UNIVERSITY OF TASMANIA

2015 TRAVEL BEHAVIOUR SURVEY

SUMMARY OF FINDINGS

December 2015

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This document summarises findings from the *University of Tasmania (UTAS) 2015 Travel Behaviour Survey.* The project team wishes to sincerely thank all UTAS staff and students who took the time to participate.

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GLOSSARY OF TERMS AND ABBREVIATIONS

ACTIVE TRANSPORT	The combined total of walking and cycling.
CARPOOLING	An arrangement either through formal programs (e.g. CoolPoolTas) or informal efforts between two or more people sharing a ride to a common or nearby destination.
MODAL SHARE	The method of transport that comprised the longest part of the journey in terms of time. (Consistent with the *Greater Hobart Household Travel Survey 2010*)
MULTI-MODAL	A trip (or journey) that includes more than one mode of transport.
OTHER	May include running, jogging, skateboarding, non-powered scooter and water taxi where such modes of transport are not formally categorised.
STS	The UTAS Sustainable Transport Strategy.
TRIP	All travel between an origin and a destination. May also be referred to as a journey.
UTAS	The University of Tasmania
VIRTUAL TRANSPORT	Transport undertaken by virtual (videoconference, Microsoft® Lync™, Skype™, Zoom™, etc) or satellite/ remote means (e.g. working from home).

CAMPUS ABBREVIATIONS

CFTA	Centre of the Arts (officially TCotA), Hobart
CON	Conservatorium of Music, Hobart
CC	Cradle Coast campus, Burnie
DOM	Domain campus, Hobart
INV	Inveresk campus, Launceston
IMAS-T	Institute of Marine and Antarctic Studies, Taroona
IMAS-S	Institute of Marine and Antarctic Studies, Hobart
LCS	Launceston Clinical School, Launceston
MSP	Medical Science Precinct, Hobart
NH	Newnham campus, Launceston
RCS	Rural Clinical School, Burnie
SB	Sandy Bay, Hobart

MODE ABBREVIATIONS

SOV	Single occupant vehicle
MULTI	Drove multiple occupants
PASS	Car passenger
BUS	Bus or coach
WALK	Walked
CYCLE	Bicycle including electric assist
TAXI	Taxi
MC/S	Motorcycle/scooter
OTHER	Other
P(SOV)	Private car sole occupant
P (MULTI)	Private car multiple occupants
FLEET	UTAS fleet vehicle

1 BACKGROUND

The University of Tasmania's (UTAS) Sustainable Transport Strategy 2012-16 *(STS)* has been developed to guide investments and actions that deliver more socially, economically and environmentally sustainable transport outcomes and travel behaviours into the future[1]. A barrier identified in developing the STS was the lack of baseline and monitoring data about travel behaviour of the university community that could be used to identify issues and inform performance measures and decision-making. While there are a number of travel behaviour datasets for Tasmania, they have limited use for university transport planning, telling us little about trips other than the journey to work, or travel behaviour issues and differences across and within Tasmanian regions. The ABS 2011 *Census of Population and Housing Working Population Profile* focuses on the journey to work and is not inclusive of student travel behaviour, while the *Greater Hobart Household Travel Survey* is useful for understanding broad urban travel patterns but not those relevant to the university community across the state[2,3].

Following on from the development of the UTAS STS and responding to the need for appropriate data, the UTAS Travel Behaviour Survey (TBS) project was initiated to provide baseline travel behaviour data and then ongoing data over time (biennial) to inform planning and performance indicators. The survey was designed and developed as part of the Academic Operations Sustainability Integration Program (AOSIP). The AOSIP program provides opportunities to partner operations projects with academic endeavours. The TBS was an ideal AOSIP project as it demonstrates applied planning relevance and skills development ideally suited to a Masters planning research project and a continuing wider transport research program.

This report summarises some key findings of the 2015 UTAS TBS, in which almost 4,500 students and staff (combined) participated. It identifies changes since the 2013 TBS that will assist with further planning. Conducted via online quantitative surveys, the results of the survey provide great insight into UTAS staff and student travel behaviour associated with university business (work and study) across the state, within cities, and across university campuses and facilities. While there have been a number of smaller ad hoc, purpose-driven travel surveys associated with UTAS, such as vehicle traffic, cyclist and pedestrian counts[4], the UTAS TBS is the first significant comprehensive

[1] UTAS, 2012. *University of Tasmania Sustainable Transport Strategy 2012-2016*, Commercial Services & Development, University of Tasmania, Hobart,:1

[2] Australian Bureau of Statistics 2011. *Census of Population and Housing: Working population Profile, ABS, 15 May 2013*, http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/6?opendocument&navpos=100

[3] Department of Infrastructure, Energy and Resources (DIER) 2010. *Greater Hobart Household Travel Survey*, Tasmanian Government, Tasmanian Government, Hobart, pp. 2-9, 25.

[4] UTAS 2014. *Sustainable Transport Strategy Implementation Progress Report, 2014*, UTAS Commercial Services & Development, Hobart.

state-wide travel behaviour survey undertaken by the University. It is also the biggest independent travel survey of its kind in Tasmania.

UTAS is a growing institution, both in terms of students and its facilities. It is also one of the largest employers in Tasmania. Between 2004 and 2014 the student population more than doubled in size[5]. Into the future the university plans to continue to grow its student base, focusing on increasing tertiary education participation in the state across age and social groups[6], as well as hoping to attract a growing number of international students. Maintaining and improving student access to campuses and educational services through efficient transport is thus an essential component of planning for the future.

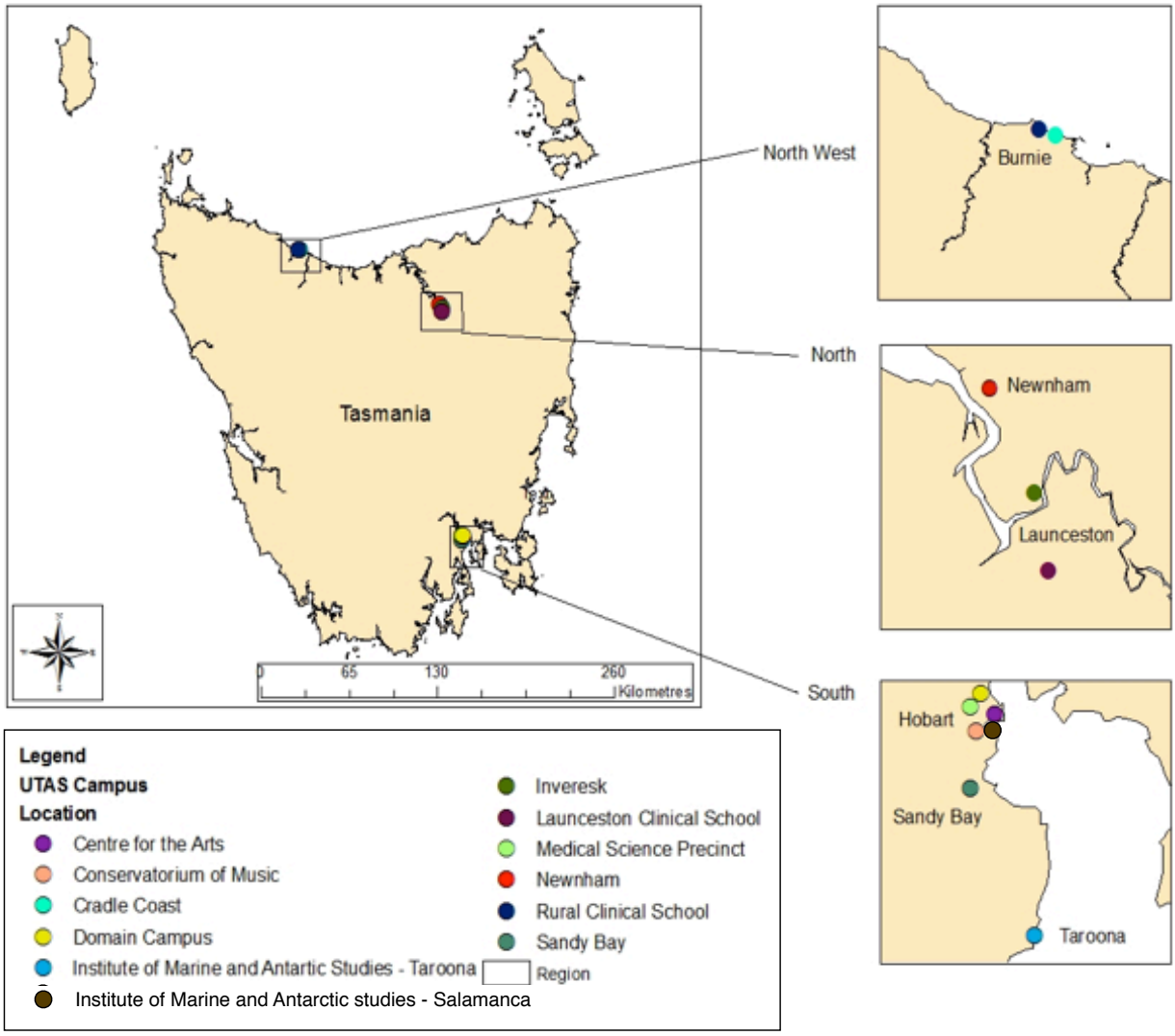


Figure 1: UTAS campus location map (2015)

[5] UTAS 2014, *Annual Report 2014*, University of Tasmania, Hobart.

[6] UTAS, 2012. *Open to Talent: Strategic Plan 2012 Onwards.*

While major campuses are located in Tasmania's South (Hobart region), North (Launceston region) and North West (Cradle Coast region), there are also other smaller campuses and facilities located in each of these regions as well as interstate facilities (e.g. the Rozelle campus in Sydney). Figure 1 shows the location of campuses and major facilities within Tasmania specifically as at March 2015. As a consequence of multiple campuses and facilities there is much associated movement within and between campuses, facilities and regions across Tasmania. On-ground, these include many trips by students and staff to and from the University, trips between campuses, and trips for university work purposes to non-UTAS destinations. This travel requires the use of significant transport infrastructure, as well as attention to future transport planning; and generates economic, social and environmental costs for both the institution and individuals associated with it, and the wider community.

Since the 2013 survey was undertaken, there have been a number of improvements to the University's array of alternative transport offerings brought about by changes to transport infrastructure, services, and the location of some key facilities, including:

- upgrading of virtual transport facilities (video and internet based conferencing facilities)
- changes in parking and carpool supply and pricing
- relocation and expansion of some major facilities in the Hobart CBD (specifically, IMAS Waterfront, expansion of the Medical Sciences Precinct and the Domain facilities)
- upgrading of active transport facilities, such as the installation of new or retrofitted full-featured end-of-trip cycle facilities (e.g. bike hubs with electric bike charging points, repair and water stations) in new facilities and key entry points on main campuses
- improvements to way-finding signage
- improvements to the inter-regional early morning chartered bus service between Launceston and Hobart University facilities
- installation of new and upgraded bus stop shelters at all main campuses, including signage improvements
- implementation of a high frequency (15 min) 'Turn Up and Go' bus service between the Newnham and Inveresk campuses and the Launceston CBD.

2 ABOUT THE SURVEY

2.1 METHOD

The 2015 UTAS Travel Behaviour Survey was conducted via two online surveys in March 2015, one each for UTAS staff and students, as there was some variance in a few of the questions asked.

As with the 2013 survey, an online survey was deemed the most suitable survey approach given resource constraints, the need to be able to reach all UTAS staff and student communities across the state and the need to provide capacity for periodically repeated surveys in years to come to allow for longitudinal analysis.

The staff survey consisted of 27 questions, of which a number of questions asked the participant to reflect on their travel behaviour for the previous week, such as what days of the week they travelled to and from work, by what mode or modes they travelled, and the length of their journey measured by time taken. Other questions focused on travel for work purposes, both intercampus and to other non-UTAS destinations. These questions asked the participant which campus they travelled from/to, and by what mode. If the travel was to non-UTAS destinations they were asked by what mode and approximately how many kilometres they travelled. Other questions were framed around inter-regional coach services, carpooling practices, car parking behaviour, Metro Tasmania Greencard ownership, cycling infrastructure use and technology use for face-to-face meeting replacement. A number of questions about the participant, such as the primary campus of work, age, gender employment status, and residential origin, were also asked to provide further participant context to the analysis.

The student survey replicated much of the staff survey, however, intercampus travel for work was reframed as intercampus travel for study. Questions about work to other non-UTAS destinations and technology use were not included in the student survey. All questions reflected the responses of the survey's duration: 19-29 March 2015.

All travel surveys have their limitations and challenges including the timing of the survey period, unintended events impacting the survey, and question design challenges. The project team was rigorous in the design of the survey according to best practice guidelines but still found challenges. For example, staff that were also students self-selected whether they were a staff member or student largely based on their hours of work or study, but for a few respondents there was some uncertainty. There were also some minor queries about some questions, especially those that concerned multi-modal issues. Overall, however, there were very few issues with the survey roll-out. All issues raised by participants were documented and considered in subsequent reviews of the survey design.

2.2 PARTICIPATION

In 2015 (Figure 2) there was a growth in the number of both staff and students who participated in the survey, with total responses in 2015 up by 13% compared to 2013. Relative to the university student population, it was difficult to establish the accurate participation rate of enrolled students travelling to Tasmanian campuses specifically, as student enrolment figures include distance mode and interstate/international enrolments, which were less relevant to the survey inquiry. This means that participation rates for students were possibly underestimated. Nevertheless, based on total 2015 student enrolments, the participation rate of the 2015 students was 11%, identical to the 2013 rate. Staff employment statistics for 2015 were not comparable to those used in 2013 so the response rate was not quantifiable this time. Given that there was a slight increase in the total number of staff participants, however, it is assumed that the participation rate was not dramatically different in 2015 compared to that in 2013.

There is a bias towards female participation in the survey (65% of student and 63% of staff participants were female), but any bias becomes marginal once the gender breakdown of the university community is understood (in 2015 61% of student enrolments were female and for the year 2014-15 56% of staff were female)[7,8].

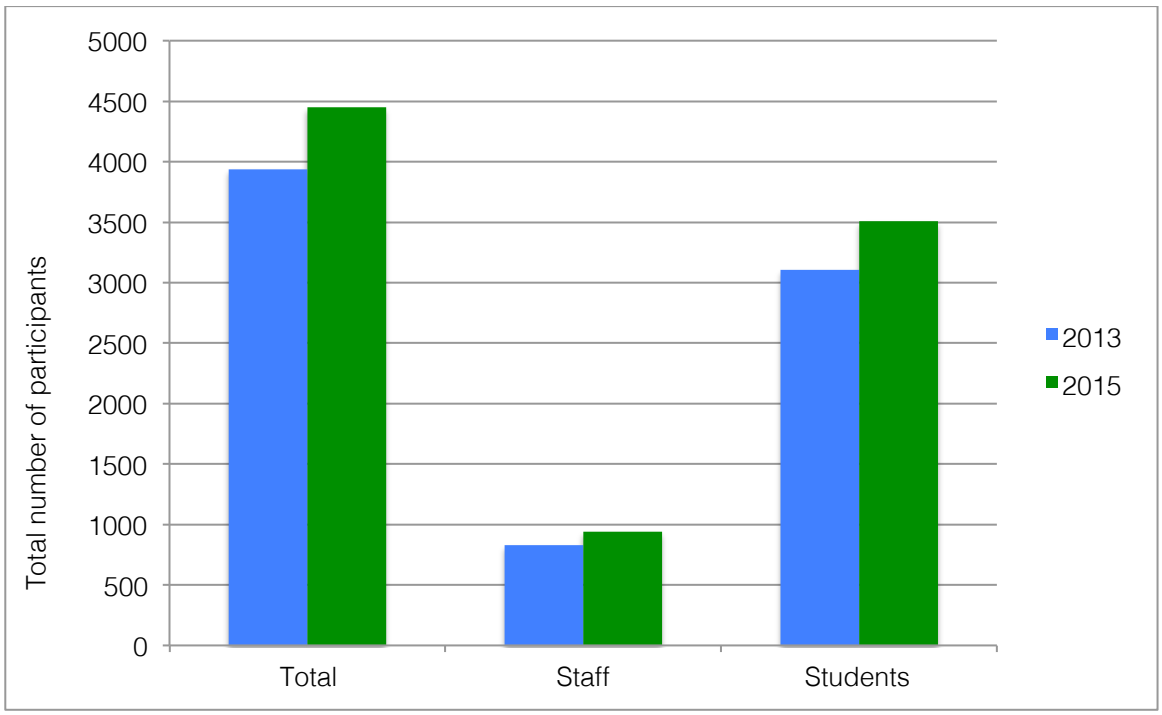


Figure 2: UTAS staff and student participation 2013 and 2015

[7] UTAS, *University of Tasmania Annual Report 2014*

[8] Workplace Gender Equality Agency, 2015. 2014-15 public report form submitted by University of Tasmania to the Workplace Gender Equality Agency. http://www.utas.edu.au/__data/assets/pdf_file/0004/571657/Final-UTAS-2015-WGEA-Public-Report.pdf (accessed online 7 Nov 2015)

3 SUMMARY OF FINDINGS 2015

This report presents a summary of findings and key highlights of the 2015 TBS survey and changes since 2013 only. There is much information to be gleaned from the 2013 and 2015 datasets and thus opportunities for UTAS research students, staff or stakeholders to undertake further analysis.

3.1 JOURNEY TO WORK AND STUDY

As was identified in the 2013 UTAS TBS baseline findings, the journey to and from UTAS for many staff and students is not straightforward. How staff and students make this journey varies considerably. Not all trips are by a single mode: more than one in ten trips to and from UTAS by staff and students are multi-modal and may include as many as three modes.

With changes in the location and form of UTAS facilities (particularly in and around the Hobart CBD with the construction of the IMAS Waterfront building, extension of the Medical Sciences Precinct and Domain facilities), we were particularly interested in the performance of these central facilities relative to the other major campuses in encouraging non-car based journeys to and from work and study. In addition to the locational and infrastructure context of each main campus and facility, we were also interested in travel behaviour variations according to gender and residential origin. The following factors also appear to influence mode choice:

- proximity to a CBD (major activity and transport hub)
- active transport facilities (such as end-of-trip cycle storage and shower facilities)
- access to and regularity of bus services
- and on campus parking supply and pricing.

Gender differences in travel are also clearly apparent, while at particular sites (such as Hobart's Medical Science Precinct) student and staff values and attitudes (such as the high value of healthy lifestyles) may also be influencing travel practices. The influences on travel practices, particularly the role of campus location, facilities, values and gender are being investigated through additional qualitative research.

3.2 HOW MODAL SHARE DIFFERS BETWEEN REGIONS AND CAMPUSES

Mode choice varies considerably between staff and student survey participants, and between regions and campuses. Like 2013, 2015 findings show some modal patterns are consistent across regions, for example, car use is higher among staff when

compared to students in the same region, while bus use is generally higher among students when compared to staff. The extent of difference does however vary when campus breakdowns are applied. Regions that have the greatest number of transport facilities and mode choices on offer generally have higher levels of non-car mode share, such as bus, cycle or walk modes.

3.3 INTERCAMPUS TRAVEL AND STAFF TRAVEL FOR WORK PURPOSES

While the majority of trips undertaken by staff and students are between home and UTAS and back, the university community and its business generates a significant number of trips associated with intercampus travel (e.g. between Hobart and Launceston campuses as well as a growing number of trips between Sandy Bay and the Hobart waterfront and the CBD). In addition, there is frequent movement by staff for business purposes to non-UTAS destinations for meetings and fieldwork.

3.4 USE OF ACTIVE MODES

Active transport (walk and cycle) share varies considerably across regions, facilities and gender; and between staff and student respondents, for example, some 31% of all student trips across Tasmania are by active transport modes compared to a little over 20% of all staff trips. Those facilities recording the highest active transport share are within close proximity to a CBD and have relatively greater active transport infrastructure provisions.

An example of this is the new IMAS facility at Salamanca where 37% of staff (11% walk, 26% cycle) and 63% of students (36% walk, 27% cycle) use active modes to travel to and from work/study. This facility has modern end-of-trip facilities, such as change rooms, showers, bike storage and maintenance facilities. Importantly there is no on-site parking provided so parking in the area is limited to local availability.

IMAS-Salamanca (left) and MSP (right) indoor bicycle storage and service facility

4 TRAVEL SURVEY FINDINGS IN MORE DETAIL

4.1 MODAL SHARE

In addition to reporting travel by individual modes we also grouped those modes that perform most sustainably, providing three specific sustainable travel categories. This assists in tracking of specific sustainable transport strategies (more details in Table 1).

Category 1 – No or low carbon active modes, which include walking, cycling or taking a bus.

Category 2 – Travel demand-reducing activities, which include working from home or participating in meetings or study via the use of information and communication technologies (ICTs) thus replacing the need to travel.

Category 3 – Carbon reducing vehicle use, which includes road based multi-passenger vehicle travel (carpooling) and low emission vehicles.

Table 1: Sustainable travel categories

SUSTAINABLE TRAVEL CATEGORY	MODES INCLUDED	EXPLANATIONS
Category 1 No or low carbon active modes	• Walk • Cycle • Bus	• These modes usually function best in the inner-mid urban zones. • Bus is included as it usually involves walking at either end of the trip so is encouraged for increasing day-to-day personal activity; carbon generated will depend on passengers on bus. • Cycle may also include an electric bicycle.
Category 2 Travel demand-reducing activities	• Virtual transport • Work/study from home	• Use of ICT to replace need for travel (teleconference, videoconference, internet communication services). • Work from home often referred to as tele-commuting.
Category 3 Carbon reducing vehicle use	• Car driver with multiple passengers • Passenger in car, • Motorbike/scooter	• These modes still require parking/road infrastructure. • These modes encouraged where other Cat 1 or 2 options limited or unsuitable. • A multiple occupant vehicle is also commonly referred to as car-pooling.

Staff commuting

In 2015 25% of staff trips to/from work at the University were by sustainable travel category 1 modes (bus, cycle or walk) of which 4.5% were by bus and 20% by active modes (cycle and walk). Just over half of staff trips to/from work at the University (52%) were by single occupant vehicle. Compared to 2013, sustainable travel category 1 mode use by all university staff respondents has increased by around 3.5 percentage points and single occupant vehicle use is down by almost 3 percentage points.

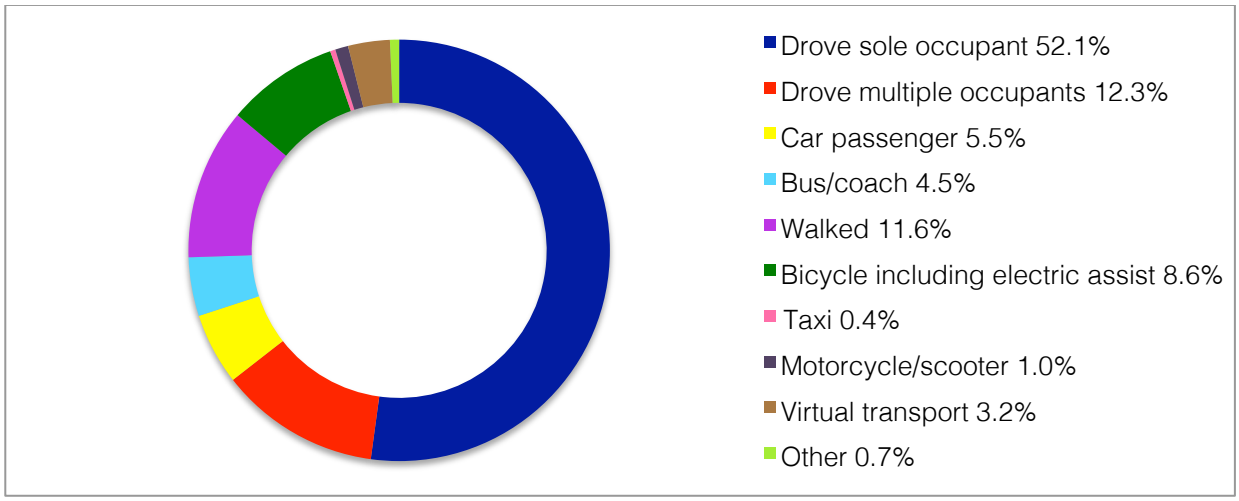


Figure 3: Mode of transport used by staff (all regions) travelling to/from home/work 2015

Student commuting

In 2015 some 46% of student trips to/from study at the University were by sustainable travel category 1 modes (bus, cycle or walk) of which around 15% were by bus and 31% by active modes (walk or cycle). Around 29% of student trips to/from study at the University were by single occupant vehicle. Compared to 2013, sustainable travel category 1 mode use by students has increased by 2 percentage points and single occupant vehicle use is down by 3 percentage points.

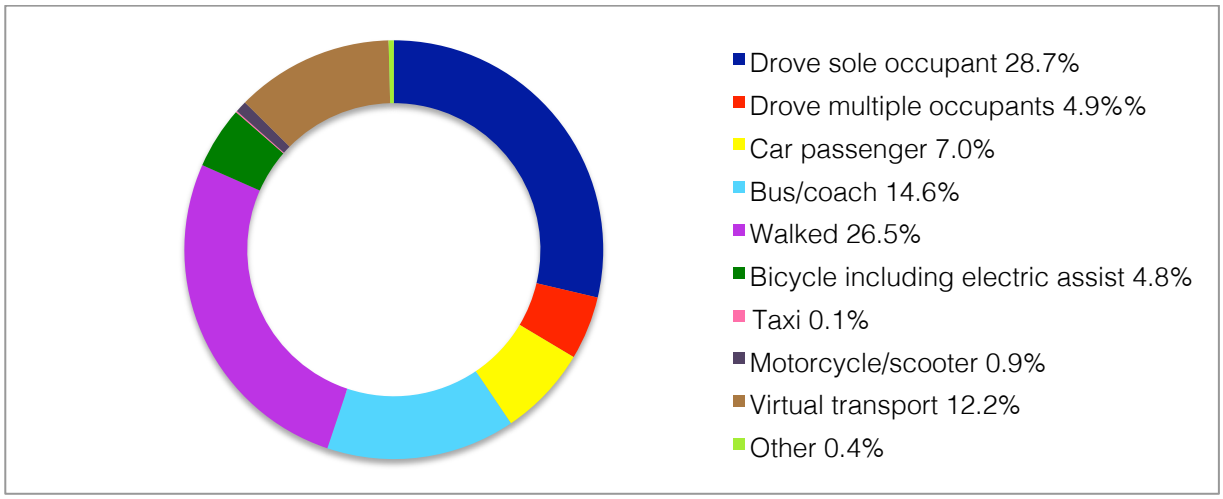


Figure 4: Mode of transport used by students (all regions) travelling to/from home/study 2015

Modal share by region

As in 2013, the 2015 data reveals marked differences in modal share across the three Tasmanian regions in which UTAS has campuses. Approximately 15% of staff based in the North and 7% based at North West campuses/facilities use active transport (cycle or walk) as their primary mode of travel. Active transport use is greatest among staff based in the South where more than 22% of staff trips are by active modes.

Students attending Tasmanian campuses and/or facilities in the South are also twice as likely than those in the North, and three times more likely than those in the North West, to use a bus as their primary mode of travel. Since 2013, however, there has been a growth in bus use across all regions, with particular improvements in the south where 18% of students use the bus as their main mode of transport compared to 14% in 2013. Approximately one in three students attending campuses/facilities in Tasmania's South and North use active transport as their primary mode of travel. Active transport use is much lower among students in the North West, where approximately 8% use it as their primary mode. This is a significant decrease from that of 2013, when 13% of students reported using active transport in the region.

Table 2: Staff and student modal share of trips to/from work/study and home by region 2015

MODE OF TRAVEL	SOUTH		NORTH		NORTH-WEST	
	Staff	Students	Staff	Students	Staff	Students
Total number of recorded trips	3237	12001	1588	5350	186	894
Drove single occupant	46.7%	25.9%	64.0%	31.8%	86.6%	48.0%
Drove multiple occupant	13.6%	5.0%	9.8%	5.1%	1.1%	3.5%
Car passenger	6.1%	7.4%	3.8%	5.6%	4.8%	8.9%
Bus / coach	5.5%	18.2%	2.0%	7.9%	0.0%	5.7%
Walked	13.3%	27.6%	7.5%	27.3%	0.0%	6.0%
Bicycle	8.9%	5.6%	7.6%	3.3%	7.0%	2.0%
Taxi	0.3%	0.1%	0.6%	0.1%	0.0%	0.0%
Motorcycle / scooter	1.2%	1.0%	0.6%	0.6%	0.0%	0.0%
Water taxi / ferry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Virtual transport	3.1%	8.8%	3.4%	17.8%	0.0%	25.5%
Other	1.0%	0.3%	0.2%	0.6%	0.5%	0.2%

Sustainable modal share by campus

Regional differences are further defined by the location and form of campuses. Central UTAS campus/facility locations near or within a city CBD appear to have an influence on sustainable mode choice, with Hobart CBD facilities, Sandy Bay and Inveresk campuses performing most strongly for student sustainable modes. The Cradle Coast campus has a significantly lower proportion of students and staff using category 1 sustainable modes (bus, cycle, walk) compared to all other major sites.

The above observation points to a range of factors facilitating more sustainable travel choices including:

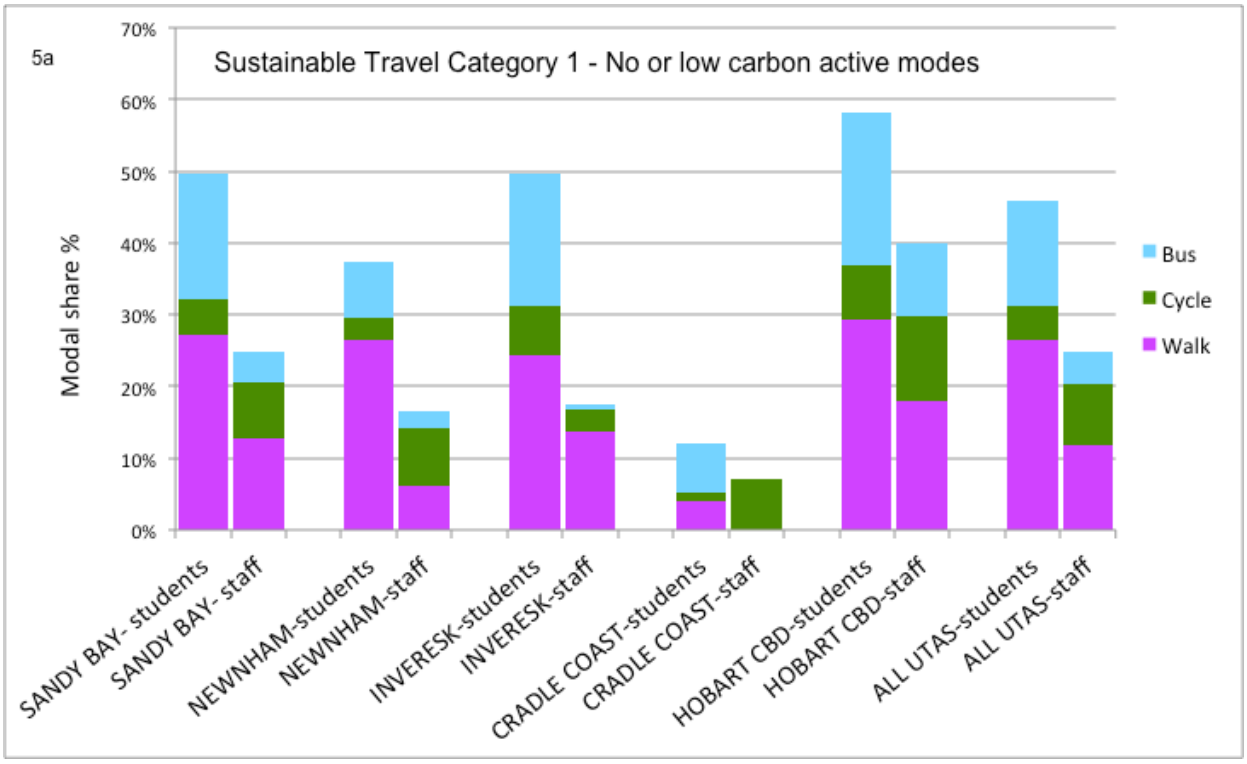
- a high proportion of survey respondents both residing and working/studying within inner urban suburbs enabling shorter trips to work/study to campuses in Hobart and Launceston[9]
- good access to public transport in central city locations
- accessibility to various active transport infrastructure, including bike lanes and end-of-trip facilities
- little to no free on-campus parking.

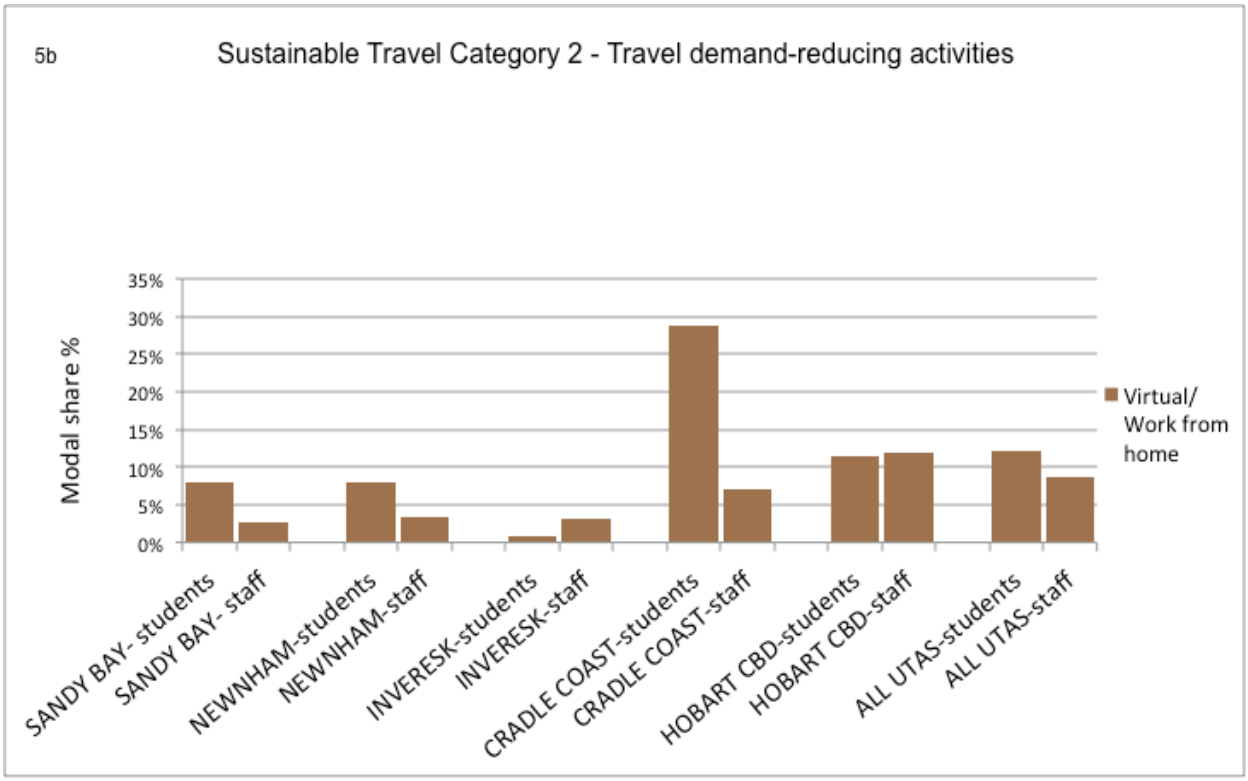
On the other hand, students and staff based at the Burnie Cradle Coast campus are more dispersed, have more limited access to public transport, have to negotiate very hilly terrain, and have free campus parking available. These, and a stronger female gender bias for students and staff at the Cradle Coast campus, are likely contributing factors to high levels of car use. Cradle Coast campus students are more likely to use virtual travel modes (sustainable travel category 2) than other campuses but have similar levels of carbon reducing vehicle use (multiple passenger/carpooling) as most other campuses. For staff, multiple passenger/carpooling is lowest at the Cradle Coast campus and highest at the Sandy Bay and Hobart CBD campuses. This further points to the heavy reliance on single occupant motor vehicle modes in the North West. Figures 6 and 7 show that single occupant vehicle use by staff at the Cradle Coast campus in Burnie is highly dominant at almost 90%, the highest proportion recorded by either staff or students across UTAS campuses and facilities. For students, both the Cradle Coast campus and Rural Clinical School in Burnie have the highest single occupant vehicle use of all campuses (around 46% and 55% respectively), while all car based modes (including 'drove as a single occupant' and 'drove with multiple occupants' and 'car passenger') are approaching 60% and 70% respectively at these campuses.

[9] Mapping outlined in the UTAS *Sustainable Transport Strategy 2012-2016* shows a high density of students and staff living within a 5km radius of major campuses in Launceston and Hobart, see p 23-35.
UTAS Sustainable Transport Strategy 2012-2016

Looking at active modes specifically (cycle and walk), over 30% of staff and 41% of students at the Medical Science Precinct in Hobart walk or cycle as their main mode, while at IMAS-Salamanca 37% of staff and 63% of students do so. These central Hobart sites have the highest proportions of active transport modes recorded by staff and students across all UTAS campuses and facilities. As a comparison, staff active transport share at suburban Sandy Bay and Newnham campuses is 21%, and 14% respectively.

These place based differences point to the need for place and region specific transport and urban planning responses. In our inner city areas, the focus on reinforcing transport infrastructure, public transport services, and urban design to grow the attractiveness of sustainable modes for short to medium length trips is essential, while on the Cradle Coast, where settlements are more dispersed and public transport delivery is more challenging, there needs to be concerted collaborative and perhaps innovative efforts to address both travel demand and travel choice options.





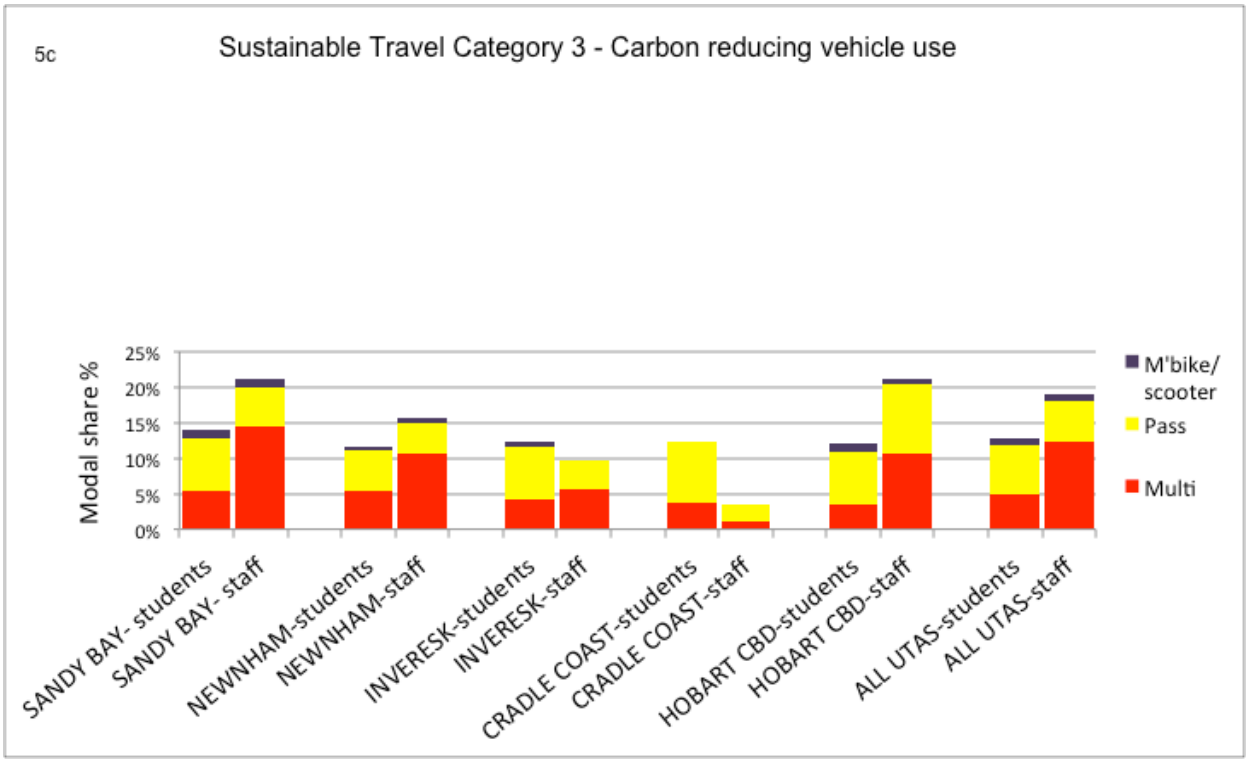


Figure 5a-c: Sustainable Travel Categories by campus 2015 – students and staff

Note: Hobart CBD includes IMAS-Salamanca, Medical Sciences Precinct, The Domain, Centre for the Arts and the Conservatorium of Music which are all located within the Hobart CBD and central waterfront zone.

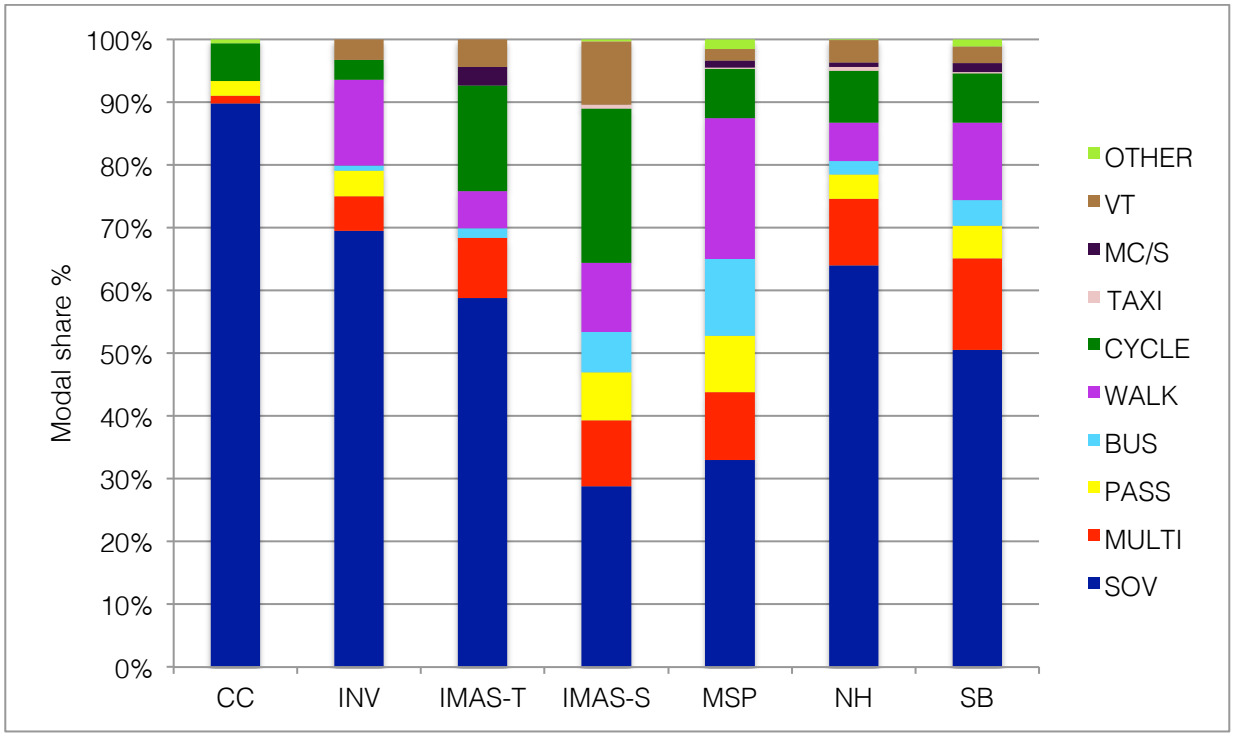


Figure 6: Mode share by campus 2015 – all staff respondents

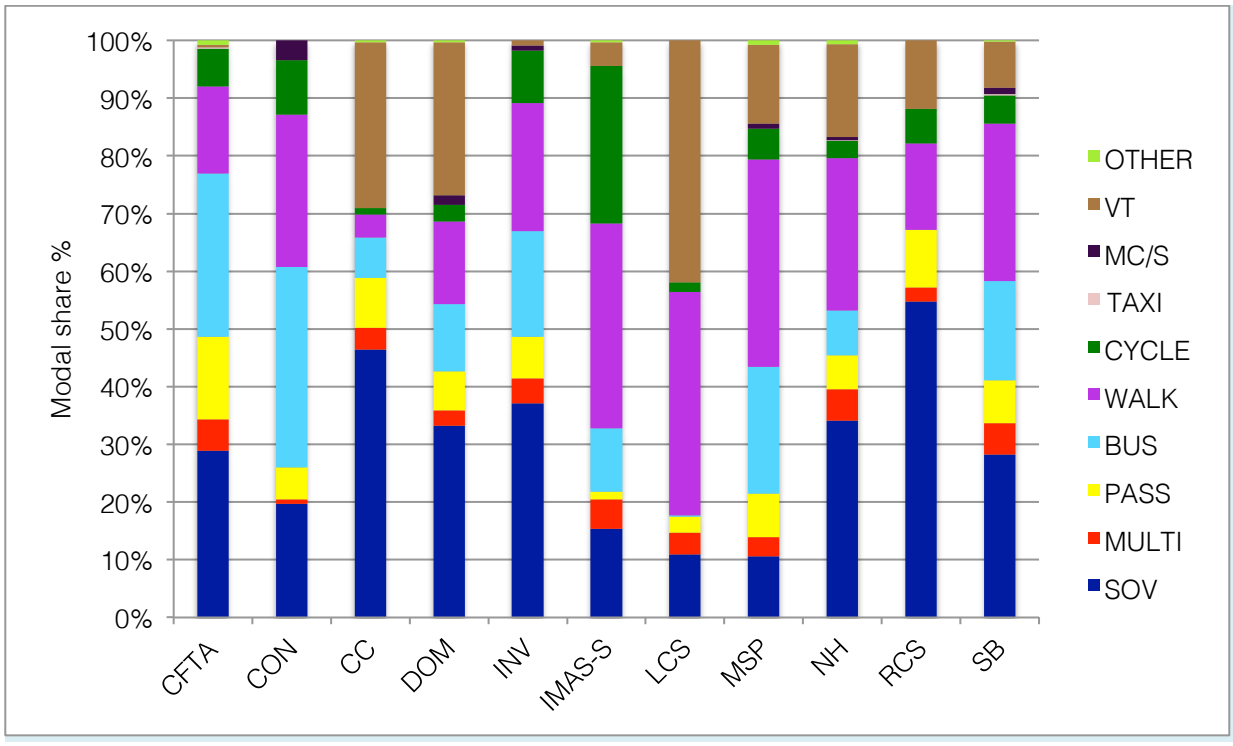


Figure 7: Mode share by campus 2015 – all student respondents

4.2 MULTI-MODAL TRIPS

More than 10% of all staff and student trips during the survey period were multi-modal. Like 2013, the combination comprising the greatest share of multi-modal trips for staff was 'drove with multiple occupant' then 'drove as a single occupant' (59%). This could have been due to dropping children at school, partner at work, etc (see Figure 8). For students, 'multiple buses' comprised the greatest share of multi-modal trips. More than 19% of staff multi-modal trips consisted of 'drive then walk' whilst over 23% of student multi-modal trips consisted of walk and bus (all walking trips recorded were more than 11 minutes in travel time). More than 12% of staff and 43% of student multi-modal trips required the respondent to use 'multiple buses' to get to work/study from home. The need to use multiple buses in the one journey is recognised as a key inhibitor of bus use overall as it tends to significantly increase journey time (including wait times), hence, through-servicing or transport corridor focused services linking major activity centres, including campuses, is likely to result in more attractive bus services[10].

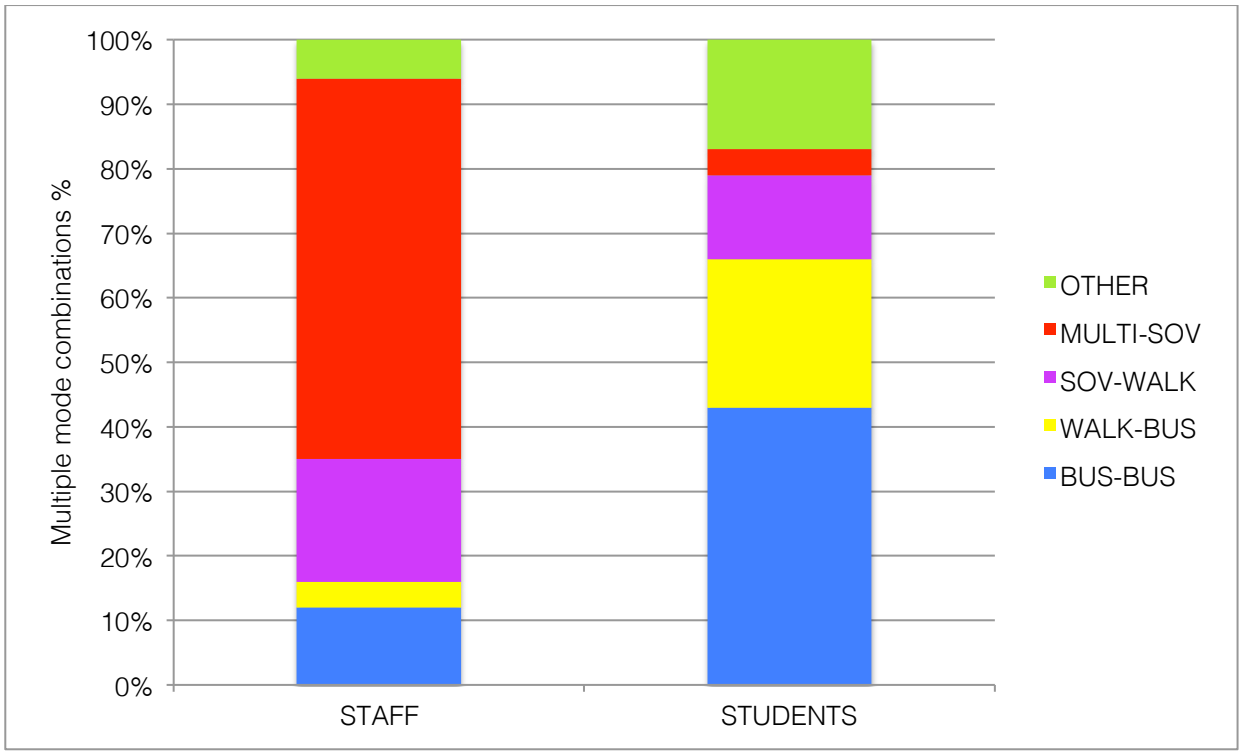


Figure 8: Most common combinations of multi-modal trips 2015

4.3 GENDER DIFFERENCES

There is some variance in travel behaviour and transport choices according to gender. Specifically, there is more difference between male and female staff than between male and female students with 1.1 female students driving single occupant vehicles for every

[10] Mulley, C, and Ho, C., 2013. Evaluating the impact of bus network planning changes in Sydney, Australia. *Transport Policy*, 30: 13-25.

male student, and 1.3 female staff driving single occupant vehicles for every male staff member. Women tend to drive to work or study a little more than men across most campuses, except at Inveresk where they tend to drive a little less (both staff and students), and at Hobart CBD facilities where there is no apparent gender bias amongst the staff (Figure 9). The latter is likely to be due to the limitations on parking opportunities (availability and cost) in the Hobart CBD locations relative to other campuses where parking is provided. The higher ratio of female to male car users (especially drivers of single occupant vehicles) is not surprising given what we know of gender and car use. The higher rates of female staff using cars is likely to be a reflection of their life-stage, with staff more likely to have children and other caring responsibilities and higher incomes than students (although these factors will also be the case for some students given the higher than sector average of mature age students at UTAS). The former is cited in the literature as being particularly important in determining differences in travel behaviour between households with children and without and between men and women more generally[11,12]. Women and men tend to increase their car use when they have children to care for. Women in particular though are more likely to work part-time and therefore be travelling outside of peak periods, they are known to juggle more daily tasks in addition to work than men in general (i.e. picking up and dropping off kids, undertaking domestic, volunteer and other caring duties) which impacts on their choice of transport. This is not to say that many women do not wish they had other choices for some of their trips or that some men are not constrained by similar commitments.

Women typically cycle less than men in urban Australia[13]. This picture is similar to the USA where men's cycling trips surpass women's by at least 2:1, but in stark contrast to cycle friendly cities in Europe, such as Copenhagen or Amsterdam, where female cycle trips outstrip male trips[14]. Figure 10 shows that UTAS female staff and students survey participants cycled less than male staff and students in 2015. The male to female cycle ratio across the University in 2015 is 3:1, although for the Sandy Bay campus the ratio of male to female cyclists for staff is lower at 2:1. While Hobart CBD locations demonstrate the highest cycle mode shares this does not necessarily translate to higher proportions of women cycling to the Hobart CBD. In fact, locations such as IMAS-Salamanca have particularly high male to female cycle ratios.

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[11] Lyth-Gollner, A., & Dowling, R., 2002. Implications of Household Form, Gender & Parenting Cultures on Car Use & Urban Transport Policy: a Sydney Study, *25th Australasian Transport Research Forum Incorporating the BTRE Transport Policy Colloquium*, October 2-4, Canberra, ACT.

[12] Dowling, R., Gollner (Lyth), A., & O'Dwyer, B., 1999. A Gender perspective on urban car use: A qualitative case study, *Urban Policy & Research: An Australian & New Zealand Guide to Urban Affairs*, 17 (2) pp. 101-110.

[13] In Melbourne and Sydey the male to female cycling ratio is approximately 4:1 and 5:1 respectively, see: Garrard, J., 2011. Bikes as transport: getting Australian women along for the ride, *The Conversation* (11 Aug 2011) https://theconversation.com/bikes-as-transport-getting-australian-women-along-for-the-ride-2157 (accessed online 7 Nov 2015)

[14] Baker, L., 2009. How to Get More Bicyclists on the Road, *Scientific American* (1 Oct 2009), http://www.scientificamerican.com/article/getting-more-bicyclists-on-the-road/ (accessed online 7 Nov 2015).

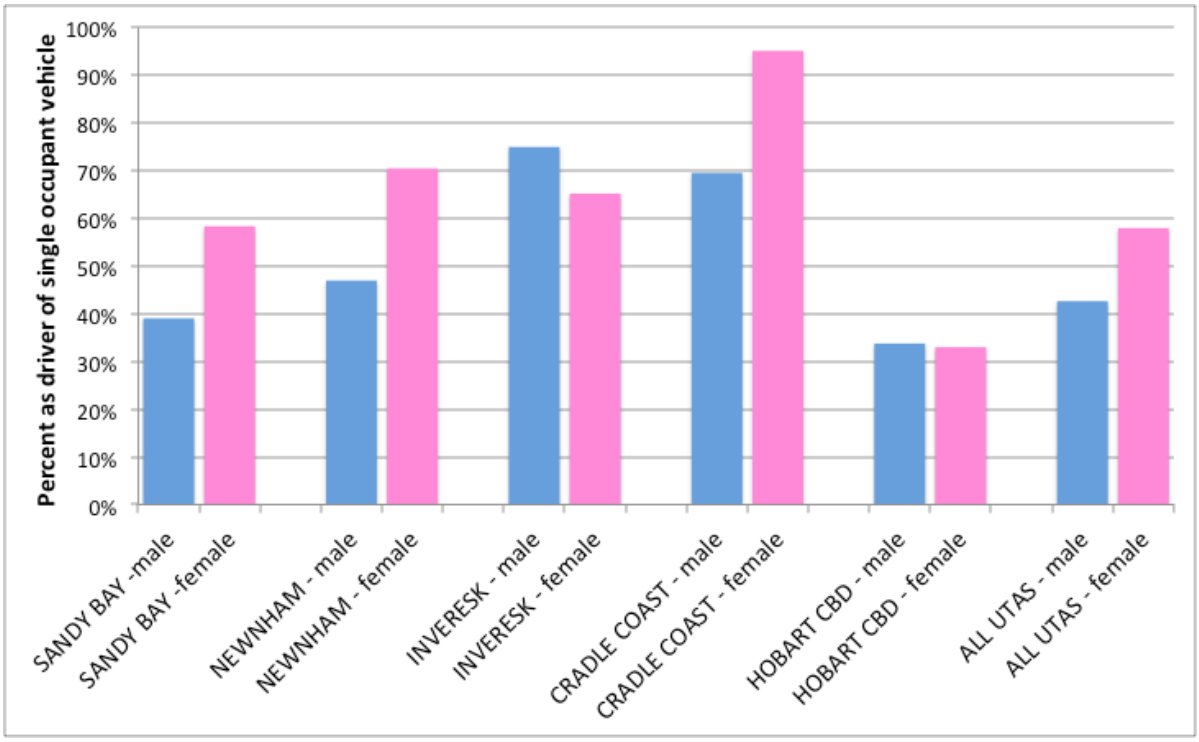

Figure 9: Travel to/from work/study as driver of a single occupant vehicle – staff by campus and gender 2015

Note: Hobart CBD includes IMAS-Salamanca, Medical Sciences Precinct, The Domain, Centre for the Arts and the Conservatorium of Music which are all located within the Hobart CBD and central waterfront zone.

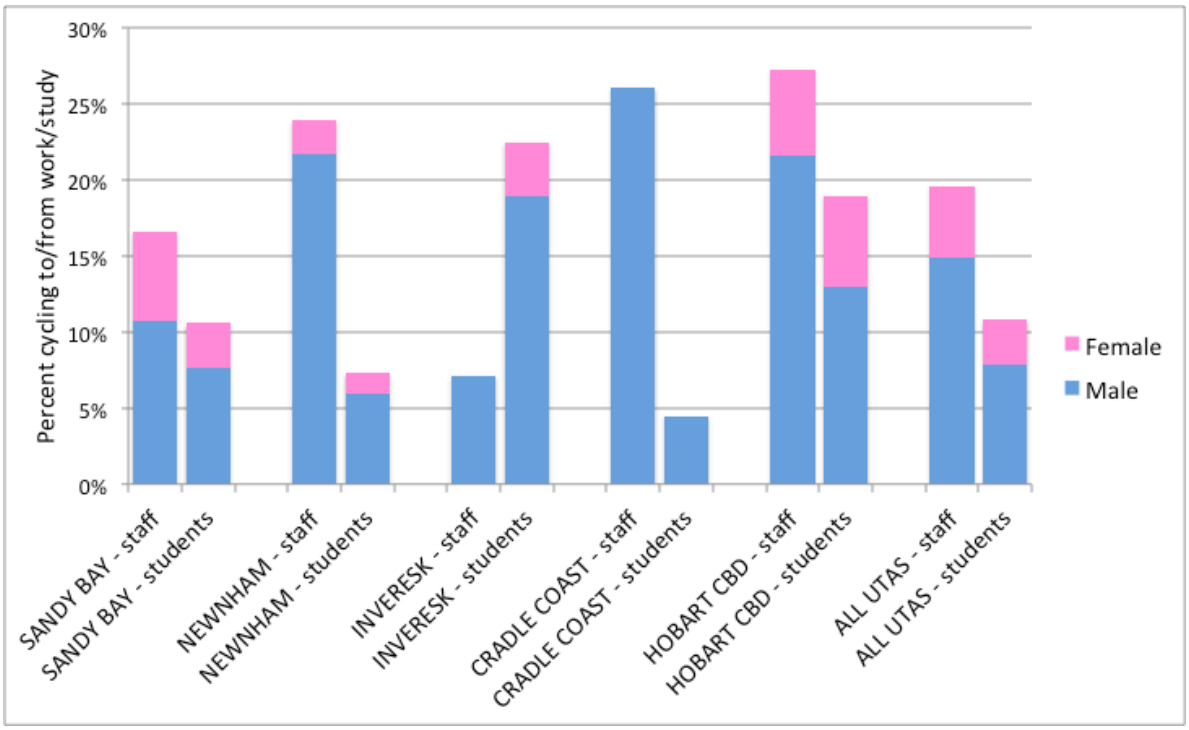

Figure 10: Percent of staff and students cycling to/from work/study by gender 2015

Note: Hobart CBD includes IMAS-Salamanca, Medical Sciences Precinct, The Domain, Centre for the Arts and the Conservatorium of Music which are all located within the Hobart CBD and central waterfront zone.

Women are sometimes talked about as the indicator gender for cycling, that is, if you have large numbers of women cycling compared to men then your cycling

infrastructure is likely to be of the quality to attract a broad range of people[15]. Focus group discussions with staff at the IMAS-Salamanca site who had previously worked at the Sandy Bay campus and the lower male to female cyclist ratio at the Sandy Bay campus compared to other locations point to this consideration being true in Hobart, where there have been particular improvements to Sandy Bay cycling infrastructure in recent years. In the IMAS-Salamanca focus group, women mentioned concerns about safety and confidence. Some who did not ride voiced a desire to do so if cycling was perceived to be a less risky endeavor in high traffic zones, while those already cycling tended to prefer cycling to the suburban Sandy Bay campus rather than into the CBD where traffic was more of an issue and cycle routes less defined or integrated despite the central location of CBD facilities. Most of these women lived in suburbs surrounding the Sandy Bay area[16].

4.4 INTERCAMPUS TRAVEL AND OTHER TRAVEL FOR WORK PURPOSES

Intercampus routes and trip growth

Whilst the majority of trips undertaken by staff and students are between home and UTAS, there are also a significant number of trips both intercampus and for business purposes. Approximately 14% of staff and 7% of students travelled intercampus during the survey period. Figures 11 and 12 show that the majority of intercampus trips by staff (almost 55%) and students (68%) were in Hobart - local trips between the Sandy Bay campus and Hobart CBD or waterfront facilities - followed by inter-regional intercampus trips between Newnham and Sandy Bay (staff 13%, students 10%), and local trips in Launceston between Newnham and Inveresk campuses (staff 9%, students 13%). For staff, the number of intercampus trips per day increased by 50% for the equivalent 2013 and 2015 survey period. The growth in intercampus travel was most noticeable for trips between the Sandy Bay campus and UTAS Hobart CBD facilities, with an increase of 61%.

Intercampus modal share

Figure 13 presents the breakdown in modal share for staff and students travelling intercampus between Sandy Bay and the Hobart CBD and waterfront specifically. Despite these trips being relatively short, a little over 50% of staff trips were by car, of which almost 40% were as the driver of a private single occupant vehicle. For students, these short trips are much more likely to be taken by more sustainable modes, particularly bus or walking. In fact, the ratio of student to staff category 1 modes (bus, cycle, walk) for intercampus trips between Sandy Bay and the Hobart CBD is 2:1.

[15] Ibid

[16] Pers. comm. IMAS and MSP transport focus group discussions, August 2015.

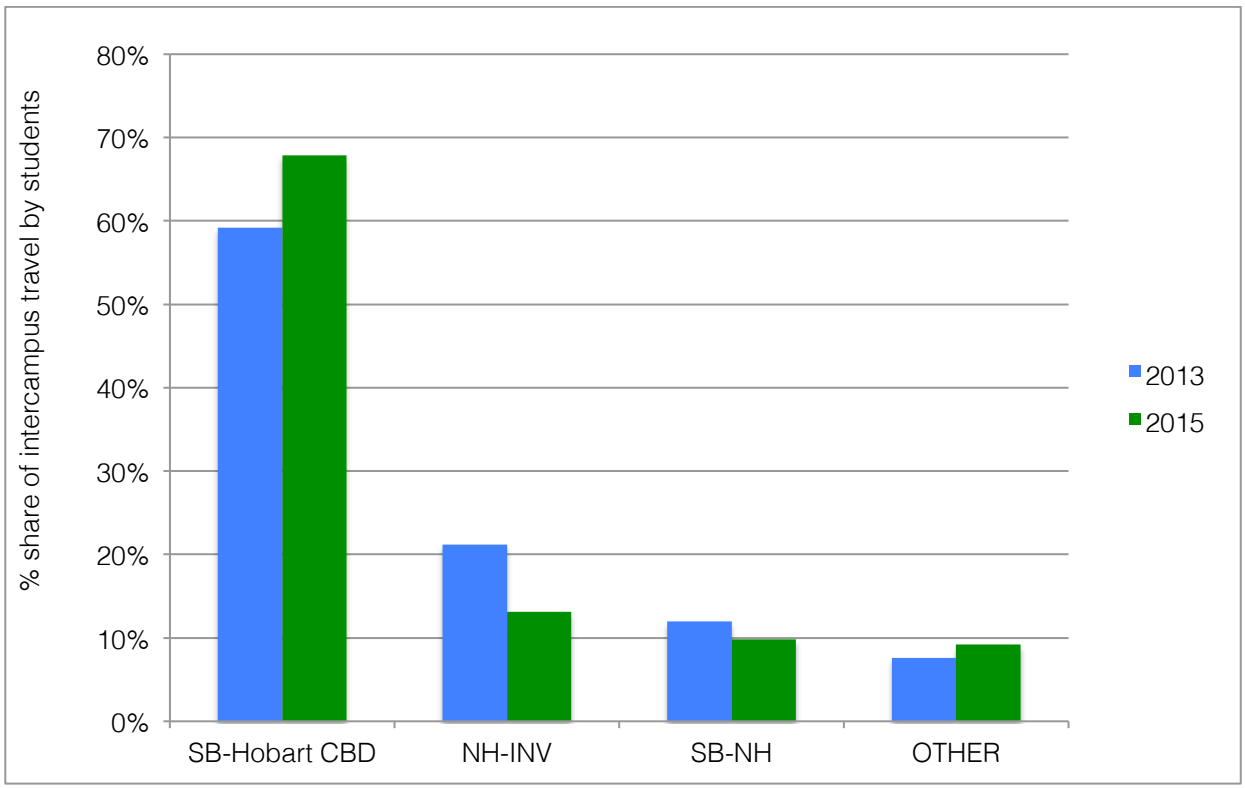

Figure 11: Intercampus trips by major route category 2013 and 2015 – students

Note: 'Other' in Figure 11 and 12 includes all other intercampus trip combinations.

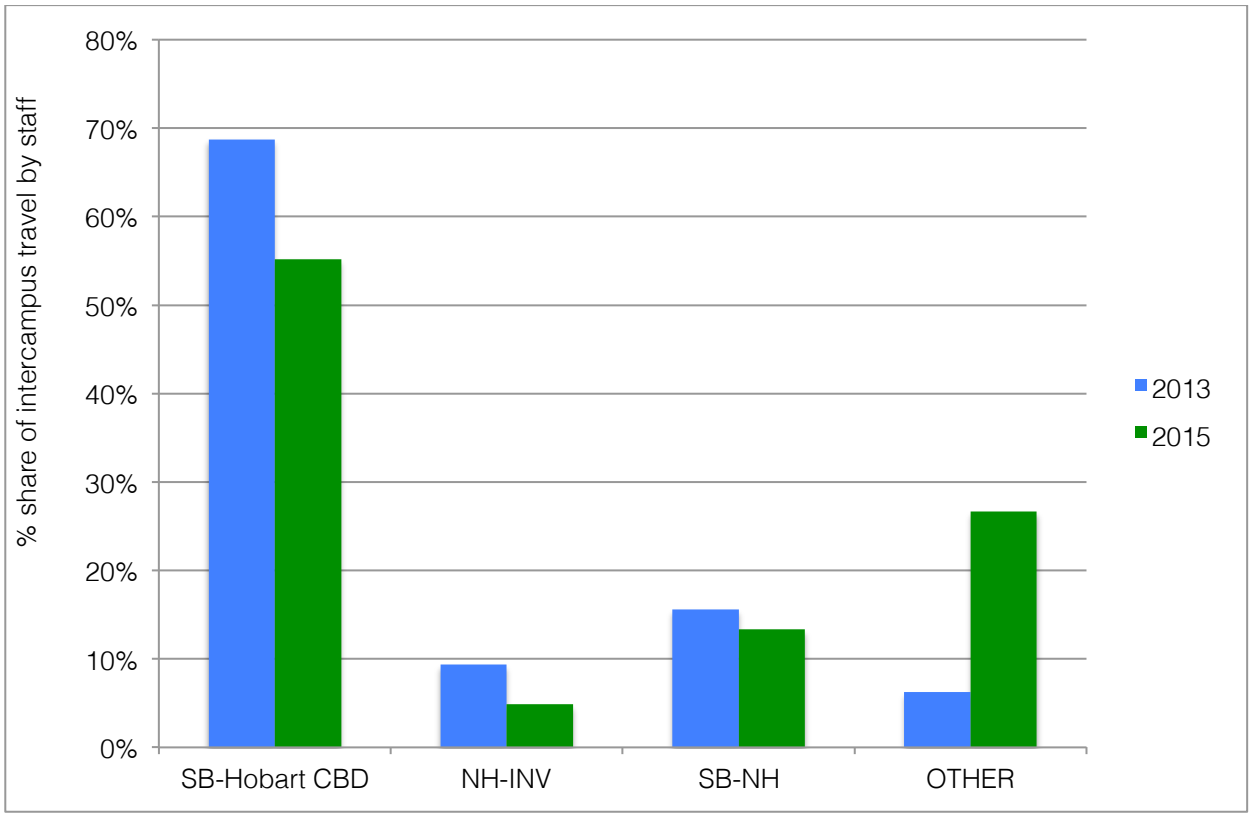

Figure 12: Intercampus trips by major route category 2013 and 2015 – staff

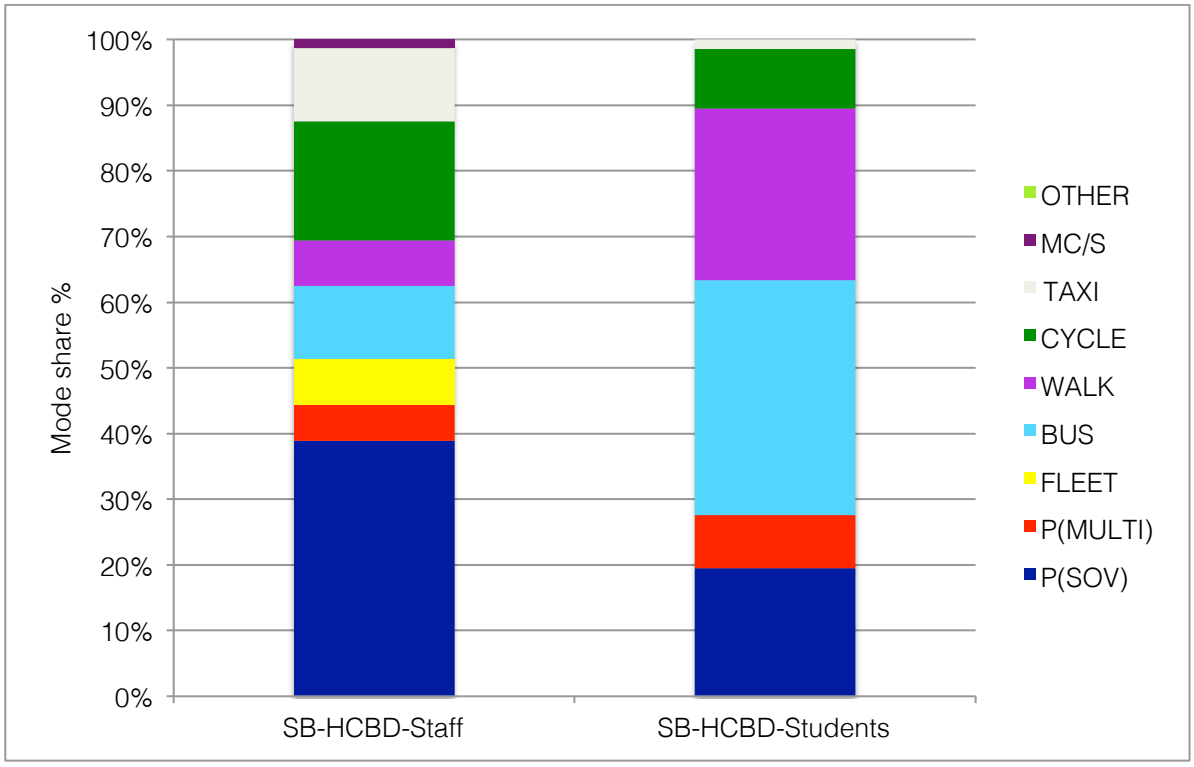

Figure 13: Primary mode share of Hobart intercampus trips 2015 – staff and students

Way finding signage for walking and cycling near the Launceston Inveresk campus (left), and way finding signage for cyclists near the Hobart Sandy Bay campus (right)

Other staff business travel

Figure 14 presents the breakdown in modal share and approximate distance of journey for staff travelling within Tasmania for business purposes to non-UTAS destinations. Figure 15 presents the breakdown in modal share of journey for staff travelling under 2.5km within Tasmania for business purposes to other non-UTAS destinations. Compared to 2013, sustainable travel category 1 mode use by staff for journeys under 2.5km has increased by 12 percentage points while journeys 2.5-5km have increased by almost 13 percentage points. This may be partly due to the consolidation of university facilities in and around the Hobart CBD.

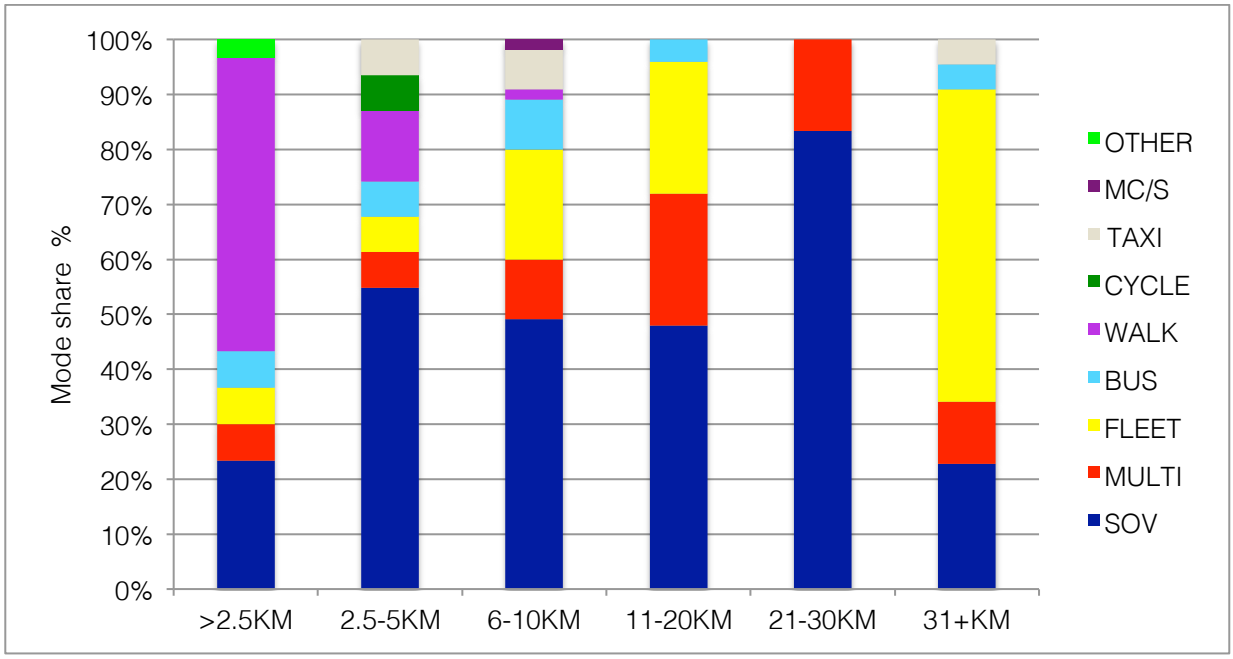

Figure 14: Staff 'other business travel' by length of trip 2015 (land trips only)

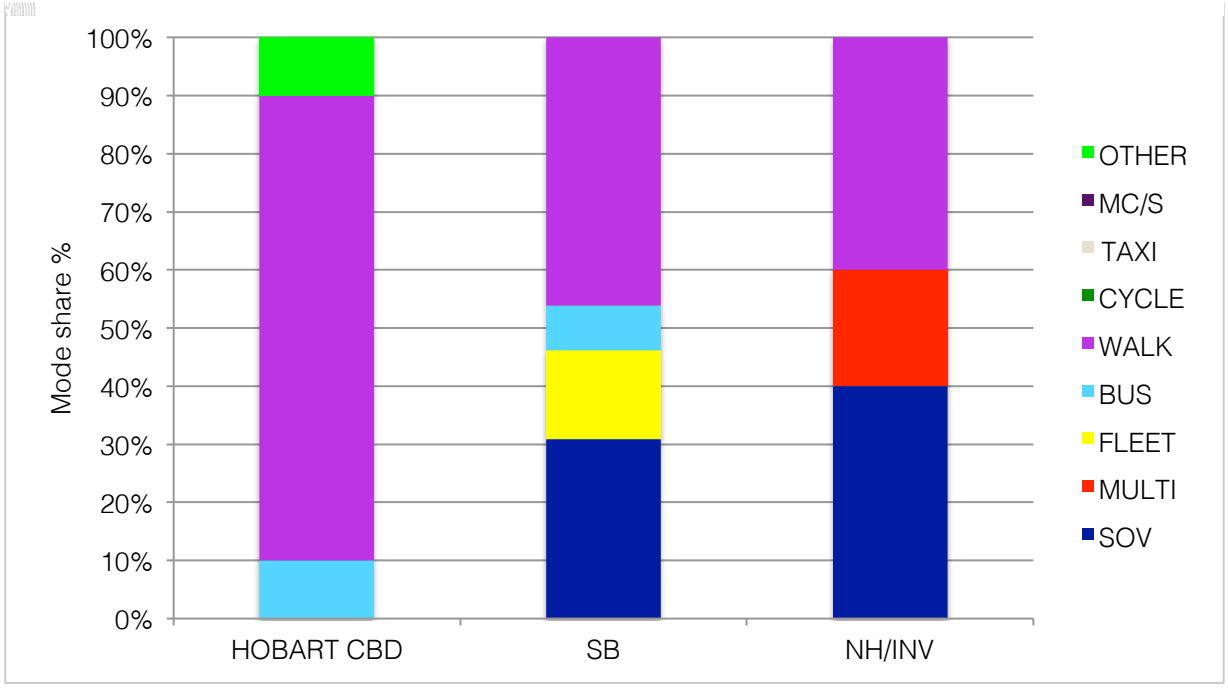

Figure 15: Staff 'other business travel' trips under 2.5kms 2015

4.5 METRO TASMANIA GREENCARD OWNERSHIP

Southern Tasmania has the greatest share of both staff and students who have a Metro Greencard for bus use (Figure 16). While the share of staff travelling by bus to and from UTAS is more than 4% (a modest increase on 2013 findings), the number of staff that have a Metro Greencard is almost 35%, an increase of 7 percentage points on 2013 findings. The survey did not ask, however, whether there was credit on the Greencards.

Metro Tasmania 'Tap-and-ride' Greencard (above)

The launch of the new high-frequency 'Turn Up and Go' service between Newnham, Inveresk and the Launceston CBD, early 2015 (left)

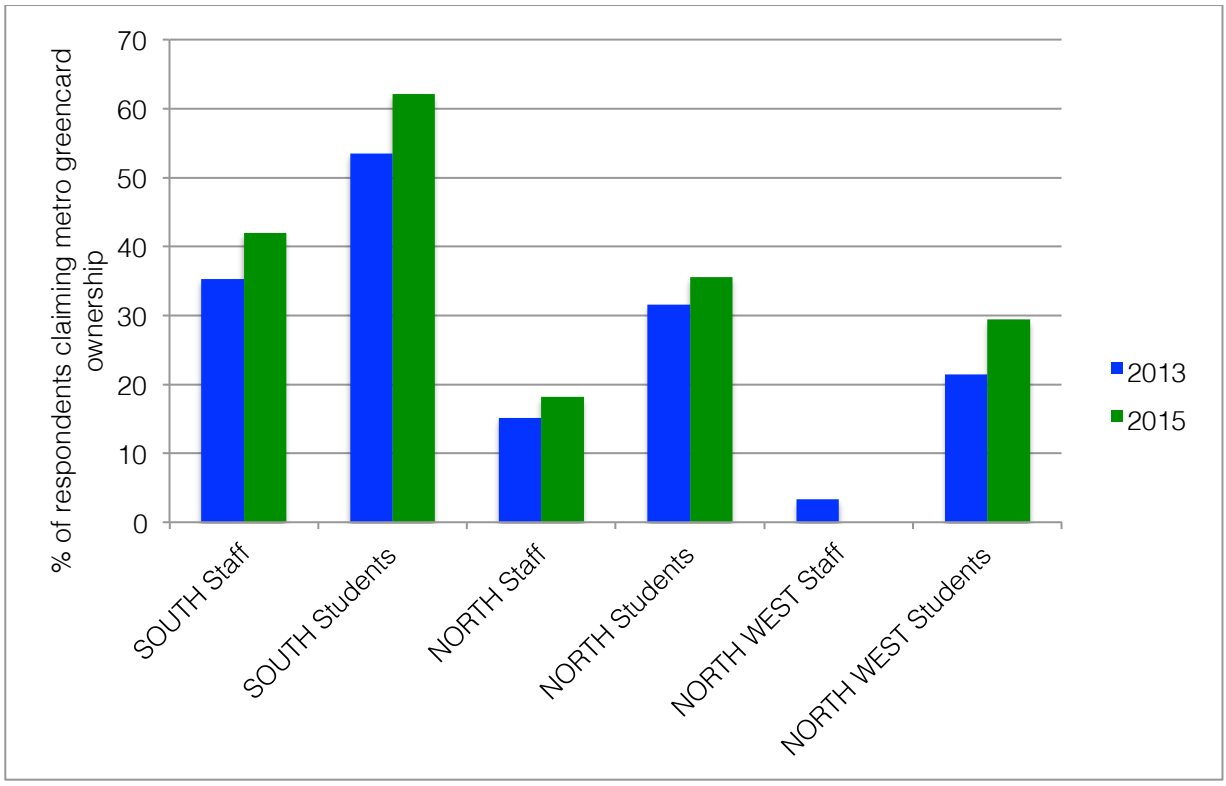

Figure 16: Metro Greencard ownership by region, staff and students 2013 and 2015

5 TRACKING PROGRESS AND IDENTIFYING OPPORTUNITIES AND CHALLENGES

The following figures show how the university community overall has progressed in terms of demonstrating more sustainable transport behaviours. We can see that each region in which the University has a presence has performed differently, although there are a few consistent trends. The first obvious improvement is the increase in bus use in each region. This has been especially so for students and for those working and studying at southern campuses. The potential for continual improvement in this area is positive with further bus timetable, routing and infrastructure improvements in both Launceston and Hobart coming online through 2015 and into 2016 to provide more frequent and more direct bus services and access at UTAS Hobart and Launceston campuses. Note that the new 15 minute, high frequency bus service between Newnham and Inveresk campuses and the Launceston CBD had been in operation for 5 weeks when this survey was conducted. Ridership numbers from Metro Tasmania showed an increase of >22% - 25% from 2014 patronage data[17].

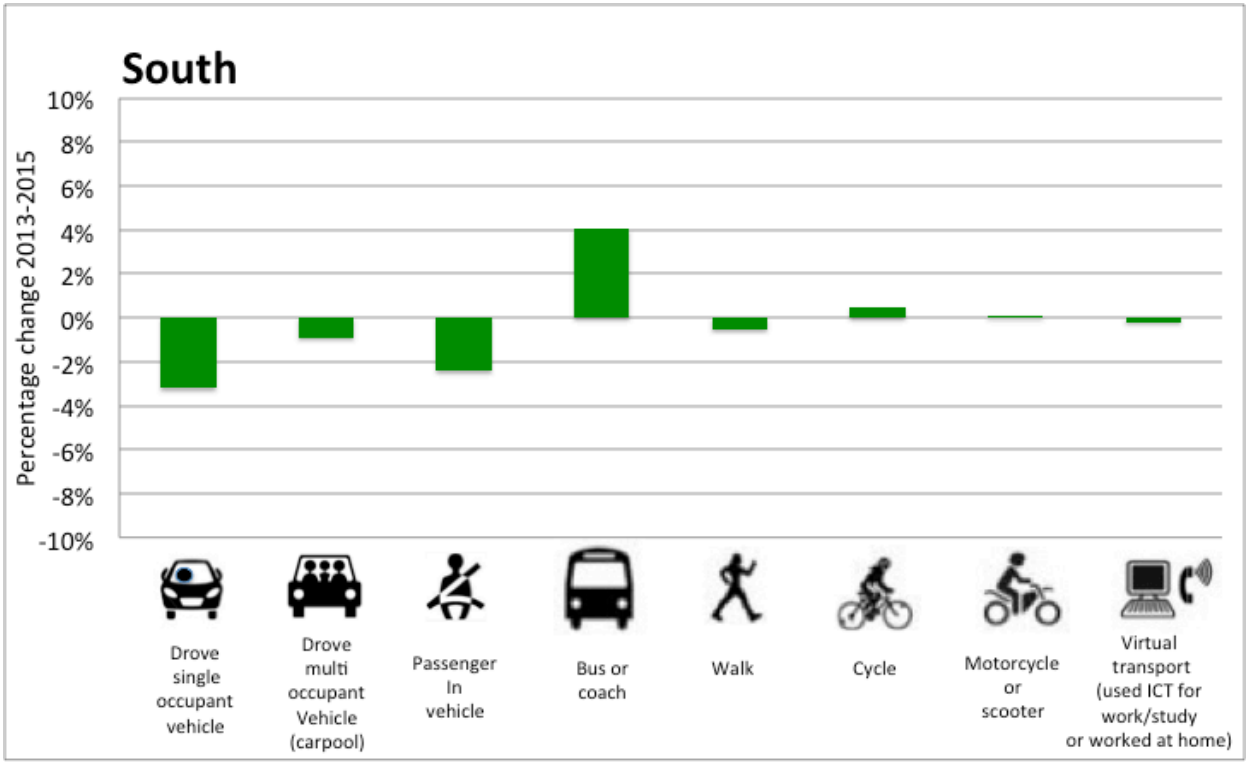

Figure 17: Mode share change by percentage points 2013-2015 – southern Tasmanian campuses (all student and staff participants)

[17] Pers. comm., Metro Tasmania, November 2015.

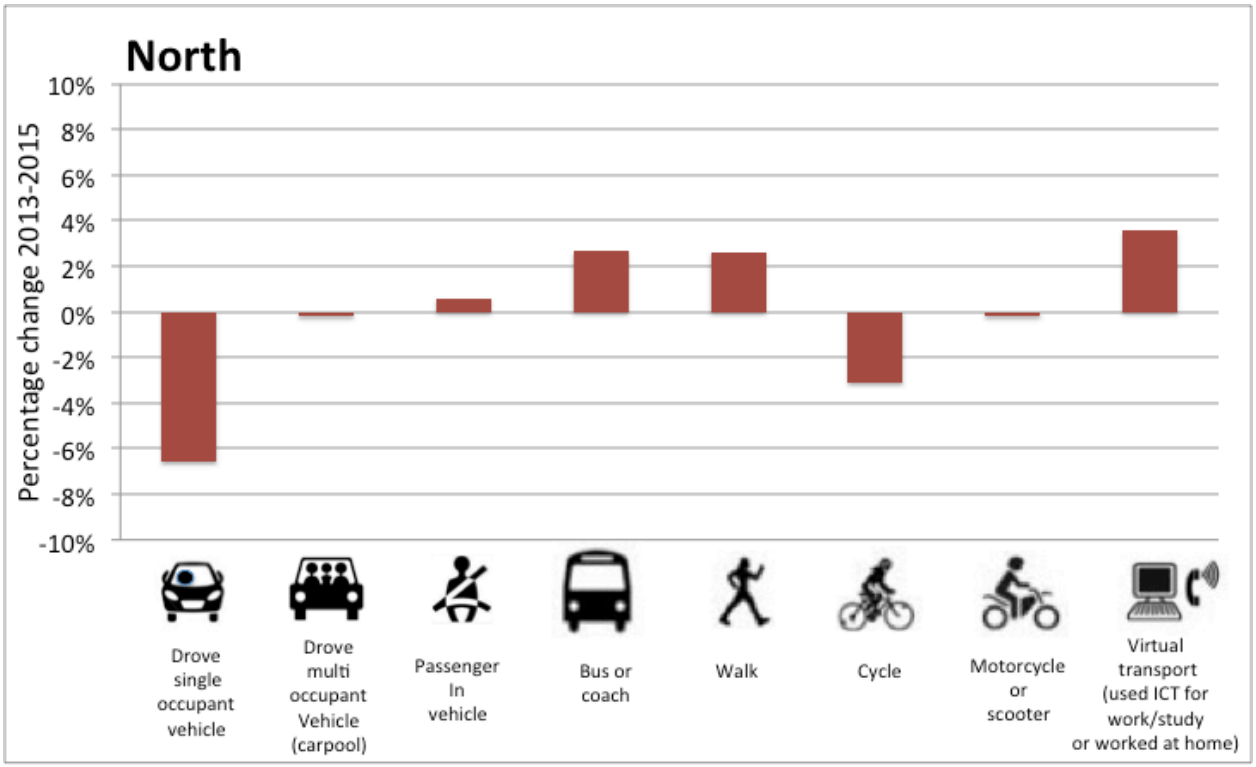

Figure 18: Mode share change by percentage points 2013-2015 – northern Tasmanian campuses (all student and staff participants)

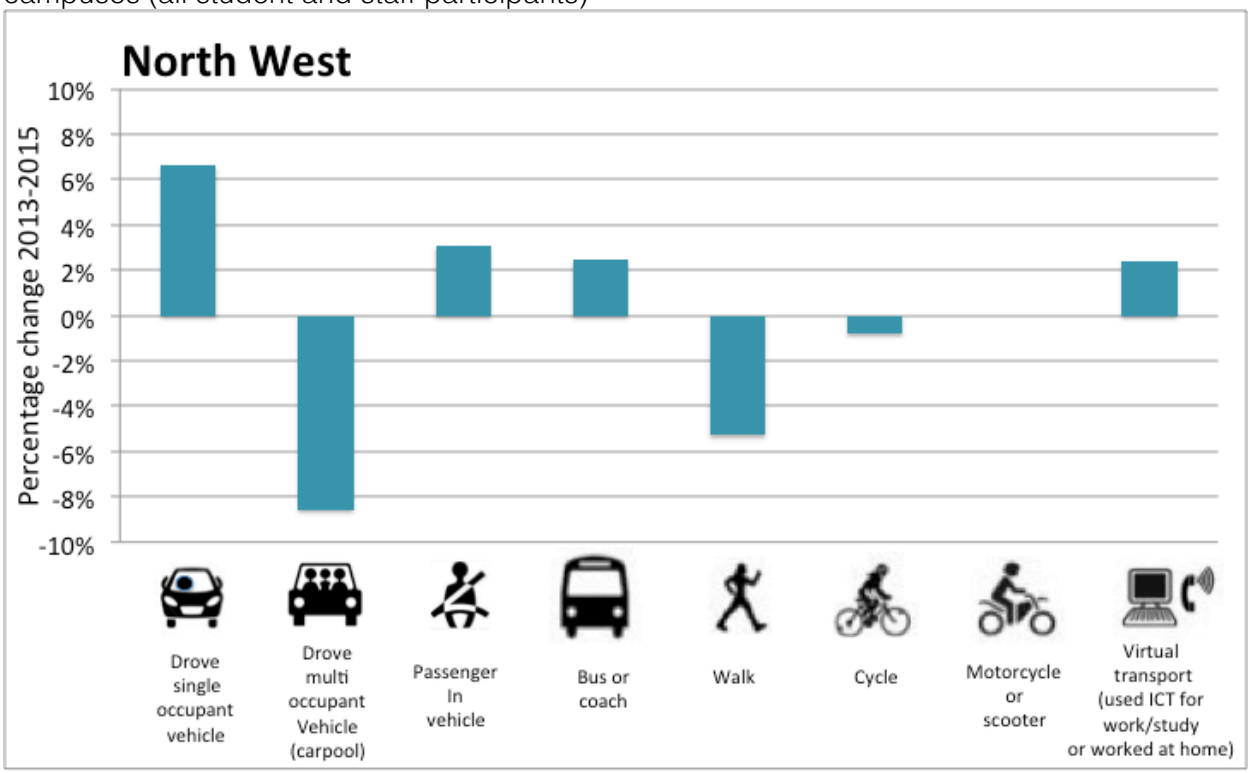

Figure 19: Mode share change by percentage points 2013-2015 – north-western Tasmanian campuses (all student and staff participants)

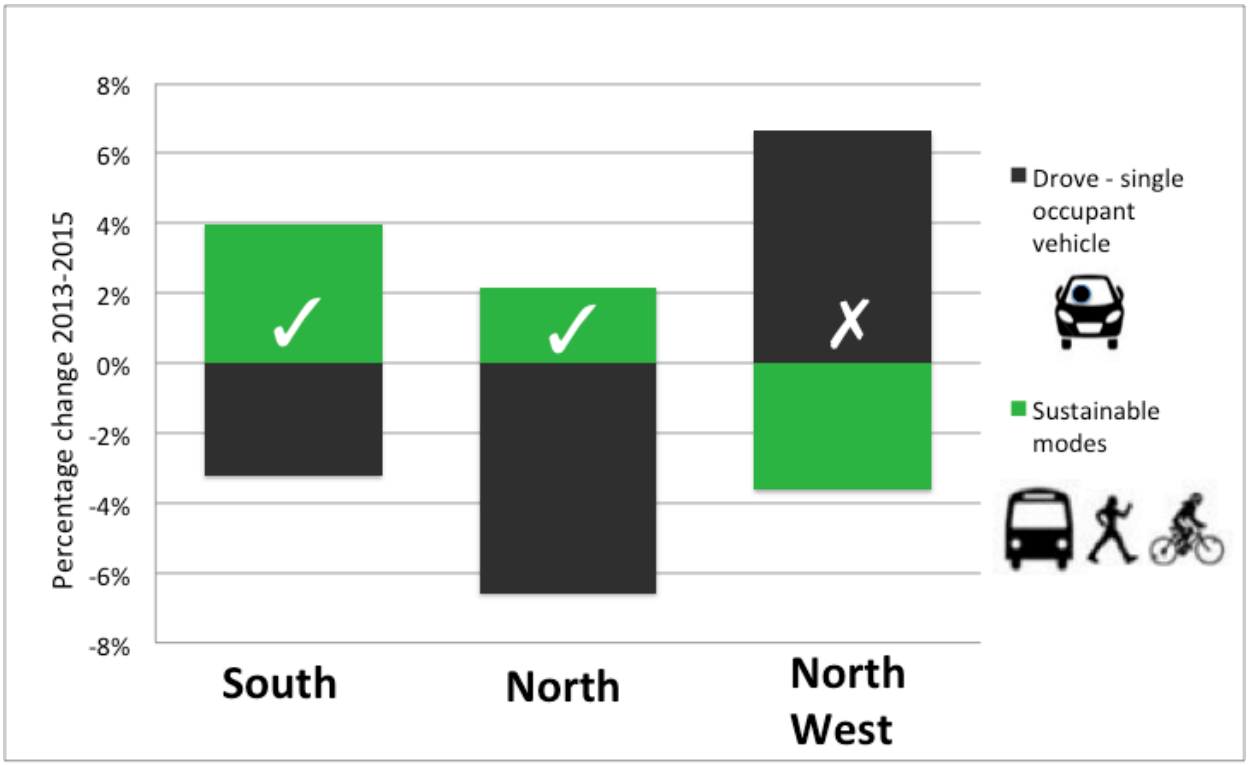

Figure 20: Overall University performance – change by percentage points in single occupant vehicle and sustainable travel Category 1 modes 2013-15 (all student and staff participants)

While we have seen some improvements in active modes (walking and cycling) the gains are variable depending on the location of the campus, with campuses located in inner urban or CBD settings performing the best. Overall, however, we can see that any small gains in cycling in the south have been cancelled out by a small drop in the proportion of walkers, although the change between 2013 and 2015 is only small and those catching buses would also likely be walking for part of their journey. This is why it is useful to package walking, cycling and bus trips together in a sustainable travel category. A similar situation is apparent in the north where an increase in the proportion of those walking is cancelled out by a similar decline in cycling trips overall, although improvements in bus use still delivers a positive sustainable travel result.

The results for Hobart and Launceston campuses, including CBD facilities, point to the need to continue to work closely with bus service providers, local councils and transport planning agencies to enhance local amenity, connectivity between key activity places, and the capacity for mobility by sustainable modes for short trips in the inner and middle urban zones. The lower proportion of female bike riders within the UTAS community compared to male riders also points to the need to give continual attention to much safer and connected cycle routes for commuter and family use to suit these riders and potentially capture latent cycling demand for local trips. This consideration is reinforced by the findings from the staff focus groups held at the IMAS and MSP precincts where female staff voiced their *desire* to cycle but were not necessarily confident to do so due to road safety fears, despite recent improvements to

cycle infrastructure for some routes and end of trip facilities for cyclists[18]. Collaborative efforts with bike infrastructure planning agencies at the local and state level are required to allay such fears. There are community-wide benefits to be had from attention to the needs of female cyclists in Tasmanian cities. As pointed out earlier, the more female cyclists there are compared to men, the more likely cycling infrastructure is attractive to a broader range of people.

In the North West region, there is an obvious need to consider new strategies for addressing what appears to be an increasing reliance on car use, specifically single occupant vehicles. The dispersed nature of settlements in the North West region, the length of journeys to university facilities, and the hilly topography around the Cradle Coast campus all contribute to a challenging transport planning environment in this region. While virtual transport has increased in the North West as it has in the North, reducing the need for travel for some work and study, we have also seen a marked reduction in carpooling behaviour (down 5% if we consider the difference between the decline in 'drove with multi occupants' and the increase in 'car passenger'). There are mixed observations on carpooling in Australian cities. In Hobart between 2001-2006, a very small rise in carpooling was observed, although nationally the trend has been a continuous fall in car passenger trips for travel to work specifically.[19] Improvements in information technology (specifically mobile apps) and the emergence of a sharing economy may work to enhance the attractiveness and access to carpooling options although this remains to be seen. It was assumed in the UTAS STS that the Cradle Coast campus would be particularly suited to carpooling enhancing strategies given its more limited public transport options. The University will consequently need to engage with its Cradle Coast community further and seek to collaborate with other agencies responsible for transport improvements and planning in the region to conceive of more innovative solutions.

[18] Pers. comm. IMAS-S and MSP transport focus group discussions, August 2015.

[19] Mees, P., O'Connell, G., & Stone, J., 2008. Travel to Work in Australian Capital Cities 1976-2006. *Urban Policy & Research*, 26(3): 363-378.

FURTHER INFORMATION

The data obtained from both the 2013 and 2015 *UTAS Travel Behaviour Survey* is being used for a comparative assessment of existing key performance indicators that were developed after the analysis of data from the 2013 survey. These indicators are used to guide the delivery of the *UTAS Sustainable Transport Strategy (*STS) and facilitate future transport, facilities and infrastructure planning. The data is important in that it provides both baseline and comparative information from which to monitor and communicate change and progress over time. It is intended that more detailed data analysis will continue allowing further research inquiry around the travel behaviour of the UTAS community, and transport planning generally, as well as contributing to the transport knowledge base for Tasmania as a whole. It is intended that the survey will be improved on and rolled out periodically as a longitudinal survey to allow monitoring and evaluation over time.

Further information on the survey can be obtained by contacting Anna Lyth at Anna.Lyth@UTAS.edu.au For AOSIP project context and operational use of data enquiries, please contact Corey Peterson on 03 6226 6203 or corey.peterson@UTAS.edu.au