DRO 12 Integrated transport

A connected and accessible region based on an integrated transport system that supports more compact urban growth and efficient travel; connects people, places, goods and services; and promotes public transport use, walking and cycling

- Vehicle kilometres travelled
- Journey to work
- Mode share
- Public transport patronage
- Car availability
- Vehicle occupancy
- Road congestion
- Freight movements

The available evidence indicates that SEQ’s transport network is under increasing pressure.

Firstly, people are choosing, through either personal preference or a lack of current viable options, to travel predominantly by private vehicle. Indeed, the number of cycle and walk trips have decreased in favour of the number of private vehicle trips, which is growing each year. Not only is the private vehicle the preferred mode of transport, it is also being driven further. Annual vehicle kilometres travelled (VKT) per capita by the private vehicle, is growing faster than the population. This trend has been matched by an increase in car availability. At the same time, the single-occupant vehicle predominates. Finally, road congestion is increasing on particular critical links during peak hours. Road upgrades bring improvements, but over several years travel speed tends to slow again because more vehicles are using the network every year.

While people in inner city areas are a little less dependent on the private vehicle, travel in outer areas is trending more strongly towards high private vehicle ownership, and low public and active transport mode share.

A range of factors is contributing to these trends. Data demonstrates that the average distance to work is increasing and this suggests that a key influencer of travel behaviour is the separation of land uses—work, home, education, retail and recreation—such that private vehicle travel is necessary when travelling from one to another. Other factors include: rapid population growth; poor accessibility for walking, cycling and public transport in the urban form; a lack of viable travel options; and, increased private vehicle affordability.

The transport network is also being placed under growing pressure by rapid increase in freight movements throughout the region due to population growth, economic prosperity and changing business practices.

Sustainability impacts may include: increased levels of air and noise pollution and greenhouse gas emissions; growing demand for public expenditure on transport infrastructure; an increasingly physically inactive population; costly passenger vehicle servicing, fuel and other expenses; and loss of economic activity due to the increasing amount of time spent waiting in congestion.

The SEQ Regional Plan is a long-term document with a 20-year planning horizon. Given that we are only a few years into its implementation it is important to maintain realistic expectations about the time and effort required to slow and reverse trends of concern while sustaining positive trends. Early indications that this is occurring can be seen in increases in public transport patronage. This is reinforced by a slight increase in public transport mode share.
Vehicle kilometres travelled

The total annual distance travelled in the Brisbane Statistical Division (BSD) by passenger vehicles divided by the BSD population.

Interpretation

Status assessment

Condition assessment: Amber
Trend assessment: Red

Where do we want to be?

Guideline for assessment: It is preferable that there is a reduction in vehicle kilometres travelled (VKT) per capita.

What is happening?

We are driving more and travelling longer distances than ever before in SEQ. In fact, passenger vehicle VKT per capita is growing faster than the population.

The average distance travelled in the Brisbane Statistical Division (BSD) per capita by passenger vehicles is estimated to be approximately 8840 km per annum in 2004. The current condition, estimated from 2004, data indicates that VKT per capita was significantly above the target level, even after making allowance for the random variation about the regression line fitted to the data (Figure 12.1).

There is no data for 1992, the year on which target levels are based, but between 1991 and 2004 the VKT per capita grew by 24.2%. Regression analysis of the data relating to the period 1985–2004 indicates that there is a significant continuing trend of increasing VKT per capita—significantly above and departing from the target level (1992 levels of VKT per capita).

Why is it happening?

A number of factors are contributing to increasing passenger vehicle VKT per capita. One factor is our preference for low density suburban living. When this preference is combined with many people living in suburbs located at considerable distances from employment, recreation and other activities, longer and multiple journeys are required. These journeys are largely undertaken by passenger vehicles because low densities mean that public transport options are expensive to provide (long distances are travelled for only a few patrons) and may only be viable as low frequency services. At the same time long distances discourage journeys made by walking and cycling.

Another factor is the increasing occurrence of everyday destinations and services, such as schools and shops, not being located in close proximity to major residential areas. Often major residential developments are not self-contained and walkability is low in these developments. This can be improved through the coordination of mixed land use development and transport planning.

In this setting, the rapid rate of population growth in SEQ has meant that many people find themselves living in very recently developed low density greenfield areas where transport options are limited because they are currently technically difficult and/or uneconomic to provide. This population growth has also been accompanied by conditions of economic prosperity—conditions that tend to encourage additional trips to match high levels of economic activity, consumption and recreation.

Another factor contributing to rising VKT is increasing car ownership, which can lead to decreasing car occupancy, resulting in more trips being made per person per vehicle. Car ownership levels are increasing, which means that people have the opportunity to use a car as their preferred and most convenient transport mode before considering the alternative modes such as public transport, walking and cycling.

The increasing number of dual income households may also be impacting on VKT. With two people travelling to different work destinations everyday, as well as additional trips to childcare for example, there comes an increase in VKT.
Why is it important?

Passenger vehicle VKT per capita is a key indicator of travel behaviour. It can be used to measure the efficiency of land use planning in achieving better self containment of trips, and thus minimising the journeys made by the passenger vehicle. It is also assumed that measuring changes in passenger vehicle VKT per capita indicates the extent to which transport system users prefer private vehicle use over that of other more sustainable modes: walking, cycling and public transport.

What does it mean for sustainability?

Increasing passenger vehicle VKT can result in significant economic, environmental and social sustainability issues. Passenger vehicle servicing, fuel and other expenses associated with increasing VKT per capita can be costly for individuals and commercial interests alike. Provision and maintenance of infrastructure under increasing passenger vehicle VKT conditions is also costly. While significant improvements including cleaner fuels and more efficient and quieter engines have been made, increasing VKT may ultimately override these improvements. Negative health effects from reduced physical activity and increased pollution may also result.

Society's response

The SEQ Regional Plan is a key strategy seeking to manage the trend in increasing passenger vehicle VKT. It identifies the need for a more compact urban form. This means focussing higher density and mixed land use development in and around regional activity centres and public transport nodes and corridors. A compact urban form, including higher densities, provides people with more choices regarding where they would like to go and how they would like to get there, and also allows opportunities for combining trip purposes. For example, co-location of residential, commercial and recreation areas allows people to access services locally by walking and/or cycling. Likewise, close proximity to high frequency and high quality public transport is especially suitable for commuter trips. In these ways, the overall amount of passenger vehicle trips necessary, and hence VKT, is reduced.

Another important way in which VKT can be reduced is via initiatives such as TravelSmart. TravelSmart encourages the use of public transport, cycling, walking and car pooling via voluntary change in behaviour of individuals and organisations, including schools. It does so by raising awareness through campaigns and improving access to information and opportunities to use environmentally friendly transport. TravelSmart helps individuals to become aware of a full range of travel options for a given trip.

The TransLink Network Plan is another initiative likely to reduce passenger vehicle VKT. It outlines a program of operational and infrastructure improvements to public transport across the network. With these improvements it is likely that more people will be able to make more of their trips on public transport.

Another initiative is the implementation of High Occupancy Vehicle (HOV) lanes. HOV lanes encourage car pooling and thus help in the reduction of VKT.

Elsewhere, some employers now make telecommuting an option for their employees. This provides individuals with another choice about if, how and when they travel.
Data

Figure 12.1: VKT per capita for passenger vehicles in the Brisbane Statistical Division Area of Operation

**Indicator author**
Greg Brown, Queensland Transport

**Related indicators**
Distance to work, Vehicle occupancy

**Other data and links**
TravelSmart <www.transport.qld.gov.au/Home/General_information/Travelsmart/>

**Source dataset**
Queensland Transport Facts, Apelbaum Consulting Group, Queensland Transport. This series of publications includes Distance Travelled by Area of Operation. This tabulates distance travelled by vehicle type and area of operation for a number of points in time from 1984–85 to 2003–04.

Regional Population Growth (ABS cat. no 3218.0). This series of publications include estimated resident population by statistical division.

**References**


Journey to work

Average distance travelled between home and work

**Interpretation**

*Status assessment*
Condition assessment: Amber
Trend assessment: Red

*Where do we want to be?*
Guideline for assessment: Reduction in average distance to work.
No target has been set for this indicator.

*What is happening?*
People in SEQ are now travelling further than ever before. In all three areas covered by the survey significant increases in distance of travel to work are evident between 1992 and 2003–04.

In the Brisbane Statistical Division (BSD) the estimated work commuting trip distance increased by about 28% of the 1992 average, from 13.5 km to 16.8 km.

In the suburbs closest to the Brisbane City centre, the work commuting trip has remained consistently lower than the average for the BSD generally (8.6 km in 1992 and 10 km in 2003–04) and has increased at a lower rate of around 25% of the 1992 average. This may indicate that many residents living in and around the inner city do so because they are closer to their place of work.

Travel to work in the coastal areas generally involves greater distances. Between 1992 and 2003–04, the average trip distance to work for Gold Coast residents increased from 12.7 km to 17 km, representing a 37% increase. For the same period on the Sunshine Coast the average trip distance increased from just over 14 km to just over 17 km (Figure 12.2).

*Why is it happening?*
A number of factors are contributing to increasing distance to work. Together with rapid population growth, our preference for lower density living is creating challenges for land use and transport planning. The increasing distance travelled to work may be attributed to high rates of greenfield residential developments on urban peripheries in all three survey areas. This has led to major employment centres being located further away from the areas of greatest population increase.

Distance travelled to work in the coastal areas generally involves greater distances than the BSD. This may in part be due to a higher number of workers travelling from the coastal areas to Brisbane for work each day.

*Why is it important?*
The SEQ Regional Plan supports a compact urban form, higher densities, and regional activity centres. Distance to work provides a partial indication as to whether these strategies are being achieved. The indicator provides data on changes in the pattern of urban development. The indicator tells us something about the distribution of employment opportunities relative to residential areas and vice versa. It also provides information on the effectiveness of integrating land use and transport to reduce the need to travel (for example, locating services close to where people live allows for shorter trips that can be made by walking and/or cycling).

What does it mean for sustainability?

Increases in distance to work can result in significant economic, environmental and social sustainability issues. It may lead to increased congestion, increased VKT and greater pollution levels. Negative health affects from reduced physical activity can also result.

*Society's response*
The SEQ Regional Plan is a key strategy seeking to manage the trend in increasing distance to work. It identifies the need for a more compact urban form. This means focussing higher density and mixed land use development in and
around regional activity centres and public transport nodes and corridors. A compact urban form, including higher densities, provides people with more choices regarding where they would like to go. For example, co-location of residential, commercial and recreation allows people to live and work locally. Mixed land use development, where potential places of employment are located closer to residential areas could, over time, help reduce the amount of total commuting travel and help reduce peak period congestion as people take up employment closer to home.

Other initiatives that may address increasing distance to work include flexible work arrangements such as the regionalisation of commercial centres and organisations and telecommuting, which allows people to work from home.

Data

![Distance to work 1992 and 2004—Brisbane, Gold Coast and Sunshine Coast](image)

**Figure 12.2: Distance to work 1992 and 2004—Brisbane, Gold Coast and Sunshine Coast**

**Indicator author**

Jeffery Eaton, Queensland Transport

**Related indicators**

Car availability, Vehicle kilometres travelled, Mode share, Road congestion, Freight movements

**Source dataset**

SEQ Travel Survey 2003–04 Brisbane, Gold Coast, Sunshine Coast. A survey of day-to-day travel behaviour of persons living in a sample of private dwellings in the Brisbane Statistical Division, Gold Coast and Sunshine Coast.

1992 SEQ Household Travel Surveys Brisbane, Gold Coast and Sunshine Coast Areas. A survey of day-to-day travel behaviour of persons living in a sample of private dwellings in the Brisbane, Gold Coast and Sunshine Coast areas.

**References**

Mode share

Trips undertaken as a percentage of trips made by each mode

**Interpretation**

**Status assessment**

Condition assessment: Amber

Trend assessment: Amber

**Where do we want to be?**

Guideline for assessment: assess against the target.

Target: 2011 Target Mode share for SEQ public transport 10.5%; walking 15%; cycling 5% *(Integrated Regional Transport Plan for SEQ).*

2011 target public transport mode share for sub-regions: Sunshine Coast 6.5%; Gold Coast 6.5%; Brisbane City Council 17%; Balance of Brisbane Greater Metropolitan Area 13%; Ipswich 13%. Reaching the 2011 targets, whether at regional or sub-regional is unlikely *(Integrated Regional Transport Plan for South East Queensland).*

**What is happening?**

Mode share of travel in SEQ has been dominated by the private vehicle. People were more likely to drive themselves in 2003–04 than in 1992, with increases in vehicle driver mode share of around 5 to 6% across all three study areas.

Data available from household travel surveys for the BSD area shows for Brisbane, 80.2% of personal trips were made by private vehicle in 2003–04, either as driver or passenger and the share of trips by private vehicle as driver has increased from 51.2% in 1992 to 56.4% in 2003–04. The share of trips by private vehicle as passenger reduced from 25.8% to 23.9%. Mode shares for walking and cycling reduced from 13.3% to 10.2% and 2.0% to 1.1% respectively as walking and cycling trips have been replaced with trips by car. The majority of these trips are taken by drivers without passenger/s.

A significant positive development is evidenced by the mode share for public transport that has increased slightly from 7.5% to 8.4% over the same period. There is a greater reliance on private vehicles for the Gold Coast and Sunshine Coast when compared with Brisbane. For the Gold and Sunshine Coasts the figure is 86.4% and 85.5% respectively; people were less likely to walk or cycle in 2004 than in 1992. For the same time period, public transport increased in mode share slightly in Brisbane and the Gold Coast, but remained relatively low on the Sunshine Coast. Brisbane has lower per person car availability and better public transport services and therefore better public transport mode share than the Sunshine Coast (Figure 12.3).

Preliminary estimates for 2006 show modest shifts toward public transport mode share with little noticeable difference in private vehicle mode share. While there has not been a decline in mode share for public transport across the region, the gain is swamped by the dramatic increase in car use. Additionally, active modes are static, or have suffered a decline, across the board.

**Why is it happening?**

A number of factors are contributing to the increased favouring of the private vehicle. Our preference for low density, greenfield residential developments has meant that people are now travelling more and longer distances for work and recreation. Such low density development often makes public transport unviable or infrequent, and active transport modes are not an option in such environments because of the long distances and lack of destinations. This results in the private vehicle, either as driver or passenger, being the only practical mode. At the same time, the private motor vehicle is cheaper than ever before to purchase, resulting in an increase in car availability.

**Why is it important?**

This indicator illustrates changes in travel mode share undertaken by people living in Brisbane, Sunshine Coast and Gold Coast expressed in terms of percentage of trips made by each mode. It shows the spread of trips made across modes: driver, passenger, public transport, cycling and walking. This provides a measure of the effectiveness of the range of strategies implemented to increase public and active transport patronage within the transport system (including service and infrastructure improvements, integrated ticketing and fares, system marketing and branding, and other initiatives).
What does it mean for sustainability?

Increasing private vehicle mode share can result in significant economic, environmental and social sustainability issues. Provision and maintenance of infrastructure to support high private vehicle use and the associated increasing congestion and VKT levels can be costly. Negative health impacts from reduced physical activity and increased pollution can also result.

Society's response

The SEQ Regional Plan is a key strategy seeking to manage the trend in increasing private vehicle mode choice. It identifies the need for a more compact urban form. A compact urban form will enable a mode share shift from private vehicles to public transport, walking and cycling through the co-location of residential, commercial and recreation, and close proximity to public transport. This will in turn increase mobility and accessibility.

Along with significant improvements to the public transport network that have occurred in recent years, the TransLink Network Plan is an initiative likely to encourage mode share shift towards more public transport. It outlines a program of operational and infrastructure improvements to public transport across the network. These improvements will allow people to make more of their trips on public transport.

Another initiative is TravelSmart. TravelSmart encourages the use of public transport, cycling, walking and car pooling via voluntary change in behaviour of individuals and organisations. It does so by raising awareness through campaigns and improving access to information and opportunities to use environmentally friendly transport. TravelSmart helps individuals to become aware of a full range of travel options for a given trip. Other initiatives such as ‘walking’ school buses are supporting a shift to active transport mode share.

Data

![Bar chart showing mode share comparison between 1992 and 2003/04 for Brisbane Stat. Div.](chart.png)

- **Survey Year**: 1992, 2003/04
- **Percentage**:
  - 1992:
    - 1: Vehicle Driver: 51.2%
    - 2: Vehicle Passenger: 25.8%
    - 3: Walking: 13.3%
    - 4: Bicycle: 7.5%
    - 5: Public Transport: 7.5%
  - 2003/04:
    - 1: Vehicle Driver: 56.4%
    - 2: Vehicle Passenger: 23.9%
    - 3: Walking: 2.9%
    - 4: Bicycle: 8.4%
    - 5: Public Transport: 10.2%
Figure 12.3: Mode of Travel comparison 1992 and 2003–04, Brisbane Statistical Division, Gold Coast and Sunshine Coast

Indicator author
Jeffery Eaton, Queensland Transport

Related indicators
Car availability, Vehicle kilometres travelled, Road congestion, Distance to work, Vehicle occupancy

Other data and links
Source dataset

1992 South East Queensland Household Travel Surveys - Brisbane, Gold Coast and Sunshine Coast Areas. A survey of day-to-day travel behaviour of persons living in a sample of private dwellings in the Brisbane, Gold Coast and Sunshine Coast areas.

South East Queensland Travel Survey 2003–04. A survey of day-to-day travel behaviour of persons living in a sample of private dwellings in the Brisbane Statistical Division, Gold Coast and Sunshine Coast.

References


Public transport patronage

Total number of trips made by passengers on bus, train, and ferry services within the TransLink network.

Interpretation

Status assessment
Condition assessment: Green
Trend assessment: Green

Where do we want to be?
Guideline for assessment: Increase in regional public transport patronage.

The published target for the number of passenger trips for 2007–08 is 168 million (Ministerial Portfolio Statement).

What is happening?

Public transport patronage levels over recent years have indicated a transition towards increasing public transport accessibility in SEQ. Public transport patronage levels have increased in excess of 9% in 2004–05, 11% in 2005–06 and 7% in 2006–07. This is compared to the annual increase prior to July 2004 that was of the order of 2%.

Prior to July 2004 the annual public transport patronage (millions) for 1998–99, 1999–00, 2000–01, 2001–02, and 2002–03 were 100.8, 108.9, 110.6, 112.2, and 115.7 respectively. Annual public transport patronage (millions) for 2003–04, 2004–05, 2005–06, and 2006–07 were 123.8, 136.1, 151.7, and 162.4 respectively (Figure 12.4). Measurements are based on a combination of ticket sales, validations and passenger count data on bus and ferry services, and ticket sales and assumed trip multiplier factors for train services where multi-trip journeys occur.

Why is it happening?

A number of important drivers are contributing to increasing public transport patronage. They include rapid population growth, economic growth (labour force participation), the provision of new high quality public transport infrastructure (e.g. South East Busway, Inner Northern Busway, rail extensions and upgrades, and new rail rollingstock), as well as fuel price increases more recently.

Further to these drivers is the investment of $63 million in service improvements across SEQ, which has incorporated funding for 500 new buses. Also, the introduction of NightLink buses, trains and flat fare taxis has seen more than 250,000 people use these services to get home after a Friday or Saturday night out in the Brisbane CBD or Fortitude Valley. Another factor is TransLink integrated ticketing, which was introduced on 1 July 2004. Integrated ticketing allows people to travel on participating buses, Citytrain and Brisbane City Council ferries using just one ticket across the system. Other strategies and programs impacting on growing public transport patronage include TravelSmart and the TransLink Network Plan.

Why is it important?

Public transport patronage is a measure of growth in the use of public transport. Growth in public transport usage, as is occurring in SEQ, indicates that people are choosing to use public transport rather than the private motor vehicle. This can reflect an efficient and balanced use of the transport system.

What does it mean for sustainability?

Growing public transport patronage helps support many economic, environmental and social sustainability outcomes. Growing public transport patronage can help in reducing congestion on the roads and can lead to a reduction in greenhouse gas emissions, air emissions, and noise pollution. Increased employment opportunities for workers in public transport and associated industries, and diminished health costs through increased physical activity can result from growing public transport patronage. Growing patronage of public transport also results in greater social interaction.
Society’s response

The SEQ Regional Plan is a key strategy seeking to more actively encourage higher public transport patronage. It identifies the need for a more compact urban form. This means focusing higher density and mixed land use development in and around regional activity centres and public transport nodes and corridors. These high levels of public transport accessibility provide individuals with opportunity and choice above and beyond the private motor vehicle in accessing people, places, goods and services.

In supporting the SEQ Regional Plan the SEQ Infrastructure Plan and Program is providing a significant amount of public transport infrastructure investment for SEQ (e.g. eastern and northern busways, Gold Coast Rapid Transit, rail duplication, Caloundra and Maroochydore Corridor Options Study), which will encourage and facilitate public transport patronage growth.

The TransLink Network Plan is another initiative likely to increase public transport patronage. It outlines a program of operational and infrastructure improvements to public transport across the network. With these improvements it is likely that more people will be able to make more of their trips on public transport. Further to the TransLink Network Plan, TransLink has introduced integrated ticketing and ongoing refinement of this system, which enables one ticket to be used across a range of modes for any one public transport journey.

Another important way in which public transport patronage can be increased is via initiatives such as TravelSmart. TravelSmart encourages the use of public transport via voluntary change in behaviour of individuals and organisations by providing information on the full range of options for a given trip.

Data

![Graph showing annual public transport patronage 1998–99 to 2006–07](image)

Figure 12.4: Annual public transport patronage 1998–99 to 2006–07

Indicator author

Brian O'Connor, Queensland Transport

Related indicators

Mode share, Road congestion
Other data and links


Source dataset

Operator Patronage Data—Business Activity Monitoring database. Patronage data are received from bus train and ferry operators in SEQ (Noosa to Coolangatta and west to Helidon) who provide urban passenger services under contract to TransLink.

References


Car availability

Number of registered vehicles per person 17 years and over by statistical sub-division (SSD) in the Brisbane, Gold Coast, Sunshine Coast and West Moreton Statistical Divisions including the Toowoomba Statistical Sub-division.

Interpretation

Status assessment
Condition assessment: Amber
Trend assessment: Amber

Where do we want to be?
Guideline for assessment: It is preferable that any increase in car availability is in line with the trend of population growth.
No target has been set for this indicator.

What is happening?
Car availability in SEQ per person is now higher than ever before. Today many households in the region have two or more vehicles and the private motor vehicle is the most common mode of travel. Many of these trips are by single occupant vehicles leading to increases in unnecessary traffic on our roads.

The number of vehicles per person in SEQ has increased over time. Time series data available from the censuses of population and housing taken in 1996, 2001 and 2006 shows the ratio of vehicles to persons over 17 years has increased from 0.74 vehicles per person in 1996 to 0.83 in 2006 (Figure 12.5).

Why is it happening?
Between 1996 and 2006, the vehicle to person ratio has generally increased across SEQ. This indicates greater levels of vehicle ownership and use in all sub-regional areas.

Inner Brisbane car ownership is lower relative to other areas in the region. This may be a result of the increased availability of public and active transport facilities in the inner areas. Further to this, mixed land use development, which ensures local work, retail and recreation opportunities in the Brisbane inner suburbs, reduces the need to travel long distances and thus contributes to lower vehicle ownership. Higher car availability in coastal and rural areas is a result of many people travelling to work in Brisbane everyday. Also, factors such as an increase in motor vehicle affordability have also contributed to higher individual vehicle ownership.

Why is it important?
The SEQ Integrated Regional Transport Plan recognises that car dependency can promote increased separation between employment, housing, education, recreation and services in the urban form. The SEQ Regional Plan supports compact urban form, higher densities and regional activity centres. Car availability provides a partial indication of transport options and a preference for the private motor vehicle. Higher levels of car availability are linked to lower levels of public transport and active transport use and vice versa. It is assumed that increased car availability contributes to increased car use and hence increased vehicle kilometres travelled, congestion and decreased use of other more sustainable modes of transport.

What does it mean for sustainability?
The effects of transport on sustainability depend strongly upon the mode of transport used. Cars are generally the most unsustainable mode of transport. Public transport has minimal effects, while walking and cycling are the most sustainable. An increase in car use can result in a range of negative environmental, economic, and social issues. Air and noise pollution, expanding public expenditure on road infrastructure and significant health problems resulting from a lack of physical activity are now evident throughout the region.
Society's response

Responses that help reduce levels of car availability must provide people with choices beyond car use. The SEQ Regional Plan is a key strategy seeking to manage the trend in increasing car availability. To do so it identifies the need for a more compact urban form. This means focussing higher density and mixed land use development in and around regional activity centres and public transport nodes and corridors. A compact urban form, including higher densities, provides people with more choices regarding where they would like to go and how they would like to get there. For example, co-location of residential, commercial and recreation areas allows people to access services locally by walking and/or cycling. Likewise, close proximity to high frequency and high quality public transport is especially suitable for commuter trips.

Another important way in which to discourage growing car availability levels is via initiatives such as TravelSmart. TravelSmart encourages the use of public transport, cycling, walking and car pooling via voluntary change in behaviour of individuals and organisations. It does so by raising awareness through campaigns and improving access to information regarding travel alternatives.

A further initiative, the TransLink Network Plan, may also impact on increasing car availability levels. It outlines a program of operational and infrastructure improvements to public transport across the network. With these improvements it is likely that more people will be able to make more of their trips on public transport, thus reducing the need for high levels of car ownership.
Data

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Figure 12.5: Vehicles available per person aged 17 years and over by statistical subdivision
**Indicator author**
Jeffery Eaton, Queensland Transport

**Related indicators**
Vehicle kilometres travelled, Mode share, Road congestion, Distance to work, Freight movements, Vehicle occupancy

**Other data and links**
TravelSmart <www.transport.qld.gov.au/Home/General_information/Travelsmart/>

**Source dataset**
ABS census data 2006 (Time series 1996, 2001, 2006); 2006 census time-series catalogue 2068.0: 1) household composition and family composition by number of motor vehicles for time series for number of vehicle estimates and 2) Age by sex for time series for number of person counts
South East Queensland Household Travel Survey 1992
South East Queensland Travel Survey 2003–04 and 2006 (Brisbane SD only)

**References**
Vehicle occupancy
The average number of occupants per passenger vehicle

Interpretation

Status assessment
Condition assessment: Amber
Trend assessment: Amber

Where do we want to be?
Vehicle occupancy of 1.40 by 2011 (SEQ Integrated Regional Transport Plan)

What is happening?
The trend for average passenger vehicle occupancy levels commenced a sharp decline away from the target of 1.40 people per vehicle in 1997. This trend has continued where the latest 2005 data indicates vehicle occupancy at around 1.27 persons per vehicle (Figure 12.6). The rate is now so low that the target of 1.40 by 2011 would require a greater rate of change than the decline so far.

Why is it happening?
The sharp decline in average passenger vehicle occupancy coincides with the start of two other trends. The first is the decreasing price of passenger vehicles in real terms, as shown in the Consumer Price Index. The second is the declining proportion of household income spent on motor fuel. Taken in combination these two trends have led to:
- an increased affordability of passenger vehicles
- increased numbers of passenger vehicle sales
- increased affordability of passenger vehicle use in the context of total household expenditure.

These factors have limited incentives for people to car pool and/or trip combine (where any trip in a passenger vehicle has more than one purpose).

Additionally, the trend for declining average passenger vehicle occupancy has occurred alongside the fact that we are driving more and travelling longer distances than ever before in SEQ. This strong growth in vehicle kilometres travelled (VKT) has arisen from a number of sources, most notably our preference for low density suburban living in SEQ and greater levels of car ownership. Many people now live considerable distances from where they work, recreate and pursue other activities. The majority of these trips occur in the passenger vehicle and create additional circumstances for low vehicle occupancy.

Why is it important?
An appropriate level of vehicle occupancy is generally taken as an indicator that existing roads are being used efficiently. Higher vehicle occupancy is likely to indicate that fewer vehicles are on the roads and congestion is lower than it would otherwise be.

What does it mean for sustainability?
Vehicle occupancy has significant implications for economic and environmental sustainability. Low levels of vehicle occupancy prevent efficient use of road infrastructure and is likely to result in congestion. Likewise, decreasing vehicle occupancy is linked to increasing VKT, with links also to increasing vehicle emissions, including greenhouse gas emissions and other vehicle related pollutants.

Society's response
The SEQ Regional Plan identifies the need for a more compact urban form. This means focusing higher density and mixed land use development in and around regional activity centres and public transport nodes and corridors. A compact urban form, including higher densities, provides people with more choices regarding where they would like to go and how
they would like to get there. In so much as vehicle occupancy is concerned, this is likely to encourage trip combining where the assumption is that a trip with multiple purposes around a compact area can easily accommodate the needs of several vehicle occupants.

Initiatives directly targeting higher levels of vehicle occupancy include the assignment of designated transit lanes on major routes that are exclusively for the use of high occupancy vehicles.

Another important way in which levels of vehicle occupancy can be increased is via a range of car pooling initiatives. TravelSmart is one such initiative, which encourages the use of car pooling via voluntary change in behaviour of individuals and organisations, including schools. It does so by raising awareness through campaigns and improving access to information and opportunities to car pool. Other car pooling initiatives include the Brisbane City Council’s King George Square car park, which charges reduced rates for car pool vehicles.

Data

![Graph showing vehicle occupancy in Brisbane City Council area from 1993 to 2005.](image)

**Figure 12.6: Vehicle occupancy in Brisbane City Council area**

**Indicator author**

Mark Dorney, Queensland Transport

**Related indicators**

Vehicle kilometres travelled, Distance to work

**Other data and links**

TravelSmart <www.transport.qld.gov.au/Home/General_information/Travelsmart/>

**Source dataset**

Vehicle Occupancy Survey. Various surveys over the period 1993 to 2005 conducted first by Brisbane City Council and later by Queensland Transport. Sites covered vary and this indicator reports on 12 sites common to most of the surveys.

**References**


Road congestion

Travel times per kilometre on a representative sample of arterial roads and freeways in the urban metropolitan area.

**Interpretation**

**Status assessment**
Condition assessment: Amber
Trend assessment: Amber

**Where do we want to be?**

Guideline for assessment: To maintain level of service (LOS) at Levels C and D as a minimum on routes during peak times. Level C is in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level. Level D is close to the limit of stable flow and is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.

No target has been set for this indicator.

**What is happening?**

Since 1995–96 the trend in average peak hour travel speeds has been towards reduced speeds on the sampled network in peak hour periods. This suggests that significant congested conditions and marginally deteriorating travel speeds are occurring on the network during the morning and evening peaks. Each year since 1995–96 the analyses have supported the trend of increasing congestion on Brisbane metropolitan arterial roads, freeways and motorways (Figure 12.7). Each of the roads in the sample is showing increasing traffic numbers each year with road capacity being continually consumed. As the available spare road capacity is reducing, the onset of congested conditions is being manifested. There is evidence over the period since 1999–00 that despite road capacity being increased to relieve congestion and improve average travel speeds, congestion slowly increases again, reducing travel speeds.

**Why is it happening?**

Factors contributing to congestion, measured as a reduction in travel speed, are complex and various. Increasing travel demand is associated with population growth, a dispersed urban settlement pattern and changing business practices. This is compounded by some network deficiencies, limited accessibility, limited travel choice in some locations, the trend towards increasing private vehicle mode share, increasing car ownership, increasing VKT, and increasing freight activity. Simply put, more people and more vehicles are travelling further each year in SEQ.

Some congestion may also be attributed to disruptions caused by significant transport upgrades, for example, the construction of the Pacific Motorway, Coronation Drive upgrade, the Inner City Bypass, Gateway/Airport Drive roundabout changes, and Clem Jones Tunnel Busway.

The construction phase of each project has a rippling effect on the transport network with reduced standards of service noted. The completion of each project improves travel conditions; however, over time increasing travel demand begins to erode benefits provided by improvements and performance declines once again.

This trend confirms the need for strategies that tackle congestion on multiple fronts including: improved land use integration; travel demand management; enhanced travel options; efficient transport operations and network improvements and promotion of changes to travel behaviour.

**Why is it important?**

Average peak hour travel speeds can be an indication of the relationship between transport supply and demand. Average peak hour travel speeds can also be a measure of the efficiency of land use and transport planning in achieving better self containment and reducing the need to travel.
What does it mean for sustainability?

The road network is an essential ingredient for social interaction, trade and socio-economic development. The road network provides mobility for the work, business, education and leisure activities that make our region so liveable. As road transport accounts for the majority of total transport consumption in SEQ, the increasing congestion has the potential to seriously affect the productivity and competitiveness of business, and impact on the environment and our health.

Economic impacts include the rising cost of the provision and maintenance of road infrastructure to cope with and address the increasing congestion levels. The increasing amount of time spent waiting in congestion may result in a loss of economic activity in the region through decreasing productivity levels and a loss of work and leisure time.

Environmental impacts may result from the increasing pollution levels. The decreasing levels of physical activity and social interaction may result in a range of health issues. There is also likely to be an increase in stress levels.

Society's response

The SEQ Regional Plan is a key strategy seeking to manage the trend in increasing congestion levels. It identifies the need for a more compact urban form. This means focussing higher density and mixed land use development in and around regional activity centres and public transport nodes and corridors. A compact urban form provides people with a greater range of travel options and destinations, helping to limit the need to travel and the need to travel by car.

The SEQ Regional Plan also highlights a number of significant road infrastructure projects that are examples of adding capacity and efficiency with subsequent beneficial network improvements to travel times.

Another important way in which congestion levels can be reduced is via initiatives such as TravelSmart. TravelSmart encourages the use of public transport, cycling, walking and car pooling via voluntary change in travel behaviour of individuals and organisations. Further initiatives encouraging the use of public transport or car pooling include parking controls through high fees and short time limits for example, and the implementation of High Occupancy Vehicle (HOV) lanes on major roads.

Public transport is another key factor in addressing rising congestion levels. As such, the TransLink Network Plan is an initiative likely to increase average peak hour travel speeds. It outlines a program of operational and infrastructure improvements to public transport across the network. With these improvements it is likely that more people will be able to make more of their trips on public transport. Elsewhere, some employers now make telecommuting an option for their employees. Along with flexible working hours and regionalisation of business centres, this provides individuals with another choice about if, how and when they travel.

Intelligent Transport Systems are another way of helping to alleviate congestion by better managing the current transport system.

Data

![Graph showing actual urban travel time](image)

Figure 12.7: Actual urban travel time
Indicator author
Frank Turner, Department of Main Roads

Related indicators
Vehicle kilometres travelled, Distance to work, Mode share, Public transport patronage, Car availability, Car occupancy

Other data and links
TravelSmart <www.transport.qld.gov.au/Home/General_information/Travelsmart/>

Source dataset
Annual Travel Time survey conducted by Queensland Transport
Survey data are captured in am, pm and off-peak periods over a two-week period each year on a representative sample of arterial roads, freeways and motorways. The sample size is approximately 894 kilometre of road length, surveyed over 5 week days with five runs in the inbound and outbound direction undertaken in each of three periods.
Main Roads retains all survey data

References
Freight movements

Numbers of articulated and commercial vehicles on Priority 1 (P1) and Priority 2 (P2) freight routes.

Interpretation

Status assessment

Grey: A recent review of this indicator identified that it does not provide a complete view of freight movements in SEQ. To remedy this, a set of secondary indicators has been identified. These indicators are still under development and include: freight volumes moved through and within SEQ, capacity and performance of existing infrastructure (freight bottlenecks, freight transport time), utilisation of intermodal terminals, and utilisation of vehicle capacity. Their future inclusion will allow for a more robust assessment in forthcoming State of the Region reports. This indicator is included in this report to allow for the comparison of trends and ensure consistency across all reports.

Where do we want to be?

Guideline for assessment: It is preferred that there is no reduction of heavy articulated traffic on P1 and P2 freight routes, or no reduction beyond a 2% variation in the trend line between now and 2009.

No target is set for this indicator.

What is happening?

P1 freight routes carry more than 1000 articulated trucks per day and are aligned with the major existing and emerging industrial areas in SEQ. P2 freight routes generally carry more than 250 articulated trucks per day. They are key links for the distribution of freight from factories or distribution centres to retail outlets.

The trend data shows that there has been a 14% increase in the total number of articulated commercial vehicles on P1 freight routes and a 15% increase on P2 freight routes in SEQ between 1999 and 2006. The total number of articulated commercial vehicles on P1 freight routes has increased from 64,335 in 1999 to 73,291 daily trips in 2006. The number of articulated commercial vehicles on P2 freight routes has also increased, from 33,006 in 1999 to 37,994 daily trips in 2006 (Figure 12.8).

Why is it happening?

Increasing freight movement on P1 and P2 routes may also be a result of our preference for low density development. This pattern of development means freight must be transported further distances across a wider network. Finally, decisions made by industry also have a significant influence over the number of heavy vehicles on P1 and P2 routes irrespective of an increase in the overall transport task. These include: fleet composition i.e. larger vehicles carrying greater tonnages; additional freight on rail; and leakage to non-priority routes.

It is anticipated that SEQ's population will grow from 2.7 million to over 3.8 million people in the next 20 years. This, and associated economic activity arising from increased trade and domestic consumption, is likely to double the freight task in SEQ. This equates to approximately 3% annual growth in the freight task. Increases in heavy vehicle usage on P1 and P2 routes is arising largely in response to increasing demand for goods and services associated with population increase and a prolonged period of economic prosperity.

Why is it important?

This indicator provides a partial measure of road freight being carried on: roads fit for the task, rather than leaking to inappropriate routes; and/or alternative appropriate routes. A decline in freight movements on priority freight routes will indicate: freight is either moving to other modes (for example, rail — a desirable outcome); or moving to other inappropriate roads with consequences for public amenity, infrastructure longevity and congestion (an undesirable outcome). A more complete view will be developed in future reporting by combining this indicator with measures of: freight volumes moved through and within SEQ; capacity and performance of existing infrastructure (freight bottlenecks, freight transport time); utilisation of intermodal terminals; and, utilisation of vehicle capacity.

What does it mean for sustainability?

The efficiency of freight movement has a major impact on sustainability. Higher efficiency contributes to economic performance by improving supply chain performance for industry and reducing transport costs to industry and consumers.
Intermodal connectivity contributes to optimum use of modes and infrastructure. This can reduce unnecessary or excessive heavy vehicle movement on roads, and therefore deliver sustainability improvements through reductions in greenhouse emissions, congestion and enhancing community amenity and safety.

**Society's response**

The SEQ Regional Plan is a key strategy seeking to manage growth in SEQ. It identifies the need for a more compact urban form. Improvements in the broader utilisation of the transport infrastructure network and system will contribute to a reduction in unnecessary or excessive heavy vehicle movement on roads.

The SEQ Regional Freight Network Strategy seeks to improve the movement of freight within SEQ and forms the basis for developing a range of new initiatives to improve efficiency and performance. Related strategies include restricting heavy vehicle movement on certain non-priority freight routes, and encouraging the use of more freight efficient vehicles, supported by a trial to be initiated between the port and its immediate industrial surrounds east of the Gateway Motorway. Additionally, a number of rail studies are considering ways to enhance the performance of rail and to attract new freight from road (the Southern Rail Freight Corridor and the Metropolitan Freight Capacity Enhancement Program). Queensland Transport also works closely with industry to identify options for improvement.

Industry is pursuing a range of efficiency measures which, although driven by commercial considerations (including the cost of fuel), will deliver sustainability benefits. Examples include increasing use of alternative fuels, freight efficient vehicles, spreading operating times outside peak congestion periods, reduction in empty vehicle running, and rationalisation of warehousing and distribution facilities.

**Data**

**Total of length-weighted Annual Average Daily Heavy Vehicles on Priority 1 Freight Routes**

![Graph showing the total of length-weighted annual average daily heavy vehicles on priority 1 freight routes from 1999 to 2006. The graph shows a steady increase in heavy vehicle movement over the years.](image-url)
Total of length-weighted annual average daily heavy vehicles on Priority 2 freight routes

Figure 12.8: Total of length weighted annual average daily heavy vehicles on priority 1 and 2 freight routes

**Indicator author**
Veronica Wood, Queensland Transport

**Related indicators**
Road congestion

**Source dataset**
Department of Main Roads Road Traffic Analysis and Reporting system. A system for reporting Main Roads traffic count data from automated traffic counting systems. The system conducts validation checks and performs analysis to provide annual summaries such as annual average daily traffic.

**References**

