



## How to Guide – Student Travel to Study Emission Calculations

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## Abbreviations and Acronyms

Abbreviation/Acronym	Description
GHG	Green House Gases
UK	United Kingdom
tCO <sub>2</sub> e	Tonnes (t) of carbon dioxide (CO <sub>2</sub> ) equivalent (e)
N America	North America
S America	South America

## Introduction

This is a guide to calculating annual student travel emissions based on domicile data, utilising the calculation workbook and monitoring workbook. For more information, please refer to the research paper behind the finalised methodology, found in the following location:

**REDACTED**

## Formal Methodology

### Step 1: Requesting the Data

Request domicile student data from registry, this should only include Aberdeen-campus students and is for both on-campus and blended students. The file Netzero\_OnCampus-and-Blended should be requested for the required academic year from registry through: **REDACTED**

### Step 2: Organising the Data

A parent folder is to be created for each reporting year in the following location:

**REDACTED**

The folder naming format is to be as follows:

*“20YY - 20YY”*

Due to the size of the files, the list from registry will be compiled across multiple sheets and the user will need to merge these into one sheet for calculations to go ahead. Save this merged sheet and the raw data in a folder in the location highlighted above. The folder name is to be:


*“01 Domicile Data”*

### Step 3: Update institution information

Please make sure to read the “Read Me First” sheet before any calculations are made.

The name of the institution, the flight layover location and the distance between the two should then be updated for the required data.

Written by:	Estrid Jonsson	Date:	02/03/2023
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**Student Travel Emissions Calculation Spreadsheet**

This spreadsheet calculates student travel emissions using domicile data. The green cells are open to editing for the user, red cells should not be changed and yellow cells contain helpful comments for the calculations.

Before any calculations are made, please read the how-to guide which gives a detailed explanation on how to use this calculation sheet.

Calculations are started by getting domicile data of the student body, this is entered in the "Data" tab in order to start calculations. Verify this domicile data in the "Verification of Data" tab and make any adjustments if needed.

Update the emission factors for the specified year in the "Emission Factors" tab. These GHG emission factors given by the government can be found here: <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>  
For any changes made to the original methodology, please update the number of trips and the split between travel modes for any countries.

To complete column D in the "Country Distances" tab, users should access <http://ksgleditsch.com/data-5.html> to get distance from capital to layover location for all international countries. The distance between layover location and the institution entered into D39 in the "Read Me First" tab will then be added in the "Domicile Data" tab. For countries/territories which do not appear on the mentioned websites should be found using Google Maps. For UK countries, the distance from their respective capitals to the university should be noted as the distance.

"Home" in this calculation sheet is assumed to be Scotland, however, this should be adjusted for the required country which the institutions is situated in. Edits to this is made by changing the region of the respective home country to "Home" and assigning "UK" to the region of Scotland. Edits would have to be made under "Summaries" to update the Home summary to the required Home country.

As per guidance from the *Public Bodies and Climate Change Duties - Guidance on nature-based carbon reduction projects (insetting and offsetting) and annual bodies duties reporting* document released by the Scottish Government on 27/02/2023, flexibility with regards to the number of journeys counted towards Scottish emissions is provided under "Domicile Data". 1 trip means a single journey between the student's home and the institution and 2 trips would imply a return journey.

For technical queries, please contact Rose Lyne at [rose.lyne@abdn.ac.uk](mailto:rose.lyne@abdn.ac.uk)

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**ENTER THE FOLLOWING DATA**

Institution Name:	University of Aberdeen
Flight Layover Location:	London (UK)
Distance from layover location to University (km):	641.9

Please note that all data is anonymised in this workbook, and since no individual student can be identified, it is not of GDPR concerns.

Read Me First	Country Distances	Domicile Data	Emission Factors	Data	Verification of Data	Summaries	+
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Figure 1. Enter institution data

#### Step 4: Update Country Capital Distance to Layover Location

The distance between the chosen layover location and the capital city should now be updated in the "Distance to layover location from country capital" column.



Country	Region	Distance to layover location from country capital (km)	Number of students
Afghanistan	Asia	5725	0
Aland islands	Europe	1569.14	1
Albania	Europe	1868	2
Algeria	Africa	1678	1
American Samoa	Oceania	15790.66	0
Andorra	Europe	955	0
Angola	Africa	6828.25	21
Anguilla	North America	6570.22	0
Antigua and Barbuda	North America	6581.18	1
Argentina	South America	11052	2
Armenia	Europe	3599	0
Aruba	North America	7534.11	0
Australia	Oceania	16981.83	10
Austria	Europe	1235.04	65
Azerbaijan	Europe	3969	30
Bahamas	North America	5104	0
Bahrain	Asia	5071.29	3
Bangladesh	Asia	8004.34	11
Barbados	North America	6778.77	1
Belarus	Europe	1871.61	5
Belgium	Europe	313	62
Belize	North America	8385	0
Benin	Africa	5006	0
Bermuda	North America	5548.48	0
Bhutan	Asia	7638.95	0
Bolivia	South America	9940	2
Bosnia and	-	-	0

Comments: The distance should be updated to reflect the distance from the capital city to the chosen flight layover location.

Read Me First | **Country Distances** | Domicile Data | Emission Factors | Data | Verification of Data | Summaries | (+)

Figure 2. Distance to layover location from country capital

### Step 5: Import Data

Open the “Student Emission Calculation” workbook which can be found in the following location:

**REDACTED**

And save a copy of the file with the following naming format in the parent folder detailed in Step 2:

*“Student Emissions Calculation Sheet 20YY - 20YY”*

Copy the saved compiled list of data from registry in under the “Data” sheet. For calculations, the domicile data must be in column B.



### Step 7: Verify Data

This list is copied into Column A in the “Verification of Data” to verify that all countries received from registry appears in the “Domicile Data” sheet in the calculation sheet. Therefore, all countries should have a 1 next to them, if this is not true the data needs to be reviewed for any adjustments. Please note that the data from registry contains data for students which domicile data was not collected, therefore, “No data recorded” can be ignored as no calculations of emissions can be made for these students.

	A	B	C
		<b>Appears in the domicile data</b>	
1	Break_Ref		
2	Albania		1
3	Algeria		1
4	Angola		1
5	Argentina		1
6	Australia		1
7	Austria		1
8	Azerbaijan		1
9	Bahrain		1
10	Bangladesh		1
11	Barbados		1
12	Belgium		1
13	Belize		1
14	Bermuda		1

Figure 5. Verify data through comparison between Registry and calculation sheet country list

### Step 7.1: Updating the country list (Student Emission Calculation)

If, in the verification step, it is determined that the country list needs to be updated the following steps should be followed:

86	Monaco	1							
87	Morocco	1							
88	Mozambique	1							
89	Myanmar (Burma)	1							
90	Namibia	1							
91	Nepal	1							
92	Netherlands	1							
93	New Country	0							
94	Nigeria	1							

Navigation: Read Me First | Domicile Data | Emission Factors | Data | **Verification of Data** | Summaries

Figure 6. Missing country from country list

### Step 5.1a: Updating the Domicile Data (Student Emission Calculation)

First, the country list in the “Domicile Data” needs to be updated. This is done by inserting a row, for the new country. The region, distance and the percent split between travel modes should be updated for the required country. A detailed guide on how this is done is provided in the research document behind this methodology, mentioned previously.

	New Caledonia	Oceania	0	2					100.00%
	New Country	Asia							
	New Zealand	Oceania	0	2					100.00%
	Nicaragua	North America	0	2					100.00%
	Niger	Africa	0	2					100.00%

Navigation: Read Me First | **Domicile Data** | Emission Factors | Data | Verification of Data | Summaries

Figure 7. Adding country to domicile data

The number of students, emission factors and carbon emissions formulas are updated by dragging the fill handles across the cell from the adjacent cell, shown in Figure 6.

New Caledonia	Oceania	17206.04	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
New Country	Asia	7730	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
New Zealand	Oceania	19458.9	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
Nicaragua	North America	9351.9	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
Niger	Africa	4868.9	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
Nigeria	Africa	5650.9	293	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	489.66	489.66
Niue	Oceania	16940.02	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
Norfolk Island	Oceania	17971.57	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
North Korea	Asia	9306.11	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00
Northern Mariana Islands	Oceania	12537.17	0	2				100.00%	0	0	0	0.1479	0.00	0.00	0.00	0.00	0.00

Navigation: Read Me First | **Domicile Data** | Emission Factors | Data | Verification of Data | Summaries

Figure 8. Fill formula down into adjacent cells

Step 7.1b: Updating the Region Summary (Student Emission Calculation)

Under “Summaries”, a new country should be added by inserting a new row under the correct region, in accordance with the domicile data. The formula is updated by dragging the fill handles across the cell from the adjacent cells.

Asia Summaries							
Countries	Total Emissions - Asia (tCO2e)	Percent of Asian Emissions	Percent of Total Emissions	Number of Students	Percent of Asian Student	Percent of Total Student	
Afghanistan	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Bahrain	18.59	0.30%	0.18%	11.00	0.43%	0.07%	
Bangladesh	710.86	11.35%	6.83%	278.00	10.81%	1.84%	
Bhutan	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Brunei	24.65	0.39%	0.24%	7.00	0.27%	0.05%	
Cambodia	6.30	0.10%	0.06%	2.00	0.08%	0.01%	
China	2,719.32	43.40%	26.12%	1,037.00	40.32%	6.86%	
Cocos (Keeling) Islands	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
East Timor	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Hong Kong	136.68	2.18%	1.31%	45.00	1.75%	0.30%	
India	1,042.34	16.64%	10.01%	477.00	18.55%	3.15%	
Indonesia	123.93	1.98%	1.19%	34.00	1.32%	0.22%	
Iran	26.96	0.43%	0.26%	18.00	0.70%	0.12%	
Iraq	61.40	0.98%	0.59%	44.00	1.71%	0.29%	
Israel	2.51	0.04%	0.02%	2.00	0.08%	0.01%	
Japan	57.85	0.92%	0.56%	19.00	0.74%	0.13%	
Jordan	22.80	0.36%	0.22%	18.00	0.70%	0.12%	
Kazakhstan	39.97	0.64%	0.38%	25.00	0.97%	0.17%	
Kiribati	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Kosovo	0.75	0.01%	0.01%	1.00	0.04%	0.01%	
Kuwait	82.82	1.32%	0.80%	53.00	2.06%	0.35%	
Kyrgyzstan	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Laos	2.96	0.05%	0.03%	1.00	0.04%	0.01%	
Lebanon	14.55	0.23%	0.14%	12.00	0.47%	0.08%	
Macao	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Malaysia	248.16	3.96%	2.38%	75.00	2.92%	0.50%	
Maldives	8.13	0.13%	0.08%	3.00	0.12%	0.02%	
Mongolia	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Myanmar (Burma)	11.44	0.18%	0.11%	4.00	0.16%	0.03%	
Nepal	7.11	0.11%	0.07%	3.00	0.12%	0.02%	
New Country							
North Korea	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Oman	51.76	0.83%	0.50%	27.00	1.05%	0.18%	
Pakistan	59.47	0.95%	0.57%	30.00	1.17%	0.20%	
Occupied Palestinian Terri	3.77	0.06%	0.04%	3.00	0.12%	0.02%	
Philippines	3.38	0.05%	0.03%	1.00	0.04%	0.01%	
Qatar	17.11	0.27%	0.16%	10.00	0.39%	0.07%	
Saudi Arabia	152.58	2.44%	1.47%	92.00	3.58%	0.61%	
Singapore	115.65	1.85%	1.11%	34.00	1.32%	0.22%	
South Korea	50.57	0.81%	0.49%	18.00	0.70%	0.12%	
Sri Lanka	94.47	1.51%	0.91%	34.00	1.32%	0.22%	
Syria	6.18	0.10%	0.06%	5.00	0.19%	0.03%	
Taiwan	27.80	0.44%	0.27%	9.00	0.35%	0.06%	
Tajikistan	0.00	0.00%	0.00%	0.00	0.00%	0.00%	
Thailand	157.18	2.51%	1.51%	52.00	2.02%	0.34%	
Turkey	24.82	0.40%	0.24%	24.00	0.93%	0.16%	
Turkmenistan	1.60	0.03%	0.02%	1.00	0.04%	0.01%	
United Arab Emirates	85.15	1.36%	0.82%	47.00	1.83%	0.31%	
Uzbekistan	6.97	0.11%	0.07%	4.00	0.16%	0.03%	
Vietnam	35.25	0.56%	0.34%	11.00	0.43%	0.07%	
Yemen	1.84	0.03%	0.02%	1.00	0.04%	0.01%	

Figure 9. Updating the region summary

### Step 7.1c: Updating the Domicile Data (Student Emission Calculation Tracking)

A new row should be inserted to the country list under “Domicile Data”. Please note that cells can be left blank for the years which the newly added country does not concern.

New Caledonia	Oceania	0	1	0	0	0	0	0
<b>New Country</b>	<b>Asia</b>							
New Zealand	Oceania	4	2	1	1	1	0	0
Nicaragua	North America	0	0	0	0	0	0	0
Niger	Africa	0	0	0	0	0	0	0
Nigeria	Africa	285	236	218	231	261	215	293

Figure 10. Updating the domicile data

### Step 7.1d: Updating the Travel Data (Student Emission Calculation Tracking)

A new row should be inserted to the country list under “Travel Data”. The distance should also be updated, in accordance with the Student Emission Calculation workbook. Please note that cells can be left blank for the years which the newly added country does not concern.

<b>New Country</b>	<b>7,500.00</b>						
New Zealand	19,458.90	2			100.00%	2	
Nicaragua	9,351.90	2			100.00%	2	
Niger	4,868.00	2			100.00%	2	

Figure 11. Updating the travel data

### Step 7.1e: Updating the Emissions Data (Student Emission Calculation Tracking)

A new row should be inserted to the country list under “Emissions Data”. The region should also be updated, in accordance with the Student Emission Calculation workbook. Please note that cells can be left blank for the years which the newly added country does not concern.

<b>New Country</b>	<b>Asia</b>						
New Zealand	Oceania	0.00	0.00	0.00	22.85	22.85	
Nicaragua	North America	0.00	0.00	0.00	0.00	0.00	
Niger	Africa	0.00	0.00	0.00	0.00	0.00	

Figure 12. Updating the emissions data

Step 7.1f: Updating the Tracked Data (Student Emission Calculation Tracking)

A new row should be inserted for the new country under the correct region, in accordance with the Student Emission Calculation workbook, under “Tracked Data”.

	2015 - 2016		
	Emissions (tCO2e)	Number of Students	Emissi
<b>Asia</b>			
Afghanistan	0	0	
Bahrain	5.031492169	3	10.3
Bangladesh	27.92009236	11	20.3
Bhutan	0	0	
Brunei	34.95254526	10	21.6
Cambodia	0	0	
China	476.342991	183	565
Cocos (Keeling) Islands	0	0	
East Timor	0	0	
Hong Kong	123.6142439	41	136
India	173.5268387	80	140
Indonesia	343.7192762	95	311
Iran	23.78493574	16	27.3
Iraq	6.92640142	5	9.9
Israel	1.247844299	1	2.5
Japan	36.26957285	12	40.4
Jordan	11.3142721	9	14.3
Kazakhstan	71.41764375	45	67.4
Kiribati	0	0	
Kosovo	0.739589193	1	0.7
Kuwait	62.04273176	40	67.3
Kyrgyzstan	0	0	1.8
Laos	0	0	3.0
Lebanon	7.219110096	6	6.3
Macao	3.006233472	1	
Malaysia	495.9509261	151	473
Maldives	0	0	
Mongolia	0	0	
Myanmar (Burma)	8.516087532	3	14.4
Nepal	9.411416176	4	9.6
<b>New Country</b>			
North Korea	0	0	

Summaries **Tracked Data** Emissions Data Travel Data Domicile Data Emission Factors

Figure 13. Updating the tracked data

Emissions and number of students formulas are updated by dragging the fill handles across the cell from the adjacent cell, shown in Figure 12.

Nepal	9.411416176	4	9.694181848	4
New Country				
North Korea	0	0	0	0
Oman	15.22261251	8	23.51996306	12
Pakistan	45.25717645	23	54.72421835	27
Occupied Palestinian Territories	1.247844299	1	1.285335737	1
Philippines	6.711897128	2	20.74066753	6
Qatar	6.791686736	4	6.995742728	4
Saudi Arabia	83.95901132	51	101.7430081	60
Singapore	151.9423994	45	146.0736699	42
South Korea	47.41248517	17	51.70975585	18
Sri Lanka	13.78983422	5	19.88580903	7
Syria	2.454102888	2	2.527836324	2
Taiwan	15.33249202	5	9.475893726	3
Tajikistan	0	0	0	0
Thailand	312.04653	104	278.1536168	90
Turkey	13.34514953	13	17.97567457	17
Turkmenistan	1.585194644	1	0	0
United Arab Emirates	25.17646886	14	53.71813962	29
Uzbekistan	3.457490968	2	3.561371164	2

... | Summaries | **Tracked Data** | Emissions Data | Travel Data | Domicile Data | Emission Factors

Figure 14. Fill formula down from adjacent cells

### Step 8: GHG Emission Factors

After the data has been verified, emission factors need to be updated for the year being calculated.

Emission factors for national rail, average car for unknown fuel, economy class short-haul flights and economy long-haul flights can be found here:

<https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

Please note that since, for example, in academic year 2015/2016 as a majority of the year falls in 2016, emission factors for 2016 should be used. The full set (for advanced users) should be used.

For cars, total kg CO<sub>2</sub>e per unit, for unknown fuel, per kilometre for average car, under Business travel -land should be used.

Activity	Type	Unit	Unknown				Total kg CO <sub>2</sub> e per unit	kg CO <sub>2</sub> e of CO <sub>2</sub>
			Total kg CO <sub>2</sub> e per unit	kg CO <sub>2</sub> e of CO <sub>2</sub> per unit	kg CO <sub>2</sub> e of CH <sub>4</sub> per unit	kg CO <sub>2</sub> e of N <sub>2</sub> O per unit		
Cars (by size)	Small car	km	0.1444	0.14332	0.00021	0.00087	0.05255	0.0520
		miles	0.23239	0.23065	0.00034	0.0014	0.08458	0.0838
	Medium car	km	0.17588	0.17456	0.00015	0.00117	0.08597	0.0853
		miles	0.28306	0.28093	0.00024	0.00189	0.13834	0.1372
	Large car	km	0.22733	0.22575	0.00009	0.00149	0.10148	0.1007
		miles	0.36582	0.36331	0.00014	0.00239	0.16332	0.1620
Average car	km	0.17067	0.1694	0.00017	0.0011	0.09349	0.0927	
	miles	0.27465	0.27262	0.00027	0.00176	0.15046	0.1493	

... | Waste disposal | Business travel- air | WTT- business travel- air | Business travel- sea | WTT- business travel- sea | **Business travel- land** | WTT- pa ...

Figure 15. GHG emission factor for car

The total kg CO<sub>2</sub>e per unit for national rail, under Business travel-land is used for rail.



Activity	Type	Unit	Total kg CO <sub>2</sub> e per unit	kg CO <sub>2</sub> e of CO <sub>2</sub> per unit
Rail	National rail	passenger.km	0.03549	0.0351
	International rail	passenger.km	0.00446	0.00441
	Light rail and tram	passenger.km	0.02861	0.02832
	London Underground	passenger.km	0.02781	0.02753

Waste disposal Business travel- air WTT- business travel- air Business travel- sea WTT- business travel- sea Business travel- land WTT- pa ...

Figure 16. GHG emission factor for rail

Total kg CO<sub>2</sub>e per passenger.km for coach, under Business travel-land is used for bus.

Type	Unit	kg CO <sub>2</sub> e	kg CO <sub>2</sub>	kg CH <sub>4</sub>	kg N <sub>2</sub> O
Local bus (not London)	passenger.km	0.11986	0.11902	0.00008	0.00076
Local London bus	passenger.km	0.0738	0.0734	0.00004	0.00036
Average local bus	passenger.km	0.10177	0.10106	0.00006	0.0006
Coach	passenger.km	0.02867	0.02829	0.00003	0.00035

Waste disposal Business travel- air WTT- business travel- air Business travel- sea WTT- business travel- sea Business travel- land

Figure 17. GHG emission factor for bus

For ferry, kg CO<sub>2</sub>e per passenger.km for average passenger should be used.

Activity	Type	Unit	kg CO <sub>2</sub> e	kg CO <sub>2</sub>	kg CH <sub>4</sub>	kg N <sub>2</sub> O
Ferry	Foot passenger	passenger.km	0.01927	0.01912	0.00001	0.00014
	Car passenger	passenger.km	0.13319	0.13216	0.00005	0.00098
	Average (all passenger)	passenger.km	0.11606	0.11516	0.00005	0.00086

Waste disposal Business travel- air WTT- business travel- air Business travel- sea WTT- business travel- sea Business travel- land

Figure 18. GHG emission factor for ferry

Domestic flights use average passenger total kg CO<sub>2</sub>e, Short-haul flights use total kg CO<sub>2</sub>e per unit for economy class and for Long-haul, total kg CO<sub>2</sub>e per unit for economy class are used, found under Business travel – air.

Activity	Haul	Class	Unit	kg CO <sub>2</sub> e	kg CO <sub>2</sub>	kg CH <sub>4</sub>	kg N <sub>2</sub> O
Flights	Domestic, to/from UK	Average passenger	passenger.km	0.27867	0.27722	0.00007	0.00138
		Average passenger	passenger.km	0.16844	0.1676	0.00001	0.00083
		Economy class	passenger.km	0.16508	0.16425	0.00001	0.00082
	Long-haul, to/from UK	Business class	passenger.km	0.24761	0.24637	0.00001	0.00123
		Average passenger	passenger.km	0.19162	0.19066	0.00001	0.00095
		Economy class	passenger.km	0.14678	0.14604	0.00001	0.00073
		Premium economy class	passenger.km	0.23484	0.23367	0.00001	0.00116
		Business class	passenger.km	0.42565	0.42353	0.00001	0.00211
		First class	passenger.km	0.58711	0.58418	0.00002	0.00291
		With RF	passenger.km	0.27867	0.27722	0.00007	0.00138

Waste disposal Business travel- air WTT- business travel- air Business travel- sea WTT- business travel- sea Business travel- land

Figure 19. GHG emission factors for air travel

### Step 9: Update Emission Factors

The emission factors found through the GHG website should then be updated in the “Emission Factors” sheet.

Cars (by				
	Average car	km		
Activity	Type	Unit	kg CO <sub>2</sub> e	
Rail	National rail	passenger.km		
Activity	Type	Unit	kg CO <sub>2</sub> e	
Bus	Coach	passenger.km		
Activity	Type	Unit	Total kg CO <sub>2</sub> e per unit	
Ferry	Average (all passenger	passenger.km		
Activity	Haul	Class	Unit	kg CO <sub>2</sub> e
Flights	Domestic, to/from UK	Average passenger	passenger.km	
	Short-haul, to/from UK	Economy class	passenger.km	
	Long-haul, to/from UK	Economy class	passenger.km	
				With RF
Read Me First				Domicile Data
				<b>Emission Factors</b>

Figure 20. Update emission factors using GHG emission factors

### Step 10: Update Travel Methods

Finally, any updates to travel methods or number of journeys for students needs to be edited. Note that trips per year only considers one-way between starting point and the University, therefore, two trips per year is the same as one return journey per year.

Country	Region	Distance to Aberdeen from capital (km)	Number of students	Percent Split Between Travel Modes							
				Trips per year	Car	Rail	Bus	Ferry	Domestic flight	Short-haul flight	Long-haul flight
Afghanistan	Asia	6366.9	0	2							100.00%
Aland islands	Europe	2211.04	1	2						100.00%	
Albania	Europe	2509.9	2	2						100.00%	
Algeria	Africa	2319.9	1	2							100.00%
American Samoa	Oceania	16432.56	0	2							100.00%
Andorra	Europe	1596.9	0	2						100.00%	
Angola	Africa	7470.15	21	2							100.00%
Anguilla	North America	7212.12	0	2							100.00%
Antigua and Barbuda	North America	7223.08	1	2							100.00%
Argentina	South America	11693.9	2	2							100.00%
Armenia	Europe	4240.9	0	2						100.00%	
Aruba	North America	8176.01	0	2							100.00%
Australia	Oceania	17623.73	10	2							100.00%
Austria	Europe	1876.94	65	2						100.00%	
Azerbaijan	Europe	4610.9	30	2						100.00%	
Bahamas	North America	5745.9	0	2							100.00%

Figure 21. Update travel methods data

### Step 11: Summaries Student Emissions Calculation Sheet

The calculation is now ready, and a breakdown of data is available under the "Summaries" sheet.

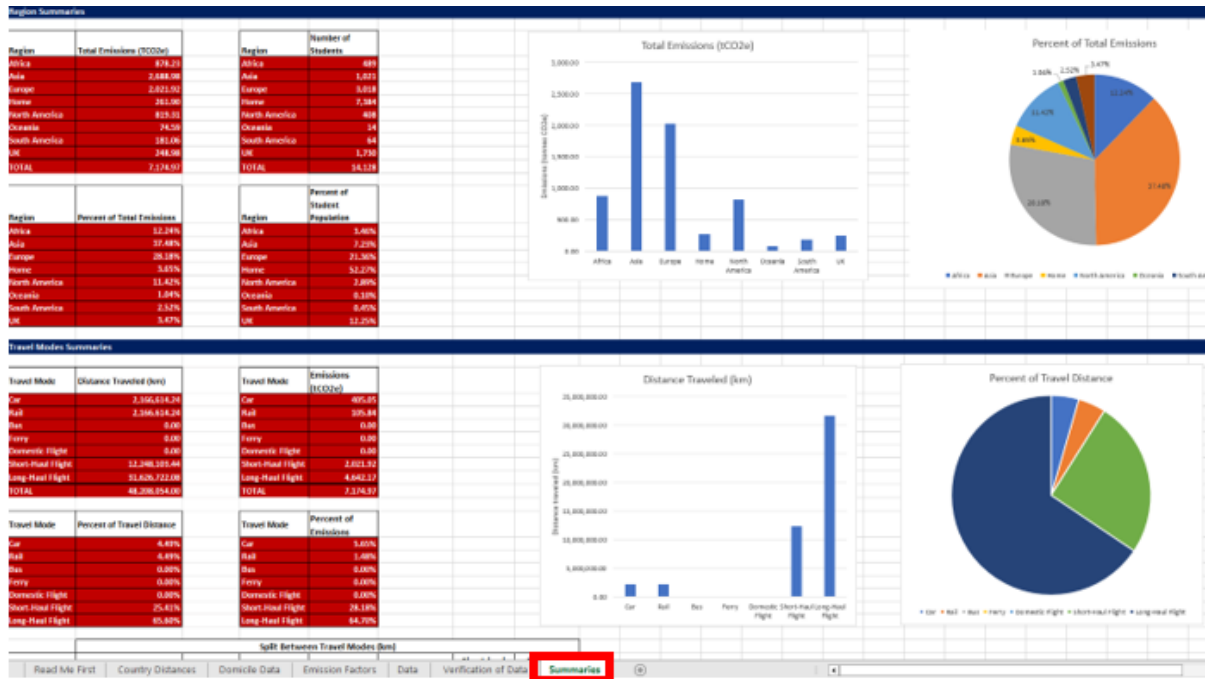


Figure 22. Review summaries data



### Step 14: Track Domicile Data

The number of students per country and year is then updated in the “Domicile Data” sheet, this list is to be copied from the saved Student Emission Calculation Sheet into the Student Emission Calculation Tracking sheet.



Figure 24. Track domicile data

### Step 15: Track Travel Data

The travel data for each country needs to be updated, to account for any changes in methodology for trips per year or the split between travel modes for any country. The total distance from the institution to the capital city of the required country, including the layover, also needs to be updated. This is copied from the saved Student Emission Calculation Sheet into the Student Emission Calculation Tracking sheet.

		2015-2016							
Country	Distance to Capital (km)	Trips per year	Percent Split Between Travel Modes						
			Car	Rail	Bus	Ferry	Domestic Flight	Short-haul flight	Long-haul flight
Afghanistan	6,366.90	2							100.00%
Aland islands	2,211.04	2						100.00%	
Albania	2,509.90	2						100.00%	
Algeria	2,319.90	2							100.00%
American Samoa	16,432.56	2							100.00%
Andorra	1,596.90	2						100.00%	
Angola	7,470.15	2							100.00%
Anguilla	7,212.12	2							100.00%
Antigua and Barbuda	7,223.08	2							100.00%
Argentina	11,693.90	2							100.00%
Armenia	4,240.90	2						100.00%	
Aruba	8,176.01	2							100.00%
Australia	17,623.73	2							100.00%
Austria	1,876.94	2						100.00%	
Azerbaijan	4,610.90	2						100.00%	
Bahamas	5,745.90	2							100.00%
Bahrain	5,713.19	2							100.00%
Bangladesh	8,646.24	2							100.00%
Barbados	7,420.67	2							100.00%
Belarus	2,513.51	2						100.00%	
Belgium	954.90	2						100.00%	
Belize	9,026.90	2							100.00%
Benin	5,647.90	2							100.00%
Bermuda	6,190.38	2							100.00%
Bhutan	8,280.85	2							100.00%
Bolivia	10,581.90	2							100.00%
Bosnia and Herzegovina	2,262.38	2						100.00%	

Figure 25. Track travel data

### Step 16: Emissions Data

This data is updated automatically if the previous steps have been correctly completed and shows how many tonnes emissions each country emits per travel mode and in total. No edits should be made in the Emissions Data sheet.

		Annual Emissions by Travel Method (tCO <sub>2</sub> e)							
		2015-2016							
Country	Region Classification	Car	Rail	Bus	Ferry	Domestic Flight	Short-haul flight	Long-haul flight	Total
Afghanistan	Asia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aland islands	Europe	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.73
Albania	Europe	0.00	0.00	0.00	0.00	0.00	1.66	0.00	1.66
Algeria	Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.68
American Samoa	Oceania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Andorra	Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Angola	Africa	0.00	0.00	0.00	0.00	0.00	0.00	46.05	46.05
Anguilla	North America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Antigua and Barbuda	North America	0.00	0.00	0.00	0.00	0.00	0.00	2.12	2.12
Argentina	South America	0.00	0.00	0.00	0.00	0.00	0.00	6.87	6.87
Armenia	Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aruba	North America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 26. Domicile emissions data

### Step 17: Tracked Data

This data is updated automatically if the previous steps have been correctly completed and breaks down emissions and student population by region and domicile data since the baseline year of 2015.

Emission source by region	Units	2015 - 2016	2016 - 2017	2017 - 2018
Africa	tonnes	878.23	860.47	852.05
Asia	tonnes	2,690.95	2,807.32	3,417.48
Europe	tonnes	2,232.02	2,173.91	2,290.43
Home	tonnes	261.90	251.40	247.10
North America	tonnes	819.31	1,080.15	1,365.53
Oceania	tonnes	74.59	96.31	91.58
South America	tonnes	181.06	151.39	156.61
UK	tonnes	248.98	236.04	221.71
Total		7,387.05	7,657.00	8,642.50
Number of students	Units	2015 - 2016	2016 - 2017	2017 - 2018
Africa	#	489	464	426
Asia	#	1,021	1,054	1,215
Europe	#	3,018	3,288	3,470
Home	#	7,384	7,292	7,305
North America	#	408	513	594
Oceania	#	14	18	16
South America	#	64	52	51
UK	#	1,730	1,689	1,613
Total	#	14,128	14,370	14,690

Figure 27. Tracked student emissions data





Region Summaries			
Region	Total Emissions (tCO2e)	Region	Number of Students
Africa	1,303.10	Africa	753.00
Asia	6,265.62	Asia	2,572.00
Europe	1,185.23	Europe	1,982.00
Home	240.89	Home	7,768.00
North America	1,083.94	North America	542.00
Oceania	36.29	Oceania	7.00
South America	107.93	South America	38.00
UK	183.83	UK	1,458.00
<b>TOTAL</b>	<b>10,406.82</b>	<b>TOTAL</b>	<b>15,120.00</b>

Region	Percent of Total Emissions	Region	Percent of Student Population
Africa	12.52%	Africa	4.98%
Asia	60.21%	Asia	17.01%
Europe	11.39%	Europe	13.11%
Home	2.31%	Home	51.38%
North America	10.42%	North America	3.58%
Oceania	0.35%	Oceania	0.05%
South America	1.04%	South America	0.25%
UK	1.77%	UK	9.64%

Figure 29. Region summaries from Student Calculation Sheet

Further, graphs of this data are also available. Figures 30 and 31 shows emissions by region as a total and percentage, respectively.

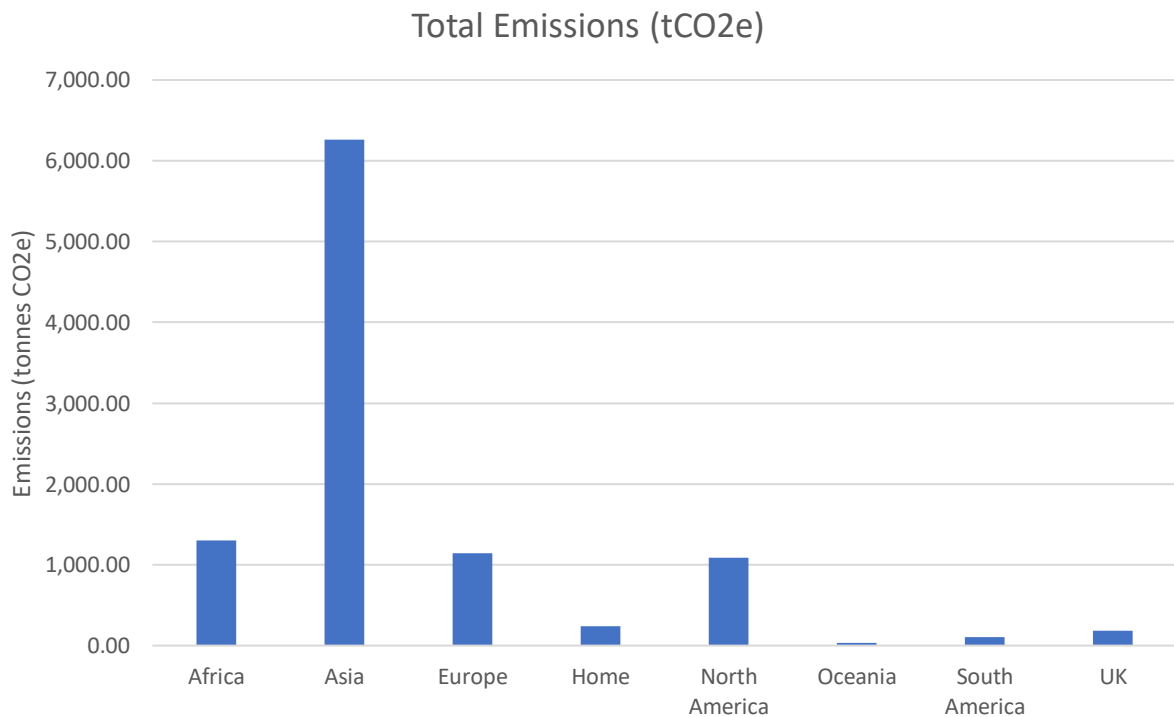


Figure 30. Total emissions summaries from Student Calculation Sheet

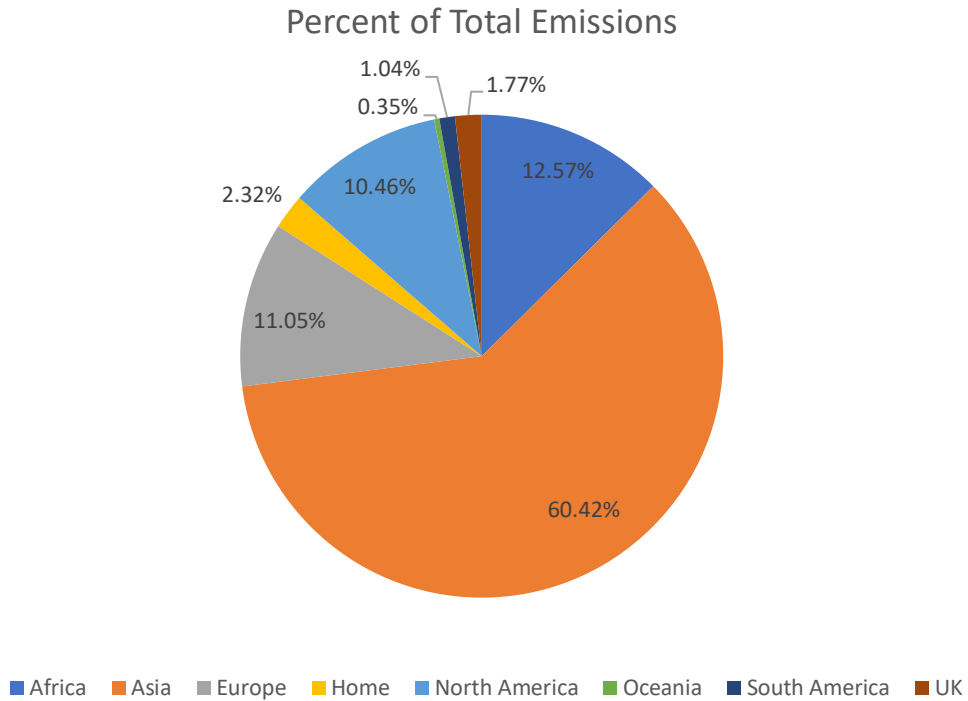


Figure 31. Percent split of emissions by region from Student Calculation Sheet

Graphs are also produced showing the number of students based on region, this is seen in figures 32 and 33.

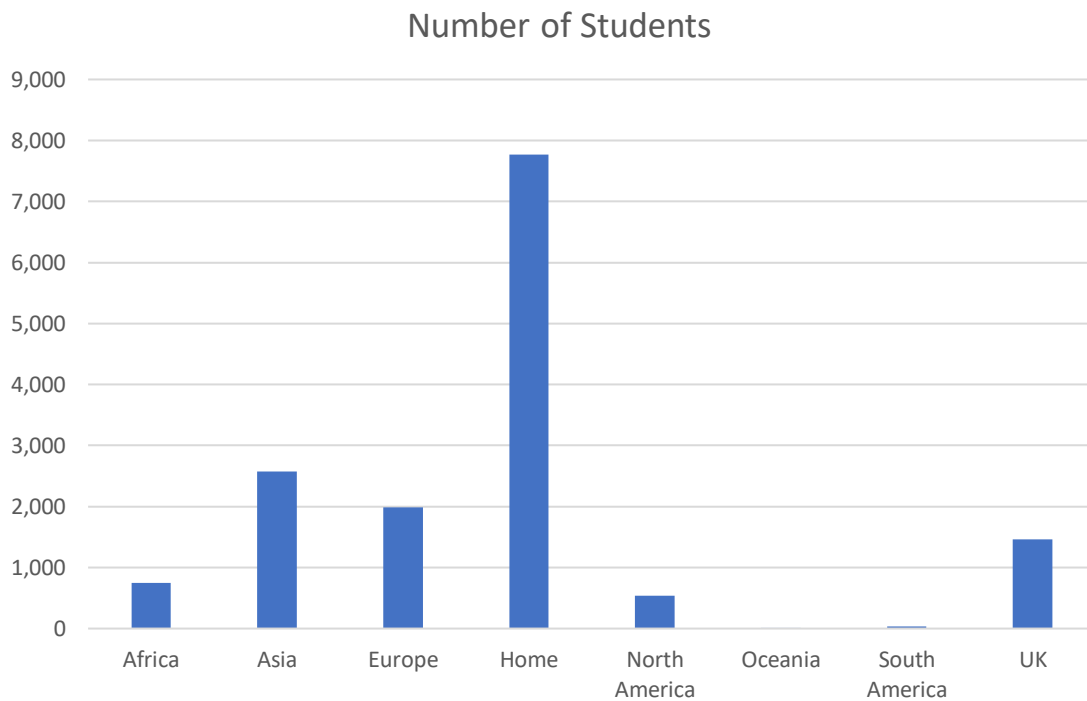


Figure 32. Number of students per region from Student Calculation Sheet

### Percent of Student Population

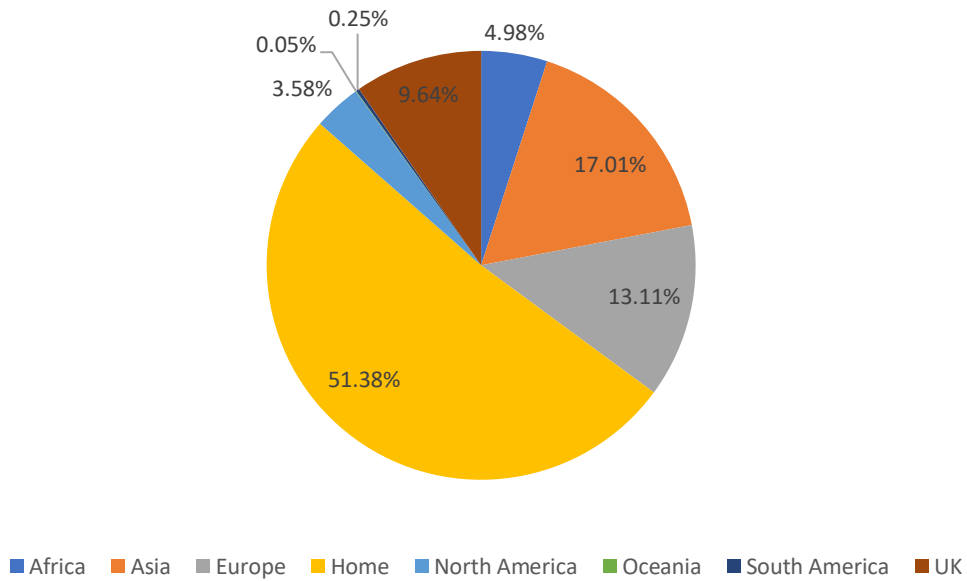


Figure 33. Percent split of students per region from Student Calculation Sheet

The next part shows a summary of travel modes, which shows the distance travelled and emissions emitted by each different travel mode, as well as the split between travel modes based on regions, seen in Figure 34. The distance travelled for each mode is to be used for external reporting purposes.

Travel Modes Summaries							
Travel Mode	Distance Traveled (km)		Travel Mode	Emissions (tCO2e)			
Car	2,166,614.24		Car	405.05			
Rail	2,166,614.24		Rail	105.84			
Bus	0.00		Bus	0.00			
Ferry	0.00		Ferry	0.00			
Domestic Flight	0.00		Domestic Flight	0.00			
Short-Haul Flight	12,248,103.44		Short-Haul Flight	2,021.92			
Long-Haul Flight	31,626,722.08		Long-Haul Flight	4,642.17			
<b>TOTAL</b>	<b>48,208,054.00</b>		<b>TOTAL</b>	<b>7,174.97</b>			

Travel Mode	Percent of Travel Distance		Travel Mode	Percent of Emissions
Car	4.49%		Car	5.65%
Rail	4.49%		Rail	1.48%
Bus	0.00%		Bus	0.00%
Ferry	0.00%		Ferry	0.00%
Domestic Flight	0.00%		Domestic Flight	0.00%
Short-Haul Flight	25.41%		Short-Haul Flight	28.18%
Long-Haul Flight	65.60%		Long-Haul Flight	64.70%

Split Between Travel Modes (km)							
Region	Car	Rail	Bus	Ferry	Domestic flight	Short-haul flight	Long-haul flight
Africa	0.00	0.00	0.00	0.00	0.00	0.00	5,983,334.18
Asia	0.00	0.00	0.00	0.00	0.00	0.00	18,319,812.36
Europe	0.00	0.00	0.00	0.00	0.00	12,248,103.44	0.00
Home	1,110,701.28	1,110,701.28	0.00	0.00	0.00	0.00	0.00
North America	0.00	0.00	0.00	0.00	0.00	0.00	5,581,889.08
Oceania	0.00	0.00	0.00	0.00	0.00	0.00	508,145.80
South America	0.00	0.00	0.00	0.00	0.00	0.00	1,233,540.66
UK	1,055,912.96	1,055,912.96	0.00	0.00	0.00	0.00	0.00

Percent Split Between Travel Modes (km)							
Region	Car	Rail	Bus	Ferry	Domestic flight	Short-haul flight	Long-haul flight
Africa	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	18.92%
Asia	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	57.93%
Europe	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%
Home	51.26%	51.26%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%
North America	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	17.65%
Oceania	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	1.61%
South America	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	3.90%
UK	48.74%	48.74%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%

Figure 34. Data of travel modes summaries from Student Calculation Sheet

This data is then shown in graphs. Figures 35 and 36 show the distance travelled by different modes.

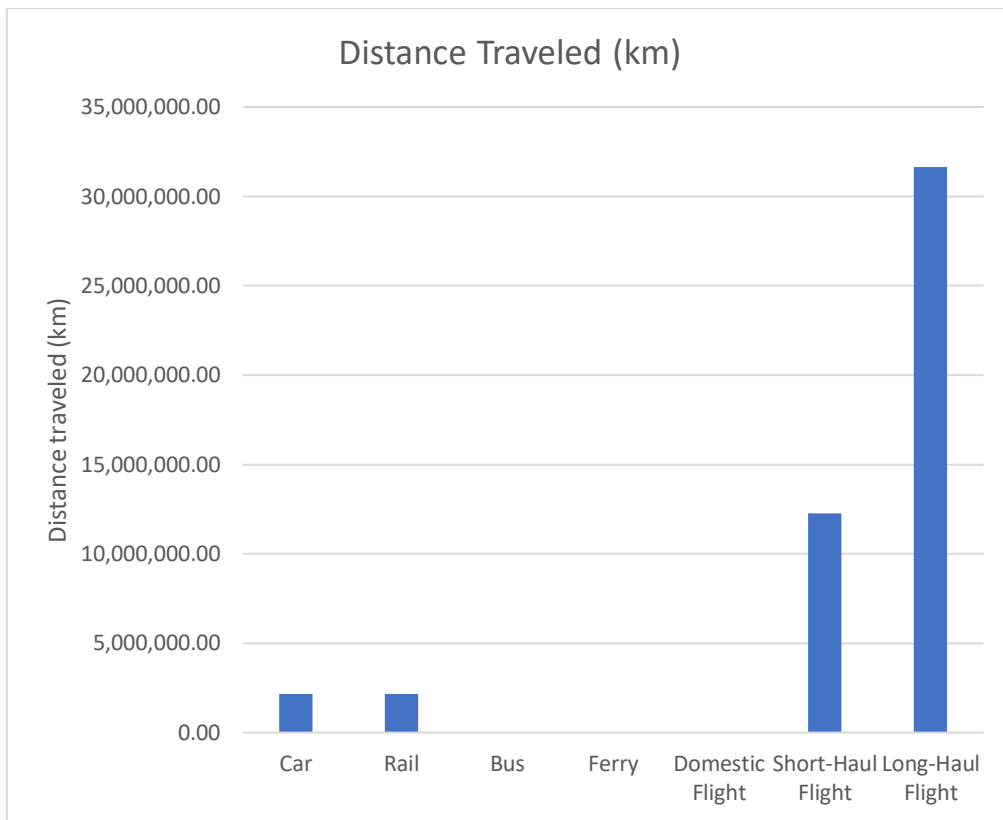


Figure 35. Distance travelled by each mode from Student Calculation Sheet

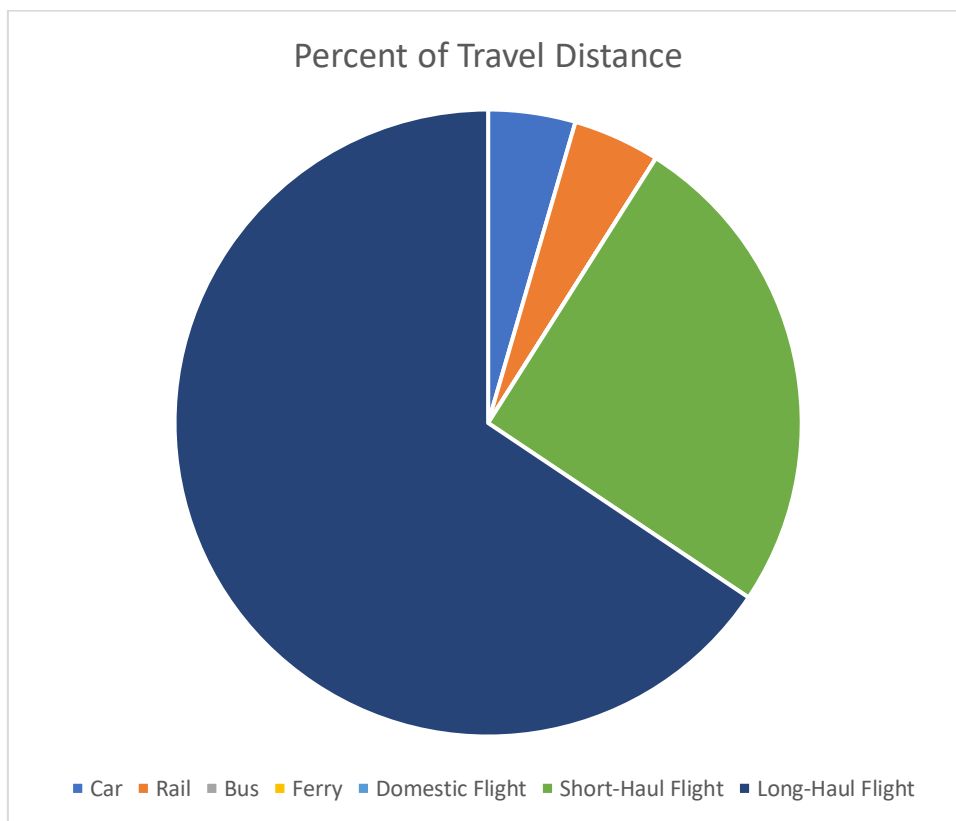


Figure 36. Percent split between travel modes based on distance travelled from Student Calculation Sheet

Additional graphs show the emissions produced by each travel mode seen in Figures 37 and 38.

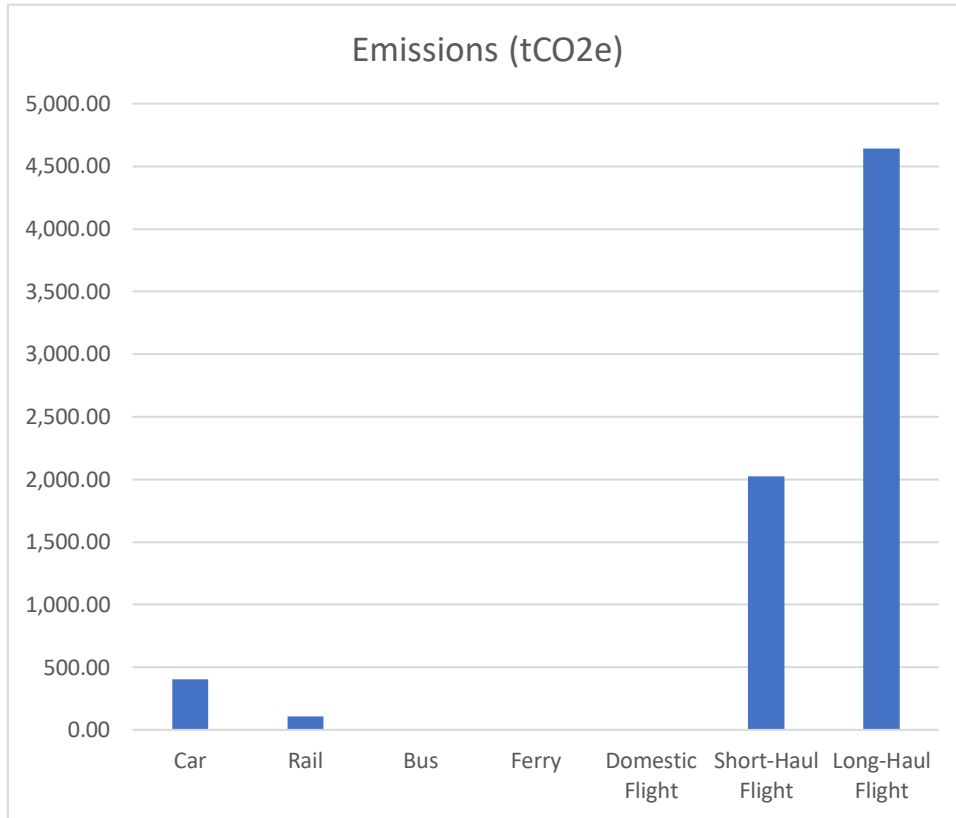


Figure 37. Emissions by each travel method from Student Calculation Sheet

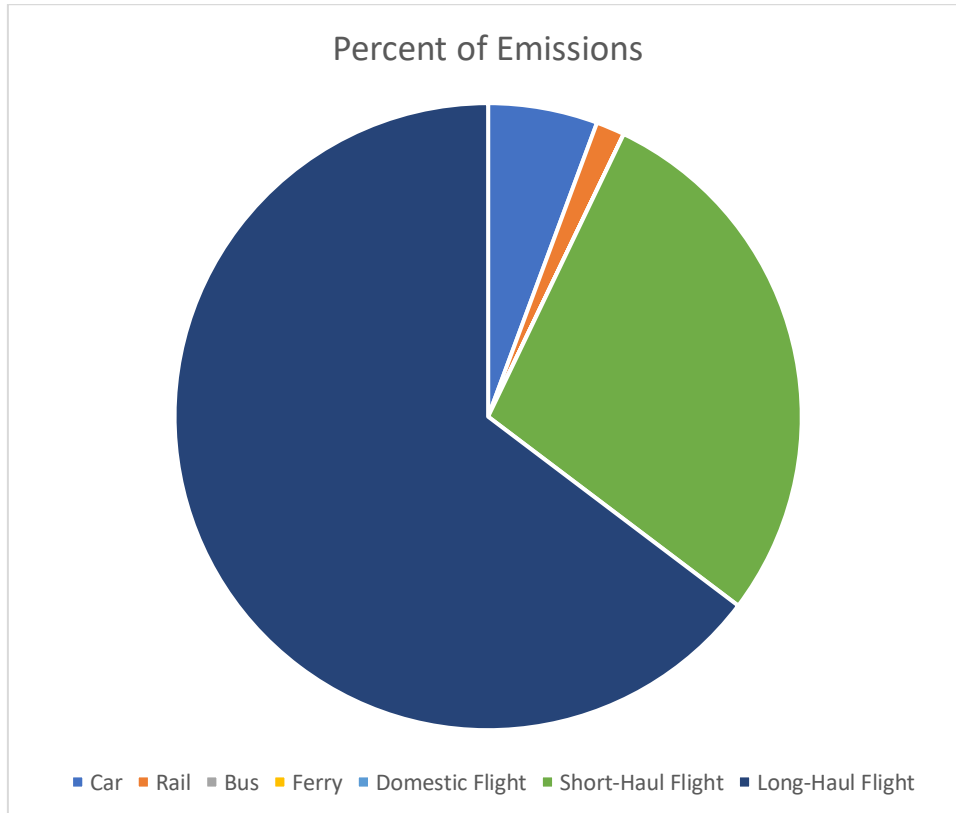


Figure 38. Percent split of emissions by travel method from Student Calculation Sheet

The summaries then breakdown the regional data by country which shows total emissions and students per country and its respective regional contributions and contribution to the total summaries. An example is shown for nine African countries in Figure 39.

Africa Summaries						
Countries	Total Emissions - Africa (tCO <sub>2</sub> e)	Percent of African Emissions	Percent of Total Emissions	Number of Students	Percent of African Student Population	Percent of Total Student Population
Algeria	0.69	0.05%	0.01%	1.00	0.13%	0.01%
Angola	15.46	1.20%	0.15%	7.00	0.93%	0.05%
Benin	0.00	0.00%	0.00%	0.00	0.00%	0.00%
Botswana	8.42	0.65%	0.08%	3.00	0.40%	0.02%
Burkina Faso	0.00	0.00%	0.00%	0.00	0.00%	0.00%
Burundi	0.00	0.00%	0.00%	0.00	0.00%	0.00%
Cameroon	1.79	0.14%	0.02%	1.00	0.13%	0.01%
Cape Verde	0.00	0.00%	0.00%	0.00	0.00%	0.00%
Canary Islands	3.13	0.24%	0.03%	3.00	0.40%	0.02%

Figure 39. Domicile summaries example from Student Calculation Sheet

Further, graphs are provided displaying the domicile data of emissions and the percentage of regional emissions produced, seen in Figures 27 and 28.

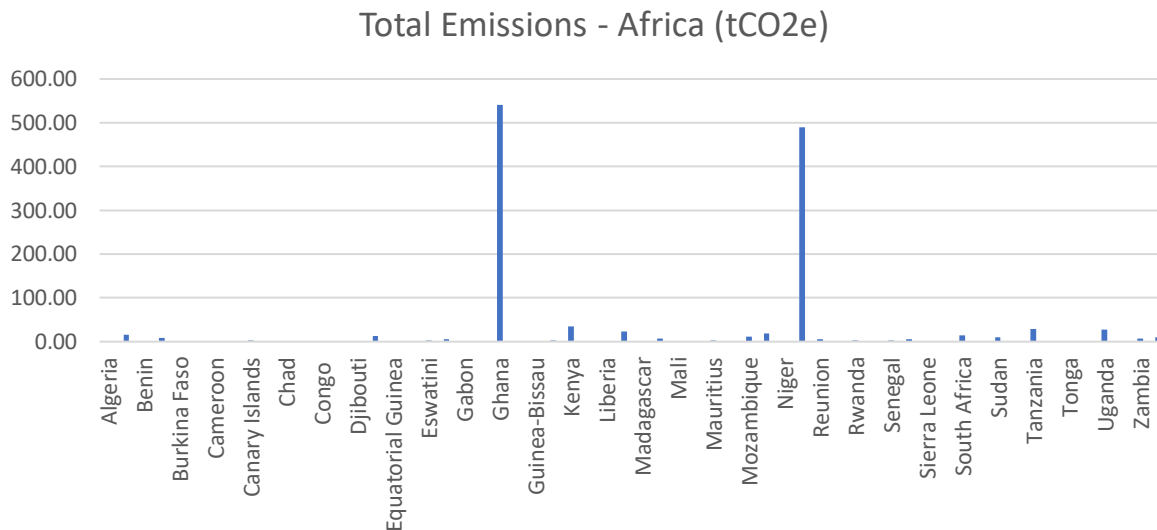


Figure 40. Emissions by country from Student Calculation Sheet

### Percent of African Emissions

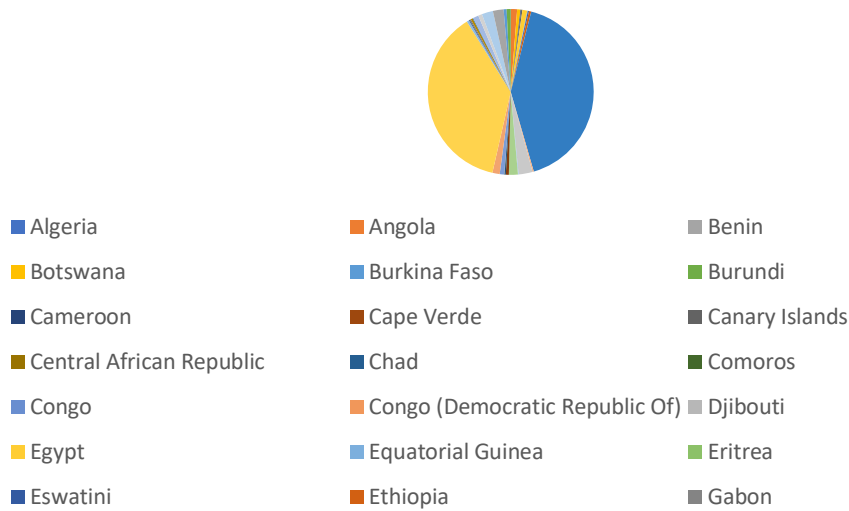


Figure 41. Domicile contribution to regional emissions from Student Calculation Sheet

In the Student Emissions Calculation Tracking regional and domicile data is tracked since the baseline year 2015. Firstly, emissions data is available for all countries which shows emissions for each travel modes and the total emissions by each country.

Country	Region Classification	Annual Emissions by Travel Method (tCO2e)							
		2015-2016							
		Car	Rail	Bus	Ferry	Domestic Flight	Short-haul flight	Long-haul flight	Total
Afghanistan	Asia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aland islands	Europe	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.73
Albania	Europe	0.00	0.00	0.00	0.00	0.00	1.66	0.00	1.66
Algeria	Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.68
American Samoa	Oceania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Andorra	Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Angola	Africa	0.00	0.00	0.00	0.00	0.00	0.00	46.05	46.05
Anguilla	North America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Antigua and Barbuda	North America	0.00	0.00	0.00	0.00	0.00	0.00	2.12	2.12
Argentina	South America	0.00	0.00	0.00	0.00	0.00	0.00	6.87	6.87
Armenia	Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aruba	North America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 42. Emissions data from Student Emissions Calculation Tracking



Under Tracked Data, data with regards to emissions, number of students and distance travelled appears for all tracked years appears.

Emission source by region	Units	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024-2024	2025-2025	2026-2026	2027-2027	2028-2028	2029-2029	2030
Africa	tonnes	374.13	350.87	332.25	372.54	438.80	800.97	1383.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asia	tonnes	2,688.98	2,801.52	3,414.36	3,736.35	4,590.33	4,851.62	6,262.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Europe	tonnes	2,021.92	2,052.32	2,170.87	2,141.72	1,878.52	1,510.06	1,145.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Home	tonnes	261.90	251.40	247.10	237.09	223.79	227.48	240.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North America	tonnes	819.31	1,080.15	1,365.53	1,339.69	1,060.72	729.59	1,083.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oceania	tonnes	74.50	96.31	91.58	100.88	56.96	26.96	36.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
South America	tonnes	181.06	151.39	156.61	183.89	130.33	96.31	107.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UK	tonnes	248.98	236.04	221.71	194.90	181.56	179.25	183.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		7,174.97	7,529.61	8,519.82	8,798.06	9,046.67	8,421.34	10,364.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Number of students	Units	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024-2024	2025-2025	2026-2026	2027-2027	2028-2028	2029-2029	2030
Africa	#	489	464	426	471	529	449	753	0	0	0	0	0	0	0	0	0
Asia	#	1,021	1,054	1,215	1,480	1,856	1,953	2,572	0	0	0	0	0	0	0	0	0
Europe	#	3,018	3,298	3,470	3,502	3,125	2,569	1,982	0	0	0	0	0	0	0	0	0
Home	#	2,384	2,292	2,305	2,222	2,141	2,307	2,768	0	0	0	0	0	0	0	0	0
North America	#	408	513	594	623	531	364	542	0	0	0	0	0	0	0	0	0
Oceania	#	14	18	16	19	11	5	7	0	0	0	0	0	0	0	0	0
South America	#	64	52	51	67	48	31	38	0	0	0	0	0	0	0	0	0
UK	#	1,750	1,689	1,613	1,461	1,428	1,418	1,858	0	0	0	0	0	0	0	0	0
Total	#	14,128	14,370	14,690	14,841	14,669	14,099	15,120	0	0	0	0	0	0	0	0	0

Carbon emission per student	Units	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024-2024	2025-2025	2026-2026	2027-2027	2028-2028	2029-2029	2030
Africa	tonnes	1.80	1.85	2.00	1.85	1.75	1.78	1.72	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Asia	tonnes	2.63	2.66	2.81	2.52	2.47	2.48	2.43	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Europe	tonnes	0.67	0.62	0.63	0.61	0.60	0.59	0.58	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Home	tonnes	0.04	0.03	0.03	0.03	0.03	0.03	0.03	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
North America	tonnes	2.01	2.11	2.30	2.14	2.00	2.00	2.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Oceania	tonnes	5.33	5.35	5.72	5.31	5.15	5.21	5.18	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
South America	tonnes	2.83	2.91	2.97	2.92	2.72	2.83	2.84	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
UK	tonnes	0.14	0.14	0.14	0.13	0.13	0.13	0.13	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total		15.44	15.68	16.70	15.52	14.84	15.06	14.93	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Emission source by travel modes	Units	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024-2024	2025-2025	2026-2026	2027-2027	2028-2028	2029-2029	2030
Car	tonnes	405.05	387.95	376.59	350.55	333.48	336.99	351.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rail	tonnes	105.84	99.49	92.23	81.45	71.87	69.74	73.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bus	tonnes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ferry	tonnes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Domestic Flight	tonnes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Short-Haul Flight	tonnes	2,021.92	2,052.32	2,170.87	2,141.72	1,878.52	1,510.06	1,145.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long-Haul Flight	tonnes	4,642.17	4,989.85	5,880.13	6,224.34	6,762.80	6,504.55	8,793.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		7,174.97	7,529.61	8,519.82	8,798.06	9,046.67	8,421.34	10,364.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Distance traveled by travel mode	Units	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024-2024	2025-2025	2026-2026	2027-2027	2028-2028	2029-2029	2030
Car	km	2,166,614.24	2,126,699.89	2,084,741.55	1,979,362.33	1,945,605.37	1,965,188.25	2,060,127.57	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Rail	km	2,166,614.24	2,126,699.89	2,084,741.55	1,979,362.33	1,945,605.37	1,965,188.25	2,060,127.57	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Bus	km	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Ferry	km	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Domestic Flight	km	0.00	0.00	0.00	0.00	0.00	0.00	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Short-Haul Flight	km	12,248,103.44	12,952,497.56	13,593,408.40	13,752,790.68	12,275,534.26	9,989,076.56	7,586,121.70	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Long-Haul Flight	km	31,626,722.66	33,003,835.82	36,120,959.76	41,548,218.12	46,371,023.96	43,988,294.30	59,469,498.94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total		48,208,054.00	50,209,713.16	53,883,851.66	59,259,733.46	62,443,768.96	57,917,737.36	71,115,875.78	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Figure 43. Tracked data from Student Emissions Calculation Tracking

This data is also shown in figures 44, 45, 46, 47 and 48 below which shows trends since 2015.

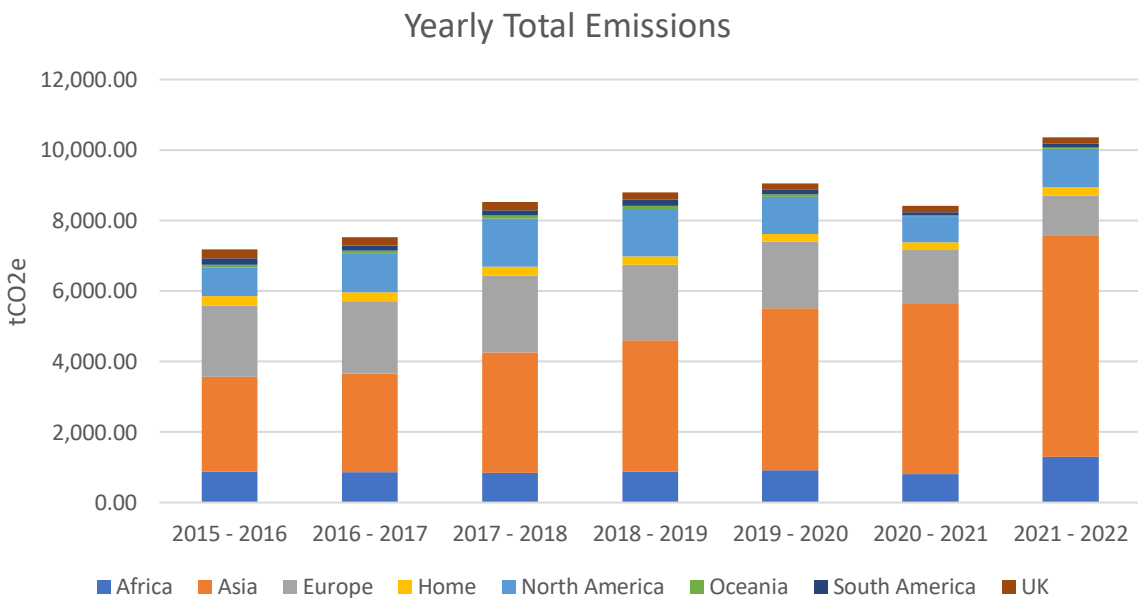


Figure 44. Yearly total emissions from Student Emissions Calculation Tracking

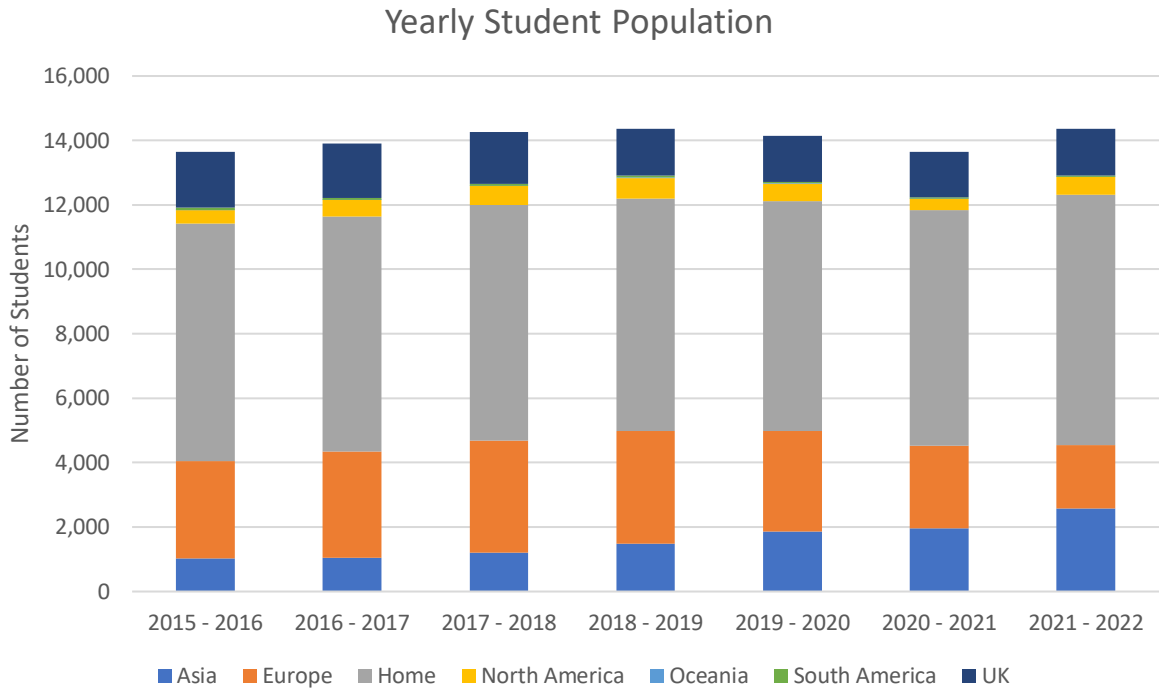


Figure 45. Yearly student population from Student Emissions Calculation Tracking

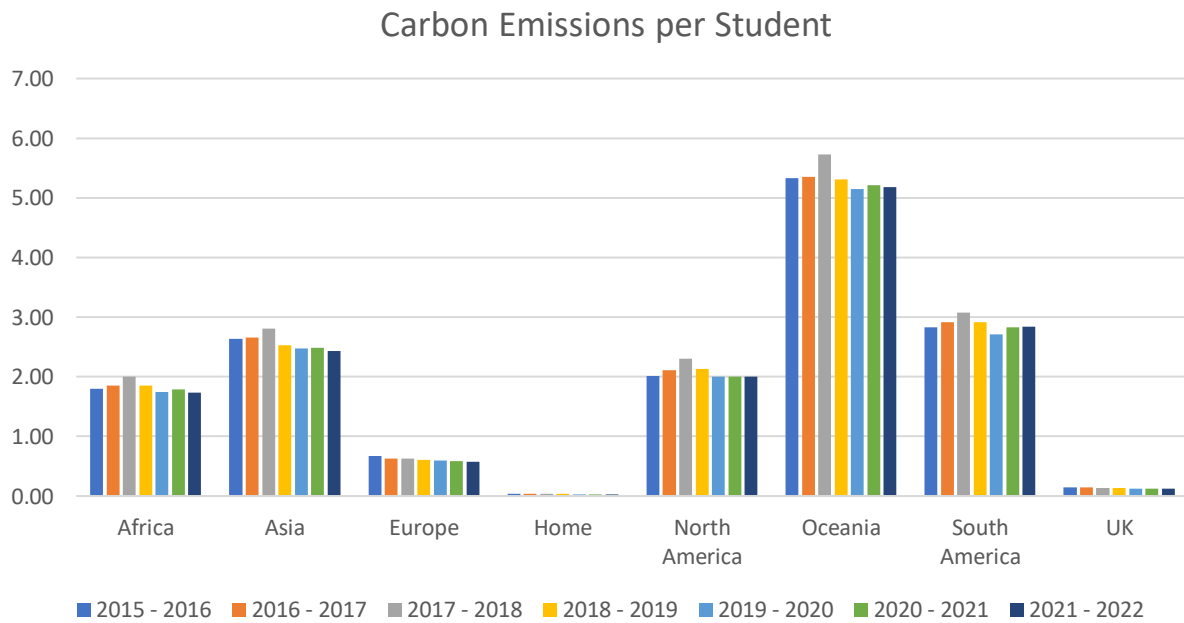


Figure 46. Carbon emissions per student from Student Emissions Calculation Tracking

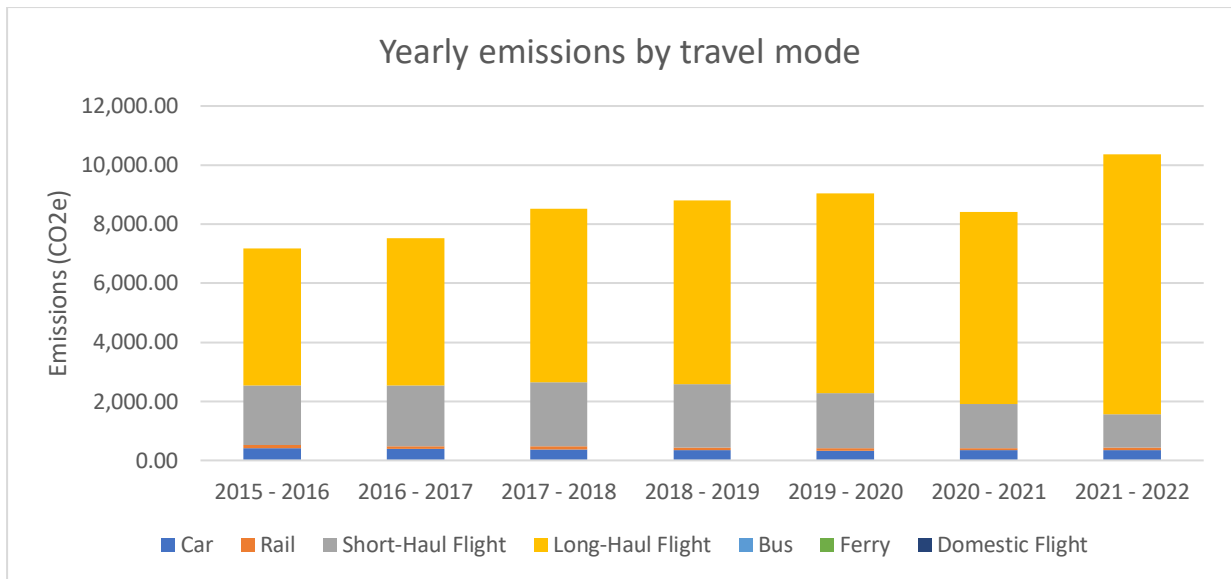


Figure 47. Yearly emissions by travel mode from Student Emissions Calculation Tracking

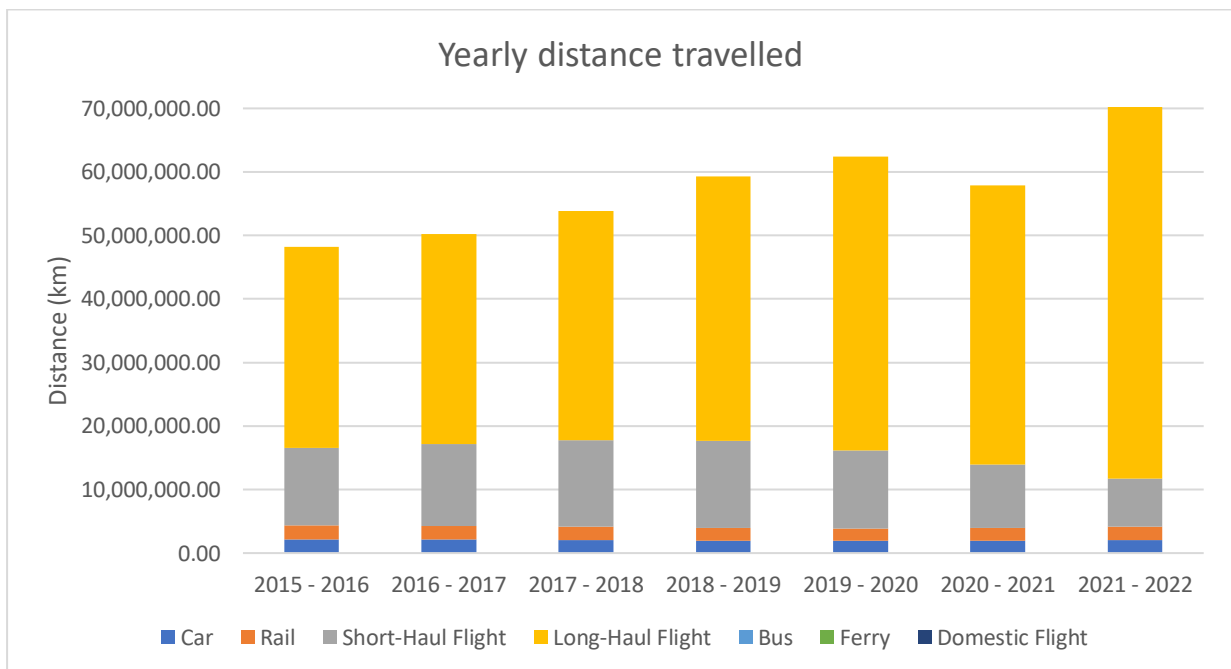


Figure 48. Yearly distance travelled from Student Emissions Calculation Tracking

Further, data is broken down by region so that domicile data becomes available for tracking of its emissions and number of students.

Regional Breakdown					
	2015 - 2016		2016 - 2017		2017 -
	Emissions (tCO <sub>2</sub> e)	Number of Students	Emissions (tCO <sub>2</sub> e)	Number of Students	Emissions (tCO <sub>2</sub> e)
<b>Africa</b>					
Algeria	0.681029844	1	1.402982724	2	1.510626084
Angola	46.05168191	21	67.76471871	30	77.82820598
Benin	0	0	0	0	0
Botswana	2.784393115	1	5.736100219	2	9.264300761
Burkina Faso	0	0	0	0	0
Burundi	0	0	2.223152188	1	0
Cameroon	5.326722526	3	12.80244868	7	9.846222918
Cape Verde	0	0	1.57591687	1	1.696828542
Canary Islands	1.037288389	1	2.136907365	2	4.601721674
Central African Republic	0	0	0	0	0
Chad	0	0	0	0	0
Comoros	0	0	0	0	0
Congo	0	0	0	0	0
Congo (Democratic Republic of)	0	0	0	0	0
Djibouti	0	0	0	0	2.128993666
Egypt	23.16260029	19	32.64850079	26	28.39316762
Equatorial Guinea	0	0	0	0	0
Eritrea	0	0	0	0	0
Eswatini	0	0	0	0	3.197416994
Ethiopia	5.758255726	3	5.931262319	3	6.386336351
Gabon	0	0	0	0	0
Gambia	3.011279768	2	3.101753564	2	5.009601786
Ghana	65.87548048	39	73.07429984	42	59.94735238
Guinea	0	0	0	0	0
Guinea-Bissau	0	0	0	0	0
Ivory Coast	1.653667514	1	0	0	0
Kenya	52.56630966	24	45.1213855	20	43.72497726
Lesotho	0	0	0	0	0
Liberia	0	0	0	0	0
Libya	9.605976002	11	9.894587217	11	8.716701247
Madagascar	0	0	0	0	0
Malawi	15.19498852	6	13.04293452	5	8.426189469
Mali	0	0	0	0	0
Mauritania	0	0	0	0	0
Mauritius	0	0	0	0	0
Morocco	0	0	0.821233842	1	2.652728166
Mozambique	2.870987444	1	20.70072313	7	19.10483905
Namibia	2.621461444	1	13.50111581	5	8.722190526
Niger	0	0	0	0	0

Figure 49. Regional breakdown of data from Student Emissions Calculation Tracking

Under summaries, totals for emissions, students and distances are shown for all tracked years. This data is further broken down into percentages, showing the trends of each respective category with regards to the previous year and since the baseline year.

	Units	Scope	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022
<b>Total emissions</b>	tCO2e	Scope 3	7,387.05	7,657.00	8,642.50	8,902.37	9,128.47	8,495.70	10,406.82
Percent change (year to year)			0.00%	3.53%	11.40%	2.92%	2.48%	-7.45%	18.36%
Percent change (since baseline year)			0.00%	3.53%	14.53%	17.02%	19.08%	13.05%	29.02%
<b>Total Students</b>	#	Scope 3	14,128.00	14,370.00	14,690.00	14,841.00	14,669.00	14,099.00	15,120.00
Percent change (year to year)			0.00%	1.68%	2.18%	1.02%	-1.17%	-4.04%	6.75%
Percent change (since baseline year)			0.00%	1.68%	3.83%	4.80%	3.69%	-0.21%	6.56%
<b>Total distance travelled</b>	km	Scope 3	49,494,206.10	51,015,464.44	54,651,698.66	59,930,160.50	62,979,814.40	58,410,593.50	71,459,013.08
Percent change (year to year)			0.00%	2.98%	6.65%	8.81%	4.84%	-7.82%	18.26%
Percent change (since baseline year)			0.00%	2.98%	9.44%	17.41%	21.41%	15.27%	30.74%

Figure 50. Summaries from Student Emissions Calculation Tracking

The trends are then displayed in Figures 51, 52 and 53.

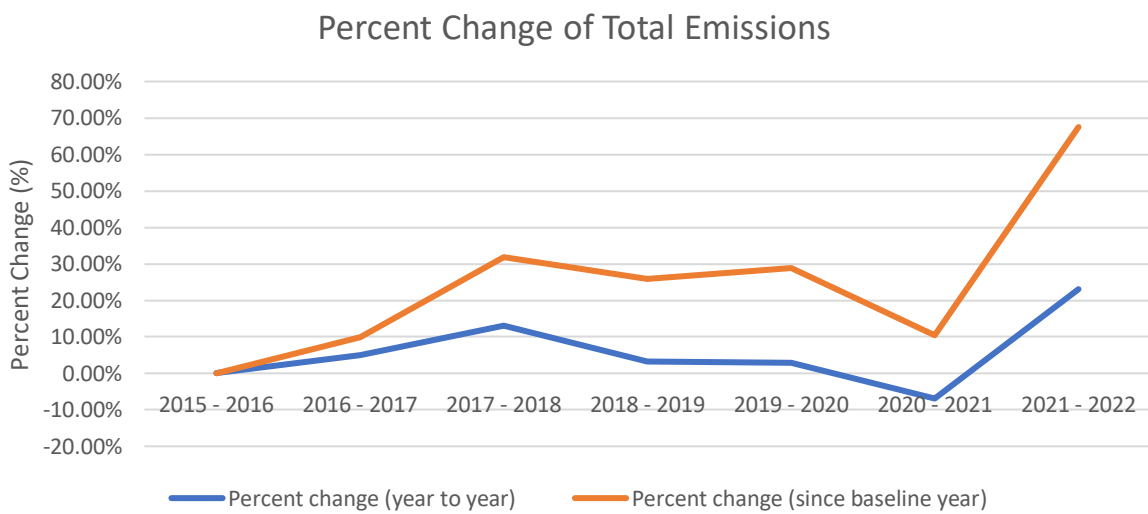


Figure 51. Percent change of total emissions from Student Emissions Calculation Tracking

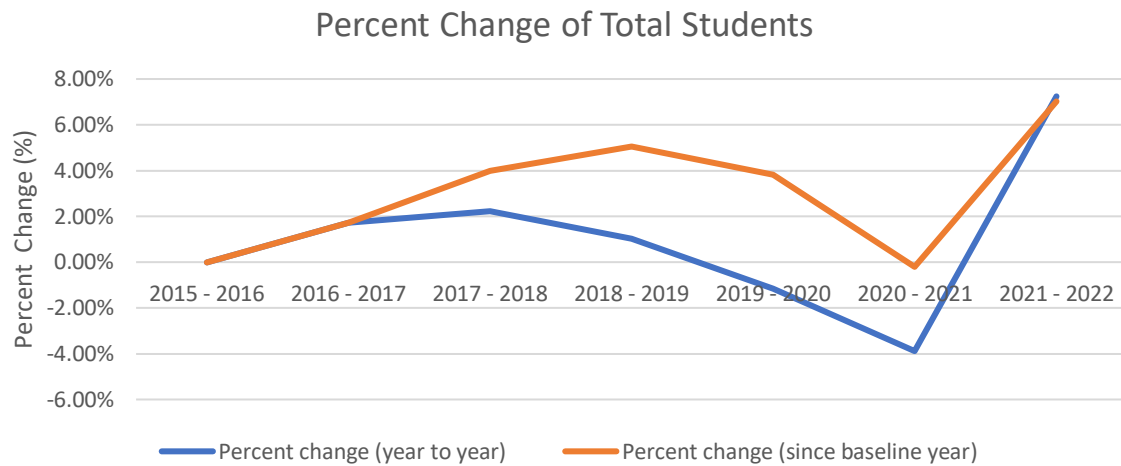


Figure 52. Percent change of total students from Student Emissions Calculation Tracking

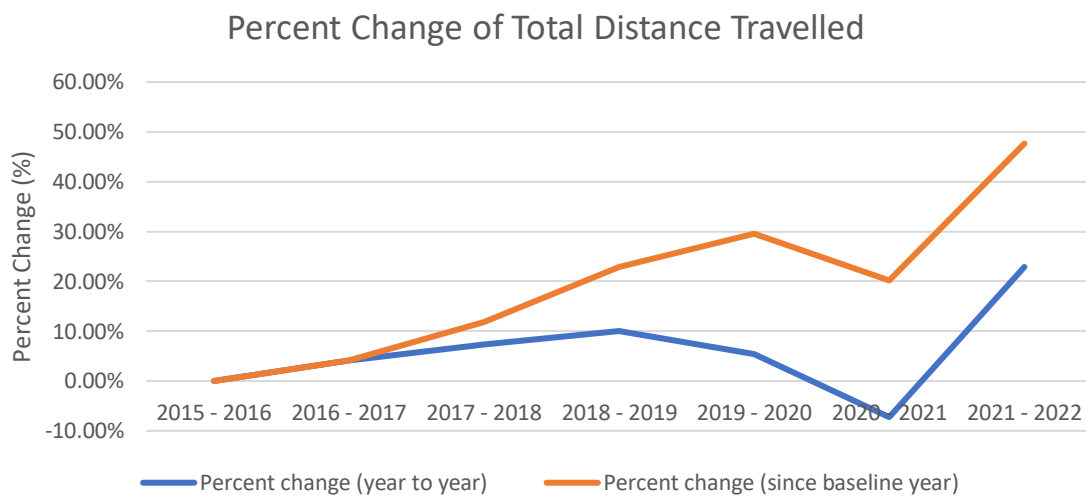


Figure 53. Percent change of total distance travelled from Student Emissions Calculation Tracking

## Conclusion

Since 2015, emissions for student travel have increased disproportionately to the total student population. Such trends are displayed through tracked data of domicile student travel emissions. This allows the University to take appropriate action with regards to the move to net zero.