ARTSA
AUSTRALIAN ROAD TRANSPORT SUPPLIERS ASSOCIATION

tca
Transport Certification Australia

Performance-Based Standards Freight Task Analysis

A joint analysis by Transport Certification Australia and the Australian Road Transport Suppliers Association

Foreword

May 2019

The Australian Road Transport Suppliers Association (ARTSA) and Transport Certification Australia (TCA) are pleased to share the results of a joint research exercise. The research was designed to provide insights into the movements of heavy vehicles certified under the Performance Based Standards (PBS) scheme, using telematics data collected from the Intelligent Access Program (IAP) across Australia.

This report contains aggregated statistics from registered PBS freight vehicles enrolled in the IAP, derived from global positioning system (GPS) records collected from vehicles during 2018. It provides a bird's-eye view of the movements of a sample of the PBS fleet.

The report aims to demonstrate:

- The power of telematics data to reveal usage of the road network, from a whole-of-network view to individual road segments
- An example of how industry data can be securely stored, managed and aggregated for research purposes
- Key statistics to inform industry and government of the various freight tasks the PBS fleet is fulfilling.

All data relates to PBS vehicle movements on major roads and is de-identified and aggregated to preserve privacy.

Key report findings

- Newer vehicles travelled further per journey and performed more journeys, compared to older vehicles.
- PBS freight vehicles perform a broad mix of freight tasks, with a wide range of journey distances ranging from less than 5km up to several hundred kilometres. However, the majority of journeys are short, with an average journey distance of 158km.
- There is a gradual growth trend in the number of PBS vehicles being monitored through government programs, with the opportunity to gather more research data from new applications of the National Telematics Framework. This data can enhance the ability of policy makers and industry to make evidence-based decisions, improving outcomes for the sector and the public.

Martin Toomey
Chair
Australian Road Transport Suppliers Association

Stuart Ballingall
Executive General Manager
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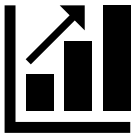
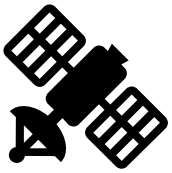
Key statistics

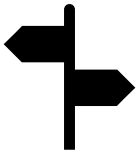
In 2018 there were **1,417** PBS prime movers enrolled in the IAP



PBS vehicles in the IAP travelled **116 million km** in 2018



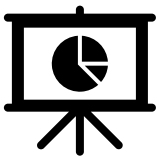
20% of PBS prime movers manufactured in 2017 participated in the IAP during 2018



On average, this is **87,000km per vehicle**

28% of all vehicles enrolled in the IAP in 2018 were PBS

PBS vehicles made **737,000 journeys** at an average of **158km per journey**



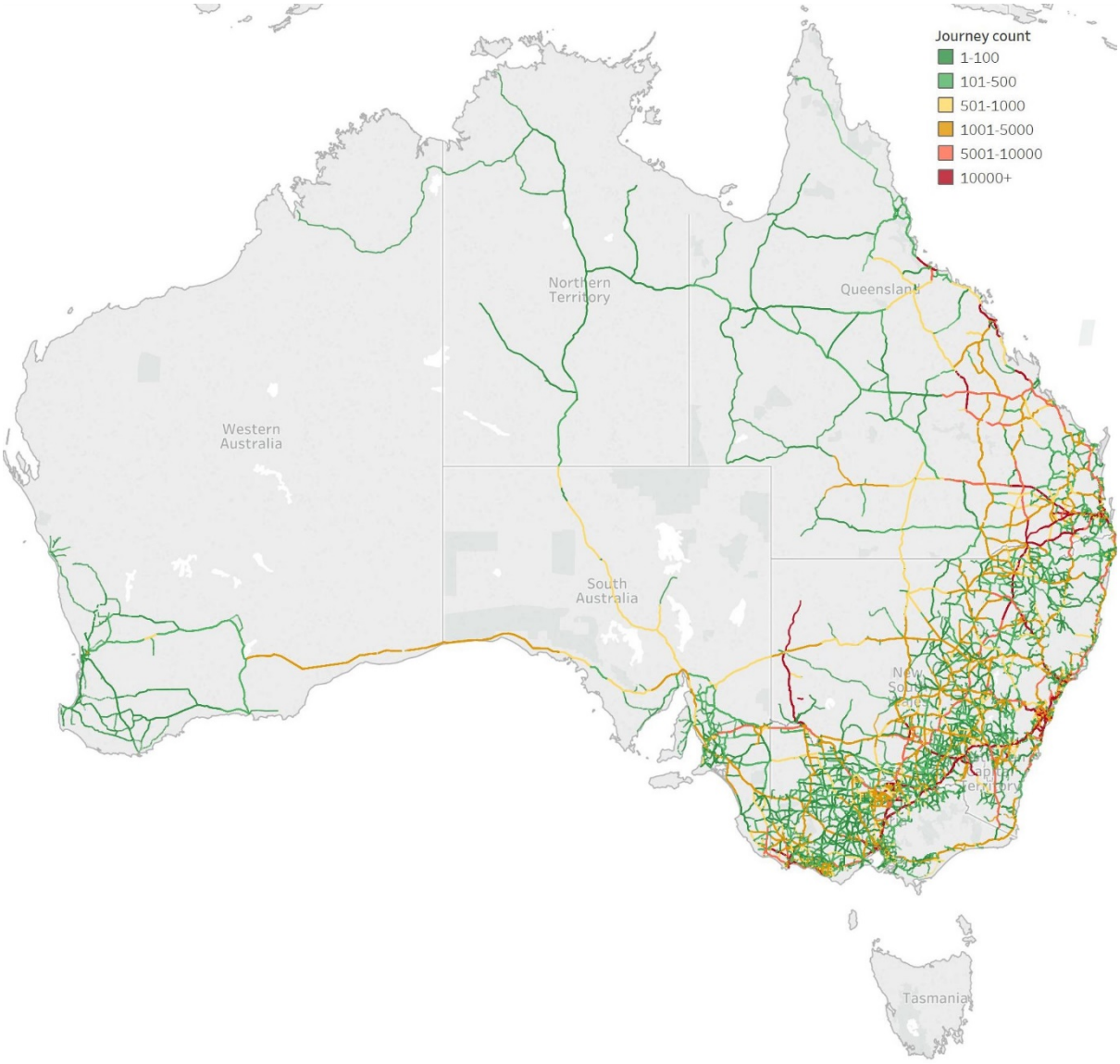
65% of PBS vehicles travelled **less than 100,000km** in 2018

8% of PBS vehicles travelled **more than 200,000km** in 2018

Visualising PBS vehicle movements in Australia

Telematics data provides the big picture, and the detail

Visualising a full year's journeys by the PBS vehicles in the IAP, we can see the reach of the PBS fleet across Australia's road network. The national PBS heatmap shows the roads most heavily travelled by monitored PBS vehicles in red and orange.

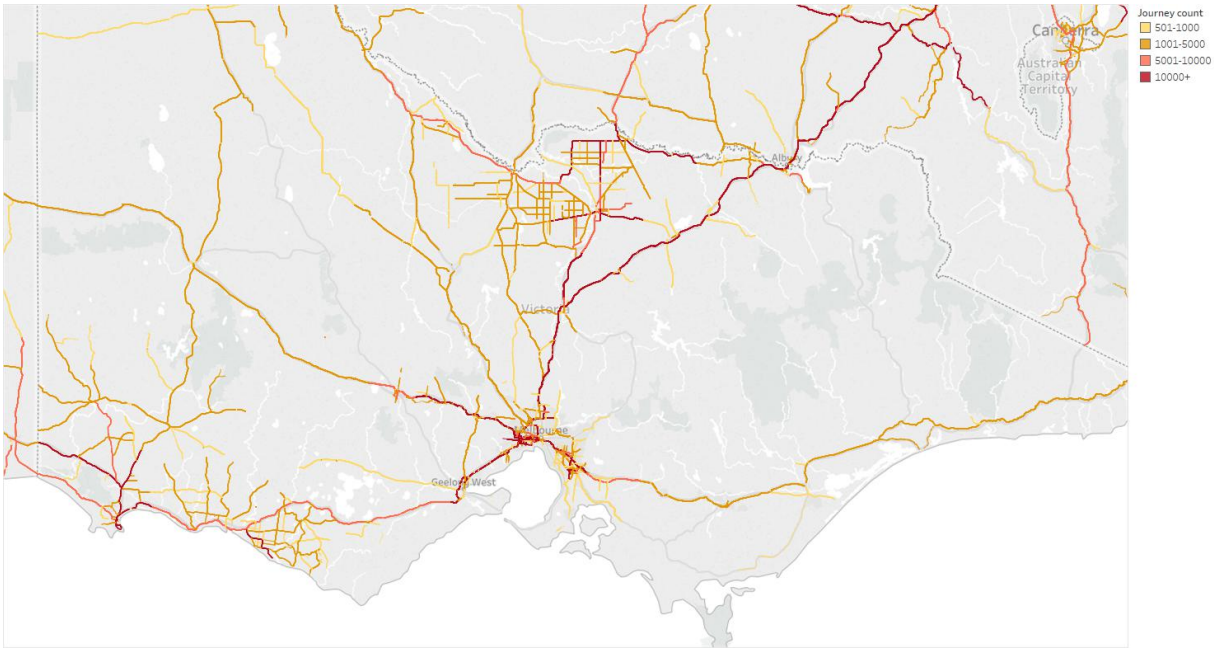


Key PBS routes in Victoria

Diving into more detailed maps, the data allows us to show specific areas of interest and filter out the less busy routes to reveal the key freight routes used by PBS vehicles. Here we can see the Victorian routes most heavily used by PBS vehicles, with the busiest (those with more than 10,000 journeys in 2018) shown in red.

The busiest road segments for PBS freight vehicles in Victoria are:

1. Footscray Road, City of Melbourne (103,000 journeys)
2. Westgate Freeway, Hobsons Bay City Council (87,000 journeys)
3. Westgate Freeway, Melbourne City Council (80,000 journeys).



Key PBS routes in the Sydney region

A closer view of PBS freight vehicles movements in the Sydney region shows the density of usage on key routes across and around the Sydney metropolitan area. Telematics data can provide detailed road usage information to a very granular level, supporting analysis of usage of specific pieces of infrastructure.

Journey patterns

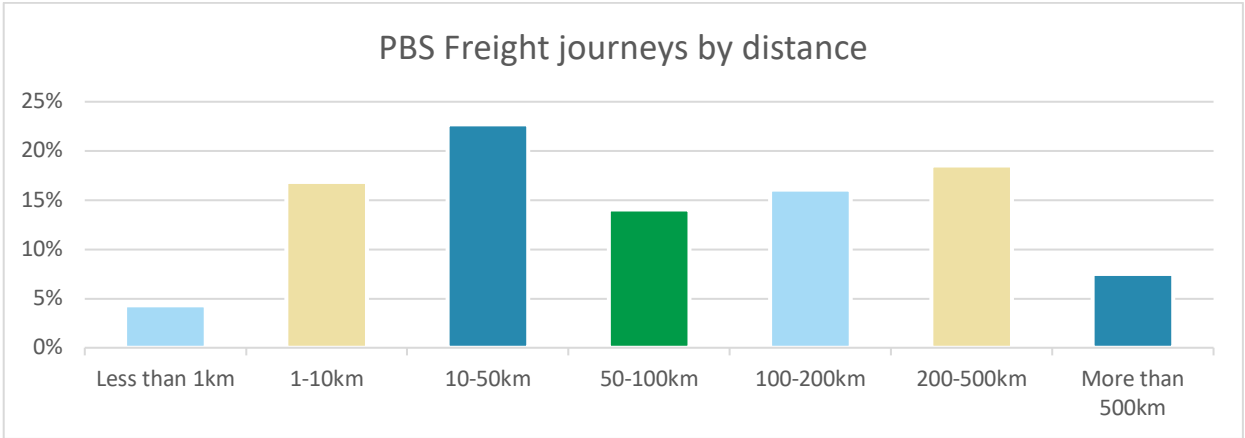
Most PBS vehicle journeys are relatively short

TCA defines a journey as ending when a vehicle's engine is switched off for a period of 60 minutes or longer, a definition that allows for brief stops for fuel, food or driver changes while continuing a task.

The majority (58%) of journeys by PBS vehicles monitored were of less than 100 kilometres, with only a small proportion (8%) of journeys over 500km. This finding suggests the bulk of the PBS freight task is located in metropolitan or built-up areas, rather than long-distance interstate routes.

63% of journeys by Semi Trailers are less than 100km.

51% of journeys by B Doubles are less than 100km.



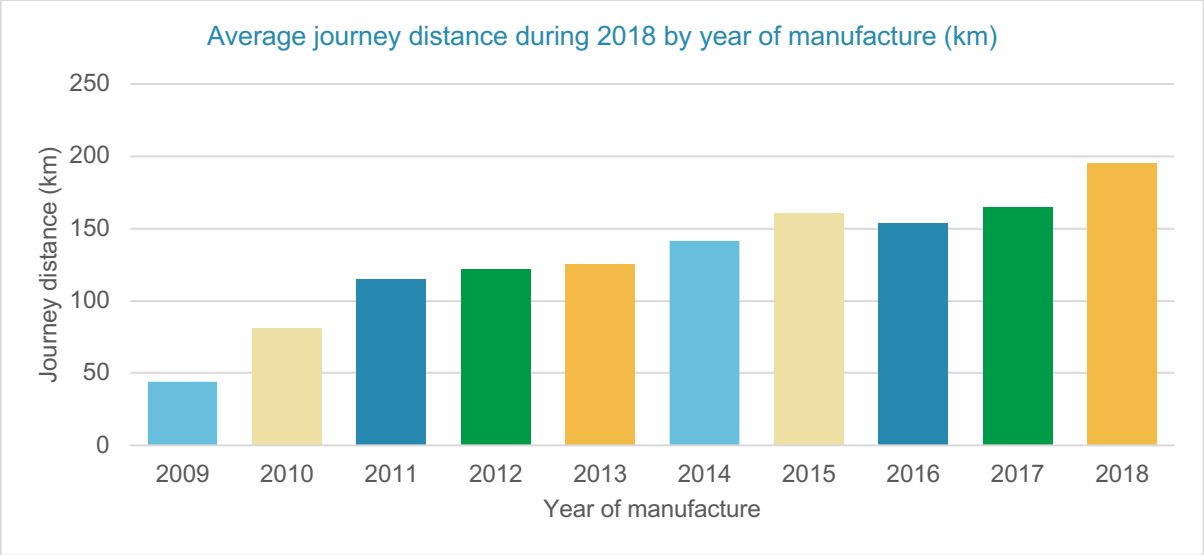
Newer PBS vehicles travel further and more often than older ones

The 2018 data shows that PBS vehicles manufactured in 2016 and 2017 completed more journeys per vehicle, and these journeys were longer on average than for older PBS vehicles.

This suggests that transport operators are using their newest, most efficient vehicles on longer routes to maximise the productivity benefits these vehicles bring.

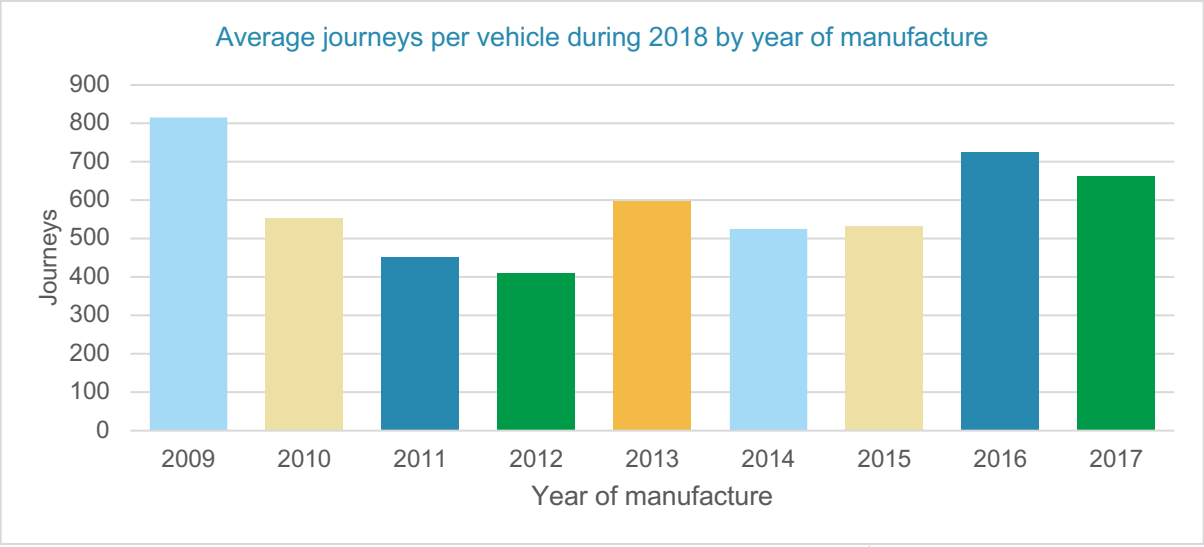
Newer vehicles travelled further per journey

Data from the IAP shows that the newest vehicles are indeed completing longer journeys, on average.



Newer vehicles completed more journeys per vehicle

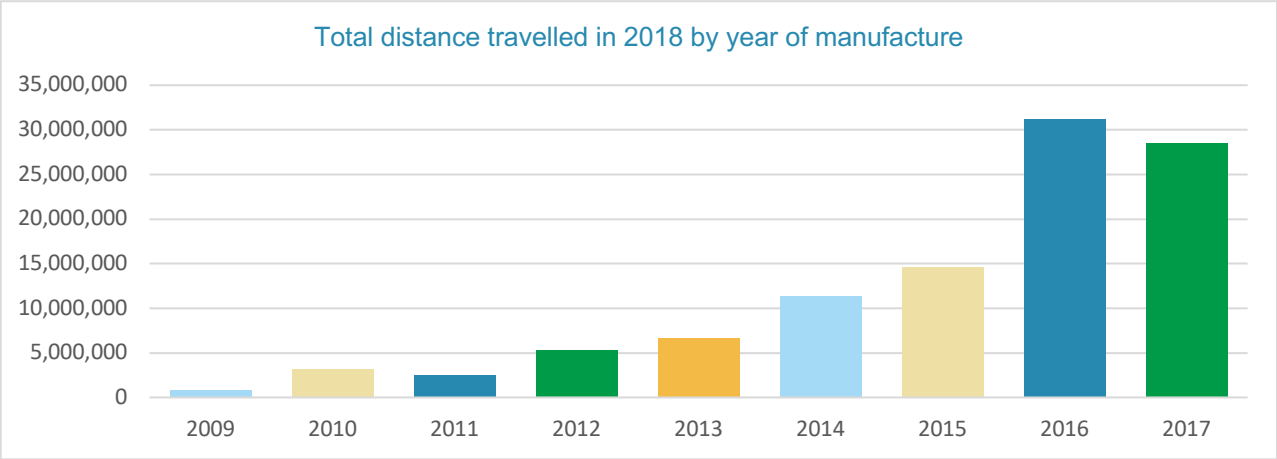
In general, newer vehicles also completed more journeys on average than older vehicles, with the exception of the oldest vehicles (manufactured in 2009), which are predominantly undertaking a very high number of the shortest journeys.



Newer vehicles travelled further in total

Combining the information about journey count, journey distance and number of vehicles active in the IAP in 2018, it's easy to see that the newest PBS freight vehicles (manufactured in 2016 and 2017) travelled further overall than older vehicles, showing that the bulk of the PBS freight task is being handled by the newest vehicles on the roads.

Overall, **vehicles manufactured between 2016-2018 accounted for 61% of the total distance travelled** by PBS vehicles in 2018.



For the chart above, vehicles manufactured in 2018 were excluded as they were not on the road for the full year, which reduced their total distance travelled.

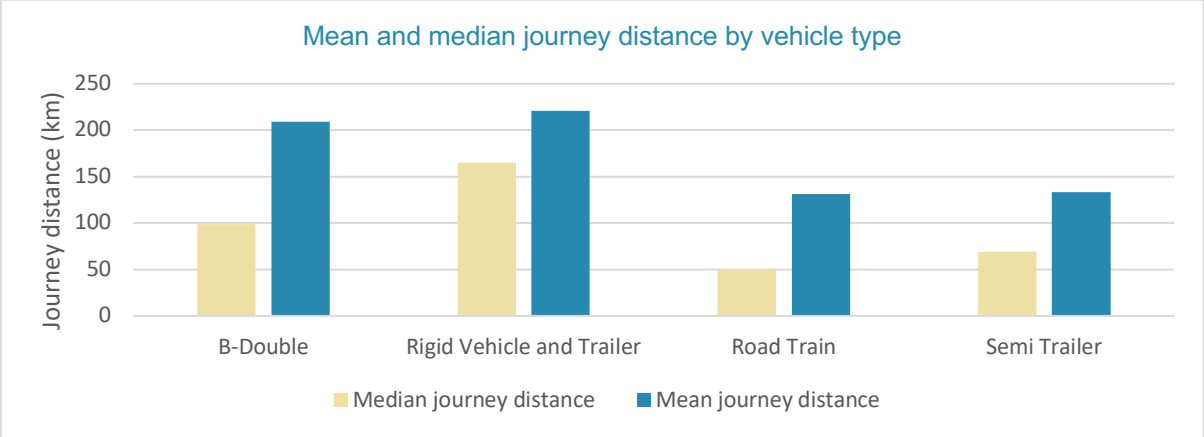
Analysis by vehicle type

Different vehicle types perform different tasks

The monitored PBS-approved vehicle types undertaking the longest journeys on average are B-Doubles and Rigid Vehicles (predominantly truck and dog), averaging just over 200km per journey, but there are a small number of vehicles travelling very long journeys, pushing the average up well past the median journey length.

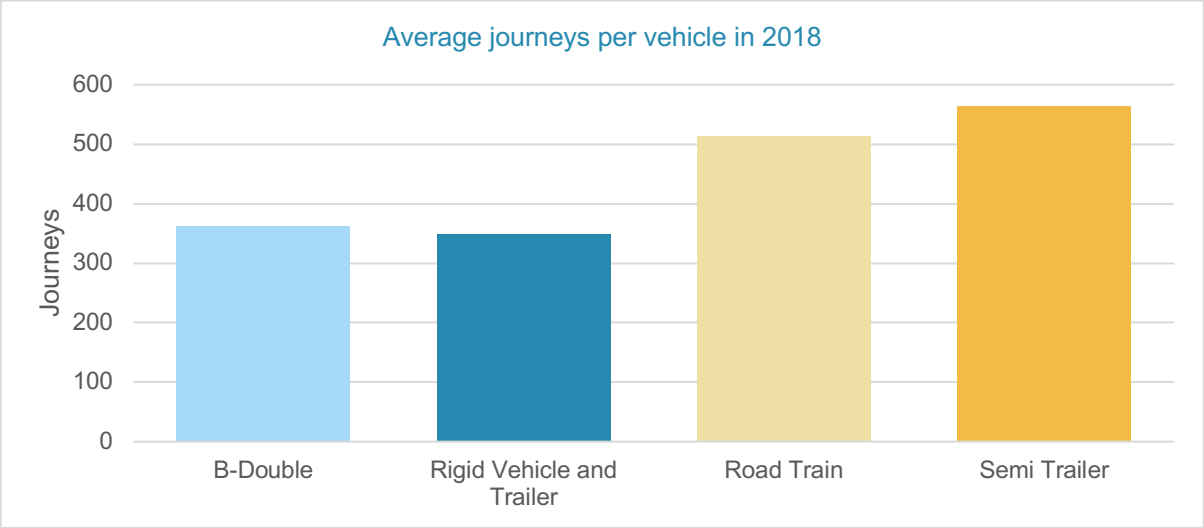
Why are these relatively small vehicles undertaking longer journeys? Bear in mind that under the definition of journey used, a smaller vehicle such as a truck and dog is able to load and unload, or refuel, within less than an hour stationary, which is TCA's benchmark for considering a journey to be finished. This means that these vehicles are able to move through multiple load-unload cycles within what we consider for this analysis to be a single journey.

We also see a significant difference between the mean and median journey distances for all vehicle types. Mean journey distance is much higher, indicating that a small number of vehicles are performing average journeys that are much longer than most other vehicles of their type, inflating the mean average.



Semi-trailers perform more journeys on average, but the journeys are shorter

Semi-trailers don't travel a long way on each average journey, but this is offset by a high average count of journeys per vehicle, undertaking 5.4 journeys per day, every day of the year.



Key stats on PBS vehicles in the IAP

Twenty-three per cent (23%) of registered PBS vehicles manufactured in 2016 were enrolled in the IAP during 2018, and 20% of vehicles manufactured in 2017 were enrolled, providing a strong sample of the PBS freight fleet. In addition, all 60m Quad road trains operating in Western Australia are monitored in the IAP, but are not included in this report.

TCA anticipates that a greater proportion of PBS vehicles will be included in new telematics monitoring and assessment applications launching in 2019, designed to give road managers and policy makers the tools to enhance the productivity and safety of the road network, benefiting the transport industry and other road users.

About ARTSA

The Australian Road Transport Suppliers Association Inc. was formed in the mid 1980's with the vision of being the technical resource for the road transport industry in Australia.

ARTSA seeks to bring together manufacturers and suppliers of equipment, parts and services to the road transport industry to promote the uptake of practices and technologies that will enhance the safety, productivity and reputation of the industry and to increase the awareness of regulators to current issues.

ARTSA through its Data division produces detailed heavy vehicle statistics on a quarterly basis using sources such as the NEVDIS registration data base and other sources. It collaborates with organisations including TCA and the NHVR to produce informative documents such as this publication, but also provides a commercial service for industry wanting to access more detailed heavy vehicle data.

www.artsa.com.au

About TCA

Transport Certification Australia (TCA) is the Australian entity responsible for providing assurance in the use of telematics and related intelligent technologies.

We manage the National Telematics Framework, which brings transport operators, road managers, heavy vehicle regulators, other regulators and third party business partners together on a common digital business platform.

The National Telematics Framework:

- Provides a national platform for the use of telematics and related intelligent technologies
- Supports different applications across regulatory, contractual and commercial needs
- Supports different levels of assurance
- Is outcome focussed and encourages innovation.

What we do

- Advice founded on a demonstrated capability to design and deploy frameworks and platforms as enablers for reform
- Accreditation in the type-approval and certification of telematics and intelligent technologies and services, that give confidence to all stakeholders for their consideration and use
- Administration of applications founded on the National Telematics Framework.

www.tca.gov.au

About the IAP

The IAP is an application which provides heavy vehicles with access, or improved access, to the Australian road network in return for monitoring of compliance with specific access conditions using the Global Navigation Satellite System (GNSS).

The IAP is a certified service administered by TCA and is an application of the National Telematics Framework. Vehicle data is collected by IAP Service Providers certified by TCA, with data provided to TCA for research purposes.

Disclaimer

The analysis provided is representative of vehicles enrolled in a TCA certified program and as such may not be representative of all vehicles using these roads. This report was developed by TCA using Intelligent Access Program (IAP) information. It contains aggregated and de-identified IAP information. TCA has not disclosed IAP information which identifies any transport operator or vehicle enrolled to any party. Data was collected in 2018. These charts show journeys on major roads and do not represent all monitored vehicle movements within this area. Vehicle Type is defined using the most recent IAP scheme enrolment of that vehicle at the time of its journey. Vehicles may not be configured as the type shown during all journeys. Journey counts are aggregated by road name within each local government area.