Industry Position on Seatbelts on Buses

Bus Industry Confederation

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The Facts about Bus Safety

Whilst every serious injury or fatality that occurs on or around a bus is tragic, buses are indisputably the safest form of road transport.

Between 1989 and 2010 approximately 0.63 per cent of total road fatalities were suffered by bus and coach passengers in Australia.

Of the fatalities related to buses less than one third occurred inside the bus, more than one quarter were suffered by pedestrians and almost 40 per cent were suffered by drivers and passengers in other vehicles and cyclists.

With almost 1.5 billion passenger trips being made on buses every year in Australia, the odds of a bus passenger suffering a fatal accident are approximately one in 150 million.

School Bus Safety

Between 1989 and 2010 school bus passengers accounted for approximately 0.62 per cent of total road fatalities amongst school aged children.

Of 92 bus related fatalities including school aged children during this period only 38 occurred inside the bus.

SOURCE: Department of Infrastructure, Transport, Regional Development and Local Government, ATSB Database: http://statistics.infrastructure.gov.au/atsb/login.do

An Industry Committed to Safety

The Bus Industry Confederation of Australia (BIC) is the peak body representing Bus Operators, manufacturers and parts and service suppliers in Australia.

The bus industry is committed to the road safety of passengers, employees and to the travelling public.

Following the tragedy of the Kempsey and Grafton bus accidents in 1989 the industry has been at the forefront of initiatives to improve the safety performance of the bus and coach fleet.

Bus Operators have worked closely with Governments, manufacturers, and the travelling public to ensure the safety of passengers is paramount and operating practice reflects this commitment to safety.

Safety measures adopted since 1989 include:

- The implementation of ADR 68/00, resulting in seat belts being mandated on coaches.
- The adoption of higher levels of safety and management performance through state based industry accreditation schemes.
- A reduction in the average age of the fleet resulting in safety improvements across the fleet.
- Improvements in driver safety training.
- Participation in the development and delivery of school bus safety awareness programs.

As outlined in the statistics, buses are the safest form of road transport in Australia.

The BIC is in full support of initiatives that will improve the overall safety performance of the bus industry and reduce accidents involving buses or coaches.

Seatbelts in Buses

The issue of seatbelts in buses is an issue raised by some sections of the community which is focussed particularly on the school bus sector.

The idea of mandating seatbelts on school buses has been primarily been raised by concerned parent groups who have been campaigning for this measure through the modification of Australian Design Rule 68/00, the Design Rule governing occupant protection on buses.

The Bus Industry Confederation believes that the mandating of seatbelts should only be introduced after full consideration of the impacts of such a decision and a full costs and benefits analysis undertaken of such a decision.

Small Buses the BIC View

Small buses used to convey students either by normal route or designated school services with a seating capacity of 17 or less should be equipped with lap shoulder seat belts at all designated seating positions.

Since the size and operating weights of these smaller buses are closer to those of passenger cars, seat belts would help provide occupant protection with a comparative low cost of installation.

There should be no provisions in the Australian Design Rules that makes small buses with less than 17 seats exempt for any requirement for fitting seatbelts for all seating positions.

Retrofitting the BIC View

In the case of retrofitting seat belts in buses this should only be undertaken based on the NTC/Bus Industry developed publication "Bus Seat Retrofit Guidelines" which was completed in 2006 and is available from the NTC.

Large Buses the BIC View

The high mass of a large bus and compartmentalisation protects the passengers in the event of a collision and this is borne out in the statistics.

The Mandating of Seatbelts on Buses

In order to have an open discussion on the issue of seatbelts the idea of mandating seat belts on all buses through the ADR's should be considered as this may be a natural flow on effect of mandating seatbelts on school buses.

The availability of data on the cost of mandating seatbelts on all buses is limited to research on school buses; therefore the cost section of this paper looks specifically at research conducted into the cost of seatbelts on school buses.

However the costs and benefits are indicative of the potential costs of mandating seat belts on all (route and charter) buses.

The Cost of Mandatory Seatbelts

In assessing the costs of mandatory seatbelts the BIC has drawn on a number of cost and capacity models including a NSW RTA model as outlined in the 2004 report *Deliberations of the NSW School Bus Safety Working Group*, produced by Dr David Saffron.

The BIC believes costs associated with mandating seat belts through retrofitting or fitment of seatbelts in new buses with seatbelts should be met by Governments. This includes the cost of fleet expansion associated with any loss in carrying capacity due to the installation of seatbelts or a no standee policy on seat belted buses.

Seatbelts on New Buses Only

Based on estimates provided by bus manufacturers and retailers, as referred to in the Saffron Report, *Deliberations of the NSW School Bus Safety Working Group*, the additional cost of seatbelts on new buses, typically 57 seats, is estimated to be $30,000 per vehicle.

According to estimates based on the rate of replacement for the NSW fleet a program of fitting only new buses with seatbelts would take 29 years for full replacement of the large bus fleet and 12 years for the small bus fleet with an annual cost of $34 million with no loss of carrying capacity and $82 million with a carrying capacity loss of 48 per cent.

At maximum carrying capacity loss, the program would cost approximately $3 billion for NSW with a delivery schedule of 29 years, not accounting for inflationary cost impacts over that period of time.

With NSW accounting for approximately one quarter of Australian bus fleet (Hensher 2003, Fact Sheet: Passenger Transport Activity in Australia) this $3 billion figure can be extrapolated to an approximate total cost of $12 billion for a national program which sees all replacement school buses fitted with seatbelts.

Source: Deliberations of the NSW School Bus Safety Working Group (2004), Saffron

Table 20: Time to replace existing school bus fleet based on estimated replacement rates, as described in Section 4.5.1

Bus size	50%	75%	90%	100%
Large	15 years	22 years	26 years	29 years
Small	6 years	9 years	11 years	12 years

Retrofitting Seatbelts

The NSW Bus Safety Working Group found the cost of retrofitting a school bus to be approximately $45,000 a vehicle.

The factors involved in cost estimates include:

- Costs of getting the bus to and from the factory
- Costs of a replacement bus while the bus is off the road for two or three weeks while the work has been done.

NSW Department of Transport assessments found the overall cost of retrofitting all buses in NSW with seatbelts, inclusive of the additional buses required due to loss of carrying capacity, was between $1.48 billion and $2.98 billion as attested to by NSW Director General of Transport at the time John Lee.

With NSW accounting for approximately one quarter of Australian bus fleet (Hensher 2003, Fact Sheet: Passenger Transport Activity in Australia) this $3 billion figure can be extrapolated to an approximate total cost of $12 billion for a national program which sees the retrofitting of seatbelts on school buses alone.

Cost estimations by the RTA, as included in the 2004 Saffron Report *Deliberations of the NSW School Bus Safety Working Group* are below.

Experiential data suggests retrofitting seatbelts on to school buses is problematic if loss of carrying capacity and the full cost of the modifications to vehicles are not met by Government.

2. Small buses

2.(a) Total costs

The number of buses is the number included in the costings. Many small buses have been excluded from the costings because they are or will be required to have seat belts under current law.

Option	Retrofit		New buses		No of buses	
	$ million	%	$ million	%	No.	%
Country	11.0 to 32.1	85%	6.9 to 28.0	85%	630	85%
Metropolitan	2.0 to 5.8	15%	1.2 to 5.0	15%	113	15%
Total	13.0 to 37.9	100%	8.2 to 33.1	100%	743	100%

2.(b) Loss of standing and 3 for 2 seating

Loss of carrying capacity	0% to 20%
Additional buses required	0% to 25% zero to 186

Cost to make up capacity loss

	$ million	%
Country	zero to 19.4	85%
Metropolitan	zero to 3.5	15%
Total	zero to 22.9	100%

2.(c) Cash flow

2.(c) (i.) Retrofit – cost per year

	Country	Metro	Total
Phase-in period	$ million	$ million	$ million
5 years	1.9 to 6.1	0.3 to 1.1	2.2 to 7.2
10 years	0.8 to 2.9	0.1 to 0.5	0.9 to 3.4
%	85%	15%	100%

2.(c) (ii.) New buses – cost per year

About one in 12 small buses is replaced each year. This is approximately 62 buses, each of which will cost more with seat belts fitted. Additional buses are required each year to make up for any capacity loss: approximately 15 if capacity loss is 20%.

Country	Metro	Total
$ million	$ million	$ million
0.6 to 2.3	0.1 to 0.4	0.7 to 2.8
85%	15%	100%

The costs are an estimate, one that was possible with the time and resources available. Estimation of the numbers was undertaken with RTA vehicle registration data, which were not intended for that purpose. There was no way of checking the reliability of the division of buses between those that travel on country roads and those that travel

Other Factors and Considerations

Operational Concerns and Legal Obligations

A simple set of operational concerns and questions about legal obligations should be considered when the mandating of seatbelts is being investigated.

1. Who is responsible for ensuring the seatbelts are worn?
2. How is the loss of carrying capacity managed within the fleet if seatbelts are mandated?

In discussion with industry on this issue several key operational and legal concerns have been raised if the mandating of seatbelts was to become a reality:

Who is accountable for people putting on their seatbelts and ensuring they continue to wear them?

There is no legal requirement for a bus driver to ensure children are wearing a seat belt and whilst bus operators and drivers do encourage children to wear seat belts when they are fitted there is no way of ensuring that the seat belt will continue to be worn.

In relation to small children, it is impractical for bus operators to provide booster seats and this should be dealt with by development of a standard advising parents what to provide.

Loss of Carrying Capacity

It is widely believed, and factored into cost calculations by State Agencies, that fitting seat belts on buses will produce a loss of carrying capacity on buses for two reasons.

a) No standees

In accordance with practice on coaches where seatbelts are mandated, seatbelts on a vehicle imply no standing passengers are allowed due to the liability implications for Operators and Governments. Will the same logic apply for school and other seat belted services.

b) Seat Capacity

Where seat belts are installed, anchorage points will reduce the amount of seats on the bus and small seats which would normally fit two passengers can only fit one.

As referred to in Austroads *Investigation of Internal Bus Safety Measures* (2002), the loss of carrying capacity for a large bus was estimated by the NSW Department of Transport to range between 25% and 48% per bus (see page 39 of the Austroads report).

This loss of carrying capacity has serious cost implications for State Governments to fund extra buses and services.

Compartmentalisation and Padding

In their 2003 paper, Road Safety Impact of Fitting Seatbelts to School Buses, Langford and Congiu identified a range of other measures which would improve bus safety:

1. Compartmentalisation on school buses: arranging the seats on buses to allow the mass of the vehicle to take the bulk of the impact in an accident. Compartmentalisation centres upon strong, closely spaced seats with energy-absorbing seat backs that serve as protective envelopes around passengers, usually supplemented by improved body construction and stringent fuel system integrity requirements.
2. Extra padding along the sides of the compartment over window headers and on panelling between windows to minimise direct impact trauma (Lapner, Nguyen, & Letts 2003), although in Australia during the 1990s, side-impact and roll-over events accounted for only 15% of all fatal crashes involving buses, whereas frontals accounted for 62% of crashes (Australian Transport Safety Bureau 2001).

According to Langford and Congiu compartmentalisation requires seat spacing at around 60 centimetres whereas seat belts require seat spacing of around 85 centimetres if incidental injuries are to be avoided.

A further study by Transport Canada investigated the relative safety offered to children of different ages by compartmentalisation and by child restraints in school buses. The results showed that children whose mass is 18 kg and under, or until they reach approximately 4½ years of age, would benefit from being restrained in child restraints appropriate to their height and weight while travelling in a school bus. The study also found that older children are well protected by school bus compartmentalisation (Transport Canada 2004).

Compartmentalisation and padding of seating and stanchions will reduce safety risks whilst travelling on buses and should be further investigated before mandating seat belts on buses.

Road Safety in General

With bus passengers accounting for only 0.63 per cent of total road deaths between 1989 and 2010 (other fatalities accounting for 99.37 per cent) the cost of a seatbelt program for the Australian bus fleet must be weighed against the effectiveness of safety programs relating to other modes of transport, particularly the motor car.

In relation to bus safety, with approximately two thirds of bus related fatalities occurring outside the bus, investment in safety awareness programs for passengers alighting from the vehicle and drivers operating around the vehicle could have the potential to deliver equal, if not greater, safety benefits than addressing safety on the bus through mandatory seatbelt programs.

The National Road Safety Strategy (2000) developed by the Federal, State and Territory Governments identified a range of measures with the potential to save more than 700 lives per year, a figure similar to the total number of bus related fatalities in the last two decades.

The measures identified included:

- Safer vehicles (potential to save 175 lives per year)
- Behavioural change program (potential to save 158 lives per year)
- New technology (potential to save 35 lives per year)
- Safer roads (potential to save 368 lives per year)

The implementation of this program has seen a significant reduction in road related fatalities. For the 12 months ended December 2009 the national road fatality rate was 6.9 per 100,000 people, representing a 26 per cent reduction in fatalities since the start of the decade.

Whilst the program is unlikely to meet the 5.6 fatalities per 100,000 target set in 2000, the achievement of a one quarter reduction in road related fatalities suggests that investment in a program of similar, if not greater magnitude, for the decade 2010-2020 is more than justified.

While one is not necessarily contingent on the other, the limited share of funding available for road safety programs implies significant expenditure on mandatory seatbelts could impinge on the delivery of programs such as the National Road Safety Strategy.