ANU Below Zero Initiative survey

Baseline attitudinal data for the ANU staff and student community

The ANU has committed to reducing emissions to below net zero as soon as possible as part of the Below Zero Initiative. The ANU community will be led through a consultation process from September 2020.

We conducted a brief survey of the ANU community (both staff and students) attitudes towards climate change and emissions reductions before the consultation process begun. This report details the findings of this survey, which will be repeated annually as the Below Zero Initiative is implemented.

Image description: Row of bikes on ANU campus*

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Executive Summary

Over 500 members of the ANU community (including 183 students and 374 staff) shared their attitudes towards climate change and emissions reductions in a brief online survey.

Efficacy and impact of the Below Zero Initiative

Overall, we found high support for the Below Zero Initiative. While the majority of respondents were not yet familiar with the initiative, a strong majority indicated they thought the initiative would enhance the reputation of the University. Moreover, the majority of participants agreed it was likely the University would achieve its 'below zero' goal, and that the Initiative provides leadership for other organisations in responding to climate change. Most respondents favoured investing additional resources toward the Below Zero goal, and there was a strong sentiment that taking action on emissions reduction was a joint responsibility shared by the ANU and the University's staff and student community.

Climate change risk perceptions

Audience segmentation analysis indicated that the ANU community is predominantly made up of individuals who are *alarmed* or *concerned* about climate change (91.4%, versus 52.5% in the general population), expressing a great deal of worry about the issue and its likely effects on themselves and future generations.

Willingness to engage in personal behaviours

On average, participants showed a strong willingness to engage in a list of 12 personal behaviours. Behaviours with the highest ratings were shutting windows, doors, and computers down upon leaving campus, and using recyclables and compost bins. There were some small to medium differences in willingness between staff and students, with non-academic staff more willing to work from home and reduce air travel, and students more willing to take active modes of transport (as well as public transport) to campus.

Travel behaviour

Just over half of respondents travel to campus using active transport (bike/walk) or public transport. The remainder who travel by vehicle tend to have longer commutes, and many carpool with others in their household.

Survey method

The survey was launched on 31st August at 9am 2020, and closed at 2pm on 4th September 2020. At the time of surveying, the campus was open to staff and students, however teaching was largely being conducted remotely to comply with COVID-19 related restrictions on gatherings.

An invitation to complete the survey was sent to a random list of 3000 ANU staff (45%) and students (45% undergraduate, 10% postgraduate)[1]. To reach a wider audience, the survey was also advertised in the On and Off Campus newsletter distributed to all staff and students. Responses primarily came from the email advertisement (79%, versus 21% from On and Off Campus).[2] By the time the survey closed, the email invites had achieved an overall response rate of 14.6% (staff response rate: 23.3%; HDR students: 7.0%; other students: 7.7%). We note that, as with any opt-in survey, there may be some self-selection bias where those more interested in sharing their opinion on emissions reductions took part in the survey.

A total of 557 participants completed the survey, with an average age of 38.64 years (SD = 13.93 years). More females (58.5%) than males (40.8%) completed the survey (0.7% other).[3] Table 1 presents participants' primary role at the ANU, showing that the largest portion of responses came from non-academic staff members, followed by academics, undergraduate, and postgraduate students.

Table 1. Breakdown of participants by primary role at ANU

	Count	Percent of sample
Undergraduate student	120	21.5%
Graduate coursework student	28	5.0%
Higher Degree Research student	34	6.1%
Non-Award or Enabling student	1	0.2%
Academic staff member	148	26.6%
Non-academic staff member	226	40.6%

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[1] Although the ANU community is comprised of approximately 85.8% students, 5.9% academic staff, and 8.3% non-academic staff, we wanted to hear from ANU community groups equally to ensure data were representative across staff and student groups and to allow for comparisons. For these reasons, we invited a greater proportion of staff members than would be truly representative of the population.

[2] There were no significant differences between responses from email or On Campus distribution channels in familiarity with the Below Zero Initiative, or in ratings of the Initiative's effectiveness and impact, so data analyses included all respondents.

[3] This represents a gender bias in those who completed the survey, as ANU student data shows that 53% of students and 52% of staff are female.

Where analyses are reported for different demographic groups, the student group includes undergraduate students, graduate coursework students, HDR students and non-award or enabling students. These form three groups of similar size (as shown to the right).

Non-academic staff 40.6%

Student 32.9%

Academic staff 26.6%
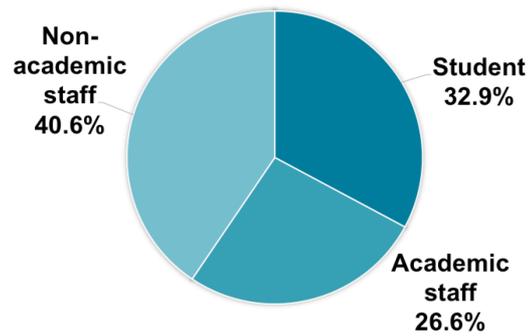
Efficacy and impact of the Below Zero Initiative

Participants were asked several questions relating to their familiarity with the Below Zero Initiative, and their views on whether they thought the initiative would be effective over several criteria. Mean responses are provided in Table 2.

Table 2. Mean participant ratings of efficacy and impact of the Below Zero Initiative

	Scale	Mean (SD)
Familiarity: To what extent are you familiar with the ANU Below Zero Initiative?	1 – Not at all familiar 4 - Somewhat familiar 7 – Extremely familiar	2.89 (1.64)
Achievability: How likely do you think it is that the ANU will achieve its target to reduce emissions to below net zero?	1 – Extremely unlikely 7 – Extremely likely	4.44 (1.46)
Leadership: How much impact do you think the ANU Below Zero Initiative can have in providing leadership to other organisations on how to address climate change?	1 – No impact at all 7 – A great deal of impact	5.44 (1.41)
Reputation: How do you think the ANU Below Zero Initiative will impact the university's reputation?	1 – Negative impact 4 – Neutral impact 7 – Positive impact	6.11 (1.15)
Attraction: To what extent do you think the ANU Below Zero Initiative will help attract future students and attract/retain staff?	1 – Not at all 7 – A great deal	4.64 (1.63)
Resources: What level of additional resources should the ANU provide to ensure achievement of the Below Zero goal?	1 – None at all 7 – A great deal	5.46 (1.34)
Responsibility: To what extent do you think it is the responsibility of the ANU to set restrictions that drive emissions reductions, versus the responsibility of ANU community members (i.e., staff and students) to voluntarily take action?	1 – Entirely the responsibility of the ANU 4 – Equally the responsibility of the ANU and community members 7 – Entirely the responsibility of the ANU community members	3.69 (1.22)

Figure 1 shows the distribution of ratings for each of the efficacy and impact questions. Almost one-third of participants reported being *somewhat familiar* with the Below Zero Initiative, more than half thought it was at least somewhat likely the goals of the initiative would be achieved, and more than three-quarters responded positively about the Initiative's potential to provide leadership to other organisations.

Perhaps the strongest endorsement from participants was their rating of how the Initiative would impact the reputation of the University; almost 90% indicated the initiative would confer at least some positive impact, and more than half of all participants rated this impact at the extreme positive end of the scale. On average, participants thought the Initiative would play some role in attracting and retaining staff and students, and favoured investing resources to achieve the Below Zero goal. The majority of participants (51.5%), indicated that it was equally the responsibility of the ANU and the University community to take action on emissions reduction.
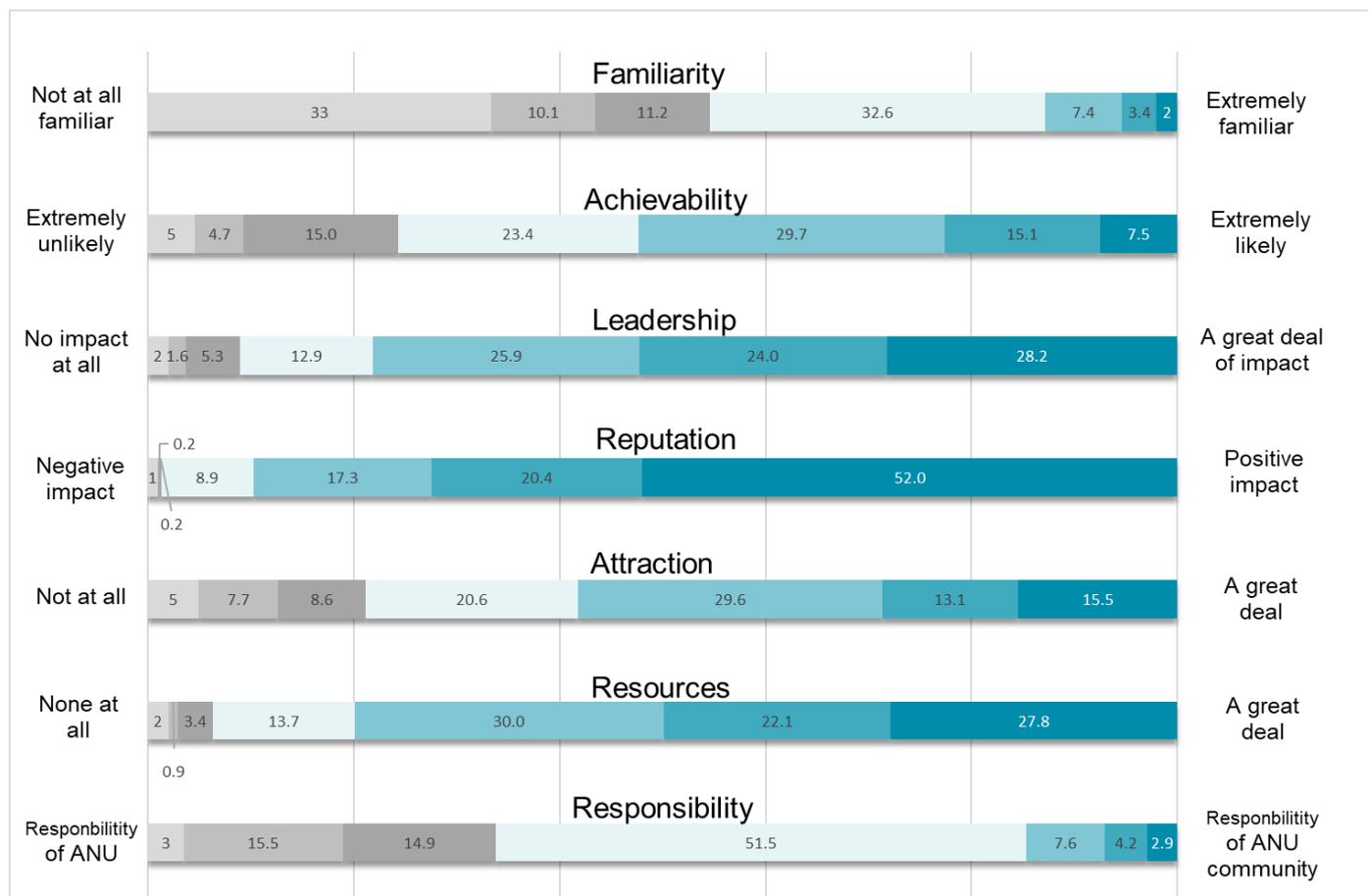
Figure 1. Percentage of the sample for each rating of efficacy and impact, from 1 (left-hand side) to 7 (right-hand side)

Differences in ratings of efficacy and impact of the Below Zero Initiative across the ANU community

Figure 2 shows there were only a few significant differences in ratings of the Below Zero Initiative between students, academic staff, and non-academic staff. Both academic and non-academic staff were more familiar with the Below Zero Initiative, and non-academic staff placed greater responsibility for ANU community members to voluntarily take action than did students. By contrast, students thought more additional resources should be provided to achieve the Below Zero goal than did non-academic staff. There were no other differences in ratings of efficacy and impact between the three groups.
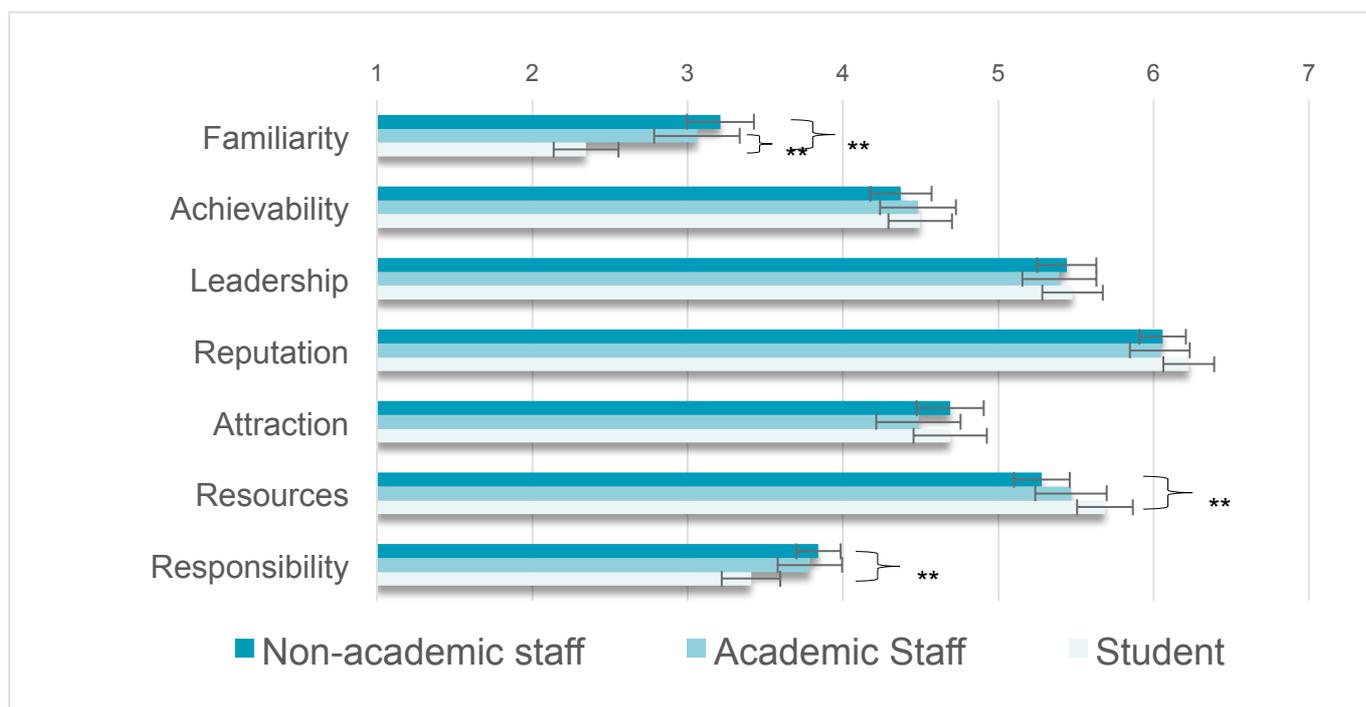

Figure 2. Differences in ratings of efficacy and impact of Below Zero Initiative by primary role (error bars are 95% Confidence Intervals; asterisks denote statistically significant differences between the groups)

More female non-academics and students completed the survey than males in these categories. This means that participants' primary role at the ANU varied by gender, and therefore any apparent gender differences in the data could be driven by differences in roles. In this report, we present differences by participant's main role at the ANU. The note at the end of this report explains how responses to these general Below Zero Initiative items differ by gender and age.

General views on climate change

To understand general views on climate change, we asked participants how worried they were about climate change, how important the issue is to them personally, and how much they think climate change will harm themselves and future generations of people. These

four questions are from the Six Americas Super Short Survey[4] used to organise the sample into six audience segments.

These segments include the most concerned and motivated about climate change (the *Alarmed*), with progressively lower concern and motivation through the remaining profiles: *Concerned, Cautious, Disengaged, Doubtful,* to the least motivated and concerned: *Dismissive.*

Figure 3 below compares the distribution of ANU community members across the six profiles to the audience segmentation analysis based on a nationally representative sample of Australians collected at the same time as the ANU community data[5]. This demonstrates that the majority of our sample of ANU community members (over 90%) fall into the *Alarmed* or *Concerned* profiles, which are the two profiles characterised by the highest belief in climate change, highest levels of concerns, and greatest motivation to take action.
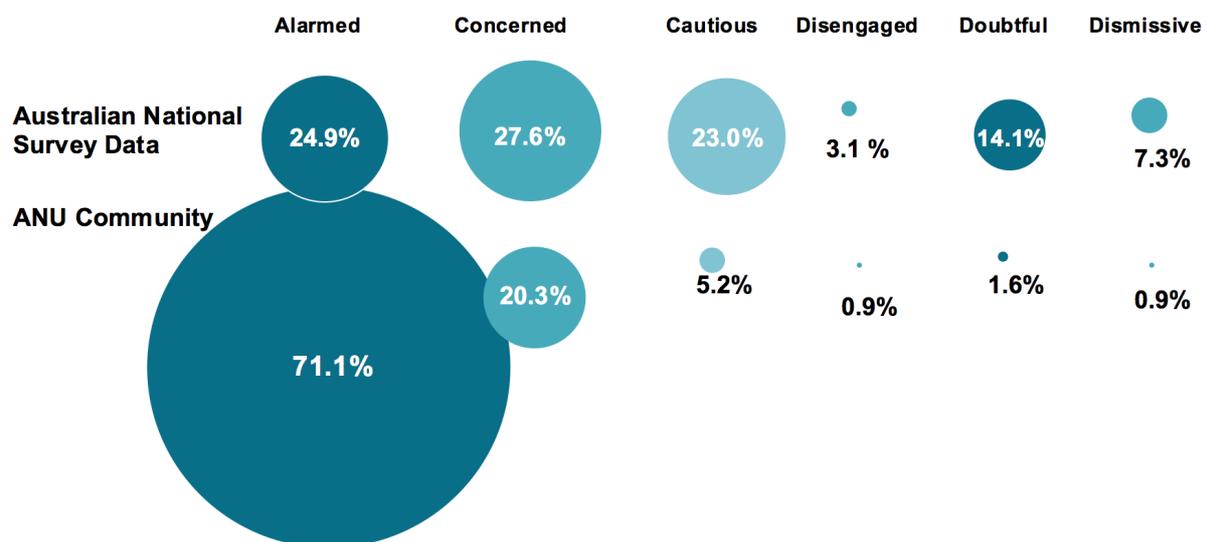

Figure 3. Comparison of six climate change profiles between general Australian population and ANU community

Supporting this, Figure 4 presents ANU community responses to each of the four questions. This shows that the majority of responses (80%+) reflect the highest concern about climate change for each question: expecting a great deal of harm to future

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[4] Chryst, B., Marlon, J., van der Linden, S., Leiserowitz, A., Maibach, E., & Roser-Renouf, C. (2018). Global warming's "Six Americas Short Survey": Audience segmentation of climate change views using a four question instrument. *Environmental Communication*, *12*(8), 1109-1122.

See also https://climatecommunication.yale.edu/visualizations-data/sassy/

[5] Australian National Survey data reported here are from a nationally representative study (N = 5104) conducted during August and September 2020 by Dr Samantha Stanley, Dr Zoe Leviston and Professor Iain Walker.

generations, a great-to-moderate amount of harm to oneself, the belief that climate change is a very or extremely important issue, which individuals are overall very worried about.
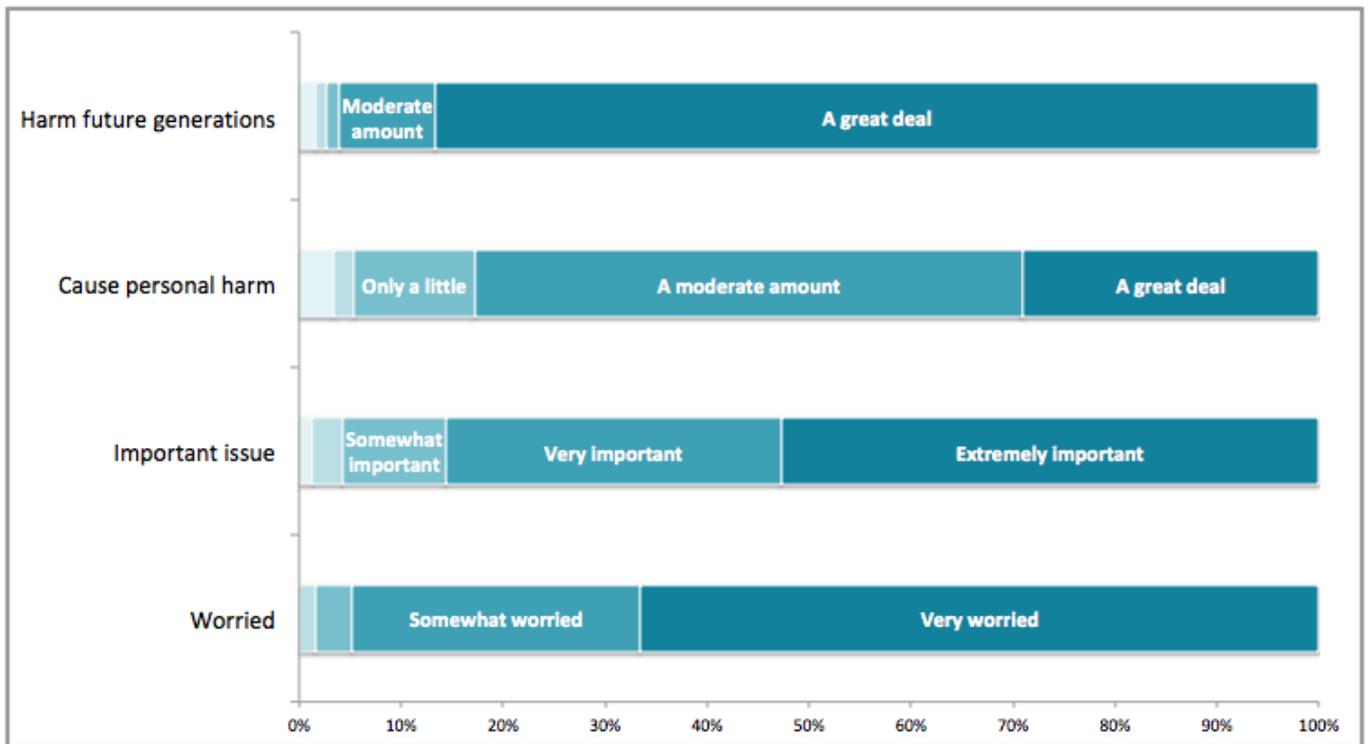
Figure 4. Distribution of responses to the climate change profile questions

Support for emissions reductions by the ANU

We presented participants with a list of 26 possible actions the University could take in relation to climate change and/or reducing greenhouse gas (GHG) emissions. Participants rated the strength of their support or opposition (from 1 – strongly oppose to 7 – strongly support). Every action received at least slight support on average, with the majority of actions achieving average support above a six on the scale.

Participants' support ratings are presented in Table 3 in order of most overall support (highest mean) to least support. Most participants (N = 549 of the 557) also chose three actions the university should prioritise from that list. This information is shown in the right-most column of Table 3, and the most commonly selected actions are highlighted in Figure 5.

Table 3. Mean ratings of support for possible University actions to reduce greenhouse emissions

	Mean (SD) of support	% times selected as priority
Maximising the energy efficiency of all existing buildings	6.71 (0.72)	26.4%
When constructing new ANU buildings, minimising their GHG emissions footprint across their total lifecycle	6.71 (0.75)	16.0%
Installing rooftop solar panels on appropriate buildings	6.69 (0.83)	28.1%
Installing heat recovery systems to reuse wasted heat (e.g. heat emitted from supercomputing facilities)	6.65 (0.77)	8.7%
Supporting research on GHG emissions reduction	6.65 (0.84)	10.2%
Supporting research and development of technologies that actively remove greenhouse gases from the atmosphere	6.62 (0.83)	23.7%
Including climate change implications (both GHG emissions and adaptation) in all significant ANU planning processes	6.54 (1.02)	16.6%
Finding alternatives to single use plastics on campus	6.53 (0.95)	11.5%
Supporting research on adapting to the effects of climate change	6.49 (0.97)	12.4%
Aligning the ANU investment strategy with the below net zero emissions goal	6.49 (1.08)	22.4%
ANU becoming an international leader in acting to address climate change	6.48 (1.09)	31.0%
Phasing out gas on all campuses and replacing with renewable electricity	6.47 (1.14)	20.2%
Planting more trees on ANU land	6.45 (0.99)	10.0%
Improving campus infrastructure for bicycle users	6.42 (1.01)	6.9%
Providing public information about GHG emissions monitoring from buildings or ANU Schools.	6.30 (1.12)	2.6%
Transitioning to low and zero GHG procurement (purchasing)	6.29 (1.15)	4.6%
Improving infrastructure for electric vehicles, including parking and charging facilities	6.19 (1.18)	4.9%
Providing support for virtual conferences to reduce international staff travel	6.18 (1.23)	8.4%
Transitioning the ANU vehicle fleet to electric	6.16 (1.17)	5.6%
Prioritising low GHG footprint catering at events	6.13 (1.26)	0.4%
Offsetting ANU emissions using socially responsible Australian offsets	6.07 (1.41)	5.6%

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Encouraging staff to reduce domestic and international flights for business travel	5.94 (1.33)	12.0%
Implementing a levy on single use coffee cups bought from cafes on campus	5.87 (1.59)	3.8%
Reducing printing wastage by requiring staff and students to release printing using their access cards	5.79 (1.55)	2.2%
Turning down the heating in winter	5.35 (1.67)	2.4%
Reducing the air conditioning in summer	5.29 (1.66)	3.5%
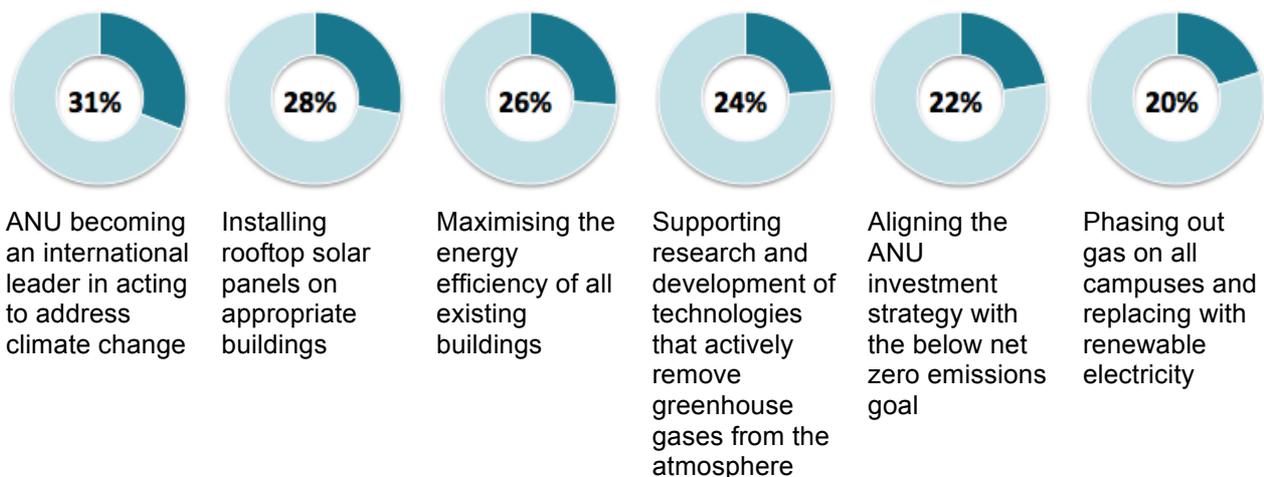
Figure 5. Six most commonly selected actions as top priorities

Differences in support for emissions reductions across the ANU community

Table 3 above shows that overall, members of the ANU community largely support the proposed actions to reduce emissions. To explore possible individual differences in support, we examined how support for each action varied by respondents' primary role at the ANU.

Most actions were as strongly supported by academic staff, non-academic staff and students. However, for a few actions, mean support differed between staff and student groups.

Differences between staff groups

As shown in Figure 6, non-academic staff were more supportive of virtual conferences and reducing flights for business travel than academic staff, while non-academic staff reported slightly lower support for improving campus infrastructure for bicycle users compared to academics and students.
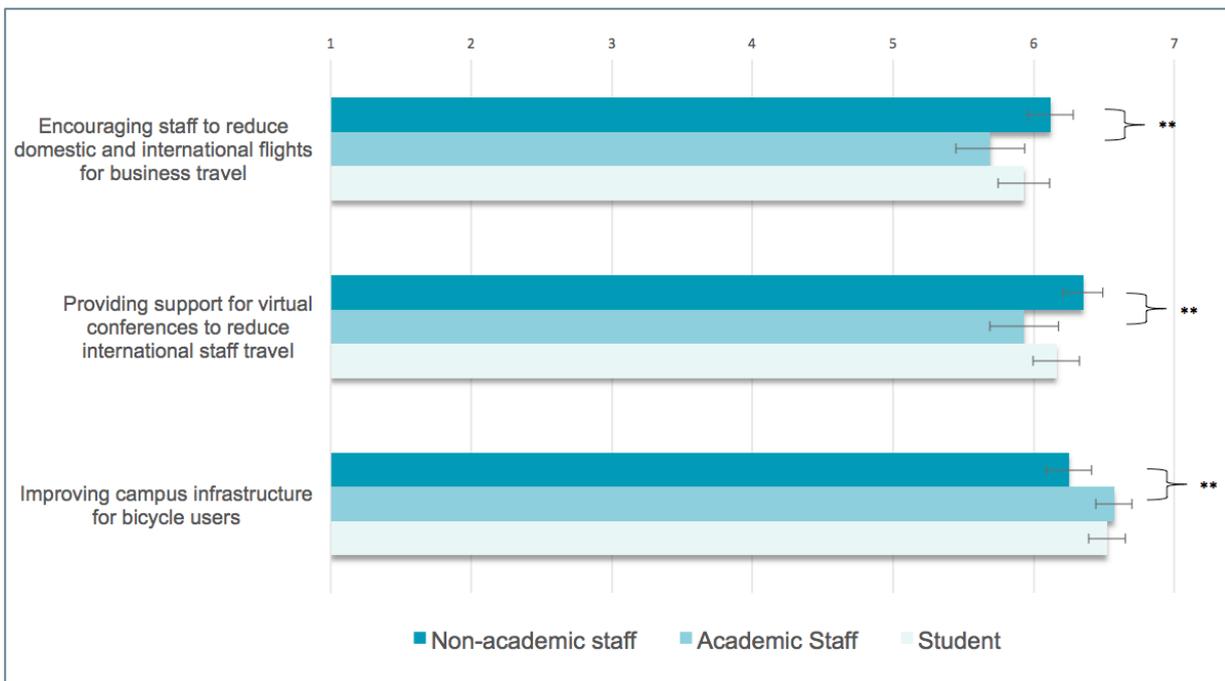
Figure 6. Differences in support for actions by staff group

Differences between students and staff

For several actions, students reported greater support than staff. As shown in Figure 7, students were more supportive of phasing out gas and tree planting than both staff groups. They differed from academic staff in their slightly higher support for maximising energy efficiency of existing buildings and reducing printing wastage, and from non-academic staff in reporting slightly higher support for heat recovery systems, aligning the ANU investment strategy with the Below Zero goal, low emission procurement, and turning down heating in winter.
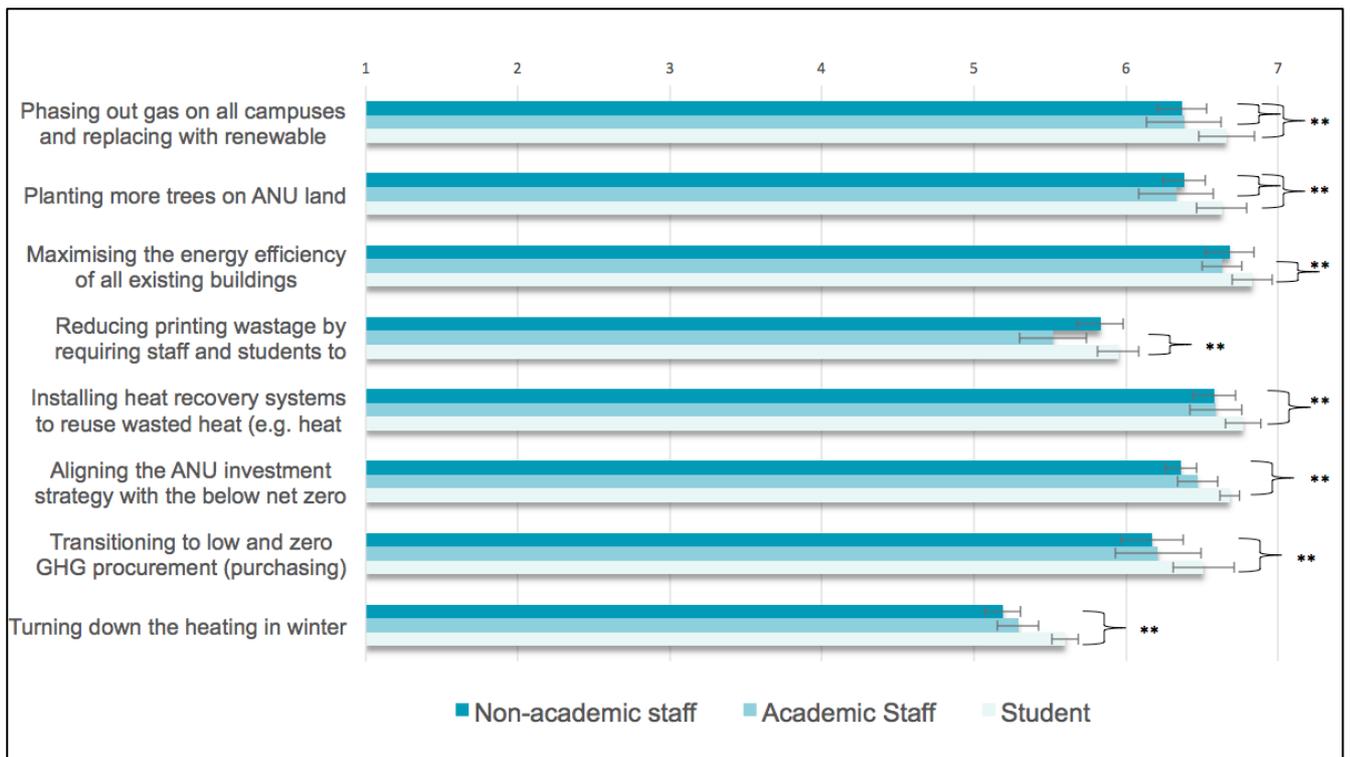
Figure 7. Differences in support for actions by primary role

Interpretation of differences

These analyses of group-based differences reflect a few general patterns:

1. Differences in support across groups are statistically weak, and all groups, overall, supported all 26 actions.
2. Differences between staff members may reflect how these policies differently affect staff members, with academic staff rating those actions that would affect their ability to travel or attend conferences slightly less favourably. Reasons for these differences were not explored in the survey, and may come out during the wider consultation process.
3. There is a general pattern where students who responded to the survey were slightly more accepting of actions by the ANU than other groups.
4. While we have highlighted several differences here, we note that for all other actions, support was not statistically different between groups. This suggests a general consensus on most actions between different members of the ANU community.

Actions the ANU community are willing to take

Participants were also presented with a list of personal behaviours and were asked to rate their willingness to engage in each of them (from '1 – completely unwilling' to '7 –

completely willing'). For each behaviour, there was also the opportunity to indicate they could not perform that behaviour (though reasons for choosing this response were not probed).

Table 4 lists participants' willingness to engage in each behaviour in order of most to least willing. The table shows that, on average, people indicated a willingness to engage in each of the behaviours listed. The behaviours people were most willing to engage in were shutting windows and doors upon leaving campus, using reusable cups and water bottles, and using compost bins for food waste. The behaviours people were less willing to engage in were transport-related, including car pooling and taking public transport to campus; however, these actions still enjoyed broad support (as indicated by mean ratings well above the midpoint).

Table 4. Mean participant ratings of willingness to engage in personal behaviours

	Mean (SD) level of willingness	% unable to do this	**% did not answer**
Shutting windows and doors when you leave campus	6.84 (0.81)	1.1%	5.2%
Using a reusable cup and/or water bottle on campus	6.80 (0.86)	0.0%	1.4%
Putting food waste into compost bins on campus	6.73 (0.97)	0.2%	1.1%
Shutting down computers and computer screens overnight	6.66 (1.05)	2.2%	1.8%
Bringing your own reusable containers if purchasing takeaway food on campus (when safe to do so)	6.32 (1.38)	0.5%	2.3%
Taking active transport to campus (i.e., walk or bike)	6.02 (1.75)	15.1%	4.8%
Working from home to reduce commute-related emissions	6.00 (1.61)	3.8%	4.3%
Using printing services only in exceptional circumstances	5.90 (1.59)	0.4%	1.6%
Reducing air travel for business or academic purposes	5.79 (1.59)	1.1%	12.2%
Participating in a range of low-emissions lifestyle changes in your personal life (including reducing or eliminating meat consumption), via an ANU community program	5.52 (1.86)	0.5%	1.3%
Taking public transport to campus	5.45 (2.02)	11.5%	12.6%
Carpooling to campus	5.21 (2.01)	10.4%	29.1%

There were several personal behaviours that a considerable proportion of participants indicated they were not able to perform, or for which no answer was provided, most notably taking active transport to campus, taking public transport to campus, and carpooling to campus. It is possible that non-response was used to indicate questions that were not applicable to some participants, for example those participants who were already living on campus, or already taking more sustainable forms of transport (e.g., bike riders who are asked about carpooling), had access issues (such as lack of public transport in their area), or personal mobility issues. The relatively high non-response rate for reducing air travel may reflect responses from participants who usually engage in little to no university air travel, or may be in response to COVID-19-related restrictions on air travel during the time of the survey.

Differences in willingness to engage in personal behaviours across the ANU community

Several differences were found in ratings of willingness to engage in personal behaviours between academic staff, non-academic staff, and students. Figure 8 summarises the personal behaviours where ratings of willingness significantly differed between at least two of these groups. The personal behaviours not listed did not statistically differ between groups, indicating that staff and student groups were as willing as each other to participate in half of the behaviours included in the survey. Across the behaviours that did differ by groups, we found that, in general, non-academic staff were more willing to work from home, reduce their air travel, and use print services only in exceptional circumstances. By contrast, students were more willing to engage in alternative transport options, such as carpooling or taking public transport to campus.
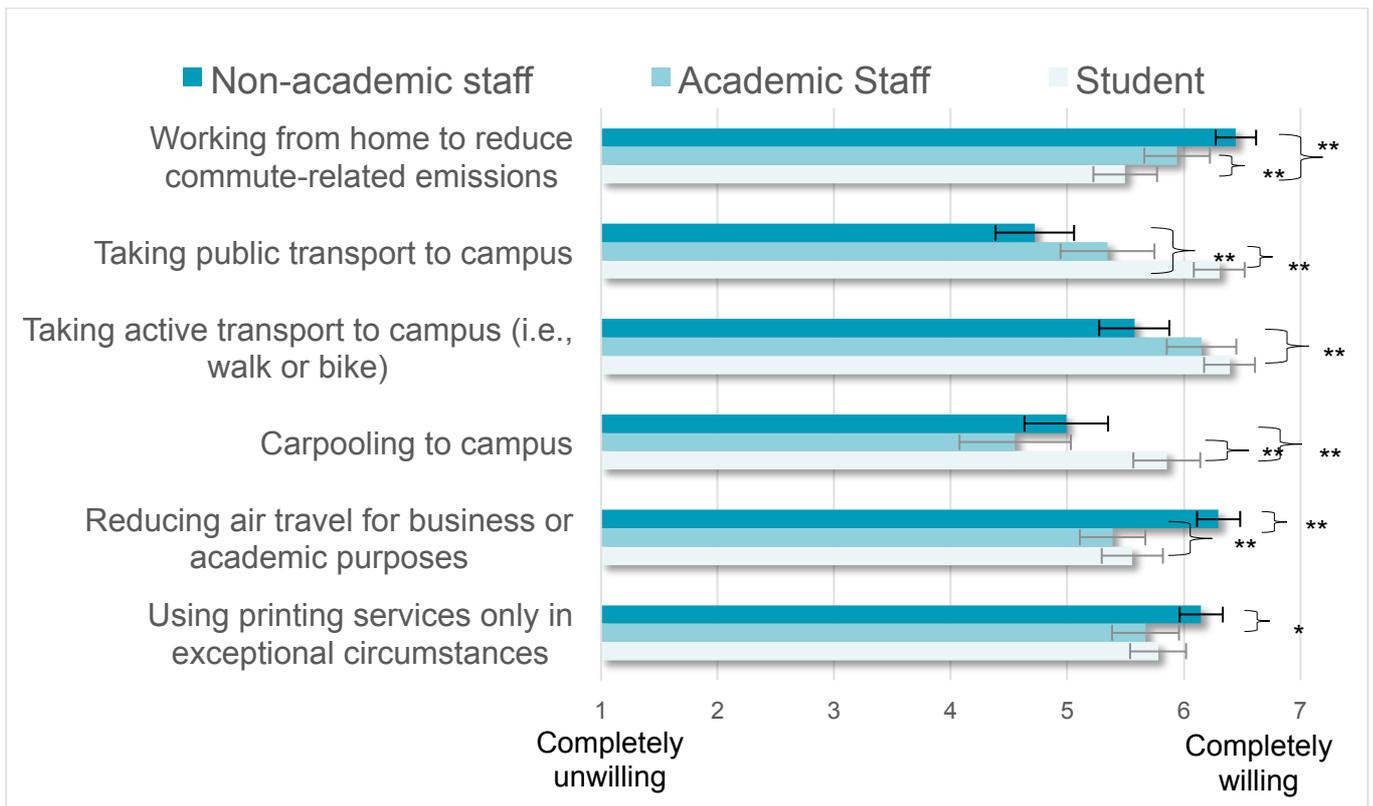
Figure 8. Differences in willingness to engage in personal behaviours by primary role

Travel behaviour

The way that individuals within the ANU community travel to campus is another potential source of emissions. We asked participants how far they travel to campus (if known, and if they come to campus[6]) and their main mode of transport for this journey. The percent of those who travel in one of the five main categories are displayed in Figure 9. These data show that the largest proportion of those surveyed drive to work. In order, the next most common modes of transport were biking, walking, taking public transport, and carpooling with other household members.

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[6] The majority (92.6%) of the sample indicated the distance they travel, though a small number of participants did not know how far they travel or reported never visiting campus (5.0% and 1.8%, respectively, and 0.5% did not answer this question).
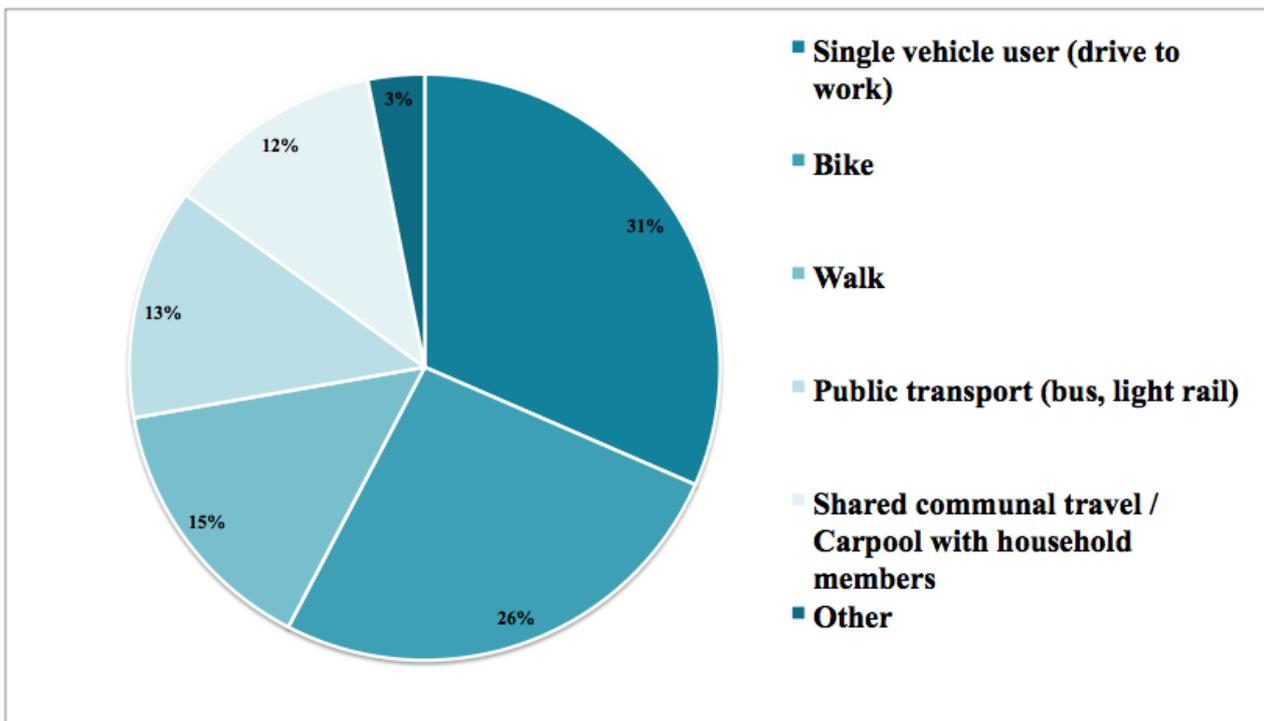
Figure 9. Participants' main mode of travel to campus

There are several caveats of this data to note. First, the response options did not differentiate between petrol, diesel, and electric vehicles, or between cars and motorbikes. Second, public transport use has declined in 2020 due to the COVID-19 pandemic,[7] which might explain low uptake of public transport options at the time of surveying.

Differences in travel behaviour across the ANU community

Table 5 presents the percentage of participants who take various transport methods to the ANU based on this survey, and based on the 2019 travel audit data (supplied by the Facilities & Services Division).

There are some differences between the frequency of travel modes in our sample (shown in Figure 9) and the audit data. Specifically, our sample reported driving and walking a bit less, cycling a bit more, and similar rates of carpooling and public transport as the audit data. However, note that this is partially due to the group differences (See Table 5). As the audit data is based on all commuters, it is likely closer to the entire ANU community (see footnote 1), while we have oversampled staff members.

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[7] A Google Mobility Report for the period ending 4th September (the day our survey closed) indicated that public transport was down 24% compared to the baseline (pre-COVID) in the Australian Capital Territory, where the ANU has its main campus.

Differences based on participants' primary role at the ANU show that students surveyed are more likely to walk or take public transport to campus than other groups, while academic staff are more likely to bike to work than other groups, and non-academic staff are the most likely to drive to work.

Table 5. Percentage of students, academic staff, and non-academic staff using each form of transport.

	2019 audit data	Students	Academic staff	Non-academic staff
Single vehicle user (drive to work)	40%	18.0%	26.9%	45.3%
Bike	12%	21.3%	41.4%	20.0%
Walk	26%	27.0%	9.7%	8.0%
Public transport (bus, light rail)	8%	23.0%	8.3%	7.6%
Shared communal travel (carpool with household members)	11% carpool	6.7%	9.7%	17.3%
Other (includes carpooling with non-household members, rideshare)	2%	3.9%	4.1%	1.8%

Distance travelled

Participants who did travel to campus reported travelling between 0 and 600km to campus, revealing a skewed distribution.[8] We restricted the analyses of distance travelled to those 479 participants who reported travelling 30km or less to campus in one of the five main transport modes. Distance travelled is graphed by transport type in Figure 10.

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[8] A 600km radius around the ANU encompasses both Melbourne and Sydney, suggesting some members of the ANU community travel great distances to come to campus.
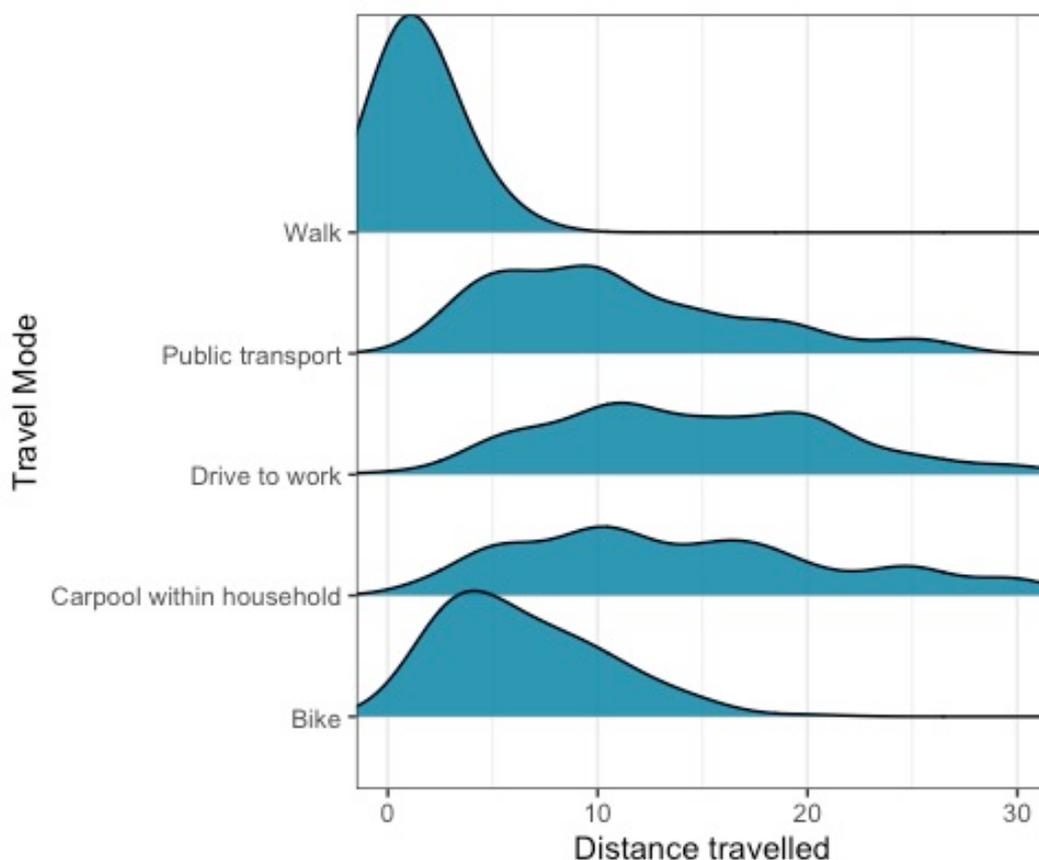
Figure 10. Distribution of distance travelled to campus for each mode of travel

On average, those who used active transport reported travelling the least distance to campus (walkers: 1.5km, bikers: 6.5km). Those who reported travelling by vehicle travel furthest (single vehicle driver: 14.6km, shared travel within household: 14.1km), with public transport users in the middle (10.8km).

Summary and future directions

Our data show that the ANU community is highly supportive of actions to reduce emissions; both those led by the ANU and those that require staff and student engagement.

The Below Zero Initiative aims to reduce emissions to below net zero as quickly as possible. As this process unfolds, we will continue to survey the ANU community annually. This will allow us to track how views about climate change and attitudes towards emissions reductions within the community change over time.

Endnote

On pages 5-6, we considered how the rated efficacy and impact of the Below Zero Initiative differed across staff and student groups at the ANU. We also noted that these groups differed by gender. To examine the possible effect of other participant demographics, we tested whether differences between the views of staff and student members of the ANU remained significant when controlling for age and gender.

We found that differences remained significant in almost all cases, with two exceptions. First, there was a small effect of age on ratings of the resources the ANU should provide towards the Below Zero goal. A small negative correlation between age and the resources item (r = -.15, p = .001) is interpreted to mean that younger members of the ANU community supported a greater allocation of resources to the Below Zero Initiative. In the other exception, the difference in responsibility ratings between non-academic staff and students became non-significant when gender and age were controlled. Instead, ratings of the extent the community versus the ANU are responsible for emissions reductions depended on both age (β = .16, p < .001) and gender (β = -.09, p = .046). These results indicate that older participants and males were more likely to place greater responsibility on the ANU *community* to reduce emissions, and relatively less responsibility on the *ANU* to drive emissions reductions.

We also found that females gave higher ratings for the leadership impact the Below Zero Initiative would provide (Male: M = 5.14, SD = 1.48, Female: M = 5.65, SD = 1.33), its reputational impact (Male: M = 5.90, SD = 1.26, Female: M = 6.26, SD = 1.05), and the extent to which the initiative would attract staff and students (Male: M = 4.45, SD = 1.71, Female: M = 4.78, SD = 1.56). This reflects a small gender bias where female participants appear to be slightly more optimistic about the likelihood of the Below Zero Initiative conferring benefits to the University's standing.