Congestion – Choking Australia's Economy

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This article was contributed by the SaferRoads Program

Surging oil prices and the release of the Garnaut Review's draft report on climate change and Emissions Trading Scheme have again fuelled debate about petrol prices. A risk is this debate will shift towards providing short-term relief at the bowser at the expense of the long-term well-being of the economy and the environment.

While a simple cut in petrol tax would no-doubt be welcomed by motorists feeling the pinch, the real opportunities for governments are in implementing broad strategies to create a more sustainable transport system, with the effect of helping to keep a lid on motoring costs and benefitting the environment.

As a society, we must continue to introduce measures to reduce fuel consumption and the emissions of all vehicles, reduce the demand for travel and provide better opportunities for the community to use public transport. Many of these measures are well underway, but more is needed.

The Australian Automobile Association believes that fuel excise of 38.1 cents per litre – of which only 10 cents are returned to roads infrastructure – should be removed and replaced with a road-user charge that means those with the highest impact on roads and the environment pay more.

The road user charge would account for the cost of providing road infrastructure and maintenance, the cost of accidents to the community, an environment impact charge and the cost of congestion, but only applying to those contributing to severe congestion.

The subsequent revenue should be used to upgrade roads and public transport and help reduce the impact of motoring on the environment, thereby contributing to an integrated transport solution.

Tackling traffic congestion must be central to any strategy. To a point, travellers can accept some congestion as a result of economic activity. But as travel demand increases, congestion threatens to strengthen its stranglehold on our major cities, stifling economic growth, increasing fuel consumption and emissions and exasperating travellers.

The cost of congestion in Australia's capital cities is staggering.

The Bureau of Transport and Regional Economics estimated that the avoidable cost of congestion is more than $9 billion annually or $24 million a day – comprising $3.5 billion in private time costs, $3.6 billion in business time costs, $1.2 billion in extra vehicle operating costs and $1.1 billion in extra air pollution costs. This will grow to $20 billion a year ($55 million a day) by 2020 if we don't act, with traffic expected to grow by 37 per cent between 2005 and 2020.

A report by the Centre for International Economics found that a Sydney motorist who travels 22km a day will spend three days stuck in traffic each year – and that is set to worsen.

A recent survey by the RACQ found that Brisbane's morning peak hour increases vehicle fuel consumption and greenhouse emissions by around 30 per cent. The survey also found the crawl to work took almost twice as long as travelling the same routes in the period between the morning and evening peaks.

The Victorian Transport Department's Metropolitan Transport Plan found that approximately 40 per cent of total tram travel time is taken up by delays attributable to other road vehicles. Largely due to congestion, 30 per cent of trams are regularly outside their schedules. This highlights the need for improved integration between all forms of transport and better urban infrastructure planning.

A particularly frustrating aspect of congestion is that although we know when the peak congestion periods occur – typically before and after normal business hours – the intensity of congestion on any given day can vary significantly. This has the result of making travel annoyingly unreliable, so to counter unreliability on congested roads, travellers need to leave early just to avoid being late.

Several studies around the world have examined the causes of congestion, and thereby provide answers to the problem. A US study conducted for the US Federal Highway Administration found that, apart from fluctuations in traffic volumes, the key causes of congestion are: bottlenecks or locations where capacity is lacking (40%); traffic incidents (25%); bad weather (15%); work zones (10%); poor traffic signal timing (5%); and special events and other factors (5%).

It is unrealistic to expect that congestion can be entirely cut from networks, since it is a manifestation of economic activity – truly "free-flow" traffic conditions can only occur all the time if society stops moving.

But investment in a three-pronged strategy can reap significant returns in terms of private and business time costs, vehicle operating costs and air pollution.

In new urban areas, construction of new roads will be necessary to ensure the growing numbers of cars can be accommodated, while in well established urban areas, the opportunities for, and public acceptability of, substantial new transport infrastructure is probably limited. Widening roads to add more lanes, improving intersection design, unchoking bottlenecks and creating "tidal" flow systems for morning inbound and afternoon outbound traffic can each assist in managing congestion.

While the planning and construction of road network infrastructure is vital, there are other approaches that governments can take to improve capacity and travel times. These include incident management, work zone management, weather management, special events management, freeway and corridor management and better traveller information.

Traffic flow and congestion can also be improved by reducing total demand for the road, or by curbing demand at peak times. Encouraging more people into each vehicle, flexible working hours, telecommuting, living closer to work and expanding public transport each has an important role to play.

The Federal and State Governments' announcement this year they will provide $132 million to undertake a series of studies into projects which have the potential to reduce congestion is a welcome first step.

With more than 1,100 new vehicles added to the road network each day and with petrol prices climbing and climate change looming, it is more important than ever that Governments tackle congestion to counter these issues and provide a solution.

Anti-lock Braking Systems (ABS)

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Introduction

Vehicle safety features, such as anti-lock brakes, are sometimes promoted as the next 'silver-bullet' for road safety improvements. Research with thousands of drivers around the world, suggests that many of them are dangerously ignorant of what ABS actually does.

What is ABS?

ABS is an abbreviation for Anti-lock Braking System. ABS allows steering while maximizing braking. ABS was developed to reduce skidding and maintain steering control when brakes are used in an emergency situation. When used properly, an antilock braking system (ABS) allows the driver to maintain directional stability and control over steering during EMERGENCY BRAKING SITUATIONS, particularly on wet and slippery road surfaces.

Unfortunately, safety experts have found that many drivers don't benefit from ABS because the correct techniques for using them are almost the opposite of everything that most of us have been taught about emergency braking in cars. To gain any safety advantage from ABS, drivers must learn how to operate it correctly. ABS is designed to help the driver maintain control during emergency-braking by preventing the vehicle's wheels from locking. This allows drivers to maintain steering control under heavy braking and to hit the brakes fully with less fear of skidding or loss of control. It does this by either preventing the wheels from locking, or if they do lock, by releasing and then reapplying the brakes once more.

In effect, ABS is a mechanical way of cadence braking (or pumping the brakes). There are two advantages for the typical driver. One is that the ABS system is able to "pump" the brakes on and off much quicker than the driver's leg, and the other is that it requires no skill or experience - the car does all of that for you.

ABS was originally used in aerospace applications - specifically, to reduce wear and tear on aircraft tyres after landing. The first car (worldwide) to have ABS fitted as standard across the entire range was the Ford Granada Mk 3 (of 1985). BMW made the technology standard on all vehicles in 1986. Since it came into widespread use in production cars, ABS has made considerable progress. Recent versions not only handle the ABS function itself (i.e. preventing wheel locking) but also traction control, brake assist, and electronic stability control, amongst others. The technology now much lighter and more efficient.

A typical ABS is composed of a central electronic unit, four speed sensors (one for each wheel), and two or more hydraulic valves on the brake circuit. When the system senses that any of the wheels are rotating considerably slower than the others (a condition that will bring it to lock) it moves the valves to decrease/increase the pressure on the braking circuit, effectively reducing/increasing the braking force on that wheel. This process is repeated continuously, causing a pulsing feel through the brake pedal.

In vehicles not equipped with ABS, the driver must manually pump the brakes to prevent wheel lockup, maintain steering control and avoid hazards. In vehicles equipped with ABS, the driver's foot remains firmly on the brake pedal, allowing the system to automatically pump the brakes. This makes ABS particularly useful for steering through skids, reducing both the likelihood and severity of collisions.

What is the downside to ABS?

In Australia, The Royal Automobile Club of Victoria (RACV) was concerned about overseas research on ABS safety and commissioned Monash University Accident Research Centre (MUARC) to examine the Australian experience. MUARC analysed the crash records for a number of models that came equipped both with and without ABS, and compared their actual crash involvement.