

Trip Rate and Parking Databases in New Zealand and Australia

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ABSTRACT

The New Zealand Trips and Parking Database Bureau (NZTPDB, or “the Bureau”) was set up in 2002. The aim is to develop a large body of data which is available to all members. It is intended to improve “good practice” in the area and through shared common knowledge, to reduce needless debate at hearings and appeals on trip and parking rates.

The Bureau has good ties and reciprocal memberships with the consultants responsible for running the TRICS database in the UK, and is seeking to establish closer ties with AITPM, consultants and government bodies in Australia. It is also planned to develop contacts with Canada and the US during 2008.

This paper outlines:

- Current practices regarding sources of surveyed trip rate and parking data in New Zealand and Australia;
- The progress to date in developing the New Zealand Trips and Parking Database and details of the range of data held for different land uses;
- Studies being progressed by the Bureau, including a study into correlating the New Zealand data with that from TRICS;
- The scope for greater coordination between the professional institutions in Australia and New Zealand on the issue of trip rate and parking data;
- The possibility of widening the Bureau’s membership to include Australian members.

1 Introduction

This paper sets out the work of the work of the New Zealand Trips and Parking Database Bureau (NZTPDB, or “the Bureau”) and considers its relevance to Australia. It suggests that there is currently a lack of an up to date source of trip rate information in Australia, so closer collaboration between Australia and New Zealand would appear to be a sensible idea.

This paper is intended to respond directly to the conference theme: namely to seek to increase national convergence throughout Australia and indeed New Zealand.

2 Sources of Trip Rate Information

2.1 Sources of trip rate information used in New Zealand

The two most widely known international sources of trip rate information used for some time in New Zealand are as follows:

- The New South Wales Roads and Traffic Authority (RTA) “Guide to Traffic Generating Developments” is probably the most commonly used source. While the latest version of the document was published in 2002, much of the background data is now almost 30 years old.
- The Institution of Transportation Engineers (ITE) “Trip Generation” books are also in common use. This American source is document based, and the most recent (7th) edition was published in 2004. It is in wide use outside the USA, but its circulation, in book format only, means that it is not possible to pick and choose the most appropriate data.

In addition, there are two sources that are coming into wider use in New Zealand:

- The New Zealand Trip Rate and Parking Database (NZTPD) is now in common use (see section 3 below). However, the dataset is relatively small, so there will continue to be a need to refer to other sources.
- The UK TRICS database has recently become available to members of the NZTPD Bureau. This database was set up in the late 1980s and is the main source of trip rate information in the UK. It provides a wide variety of information on numerous land uses, based on over 6000 surveys. Given its database format, it is easy for a user to select appropriate sites (rather than all sites within a particular land use) and to select only certain surveys (say, those which are less than five years old). Also, some multi modal trip rate information is available within this database.

2.2 Current practices in Australia

In preparing this paper, I have sought the views of many practitioners throughout Australia, including consultants and persons working for state or local authorities. My understanding is that the RTA “Guide to Traffic Generating Developments” appears to be by far the most common source of trip rate information throughout Australia.

In addition, I have been advised of the following:

- I have been referred to the South Australian “Land Use Traffic Generation Guidelines”, but these were published in 1987 and respondents from South Australia advised me that they generally use the RTA Guide.
- Many respondents referred to the RTA guide as being the main source of data, but commented that they undertake their own surveys where necessary.
- I believe that the ITE books are in limited use in Australia.
- TRICS advise me that there are no registered users in Australia.
- As yet there is no use of the NZTPD, although some practitioners are aware of its development due to personal contacts with colleagues in New Zealand.

Several respondents noted with concern the abuse of the RTA guide and the fact that much of the data is now “past its sell by date”. I have been advised that the RTA is considering a modest programme of updates.

As a result, there appears to be a problem in Australia. This was noted in the paper by Alan Short and Richard Hanslip to the 2004 AITPM Conference, which concluded that their paper

“put forward a strong case that the resources used to develop a Traffic Impact Assessment for development or change in Land Use are unlikely to be reliable, although (they provide) the best information currently at hand. Specifically the resources that are used are 10 to 25 years old, and some are not based on a statistically rigorous methodology. Most do not consider fluctuations in the time of year when research was undertaken.”

The above conclusions indicate that there would appear to be significant potential for closer collaboration between the NZTPD Bureau and bodies within Australia. This collaboration should be a two way exercise, as there is a growing need for multi modal trip rate information.

3 The New Zealand Trip Rate and Parking Database Bureau

The purpose of the New Zealand Trips and Parking Database Bureau Inc. (NZTPDB, or “the Bureau”) is to collect data on surveyed trips, parking and travel related to all land uses and share it with professional engineers and planners.

Research on these issues in New Zealand was undertaken by Malcolm Douglass in 1971, when he was Regional Traffic Engineer for the Canterbury Regional Planning Authority. That work resulted in a paper termed Road Research Bulletin No 15.

Malcolm initiated a review of that work in 2000, in conjunction with consultants Traffic Design Group and Transfund New Zealand Research Publications Nos 209 and 210, ‘Trips and Parking Related to Land Use’ were published in 2001. Transfund (which has since become Land Transport New Zealand) was not prepared to continue funding of this work for the translation of the research into practice.

The Institution of Professional Engineers New Zealand (IPENZ) Transportation Group agreed to set up a Focus Group to pursue the translation of the reported research into practice and this sponsorship enabled the Bureau to be established. Later in September 2003 it became a non-profit Incorporated Society. The Bureau is continuing to expand its database services to members and it also undertakes relevant research in the field of transportation and travel patterns.

The NZTPDB continues as a Focus Group of the IPENZ Transportation Group and it reports to that Group annually. There are currently 50 New Zealand members, including City and District Councils (23), Government agencies (1), and Consultants (26) from throughout the country. The NZTPDB is controlled by an elected Board.

The database includes data for over 600 sites and this information is being steadily extended. It is shared in electronic form with the professionals who are members. The Bureau's researchers continue to undertake specific trip generation, parking and land use assessment studies and to collect further data. The database is of value and interest to all councils and consultants with responsibility for transportation planning, roading asset management and land use planning, including advice on resource management consents.

The aim is to assist both planners and engineers to improve "good practice" in the area. It is hoped that through shared common knowledge and inter-disciplinary exchange, the consistency of transport assessments and evidence before the environment court and tribunals will be improved, so reducing needless debate at hearings and appeals on trip and parking rates and travel assessments.

It is fair to say that the Board had hoped to achieve a more rapid expansion of the size of the database than has been the case. It appears that the main obstacles have been a lack of time or inclination for consultants or local authority officers to submit information to the Bureau. In the case of consultants, we suggest that the main reason is the perceived commercial sensitivity of data, and a reluctance to "give away" any data that will be of advantage to other consultants (even though the aim is that the exchange of data will be reciprocal).

4 Studies being progressed by NZTPDB

Currently the Bureau is undertaking three critical pieces of research which has been made possible through successfully gaining research funds from Land Transport New Zealand. Each project is of one or two years in duration. The Bureau does not employ staff directly, but it uses consultants who are contracted to investigate and study the issues and report their findings to the Bureau.

The three contracts are as follows:

- Correlation of UK/NZ Trips and Parking
- Transportation Assessment Guidelines
- NZ National Travel Profiles.

These three contracts are discussed in more detail in the following sections:

4.1 Correlation of UK/NZ Trips and Parking

This important research project is essential to both the use of information from the UK TRICS database in New Zealand and also the upgrading of the NZTPDB database so as to be consistent with UK practices.

The research project objective is

“To provide New Zealand transport practitioners with better quality and quantity of trip and parking prediction information by making UK data applicable in New Zealand.”

This research proposes to extend the trip and parking database for a much wider range of land uses in a variety of different situations. This will be achieved by bringing UK and NZ data together into comparative tables for equivalent land uses which are defined by variables, to ensure comparability. It is effectively an analysis to correlate equivalent land uses and traffic situations and demonstrate the similarities and differences of UK and NZ land uses and situations.

Over a period of a year NZTPDB has been making comparative analysis by invigilating the TRICS and the New Zealand databases, to explore the correlation of retail, residential, assembly, industrial trips and parking data. This has been undertaken in close collaboration with TRICS UK. TRICS is also undertaking upgrades and moving to place their database on a website framework.

A simple system of site lists linked to data for individual sites is being developed in both countries. The system will allow the data to be extracted into Excel spreadsheets, by land use categories and by different parameters such as location, catchment population, traffic environment and time periods as specified by the user. Seasonal, weekly, daily and hourly factors necessary to calculating ‘85% design hour’ data will also be included in due course.

However it takes time to put it all in place. In the meantime the data required for research will need to be obtained by normal inspection from the user programmes available for individual sites.

While TRICS has a very much larger file of information, about 4000 sites compared to 600 on the NZ database, over the longer term the two bodies are travelling on parallel paths. NZTPDB is seeking to lift the quality of its database to match that of TRICS. This will enable the two databases to be aligned so that, sooner rather than later, they can be compared and merged. Hopefully this will be on the basis of mutually agreed land use descriptions and the same definitions for trips, parking, other mode accessibility, and other parameters and variables.

NZTPDB intends to finish this research project in March 2008 as it is a pre-requisite to the joint TRICS/NZTPDB work and future arrangements. However it may be two years before sufficient confidence can be achieved as to the ‘seamless’ relationship of the two databases.

4.2 Transportation Assessment Guidelines

Guidelines for undertaking Integrated Transport Assessments have been prepared for the Auckland Region by the Auckland Regional Transport Authority (see separate paper). However, New Zealand does not at present have a comprehensive guidance for what should or should not be included in transportation assessment or environmental effects reports. This research is therefore designed to produce a framework to enable improved Transportation Assessments that are suited to the New Zealand administrative, planning and statutory processes.

4.3 NZ National Travel Profiles

The Ministry of Transport (MoT) has agreed to make available to NZTPDB the last five years of national travel survey data. These annual surveys include trips made by approximately 12,000 people from about 5,000 households from sample areas throughout New Zealand. The surveys result in a wealth of daily travel patterns from household surveys by all modes of travel and to all types of land uses. The information is for a range of metropolitan and provincial locations.

The objective of this research is to investigate and determine New Zealand travel behaviour for the main urban areas and rural areas by all modes related to different land uses and for varying trip purposes. This will provide practitioners with better quality information upon which to make transport planning decisions.

5 Comparison of trip rates

Transfund Report 209 provided the following comparison of trip rates, based on New Zealand, Australia and American trip generation rates in the 1990s.

Table 1: Comparison of New Zealand, Australian and American Daily Trip Generation Rates in 1990s

	New Zealand	Australia	America
Dwelling houses	10.4 per dwelling	9.0 per dwelling	9.6 per dwelling
Medium density residential	6.8 per dwelling	4 to 5 per dwelling	5.9 per dwelling
Commercial premises / offices	20 per 100m ² GFA	10 per 100m ² GFA	11 per 100m ² GFA
Supermarkets	130 per 100m ² GFA	150 per 100m ² GLFA	177 per 100m ² GFA
Shopping Centres over 30,000m ²	47 per 100m ² GFA	50 per 100m ² GLFA	43 per 100m ² GFA

Source: Table 6.1 of Transfund Report 209.

Note details for other land uses were also provided

Table 2: Comparison of New Zealand, Australian and American Peak Hour Trip Generation Rates in 1990s

	New Zealand	Australia	America
Dwelling houses	1.2 per dwelling	0.85 per dwelling	1.0 per dwelling
Medium density residential	0.8 per dwelling (*)	0.4 to 0.5 per dwelling	0.5 per dwelling
Commercial premises / offices	2 per 100m ² GFA	2 per 100m ² GFA	1.5 per 100m ² GFA
Supermarkets	17.8 per 100m ² GFA	15.5 per 100m ² GLFA	12.3 per 100m ² GFA
Shopping Centres over 30,000m ²	9.9 per 100m ² GFA (*)	6 per 100m ² GLFA	5 per 100m ² GFA

Source: Table 6.1 of Transfund Report 209.

Note: details for other land uses were also provided.

(*): The samples for these land uses are small, so the results should be used with caution

The above comparisons indicate a reasonable amount of similarity between trip rates in New Zealand, Australia and America. There are a number of outliers in the New Zealand trip rates, such as the daily rate for offices, which is higher than elsewhere, and the rates for medium density housing, which are based on a small sample size.

Research undertaken by the Bureau in 2005, comparing trip rates from the NZTPD and TRICS, related to five land uses. The results are as follows:

Table 3: Comparison of New Zealand and UK Peak Hour Trip Generation Rates

	New Zealand	TRICS UK
Residential dwellings	1.2	0.7
Education: preschools	19.0	13.8
Retail: Bar	9.6	14.2
Retail: Restaurant	12.6	15.2
Supermarket	15.2	14.4

Source: NZTPDB Research Report No 2/2005.

Note 1: rates are per 100m² GFA, except for residential rates, which are per dwelling

Note 2: these are average trip rates and minimum, maximum and standard deviations are also provided. The New Zealand trip rates in Tables 1 and 2 were 85th percentiles.

The above results are variable, with some average New Zealand trip rates being lower, and others being higher than those from the UK. The research suggested that more refined filtering techniques, a better understanding of land use classifications and more clearly defined trip rate predictor definitions would improve the correlations.

6 Conclusion

The research being undertaken by NZTPDB is leading to the conclusion that for any general class of land use, outside of the central areas of large cities where passenger transport contributes to a significantly larger proportion of person trips, the travel patterns, trip rates and parking demands are surprisingly similar, in different cities and in different countries. The researchers are finding that there are differences between individual sites, which result in a wide scatter of results within a land use class. However, if one takes the averages, or more importantly the 85th percentile, then the results in the UK, New Zealand, and probably Australia are likely to be of the same order.

The NZTPD is currently being upgraded and detailed comparisons are being made with TRICS. I will be able to illustrate the results of these comparisons at the Conference.

A key advantage of TRICS and NZTPDB, compared with the ITE “Trip Generation” and RTA “Guide to Traffic Generating Development” books is that a user can “drill down” and enquire into specific sites which appear to have similarities with the particular site under investigation.

This paper has highlighted the previously identified gap in Australia, in terms of an up to date source of trip rate data.

The NZTPDB is establishing a source of data for New Zealand. There would appear to be significant potential to increase the level of collaboration between Australia and New Zealand on this issue.

Potential ways for Australia to proceed are:

- Carry on as at present, using the RTA guide (with its possible modest updates in the future) with caution and undertaking additional surveys where necessary.
- Develop a new source of trip rate information, possibly as an initiative of the AITPM or other professional body or academic institution.
- Develop closer collaboration between Australia and the NZTPDB.

Whether or not consultants, state and local authorities choose to develop any ties with NZTPDB, it would be very useful for NZTPDB to be provided with the results of up to date surveys, particularly multi modal surveys, to supplement our database of surveys in New Zealand with relevant information from sites within Australia.

7 References

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