Big Pedal 2021

Amazing air investigation

Secondary schools

Objectives

To investigate the trends of national and regional road traffic statistics, specifically the type of vehicles and roads used.

To investigate the impact of vehicle use on air pollution and emissions. To recognise the importance of active travel in reducing emissions.

Session plan

Ask students to use data from the Department of Transport's road traffic statistics to investigate how vehicle use has changed over years. Ask them to form hypotheses about the reasons for the changes.

Students use provided calculations to work how a daily journey to school in a car, bus and bicycle differs in air emissions.

Link to the Department of Transport's road traffic statistics:

https://roadtraffic.dft.gov.uk/#6/55.254/-13.359/basemap-regions-countpoints

Possible reasons for change in vehicle and road use:

- Technology (Sat Nav) enables smaller A and B roads to be used easier.
- Active travel is becoming easier in cities so bicycle use is increasing.

At home adaptation

Investigation can be completed on a laptop or work sheet.

For students that cannot access the internet and the Department of Transport's website, the **national trend graphs** have been supplied in an additional pdf which can be printed off and given to students if required. Please add your region's trend graphs for comparison, you can find the regional data here:

Road traffic statistics - Regions across Great Britain (dft.gov.uk)

Time needed
30-40 mins

Resources needed
Laptop with access to the internet or printed work sheet with regional data included

Solo/Group activity
Solo

sustrans
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Worksheet page 1

Aim

To investigate the trends of national and regional vehicle type use in Great Britain between 1993 and 2019.

To investigate the trends of national and regional road type use in Great Britain between 1993 and 2019.

To investigate the impact of vehicle use on air pollution and emissions.

To recognise the importance of active travel in reducing emissions.

Hypotheses

What do you expect to find in this investigation?

(Answer this question in your exercise book.)

Method

Part 1: data analysis

Using your device follow the link to access the Department of Transport's road traffic data: **https://roadtraffic.dft.gov.uk/summary**

Find the national trends summary and evaluate how the **vehicle** use has changed between 1993 and 2019. Which vehicles have seen an increase in use, have any seen a decrease in use?

Find the national trends summary and evaluate how the **road type** use has changed between 1993 and 2019. Has there been a change in road use?

Using the Department of Transport's website again, select the region you live in using this link: **https://roadtraffic.dft.gov.uk/regions**.

Compare the regional trends for vehicle and road use to the national trends between 1993 and 2019. What are the similarities and differences?

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Worksheet page 2

Part 2: emissions calculation

Use the information below to work out how much carbon dioxide emission would be emitted on your journey to school for each mode of transport listed below. First work out how far your journey is in miles, then multiple by the figure below.

Active travel (walking, cycling, wheelchair) emit 0 kilograms of CO_2/mile
Cars emit 0.30 kilograms of CO_2/mile
Buses emit 0.18 kilograms of CO_2/mile per passenger
Trains emit 0.08 kilograms of CO_2/mile per passenger

Please note: Carbon emissions can vary according to specific types of vehicle, such as a small or large car. The figures used above are based on certain averages and you can use them as the starting point for further investigation.

Results

Record what you have found in your exercise book. Include your workings for the calculations.

Conclusions

Can you draw conclusions on your findings on the National and Regional trends and emissions data? Can you suggest any reasons for these findings? Can you conclude which modes of transport are better for the environment?

(Answer these questions in your exercise book.)

What's the best way to get to school?

| Walking | Cycling | Train | Bus | Car share | Drive and park |

Most sustainable ⟶ **Least sustainable**