

Transportation economics

with Assistant Professor
Daniel Vignon

Talking points

Comprehension

1. How do you think a person's age, occupation and driving history influence their insurance costs?

Application

2. How do you think driver behaviour might change if it were monitored more closely, and why? What impact do you think this might have on road safety?
3. If you were driving a car, to what extent would you be willing to be monitored through use of cameras and GPS tracking? Why?

Analysis

4. Do you think automated vehicles are better or worse than vehicles driven by humans? Why? If driver behaviour were to improve due to increased awareness of safety issues, would this change your answer?
5. Daniel uses mathematical models in his research. What might be the advantages and limitations of using mathematical models to represent real-life scenarios?

Evaluation

6. Monitoring driver behaviour has the potential to improve road safety, but installing cameras inside cars raises issues of privacy. Which do you think is more important – individual privacy or road safety? Why?

Creativity

7. What problems can you think of that could be studied by transportation economists? What potential solutions could there be to these problems?

Activity

Create your own car insurance calculator

In groups, you are going to use mathematical modelling to create your own car insurance calculator. To keep things simple, start with a base insurance cost of \$1,000 per year.

Create a list of at least five variables that may change the insurance cost e.g., the age of the driver or the make and model of the car. What other variables can you think of?

For each variable listed, think about if it should increase or decrease the cost of car insurance, and decide by how much. For example, drivers under the age of 25 are statistically more likely to have an accident, so you may want to increase the insurance cost by \$500 per year.

Once you have finished, create some driver profiles (age, occupation, driving history, type of car, etc.) for imaginary drivers, and test whether or not you think the insurance costs make sense. Are drivers who have driven for many years without an accident charged fairly, for example?

Now think about what could be added to your calculator if all drivers had cameras inside and outside their vehicles. What driver behaviours would you be interested in, and how would they impact insurance costs? For example, what distractions might there be, and what might body language tell you? What clues might cameras on the outside of cars give you, and how could you include these in your calculator? For example, how does the driver respond to road and weather conditions?

Discuss your calculator with other groups. How did you decide how much to change the cost by for each of your variables? Does everyone else agree with you? What else might you want to know to decide if your pricing is fair? How could statistics or data help? What variables might you have missed?

More resources

- Learn more about Daniel's research in the Laboratory for the Economic Analysis of Transportation Systems:
featsnyu.com/wordpress
- Watch a selection of TED talks about transportation:
ted.com/topics/transportation