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**Improved information for better
land transport in our cities.**

By

John Stanley

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TITLE: **Improved information for better land transport in our cities.**

ABSTRACT: COAG's Capital Cities Strategic Planning Process work is nearing completion. The COAG National Objective for this work is To ensure Australian cities are globally competitive, productive, sustainable, liveable and socially inclusive and are well placed to meet future challenges and growth. The Planning work is primarily being driven by process criteria. To maximise chances of achieving the National Objective, outcome criteria closely aligned with that Objective are required, to complement the process criteria. This paper highlights some national problems confronting land transport in Australia's major cities, which will adversely impact on achievement of the National Objective. It then identifies policy directions to tackle these national issues and proposes a small number of outcome criteria that can be used to indicate progress towards the National Objective, as this is affected by land transport.

KEY WORDS: *Climate change; COAG Reform Council; traffic congestion; liveability performance indicators; social exclusion.*

AUTHORS: John Stanley

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CONTACT: INSTITUTE of TRANSPORT and LOGISTICS STUDIES (C37)
The Australian Key Centre in Transport and Logistics Management

The University of Sydney NSW 2006 Australia

Telephone: +612 9351 0071
Facsimile: +612 9351 0088
E-mail: business.itlsinfo@sydney.edu.au
Internet: <http://sydney.edu.au/business/itls>

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1. Introduction

It is remarkable that, of the 140 cities ranked in The Economist Intelligence Unit's most liveable cities listing for 2011, four Australian capitals were in the top ten. The liveability of Australian cities has become a key part of what might be termed 'brand Australia'. It is a critical element in attracting and retaining the brightest and best and reflects the high quality of life available for most Australians, whether they live in cities or simply visit them. Given the significance of the knowledge economy for future economic development and employment growth, sustaining liveable cities must remain a vital policy goal for Australian governments.

While a high liveability rating has been a defining quality of Australia's major cities, the *State of Australian Cities 2010* (Australian Government 2010) drew attention to a concerning trend of Australian cities falling in the rankings of the Mercer *Quality of Living Survey*. In the 2009 Mercer survey, compared to 2004, Sydney slipped from 5th to 10th, Melbourne from 12th to 18th, Perth from 20th to 21st, Adelaide from 24th to 30th and Brisbane from 24th to 30th. Mercer attributes the rise of cities that have replaced Australian cities to investment in infrastructure, such as transport and housing. This declining ranking needs attention before it becomes a threat to a key aspect of brand Australia. Interestingly, worsening traffic congestion was the key reason why Vancouver slipped from top ranking in the recent EIU rankings.

Managing the development of cities is fundamentally about finding the right balance between **economic competitiveness/productivity**, maintaining a high standard of **liveability**, achieving long term environmental **sustainability** and ensuring **social inclusion**, recognizing that there are multiple interdependencies between these goal areas. The **National Objective** specified in the COAG Communique announcing the Capital Cities Strategic Planning Systems project illustrates this goal set (COAG 2009, p. 15):

To ensure Australian cities are globally competitive, productive, sustainable, liveable and socially inclusive and are well placed to meet future challenges and growth.

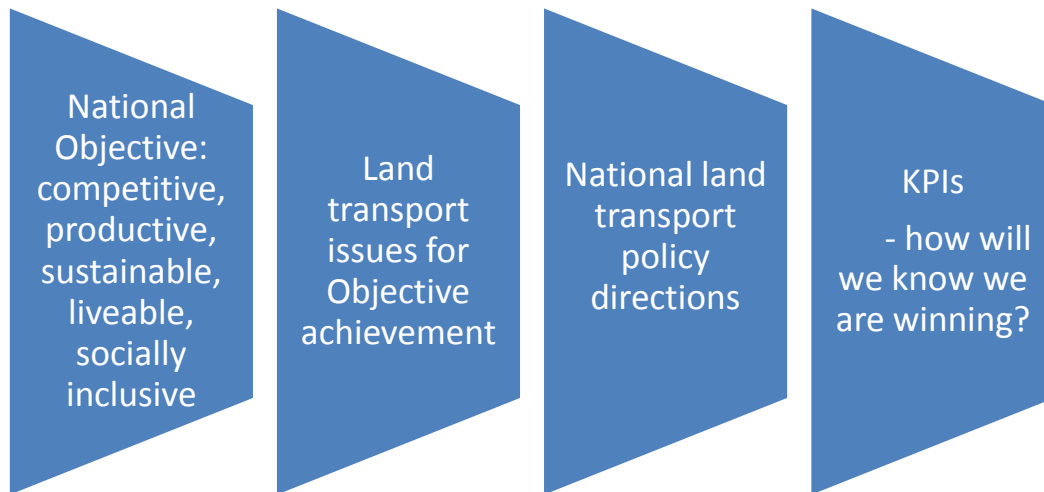
The COAG Communique spells out nine criteria that capital city planning systems will be expected to meet and there is an extensive process underway to complete plans for all capital cities by January 2012. These criteria are largely **process-based**. They provide a good starting point to improving outcomes for our cities, in line with the National Objective.

The next step should be the nomination of **specific outcome criteria or objectives**, measurement of performance against which will help to indicate progress towards Australian cities meeting the National Objective. The present paper suggests some outcome indicators for land transport in our capital cities that could assist in this regard.

Accepting the high level social goals or desired outcomes included in the National Objective, the paper identifies some key national issues confronting land transport in our cities, which stand between us and achieving the National Objective. It suggests policy directions to tackle these issues. A number of Key Performance Indicators are then suggested that will help us know if we are winning in outcome terms. In some cases, indicative targets are suggested for particular KPIs. This is simply to show in broad terms what is likely to be required across our major cities as a whole, rather than necessarily as specific targets for any particular city.¹ Chart 1 shows the paper's outline structure.

¹ Specific goals on particular indicators in any city are rightly a matter for political judgement in that city and will depend, for example, on starting points, local values and the policy and program approach taken to the full set of KPIs, which reflect an integrated approach to goal achievement. Thus, for example, a lower level of attainment on one specific goal is quite reasonable if there is over achievement on some other complementary goals or if a jurisdiction is already well down the path to achievement of a particular objective.

Chart 1: Paper structure



2. Critical national land transport related issues confronting achievement of the national objective in our cities

Australia's capital cities currently face many major issues that are a barrier to achievement of the high level social goals. From a land transport perspective, and in the present author's opinion, the top issues are (not in any necessary order):

- the high and growing costs of **traffic congestion**, estimated at almost \$10 billion in 2005 and predicted to double by 2020 (BTRE 2007). Traffic growth in our cities seems to have slowed since that BTRE prediction, as shown in Figures 1 and 2 (figures are included at the end of the paper), suggesting that congestion costs may not double by 2020, but they remain high, are increasing and reduce economic competitiveness and productivity. Trucks appear to be the major source of increasing traffic congestion at present and must be an important focus of strategies to lower congestion costs (Fig. 3). UK research suggests that only small sustained reductions in traffic levels are needed to make large savings in congestion costs (e.g. 4% cut in traffic volumes would lower UK congestion costs by about 40%). This is relevant in KPI setting, where some key initiatives to cut congestion should be framed so as to not generate additional road traffic volumes;
- the high and growing transport **greenhouse gas emissions** from our cities, which are amongst the highest per capita in the world and are continuing to grow. Transport accounts for about 15% of Australia's GHG emissions, with almost 90% being from road transport and over half of this coming from our cities. Our low urban development densities and associated relatively low public transport mode shares are key contributors to this outcome and need to be considered in selecting KPIs for land transport for our cities (Bento et al. 2005);
- the **serious injury toll** (over 30,000 annually) and **loss of life** (about 1350 annually) on our roads. While there has been a significant drop in fatalities in recent years, there is more to do and serious accident numbers remain high (Figs 4 and 5 illustrate trends for Melbourne and Sydney). Safety programs typically focus on the vehicle, the driver and the road environment. They should also recognise the role of the high dependence on motor vehicles in underpinning the present safety outcomes and the potential gains from reducing this high dependence;
- many people are at risk of **social exclusion** because of our high reliance on the motor vehicle, particularly people in outer urban areas (and in regional/rural areas). NTC (2011)

points out that 13% of our population are aged under 18 and 4% are over 80, while 10% of households have no car. Others have mobility difficulties. Many people experience transport poverty because of their household need for multiple car ownership, with low household incomes (Currie et al. 2007);

- the **energy security** concerns raised by Australia's high and growing dependence on imported fossil fuels. Australia is currently about 50% self-sufficient for transport fuels but this is expected to fall to about 20% by 2030, with associated risks for our balance-of-payments current account and also for energy security. Supply disruptions could be extremely costly. Rising costs of transport fuels, associated with peak oil, compound these concerns;
- our transport choices, which are associated with reduced incidental exercise, are increasingly being recognised as a likely contributor to the rising incidence of **obesity** in our community. 52% of women, 67% of men and 25% of children are overweight or obese in Australia and the prevalence has doubled in the last 20 years. Environments that encourage walking, cycling and incidental exercise may help reduce this trend. For example, the average car trip to work in Melbourne involves only 8 minutes walking. The average public transport trip involves five times as much incidental exercise.

These are all **national issues** - they impact on all our cities to a greater or lesser extent. The *State of Australian Cities* (2010) and the Federal Government's new *National Urban Policy* (Australian Government 2011), together with the COAG Capital Cities agenda, show clearly that the issues are understood by governments. The issues provide a high level set of matters for which outcome performance indicators should be sought for the Capital Cities Strategic Planning project, as it evolves.

Air pollution could also be included as a key issue for land transport, since some forms of such pollution are significantly transport-dependent, including particulates (where trucks are the main source) and ozone. Progress has been made in lowering air pollution levels in recent years in most Australian cities, linked to tightening of emission standards. Air quality standards are available for particular pollutants and air quality is regularly monitored and reported against such standards. The achievement against such air quality standards could be included as a high level KPI for land transport in our cities. It is not suggested for inclusion by the present paper, however, because of the author's belief that this issue is largely in-hand. Inclusion would be very easy, if thought important.

It is common to see issues like population growth, the changing age profile of the population and infrastructure backlogs included in a listing of key issues affecting land transport. The present paper takes the position that the consequences of such factors are manifest in the various issues that have been raised above. Thus, for example, a faster rate of population growth and transport infrastructure backlog is reflected, *inter alia*, in worsening traffic congestion and increasingly crowded public transport. For that reason they are not specifically flagged for attention.

3. Transport policy directions for sustainable cities

Land transport policy directions to tackle the national issues, and enable progress towards the National Objective (with examples of the types of initiatives that will support these policy directions included as dot points), can be summarized as follows:

1. Reduce the need for motorised travel but without reducing the number and range of activities that can be undertaken:
 - land use planning (more compact cities, co-location)

- improved travel planning (e.g. Travel Smart programs)
2. Achieve a modal shift to lower impact transport modes – cars to public transport, walking and cycling; trucks to rail for freight
 - infrastructure improvements to support low impact modes
 - designing cities to be more walkable/cyclable
 3. Improve vehicle utilisation
 - high occupancy vehicle/toll lanes
 - car sharing
 4. Reduce vehicle emissions intensity
 - more efficient vehicles
 - smaller passenger vehicles
 - alternative fuels
 - intelligent transport systems
 - better driving practices
 5. Increase mobility opportunities for those at risk of mobility-related social exclusion
 - provision of reasonable base public transport service levels
 - use existing public transport opportunities (e.g. school and community buses) more effectively
 - continue roll-out of accessible public transport and related infrastructure/services
 6. Create a more sustainable freight network (productivity enhancement/congestion avoidance aim)
 - focus on freight movement to/from ports, hubs and to key manufacturing/distribution centres and regional centres
 - truck-only links.

Table 1 shows the way these various policies target the specific national issues raised in section 2 and identify where positive outcomes are expected. The policy directions typically have the virtuous quality that they help tackle several of the key national land transport issues which have been identified, emphasising the vital importance of taking an integrated approach to land transport. They are policy directions that are being pursued by most Australian states, and by most developed and many developing countries at present. A key question for Australian cities is whether sufficient progress is being achieved. Establishing relevant KPIs will help answer this question.

Table 1: Likely impacts of suggested policies on key national transport issues.

Policy direction	Congestion / productivity	GHG emissions	Safety	Social inclusion	Energy security	Health
Reduce need for motorised travel	Positive	Positive	Positive	Positive	Positive	Perhaps
Increase mode share of low impact modes	Positive	Positive	Positive	Positive	Positive	Positive
Improve vehicle utilisation	Positive	Positive	May be positive	Positive	Positive	May be positive
Reduce vehicle emissions intensity	Neutral	Positive	Neutral	Depends on cost	Yes	Neutral
Increase mobility opportunities for at-risk people	Little impact	Little impact	Little impact	Positive	Neutral or positive	Probably positive
Create more sustainable freight network	Positive	Positive	Positive	Neutral	Positive	Neutral

4. The importance of measuring outcomes

There are several very important reasons why the Capital Cities Strategic Planning work should proceed to identifying key **outcome performance indicators** and then track and publicly report achievement against these indicators. These reasons can be summarised as follows:

- first and foremost, maintaining cities that rate very highly in liveability terms is a vital part of ‘brand Australia’. It is in the national interest that this liveability rating remains high and a nationally managed process should assist in delivering this result;
- an agreed national process of identifying key outcome criteria that align with achievement of the COAG National Objective and then monitoring performance outcomes is an important element in identifying any areas where performance is exceptional and those where remedial action is required, providing a platform for policy and program adjustment and for mutual learning between participating jurisdictions;
- monitoring and reporting outcomes on key matters that affect the achievement of the COAG National Objective improves the transparency and accountability of political processes to the Australian community, for whom these processes are being undertaken, and should assist the democratic process.

This has nothing to do with States being monitored by the Commonwealth or with establishing some kind of league table as between various cities. It is all about trying to improve the effectiveness of policy and program **outcomes** in line with the National Objective. Liveable cities are a vital **national** concern and the sustenance of this liveability for the benefit of the present and future Australian communities should benefit from a national learning process, operating in a transparent and accountable framework for the benefit of the Australian community. KPIs are one integral part of this process.

5. KPIs consistent with the national objective components and policy directions

As noted in section 2, the key national issues of concern for land transport are themselves directly suggestive of some relevant performance indicators. Some of the policy directions proposed in section 3 for dealing with these issues are also suggestive of particular KPIs for land transport in our cities, since they deal with critical matters that will determine the extent to

which the high level goals (the various components of the National Objective) are achieved (that is, are we getting closer to, or further away from, high level goal achievement).

A further layer of KPIs could also be developed, at the level of the dot points listed under the various numbered policy directions set out in section 3. These would help people to understand why particular policy directions are being successful, or not. That is likely to be useful at a jurisdictional level, to help in fine tuning policies and programs. The COAG process could provide a useful forum for the development of more detailed performance indicators at this scale, for application on a jurisdiction by jurisdiction basis. It seems less important, however, in the context of seeking an overall set of strategic outcome indicators of national progress towards tackling the land transport problems that are facing our cities, in the pursuit of the associated high level National Objective. A small number of high level indicators should suffice for that purpose.

At the highest possible level, KPIs to cover the key national issues raised above could simply be direct indicators of outcome performance against these issues, such as:

1. Monetary congestion costs in a city - measured on a consistent basis, such as by the BTRE (2007) dead-weight cost measure. Both total cost and unit cost indicators (e.g. cost/vehicle kilometre) would be useful;
2. Land transport greenhouse gas emissions - measured as tonnes of CO₂ equivalent (total and per capita);
3. Numbers killed or seriously injured - total and per 100,000 population, as an exposure based measure;
4. Fossil fuel used in the city (total and per capita; % of fossil fuel imported is also a useful national indicator for energy security);
5. Number of dwellings without 100 public transport services a week available within 400 metres – a good indicator of a service level that will provide a reasonable level of mobility for most people at risk of mobility-related social exclusion (total and perhaps including a socio-economic descriptor of areas not achieving this service level, as an indicator of social equity and inclusion);
6. Number who do not get 30 minutes incidental exercise a day (number and possibly a socio economic indication of those not meeting this threshold).

Table 2 includes these measures. It also includes some policy-level indicators that will strongly affect performance against these macro indicators. Thus, for example, if person kilometres of motorised travel are falling and mode share of low impact modes (such as walking, cycling and public transport) is increasing, it is very likely that congestion costs will be reduced. Greenhouse gas emissions are also likely to fall in this circumstance, mobility-related social inclusion should improve and obesity should be reduced. These indicators are called policy indicators in Table 2 and they help us to understand what is happening in the macro measures. Policy measures 4 and 5 do not have additional supporting policy indicators since the relevant macro indicators are sufficiently informative for an overview of performance.

In suggesting some indicative potential 2020 ‘targets’ for achievement on some indicators, the scale of changes likely to be required over the period to 2050 to deliver an 80% cut in GHG emissions is likely to be the single most powerful influence on aspiration. In a shorter time frame, such as to 2020, reductions of about 20% on 2010 levels might be required to establish a pathway towards an ultimate GHG emissions cut of about 80%, if the land transport sector’s performance is expected to broadly mirror the overall outcome expectation (which inter-sectoral equity might suggest is appropriate, if not necessarily efficiency). Table 3 shows indicative measures of the relative changes at a national level, with substitution of achievement between the various rows in the table always possible.

6. Concluding comments

The new National Urban Policy and related COAG Capital Cities Strategic Planning process are significant steps forward for Australian cities. They provide a foundation on which to build knowledge about how our cities work and on which to deliver better outcomes for those who live in, or visit, our cities. Monitoring and reporting on high level outcomes in our cities on an on-going basis provides a way of judging progress and a foundation for policy and program adjustment, as needed. It also improves the accountability of governance arrangements for our cities to their electorates. This paper has suggested a small number of outcome indicators that are readily measureable, which could form part of a regular monitoring and reporting regime for all major cities, to help ensure that they remain *globally competitive, productive, sustainable, liveable and socially inclusive and are well placed to meet future challenges and growth*, as COAG intends.

Table 2: Suggested KPIs and indicative targets for land transport in our capital cities

Goal/Policy Direction	Some Potential Cities' KPIs	Indicative National Cities' Targets for 2020
MACRO KEY PERFORMANCE INDICATORS FOR KEY NATIONAL LAND TRANSPORT ISSUES		
Reduce congestion	\$ Congestion cost; \$ Congestion cost/vkm	2020 to be at 2010 levels
Reduce greenhouse gas emissions	Tonnes CO ₂ e; Tonnes CO ₂ e/per capita	Reduce by at least 20% on 2010 levels
Improve road safety	Deaths; serious injuries Deaths/100,000 population Serious casualties/100,000 pop.	Reduce by 30%
Improve energy security	Petroleum based ML used; ML/pc; % fossil fuel imported	Reduce at least 20% on 2010 by 2020
Increase social inclusion	Number without PT available 100 hrs/week within 400m	At least 95% coverage
Reduce transport-related obesity	Number not getting 30m incidental exercise a day (PT/walk/cycle mode share below is also a good indicator)	Zero
SUPPORTING POLICY PERFORMANCE INDICATORS		
Reduce motorised travel (but not trips/activities, because of inclusion goal)	Motorised travel kms per capita	Reduce by 1% pa faster than population growth (so total impacts are favourable)
	Gross urban density	Increase by 2% p.a.
Increase relative use of low impact modes	% combined mode share for walking, cycling and public transport	Increase by 10 percentage points from 2010 to 2020
	% freight mode share by rail	Increase by 10 percentage points from 2010 to 2020
Improve vehicle utilisation	Average car occupancy in a.m. peak	Increase by 0.2 by 2020
	Freight tkms/truck km	Increase by 2% p.a.
Create a more sustainable freight network	Kms of freight routes in city	(Indicative target needed)

Table 3: Indicative land transport changes to achieve greenhouse gas emission reductions of 20% on 2007 by 2020 and 80% by 2050.

(From Stanley et al. 2009) ('Extreme efficiency' ~90% reduction in emissions intensity by 2050; 'high efficiency' ~75% reduction)

Measure	Indicator	2007	2020 (A)	2050 Extreme efficiency	2050 High efficiency
1. Fewer/short car trips (kms)	Less urban car kms	-	8%	20%	50%
2. Shift car to walking/cycling	Active urban trans. mode share	16%	22%	30%	50%
3. Increase public transport mode share	Urban PT mode share (all trips)	8%	20%	25%	38%
	<i>Car mode share</i>	77%	62%	48%	22%
4. Increase car occupancy	Urban passengers/car	1.4	1.6	2	2.8
5. Freight efficiency	Less fuel	-	20%	35%	80%
6. Car Emissions intensity	Less than 2007	-	25%	92%	75%
Truck emissions intensity	Less than 2007		18%	89%	75%
<i>Car emissions intensity</i>	<i>g/km</i>	220	165	18	54

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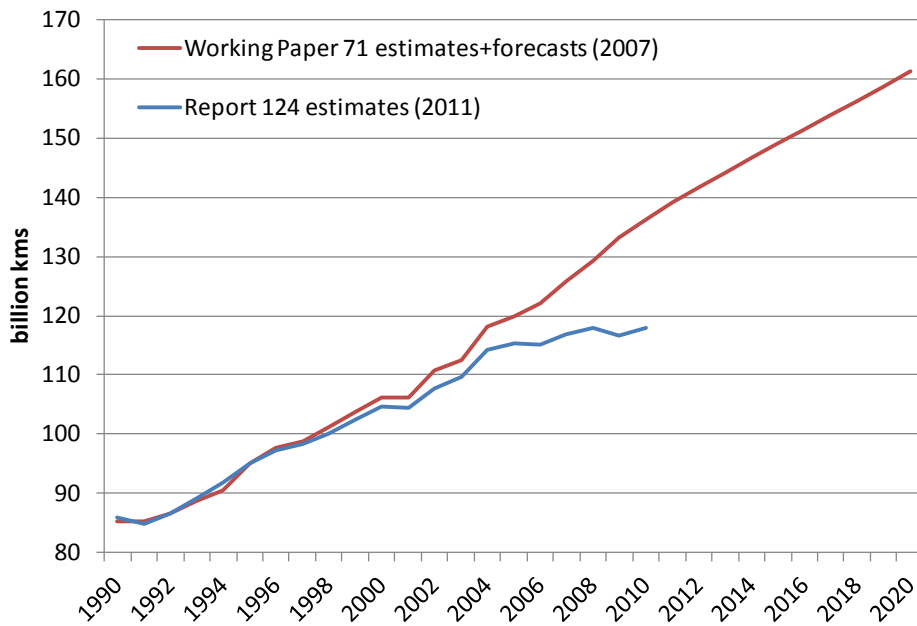
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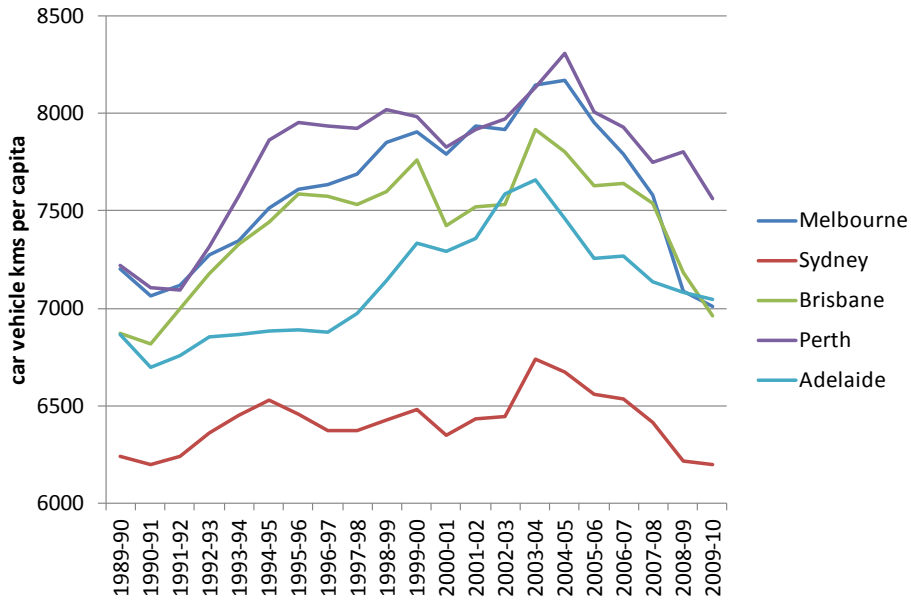
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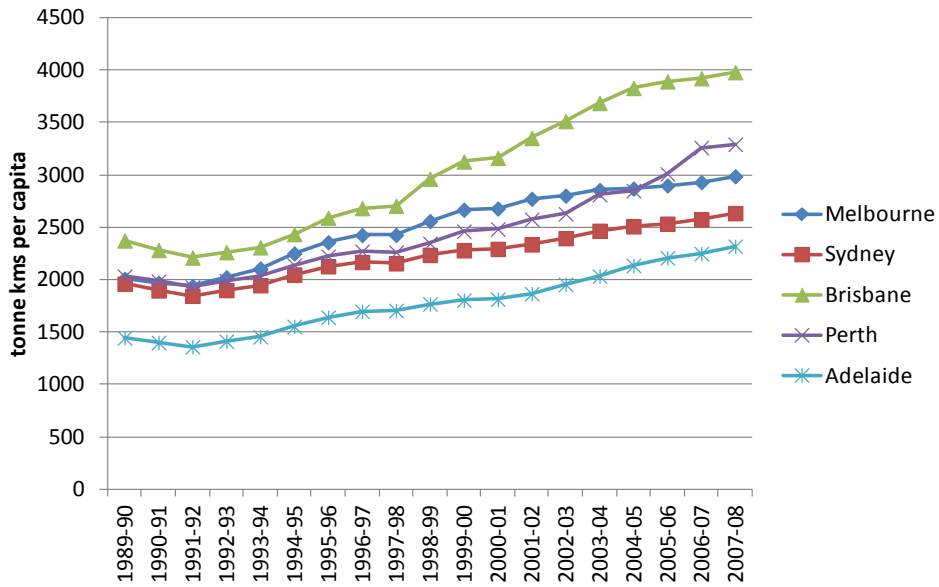
Sources: BTRE (2007), BITRE (2011a)

Figure 1: BTRE/BITRE estimates and forecasts of total vehicle kilometres in major Australian cities



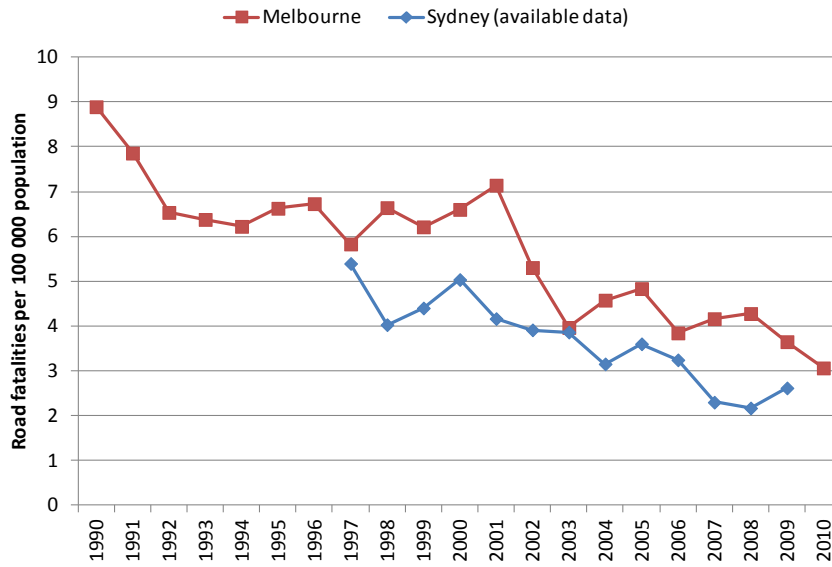
Sources: Derived from BITRE (2011a) and ABS (2011)

Figure 2: Estimates car vehicle kilometres per capita



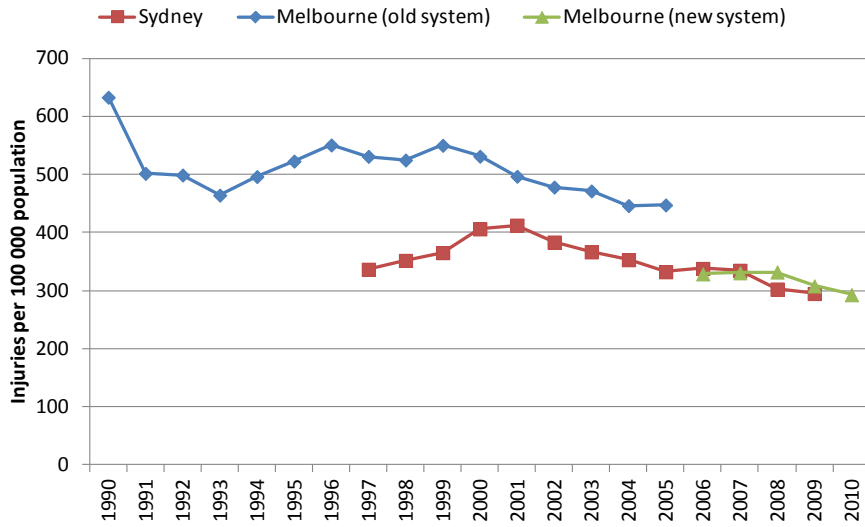
Sources: Derived from BITRE (2011b) and ABS (2011)

Figure 3: Urban road freight tonne kilometres per capita



Sources: Derived from VicRoads CrashStats online data (2011), Roads and Traffic Authority NSW Centre for Road Safety – Crash Statistics – Annual Statistical Statements (2011) and ABS (2011)

Figure 4: Metropolitan road accident fatalities per 100 000 population



Sources: Derived from VicRoads CrashStats online data (2011), Roads and Traffic Authority NSW Centre for Road Safety – Crash Statistics – Annual Statistical Statements (2011) and ABS (2011)

Figure 5: Metropolitan road crash injuries per 100 000 population