2040 - Sustainable Transport and Scatterplots

Name _____ Class _____

Student Worksheet

Thought starter: What will transport emissions be like in the future?

1. View this 2040 clip on Transport.

2040 - Car of the Future Password
2040_EDU (https://vimeo.com/showcase/6167669/video/336510915)

While you're watching, complete the table below.

SEE – What did you see as you watched this video?	**HEAR** – What did you hear the narrator talk about in the video?	**WONDER** – What questions arose as you watched?

2. Consider all the people in your household. Fill in the table below to indicate how they get to work, school or other duties during the day.

Family member (e.g. brother)	Destination (e.g. work, university)	Mode of transport (walk, ride, public transport - what type, car (individual or shared)

3. Go to the **Australian Greenhouse Gas Calculator** (https://www.epa.vic.gov.au/agc/calculator/index.html).

- Enter the appropriate information about your household on the Tell us about your household page and then click Done.
- On the Transport page, enter information regarding all of the cars in your household. For annual kilometres, select Typical, unless you are clear about low or high use of particular vehicles.
- Click on the Public Transport tab and select the appropriate options from the drop-down menus (you may need to make some educated guesses or use a maps app to help you calculate distances).
- Now look at the top of page. What is the total amount of 'ghg emissions' per year, for your household coming from transport?

  _____ tonnes

4. Pair up with another student to compare greenhouse emissions figures and complete the following table:

Column A: Answer the questions in this column on your own first.
Column B: Talk about the findings and your thoughts with your partner, then add anything in column B that you hadn't originally thought of.

	A	B
Whose is more? Less? Why?		
Write down any ideas that you have about how your household ghg emissions from transport could be reduced.		

5. Group Task

Place the data provided by your teacher in this table:

Year	Projected Australian population	Emissions from transport $MtCO_2$
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		

Describe the pattern of the scatterplot that your teacher has created:

A. What is the direction of the relationship between the two variables?

B. What does this suggest about our growing population and greenhouse gas emissions from transport in the future? Why do you think this is so?

6. Individual Task

Using the data tables below construct a scatterplot to display the relationship between Australia's projected population growth and Australia's projected emissions from cars, starting from 2020 to 2030.

According to the Australian Bureau of Statistics, Australia's population numbers from 2020 to 2030 will be:

Year	Projected Australian population
2020	25,936,500
2021	26,402,046
2022	26,873,947
2023	27,349,900
2024	27,829,520
2025	28,311,405
2026	28,796,151
2027	29,283,507
2028	29,773,492
2029	30,264,147
2030	30,755,046

Source:
https://www.abs.gov.au/ausstats/abs@.nsf/latestProducts/3222.0Media%20Release12017%20(base)%%202066

And according to the Australian Department of Energy and the Environment, greenhouse gas emissions from all Transport from 2020 to 2030 will be:

Year	Emissions from cars $MtCO_2$
2020	45
2021	45
2022	45
2023	45
2024	46
2025	46
2026	45
2027	45
2028	45
2029	44
2030	44

Put the above data into the same table:

Year	Projected Australian population	Emissions from cars $MtCO_2$
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		

- Construct your axes, labelling it with regular and equal intervals as appropriate to the data. Make sure you tell us what each axes is telling us - which one is about population and which one is emissions? What is the measurement used on each axis?

- Insert the data using coloured dots.
- Draw in a line of best fit in another colour.

7. Analyse the scatterplot and draw conclusions

Column A: Answer the questions in this column on your own first.
Column B: Talk about the findings and your thoughts with a partner, then add anything in column B that you hadn’t originally thought of.

	A	B
Describe the scatterplot by looking for patterns. What do you see?		
What does this suggest about our growing population and greenhouse gas emissions from cars in the future? Why do you think that this is so? [Think back to the video about the future of transport]		
Compare the two scatterplots that you have created and discuss what you observe between population numbers and car emissions only versus emissions from all forms of transport.		

8. Take Action

Conduct some more research on climate change and transport using the following websites and then make a poster that presents how transport of the future can be more efficient and which aims to persuade others to consider how their decision-making around transport can impact on the planet. Remember to include some of the information that you have learned today about population growth and emissions.

- **https://www.climatecouncil.org.au/resources/transport-climate-change/**
- **https://www.drawdown.org/solutions/transport/electric-vehicles**
- **https://www.drawdown.org/solutions/transport/cars**
- **https://www.greenvehicleguide.gov.au/**

9. Reflection

I used to think…

But now I think...

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