



# 2024 Carbon Commuter Survey

## The University of Manchester

### Carbon Emissions Survey Report (CESR)

Prepared for

The University of Manchester



The University of Manchester

July 2024  
3704-01-CESR01



# Document Control

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## 1.0 INTRODUCTION

### 1.1 Overview

- 1.1.1 Axis has been appointed by The University of Manchester ('the University') to provide transport planning support in respect to estimating carbon dioxide equivalent emissions generated by staff and student commuter travel to and from the University campuses. These types of emissions are known as Scope 3 commuter emissions.
- 1.1.2 Since 2013 the University has estimated Scope 3 carbon emissions every two years or so, with surveys and associated assessment work previously undertaken in April / May 2013, 2015, 2017, 2019 and 2022, thereby enabling results to be compared over time.
- 1.1.3 In April / May 2024 further surveys were conducted, with students and staff asked questions relating to their commuting habits to and from the University, including mode of travel and place of residence, along with vehicle specification and occupancy levels (if travelling by car). Students were also asked questions relating to their permanent, family home (i.e. outside of term time) and the method of transport used and associated distances covered when travelling to and from the University at the start and end of term.
- 1.1.4 From these results, the associated carbon dioxide equivalent (kg CO<sub>2</sub>e) values were then established, based on the Higher Education Funding Council for England (HEFCE) best practice guidance, 'Measuring Scope 3 Carbon Emissions – Transport: A guide to good practice'. This guidance aligns with the recently published, 'Standard Carbon Emissions Framework for Further and Higher Education' (SCEF).
- 1.1.5 This Carbon Emissions Survey Report (CESR) sets out the results of the April / May 2024 surveys and compares them with the most recent survey results from 2019 and 2022.

### 1.2 Survey Response Rate

- 1.2.1 **Table 1.1** summarises the total number of staff and student survey responses received in the 2024 survey, and the resultant response rate.



**Table 1.1 – April / May 2024 Survey Response Rate**

Respondent	Total Number of Completed Surveys	Total Number of Staff / Students	Response Rate
Staff	969	11,375	8.5%
Student	500	43,326	1.2%

1.2.2 Whilst there was a low response rate overall, when considered against the total number of persons at the University, the number of responses amounts to some 1,500 and provides a sufficiently sized dataset against which statistically reliable assessments can be made, as set out in **Table 1.2**.

**Table 1.2 – Statistical Reliability**

Respondent	Total Number of Staff / Students	Required Response Rate*	Responses in excess of required sample size
Staff	11,375	373	596
Student	43,326	381	119

*\*To achieve a confidence level of a minimum of 95% with a margin of error of 5%.*

1.2.3 It is noteworthy also that the response rates and the overall number of responses are greater than those from the equivalent surveys in 2022, when a total of some 1,000 responses were achieved with associated response rates of 4.5% (staff) and 0.8% (students).

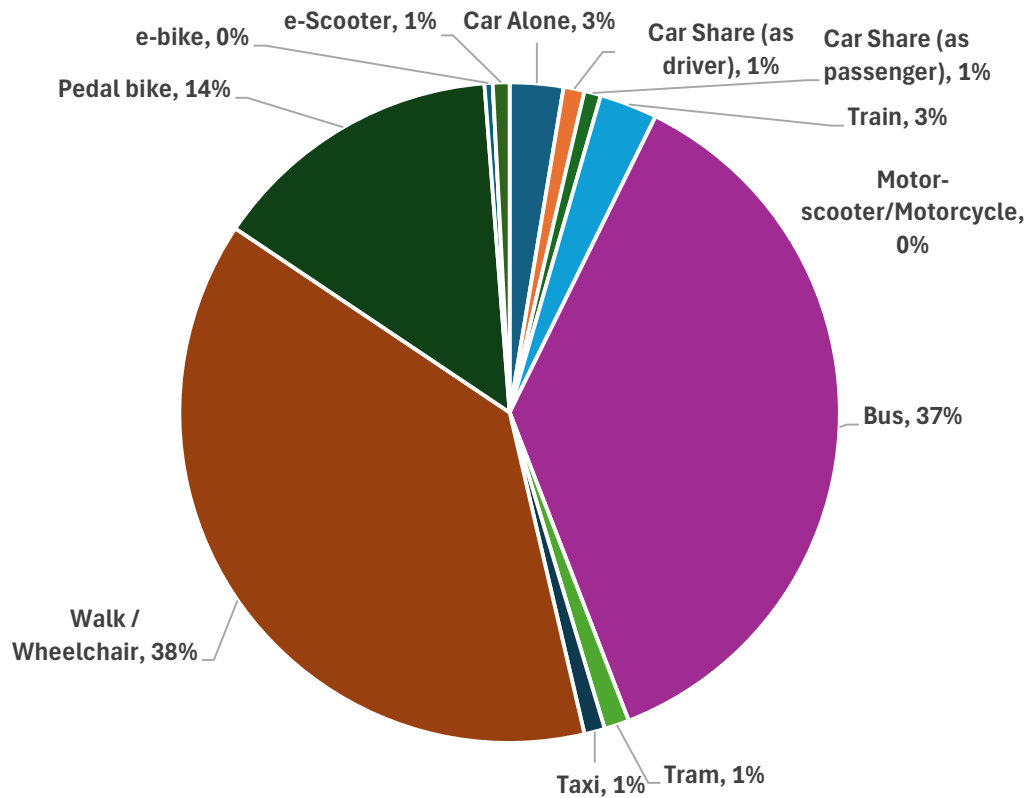


## 2.0 DAILY COMMUTING TRAVEL PATTERNS

### 2.1 Main Mode of Travel (Student Term-Time Travel)

2.1.1 The overriding modes of travel amongst students are walking (38%) and bus (37%). A notable proportion also cycle to and from campus (14%). There is a low level of private motorised vehicular use amongst students, amounting to just 5% (including car drivers alone and car sharers).

Image 2.1 – Students: Main Mode of Travel (2024)



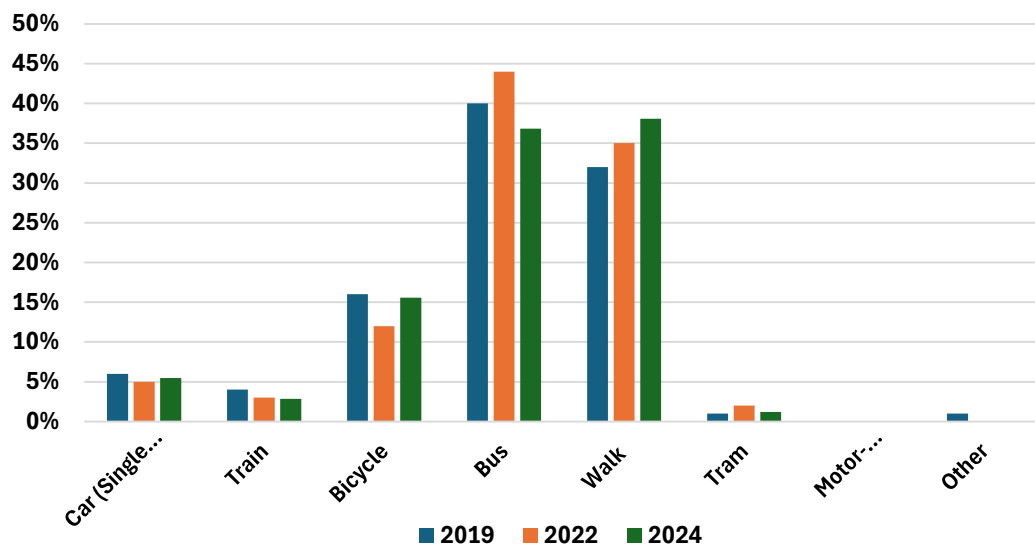
2.1.2 The above results have been compared to equivalent results from the 2019 and 2022 surveys, summarised below in **Table 2.1** and **Image 2.2**.



**Table 2.1 – Students: Main Mode of Travel – 2019, 2022 and 2024**

Mode of Travel	2019	2022	2024
Car (Single Occupancy and Car Sharers)	6%	5%	5%
Train	4%	3%	3%
Bicycle (inc. scooters)	16%	12%	16%
Bus	40%	44%	37%
Walk	32%	35%	38%
Tram	1%	2%	1%
Motorcycle	0%	0%	0%
Other	1%	0%	0%

**Image 2.2 – Students: Main Mode of Travel – 2019, 2022 and 2024**



2.1.3 It is evident that the main modes of travel used amongst students for day-to-day journeys to / from the University have remained broadly consistent between 2019 and 2024, although there has been a slight reduction in the proportion of bus use and a slight increase in terms of the proportion of students walking.

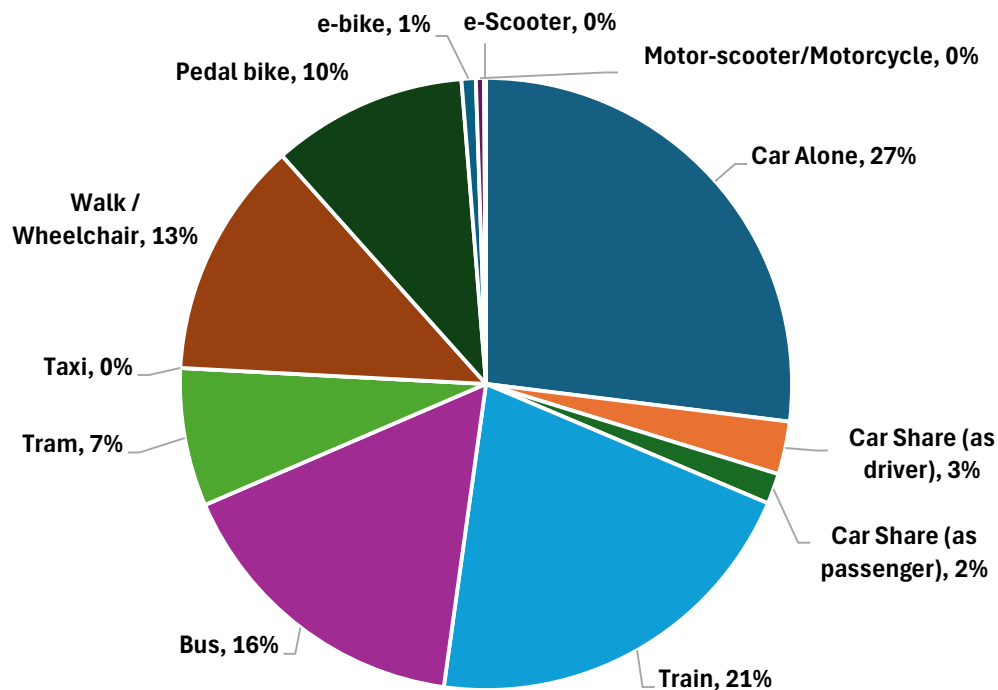
## 2.2 Main Mode of Travel (Staff Travel)

2.2.1 **Image 2.3** illustrates that there is a more even modal split amongst staff commuting journeys, although the principal method is sole-occupant private car travel (27%) with a further 5% of individuals travelling as a car sharer. There are also notable levels of bus (16%), train (21%) and tram (7%) usage amongst staff. Staff commuting journeys on foot and by cycle amount to 13% and 10% respectively.





**Image 2.3 – Staff: Main Mode of Travel (2024)**



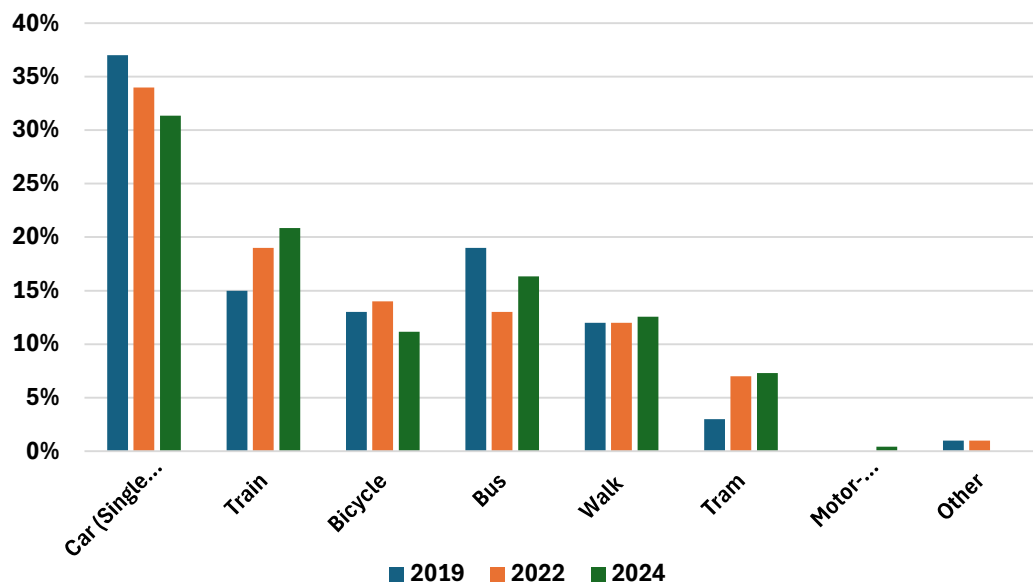
2.2.2 The above results have been compared to equivalent results from the 2019 and 2022 surveys. This is shown at **Table 2.2** and **Image 2.4**.

**Table 2.2 – Staff: Main Mode of Travel – 2019, 2022 and 2024**

Mode of Travel	2019	2022	2024
Car (Single Occupancy and Car Sharers)	37%	34%	32%
Train	15%	19%	21%
Bicycle (inc. scooters)	13%	14%	11%
Bus	19%	13%	16%
Walk	12%	12%	13%
Tram	3%	7%	7%
Motorcycle	0%	0%	0%
Other	1%	1%	0%



**Image 2.4 – Staff: Main Mode of Travel – 2019, 2022 and 2024**



2.2.3 It is evident that the main modes of travel used amongst staff for day-to-day commuting journeys to / from the University have remained broadly consistent between 2019 and 2024, although there has been a general reduction in the proportion of journeys by car and a corresponding increase in terms of the proportion of staff commuting by train.

## 2.3 Distances Travelled (Term Time)

### *Comparison of Staff and Student Travel*

2.3.1 The average distance travelled by students and staff between their place of residence and the University is presented below. Respondents were asked the postcode of their home residence (for staff) or term time residence (for students), and the University campus that they typically travel to. This enabled straight line distances to be calculated.

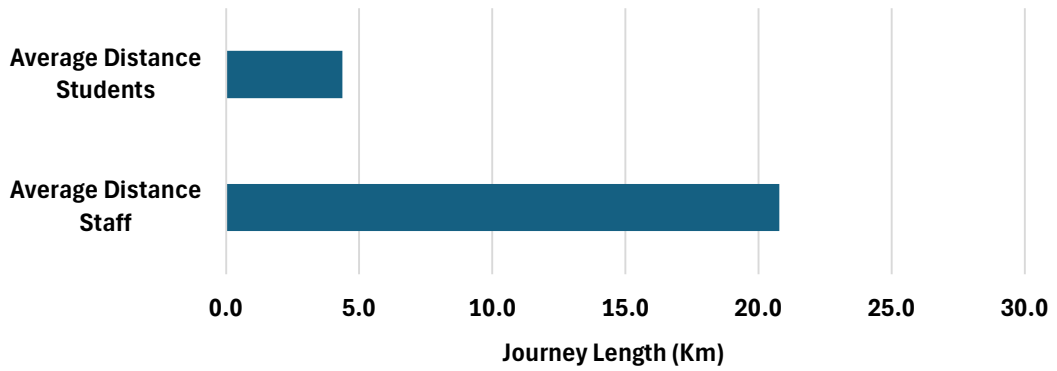
2.3.2 A number of 'spot tests' were then undertaken using Google Maps journey planner tool to establish an average uplift factor between the straight-line distances and actual door to door journey distances which was then applied to all straight-line distances recorded.

2.3.3 The average distance travelled by students (mean average distance across all modes combined) to the University from their term-time residence is 4.4 kilometres.

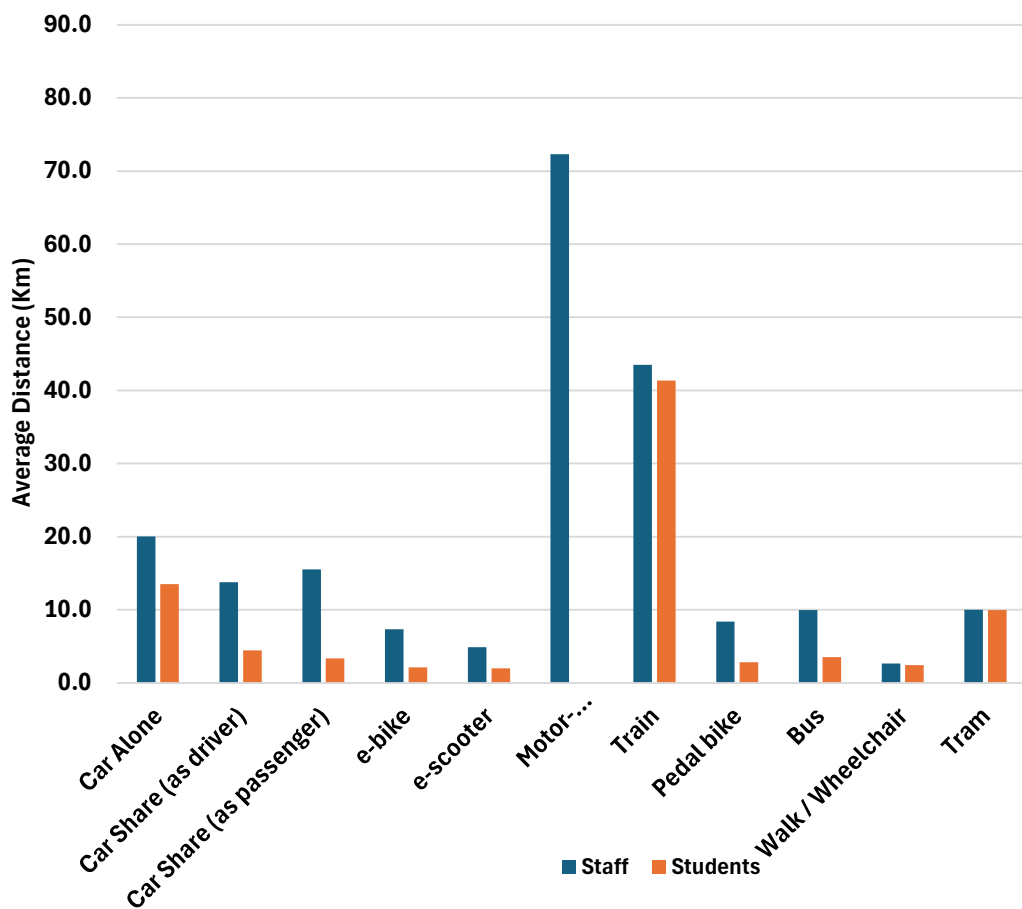


2.3.4 The average distance travelled by staff (all modes combined) to the University is 20.8 kilometres.

**Image 2.5 – Students & Staff: Average Distance (One-Way Commute) – All Modes 2024**



**Image 2.6 – Students & Staff: Average Distance by Mode (One-Way Commute) 2024**



2.3.5 The modes used for the longest journey distances amongst staff are motorcycle and train, although the motorcycle figures are skewed somewhat by the low number of staff using this mode of travel (4 no.), and due to one response from a member of staff who travels to campus by motorcycle from the Cambridge area on one day a week. The average train travel distance amongst staff and students is approximately 40 kilometres, with the majority of other modes typically being used for journeys of some 10 kilometres or less, although staff journeys by car are typically in the order of 20 kilometres in length.

#### ***Student Average Travel Distance – Comparison Against 2022 Data***

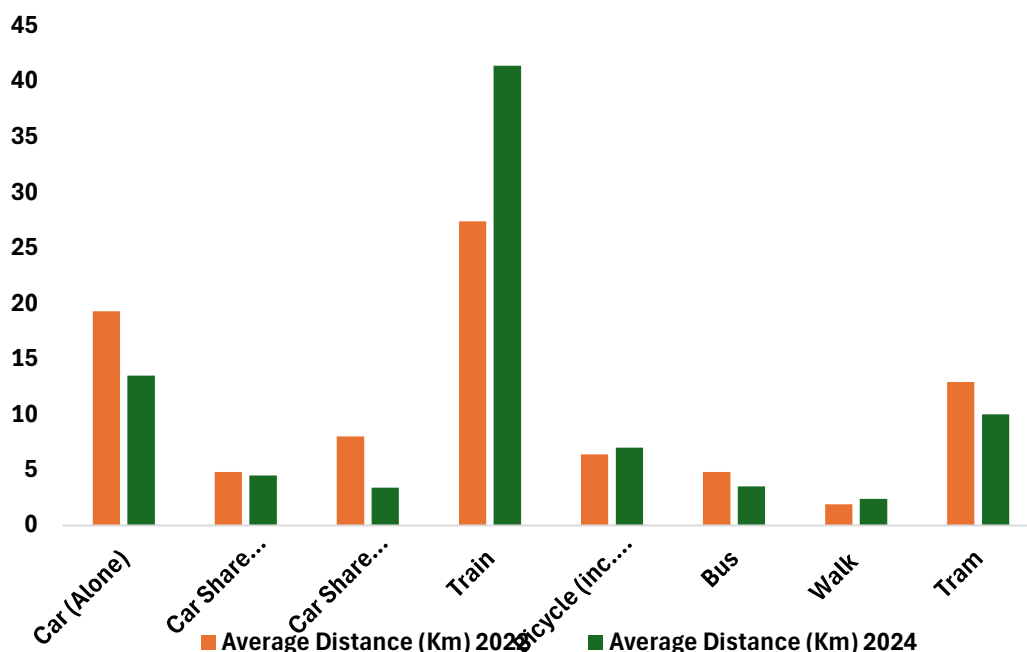
2.3.6 It is evident that the average distances travelled by students remain broadly consistent between 2022 and 2024 although there has been a notable increase in terms of average train journey distances.

**Table 2.3 – Students: Average Distance by Main Mode of Travel – 2022 and 2024**

Mode of Travel	Average Distance (Km) 2019	Average Distance (Km) 2022	Average Distance (Km) 2024
Car (Alone)	N.D.	19.3	13.5
Car Share (Driver)	N.D.	4.8	4.5
Car Share (Passenger)	N.D.	8.0	3.4
Train	N.D.	27.4	41.4
Bicycle (inc. scooters)	N.D.	6.4	7.0
Bus	N.D.	4.8	3.5
Walk	N.D.	1.9	2.4
Tram	N.D.	12.9	10.0
Motorcycle	N.D.	-	-
Other	N.D.	-	-

*N.D. = No Data*

**Image 2.7 – Students: Average Distance (One-Way Commute) – 2022 and 2024**



**Staff Average Travel Distance – Comparison Against 2022 Data**

2.3.7 The distances travelled by staff between 2022 and 2024 have broadly remained the same, although there has been a notable increase in terms of the average length of train journeys and a reduction in terms of the average length of tram journeys.

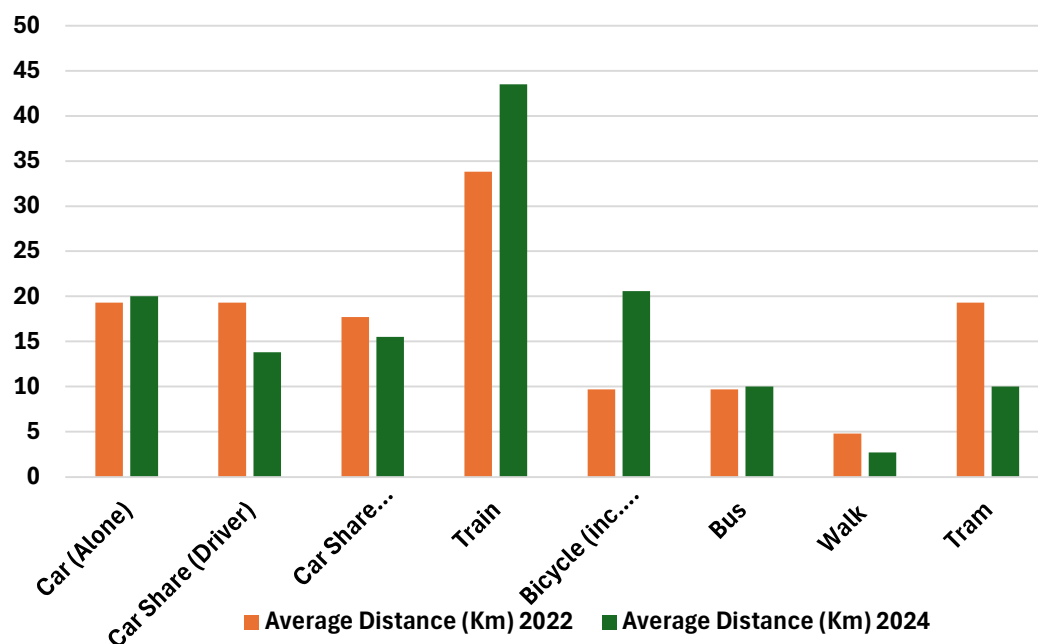
**Table 2.4 – Staff: Average Distance (One-Way) by Main Mode of Travel – 2022 and 2024**

Mode of Travel	Average Distance (Km) 2019	Average Distance (Km) 2022	Average Distance (Km) 2024
Car (Alone)	N.D.	19.3	20.0
Car Share (Driver)	N.D.	19.3	13.8
Car Share (Passenger)	N.D.	17.7	15.5
Train	N.D.	33.8	43.5
Bicycle (inc. scooters)	N.D.	9.7	20.6
Bus	N.D.	9.7	10.0
Walk	N.D.	4.8	2.7
Tram	N.D.	19.3	10.0
Motorcycle	N.D.	-	72.3
Other	N.D.	-	-

N.D. = No Data



**Image 2.8 – Staff: Average Distance (One-Way Commute) – 2022 and 2024 (Exc. M/C)**



## 2.4 Frequency of Regular Commute

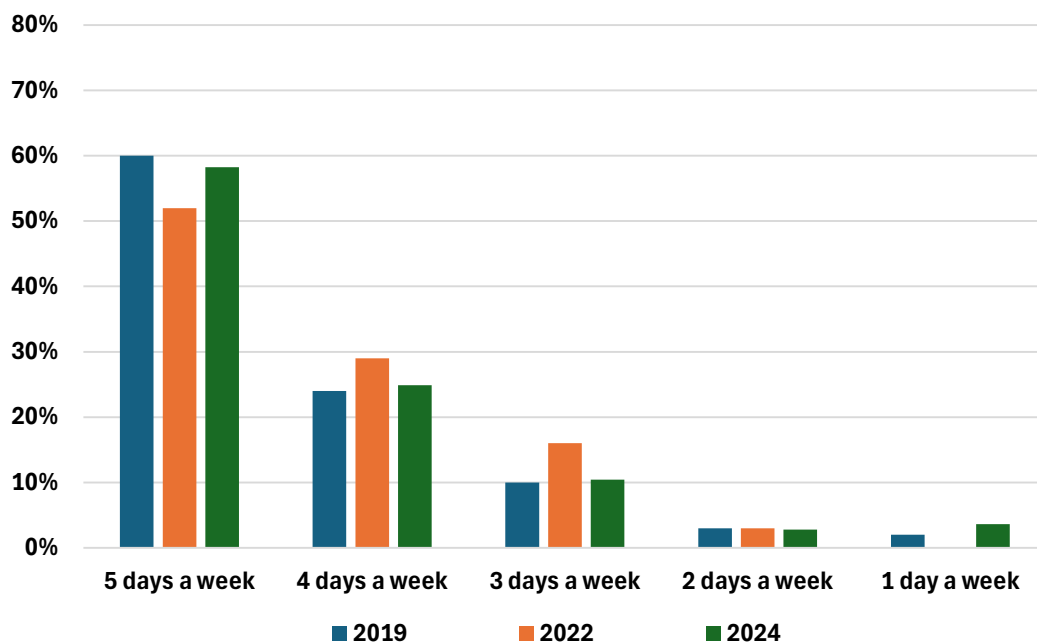
2.4.1 The frequency of student and staff travel between their place of residence and the University is presented below. Also shown are the equivalent results from the 2019 (pre-Covid) and 2022 surveys.

### *Frequency of Regular Commute – Students*

**Table 2.5 – Students: Frequency of Regular Commute – 2019, 2022 and 2024**

Frequency of Regular Commute (Students)	2019	2022	2024
5 days a week	60%	52%	58%
4 days a week	24%	29%	25%
3 days a week	10%	16%	10%
2 days a week	3%	3%	3%
1 day a week or less	2%	0%	4%

**Image 2.9 – Students: Frequency of Regular Commute – 2019, 2022 and 2024**



2.4.2 The level of hybrid working amongst students has remained broadly consistent between 2019 and 2024. There was a slight reduction between 2019 and 2022 in the proportion of students commuting 5 days a week (likely due to Covid). However, the 2024 results show that the proportion of students commuting 5 days a week is approaching pre-Covid levels again.

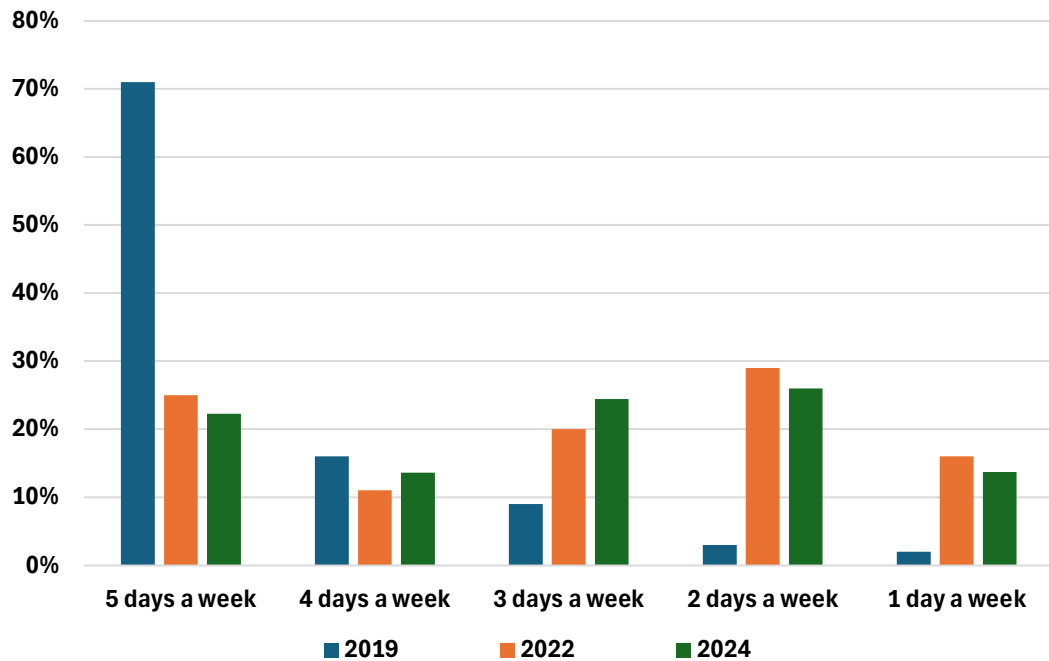
***Frequency of Regular Commute – Staff***

**Table 2.6 – Staff: Frequency of Regular Commute – 2019, 2022 and 2024**

Frequency of Regular Commute (Staff)	2019	2022	2024
5 days a week	71%	25%	22%
4 days a week	16%	11%	14%
3 days a week	9%	20%	24%
2 days a week	3%	29%	26%
1 day a week or less	2%	16%	14%



Image 2.10 – Staff: Frequency of Regular Commute – 2019, 2022 and 2024



2.4.3 There has been a notable reduction in the proportion of staff commuting to the University 5 days a week since 2019 (i.e. since Covid). Since 2022 there has however been a slight increase in the proportion of staff travelling 3 or 4 days a week and an equivalent reduction in staff commuting 1 or 2 days a week.



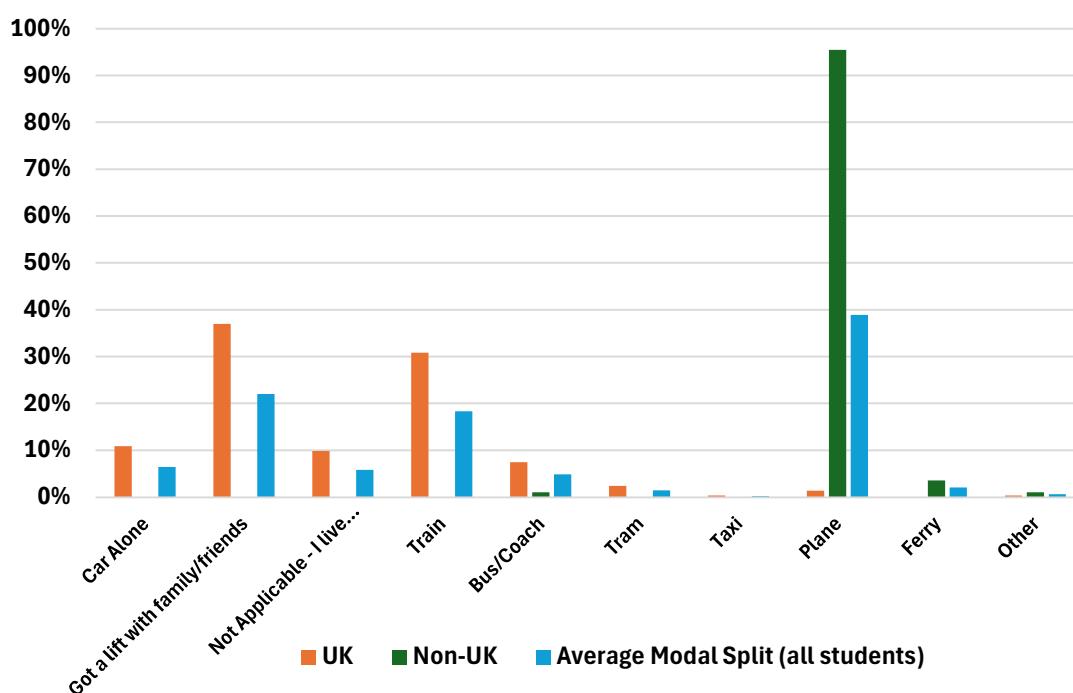


### 3.0 MAIN MODE OF STUDENT TRAVEL AT START AND END OF TERM

**Table 3.1 – Students: Main Mode of Travel at Start and End of Term – 2024**

Frequency of Regular Commute	UK Students	Non-UK Students
Car Alone	11%	0%
Lift With Friends / Family	37%	0%
Not Applicable (I live here all year)	10%	0%
Train	31%	0%
Bus / Coach	7%	1%
Tram	2%	0%
Taxi	0%	0%
Plane	1%	95%
Ferry	0%	4%
Other	0%	0%

**Image 3.1 – Students: Main Mode of Travel at Start and End of Term (UK and Non-UK)**



3.1.1 It is apparent that the majority of UK students travel to and from their permanent / family homes by way of a lift with family / friends (37%) although a notable proportion travel by train (31%). The vast majority (95%) of international students travel from their family homes by aeroplane at the start and end of term.

3.1.2 A comparison of the above results against the 2022 surveys is presented below.



**Table 3.2 – UK Students: Main Mode of Travel at Start of Term – 2022 and 2024**

Mode of Travel	2019 (UK Students)	2022 (UK Students)	2024 (UK Students)
Car Alone	N.D.	18%	11%
Lift With Friends / Family	N.D.	38%	37%
Not Applicable (I live here all year)	N.D.	11%	10%
Train	N.D.	18%	31%
Bus / Coach	N.D.	5%	7%
Tram	N.D.	1%	2%
Taxi	N.D.	0%	0%
Plane	N.D.	2%	1%
Ferry	N.D.	0%	0%
Other	N.D.	7%	0%

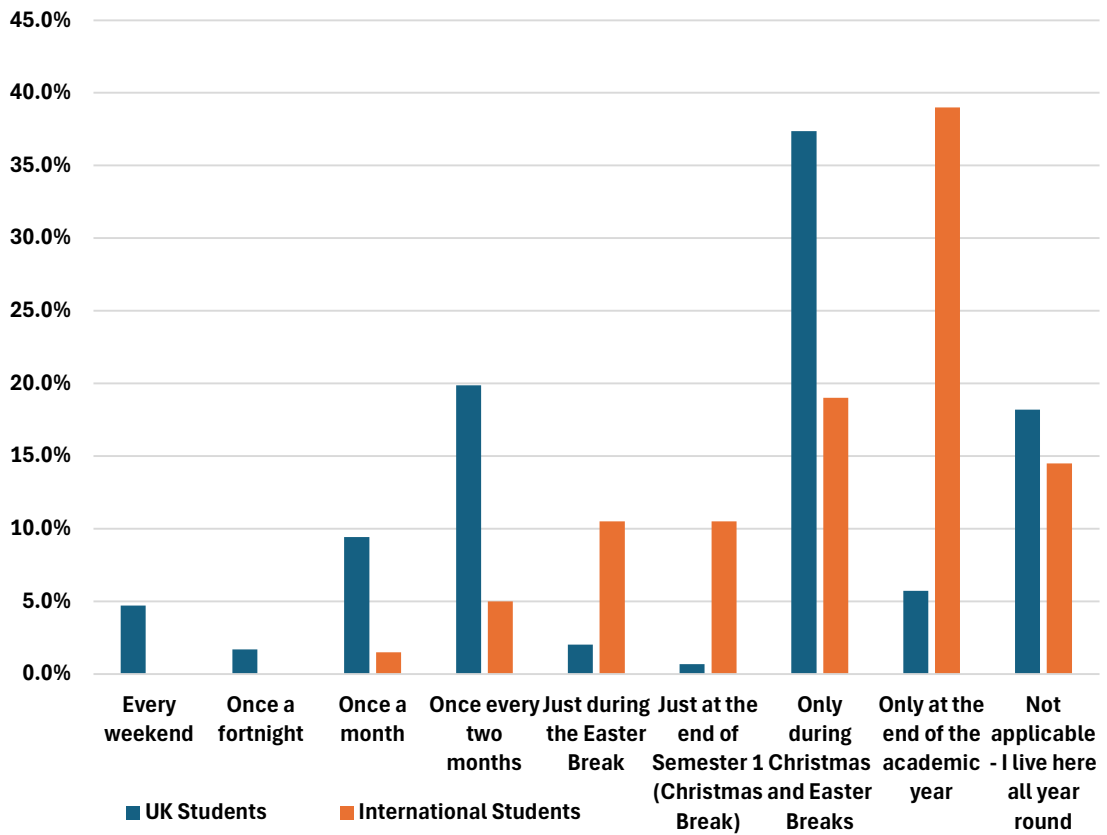
**Table 3.2 – Non-UK Students: Main Mode of Travel at Start of Term – 2022 and 2024**

Mode of Travel	2019 (Non-UK Students)	2022 (Non-UK Students)	2024 (Non-UK Students)
Car Alone	N.D.	1%	0%
Lift With Friends / Family	N.D.	0%	0%
Not Applicable (I live here all year)	N.D.	0%	0%
Train	N.D.	0%	0%
Bus / Coach	N.D.	2%	1%
Tram	N.D.	0%	0%
Taxi	N.D.	0%	0%
Plane	N.D.	94%	95%
Ferry	N.D.	3%	4%
Other	N.D.	1%	1%

*N.D. = No Data*

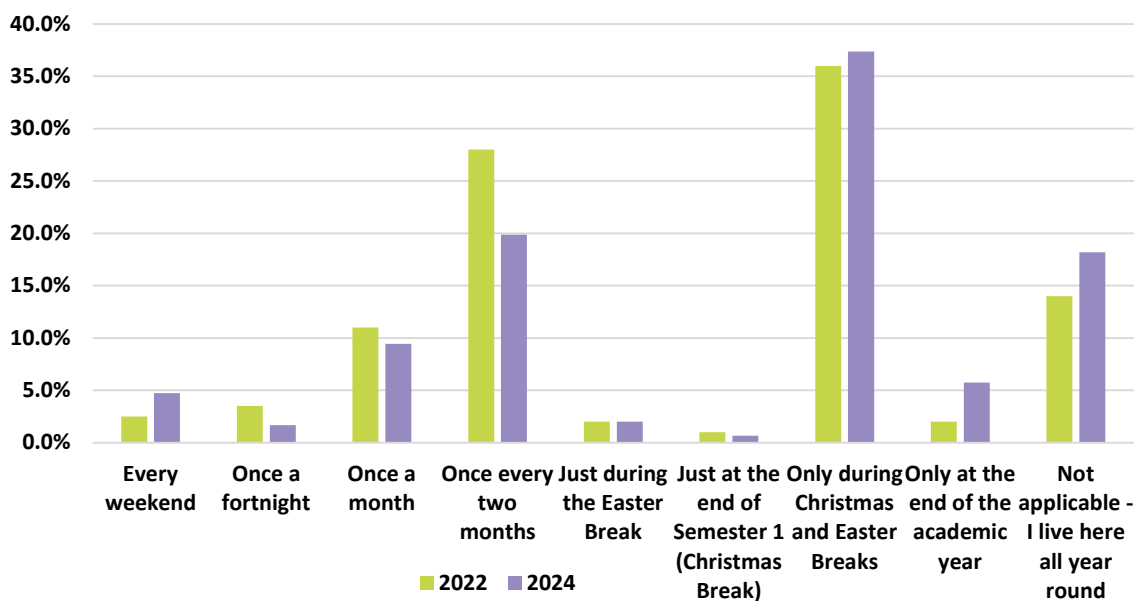
3.1.3 The modes of travel used by students at the start and end of the academic year have remained broadly consistent between 2022 and 2024, particularly in terms of international students. There has however been a notable increase in the proportion of UK students travelling to / from home by train and slight decrease in those travelling by car (alone).

**Image 3.2 – Frequency of Return Trip Home (UK and International Students) – 2024**

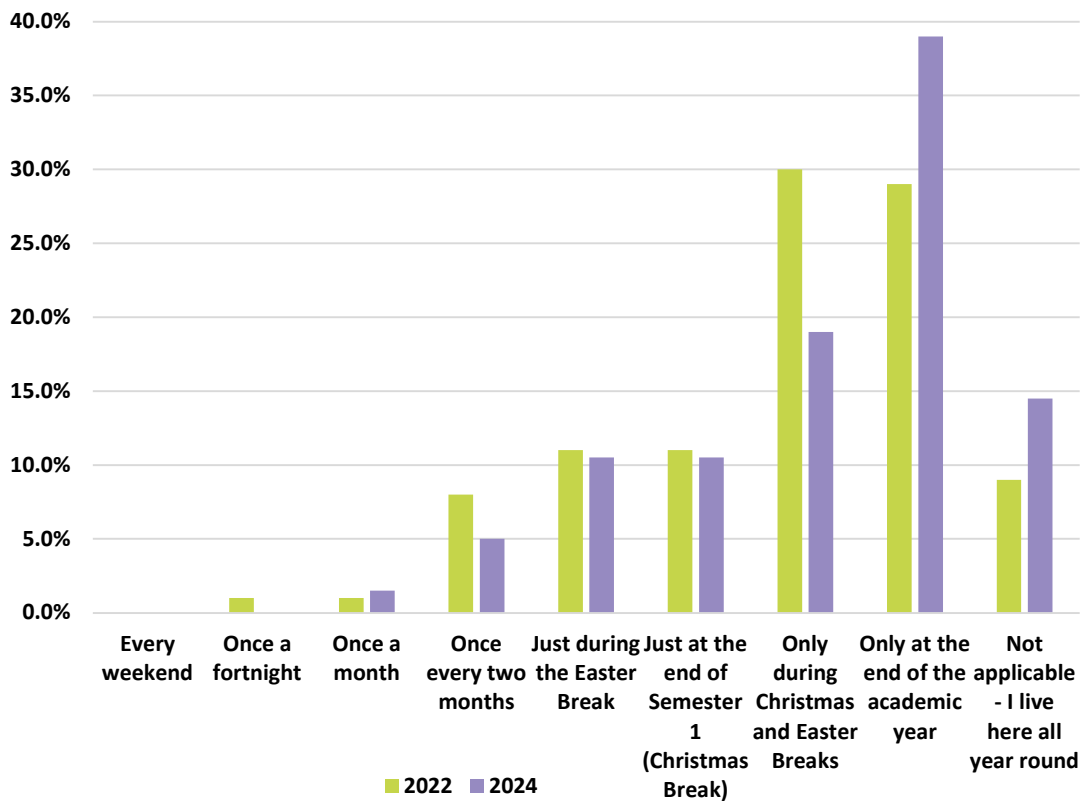


3.1.4 A comparison in terms of the frequency of domestic and international students’ return trips home between 2024 and 2022 is presented below.

**Image 3.3 – Frequency of Return Trip Home (UK Students) – 2022 and 2024**



**Image 3.4 – Frequency of Return Trip Home (International Students) – 2022 and 2024**



3.1.5 The frequency with which domestic students and international students travel home has generally remained consistent between 2022 and 2024, although there has been a slight increase in the proportion of both domestic and international students that only travel home at the end of the academic year, as well as in terms of the proportion that live in Manchester all year round.



## 4.0 CARBON ASSESSMENT

4.1.1 The outputs from the carbon impact exercise are presented below. This includes outputs relating to staff and student travel to and from the University during term, as well as the impact relating to student travel to their permanent / family home at the start and end of the academic year, and throughout the year.

### 4.2 Methodology

4.2.1 The methodology reflects that previously recommended by HEFCE and now under the responsibility of UK Research and Innovation an Office for Students, adopting the 2023 Carbon conversion factors provided by Defra. The data collated from the survey that feeds into this carbon assessment includes:

- i) Modal split (by total distance travelled) for commuting journeys to and from the University;
- ii) Distances travelled for commuting;
- iii) Number of days travelling to the University;
- iv) Distance travelled to out of term address for students; and
- v) Frequency of travel to out of term address for students.

4.2.2 A number of assumptions have been made, as follows:

- i) The average full time equivalent (FTE) member of staff works 45 weeks per annum (taking into account annual leave, bank holidays and absence);
- ii) The average student attends University for 31 weeks each year (i.e. 150 days);
- iii) Respondents were asked questions relating to the typical number of days and mode per week that they travel to the University. This information was used to factor the 45 (staff) and 31 (student) weeks down to the average number of days per year that staff and students commute;
- iv) Where respondents indicated an occasional alternative mode of travel this has been accounted for in the total distance by main mode and reflected accordingly;
- v) Response rates have been factored up to represent the full staff and student population figures of 11,375 and 43,326 respectively;
- vi) The UK students and non-UK students results (relating to method of end of term travel home) have been factored up to represent the split in UK (25,415) and non-UK (17,911) student numbers;



- vii) It should be noted that for this carbon assessment, all international students' permanent / family home locations have been used to establish travel distances (not just those who completed the travel survey).

### 4.3 Total Annual Distance by Mode

- 4.3.1 The following tables summarise the total distances travelled by mode for staff commuting, student day-to-day commuting, and domestic students travel to / from their permanent / family homes, respectively.

#### *Staff Commuting*

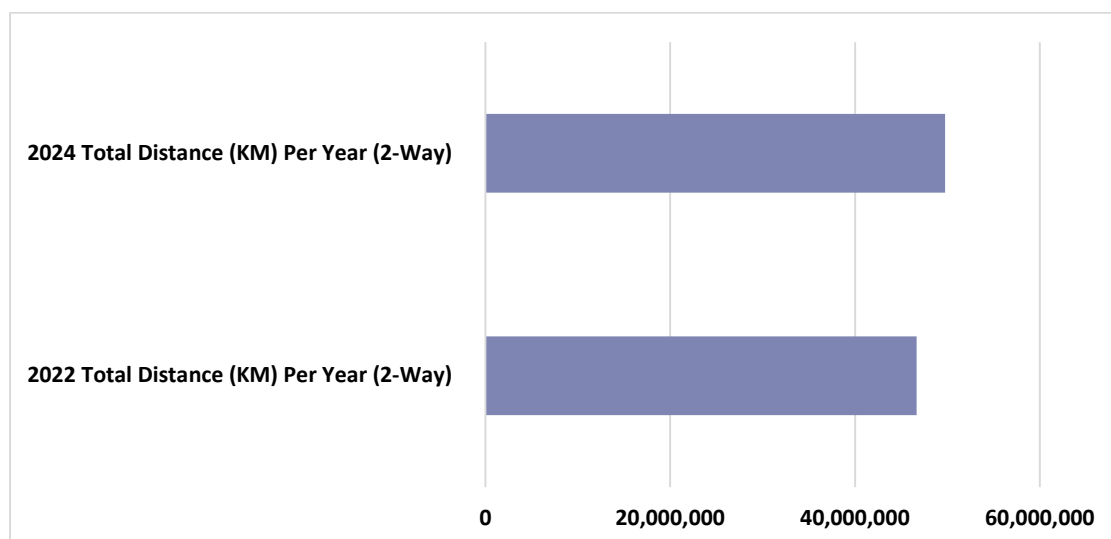
**Table 4.1 – Staff Commuting Distances Per Annum (Inc. Allowances for Occasional Modes, Extrapolated for All Staff)**

Mode of Travel	Mode Share (By Distance)	Total Distance (KM) <u>Per Year (2-Way)</u> All Staff Combined
Car Alone	28.7%	14,279,544
Car Share (as driver)	2.9%	1,453,183
Car Share (as passenger)	1.9%	936,509
Motor-scooter/Motorcycle	0.9%	469,173
Train	43.2%	21,514,230
Bus	9.0%	4,478,952
Tram	4.2%	2,076,583
Taxi	0.01%	5,042
Non-Carbon Assessment Modes	9.1%	4,548,234
<b>Total</b>	<b>100%</b>	<b>49,761,460</b>

- 4.3.2 In terms of staff commuting trips, the 2024 travel survey results indicate a total annual distance travelled of 49,761,460km when extrapolated for all staff. This represents an increase of approximately 6.6% compared to the equivalent figure extrapolated from the 2022 travel survey results (46,679,538km based on 2022 travel survey responses).
- 4.3.3 However, the majority of this increase in distance appears to be as a result of an increase in the distance travelled by train, which is 28% greater than in 2022. The overall distance travelled by single-occupancy car is indicated to have reduced by approximately 18%.



**Image 4.1 – Total Staff Commuting Distances (KM Per Year) – 2022 and 2024**



### *Student Daily Commuting*

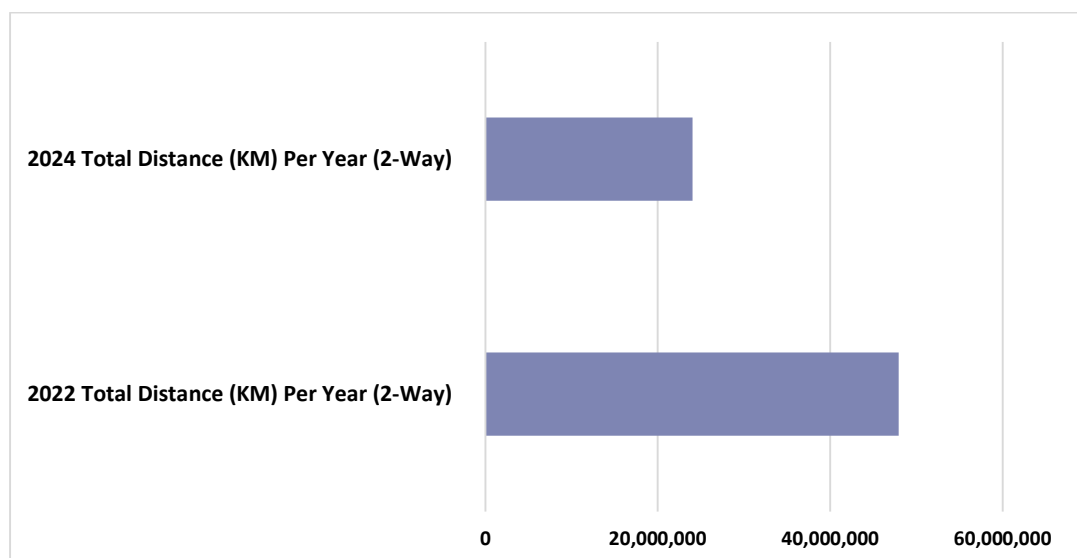
**Table 4.2 – Student Daily Commuting Distances Per Annum (Inc. Allowances for Occasional Modes, Extrapolated for All Students)**

Mode of Travel	Mode Share (By Distance)	Total Distance (KM) <u>Per Year</u> (2-Way) All Students Combined
Car Alone	7.3%	1,746,394
Car Share (as driver)	1.2%	284,868
Car Share (as passenger)	0.6%	152,615
Motor-scooter/Motorcycle	0.0%	0
Train	23.0%	5,527,968
Bus	31.5%	7,564,642
Tram	2.1%	500,964
Taxi	0.4%	100,347
Non-Carbon Assessment Modes	33.9%	8,137,369
<b>Total</b>	<b>100%</b>	<b>24,015,167</b>

4.3.4 The 2024 travel survey results indicate that for day-to-day student commuting, there is a total annual distance travelled of 24,015,167km when extrapolated for all students. This represents a decrease of approximately 50% compared to the equivalent figure extrapolated from the 2022 travel survey results (47,931,914km based on 2022 travel survey responses).

- 4.3.5 The majority of this decrease in distance travelled appears to relate to the fact that the 2024 survey results indicate a significant decrease in the distance travelled by walking and cycling, and in the distance travelled by bus. The 2024 survey results also indicate a significant reduction in the total distance travelled by single-occupancy car, and by car sharing as a passenger.
- 4.3.6 The difference in distances could also be a reflection of discrepancies in the survey methodology used. The 2022 survey asked respondents to directly estimate the distances travelled by each mode of travel used, for both regular and occasional trips. By contrast, in order to reduce the length of time taken to answer the survey – and in turn reduce ‘survey fatigue’ and increase the overall number of responses – the 2024 survey used postcode data to estimate the distance travelled. It also assumed a single principal main mode of travel for each journey, with no account taken of multi-modal journeys.

**Image 4.2 – Total Student Commuting Distances (KM Per Year) – 2022 and 2024**





### **Domestic Students – Travel To / From Family Home**

**Table 4.3 – Domestic Students – Distances Travelling To / From Family Home – 2024  
(Extrapolated for all Domestic Students)**

Mode of Travel	Mode Share (By Distance)	Total Distance (KM) <u>Per Year</u> (2-Way) All UK Students
Lift with Family / Friends	34.0%	20,045,637
Train	38.5%	22,667,157
Car Alone	8.0%	4,697,091
Bus / Coach	1.9%	1,146,907
Tram	3.4%	1,986,963
Plane	14.3%	8,400,311
<b>Total</b>	<b>100%</b>	<b>58,944,067</b>

4.3.7 The 2024 travel survey results indicate that the distance travelled by domestic students to and from their permanent / family home has remained relatively static compared to the equivalent figure extrapolated from the 2022 travel survey results (58,538,393km based on 2022 travel survey responses).

#### **4.4 Total Annual Volume of Commuter Generated Emissions**

4.4.1 The following tables summarise the total distances travelled by mode for staff commuting, student day-to-day commuting, and domestic students travel to / from their permanent / family homes, respectively.

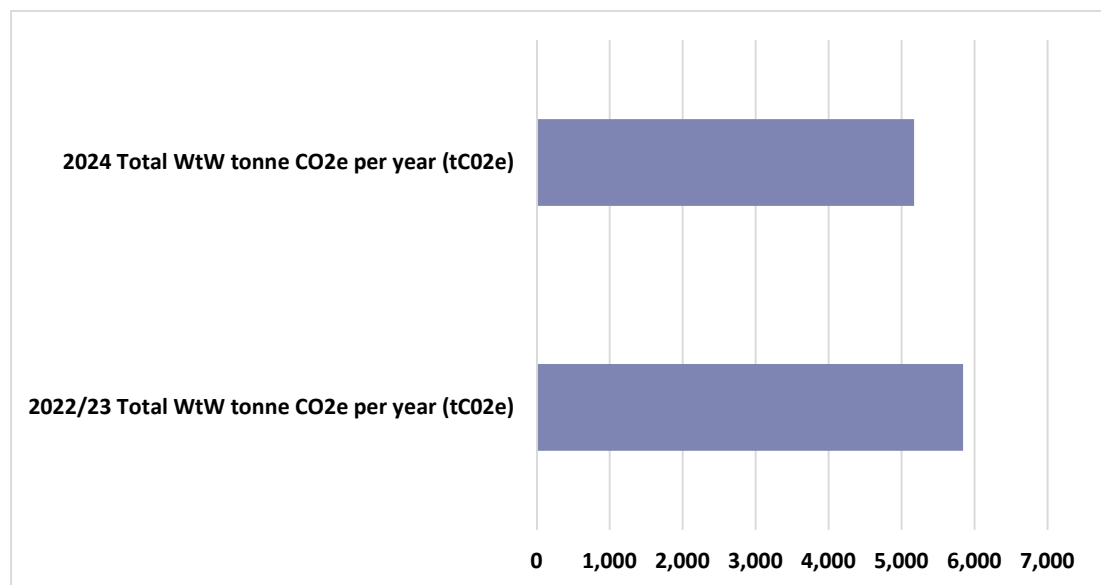
##### **Staff Commuting**

**Table 4.4 – Carbon Emissions Generated by Staff Commuting (Inc. Allowances for Occasional Modes, Extrapolated for All Staff)**

Mode of Travel	Total Tonnes CO <sub>2e</sub> per year (tCO <sub>2e</sub> )	Total Well to Tank Emissions (tCO <sub>2e</sub> )
Car Alone	2,380	623
Car Share (as driver)	242	63
Car Share (as passenger)	156	41
Motor-scooter/Motorcycle	53	14
Train	763	193
Bus	458	112
Tram	59	16
Taxi	1	0
<b>Total</b>	<b>4,112</b>	<b>1,062</b>

- 4.4.2 The staff commuting results show that a total well-to-wheel emissions of 5,174 tonnes of CO<sub>2e</sub> per year are generated from staff commuting. This equates to an average of 0.455 tonnes of CO<sub>2e</sub> per staff member, per year.
- 4.4.3 This equates to a reduction in emissions of 671 tCO<sub>2e</sub> compared to the equivalent figure for 2022/23, which was extrapolated from the 2022 travel survey results, as illustrated in **Image 4.3**. This reduction in staff commuting carbon emissions is a result of the overall reduction in the distance travelled by car (a reduction of 4,515,373km across journeys made by car alone, car share (as driver), car share (as a passenger) and motorcycle compared to 2024, which equates to a reduction of 704 tonnes of carbon per year. In comparison, the distance travelled by bus, tram and train has increased by 3,974,881km, although since these modes lower carbon emissions factors this only equates to an increase of 187 tonnes of carbon per year.

**Image 4.3 – Total Staff Commuting Carbon Emissions Per Year – 2022/23 and 2024**



### ***Student Daily Commuting***

**Table 4.5 – Carbon Emissions Generated by Student Daily Commuting (Inc. Allowances for Occasional Modes, Extrapolated for All Students)**

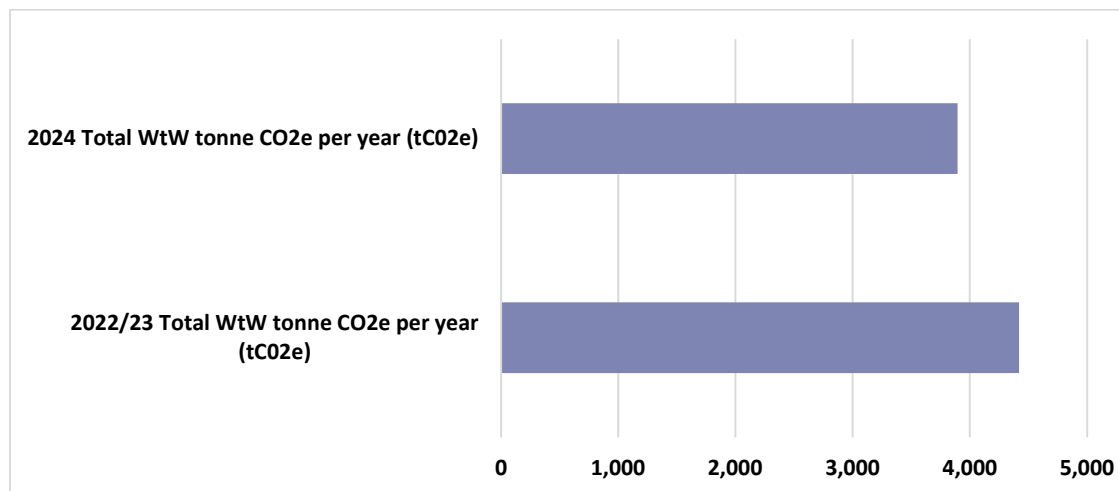
<b>Mode of Travel</b>	<b>Total Well to Wheel Tonne CO<sub>2e</sub> per year (tCO<sub>2e</sub>)</b>
Car Alone	840
Car Share (as driver)	137
Car Share (as passenger)	73
Motor-scooter/Motorcycle	0
Train	562
Bus	2,199
Tram	41
Taxi	43
<b>Total</b>	<b>3,895</b>

4.4.4 The student commuting results show that that well to wheel emissions of 3,895 tonnes of CO<sub>2e</sub> per year are generated from students commuting. This equates to an average of 0.09 tonnes of CO<sub>2e</sub> per student, per year.

4.4.5 This equates to a reduction in emissions of 524 tCO<sub>2e</sub> compared to the equivalent figure for 2022/23, which was extrapolated from the 2022 travel survey results, as illustrated in **Image 4.4**. The reduction in student commuting carbon emissions reflects the fact that the 2024 survey results indicate a significant reduction in the distance travelled by bus, and an increase in the distance travelled by train, which has a lower carbon emissions factor. There has also been a general reduction in the total distance travelled by car, particularly with regard to sole-occupancy drivers and car share (as a passenger) modes.



**Image 4.4 – Total Student Commuting Carbon Emissions Per Year – 2022 and 2024**



***Domestic Students – Travel To / From Family Home***

4.4.6 The carbon emissions associated with student travel to and from their permanent / family homes is presented below.

**Table 4.6 – Carbon Emissions Generated by Domestic Student Travel To / From Family Home (Extrapolated for All Domestic Students)**

Mode of Travel	Total Well to Wheel Tonne CO <sub>2e</sub> per year (tCO <sub>2e</sub> )
Lift with Family / Friends	6,137
Train	1,466
Car Alone	1,438
Bus / Coach	56
Tram	104
Plane	3,743
<b>Total</b>	<b>12,946</b>

4.4.7 In terms of travel home by UK students throughout the year and at the start and end of the year, this generates a total of 12,946 tonnes of CO<sub>2e</sub> per year. This equates to an average of 0.509 tonnes of CO<sub>2e</sub> per domestic (UK) student, per year for the purposes of travelling to / from their permanent family homes.

This represents an increase of 1,751 tCO<sub>2e</sub> compared to the equivalent figure for 2022/23, extrapolated from the 2022 travel survey results (11,195 tCO<sub>2e</sub>). This reflects an increase in the total distance travelled of approximately 15,765,000km.

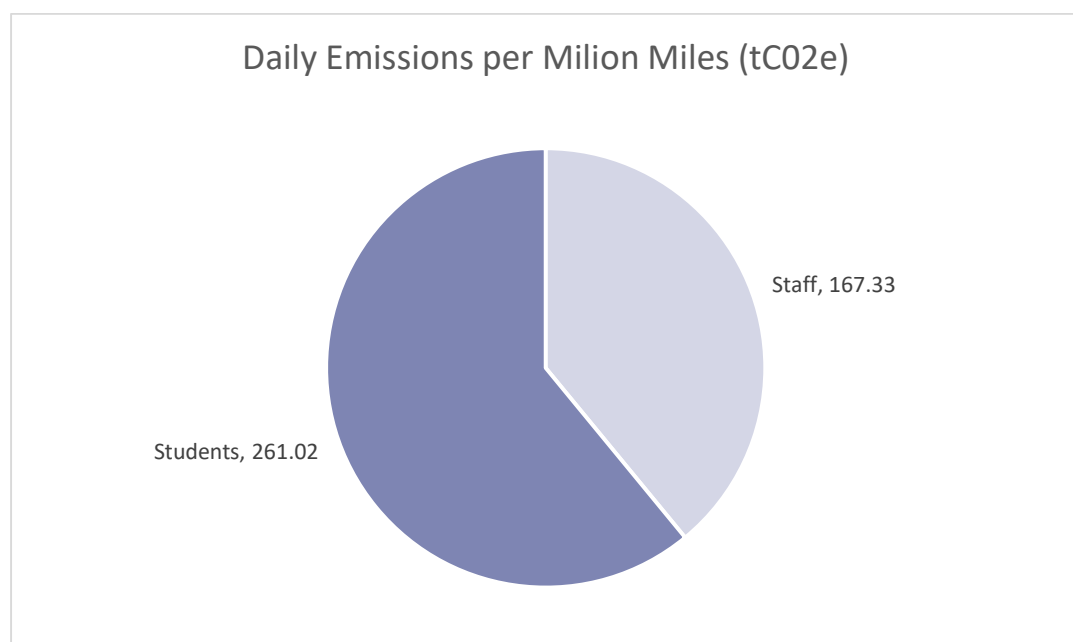


This in turn is likely to be a result of the increased proportion of students who indicate that they travel home every weekend, as illustrated in **Image 3.3** in **Section 3.0**.

## 4.5 Carbon Emission Analysis

4.5.1 As illustrated in **Image 4.5**, the total carbon emissions resulting from day-to-day commuting equates to 261.02 tCO<sub>2e</sub> per million miles for student travel, compared to 167.33 tCO<sub>2e</sub> per million miles for staff travel. In comparison, emissions resulting from domestic students travelling to and from their permanent / family home equates to 20,775 tCO<sub>2e</sub> per million miles.

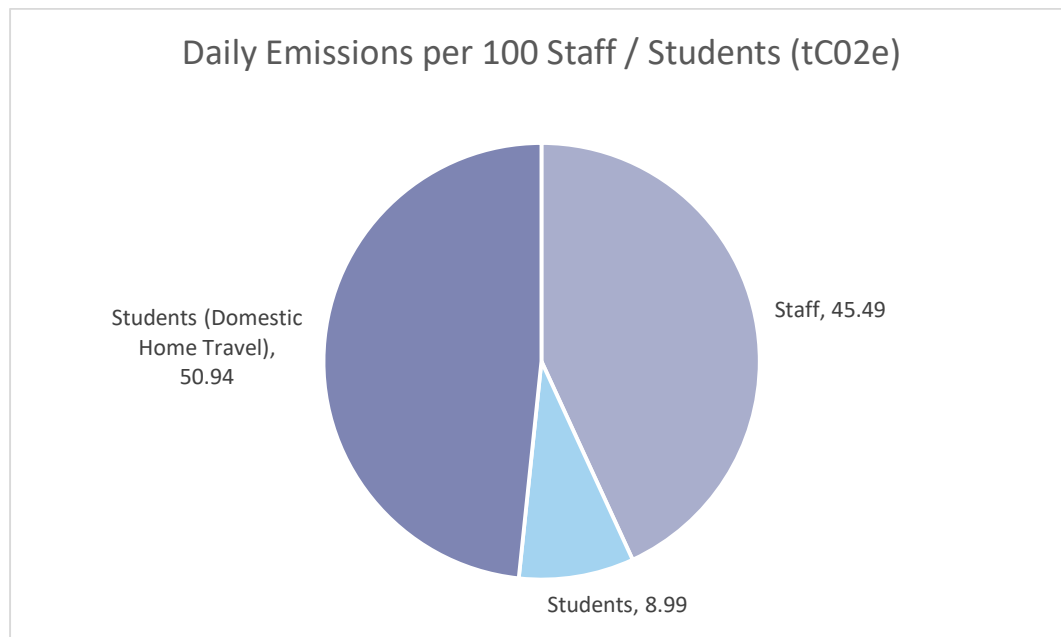
**Image 4.5 – Total Staff / Student Daily Commuting Carbon Emissions Per Million Miles**



4.5.2 In terms of emissions per number of staff / students, **Image 4.6** shows that the total carbon emissions resulting from day-to-day commuting equates to 45.49 tCO<sub>2e</sub> per 100 staff and 8.99 tCO<sub>2e</sub> per 100 students. Emissions resulting from domestic students travel to and from their permanent / family home equates to 50.94 tCO<sub>2e</sub> per 100 students.



**Image 4.6 – Total Staff / Student Daily Commuting Carbon Emissions Per Million Miles**



#### 4.6 Student Carbon Emissions Associated with Travel Home (International Students)

4.6.1 In terms of travel home by international students throughout the year and at the start and end of the year, this equates to a total of 154,108 Well to Wheel tCO<sub>2e</sub> per year, based on the breakdown of international students by country for the 2022/23 academic year. This equates to an average of 820.5 tCO<sub>2e</sub> per 100 international (non-UK) students per year for the purposes of travelling to / from their permanent family homes. In terms of emissions per mile (all modes combined) it equates to 487.8 tCO<sub>2e</sub> per million miles of travel.

**Table 4.8 – International Students – Distances and Carbon Emissions Travelling To / From Family Home – 2024**

Mode of Travel	Total Distance (KM) Per Year (2-Way) All International Students	Total Well to Wheel Tonnes CO <sub>2e</sub> per year (WtW tCO <sub>2e</sub> )
Short Haul Flight	508,166,208	149,101
Long Haul Flight	238,075	5,007
<b>Total</b>	<b>508,404,283</b>	<b>154,108</b>

## 4.7 Total Carbon Emissions

**Table 4.9 – University of Manchester – Total Commuter Carbon Emissions 2023/24**

Purpose	User Group	Total Distance (KM) Per Year (2-Way)	Total Tonne CO <sub>2e</sub> per year (tCO <sub>2e</sub> )
Start / End of Year Travel Home	Domestic Students	58,944,067	12,946
	International Students	508,404,283	154,108
Commuting	Staff	49,761,460	5,174
	Students	24,015,167	3,895
<b>Total</b>		<b>641,124,977</b>	<b>176,123</b>

4.7.1 The survey results indicate that the carbon generated by travel to and from the University totals approximately 176,123 tonnes CO<sub>2e</sub>. This represents an increase of approximately 556 tCO<sub>2e</sub> compared to the figure for 2022/23 (175,567 tCO<sub>2e</sub>), which was calculated based on responses received in the 2022 travel survey. This reflects a total increase in distance travelled of 15,994,463km compared to the 2022 travel survey.

## 5.0 SUMMARY

5.1.1 Axis has been appointed by The University of Manchester ('the University') to provide transport planning support in respect to estimating carbon dioxide equivalent emissions generated by staff and student commuter travel to and from the University campuses. These types of emissions are known as Scope 3 commuter emissions.

5.1.2 This Carbon Emissions Survey Report (CESR) sets out the results of the April / May 2024 surveys and compares them with the most recent survey results from 2019 and 2022.

5.1.3 In summary:

- i) The survey results indicate that the carbon generated by travel to and from the University totals approximately 176,123 tonnes CO<sub>2e</sub>. This represents an increase of approximately 556 tCO<sub>2e</sub> compared to the figure for 2022/23, which was calculated based on responses received in the 2022 travel survey.
- ii) This increase in carbon is primarily associated with flights to and from the UK by international students at the start and end of term. These emissions make up 93% of all CO<sub>2e</sub> associated with travel. The total distance travelled by overseas



students is indicated to have increased by almost 18 million km compared to 2022.

- iii) In contrast, the 2024 travel survey results indicate that the distance travelled by domestic students to and from their permanent / family home has remained relatively static compared to the equivalent figure extrapolated from the 2022 travel survey results.
- iv) With regard to day-to-day commuting travel, the 2024 survey results indicate that the total annual distance travelled by staff has increased by approximately 7% compared to the equivalent figure extrapolated from the 2022 travel survey results. This reflects an increase in the distance travelled by train compared to 2022, whereas the overall distance travelled by single-occupancy car is indicated to have reduced by approximately 18%.
- v) For day-to-day student commuting, the total annual distance is indicated to have decreased by approximately 50% compared to the equivalent figure extrapolated from the 2022 travel survey results. This reflects the fact that the 2024 survey results indicate a reduction in the distance travelled by walking and cycling. The 2024 survey results also indicate a significant reduction in the total distance travelled by single-occupancy car, and by car sharing as a passenger. However, this could also be a reflection of the different methodology used to estimate distances travelled compared to the 2022 survey.
- vi) The modal split for day-to-day commuting by students is broadly comparable to the situation in 2022, although there has been a slight reduction in the proportion of bus use, with a corresponding increase in the proportion of students walking. For staff commuting, the main modes of travel have remained broadly consistent between 2019 and 2024, although there has been a general reduction in the proportion of journeys by car and a corresponding increase in terms of the proportion of staff commuting by train.
- vii) The level of hybrid working amongst students has remained broadly consistent between 2019 and 2024. There was a slight reduction between 2019 and 2022 in the proportion of students commuting 5 days a week (likely due to Covid). However, the 2024 results show that the proportion of students commuting 5 days a week is approaching pre-Covid levels again. In contrast, hybrid working patterns among staff have become more embedded, with the proportion of staff only commuting 3 or 4 days a week having increased since 2022.