Frequently Asked Questions

National Roadworthiness Baseline Survey Overview

What happened and why?

When did the Survey take place?

The National Roadworthiness Baseline Survey (NRBS) commenced on 1 August 2016 and the final inspections occurred on 4 November 2016.

Will it happen every year?

No. The Survey is a one-off event for now, but we may repeat it in three years. Other research activities may be carried out.

Why did we do it?

The Survey provided a point-in-time snapshot of the mechanical condition of Australia's heavy vehicle fleet. The results will enable us to identify current issues and help us create a nationally consistent inspection approach.

Where did the Survey inspections happen?

At roadside inspection sites, state transport facilities and operator depots across the country.

What types of vehicles were involved in the Survey?

There were two vehicle categories of interest: freight vehicles and non-freight vehicles. Freight vehicles include rigid trucks, semi-trailers, b-doubles and road trains. Non-freight vehicles include bus and coach, as well as special purpose vehicles (SPVs).

How were vehicles selected for a Survey inspection?

Selection was based on a random sample of heavy vehicle combinations. We wanted an accurate snapshot of Australia's heavy vehicle fleet, so a sample of each vehicle combination was taken based on quotas provided on the advice of a statistician.

Vehicles were selected randomly through a continuous inspection method. Upon completing the inspection of the previous vehicle, inspectors selected the next vehicle over 4.5 tonnes for inspection.

Who carried out the Survey?

Who organised the Survey?

The National Heavy Vehicle Regulator (NHVR), Australia's independent regulator for all vehicles over 4.5 tonnes gross vehicle mass, coordinated the Survey. However, while the NHVR managed the Survey, jurisdictions conducted Survey operations within their jurisdiction and in some cases, assisted in other jurisdictions.

Who performed the inspections?

Authorised transport inspectors from each jurisdiction carried out the inspections.

Were all states and territories involved?

Survey inspections were conducted in all states and territories except for Western Australia. Unfortunately, resourcing constraints meant that Western Australia were unable to participate. The number of vehicles surveyed during the NRBS still provides the NHVR with an excellent representation of the health of Australia's heavy vehicle fleet.

Who paid for the Survey?

The Survey was one element of the larger National Heavy Vehicle Roadworthiness Program, which is funded by the NHVR.

What information was collected?

What was checked during a Survey inspection?

Inspections were a thorough examination of the mechanical condition of the vehicle and trailers. Information about non-conforming components was reported to the NHVR based on the recently updated National Heavy Vehicle Inspection Manual (NHVIM).

How were the inspection results recorded?

Details of each inspection were recorded using a tablet which recorded details of each vehicle unit and identified non-conformities aligned with the NHVIM. Non-conformity describes an item that does not meet the heavy vehicle safety standards. These items were recorded by assessing the safety risk of the non-conformity and are classified as a minor, major or major (grounded) non-conformity.

What is the difference between a minor, major and major (grounded) non-conformity?

A minor non-conformity creates a concern over the safety of a vehicle, and subject to conditions, does not prevent the vehicle from being used on the road. Examples of a minor non-conformity include, cracked indicator lenses or damaged marker plates.

A major non-conformity creates a significant concern over the safety of a vehicle, and subject to conditions and restrictions of use, does not prevent the vehicle from being used on the road.

An example of a major non-conformity includes when a vehicle falls short of the brake performance required when tested on a roller brake tester.

A major (grounded) non-conformity creates critical concern over the safety of a vehicle and the vehicle must not be used on the road while the non-conformity exists. An example of a major grounded non-conformity includes an excessively worn tow coupling eye.

Are the results of each inspection confidential?

Yes. Data on the mechanical condition of specific vehicles will not be published. However, jurisdictions may follow up with you about your vehicle, depending on its condition. NHVAS or WAHVAS will also be advised on the condition of your vehicle in accordance with the business rules of these schemes.

Are the results of the Survey publically available?

Yes, a report outlining the key findings of the health check is available on the NHVR's website along with several overview documents which provide summaries of the key findings.

How can I trust the data collected by the Survey?

The vehicles were randomly selected for inspection using a method recommended by a statistician and inspections were performed based on a consistent approach of visual inspection with escalation. Specific operators, industries or drivers were not targeted. We wanted the data to be as representative as possible of the condition of the Australian heavy vehicle fleet.

What are the key findings?

Is the Australian heavy vehicle fleet well maintained?

The fleet is generally safe and well maintained. After intensive inspections, with some lasting up to an hour, no non-conformities were found in more than half the vehicle combinations inspected. Of the vehicles inspected, 88% did not have a major non-conformity.

Also, only 1.3% of the vehicle units inspected were found to have a major (grounded) non-conformity.

This classification of non-conformity creates a critical concern of the safety of a vehicle and the vehicle must not be used on the road while the non-conformity exists. This result indicates that of the 11,066 vehicle units inspected during the NRBS, 98.7% could continue on their journey, albiet some vehicles were subject to conditions or restrictions of use.

What is the average age of heavy vehicles operating on the road?

The NRBS results recorded the average age of in-service heavy vehicles to be approximately nine years of age. Vehicles which are usually associated with long haul transport activities, such as road trains and b-double hauling units, are on average five years newer than the rest of the fleet (rigid trucks, semi-trailer hauling units, buses and SPVs).

Are older vehicles unsafe?

There were non-conformities identified for all ages of vehicles. Identifying a major non-conformity is 11 times more likely in a freight hauling unit that is over 13 years of age, when compared to a freight hauling unit less than two years of age.

Why does the average age data differ from other data I have seen on the Australian fleets' age?

Vehicle age data is usually calculated from registration data. The NRBS data is a random sample of in-service vehicles being used on our roads on a daily basis.

Which vehicle types are the best maintained?

Bus, coach and SPVs are generally well maintained, with the lowest rates of major non-conformity (3%). Bus and coaches are subject to very stringent passenger transport requirements and in most jurisdictions are inspected more frequently.

For freight vehicles, i.e. those that are involved in transport activities, rates of major non-conformity were higher for rigid trucks (13%) and semi-trailers (14%) and lower for B-doubles (8%) and road trains (10%). On average, B-doubles and road trains are five years newer than other heavy vehicle categories. Generally, there is a lower rate of major non-conformities identified on newer vehicles.

As such, the age difference between long haul and vehicles typically associated with local transport operations may explain the difference in the rate of major non-conformities between these vehicle types. Additionally, it is suggested that these vehicles need to be mechanically reliable due to the significant distances they travel.

Are vehicles enrolled in an accreditation scheme better maintained?

Yes, vehicles enrolled in NHVAS maintenance accreditation showed generally lower rates of major non-conformity (9%) than vehicles not in any scheme (13%). Enrolment in CICA's CraneSafe also showed lower rates of major non-conformities.

Can the NHVR explain the difference in performance between the jurisdictions?

Although it appears that some states are performing better than others, the variation in results can likely be explained by differences in inspection practices between jurisdictions.

The results demonstrate that the overall rate of non-conformities identified is generally consistent (regardless of classification), with around a 50% chance of identifying a non-conformity on any vehicle/combination. In comparing jurisdictions, the results predominately varied in the classification of the non-conformity (i.e. minor and major).

The Roadworthiness Program is continuing to build a national inspection approach to achieve consistent inspections to deliver consistent outcomes and a safer heavy vehicle fleet.

How did the fleet compare with other heavy vehicle fleets internationally?

International comparisons are made very difficult by the absence of any agreed international reporting standards or processes.

In 2011 to 2012, the United Kingdom undertook 126,502 roadside intercept inspections of commercial vehicles. The study reported a rate of prohibition notices, which is broadly equivalent to a major non-conformity, of 35.3%.

The NRBS findings indicate a major non-conformity rate of 22.8%, however subject to conditions and restrictions of use, the type of non-conformity does not prevent the vehicle from being used on the road [1].

During the North American Commercial Vehicle Safety Alliance's 3 day 'international roadcheck' inspection exercise in June 2016, 62,796 vehicles were inspected with 21.5% of vehicles being placed 'out-of-service' [2], which is equivalent to a major (grounded) non-conformity.

The NRBS findings indicate that only 1.3% of vehicles inspected had a major (grounded) non-conformity. As such, almost 99% of vehicles inspected were able to continue with their journey.

Are there many road crashes involving heavy vehicles that are as a result of roadworthiness issues?

There is limited research that examines the relationship between poor maintenance practices and crash outcomes. Existing research highlights the importance of keeping the contribution of vehicle standards non-conformity to crash causation in perspective when considering the NRBS results.

Between 2012 and 2016, there was an average of 223 heavy vehicle-involved fatalities Australia annually [3].

Of these crashes, approximately 5-7% had a vehicle technical issue as a primary causal factor. In the cases in which a vehicle technical issue is identified as contributing to the crash, approximately 70% related to tyres [4].

The primary purpose of the NRBS data was to assess risk of non-conformity with vehicle standards rather than the risk of crashes. Further work may examine linkages with crash data to provide further analysis of this relationship.

Does the data indicate that enforcement agencies should be focusing on other safety issues such as fatigue or speeding?

The NRBS was a research project that specifically focused on the mechanical condition of the heavy vehicle fleet. The data only provides an assessment of what vehicle types and vehicle systems (e.g. brakes, steering and suspension or wheels, tyres and hubs) the NHVR and jurisdictions should focus on to ensure the fleet continues to be well maintained.

What needs improvement?

The heavy vehicle fleet is generally well maintained, however there is room for improvement. For example, analysis of the results reveals that rigid trucks with trailers had higher rates of major non-conformities compared to any other category of vehicle.

In addition to fleet improvements, there are also improvements required from a regulatory perspective. The NRBS results highlight a variation in inspection practices between jurisdictions.

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Where to from here?

How will the NHVR use the Survey results?

The results of the Survey provide further clarification through the initial data set to support a more consistent, focused and efficient inspection approach. The data enables the NHVR to identify high-risk vehicle components, vehicle systems, vehicle types and industry sectors. We want to inspect the right vehicles, for the right reasons.

The objective of moving toward selecting vehicles based on risk is to more efficiently allocate inspection resources to improve the safety of the national heavy vehicle fleet.

A framework for inspecting vehicles based on risk is to be presented to Ministers at the Transport Infrastructure Council (TIC) meeting in November 2017.

How will the Survey make the roads safer?

The Survey was a research project designed to take a snapshot of the mechanical condition of Australia's heavy vehicle fleet. The data collected will be used to inform operational policy and develop projects to reduce the social, environmental and economic impacts resulting from unroadworthy (unsafe) heavy vehicles. We will achieve this by changing industry behaviour to ensure operators proactively maintain and operate their vehicles adhering to the heavy vehicle safety standards.

Does the survey identify a requirement for other research?

The Survey provided a point-in-time snapshot of the mechanical condition of Australia's heavy vehicle fleet. The results will enable us to identify current issues and help us create a nationally consistent inspection approach. We may undertake further surveys to evaluate the success of any new nationally consistent inspection approach.

The NHVR will also use the NRBS data to focus on specific areas which need improvement. Additional studies may compare state compliance data to the NRBS results and identify trends between the findings of the NRBS and other compliance surveys and activities.

Will the NHVR compare NRBS data with other data available nationally/internationally on roadworthiness?

Yes, where there are overlaps between the NRBS data and jurisdiction compliance activities (such as Statetrans, Austrans, Trishula and the NSW Triennial Compliance Survey) and it is proposed that further analysis is undertaken. These activities include a comparison of state compliance and the NRBS data to identify trends and correlations.

There is also work required to determine the extent of the link between mechanical condition and heavy vehicle crashes to continue to inform our risk and evidence-based approach to heavy vehicle maintenance. However, this work is outside the scope of the NRBS.

Will the Survey results change what is inspected either at the roadside or at an inspection facility?

Vehicles will continue to be inspected in the same inspection facilities across the country, however based on the risk the vehicle poses, the intensity of the inspection may change. The intensity of an inspection refers to the type of equipment required, the duration of inspection, the required skill of the inspector and the focus on specific vehicle systems or components. For example, if a vehicle is considered a high-risk, a more intensive mechanical inspection may be required.

These changes will be supported by the NHVR's commitment to an evidence and risk-based approach to managing vehicle inspections and are supported by the development of a Consistent Inspection Framework.

The Framework aims to outline transparent and reliable inspection methods for regulating inspection of heavy vehicles.

Will the Survey results change inspection requirements or processes?

Potentially. The NHVR is using the results to develop a way to identify high-risk vehicle components, vehicle systems, vehicle types, operators and industry sectors. Both roadside and facility based inspections will still occur, however based on the data, the intensity of the inspection may change. For example, if a vehicle is considered a high-risk, a more intensive mechanical inspection may be required.

These changes will be supported by the NHVR's commitment to an evidence-based approach to managing vehicle inspections.

How will the NHVR use the data to inform decision-making?

The NHVR is committed to using evidence to inform decisions. We are using the results to develop a way to identify high-risk vehicle types and vehicle systems (e.g. brakes, steering and suspension or wheels, tyres and hubs). The NRBS results highlight a difference between jurisdiction inspection practices. This finding further supports the development of a Consistent Inspection Framework which aims to outline transparent and reliable inspection methods for regulating inspection of heavy vehicles.

Will the NHVR use the data to target specific vehicle types or sectors of the industry?

Yes, NHVR are using the results to develop a way to direct our inspection effort to focus on high-risk vehicle types and vehicle systems (e.g. brakes, steering and suspension or wheels, tyres and hubs).

A framework for inspecting vehicles based on risk is to be presented to Ministers at the TIC meeting in November 2017. The implementation phase of this program does not commence until after July 2018. It is likely that implementation will be staged depending on the sophistication of the systems currently operating in each jurisdiction.

References

[1] European Commission, Report from the Commission to the European Parliament and the Council, "On the application by the Member States of Directive 2000/30/EC of the European Parliament and of the Council of 6 June 2000 on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the community," Brussels, 2014.

[2] Commercial Vehicle Safety Alliance, *CVSA Releases 2016 International Roadcheck Results*, 2016. [Online]. Available: cvsa.org/news-entry/2016-international-roadcheck-results/. [Accessed 22 February 2017].

[3] Bureau of Infrastructure, Transport and Regional Economics, *Fatal Heavy Vehicle Crashes Australia—Quarterly Bulletins*, The Department of Infrastructure and Regional Development, 2016. [Online]. Available: bitre.gov.au/publications/ongoing/fatal_heavy_vehicle_crashes_quarterly.aspx [Accessed 22 February 2017]

[4] National Truck Accident Research Centre, "Major Accident Investigation Report," NTI/NTARC Research, Brisbane, 2015.