownership by the doers**
- **Oversupply (Sydney) and flexibility**

Atlanta had some more substantial challenges – bus service under-resourcing had a critical impact

Size of Transit System

Atlanta 1996

Transit Mode	No. of Vehicles/Vessels/ Rail Cars
Rail Cars	238
Buses	704
Ferries	0

Sydney 2000

Transit Mode	No. of Vehicles/Vessels/ Rail Cars
Rail Cars	1,457
Buses	4,721
Ferries	27

Athens 2004

Transit Mode	No. of Vehicles/Vessels/ Rail Cars
Rail Cars	537
Buses	2,183

Scale of Demand

Tickets Sold (M)

Atlanta	11
Sydney	7
Athens	3.6

Olympic Family Size (000)

Atlanta	37
Sydney	38
Athens	46

It is interesting to contrast longer term games performance – Atlanta has probably benefited more than Sydney
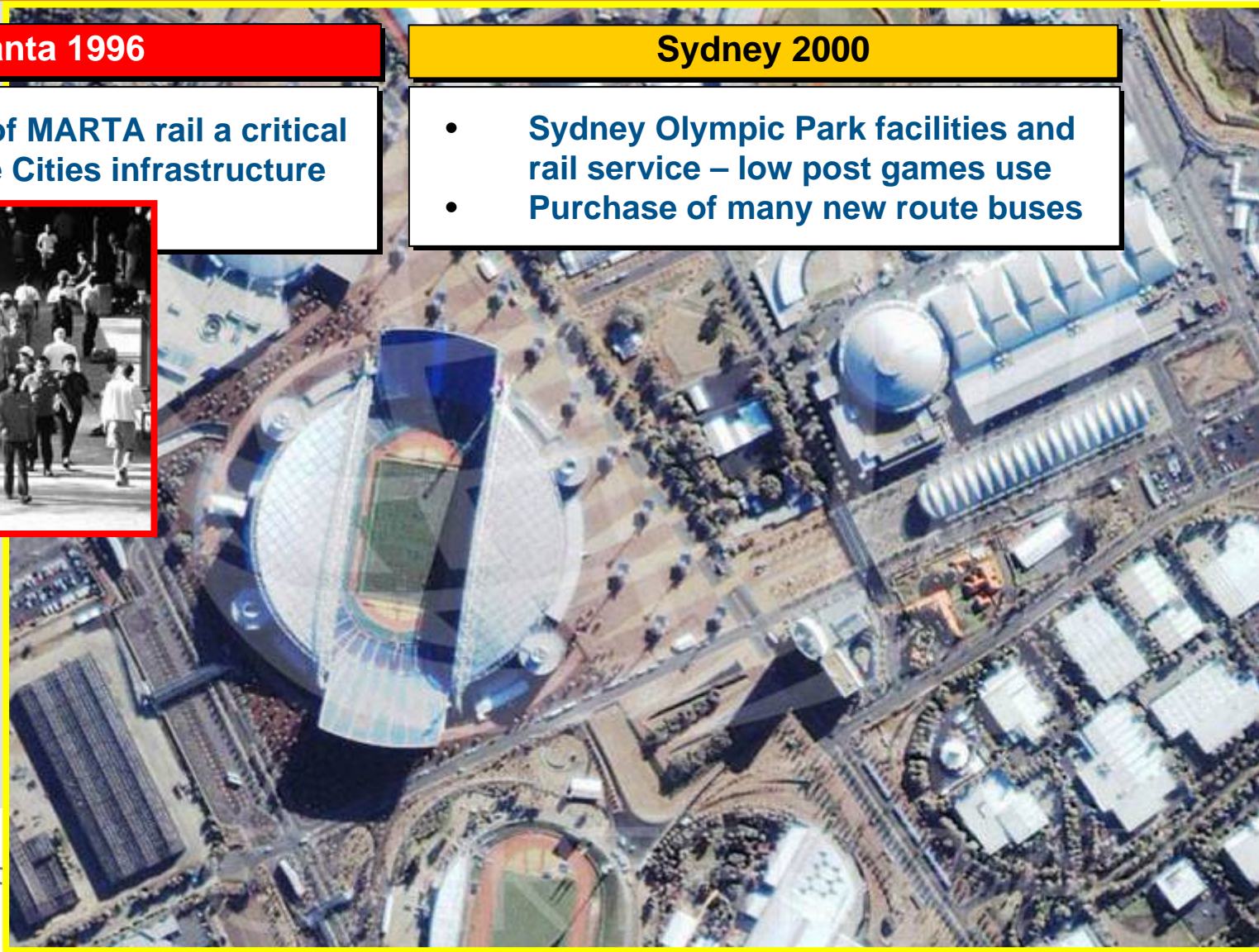
Atlanta 1996	Sydney 2000
• **Extension of MARTA rail a critical piece of the Cities infrastructure**	• **Sydney Olympic Park facilities and rail service – low post games use** • **Purchase of many new route buses**

In Athens there are many calls to maintain high public transport service levels

Kathemirini 24th August

"I've concluded that this festive atmosphere isnt just due to the Olympic Games, but also to public transport, which is still running late….when the railways wern't working before the games started business dropped off to the usual level for the season. <u>The experts should realize that if they keep public transport running until 2-3a.m. more people will go out</u>."

"Dramatically extending the timetable has dramatically increased the popularity of public transport."

Traffic restrictions will also be maintained

Kathemirini August 26th

- **Central Athens has a seasonal odd and even number plate ban which usually stops in August**
- **Transport, Environment and Public Order Ministry announces that the ban will stay in place till July 22nd 2005**

The Athens 2004 transportation legacy will be more significant than 2 weeks of sport

Beijing will have many challenges but it also has many critical advantages

Beijing 2008

Challenges

- **Scale of Road Congestion**
- **Some Reliance on Bus**
- **Catering for Olympic Family Needs including Media**

Advantages

- **Large Transit System**
- **Extensive higher capacity rail**
- **Expansion plans for transit**
- **Effective resource base and good operations experience**

KEY LESSONS

- – Transport resourcing – don't under supply – use the benefits of high capacity rail
- – Transit emphasis - limit/ban car use
- – Manage expectations, manage demand
- – Under promise and over deliver
- – Ensure Olympic Family, particularly the media, are well catered for
- – Concentrate event and non-event sites
- – Keep it simple – don't over stretch on issues like technology – ensure new systems are tested
- – Test Events – test test test test test
- – Centralised planning but decentralised control

MONASH University
Engineering