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TRANSPORTATION HABITS OF STUDENTS AT UCOL: HOW GREEN ARE OUR STUDENTS?

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ABSTRACT

The aim of this study was to explore the transportation habits of students, and assess how 'green' are students from the Universal College of Learning. Data about students' modes of travel to a tertiary education provider in New Zealand were collected in 2018 from 227 enrolled students. Green modes of travel included walking and cycling, while the non-green method was driving. Data collected also included distance from the student's home to the institution, age, gender, ethnicity, and enrolment type. Results showed that the majority of students used a non-green method of travel, international students were more likely to choose a green mode of transport, and females were more likely to drive than were males. There was a significant difference between the working status of participants, and their mode of transportation, where non-green participants were more likely to be working, while green participants were more likely to be not working. Implications and limitations of this study are presented.

Keywords: Green transport, Carbon footprint, Student commute, Sustainability, Tertiary education.

INTRODUCTION

The New Zealand government is committed to moving towards low emissions and climate-resilient economy by 2050. This, according to the Zero Carbon Bill Discussion Document (New Zealand Ministry for the Environment, 2018), will deliver health and environmental benefits. The air we breathe will be cleaner, and more people catching buses and trains more often will reduce traffic congestion in our cities.

According to the New Zealand Ministry for the Environment (2018), New Zealand's gross emissions have increased 19.6 per cent since 1990, and carbon dioxide from road transportation has contributed the most to this increase. To understand the transportation-related carbon footprint of Universal College of Learning (UCOL), transportation habits of students will be explored using an existing sub-set of data collected for a previous study that is currently in press.

A number of tertiary institutions measure their carbon footprint to help monitor their impact on the environment. For example, the University of Cambridge in the United Kingdom have introduced the Cambridge Green Challenge that aims to reduce carbon emissions, part of this is related to managing "the demand for travel and promote sustainable travel within the University" (University of Cambridge, 2018). Similarly, Victoria University of Wellington in New Zealand calculate their carbon footprint yearly, and claim that their emissions per student are among the lowest in the world (Victoria University of Wellington, 2018).

The purpose of the present study was to explore the transportation habits of students in order to assess how green are students at of UCOL.

METHOD

Participants

The sample consisted of 227 students (109 males and 107 females) at a tertiary education provider in New Zealand. Of these students, 34 were international students and 182 were domestic students. The mean age of students was 26.97 years (SD = 8.21). Participants identified as European (104), Asian (54), Māori (44), Pasifika (4), and other ethnicity (8). Eleven participants did not report their student ID and/or name, so their gender, ethnicity and enrolment status could not be obtained from the student database.

Materials

Data were collected using a questionnaire that was given to students at the beginning of selected classes. The selected courses aimed at different student groups, thereby making it possible to address many students from different levels and disciplines. Completing the questionnaire took approximately five minutes.

To ensure students' anonymity, identifiable data (for example names, contact details) were only accessible to the author. Approval to conduct the study was obtained through the research ethics committee at the institution in which the research was conducted.

Procedure

Data were collected using a questionnaire administrated by lecturers across UCOL during lecture and tutorial sessions during the last two weeks of semester 2, 2017. All questionnaires were accompanied by an information and consent cover letter, in which the aim of the study was explained, as well as that participation in the study was voluntary and that participants' anonymity was guaranteed. Students were asked to indicate whether they agree or disagree to participate in the study by ticking the appropriate option on the information and consent cover letter. 227 questionnaires were returned completed (response rate of 93%).

Participants were questioned about their working status (Yes / No), mode of transport to the institution (Drive / Walk / Bus / Cycle / Other), distance from institution (in minutes). Students were also asked to provide their student numbers and/or names, and this allowed the collection of the age of the student (in years), gender (Male/Female), ethnicity (European / NZ Māori / Asian / Pasifika / Other), and enrolment type (Domestic / International), from the institution's student database.

Data were analysed using SPSS version 22, all statistical tests were two-tailed, and alpha was set at 0.05.

RESULTS

Participants' mean age was 26.97 years (*SD* = 8.21), which did not differ significantly by gender. One hundred and eighty-two participants were domestic students and 34 were international. The ethnicity of participants was given as 104 New Zealand European, 44 New Zealand Māori, 54 Asian, four Pasifika, and eight other. The mean time of travel to UCOL was 23.47 minutes (*SD* = 20.65). Eleven participants did not report their student ID and/or name, so their age and ethnicity could not be obtained from the student database.

Participants' mode of transport to UCOL was as follows: driving to UCOL (*n* = 132), walking to UCOL (*n* =60), taking the bus (*n* =28), and cycling (*n* =3). Four participants selected 'other' modes of transport, which were not specified. When the categories were collapsed into 'green' (walking, taking the bus, and cycling), as opposed to non-green mode of travel (driving), there was a statistically significant difference in the proportions of green versus non-green, $X^2 = 7.54$, $p < .05$; more students used a non-green method of travel (*n* = 132) than used a green method (*n* = 91).

There was no evidence of a statistically significant difference in the number of students who worked (n =123) or who did not work (n = 103), X^2 = 1.77, p = .183, and no difference in participant gender with female n = 107, and male n = 109 (one participant did not state their gender).

One hundred and three participants were not employed and 123 participants were employed (one participant did not declare their employment status). To investigate the demographics of those who used green or non-green methods of transport, the relationship between working (yes vs. no) and mode of transport (green vs. non-green) was explored. There was a significant difference between the working status of participants, and their mode of transportation, whereby participants who used a non-green mode of transport were more likely to be working (OR = 1.54), while green participants were more likely to be not working (OR = 86), X^2 = 4.20, p = .04. There was no evidence of a statistically significant difference in the ratios of males versus females and working versus not working, nor between working and enrolment type (domestic vs. international) and mode of travel.

Using a median split on age (up to 25 years = 'young', more than 25years = 'older'), there was no evidence of a difference in mode of transport, enrolment type, work status, or time to travel to UCOL.

A Chi-square test of independence was also used to explore the relationship between gender and mode of transport. There was a statistically significant difference in the gender ratio of students who chose a green mode of transport; females were more likely to drive (OR = 2.39) than were males (OR = 1.04), X^2 = 8.52, p = .004.

There was a statistically significant difference in the time taken to travel to UCOL between males (20.65, SD = 16.03) and females (26.48, SD = 24.72), $t(206)$ = 2.026, p = .04. There was no evidence of a statistically significant difference in the time taken to travel to the institution, by mode of transport.

The relationship between enrolment (domestic vs. international) and mode of transport was statistically significant. International students were more likely to choose a green mode of transport (OR = 2.09) than were domestic students (OR = 0.52), X^2 = 13.48, $p < .0002$.

DISCUSSION

This study explored the transportation habits of UCOL students, with the aim to assess how green students are. Results showed that significantly more students used a non-green method of travel (n = 132) than used a green method. This creates an opportunity for the institution to introduce measures to decrease its carbon footprint, such as carpooling opportunities for students and staff, free public transport, and charging stations as used in a number of tertiary education institutions.

There was a significant difference between the working status of participants, and their mode of transportation, where non-green participants were more likely to be working (OR = 1.54), while green participants were more likely to be not working. It can be argued that those who are not working may not have a greater need for personal transportation in comparison to those who are working, because the latter have the additional requirement to commute to work. Moreover, it can be argued that those who are working are likely to use a motor vehicle because they can afford to have their own transport.

A personal means of transportation can provide flexibility around their commuting needs. However, such personal means of transport need not be a motor vehicle that uses high carbon emissions, but it could be a green method that contributes to the reduction of carbon footprints of the institution. For working students, this can only possible if additional support and alternative green options are provided, and supported by the institution.

Being able to afford personal means of transport could also be one of the reasons behind our result showing that international students were more likely to choose a green mode of transport than were domestic students. With

the high course fees associated with international enrolments, international students are more inclined to keep their living expenses low, and make use of the cheaper modes of transport such as walking, cycling, or using the free buses to commute to the institution.

According to the study results, females were more likely to drive than were males, and there was no evidence of a statistically significant different in the gender ratios and working status. One of the reasons behind the difference between female and male participants may be due to the attitudes towards the environment. It would be interesting to investigate the opinions and attitudes of females and males towards being green.

A potential limitation to the findings reported in this study, that future research can address, is that in this study, driving did not include driving electric cars which is a green mode of transport. This is because to the knowledge of the researcher, only two electric cars were used in the campus where the study was conducted, and these belonged to staff members of the institution. Another potential limitation is that driving could include carpooling. Future studies could differentiate between these as many would argue that carpooling is a greener mode of transport.

CONCLUSION

In this study, driving was the main mode of transport of students to UCOL. With the increase in student population, faculty, and staff, efforts could be made to curb the transportation-related carbon footprint of UCOL. By understanding the transportation habits of students, strategies can be put in place by the institution to help achieve the goals of the Climate Change Response (Zero Carbon) Amendment Bill (New Zealand Parliament, 2019) that was introduced on 8 May 2019. The institution could encourage the use of low or zero emission vehicles by introducing a charging station for electric vehicles. Alternatively, the implementation of a carpooling application for students and staff could encourage shared transport which will help towards reducing carbon emissions in the city. All of which would contribute to the aims of the proposed Zero Carbon legislation and help keep New Zealand green.

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