Assessment of the value to end users of the NZ Transport Agency research programme August 2017

Alkema, A and M Roorda
Evalue Research

Keywords: dissemination, influence, research use, utilisation, value

An important note for the reader

The NZ Transport Agency is a Crown entity established under the Land Transport Management Act 2003. The objective of the Agency is to undertake its functions in a way that contributes to an efficient, effective and safe land transport system in the public interest. Each year, the NZ Transport Agency funds innovative and relevant research that contributes to this objective.

The views expressed in research reports are the outcomes of the independent research, and should not be regarded as being the opinion or responsibility of the NZ Transport Agency. The material contained in the reports should not be construed in any way as policy adopted by the NZ Transport Agency or indeed any agency of the NZ Government. The reports may, however, be used by NZ Government agencies as a reference in the development of policy.

While research reports are believed to be correct at the time of their preparation, the NZ Transport Agency and agents involved in their preparation and publication do not accept any liability for use of the research. People using the research, whether directly or indirectly, should apply and rely on their own skill and judgement. They should not rely on the contents of the research reports in isolation from other sources of advice and information. If necessary, they should seek appropriate legal or other expert advice.

Acknowledgements

Abbreviations and acronyms

EQ	evaluation question
PTOM	Public Transport Operating Model
RQ	research question
RTGOs	Research Topic Group Owners
Transport Agency	New Zealand Transport Agency
Transport Research Strategy	*The New Zealand transport research strategy 2016–2020* (Ministry of Transport 2016)

Contents

Executive summary

This evaluation assesses the extent to which the New Zealand Transport Agency (the Transport Agency) is using public funds on transport-related research that is relevant and useful for end users. As such it supports a learning-oriented approach to managing and improving the Transport Agency's research programme through evidence-based information. The focus is on research published by the Transport Agency between 2011 and 2016. An additional purpose of the evaluation is to explore how value for money might be defined for the Transport Agency's research programme. The evaluation is a follow-up to a study conducted in 2011.

The Ministry of Transport and the Transport Agency plan to use the evaluation findings to inform progress against two of the four elements of the New Zealand Transport Research Strategy (2016) namely: *invest in the right research*; and *ensure visibility of research inputs and results*.

Methods

Nineteen qualitative interviews were conducted with Research Topic Group Owners within the Transport Agency and transport researchers. These were followed by an online survey of 176 end users and follow-up telephone interviews with 24 survey respondents who said they had used the research in their work. A rapid review of literature was also undertaken. This focused on research utilisation, 'good practice' dissemination and promotion of research findings as well as definitions in the evaluation literature on 'value for money'.

Findings

Table ES.1 provides an overall assessment on the extent to which the research was aligned with end users' needs, and relevance of the research to (a) their own work and (b) to the New Zealand transport sector. The shaded boxes show the assessment for each domain and sub-domain.

Table ES.1   Evaluation rubric on alignment and relevance

Domain		Excellent	Very good	Good	Poor
Alignment with end user needs		Most survey respondents say research always meets their needs	Most survey respondents say research 'usually' meets their needs	Responses cluster around research 'usually' and 'sometimes' meets their needs	Responses cluster around research 'seldom' or 'never' meets their needs
Relevance	To own work	Most survey respondents say research is very relevant to their work	Responses cluster around 'very relevant', with a smaller but significant percentage also indicating it is 'somewhat relevant' to their work	Responses cluster around 'somewhat relevant', with a smaller but significant percentage also indicating it is 'very relevant' to their work	Most survey respondents say research is not at all relevant to their work
	To Transport Agency	Most survey respondents say research is very relevant to transport sector	Responses cluster around 'very relevant', with a smaller but significant percentage also indicating it is 'somewhat relevant' to the transport sector	Responses cluster around 'somewhat relevant', with a smaller but significant percentage also indicating it is 'very relevant' to their work	Most survey respondents say research is not at all relevant to the transport sector

Relevance of research

Most respondents were interested in safety, economic analysis, public transport and asset management. The findings on research use show respondents make higher conceptual than instrumental use of the research. This means they are more likely to use the research to learn something new and share it with others than they are to use it to inform the likes of policy and specifications. The three highest rating factors that support use are: relevance to their work, knowing where to find the reports and succinct summaries/conclusions. These findings are similar to those in the 2011 evaluation. The biggest barrier to use is lack of time to read reports.

Dissemination of research

Of the 147 research reports completed and peer reviewed over the timeframe of the evaluation, all but five (3%) have been published on the Transport Agency's website. Methodological issues are the main reason for four reports not being published with the other not being publicly released due to political sensitivities. This finding emphasises the importance of a strong Steering Group process, where methodological issues and reporting strategies can be discussed and managed early in the research process.

The majority of respondents find out about the research through the Transport Agency's active approaches – the email 'Recently published reports' and the quarterly publication *NZTA Research*. Fewer than half the respondents find out about the research through the website. Respondents rate the email and newsletter more highly than the website. Dissemination could be improved by making it easier to find and find out about the research, easier to access in terms of the way information is presented, and by making it clearer how research might be applied. Table ES.2 provides an overall assessment on accessibility and communicability of the research. Again, the shaded boxes show the assessment for each domain and sub-domain.

Table ES.2   Evaluation rubric on accessibility and communicability of the research

Domain		Excellent	Very good	Good	Poor
Accessibility		Most rate the NZ Transport Agency website as excellent	Responses about the website cluster around 'very good'	Responses about the website cluster around 'adequate'	Responses about the website cluster around barely adequate or inadequate
Communicability	Hard copy notification	Most rate the publication *NZTA Research* as excellent	Responses cluster around 'very good'	Responses cluster around 'adequate'	Responses cluster around barely adequate or inadequate
	Email	Most rate the email 'Recently published reports' as excellent	Responses cluster around 'very good'	Responses cluster around 'adequate'	Responses cluster around barely adequate or inadequate

Value for money

It is challenging to define the value for money of a research programme, in part because there is no agreed definition. The findings from the interviews and the literature suggest *value* can be measured by a range of factors including: the extent to which research is used; whether cost savings are made as a result of the introduction of an innovation or work is not undertaken as research showed it was not necessary; evidence of policy or design changes; and relevance to the New Zealand context. The literature also

indicates that assessment of value needs to be broader than just monetary value. There is the opportunity for the Transport Agency to build from these ideas and further explore mechanisms for measuring value.

Recommendations

The evaluators recommend the Transport Agency:

- considers the extent to which the balance of the research topics best suits the transport sector's knowledge needs

- continues to improve access to the research by:

    – improving the usability of the website so there is improved visibility of the research and access to the research

    – providing more opportunities for research-related events such as the Transport Knowledge Conference and Transport Knowledge Hubs

- undertakes further work on defining the value of the research programme and how this might be defined and subsequently measured

- undertakes systematic monitoring and evaluation of the research programme.

Abstract

This evaluation assesses the value to end users of research published by the Transport Agency between 2011 and 2016. 'Value' is defined as the importance of the research programme to individual end users as well as the transport sector more broadly. The evaluation also identifies barriers and enablers to the uptake and use of findings; and the extent to which the Transport Agency's mechanisms for disseminating and promoting research findings work for end users. The evaluation is a follow-up to a study conducted in 2011.

The findings show the research continues to be of substantial value to end users in all areas of the transport sector. Respondents value practical, innovative New Zealand-based solutions to their issues. There is more conceptual 'use' and less evidence of research being used to inform decision making, programme/policy formation and/or improvement. This in part is due to the roles respondents have in organisations and the extent to which they are positioned to apply findings in their work.

Email and newsletter notifications are highly valued. End users would like the opportunity for more events that showcase the research.

1   Introduction

1.1   Background to the NZ Transport Agency's research programme

The New Zealand Transport Agency (the Transport Agency) is the Crown agency with responsibilities for land transport in New Zealand. These responsibilities include planning, regulating and funding land transport, promoting safety and sustainability, and managing land transport systems such as the state highways.

There has been a history of research in the New Zealand transport sector since 1953 when the National Roads Board was established, with the Road Research Unit as part of it. Transit NZ, Transfund NZ, Land Transport NZ and now the Transport Agency have successively managed government-funded transport research. An average of $5 million per annum is currently allocated from the National Land Transport Fund through the National Land Transport Programme to the Transport Agency's research programme.[1]

Until 2010, the research programme comprised projects selected from proposals submitted by researchers in a two-stage competitive application process (known as industry-generated research). The programme also comprised some Transport Agency-identified and commissioned research to meet particular needs not addressed by the industry-generated proposals. As part of the application process researchers were required to include information about when, how and by whom the research would be used and the initiatives that would support this. Steering groups and peer reviewers were also to be established as part of the research project.

Since 2010 the Transport Agency has selected the topics to be researched. These topics expressed:

> *the priority research needs of transport decision makers (the Transport Agency, the Ministry of Transport and approved organisations). This is because the NZTA is seeking higher quality and more sharply focused proposals from the research community, with an emphasis on practical application or end use.* (NZ Transport Agency 2010)

Requests for proposals are made through the Government Electronic Tendering Service and researchers are invited to submit proposals.

During the period 2011/12 to 2015/16, the Transport Agency published 142 reports as part of its research programme, with the numbers declining from 44 in 2011/12 to 20 in 2015/16 (figure 1.1). Between 2011 and 2013, a significant number of overdue projects commissioned earlier under the researcher-generated arrangements were completed and the backlog of reports was published. This explains the proportionately higher number of reports published during these two financial years, compared with the number of reports published each year since then. Projects commissioned from 2011 onwards have been of a more significant nature. Each has had a research owner or technical expert to chair a project Steering Group and facilitate the project with the National Programmes Team through to completion and report publication. These projects have been completed in a more timely fashion.

---

[1] About $1.5 million of the $5 million is invested in research commissioned by Austroads given the highly leveraged effect of contributions to this research by Australian states. The remaining $3.5 million per annum in invested in research projects through the Transport Agency's Research Programme.

Figure 1.1   Research reports published by the Transport Agency since 2011/12
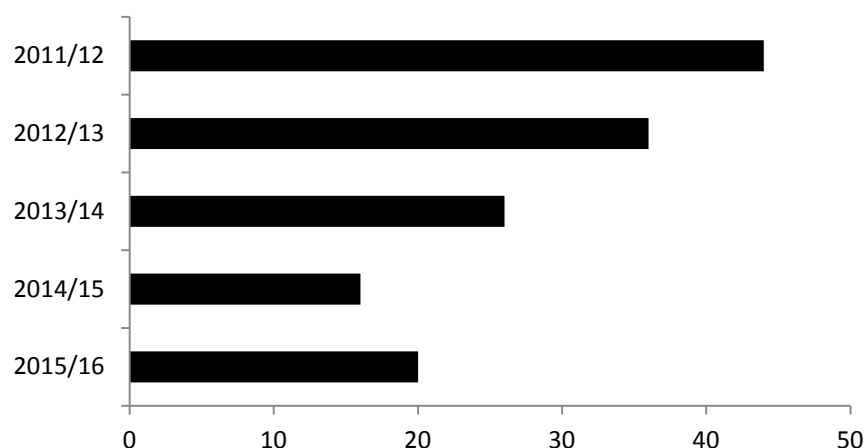
In 2016 the Ministry of Transport launched the *New Zealand transport research strategy* (the Transport Research Strategy). The strategy's goal is:

> *To create a research environment with the capacity and capability to ensure transport research maximises the economic and social benefits of the transport system and minimises harm.* (Ministry of Transport 2016, p12).

To achieve the goal there are four enablers:

1   Invest in the right research.

2   Facilitate collaboration across the wider research community.

3   Ensure visibility of research inputs and results.

4   Access and invest in research capability (ibid, p3).

Determining the right research is supported by a tool called the Triple-4 Prioritisation Framework. This sets out the steps and a series of questions to be used at each step of the research process, (ibid, pp13–16). As the Transport Research Strategy was published after the research programme 2011–2016 – the focus of this evaluation – research projects have not been evaluated against the Triple-4 Prioritisation Framework. However, the research has been aligned to the philosophy of the framework where appropriate by evaluating relevance and visibility, and to a lesser extent collaboration.

1.2   Evaluation scope and purpose

This evaluation assessed the extent to which the Transport Agency is using public funds on transport-related research that is relevant and useful for end users. As such it supports a learning-oriented approach to managing and improving the Transport Agency's research programme through evidence-based information. An additional purpose of this evaluation was to explore how value for money might be defined for the Transport Agency research programme.

The Ministry of Transport and the Transport Agency plan to use the evaluation findings to inform progress against two of the four elements of the Transport Research Strategy, namely: invest in the right research; and ensure visibility of research inputs and results.

In this evaluation 'right research' is defined as research that is relevant to the work of those in the Transport Agency and the transport sector, is used to inform new thinking and is applied in real-life contexts.

1.3   Methodology

The evaluation had three objectives: (1) to assess the value of the findings from research reports published from 2011/12 to 2015/16 to end users in New Zealand; (2) to consider the current approach to investing in, and ensuring visibility of, research against the Transport Research Strategy; and (3) to define value for money for the research programme.

The term 'value' is currently defined by the Transport Agency (2016) as 'the importance of the research programme to individual end users as well as the transport sector more broadly'.

In consultation with the Steering Group the evaluators designed a programme logic (figure 1.2) which was then used to inform the evaluation questions (EQ) and research questions (RQ) and subsequently the interview and survey questions.

Figure 1.2   Programme logic
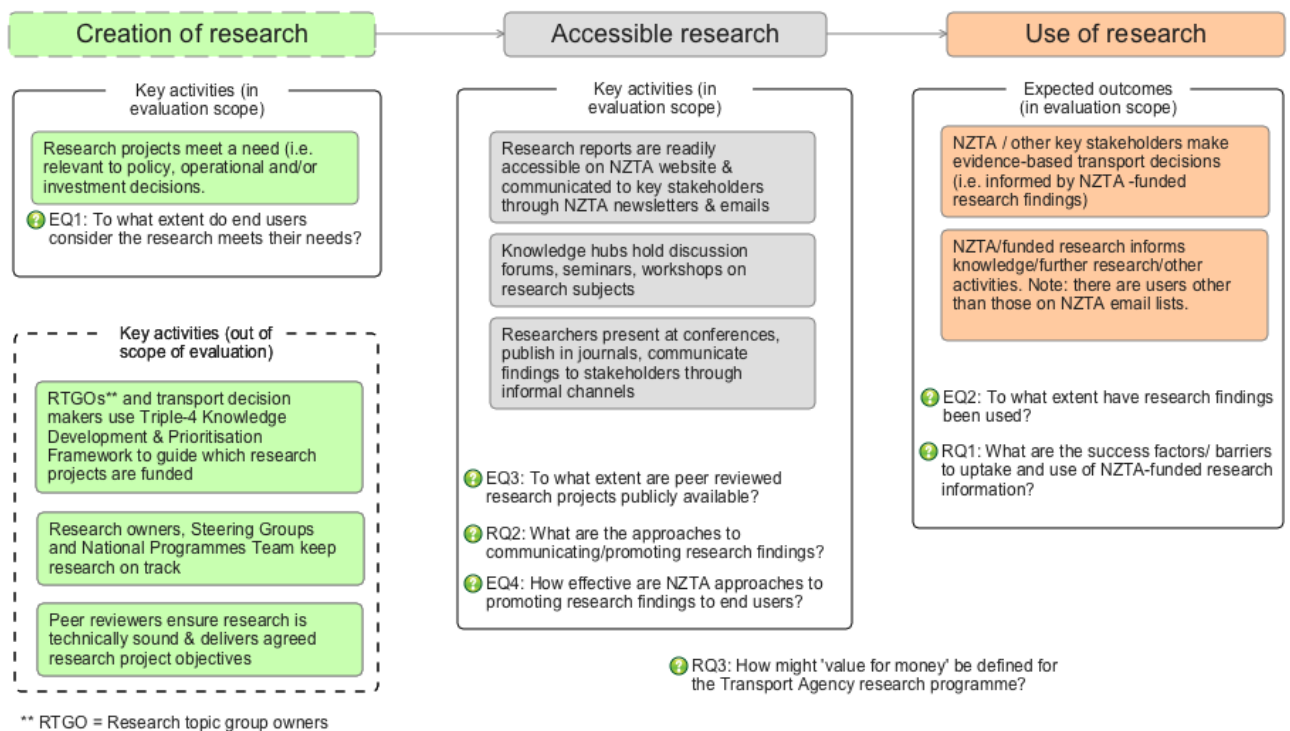
A rapid review of literature on research utilisation, 'good practice' dissemination and promotion of research findings provided a framework for the evaluation. The literature provided guidance on the types of use and the ways to enhance use through active and passive modes of dissemination. This information was used to inform interview topic guides for qualitative interviews and a questionnaire for an online survey. Literature on evaluating value for money was also included in the scope. A separate rapid review of literature looked at definitions on value for money.

1.3.1   Data sources

The report findings are based on three primary data sources. First, qualitative interviews (N=19) were conducted with Research Topic Group Owners (RTGOs) within the Transport Agency and transport researchers. These interviews explored the research topic selection process, the barriers and enablers to use, the ways in which the research is promoted and the value of the research to these two user groups.

The second data source was an online survey of end users. The survey was sent to 649 recipients of the Transport Agency's email 'Recently published reports'. In total, 176 people responded to the survey, a response rate of 26%.[2] (As a comparison, the 2011 evaluation had a response rate of 41%, although it was sent to a much smaller group.) All 176 respondents completed the survey section on research use, with 171 of them saying they had used the reports and five of them saying they had not. One hundred and sixty-five respondents completed the entire survey. In the report, the term 'respondents' refers to all those who responded to the online survey.

Given the survey response rate, the evaluation findings should be taken as indicative rather than representative of the opinions of all those on the Transport Agency's email list. For the most part, there was consensus of opinion and the responses aligned with the literature on research use, and with the findings from the qualitative interviews.

While the survey respondents had the opportunity to remain anonymous they were also able to provide their contact details for follow-up telephone interviews. Fifty-eight respondents supplied their details and 24 were subsequently interviewed. These interviews enabled the use of the research to be explored in more detail. This group of respondents are referred to as 'research users'.

Table B.1 in appendix B shows the data sources used to answer research and evaluation questions.

1.3.2   Overview of survey respondents

Almost one third of respondents (32%) work for the Transport Agency,[3] followed by 28% who work in consultancies and 20% in local government (table 1.1). Nine respondents who completed the survey did not provide information about where they worked.

Table 1.2 shows the respondents' main job role. While they were asked to supply one role, 39 gave more than one. Around a third had research as their main role, followed by engineering (26%) and consulting (25%). The strongest overlap of roles was between research and consulting where a third of those who said their role was research, also said it was consulting.[4]

---

[2]This response rate is in keeping with literature that suggests around 25% is the average response rate for online surveys: http://fluidsurveys.com/university/response-rate-statistics-online-surveys-aiming/; and other literature that suggests there will be different response rates for internal surveys (30%–40%) and external (10%–15%): www.surveygizmo.com/survey-blog/survey-response-rates/. This survey had both internal and external users of the research.

[3] The 2011 study only had two Transport Agency users.

[4] Of the five who said they had not used the research, four gave their roles which included two policy making, one research and two planning.

Table 1.1   Respondents (n=165)

Type of organisation	Percentage of respondents	Number of respondents
Transport Agency	32%	52
Consultancy	28%	46
Local government	12%	20
Other[5]	8%	13
Central government/Crown entity	6%	10
Research organisation	5%	9
Road contracting company	4%	6
Professional body	3%	5
Education or training	2%	4

Table 1.2   Research users' job roles (n=165)

Job role	Percentage of respondents	Number of job roles
Research	31%	51
Engineering	26%	43
Consulting	25%	41
Policy making	23%	38
Other[6]	20%	31
Planning	18%	30
Road contracting	6%	10
Teaching/education	3%	5

As just under a third of the respondents work for the Transport Agency, the data was analysed as a whole group and then by the Transport Agency and external users. This approach provides an overview of the extent to which the research is relevant and being used by the Transport Agency's own staff and external users.

The evaluation is a follow up to a study conducted in 2011 (Roorda and Alkema 2011). Where appropriate and feasible, this report includes a high-level comparison with the 2011 survey results to ascertain the extent to which there have been changes since that time. However, there are two points to note in terms of this comparison. First, at the time of the 2011 survey the researchers were choosing the research topics, whereas now the topic-based approach is used whereby the Transport Agency determines the topics to be researched. This may have impacted on the results. Second, the sample for this evaluation is

---

[5] This group was made up of: overseas agencies (4); NGOs (2); community group (1); advocacy group (1); NZ Police (1); trade association (1); DHB (1); independent analyst (1); materials supplier (1).

[6] The job roles in this category were made up of: safety/regulatory/compliance (6); communications/promotion (6); operations (5) advocacy (4); librarian (2); investment (2); and one each of sales; urban design; journey management; capability development ; public health; scheme appraiser.

quite different. As noted earlier, this time there were 52 Transport Agency respondents compared with only two in 2011.[7]

1.3.3 Performance standards

Evaluative rubrics were developed by the Steering Group and the evaluators, which established performance standards on 'relevance', 'use' and 'dissemination'. These standards were applied to the online survey data to provide an overall assessment of respondents' use of Transport Agency research, the relevance of the research findings and the ratings of the Transport Agency's mechanisms for disseminating the research findings.

A full description and reflection of the methodology is included in appendix B.

1.4 Report structure

The evaluation findings are structured under the headings of relevance, use and dissemination. This is followed by a discussion on the value of money and how this might be defined for the research programme. The report concludes with a discussion on the extent to which the Transport Agency's research is relevant, used and accessible to end users.

---

[7] It is worth noting here that in 2011 one of the recommendations was to better promote the research within the Transport Agency. The response rate suggests this has happened.

2   Evaluation findings

2.1   Relevance

The relevance of the research programme includes an examination of research users' views about whether the Transport Agency is investing in the 'right' research, which topic interest areas are being accessed, and the extent to which end user needs are met.

Key findings on relevance show:

- Respondents are most interested in safety, economic analysis, public transport and asset management.

- On the whole, respondents have their research needs met as the research is relevant and helps inform their current or future work; gives them new ways to think about issues; helps them to identify or address important transport issues; and adds to what they already know.

- Respondents find the research 'very' relevant to the New Zealand transport sector and 'somewhat' relevant to their own work; where there is a good alignment between respondents' work and the research subject matter, they consider the research to be very relevant.

- Respondents have mixed views on the extent to which the Transport Agency is investing in the 'right' research.

- Based on this rubric the overall alignment to users' needs is 'good'; it is also 'good' in terms of being relevant to their own work; and is 'very good' in relation to its relevance to the New Zealand transport sector.

2.1.1   Topic interest areas

The research topic areas are set by the Transport Agency after extensive consultation by the nine RTGOs. Seven of the eight RTGOs interviewed said they actively network with staff in government agencies and with those in the land transport sector to identify transport challenges. The resulting research programme covers a broad range of transport topic areas.

The survey findings indicate respondents have diverse interests and needs for transport research. The majority of respondents (85%) said they accessed reports from two or more topic areas. However, an additional reason for this is that all the research is not necessarily discrete to one particular topic. For example it is possible to have economic analysis within a public transport context.

An analysis of topic areas accessed by Transport Agency staff and external users (n=112) shows a reasonably similar pattern across the topic areas, apart from public transport. The relatively higher interest in public transport by external respondents (44% versus 27% of Transport Agency respondents) may be explained by the number of local government staff who participated in the survey. Of the 20 local government respondents, 14 indicated public transport is a key area of interest. Also, during the period of the research there were policy changes related to public transport with changes being made to the Land Transport Management Act 2003 and the implementation of the Public Transport Operating Model (PTOM).[8]

---

[8] www.nzta.govt.nz/walking-cycling-and-public-transport/public-transport/planning-and-investing-in-public-transport/

The 'other' category includes 21 topics that respondents could not place into one of the Transport Agency's topic areas.[9] The topic areas have changed since the 2011 evaluation, so a direct comparison is not possible.[10]

Figure 2.1   Topics accessed by research users
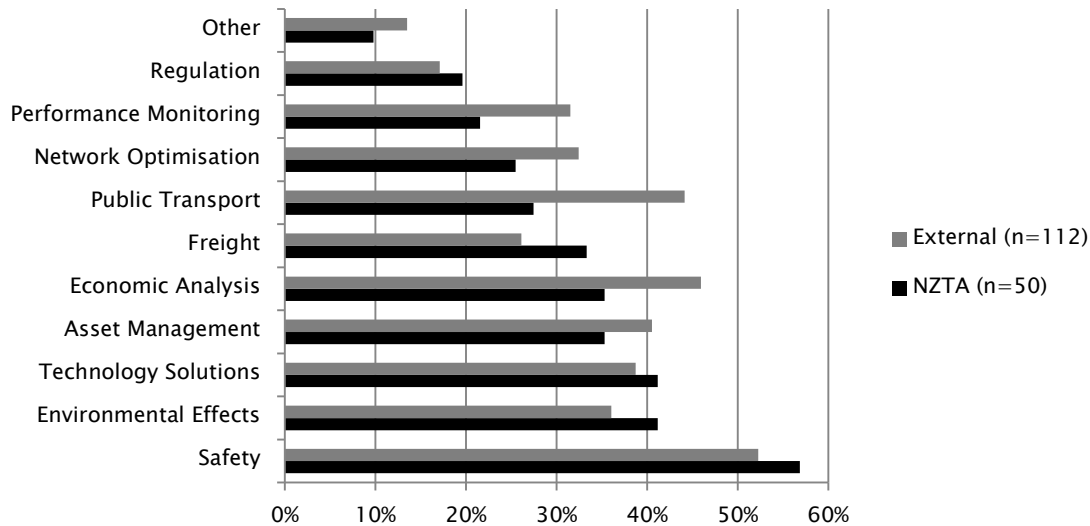
Between 2011 and 2016 the highest number of projects commissioned/researched were 36 for asset management, and 23 each for economic analysis and safety. In the survey, when considering all respondents, the top three topics accessed were safety (54%), economic analysis (42%) and public transport (40%). Asset management was the fourth most accessed topic with 38% of respondents saying they accessed these reports. The high number accessing public transport research is interesting as there were only 10 reports in that topic area. This is possibly attributable to the introduction of the PTOM in 2013.

Figure 2.2 shows some discrepancy between the top topics researched (eg asset management is the most researched topic) and the topics accessed (eg safety is the most accessed topic). While this result is likely to be attributable to the sample of respondents, the policy environment during the period, and the extent to which topics have small or large knowledge gaps, it could still be useful for the Transport Agency to consider whether the balance of topics is right.

Figure 2.2   Top three topics accessed vs top three topics researched
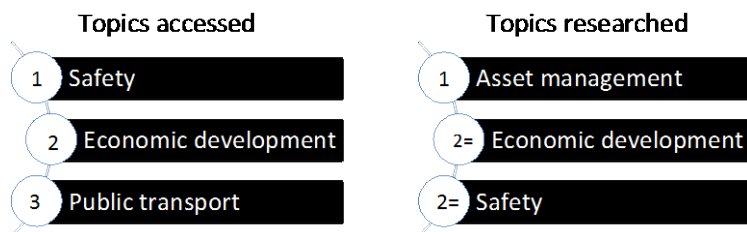
[9] Walking and cycling (3); walking/pedestrians (2); cycling (2); behaviour change (2) and one each on public health; and demand management; crashes; customers; geotechnical reports; land transport integration; modelling, economic development and productivity effects of infrastructure investment; pavement design and performance; stormwater and erosion and sediment control; road surfaces; technical papers; transport planning and parking; the research newsletter.

[10] In 2011 there were seven topic areas. The topics accessed were: sustainable transport (72%); travel behaviour (59%); asset management (53%); network management (53%); safety and personal security (53%); environmental effects (46%); and natural hazard and risk management (21%).

2.1.1.1   Who accesses what

What respondents access and are therefore likely to be interested in both overlap and differ according to where they work. The survey findings indicate 'safety' is a key area of interest regardless of where respondents work. A breakdown of research accessed by respondent workplace shows those in:

- the Transport Agency (n=50) are most interested in safety-related research (56%, n=29), followed by environmental effects and technology solutions (41%, n=21 each), and economic analysis (36%, n=18)

- consultancies (n=46) are most interested in safety and technology solutions (46%, n=21 each), followed by asset management and public transport (43%, n=20 each)

- local government (n=20) are most interested in safety (70%, n=14), followed by public transport (50%, n=10), network optimisation (45%, n=9), and freight and economic analysis (40%, n=8 each).

Safety is also a key interest for respondents working in central government/Crown agencies and 'other' work places. A full table of research areas of interest against where end users work is in appendix A.

2.1.2   Extent to which research meets end users' needs

In the survey the extent to which end user needs are met was ascertained by asking respondents about the frequency with which their needs are met (figure 2.3). The findings indicate the majority of end users' needs are met 'usually' or 'sometimes'. As figure 2.3 shows, a larger proportion of external users than those in the Transport Agency say their needs are usually met.

Figure 2.3   Frequency with which differing end user needs are met (n=159)
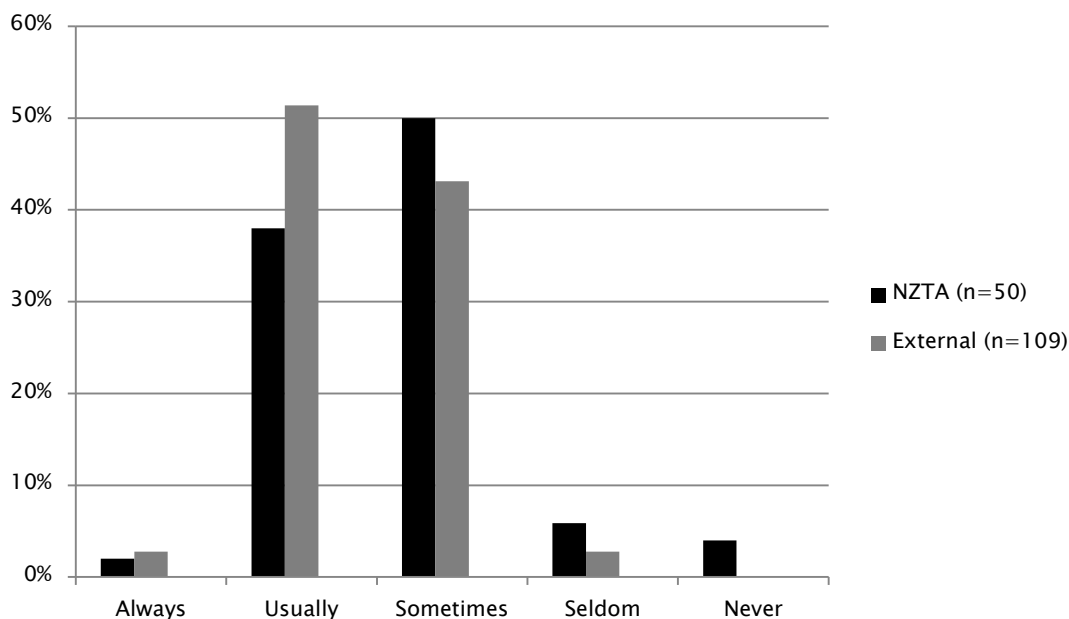
Of the 16 respondents who included a reason for their response, 10 said the research 'sometimes' met their needs. The general theme is that respondents consider research to be more relevant when there is a direct link to their work. Even when not directly relevant, they read research to maintain an oversight of what is going on in that area. A respondent who said the research 'always' met their needs commented:

> *Research on pavements and surfacings including their materials is very useful to help decide on the best renewal treatment and/or pavement design.* (Road Contracting Company)

Meanwhile, a respondent who said research never met their needs commented:

> *I read the reports because I am interested, not because I need the info for my role.* (Transport Agency)

2.1.3 How end users' needs are met

Respondents were given a range of options, some overlapping, for the ways transport research might meet their needs (figure 2.4). The key findings that emerge from the analysis of this question are the majority of respondents 'strongly agree' or 'agree' the research adds to what they already know; is relevant to, and helps inform their current or future work; gives them new ways to think about issues; and helps them to identify or address important transport issues.

Figure 2.4   How research meets end user needs (n=168)[11]
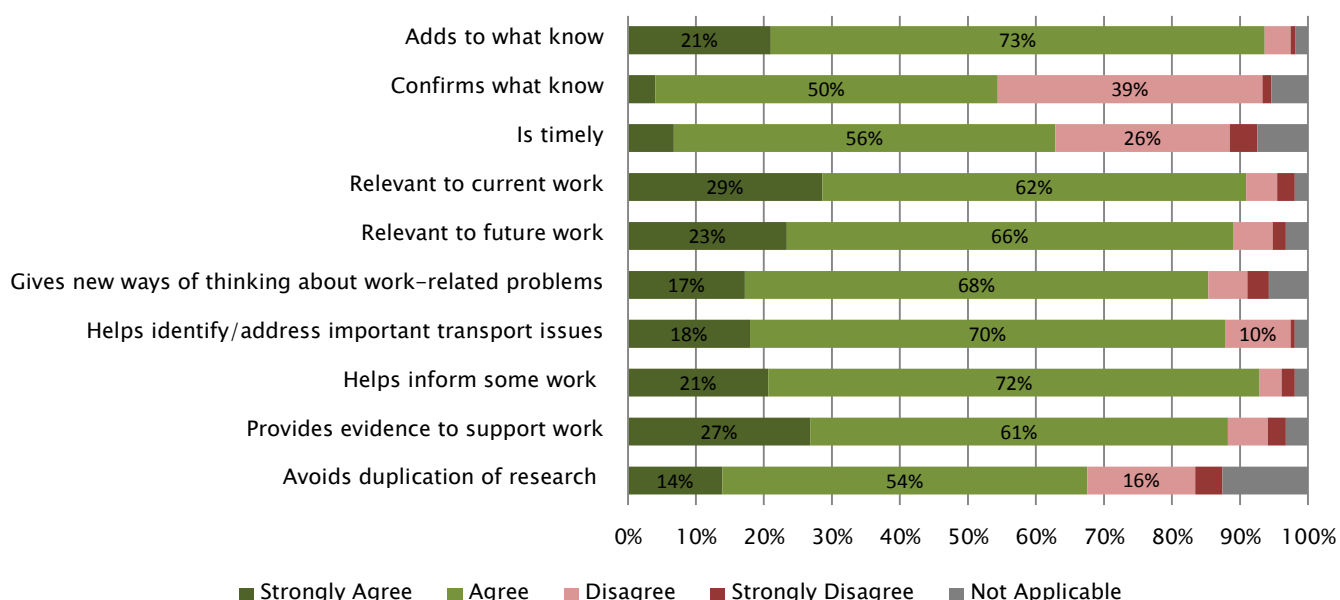
There was only one area of difference between the Transport Agency and external respondents. A higher proportion of external respondents (68%) regard the research as timely as opposed to 52% in the Transport Agency. It is not clear from the data why this is the case. As discussed later in this report, it can be challenging to balance the information needs of today against what might be needed for the future. One interviewee talked about the need to look to overseas research to see what might be coming. Here they gave an example of autonomous cars as an area that New Zealand was not prepared for as their introduction was not anticipated to happen so soon.

Twenty-eight respondents provided additional comments to support their answers, with around half the comments being positive about the relevance to their work and as such their ability to use the research. For example:

> *High quality reports add to current work but also are also useful for predicting future trends.* (Research Organisation)

---

[11] Data labels included for percentages over 9%

The other half of those who commented were more circumspect about research meeting their needs as the research was too difficult or theoretical to apply, not relevant to their needs, not timely, or poorly aligned to wider Ministry of Transport or Transport Agency work. For example:

> *[Research] is generally good but would be better with stronger links to MOT. E.g., [Road User Chargers] RUC data for network footprint of HCV fleets to prioritise structures and pavements.* (Consultancy)

2.1.3.1   Alignment of respondents' work and research subject matter

Responses about the relevance of the research programme reflect the diversity of the programme, organisations where people work and their job roles. As noted earlier, where there is a good alignment between the respondents' work and the research subject matter, respondents consider the research to be highly relevant. Respondents from different work areas commented:

> *[It's] a valuable resource … My role delves into different topic areas. Some (research topics) are more relevant than others.* (Regional Council)

> *I've not ever read a report that I thought was bad or wrong. It's just that there are those that are not applicable. [They] are on a different topic to what I'm looking for.* (Consultancy)

> *We're practitioners – we use it when we need to, when the job requires a full and comprehensive understanding of the technical components.* (Consultancy)

To draw an overall conclusion about relevance, respondents to the online survey were asked to rate the relevance of the research to their own work and to the transport sector as a whole. As figure 2.5 shows, respondents consider the research to be of greater relevance to the sector as a whole than to their own work.[12] An analysis of relevance by workplace indicates a larger proportion of external respondents (74%) view the research as 'very relevant' to the sector, compared with 64% of Transport Agency respondents. Overall, this finding suggests the research programme has significant value for transport work being done in New Zealand.

Figure 2.5   Relevance of the research

---
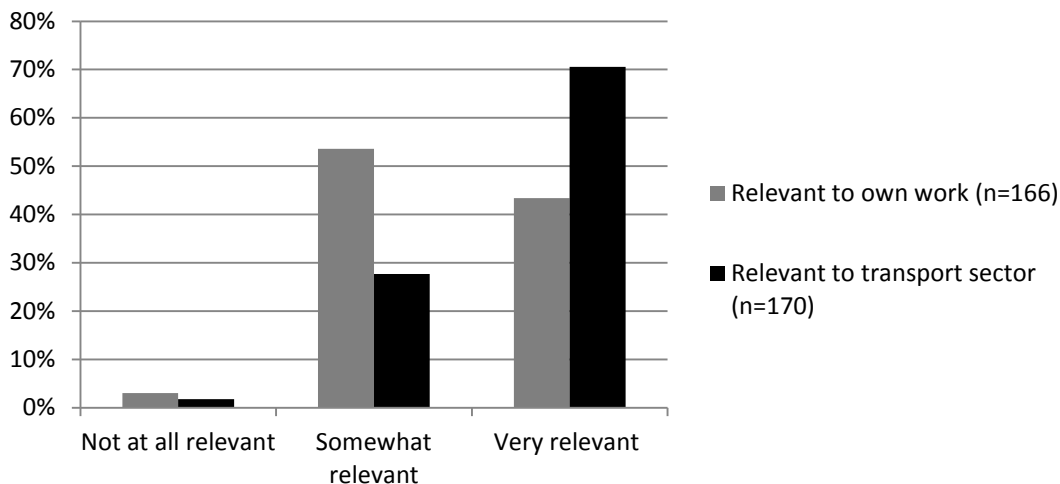
[12] In 2011 the question related to relevance focused on frequency, rather than quality. Never the less, the pattern remains the same with respondents considering the research to be of greater relevance to the sector as a whole than to their own work.

2.1.3.2 Relevance to their work

Respondents included a range of reasons for rating the research as very relevant to their work. As noted earlier, respondents value research they are able to use or apply to their work. For example:

The findings tend to provide substantive support to the processes we adopt in analysis and design. (Consultancy)

Conversely, respondents do not bother reading research that is not useful to their work. For example, one respondent commented:

I target research reports that are relevant so I don't waste my time on reports that don't add value to my business. (Transport Agency)

Other respondents commented on the high quality of the research produced within the research programme, which they say contributes to its relevance. For example:

My work requires access to the state-of-the-art and practice on transport matters. The Agency's research outputs are rich, useful and unique sources that have reached worldwide excellence. (Professional Body)

Other reasons for rating the research as 'very relevant' is that it is interesting, innovative and gives respondents new ways of thinking about an issue. Respondents commented that research may challenge their thinking; fill knowledge gaps and address New Zealand–specific issues.

Of the respondents who indicated the research is 'somewhat' relevant to their work, most said this was because research was not always relevant to their work. Several said they work in a specialist field, or believe there is insufficient research in their field:

Only a small segment of the research output is directly relevant to my work, and sometimes even those research outputs are obscure, or fail to provide useful outcomes. (Transport Agency)

2.1.3.3 Relevance to the sector

Of the 120 respondents who view the research as 'very relevant' to the sector, 80 provided comments on why they rated it this way. A common theme is that the research is New Zealand based and as such provides localised solutions, meets strategic needs and provides an evidence base for future change. Comments from two respondents sum up these views:

As a small country, New Zealand needs to make investment decisions based on the best information and transportation is changing rapidly. (Consultancy)

Many research projects have addressed the strategic research needs and knowledge gaps for the land transport sector. (Central Government)

A small number of respondents put a caveat around their 'very relevant' comments. Some respondents would like to see different types of research being funded. For example:

There is a huge possibility for the Transport Agency to shift from the sort of technical pavement-type analysis that it always has done, and (which) in fact occurs all around the world, to fund research that is more aligned to where we are heading as an agency. How do we change to be an agency that is more systems focused? What is best practice transport planning practice in a New Zealand context? Do we have the balance of our investment right? (Transport Agency)

Of the 45 respondents who said the research was 'somewhat relevant' to the sector, 29 gave reasons for their view. Here the common factors to come through are that the research is usually, but not always, well targeted; is relevant to them, but possibly not others; is not used enough to inform transport decisions; or is too 'blue skies' or theoretical to be applied. For example:

> *A substantial proportion of the research is too theoretical or academic to be directly applicable to the 'real' issues in the NZ transport sector.* (Consultancy)

2.1.4   Investing in the 'right' research

It can be assumed from the survey respondents' views that as the research is relevant, it is the 'right' research. However, the interviewees had mixed views about the extent to which the Transport Agency is investing in the 'right' research. Eight research users commented on the Ministry of Transport's Triple-4 approach for identifying and prioritising research.[13] Their views are divergent, reflecting different values and interests. On the one hand, there is a view (three people) that the Triple-4 Framework works well. One consultant commented: 'I used to despair of the research. It was the same old stuff every year, eg pavement density, skid resistance'. While recognising this research is still important, they say the programme is now starting to address 'important issues' such as the way people think about transport. Two Transport Agency research users also commented that the programme selection approach now means the research is investing in the right projects. One research user defined this as research that 'answers questions we or the wider industry is struggling with'.

On the other hand, five research users, including two Transport Agency staff, consider the current research programme too narrow and 'safe'. While they acknowledge many current projects are important, they want to see more research that 'pushes boundaries'. There is a perception that such research is not tolerated in the current political climate. As one Transport Agency research user commented: 'When I first came to NZTA there was an openness (for this kind of research) but that has closed up'.

Likewise, there is a perception that blue skies research is less likely to be accepted than projects focused on operational issues:

> *(I) want to re-emphasise – NZTA is a very high calibre organisation. But (they) have not found it easy dealing with left field, innovative issues…This is a serious issue for NZTA, like most other transport organisations they are focused on operations.* (Consultant)

In saying this, however, there is a need for research that looks at specific issues, particularly ones that relate to safety. A case in point described by one research user is Trotter et al (2017): 'Drivers' understanding of temporary and permanent slippery road signage'. A Transport Agency research user noted the research was instigated in response to a fatal road crash in the South Island. The coroner's report questioned the adequacy of road signage in areas renowned for periodic slippery conditions. The research included testing different signage options. Based on the findings, the recommendation was that the current signage be maintained. The research user commented the findings were more a confirmation that current practice is 'solid and sound. Potentially minor changes will be made over the next decade as signs are replaced'. The value of this research is that the assumptions were rigorously tested.

---

[13] As noted earlier in this report (section 1.1) the Transport Research Strategy was developed after the research programme 2011–2016, which is the subject of this report. As such this research is not judged against the Triple-4 Framework.

This use of research is in keeping with the expectations the Transport Agency has for their research. Here they are clear their research programme is about applied research in that it can be used to inform the policies, tools, guidelines, technologies or systems used by transport decision makers.[14]

2.2 Research use

This section discusses the ways in which the respondents use the research and the factors that support and inhibit the use.

> Key findings on research use show:
>
> - Respondents make higher conceptual than instrumental use of the research.
>
> - The three highest rating factors that support use are: relevance to their work, knowing where to find the report and succinct summaries/conclusions.
>
> - The biggest barrier to use is lack of time to read the reports.

Any examination of research use needs to take into account different types of use. This evaluation draws from Huberman (1992) with 'use' ranging from conceptual – 'a change in the level of knowledge, understanding or attitude', through to instrumental – 'changes in behavior or practice' (Huberman 1992, p6). Huberman's framework of use, illustrated in figure 2.6, provides a basis for assessing the type of use against end users – their job role and place of work. It does not allow for assessment of the extent to which 'use' was greater (or better) in one project than in another.

Figure 2.6   Types of use for Transport Agency research
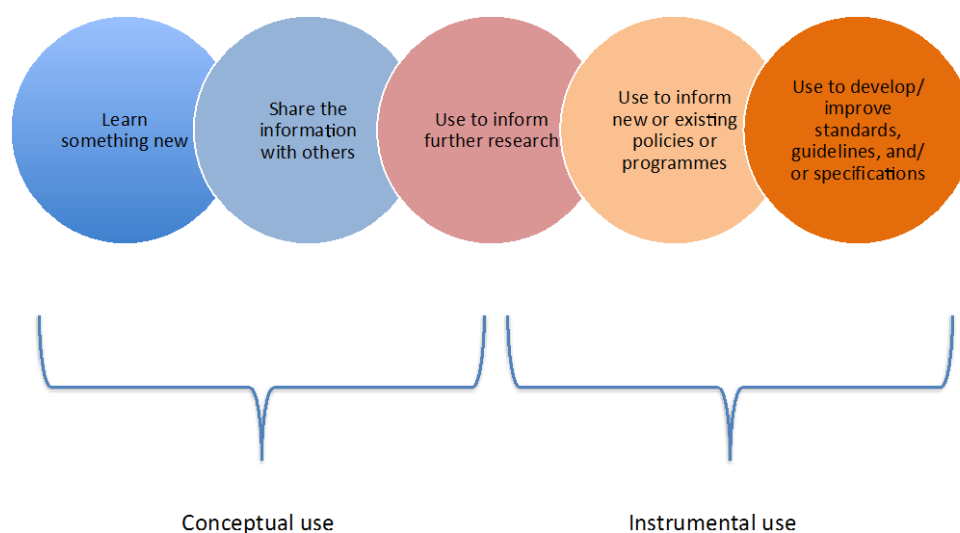
2.2.1 Types of use

Analysis of the survey data indicates use is stronger at the conceptual end of the continuum. Here 66% of respondents either 'always' or 'usually' learn something new and a further 31% 'sometimes' learn something new.

---

[14] www.nzta.govt.nz/planning-and-investment/our-investments/research/

As figure 2.7 shows, there is less use of research at the instrumental end. This finding may be attributable to the roles people hold and the type of organisation they are in. Of the 44 who use research 'to inform a new or existing policy or programme' the largest groups of users worked in the Transport Agency (15), followed by those in consultancies (11). Central and local government are the next highest users with five from each of these groups. The pattern was much the same for the 42 who said they use research 'to develop/improve standards, guidelines and/or specifications'. Here, 18 from the Transport Agency and 10 from consultancies said this was the case. This was followed by five in local government.

These findings align with the use of research in the education field. Tseng and Nutley (2014, p170) talk about the challenges related to instrumental use as, '… it is relatively rare for research findings to provide clear-cut solutions that can simply be adopted and implemented across a range of contexts'. As with the Huberman framework, Tseng and Nutley write about use in regards to learning, sharing and collaborating and that learning and knowledge growth is something that happens over time rather than a static, one-off event. From looking across a range of education research they conclude:

> *We should avoid viewing research use in over simplified ways. Research is not the next silver bullet for educational reform … Instead research helps us understand problems and think about potential solutions …* (ibid, p173).

Figure 2.7   Ways in which research is used (n=170)
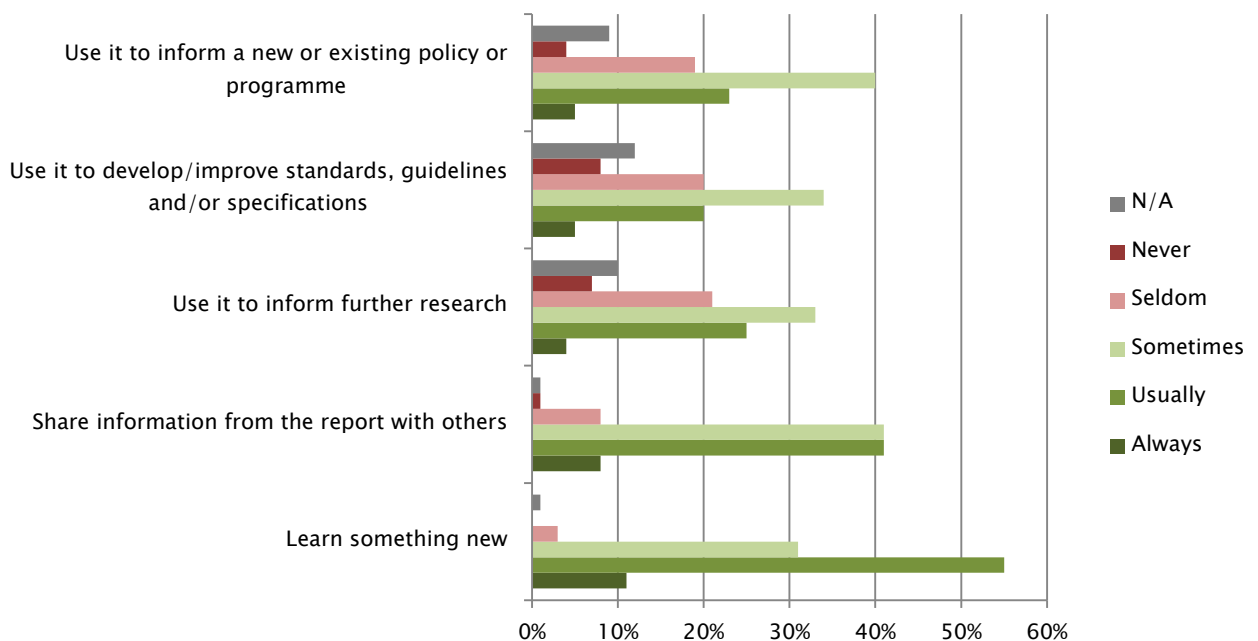
Tables comparing use by the Transport Agency and external respondents can be found in appendix A. These tables show the user groups have similar patterns with only two points of difference. External research users are more likely to use research 'to inform further research', which is not surprising given there were 51 researchers in this group. The Transport Agency users are more likely to use research 'to develop/improve standards, guidelines and/or specifications' which is also not surprising given the role they have in developing specifications for the sector. It is also in keeping with the stated purpose of the research programme.

In relation to job roles there is very little difference with regard to instrumental use. Here, around a third of the policy makers, planners and engineers use the research 'to inform a new or existing policy or

programme', and a quarter of the consultants and researchers do the same. The same pattern holds for using the research 'to develop/improve standards, guidelines and/or specifications'.

Interviewees provided many examples of conceptual use. They say they use the information to inform conversations and debates, as a starting point for further research, or to affirm what their organisation is already doing. For example:

> *The research is often not directly applicable in that I can take (the information) straight into my report. It's more background information, (and useful for) deeper level thinking.* (Consultancy)

Likewise, a Transport Agency respondent commented:

> *[We] use the information to have an open conversation with road controlling authorities about what drives the cost profile of a maintenance programme. We look at some areas and see huge variations. [The research provides] another lens into cost drivers. We use the information to debunk reasons why things are dearer.* (Transport Agency)

Around half the interviewees talked about sharing or hearing about the research at presentations – either at conferences or smaller forums, with some saying they would like to see more opportunities to learn from research, for example through collegial discussion at forums and conferences.

Further along the 'use continuum' the research is used to inform current work and in some cases bring stakeholder groups together to get a wider understanding of the issues and help decision makers with policy decisions.

A specific example of this is dust on unsealed roads (Bluett et al 2016). A Transport Agency interviewee talked about this issue as a 'huge political football' and how the research acted as 'a lever /vehicle to bring people together from disparate perspectives – investment, health, community, forestry. It's enabled collaboration, informed people, dispelled myths'.

This same research report was used by a regional council interviewee to reinforce to politicians the pollution effects on roads and to inform the development of a regional land transport plan.

In another example of research use (Rive et al 2015), a regional council interviewee said the findings were useful for informing the regional council's public transport committee:

> *There were discussions here about new technologies and they had been thinking about putting wi-fi in bus shelters, but the report said that increasing the frequency and coverage [were the things that would help - that [young people] thought important]. And these are the basic things. The report was grounded in good methodology and coverage – for example it looked at large and small centres.*

Research users interviewed had fewer examples of instrumental use. Examples included using information to inform submissions (health board) and as inputs into planning assessments. One respondent cited two research projects, one about mobile phone use in vehicles and another about alcohol limits, which had informed policy and legislative changes.

The following example demonstrates how research has informed changes to practice at the instrumental end of the use continuum:

> *I digest, think about it, and then in turn think about amalgamating … it in the real world. I use it to tweak the existing system .The network area is vast. (I) use it to influence what we do. Look at the good ideas and how we could be doing things. The operations team talks about the research – we have the ability to change process ourselves. We can say 'yeah that's*

a good idea'. NZTA might be slow to adopt, but we can make changes happen by tweaking what we do. (Transport Agency)

One of the challenges with instrumental use is the time it takes to get research into specifications. A consultant gave an example of research on shear connectors in composite bridges (Hicks et al 2016). Here the consultant hopes the findings will transfer into the Transport Agency's guidelines:

We are normally constrained by what's in the NZTA manual. It would need to be specifically mentioned in the manual. So as such it's not used but there is the potential … If we were to design a steel concrete composite bridge we would reference the research. (Consultancy)

2.2.2   Factors that support use

Survey respondents were asked to identify up to three factors that help them to use the research findings. Relevance and accessibility are the top ranked factors, closely followed by involvement with the research process. Accessibility here means research reports are available – they are promoted and freely available on the website. Reports that are clearly written and include succinct summaries and conclusions also contribute to the use of the research.

There are some small differences between the Transport Agency and external users in terms of what supports use of the research. First, a larger proportion of external users say what helps is the research is relevant to their work and second, they know where to find reports. Relevance to people's work was also rated as the top factor in the 2011 study.

Figure 2.7   Factors that help people to use the research, by user groups
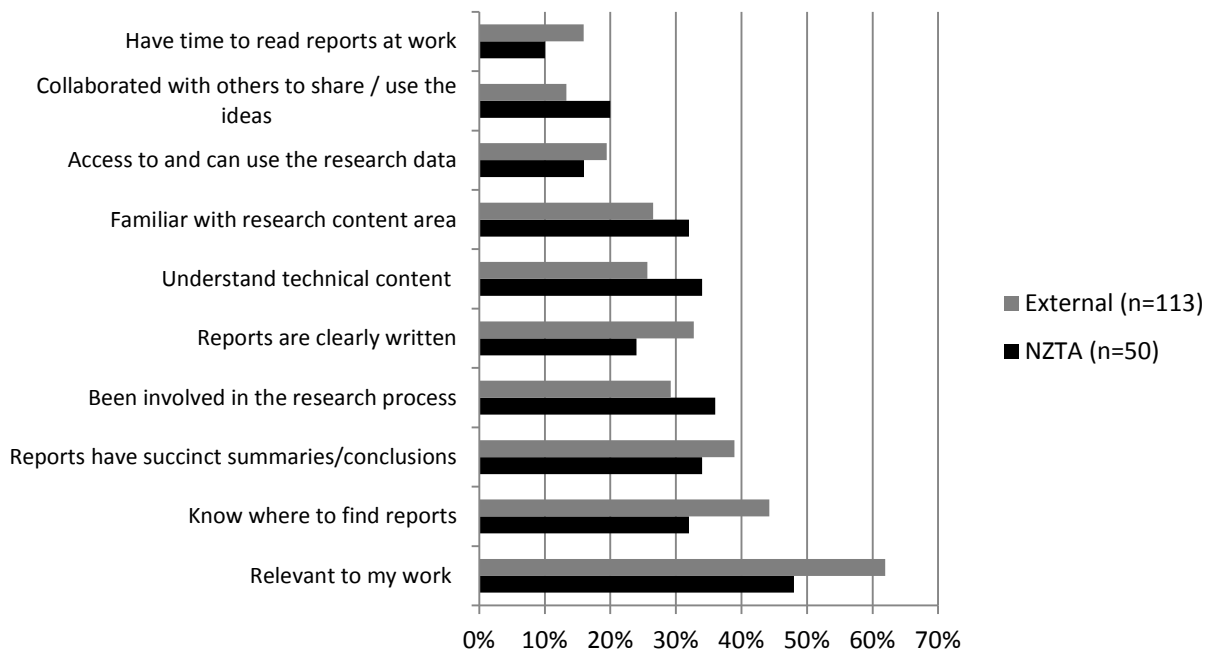
Transport Agency staff are likely to take for granted that they have easy access to research reports. This may explain why they do not rate this factor as a strong enabler of use. One Transport Agency respondent also noted Transport Agency staff have access to a 'good library. (I can) put a request in and they find me what I need'.

The fact that research is New Zealand based and applicable to the New Zealand context emerged as a major theme in the interviews with research users. This is not to say international research is not taken into account by research users. However, environmental factors such as climate, geology and terrain mean overseas research may not be directly applicable. For example:

> *(We) could have used overseas research but generally we have windier roads. We need to know what works for our conditions. It's harder to make the argument when it's overseas research, especially when there is resistance to change. We look to research in South Africa and Australia but they don't have the torturous terrain we have on our roads. Parts of Utah have similar terrain to us. That said, all projects have a literature review, so we pick up what's being done internationally. That helps shape how we answer our question/s.*
> (Transport Agency)

Timing of research can also play a factor. Sometimes, timing can be serendipitous, with research findings being put into use immediately:

> *And on the week we handed in our report with three hypothetical case studies there was the Kaikoura earthquake, flooding in Petone and on Tamaki Drive – and the research was fully deployed in solving proper problems. The case studies were tested and the approach worked. The economic losses were what we anticipated.* (Consultancy)

A key contributing factor to research use is the trusted nature of research findings. Research users commented on the sound methodology of reports they had accessed, using terms such as 'authoritative' and 'credible'. One aspect of research being viewed as credible is that all reports are peer reviewed. Involvement of key stakeholders can also strengthen research methodology, for example through research steering groups or cross-agency forums. As one RTGO commented:

> *Research gives the mandate for the conversation and robust ideas for the work. We spend a lot of time with the researchers on the recommendations. (We) involved police, industry, Auckland Council, Ministry of Transport. This gave a powerful mandate to 'weigh right' where three things were affected - maintenance, road user charges and productivity.*

2.2.3   Factors that inhibit use

The process of transfer from research, to dissemination, to use, can come up against a range of barriers along the way. Factors that can inhibit use include:

> *poor research, not targeted at policy makers, poor communications with policy implications not being clear, poor dissemination with policy makers being unable to access information and research with different objectives from those of the policy makers*, (Mulley and Reedy 2013, p4).

And in the midst of this are the busy working lives of potential end users and the amount of information they have to contend with (ibid 2013).

The biggest barriers identified by survey respondents were the lack of time to read reports and research not being relevant to the work they do (figure 2.8). Time to read was identified as a bigger barrier for those working in the Transport Agency than those working in external organisations.

Figure 2.8   Barriers to research use (n=168)
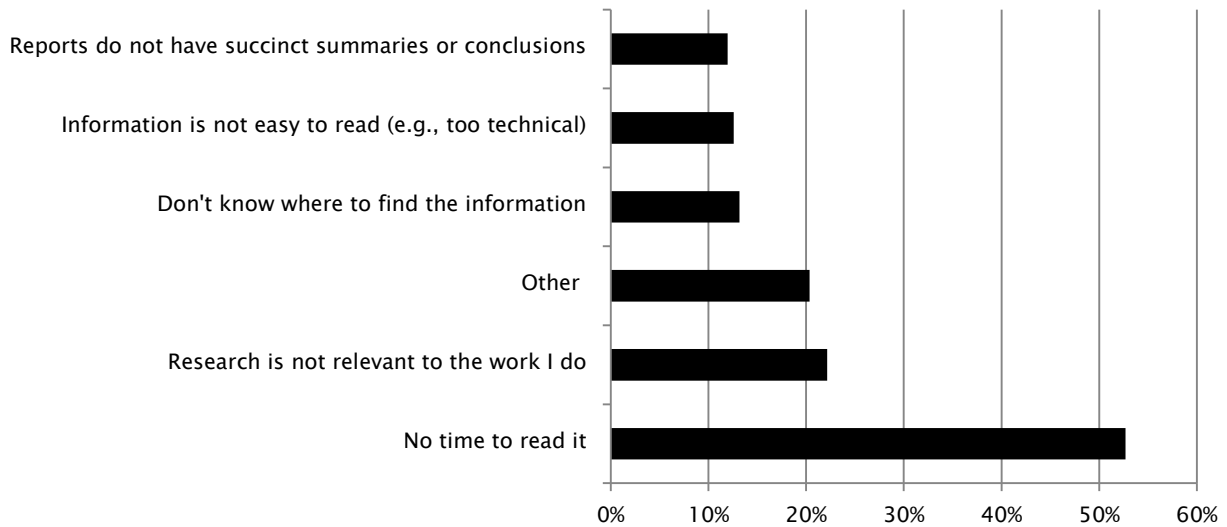
Research users commented on a range of factors that impede their use of research, including politics, lack of ownership, lack of capability to take up the research, the timing of reports, challenges associated with change, and the way in which reports are written.

Research is always conducted within the political and social context of the time – this is politics at the national, regional and local level. Some research is seen as more politically risky or sensitive, some is subjected to the political vagaries of the time and some to political timings, eg being released around election time. For example:

> *With the [name of research] there was a big delay in the report coming out. Partly political. There'd just been an election, from memory, and it was about government having a response. If it was released too soon, it would look like the government wasn't doing anything. …It needed the Minister to agree to the report being released.* (Consultancy)

Three Transport Agency research users noted more needs to be done with transport research but work priorities, three year political cycles and the need to 'sell' change or different ways of doing things, can get in the way. As one of these interviewees commented:

> *When the research is consistent with the Agency's strategies it is easier to use. But we are not sufficiently mature to be actively engaged and using information that challenges our beliefs. We need to rethink what we're going to do with the research. A lot of it goes into the data bank. It's put on the website. It looks good but we don't use it. We should more actively provide opportunities for using the research…One of the key things we are supposed to do is influence stakeholders. But we're influencing them with old ideas about transport planning practice. We should be the knowledge base for all sorts of best practice info.* (Transport Agency)

The view that the Transport Agency ought to do more with the research it commissioned was shared by a number of other research users. For example:

> *I think the research programme is generally pretty good… but not well linked to policy. (I) don't think they complete the full circle. There needs to be a mandate from NZTA … to say how they are going to use the research.* (Consultancy)

Interviewees also commented on the way some research reports are written, including the structure and language used. Reports that lack clarity, are too technical, too academic and too long may inhibit accessibility (and thus use) of the research. As one consultant commented:

> *We do research that can be a bit boring - long reports, thick, detailed. People are reluctant to read. The real key is to pull out and present the key points about what it really means – the next steps – the why without telling the full journey/all the details. However, you have to write the full report.* (Consultancy)

2.3 Dissemination

This section examines the extent to which the Transport Agency commits to publishing peer-reviewed research, and an assessment of approaches used to disseminate research findings.

Key findings on dissemination of research show:

- The Transport Agency has a strong commitment to making research findings publicly available.

- The majority of respondents find out about the research through the Transport Agency's active modes – the email 'Recently published reports' and the quarterly publication *NZTA Research*. Fewer than half the respondents find out about the research through the website.

- The respondents rate the email and newsletter more highly than the website.

- Dissemination could be improved by making it easy to find and find out about the research, easier to access in terms of the way information is presented, and by making it clearer how research might be applied.

- Based on this rubric the website rates as 'good' and the email and newsletter as 'very good'.

2.3.1 Availability of research

A primary purpose of the research programme is to inform decisions about transport policy and delivery. It also plays a role in wider debate and generation of knowledge. Good practice for research commissioned by government includes making sure all research is publicly available.[15]

The Transport Agency has a strong commitment to publish reports commissioned through the research programme. Of the 147 research reports completed and peer reviewed over the timeframe of the evaluation, all but five (3%) have been published on the Transport Agency's website.

Documentation provided to the evaluators shows the significant effort the Transport Agency's research programme's team invests in finalising research reports and readying them for publication. Analysis of data on non-publication indicates methodological issues are the main reason why four of the reports have not been published. For example, one report was deemed to be unsuitable for publication 'as the research (is) deemed to be poor', while the second was considered to be a 'narrow and incomplete view' of the issue being researched. This finding emphasises the need for a strong steering group process, so methodological issues can be addressed as early as possible.

One report was withheld due to 'significant concerns from stakeholders, within a very sensitive time for public transport'. Data provided to the evaluators shows that over a three-year process, numerous

---

[15] www.superu.govt.nz/government-social-science-research-and-evaluation-publishing-protocol

attempts were made by the research programme team to finalise and publish the report.[16] A decision was finally made to permanently withhold the report on the grounds that 'publication…is likely to focus [stakeholders] on issues related to the previous environment for public transport delivery, at a time when the sector is proactively implementing a new approach'. It is concerning this occurred despite the Transport Agency's disclaimer at the front end of each research report that notes material contained in the reports should not be construed in any way as policy adopted by the Transport Agency or indeed any agency of the New Zealand government. This finding emphasises the importance of early discussion and agreement about how findings will be communicated so research can be published in a timely manner.

2.3.2   Transport Agency approaches to dissemination of research

The Transport Agency uses both active and passive modes to disseminate its research. The active modes include the email 'Recently published reports' and the quarterly publication, *NZTA Research*. Passive modes include the website, Transport Knowledge Conference and the Transport Knowledge Hub seminars.

In the online survey 76% of respondents found out about the research through the Transport Agency's email 'Recently published reports', followed by 57% through the Transport Agency's quarterly publication *NZTA Research*, and 38% through the website. These were closely followed by 'Used a search engine' and 'From a colleague' at 32% each. The findings are different from those reported in the 2011 survey, when 53% of respondents found out about the research from the website, followed by the email at 47% and the newsletter at 40%. These results suggest the Transport Agency's more active approach in recent years to promote newly published research has proved to be successful.

Figure 2.9   How respondents find out about the research (n=168)

---
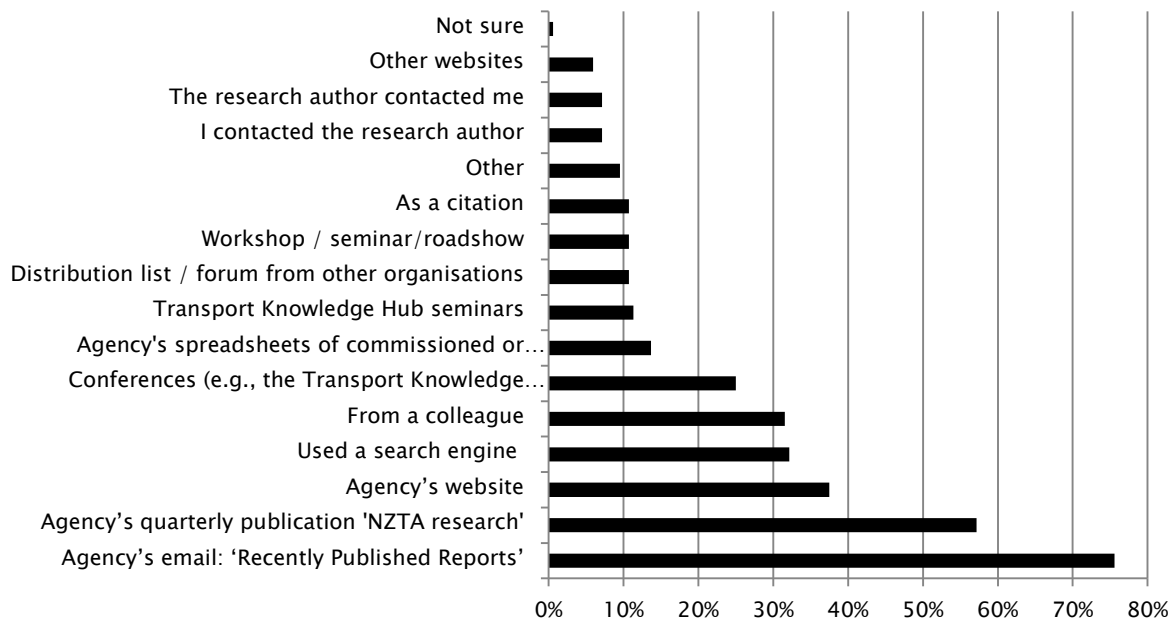
[16] This was an 'industry generated research' project commissioned in 2008/2009. The Transport Agency commented the research took five years to be completed with the final draft report being submitted three years later than originally agreed. During this time there were significant changes to the public transport operating environment.

There is virtually no difference between the Transport Agency and external users' responses with the exception that more Transport Agency respondents say they are contacted by the research author, 24%, as opposed to 5% external. This is not surprising given the Transport Agency commissions the research.

2.3.3 Respondents' views about research dissemination mechanisms

Respondents were asked to rate the Transport Agency's five main mechanisms for disseminating the research, namely: the website; the quarterly publication *NZTA Research*; the email 'Recently published reports'; the Transport Knowledge Conference; and the Transport Knowledge Hub Seminars.

The ratings of the mechanisms align with the ways respondents find out about the research. As such higher ratings are given to the most used mechanisms. The email is rated the highest, followed by the newsletter and the website. External respondents and those from the Transport Agency gave similar ratings to the mechanisms:

- 68% (n=108) rated the 'Recently published reports' email as excellent to very good, with 23% rating it as adequate.

- 62% (n=98) rated the *NZTA Research* newsletter' as excellent to very good with 27% rating it as adequate.

- 23% (n=52) rated the website as excellent to very good, with 37% rating it as adequate.

For the email and newsletter this is an improvement on the 2011 results where 42% (n=53) rated the *NZTA Research* newsletter as excellent to very good with 33% rating it as adequate; 50% (n=58) rated the 'Recently published reports' email as excellent to very good, with 25% rating it as adequate. There has been no change in the rating given to the website.

Over half the respondents reported they do not know about the Transport Knowledge Conference (60%, n=93) and Transport Knowledge Hub seminars (64%, n=98). This finding is not surprising given that these are passive modes and relatively new dissemination mechanisms. There have been three annual Transport Knowledge Conferences, and the Transport Knowledge Hubs began in 2014. These mechanisms are instigated and led by the Ministry of Transport and as such are not part of the Transport Agency's dissemination approach. However the findings provide a useful baseline from which to measure change in the future.

The interviews with research users provide some understanding of why the email and newsletter approach to dissemination works so well. Interviewees described being able to scan the newsletter or email for relevant reports:

> *We get the email distribution. I skim for relevance. If it's a topic I'm interested in I'll read the exec summary and decide whether to read further. I keep a record of it if I'm doing work in that area.* (Regional Council)

Interviewees had mixed views about the website. There were some positive comments that access to the website had improved, and that the search function works quite well. For example:

> *The NZTA website is very easy as far as websites go. It's intuitive. (I) look for a topic and there it is.* (District Health Board)

However other interviewees describe the website as being difficult to navigate and say the search function does not work in the way they expect. For example:

The website is hopeless, can't find anything. Not sure why this is the case – I just use google. For example I typed in pavement specs and it [NZTA website] just came up with one. Google and it comes up with four. (Consultancy)

While many survey respondents had not heard about the Transport Knowledge Hub seminars, some of the research users had. Most had not attended a seminar (as they had only just heard about them), but were positive about the idea.

Interviewees who are researchers talked about a range of other ways they disseminate their research. They noted that dissemination is often part of their contract with the Transport Agency. Their approaches to dissemination include presentations at conferences, to interest groups and to the Transport Agency, seminars, radio and television opportunities (if these arise), and journal articles. Researchers also take the opportunity to talk both informally with others and to commercial organisations where relevant:

Most of us [researchers] like to take opportunity to disseminate through conferences. (We) did three workshops, Auckland, Wellington, Christchurch on the findings. It gets the conversation going. That was funded through the NZTA contract and well managed by NZTA. They organised a workshop around a theme and had invited speakers. Each had a local flavour. (Consultancy)

Mulley and Reedy (2013) note 'human interaction' is the best source for learning about research. This is in keeping with Robinson (2009) who talks about peer-to-peer connections being one of the best ways to get new innovations adopted. This thinking is confirmed by two of the interviewees:

People who are involved (in the research) love presenting at conferences – it informs and provides opportunities. If it's leading edge conference goers love it too. And people get inspired to investigate further. (Transport Agency)

(The) Transport Knowledge Conference is great. The newsletter is good – but not as good as the conference. The knowledge that is gained at the conference is the best. You need to keep researchers engaged. (Transport Agency)

Many research users outside the Transport Agency said they disseminate the research within their own networks, including their workplaces and professional groups. One interviewee described this approach as being like 'the ripple in the pond – it just gets out further'. Other examples of dissemination outside the Transport Agency's influence include the following:

I get the NZTA email and circulate it. Just did that this week. Very few in our organisation know about the research. Have staff from head office through to those who go out to construction sites and research covers all of that. I went to Service Group managers and asked them if their staff would be interested - and they have all said 'yes'. We have 8000 employees…I put links to the research on the intranet for everyone to access. (Consultancy)

Internally there is an appetite for training and research, for doing things differently. Run a 'yammer' board and if I see a report abstract of interest will post a link to the report. Do the same with reports from the US and Australia. There are some active groups on Yammer in the organisation – especially the pavement guys. They ask questions help each other solve problems. (Consultancy)

2.3.4   Suggestions for improving dissemination of research

Seventy-nine survey respondents suggested improvements to the way the research can be better promoted. These are categorised into two broad themes, accessibility and relevance. Accessibility relates

to both to availability – making it easy to find and find out about, and easy to access in terms of the way information is presented. Relevance relates to making it clearer to end users how research might be applied in their work.

Nearly all the respondents commented on how to improve accessibility. Their suggestions for the improvements included: making the research easier to find on the website (links and search engine); events; using other mechanisms or other agencies' mechanisms; providing summaries of the research along with how it might be used; group research topics together so they are easier to find by those interested in specific topic areas.

The two most suggested approaches related to the need to improve the website so that reports are easier to find, and for more opportunities to discuss research findings at events such as seminars, conferences, presentations to specialist groups, webinars and workshops. For example:

> *Researchers should come and present their findings to the National Pavement Technical Group along with suggestions to change the NZTA guides and specifications. Also NZTA should speed up the process to change their guidelines and specifications to reflect the results from the research perhaps with technical notes.* (Road Contracting Company)

> *The authors need to present at an appropriate local conference or forum. For example, I … am actively involved in research and I have never been to a Transport Knowledge Conference or the seminars and I don't know anyone who has.* (Transport Agency)

These suggestions were followed by the need for more succinct summaries so people can read the research more quickly and easily.

The next most suggested approach was to use other dissemination mechanisms such as social media feeds, The Transport Agency's Facebook page, articles in newspapers/media releases and journals. This was followed by getting information out about how the findings could be used. For example:

> *Improve clarity on how research findings will be taken up, timing of policy changes etcetera and proving value of research through follow up case studies. May be more targeted assistance to those who could benefit from quick implementation of research findings.* (Transport Agency)

Research users also suggested the Transport Agency foster 'early reveals' of research. This means getting drafts or early findings out for discussion. This is in keeping with others who say they would like to know more about the progress of the research and that the Transport Agency, as well as running the spreadsheet on current projects, could include information on progress:

> *Generally speaking, my view is there should be someone in team or Ministry of Transport that needs to actively own the topic … Need to be in boots and all. You can learn as is the research is developed. You don't have to wait for it to be published. You can use initial findings, workshop during the process. Start to feed into development / guidance for policy.* (Transport Agency)

While very few respondents or research users commented on relevance, their suggestions included making connections between pieces of work so end users know how individual pieces connect therefore helping them to take a holistic view of an issue. Another suggestion was to align the topics with the direction the Transport Agency is currently taking so it can be better used to inform their new work.

3   Toward a definition of value

Part of the evaluation brief was to explore ways in which 'value for money' might be defined for the Transport Agency's research programme. The intention is to inform a broader discussion within the Transport Agency about what needs to be taken into account when defining the value of its research programme.

Key findings are:

- It is challenging to define the value of research to end users as it is context specific.

- Value can be measured by a range of factors including: use, cost savings, policy/design changes, relevance to the New Zealand context.

- There can be a mix of values including, eg monetary, social, environmental, cultural.

As noted earlier in this report, the term 'value' is currently defined by the Transport Agency as 'the importance of the research programme to individual end users as well as the transport sector more broadly'. This aligns with Georghiou's (2015) definition of value in relation to research. Georghiou notes there are many ways for research to generate value including: increasing knowledge through published research reports; collaboration between researchers and users so knowledge is shared and/or co-produced; the contribution that research/research methodologies make to innovation; and the use made of research by organisations, eg in the development and delivery of services, regulations and frameworks.

Increasingly within public sectors there are calls to determine whether programmes provide value for the resources invested. This focus of inquiry is generally referred to as 'value for money'. However, no universal definition of the term exists. King (2017) notes that definitions used by governmental publications often prioritise maximising outcomes for a given cost. He argues for a broader definition of value for money; one that connects the evaluative concepts of merit, worth and significance as follows:

> *Merit refers to the quality of the resource use, for example, using funds for their intended purpose, using funds ethically, minimizing wastage, and achieving intended outcomes. Worth refers to the value of the resource use (to a person, group, or society, at a particular time and place) relative to the next-best alternative use of resources. Significance refers to the importance of the resource use, beyond its merit and worth.* (King 2017, p103)

The brief for this research included finding out how end users understand 'value for money'. A common theme to come through from interviewees is that it is challenging, 'tricky' to define value and that ways to measure value are also challenging. The most cited way to define value related to whether it was used to inform decisions related to factors such as investment, policy, legislation, regulations or design. This conception of value aligns with King's (2017) notion of 'significance'. Here research can be used to inform change or confirm it is not required, or inform future transport-related thinking.

> *Research has a role in helping us to try and understand the trends that are coming down, for example, New Zealand coping with Uber resulted in changes to small vehicle regulations. Could we have planned better? Now we're thinking about PT and mobility as a service - a system where you don't own bikes or cars, you buy into it like you buy a phone package with the idea that you have a mobility package. ... It's flavour of the month in Europe. Could research help us be better prepared for this?* (Transport Agency)

As noted in section 2.2, some research users identified specific examples of research findings and recommendations that have informed policy, standards or specifications, ie resulted in instrumental use. A caution with using this as the only way to define value is not all research is used in this way, nor are all users in a position to do this and it may not always be obvious when research has been used to inform decision making.

Another way interviewees defined value was in financial savings resulting from use of research, for example where fatal crashes have been avoided or statistics indicated a downward trend in negative outcomes. As one research user commented: 'If research helps to save lives, there's a significant economic saving of $4.5 million per person'. This conception of value fits with King's 2017 notion of worth.

In line with this is cost savings whereby the research findings show changes are not needed, eg wifi in bus stops for young people or products that will not work in New Zealand conditions. As one central government interviewee said:

> *We are hilly and the [international] research shows the benefits are not achievable (in New Zealand). We are better to spend $100,000 on research than buy equipment that doesn't work.*

Another research user said:

> *One way to look at it is pre- post- in relation to changes in investment, policy, legislation. For example, recently we did research for $150k into an area that NZTA was going to invest $2 million. Found it wasn't worth it. So NZTA spent money to save money - money well spent!* (Consultancy)

Yet another example of monetary value includes research on new products that results in longer lasting products being implemented. Where this occurs, there can be significant savings to maintenance budgets. In evaluation terms such value is referred to as 'worth', which refers primarily to the financial aspects of a programme, eg resources or opportunity costs.

In asking respondents about how they view the value of the research programme, it was clear the monetary worth of the research is only one dimension of value. Other dimensions include the significance or importance of the research to individuals, organisations and to the country. As an example of significance, some respondents recognised there were time savings when they could access relevant information that was freely available and they did not need to collect themselves. As one interviewee commented:

> *How do you measure that time it would take you to find (the information)? It's like training at your desk.* (Consultancy)

Others recognised value comes from the new learning and the opportunities to share knowledge. While this sits at the conceptual end of the use continuum the value comes from the discussion of ideas, new learning, the development of deeper understanding and knowledge growth.

Being able to access research that was New Zealand specific was also a significant value for many interviewees. Here they commented that New Zealand's geology and infrastructure were unique and in many instances it was not possible to rely on overseas practice or equipment. Even when some information could be translated to the New Zealand context, it could be useful to test out its relevance for our local conditions.

Another value refers to merit, defined as the *quality* of the research. As noted in section 2.1.3, the transport research programme is highly regarded by respondents and research users, in part because it is

well managed with support from steering groups and because it is peer reviewed. Trusted, robust and defensible research is a key factor supporting the use of findings.

The challenge extends to measurement of value. Interviewees, many of them researchers, talked about potential ways to measure value, including using surveys, pre- and post- research comparisons, citations in publications, hits on the website. Lyall et al (2004) discuss the need to use both quantitative and qualitative measures to understand use and relevance. This is the approach taken in this evaluation.

In summary, the term 'value for investment' appears to be a more appropriate term, encompassing not just worth, or monetary value, but also merit and significance. To this end, value for investment has been defined by King (2017) as the merit, worth or significance of resource use.

4   Discussion

Finding out how research is used remains a challenge. As in 2011, this study used the Transport Agency's email list as the primary approach for contacting potential end users. This was supplemented by talking with Transport Agency staff and selected researchers and through follow-up interviews with end users who volunteered to be spoken to. There are likely to be other people beyond those identified and targeted for this evaluation who have an interest in, and use the Transport Agency's research. While the findings cannot be generalised to all end users, they do provide insight into how the research is being used across different sectors and stakeholder groups.

The literature shows use of research and hence its relevance to end users is dependent on a range of factors beyond the commissioning agent's control. One such factor is individual and organisational readiness and ability to use research and the research channels for knowledge transfer (Lyall et al 2004). A second factor is that research use is not a linear process from research 'facts' to application:

> *(Its) use is contingent, interactive and iterative. It involves people individually and collectively engaging with research over time… Research also enters the policy process at various times – as problems are defined (and redefined); ideas are generated; solutions are identified; and policies are adopted, implemented, and sometimes stalled,* (Tseng and Nutley 2014, p165).

In relation to implementing transport research, Bikson et al (1997) talk about research use being dependent on: how adaptable the results are to new settings or commercialisation; the scope and constraints organisations have; and the extent to which research is communicated and how researchers and users interact. These researchers also found research is more likely to be used it when it addresses end users' 'real-world' issues.

Roorda and Alkema (2011) found transport research use is also contingent on social and political factors, timing, the extent to which there are mandatory policy changes, and whether there are any associated costs with introducing changes as a result of the research.

All the above factors are identified by Morvant (2014) who also talks about the need to identify internal and external factors at all stages of the research, and that leaving thinking about how the research might be used until the end of a research project is problematic.

4.1   Relevance

The relevance of the research programme is driven off the back of the Transport Agency processes where the RTGOs take a collaborative approach to problem identification and engaging stakeholders in discussions about research needs and projects to address these.

As in 2011 most respondents consider the research relevant to the work they do and the sector as a whole. The responses in the survey and interviews show research is relevant to the end users, both to their individual work and the sector as a whole. Around 90% of the survey respondents say it is relevant to their current and future work and over 90% say it helps to inform work they are doing. The research 'usually' or 'sometimes', meets their needs in a variety of ways including, 'adding to what they already know' through to 'informing work they are doing'. While there is a slight tension for some interviewees about research for now or the future – the pragmatic and applicable for today versus the blue skies or innovative research for the future – the research is overall relevant to the end users.

It can be said to be the 'right research' as talked about in the Ministry of Transport's research strategy. The only cause for concern relates to timeliness. If the Transport Agency has the 'right' topics it also

needs to consider the extent to which they are at the 'right' time to meet the needs of the transport sector both now and in the future. The use of the Triple-4 Prioritisation Framework (Ministry of Transport 2016) to help prioritise the selection of research topics should help with this.

4.2   Use

The relevance of the research is the strongest contributor to its use. This is followed by having it freely available for public use. As stated above, use is contingent on a number of factors ranging from individuals' and organisations' capability and capacity, social and political factors and the extent to which research addresses real-world problems. For end users of the Transport Agency research the New Zealand factor is extremely important. Because of this it is seen as being directly applicable to the issues, climate, geology and social context. Use is also contingent on the extent to which it is trustworthy and credible. End users believe this is the case because of the Transport Agency's processes, including peer reviews and the fact it is published by a Crown entity.

As in 2011 there is stronger use at the conceptual than instrumental end of the continuum. This can partly be attributed to people's job roles. A positive finding in this evaluation, as in 2011, is the high numbers who share the research with others. This shows collaboration happening within the sector and also highlights the value users see the research as having.

The main point to be made about use is that people will take from the research what they need – for their own learning or for their work. This includes whether the research provides background information, confirms they are on the right track, contributes to tweaking what they doing, provides evidence to inform and convince others, or whether it can be applied to policies, guidelines or specifications.

4.3   Dissemination

Making research visible is key to getting research used, both within the Transport Agency and externally. The Transport Agency's 'Recently published reports' email and the *NZTA Research* newsletter are well received and the means by which most users find out about the research. As in 2011, they play an important role for those who have limited time to search for information as they are a quick and easy way to find out what research has been done. Of note has been the increased knowledge about these mechanisms since 2011.

Respondents value online access to the research reports but it is still challenging for some of them to find reports on the Transport Agency website. While the 2017 respondents rate the website slightly higher than those in 2011 they would still like to see further consideration given to the search function so they can find the research more easily.

While the electronic media are the key mechanisms, this evaluation shows there is an appetite for events and people contact in the dissemination of the research. There is the opportunity for the Transport Agency to build on its current approaches, namely: presentations by researchers as part of their contract obligations; to grow attendance at the Transport Knowledge conferences; and to publicise and give more focus to the Transport Knowledge Hub seminars. There is potential here to grow participation in the wider research community so there is a community of practice and collaboration.

5   Conclusion and recommendations

As in 2011 the findings show the Transport Agency's research is relevant and used. Of particular interest in this evaluation is that relevance and use applies to both internal and external users. This comparison was not possible in 2011. In terms of relevance, end users place great store on the fact the programme is New Zealand-based research and as such has strong applicability to their contexts. While conceptual use remains stronger than instrumental use this is in keeping with the literature. Conceptual use in its own right adds value in terms of increasing the knowledge base, increasing the understanding of the transport system and can inform future thinking. However the Transport Agency might like to have a stronger focus on how research can be used to inform, for example, policy, guidelines and specifications.

The Transport Agency's active modes of dissemination, the email and newsletter, are working well. There is the opportunity to increase the visibility of the research through building on the face-to-face activities through Transport Knowledge Hub events, conferences and localised researcher presentations. The website continues to be a challenge for the Transport Agency. While comments about the website are more positive than in 2011, the research and the search engine continue to be problematic. In relation to dissemination the Transport Agency has worked on recommendations from the 2011 evaluation and increased the research of the email and newsletter and better promoted the research within the Transport Agency.

Further work needs to be done in looking at the value of the research programme, how this might be defined and measured. Value needs to be considered in broad terms and not just from a 'value for money' perspective.

In relation to the New Zealand Transport Research Strategy the findings show the research programme is on the right track towards 'investing in the right research' and 'ensuring visibility'. In relation to the latter there is the opportunity to take a more active approach so the research programme is more widely known and the findings actively discussed and debated.

Overall these findings present the Transport Agency with an opportunity to reflect on the research programme and to consider what else might be required to enhance its use. They also provide a baseline from which to measure the extent to which the New Zealand Transport Research Strategy is achieving its goal.

5.1   Recommendations

The evaluators recommend the Transport Agency:

* provide more opportunities for research-related events by building on the mechanisms already in place – the Transport Knowledge Conference and Transport Knowledge Hubs

* continue to improve the usability of the website so there is improved visibility of the research and access to the research

* consider the extent to which the balance of the research topics best suits transport sector needs

* undertake further work on defining the value of the research programme and how this might be measured

* undertake systematic monitoring and evaluation of the research programme.

6   References

Bikson, T, S Law, M Markovich and B Harder (1997) *Facilitating the implementation of research findings: a summary report.* Santa Monica CA: Rand Corporation.

Bluett, J, M de Aguiar and N Gimson (2016). *Impacts of exposure to dust from unsealed roads.* (Updated April 2017). *NZ Transport Agency research report 590.* 104pp.

Creswell, J (1998) *Qualitative inquiry and research design: choosing among five traditions.* Thousand Oaks, CA: Sage.

Georghiou, L (2015) *Value of research.* Policy paper by the Research, Innovation, and Science Policy Experts (RISE). Brussels: European Commission.

Guest, G, A Bunce and L Johnson (2006) How many interviews are enough? An experiment with data saturation and variability. *Field Methods 18*, no.1: 59–82

Griffin, A and J Hauser (1993) The voice of the customer. *Marketing Science 12*, no.1: 1–27

Hicks, S, J Cao, C McKenzie, M Chowdhury and R Kaufusi (2016) Evaluation of shear connectors in composite bridges. *NZ Transport Agency research report 602.* 188pp.

Huberman, M (1992) *Linking the practitioner and researcher communities for school improvement.* International Congress for School Effectiveness and Improvement. Victoria, BC.

King, J (2017) Using economic methods evaluatively. *American Journal of Evaluation 38*, no.1: 101–113.

Lyall, C, A Bruce, J Firn, M Firn and J Tait (2004) Assessing end-use relevance of public sector research organisations. *Research Policy 33.* 73–87.

Ministry of Transport (MoT) (2016) *New Zealand transport research strategy: creating a research environment to maximise the benefits from transport-related research 2016–2020.* Wellington: MoT.

Morvant, M (2014) Understanding deployment strategy from research to project delivery. *Transportation Research Circular E,* no.199.

Mulley, C and L Reedy (2013) Research into policy: improving the research evidence base for transport policy makers in NSW. In *Proceedings of the Australasian Transport Research Forum 2013.* Brisbane 2–4 October 2013. Accessed 11 July 2017. http://atrf.info/papers/2013/index.aspx

NZ Transport Agency (2016) *Request for proposal: ART 16/31 Assessment of the value, to end users, of Transport Agency research programme reports published 2011/12 through to 2015/16.* Wellington: NZ Transport Agency.

Rive, G, J Thomas, C Jones, B Frith and J Chang (2015) Public transport and the next generation. *NZ Transport Agency research report 569.* 197pp.

Robinson, L (2009) *A summary of diffusion on innovation.* Accessed 11 July 2017. www.enablingchange.com.au/Summary_Diffusion_Theory.pdf

Roorda, M and A Alkema (2011) Evaluation of the value of NZTA research programme reports to end users. *NZ Transport Agency research report 450.* Wellington: NZ Transport Agency.

Trotter, M, J Burton, C Jones, B Frith and J Thomas (2017) Drivers' understanding of temporary and permanent slippery road signage. *NZ Transport Agency research report 607.* 70pp.

Tseng, V and S Nutley (2014) Building the infrastructure to improve the use and usefulness of research in education. Chapter 11 in *Using research evidence in education: from the school house door to capitol hill.* KS Finnigan and AJ Daly (Eds). Policy of Research in Education 2. Switzerland: Springer International Publishing.

Appendix A: Use of reports

Table A.1   Research use by organisation

	Transport Agency (n=51)	Consultancy (n=46)	Local government (n=20)	Other (n=13)	Central government/ Crown entity (n=10)	Research organisation (n=9)	Road contracting company (n=6)	Professional body (n=5)	Education or training (n=4)
Regulation (n=29)	20% (10)	15% (7)	5% (1)	15% (2)	20% (2)	33% (3)	17% (1)	40% (2)	25% (1)
Freight (n=46)	33% (17)	22% (10)	40% (8)	23% (3)	30% (3)	22%(2)	0% (0)	40% (2)	25% (1)
Performance monitoring (n=46)	22% (11)	35% (16)	35% (7)	15% (2)	10% (1)	33% (3)	33% (2)	60% (3)	25% (1)
Network optimisation (n=49)	25% (13)	37% (17)	45% (9)	23% (3)	10% (1)	22% (2)	0% (0)	80% (4)	0% (0)
Environmental effects (n=61)	41% (21)	33% (15)	30% (6)	38% (5)	30% (3)	56% (5)	50% (3)	60% (3)	0% (0)
Asset management (n=63)	35% (18)	43% (20)	35% (7)	31% (4)	0% (0)	44% (4)	100% (6)	60% (3)	25% (1)
Technology solutions (n=64)	41% (21)	46% (21)	30% (6)	23% (3)	20% (2)	56% (5)	0% (0)	60% (3)	75% (3)
Public transport (n=63)	27% (14)	43% (20)	50% (10)	54% (7)	30% (3)	44% (4)	17% (1)	40% (2)	50% (2)
Economic analysis (n=69)	35% (18)	50% (23)	40% (8)	38% (5)	30% (3)	67% (6)	0% (0)	80% (4)	50% (2)
Safety (n=87)	57% (29)	46% (21)	70% (14)	62% (8)	30% (3)	44% (4)	50% (3)	40% (2)	75% (3)

Table A.2a   External use of reports

External (n=112)	Always	Usually	Sometimes	Seldom	Never	N/A
Learn something new	11%	54%	30%	3%	0%	0%
Share information from the report with others	10%	40%	41%	7%	0%	1%
Use it to inform further research	5%	23%	37%	15%	4%	13%
Use it to inform a new or existing policy or programme	5%	21%	44%	19%	2%	9%
Use it to develop/improve standards, guidelines and/or specifications	5%	16%	34%	23%	4%	16%

Table A.2b   NZ Transport Agency use of reports

NZ Transport Agency (n=48)	Always	Usually	Sometimes	Seldom	Never	N/A
Learn something new	8%	60%	29%	2%	0%	0%
Share information from the report with others	6%	42%	38%	8%	4%	0%
Use it to inform further research	2%	25%	21%	35%	10%	4%
Use it to inform a new or existing policy or programme	4%	27%	33%	21%	8%	6%
Use it to develop/improve standards, guidelines and/or specifications	6%	31%	33%	13%	17%	0%

Appendix B: Methodology

The evaluation had three objectives:

1. Assess how valuable the findings of research reports published from 2011/12 to 2015/16 have been for end users in New Zealand

2. Consider the current approach to investing in, and ensuring visibility of, research against the Transport Research Strategy (Ministry of Transport 2016)

3. Define value for money for the research programme.

The evaluators designed a programme logic which was then used to inform the evaluation and research questions and subsequently the interview and survey questions.

B1 Research and evaluation questions

A mix of research and evaluation questions were developed in consultation with the Transport Agency Steering Group. The table below shows the questions and a summary of the methods used to obtain answers to the questions.

Table B.1   Data sources for evaluating the research programme

Questions	Transport Agency documents	Key informant interviews[17]	Literature scan	Survey of potential end users	Interviews with research users
EQ1: To what extent do end users consider the Transport Agency's research meets their needs (ie is relevant to their work, is timely for decision making)?				✓	✓
EQ2: To what extent have research findings been used?	✓	✓		✓	✓
RQ1: What are the success factors/barriers to uptake and use of the Transport Agency-funded research information?		✓		✓	✓
EQ3: To what extent are peer-reviewed research reports publicly available?	✓	✓			
RQ2: What are the approaches to communicating research findings?		✓		✓	✓
EQ4: How effective are the Transport Agency's approaches to communicating research findings to end users?			✓	✓	✓
EQ5: How might 'value for money' be defined for the Transport Agency research programme?		✓	✓		

---

[17] Note: these interviews were conducted as part of developing the evaluation plan.

B2 Evaluation methods

B2.1 Evaluative rubrics

In the setting up phase of the evaluation the Steering Group and the evaluators developed evaluative rubrics. These rubrics establish performance standards on 'alignment, 'relevance', 'accessibility' and 'communicability'. These standards were applied to the online survey data to provide an overall assessment of respondents' use of Transport Agency research, the relevance of the research findings and the ratings of the Transport Agency's mechanisms for disseminating the research findings.

These rubrics were peer reviewed and subsequently revised, in consultation with the Steering Group and the peer reviewers after the data collection period. The reason for this was to allow for more holistic judgements to be drawn based on data from the interviews and survey rather than just keeping to the quantitative data in the survey.

B2.2 Literature rapid review

The rapid review looked for an update on the research since 2011. At that time there was little literature on the use of research in the transport sector (Roorda and Alkema 2011). The same case applies in 2016. The rapid review was conducted as part of the scoping phase of the evaluation and used the same approach as in 2011. This started with keyword searches using Google Scholar and was followed with searches on international transport-related websites and websites that held information on knowledge transfer and utilisation, as well as sites that had information on research dissemination. The keywords included research and dissemination and transport; utilisation of research; knowledge transfer from research; roading and research and knowledge transfer; disseminating transport research. As so little literature related to the use of transport research was found through keyword searches, the snowball method was used and references followed up on. The literature on transport research was mainly sourced from Australia and the United States. The literature on research dissemination was sourced from the United States.

B2.3 Phase one qualitative telephone interviews

In November and December 2016 the first round of qualitative interviews was conducted with eight Transport Agency RTGOs and 12 researchers. The purpose of these interviews was to explore the research topic selection process, the barriers and enablers to use, the ways in which the research is promoted and the value of the research to these two user groups.

B2.4 Online survey

In January 2017 an online survey was designed and peer reviewed by the Steering Group, four RTGOs and the peer reviewers. In February 2017 a link to the survey was sent to 648 people on the Transport Agency's email list. The survey was open for just over two weeks with a reminder sent out a week before it closed. There were 176 responses to the part of the survey on research use, with 171 saying they had used the reports and five saying they had not. One hundred and sixty-five respondents completed the survey in relation to how well the findings are disseminated. This is a response rate of 26%.[18] Given this response rate the findings are indicative rather than generalisable.

---

[18] The 2011 response rate was 41%, but there were fewer numbers in that survey.

The survey was mainly quantitative, but contained some open-ended questions where qualitative data was supplied. The survey asked about use, usefulness, accessibility and visibility (EQs 1, 2 and 4, and RQ1). The information enabled us to make evaluative judgements about quality and performance as they relate to use, relevance (the right research), the extent to which research is identifying knowledge gaps and the nature of these, and dissemination approaches to support visibility of the research. This is in keeping with the enablers in the Transport Research Strategy.

A key limitation of the survey sample was that the evaluators were reliant, to a great extent, on the email list maintained by the Transport Agency. To some extent this was mitigated by asking researchers and other key stakeholders to identify names and contact details of possible end users.

B2.5　Phase two qualitative telephone interviews

Follow-up telephone interviews were conducted with 24 end users of the research in March 2017. The survey, while providing a rich source of information in its own right, was used to identify a sample of respondents who had used the research. The purpose of the interviews was to explore research use through specific examples respondents had used in their work. The interviews also explored ideas on the value of the research and how the Transport Agency might measure this.

Fifty-eight respondents agreed to be interviewed. This number was lower than anticipated and lower than that in the 2011 study. While the evaluators looked to use a systematic approach to sampling it ended up as purposive in order to get a mix of Transport Agency and external users and to limit it to those working in New Zealand. While the evaluators hoped to get 30 people for interviews, data saturation was reached at 24, ie the point at which no further light is being shed on research use.[19]

As two interviewers were involved, semi-structured interview guides were used to ensure data collection was systematic for each respondent. Verbatim notes were taken and entered into an electronic data base for analysis.

B3　Data analysis

Quantitative data from the online survey responses was analysed for patterns and trends in relation to relevance, use and research availability/visibility. It was analysed as a whole data set and then against the variables of end user (eg place or work and role). As around a third of the respondents were from the Transport Agency data was also analysed by internal and external users. This enabled the evaluators to see the extent to which there were variations in use and views on relevance. Analysis by research topic was abandoned after early analysis showed users valued the topics in the same way. The qualitative data was analysed using a thematic approach, first as a whole data set and then against the variables.

The qualitative data was coded using NVivo software. An initial frame was developed based on the evaluation questions. Additional codes were included as emergent themes were identified.

The analysis also included a high level comparison to the 2011 results to ascertain the extent to which there had been changes since that time. However there are two points to note here in terms of the comparison. The Transport Agency was introducing the topic-based approach for research projects in 2011 and this may have impacted on the results. In addition the sample for this study is quite different to 2011 – in the main this is because around a third of the respondents were from the Transport Agency. In 2011 there were only two from the Transport Agency.

---

[19] Guest et al (2006) suggest 12 interviews; Griffin and Hauser (1993) and Creswell (1998) suggest 20–30 interviews.

Following the data analysis the evaluators conducted an analysis workshop with the Project Steering Group to discuss top-level findings. The approach used was developed by Williams.[20] As such the evaluators communicated the findings (generalisations, exceptions, contradictions, puzzles and surprises), and worked through the analysis of the findings (how and why?), the 'so what' and the 'now what' (recommendations). This was an opportunity for the Project Steering Group to provide contextual information to help with the analysis and implications of the evaluation findings.

B4   Strength and limitations of the research approach

A key strength of the online survey was that it could be easily administered to a large group of people, who broadly speaking are users of the research as they are voluntarily on the email list. Closed-ended questions have the advantage of uniformity and easy translation for statistical analyses. However, closed-ended questionnaires tend to impose a set of fixed ideas on the respondent by forcing choices from a limited array of options. As a result, they are less likely to uncover surprising information, and they limit the emergence of in-depth understanding of a phenomenon. The addition of open-ended questions countered this limitation to some extent, although not all respondents took the opportunity to provide additional details.

The limitation of the survey was the response rate. While there were more responses than in 2011, the population of users was larger. Another limitation was the sample. As the Transport Agency does not have the details about their population of end users, the results from the survey are not generalisable. Rather the findings show the patterns and trends across this group of users.

Analysis by the variables of user was also a strength in that it allowed the evaluators to determine the extent to which there were differences and similarities in user groups.

Qualitative interviews provided in-depth, 'grounded' data about participants' experiences and perceptions. They allowed for probing and clarifying of responses. As qualitative interviews are more resource intensive and therefore costly, the evaluators used telephone (rather than face-to-face) interviews. This meant interviewees came from a range of roles and organisations across New Zealand.

The use of both a survey and qualitative interviews in this evaluation allowed the evaluator to offset the weaknesses inherent in one method with the strengths of the other. It is in keeping with Lyall et al (2004), who talk about the challenge of measuring the impact of research and its relevance to society. Their view is that a mix of methods is required, including surveys, interviews with users and researchers. For surveys they recommend both quantitative and qualitative data be collected.

B5   Ethics

The ethical standards used for this evaluation were informed by the Australasian Evaluation Society Guidelines for the Ethical Conduct of Evaluations.[21] Standard protocols were used to inform survey respondents and interviewees about anonymity and confidentiality.

---

[20] http://users.actrix.co.nz/bobwill

[21] www.aes.asn.au/membership-ethical-guidelines.html