

### 3. TRENDS IN TRANSPORTATION

Movement of people and freight has increased significantly in recent decades and is forecast to continue to rise. The number of motorised road vehicles is now over 800 million worldwide and is growing almost everywhere at higher rates than both human population and GDP. Road traffic may be growing even more quickly (OECD, 1996).

Motor vehicle ownership and distances travelled by private car have risen steadily while occupancy rates have declined. At the same time, there has been a marked decline in the use of public transport and non-motorised forms of travel.

On average, despite relatively high bicycle ownership in Australian cities, widespread ability to ride and accessibility of cycling to people of differing ages and incomes, cycling is used as a form of transport by only a relatively small percentage of the population. Safety concerns are one of the major reasons underlying the low use of cycling for transport purposes.

There is evidence that walking has decreased because people no longer feel safe on local streets. However, data on how many people walk are not readily available and pedestrian needs seldom figure in transport or urban planning (Victorian Road Safety Committee, 1999).

Reasons suggested for the move from non-motorised and public transport to private transport include the following (Fletcher et al., 1997):

- (a) gains in average personal wealth;
- (b) increased leisure time;
- (c) the seductive imagery of advertising;
- (d) the techno-industrial culture of road building;
- (e) deterioration in public transport facilities;
- (f) greater mobility of women outside the home;

- (g) growth in the proportion of elderly, retired persons continuing to use the private car;
- (h) the decentralisation of place of residence, workplace and retail facilities.

#### 3.1 Private motor vehicle usage

Between 1950 and the mid 1990s, the worldwide number of private cars increased from around 50 million to 500 million (McMichael, 1997).

Australian levels of car ownership and use are at the upper end of the OECD range (Table 1).

**TABLE 1  
VEHICLE OWNERSHIP AND USE**

Country	Private vehicle ownership per 1000 population	Per capita VKT*
Australia	50	8,000
Germany	49	7,000
Canada	46	8,600
NZ	46	7,400
Norway	39	6,700
Japan	36	5,500
OECD Europe	36	5,700

\* vehicle kilometres travelled

*Source: OECD Environmental Performance Reviews – Australia 1997. Reprinted from NRTC (1999c)*

Motor vehicle registrations in Australia increased from approximately 1.5 million in 1950 to 11.4 million in 1997. Passenger vehicle numbers grew by 69% between 1976 and 1995 and accounted for 80% of all vehicles registered for road use in Australia in 1997. When light commercial vehicles used for private purposes and motorcycles are included, private road vehicles represented about 93% of city passenger transport in 1995 (Australian Bureau

of Statistics, 1995 and 1997; Bureau of Transport Economics, 1999).

Passenger vehicle registrations in Victoria accounted for 27% of the Australian total. However, the number of registered cars per thousand persons in Victoria is now below what it was in 1991 (Australian Bureau of Statistics, 1995 and 1997). While cars per person are projected to continue to grow slowly until 2015, growth in car traffic on existing networks is estimated to be in the order of 20 – 40% (Bureau of Transport Economics, 1999).

Australia has become increasingly car dependent with over 70% of trips in most cities being undertaken by car.

**Seventy-five per cent of all trips in Melbourne are by car as either a driver (48%) or passenger (27%).**

*Victorian Department of Infrastructure, 1996*

In South East Queensland, over 78% of all trips are undertaken in private vehicles; the number of private vehicle trips in the region is predicted to increase by 71% per day, and the total amount of motorised travel to rise by 100% per day between 1992 and 2011 (Queensland Government, 1997).

Contrary to general perception, commuter trips do not dominate travel, accounting for only approximately one-fifth of total trips. In 1995, about 52% of the total distance travelled by passenger vehicles was for private use, 27% was for travel to and from work, and 21% was for business use (Australian Bureau of Statistics, 1995b). However, a high proportion of people (up to 85%) travel to work by motor vehicle as either a driver (50 – 70%) or passenger. In Melbourne in 1994, 84% of people used a car to travel to work compared to 69% in 1974 (Australian Bureau of Statistics, 1994).

The average occupancy of cars has been decreasing. Occupancy at peak time fell from 1.26 people per car in 1976 to 1.15 people in 1986. In SE Queensland, average vehicle occupancy is predicted to decline from 1.3 to 1.2 persons between 1992 and 2011 (Queensland Government, 1997)

A high proportion of car journeys are short trips. For example:

- In Melbourne, over 50% of all trips (whether by walking, cycling, public transport or private car) take less than 12 minutes (VicRoads, 1999); 47% of car trips are 2.5 km or less.
- In Perth, 3% of car trips are less than 500 metres, 8% are less than 1 km, and almost 50% are less than 5 km (Transport WA, 1998).
- In Adelaide, 35% of trips to work and place of education are less than 5 kms with 26% between 5 km and 10km (Australian Bureau of Statistics, 1997).
- In South East Queensland, almost 95% of daily household generated trips are under 20 km (Queensland Government, 1997).

Passenger vehicles contribute around 74% of total kilometres travelled by road vehicles in Australia. The average distance travelled by passenger vehicles in 1995 was 14,400 kms, an increase of only 1% from 1991 and 9% below the 1988 high of 15,800 kms (Australian Bureau of Statistics, 1995).

The average personal car trip in Perth is expected to increase from 8.1 km in 1991 to almost 10km by 2001, resulting in corresponding increases in fuel use, emissions and traffic congestion (Transport WA, 1997). In South East Queensland, average trip length is predicted to increase from 12.5km to 15km between 1992 and 2011.

Technological advancements in vehicle design have led to increased fuel efficiency and reductions in emissions and noise in newer cars. However, these benefits have to be set against the increase in total vehicle numbers on the road, the average age of cars on the road (more than 50% of vehicles are over 10 years old), the increased distances newer cars are driven, and the increased number of larger and more powerful vehicles (for example, 4WDs) being used. The growth in car travel overall has resulted in a 30% increase in fuel consumption over the past decade.

The financial incentives provided to motor vehicle usage through the taxation system<sup>1</sup> (for example, company-provided cars in salary packages, GST-reduced car purchase prices, company car running costs and diesel fuel prices) can be expected to lead to a continued expansion of the Australian motor vehicle fleet. If past experience in Britain is any guide, the main impact of the lower diesel prices will be a greater inclination to opt for diesel powered vehicles in new fleet and 4WD purchases (Fisher, 1999). Such an expansion in the petrol and diesel fleet would have significant environmental and health implications.

### 3.2 Freight and commercial transport

Freight and commercial transport is an important segment of the total transport task. Freight-carrying vehicles (light commercials, rigid and articulated trucks) accounted for around 18% of total vehicles registered for road use in 1995 but 24% of total distance travelled by road vehicles in Australia. By comparison in the same year, passenger vehicles accounted for 79% of total registrations and 74% of total distance travelled (Australian Bureau of Statistics, 1995b).

There has been an increasing trend for freight to be hauled by road rather than rail. Australia has one of the highest per capita rates of road freight haulage in the world. In Sydney, over 75% of freight is carried by road (NSW Government, 1998). In South East Queensland, over 95% of freight movements within the region are by road (Queensland Government, 1997).

**The number of road freight-carrying vehicles in Australia increased by 71% between 1976 and 1995 while the total distance travelled by those vehicles increased by 95% over the same period.**

*Australian Bureau of Statistics, 1995b*

There has been a significant increase in the number of freight-carrying vehicles registered for use on Australian roads. Light commercial vehicles and articulated trucks experienced the biggest growth rates with the number of light

commercials doubling over the ten year period. In 1995, light commercials accounted for 15% of all registered vehicles while articulated trucks accounted for only 0.5% (National Road Transport Commission, 1999a). The diesel sector of the freight vehicle fleet is experiencing significant growth.

Total tonnage moved and the size of freight vehicles have both increased. Between 1991 and 1995, tonnage moved rose by 19% in Australia. In 1995, 92% of total freight was carried by rigid and articulated trucks with the larger triaxle trailers and B-Double combinations accounting for the majority of freight moved by articulated trucks (Australian Bureau of Statistics, 1995b). Articulated trucks recorded the largest increases in average number of kilometres travelled.

The majority of freight moves within urban areas (National Road Transport Commission, 1999b) but, in general, there is limited knowledge of the materials carried, their origins and destinations, the routes taken and times of greatest transport demand. The short distances and volumes involved, and the local delivery nature of current freight movements in metropolitan areas, limits the opportunity for shifting freight to rail within urban areas.

In addition to the movement of freight there is a large amount of travel for business purposes, the majority of which occurs on the road network outside peak hours. Commercial trips are predicted to rise in metropolitan areas. In the Perth metropolitan region, such trips are estimated to increase 1.65 times between 1991 and 2029.

Strong growth in freight movements by light commercial vehicles, rigid and articulated trucks is predicted to 2015 with the greatest growth rates (about 6% per year) occurring in light commercial vehicles. Tonne kilometres are projected to increase by 88% between 1996 and 2015 (Apelbaum Consulting Group, 1997). The Bureau of Transport Economics estimates that truck traffic growth between 1995 and 2015 is likely to be between 60% and 80% (Bureau of Transport Economics, 1999).

In South East Queensland, it has been estimated that a 60% increase in population would increase the freight task (measured by

<sup>1</sup> These are covered in more detail in section 4.3.

tonne kilometres hauled each day) by 80-120% (Queensland Government, 1997).

Growth in road freight has significant implications for air quality. Freight vehicles, particularly light commercial vans, are predicted to increase their pollution by 70% over the next 15 years as speedier deliveries are demanded by businesses and individuals (Smogbusters). The diesel sector is likely to grow in response to the GST-reduced diesel fuel prices and can be expected to be a greater contributor to emissions of nitrogen oxides than the petrol vehicle fleet.

### 3.3 Public transport

**Public transport patronage has been in continuous decline relative to car use over the last 50 years. Total public transport use has fallen from around 30% of all trips in Australian capital cities in 1970 to less than 10% today.**

*Public Transport Users Association*

Public transport use has declined significantly in the post war period. Falling rail patronage is the main cause of this decline; by 1995, rail was moving fewer passengers in Australian urban areas than light commercial vehicles used for private travel and motorcycles combined. The rail share of the urban public transport task in Australia has declined from a high of 40% to close to 4% today and, based on current trends, will continue to decline slowly to the year 2020 (Bureau of Transport Economics, 1999).

In Sydney, 6% of passengers currently use public transport across the city. However, usage rates are substantially higher (up to 40%) where good public transport services are available (for example, Ashfield, Leichhardt, Bondi Junction) (Australian Broadcasting Corporation, 1999a). In Melbourne, 5% of all trips are by public transport (3% by train, 1% by tram and 1% by bus) (VicRoads, 1999). The percentage of total trips by public transport in Perth is less than 6% whereas in Brisbane it is between 7% and 10% (Transport WA, 1998; Australian Broadcasting Corporation, 1999a).

Commuters travelling to work and students travelling to places of education are significant users of public transport. However, public transport is as important for journeys for shopping, entertainment, personal business and social or recreational purposes as it is for work/education journeys (Yencken, 1996).

In Victoria, the percentage of people who travelled to work by public transport declined from 20% in 1974 to just under 9% in 1994 (Australian Bureau of Statistics, 1994). The public transport share of journeys to work in Sydney has also been declining over the past decade; currently 8.6% of total journeys to work are by bus (NSW Government, 1998).

In 30 years, Melbourne's public transport system has lost half its passengers. Despite having per capita the world's largest tram and rail network, public transport patronage in Melbourne is lower than in either Sydney or Brisbane (Australian Broadcasting Corporation, 1999a).

The new operators of the recently franchised public transport system in Melbourne – National Express, Metrolink and Melbourne Transport Enterprises (MTE) – are being given financial incentives to increase patronage to target levels nominated by the operators in the tendering process. These targets, however, have not been taken into account in setting the subsidy level so the private operators are reportedly under no obligation to achieve them. There are doubts as to whether they will do so (Mees, 1999). The operators are also required to upgrade rolling stock, improve passenger facilities and meet service standards that have been built into the contracts.

The impact that franchising of Victoria's passenger trains and trams will have on patronage is uncertain. Experience in Britain of franchising/privatising public transport has not been one of success in terms of increasing the passenger share of public transport. Fares were increased faster than inflation by a number of the privatised companies to the point where, in cities outside London, significant falls in bus patronage were experienced in areas where there was already low car ownership (Australian Broadcasting Corporation, 1999a).

The application of a 10% GST surcharge on public transport fares is likely to lead to a reduction in public transport usage. Local and overseas studies indicate that a 10% increase in fares leads to a 2% decline in public transport usage. If these users switch to driving to work, it would mean about 4,000 additional cars on the road in Melbourne and 10,000 in Sydney at peak periods (Davidson, 1999).

### 3.4 Non-motorised transport

Surveys conducted in Britain in the early 1990s show that there has been a marked reduction in the annual distance walked and cycled since 1974/75. It seems reasonable to assume that a similar situation exists in Australia.

At the present time, the percentage of trips undertaken by bicycle is approximately 2% in both countries. This is in marked contrast to the Netherlands where the percentage of bicycle journeys is 14 times greater than that in Australia or Britain and where five times as many journeys are made by bicycle than by all forms of transport combined (Hillman, 1997). The Dutch cities of Groningen and Delft both have a 50% modal share for cycling and walking (Whitelegg, 1997).

**Trips by bicycle and walking account for 2-3% and 10-15% respectively of all personal trips in major Australian cities.**

*Commonwealth Department of Transport and Regional Services, 1999*

**By comparison, 29% of all passenger trips are made by bicycle in the Netherlands, 20% in Japan (including bike/rail dual mode), 18% in Denmark, 15% in Switzerland and 12% in Finland.**

*Hillman, 1997; People for Ecologically Sustainable Development, 1997*

On average, 16% of all trips in Melbourne are made on foot and 2% by bicycle. These two modes account for more trips than by either bus or tram but represent only 3% of the distance travelled (VicRoads, 1999).

Approximately 85% of cycling trips in Melbourne are less than 5km with around 60% being below

2km (ibid). In 1992, 90% of cycling trips in Queensland were less than 4.5km while 90% of all walking trips were less than 1.8km (Queensland Government, 1997).

The main purposes of cycle trips are travel to work, education, for shopping or recreation. Of these, cycling to shops and for recreation are the most popular accounting for between 12%-17% and 17%-20% respectively of cycle trips in Melbourne.

In 1994, 25% of people travelling to an educational institution in Victoria went on foot (20%) or by bicycle (5%) compared to 23% by public transport (including taxi). A higher percentage of shopping trips were undertaken by walking (9%) than by public transport (3%). In the case of work trips, 4% of people walked and 1.4% cycled (Australian Bureau of Statistics, 1994). By contrast, 20% and 28% of work trips in Japan and the Netherlands respectively were by bicycle. A high proportion of school and shopping trips are also undertaken by bicycle in these countries.

While the percentage of people cycling to work in Victoria changed little between 1974 and 1994, the percentage who walked to work declined steadily from 9% in 1974 to 4% in 1994. There has also been a decline in the number of children travelling to school on foot or by bicycle.

The popularity of cycling has increased significantly in recent decades. Over the past 10 years, the number of adult cyclists has doubled. By the mid 1990s, there were 1.2 million bicycles across metropolitan Melbourne with 50% of all households having at least one bicycle. However, only 6% of bicycles are used on any one day (VicRoads, 1999).

There is a strong latent demand for cycling as evidenced by the rapid increase in cyclist numbers on newly developed bicycle infrastructure and the large numbers of people who engage in recreational cycling on the weekend. Despite this, less than \$80m is being allocated to bicycles across Australia for all types of facilities and services at both Commonwealth and State level. By contrast, 1997-98 Commonwealth spending on roads in tied and untied grants was \$1,578 billion (Automobile Association of Australia, 1998).



### **3.5 Implications of current trends**

Continuation of current travel trends beyond the year 2000, with their emphasis on private car use, have important economic, social and environmental implications:

- (a) major roads in many inner areas and regional centres will be more congested for extended periods of most days, affecting personal and commercial traffic;
- (b) there will be increased demand and expenditure on road infrastructure to cater for rising traffic volumes and congestion;
- (c) air quality will continue to deteriorate as a result of vehicle emissions;
- (d) adverse health effects and mortality will rise as the population is exposed to continuing high levels of air pollution;
- (e) public transport usage will remain low and services continue to decline in the face of static or declining patronage;
- (f) access and transport opportunities in many newly developed parts of cities will continue to be based primarily on car use;
- (g) use of non-motorised forms of transport will further decline as roadways become busier and increasingly motor vehicle dominated;
- (h) infrastructure required for walking will be further eroded;
- (i) those without access to a car (elderly, young, poor, people with disabilities) will experience reduced accessibility options and less independence;
- (j) traffic growth on local roads will reduce residential amenity;
- (k) demand for oil for vehicle fuel will continue to outstrip supply and discovery, leading to a significant rise in petrol prices.