

	Grade: Excellence
3.	<p>For Excellence, the student needs to analyse comprehensively a contemporary economic issue of special interest, using economic concepts and models.</p> <p>This involves:</p> <ul style="list-style-type: none"> • comparing and/or contrasting the impact of different causes on the contemporary economic issue • comparing and/or contrasting the impact of changes in the issue on various groups of New Zealand (NZ) society • integrating changes shown on economic models into detailed explanations. <p>The student has comprehensively analysed the economic issue of traffic congestion in New Zealand. A detailed explanation is provided for the causes of traffic congestion. Economic concepts have been used, and changes shown on the AS/AD model and the Production Possibility Curve (PPC) model have been integrated into the explanation (1).</p> <p>The causes of the traffic congestion have been compared and contrasted in a 'greater than/less than' sense in the analysis, integrating the language of the PPC and the AS/AD models (2).</p> <p>The impacts of the changes in traffic congestion on various groups of NZ society have been explained in detail. Economic concepts and secondary sources of information have been used to support the explanation (3).</p> <p>The impact of the changes has been compared and contrasted in a 'greater than/less than' sense. The language of the AS/AD model and the Circular Flow model along with economic concepts are integrated into the explanation (4).</p>

AS91228 Special interest topic – Congestion in New Zealand.

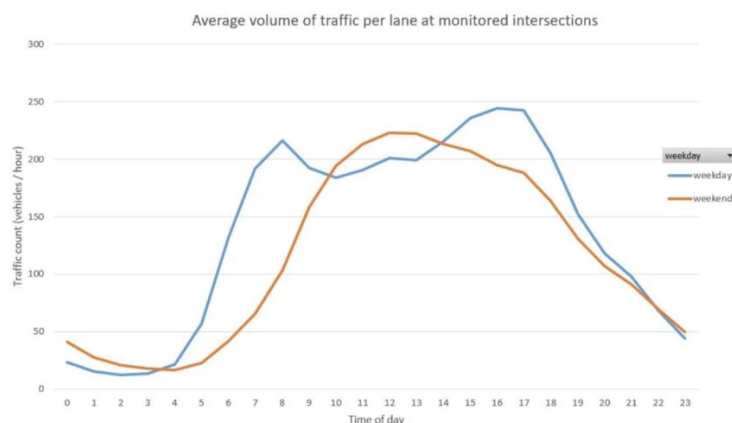
Part A: Introduction.

Explain what traffic congestion is and why it is an issue in New Zealand. Find relevant statistics and information from news sources to show the extent of the issue.

While there are many small towns and cities where traffic congestion is no (or a very minor) problem, it is a particular issue in the bigger cities where much of the population lives. New Zealand's biggest city is Auckland and congestion has been a major problem for a long time. According to a report commissioned by Auckland Transport, Auckland is the 77th worst congested city in the world. Aucklanders spend on average 17 hours per year stuck in traffic and the overall cost to the economy is \$2.6 billion per year.

<https://at.govt.nz/media/pqxhk3cn/auckland-transport-cost-of-congestion-white-paper.pdf>

The following graphic from Auckland Transport shows the amount of traffic in Auckland at different times. During weekdays, the amount of traffic peaks at around 7:30am in the morning and then about 4 – 5pm in the afternoon, and this is when congestion will be worse.



An Auckland Transport chart showing a comparison between weekday and weekend traffic flows.
AUCKLAND TRANSPORT

New Zealand's capital city Wellington also has congestion problems. During peak hours, trips into the central area take 70% more time. The Mt Victoria tunnel is a common chokepoint, and traffic gridlock often occurs.

www.wellington.live/traffic-congestion-in-wellington-challenges-and-solutions/

Congestion in Christchurch is also getting worse. It is New Zealand's fastest growing main centre and it can take longer to drive 10km in rush hour than any other city. Christchurch drivers spend an average of 179 hours sitting in traffic, with 69 hours of this due to congestion.

<https://www.thepress.co.nz/nz-news/350317649/are-we-there-yet-city-stuck-traffic>

According to some people, the worst city for congestion in New Zealand isn't even one of the 3 main centres – it is Tauranga. 77% of Tauranga residents say congestion is a big problem (compared with 40% of Aucklanders). For some residents, the congestion has to lead to commuting time of two hours plus. The Tauranga City Council has warned that there is 10 – 15 years of congestion ahead as the city continues to grow.

<https://www.stuff.co.nz/bay-of-plenty/130493910/council-1015-years-of-congestion-ahead-on-taurangas-roads>

Part B. Using economic models, explain the causes of congestion

One of the main causes of congestion is increases in population through migration.

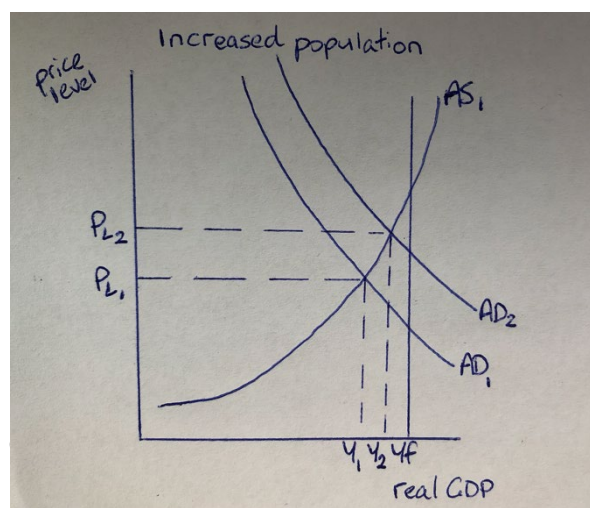
1

According to Stats NZ, in 2023 there was a net gain of 136,700 migrants coming to New Zealand. This figure fell to 67,200 in 2024 but still means that the population of New Zealand is increasing due to migration and most of these migrants will settle in one of the big cities, where there are jobs on offer.

As more migrants enter New Zealand, there will be a higher demand for vehicles as these people require transport to get to work and other places. With greater number of vehicles on the roads (which generally have a fixed capacity) there will be more traffic at all times of the day but particularly “rush hour” when people are going to work and school in the morning and afternoon / early evening. In most cities, the main arterial routes from the suburbs to the CBD or other places where people work aren't able to increase their capacity and adding more cars will simply lead to more congestion.

Using AS / AD analysis, as more migrants purchase cars, there is an increase in the consumption component of Aggregate Demand (as shown below). The slope of the Aggregate Supply curve (AS) increases as the economy gets closer to full capacity, shown as the Y_f line on the graph below. This includes the capacity of the roading network to have more cars on the road without congestion.

The increase in consumption due to increased migration causes AD to increase, shifting from AD_1 to AD_2 . Real GDP increases from Y_1 to Y_2 but this is a relatively small increase as the higher consumption of vehicles adds pressure to the fixed roading network, causing congestion. The recessionary gap which was $(Y_f - Y_1)$ shrinks to $(Y_f - Y_2)$ as the economy is very close to being at full capacity.



Congestion can also occur due to internal migration within New Zealand.

1

A good example is the city of Tauranga – according to the 2023 Census, the population of Tauranga has increased by 11.5% and the number of houses by 9.2%. Some of these people will be from overseas but many are also likely to be from other places in New Zealand, for example Aucklanders moving because of cheaper property prices. All of these new people and houses mean more car trips to work and school, particularly in rush hour.

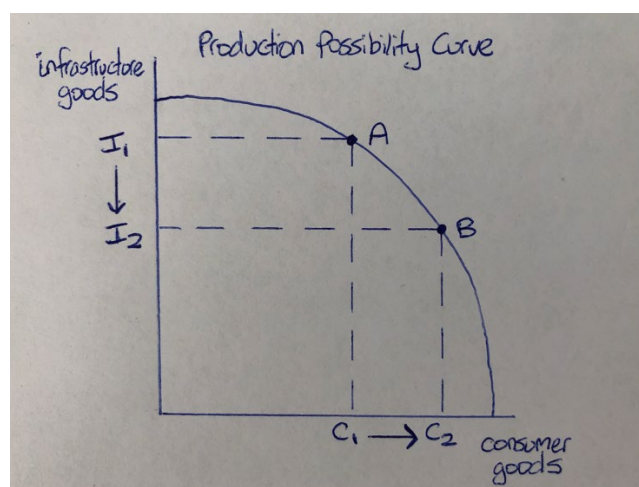
A second cause of congestion is under-investment in the transport infrastructure required to support the amount of vehicles on the road. Not enough roading infrastructure will mean too many cars on existing roads.

1

This could include new roads, lack of public transport options (rail and bus, including bus lanes) and alternative transport options eg. cycle lanes. All of these examples of transport infrastructure options can be very expensive, making the government reluctant to pay for every good idea. Some examples of these include the proposed second harbour crossing in Auckland. According to www.greaterauckland.org.nz, a new bridge would cost \$15 billion and a new tunnel under the harbour could cost \$25 billion. According to Waka Kotahi (NZ Transport Agency) the proposed upgrade to the Mt Victoria tunnel in Wellington is expected to cost \$2.2 billion.

In order to pay for these upgrades, the government would have to collect higher taxes from consumers and / or producers. They may be reluctant to do this as taxes are politically unpopular and governments that propose tax increases may be voted out.

The production possibility curve below shows the trade-off between the New Zealand economy using resources to produce transport infrastructure (that would have led to congestion being less of a problem) and using resources to produce consumer goods and services.



Previous governments have chosen to operate at point B, with relatively lower taxes, allowing consumers to keep more of their incomes and purchase consumer goods and

services. This is shown as the increase from C1 to C2 in the production and consumption of consumer goods. The opportunity cost of this decision is higher taxes and more infrastructure goods, including transport infrastructure. This is shown by the amount of infrastructure goods decreasing from I1 to I2 and this has contributed to causing congestion as the roading and public transport network has faced under-investment. For example, had there been higher taxes then there may have been many more bus and cycle lanes built in the major cities and this would have prevented some of the congestion that is currently occurring. As stated above, a reason why previous governments did not charge higher taxes is that many consumers may have been upset at purchasing less consumer goods and voted the government out, not realising that there would be increased problems with congestion.

Part C: Compare and contrast the causes of congestion. Use economic models in your answer.

In most cases, the worst congestion throughout New Zealand occurs when the two causes of congestion (increase in population and under-investment in infrastructure) occur together. In particular, the increase in population has been significant over a short period of time and the infrastructure has not been upgraded to match this. The best example of this would be the city of Tauranga, which as noted above is described by some as having the worst congestion in the country. Over the last decade there has been a rapid increase in the population through external and internal migration and the infrastructure has not been able to keep up. The Production Possibility Curve (above) can represent both national infrastructure decisions but also those by local authorities in the Tauranga area who also have the power to increase rates to provide amenities such as bus and cycle lanes. Having lower rates (represented by consumption of C2) has meant less money available for infrastructure and therefore I2 is produced instead of I1. It can also take a long time for transport infrastructure to be planned and built, and if the rapid increase in population is unexpected then it can be many years before the infrastructure can catch up – as described in Part A, the Tauranga City Council expect congestion to keep occurring for another 10 – 15 years.

In other parts of New Zealand where the population increase has been more steady, it is more likely that under-investment in infrastructure is the most significant cause of congestion. Steady increases in population are usually expected and in Auckland's case, congestion has been a problem for a much longer time. While there has been some improvements in transport infrastructure such as bus and cycle lanes, plans such as a second harbour crossing (or a second Mt Victoria tunnel in Wellington's case) have not yet occurred, with only I2 levels of infrastructure instead of I1. The increase in AD shown on page 2 would have been relatively predictable as the government controls the amount of migration into New Zealand. This means that the increase in real GDP from Y1 to Y2 bringing the economy closer to the full employment level (Yf) is a factor that has caused congestion but it is the lack of infrastructure spending (which would potentially increase potential output and shift Yf right) which is the most significant factor in increasing congestion levels.

Part D. Explain the effects of congestion on two different groups in New Zealand society.

Households are negatively effected by congestion for a number of reasons.

Firstly, there is the amount of time that is spent stuck in traffic, when the individuals could be doing more productive things. As mentioned before, the average Christchurch commuter spends 69 hours per year stuck in traffic due to congestion. These hours could have been spent working (and therefore earning a higher income for the household) or at leisure, for example being able to spend more time with your family. There are potential social impacts of having to leave home an hour earlier and arriving home an hour later as it can mean two hours less time with family and this could lead to a decrease in the strength of family relationships as children are able to spend less time with their parents. Parents can have higher stress levels from sitting in traffic and worrying about their children being at home alone for longer periods of time.

Households are also negatively affected by the increased costs caused by congestion. If their cars are stuck in traffic then their weekly petrol bill will be higher, and they will have less money available for other goods and services. The wear and tear on cars will be higher as well, meaning more maintenance costs, and increased spending on tyres. Congestion may also cause more crashes, as drivers become frustrated in traffic and may take more risks.

Pollution from congestion will also negatively affect households. When cars are constantly stopping and starting and spending time idling, emissions will be much higher. According to the Auckland Council Air Quality Report in 2016, more than 900 Aucklanders died prematurely and over 4,500 people were admitted to hospital due to air pollution, with 83% of these impacts directly related to vehicle emissions. Congestion therefore has a direct impact on the health of households.

3

Lastly, congestion can cause a decrease in social cohesion. According to Dr Kirsty Wild, from University of Auckland's School of Population Health, "People who live in really heavy traffic neighbourhoods: kids have less friends, and adults have less friends, than people who live in neighbourhoods with less traffic". This means that households have less support networks and therefore be more susceptible to problems with physical and / or mental health.

It is likely that congestion will affect low-income households more than high-income households. One reason for this is that areas with less congestion will become relatively more expensive to live in and therefore in general high-income households will be able to purchase houses there. In addition, high-income households will be able to afford different options for commuting, as well as having more expensive, fuel-efficient cars (including electric vehicles) which require less maintenance after spending the extra time in traffic.

Producers are also negatively affected by congestion. In general, there will be a loss of productivity as employees are late for work and arrive at work more tired and stressed. The more that producers rely on congested transport routes for the operation of their business, the more negatively affected they will be. Some businesses who operate from home and provide digital services, e.g. web design, may have very little effect. Other firms which rely on the transport sector for deliveries and freight are likely to have higher costs because of congestion delaying delivery and / or increasing prices for these services. Firms who directly operate in the transport sector will be the worst affected. This would include trucking companies, couriers, taxis, and other transport providers such as bus companies. A report from EY estimates that congestion in Auckland costs trucking companies \$130 million in higher wages due to drivers spending more time in traffic, increased fuel, and wear and tear on the trucks. These higher costs cause a flow-on effect as the increased costs are passed on to other businesses – for example a supermarket will have to pay more for grocery delivery and eventually these costs will be passed on to households.

Some businesses will suffer because households have less discretionary income to spend on their goods and services. For example, if congestion and therefore higher delivery costs causes the supermarket to increase their prices, in many cases households will have little choice but to pay these higher prices, especially for basic food items. An overall higher food bill will mean less money available in the household budget for luxury items, for example movie theatres and cafés may receive less revenue.

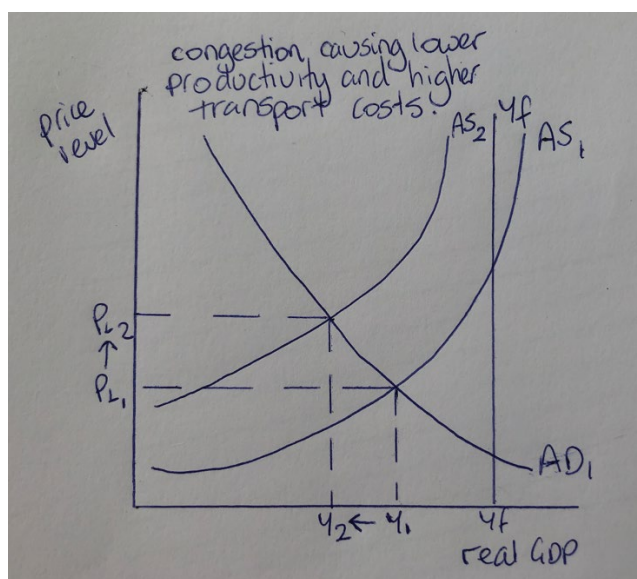
Some producers may benefit from the costs associated with congestion. Car mechanics will gain more revenue from the increased servicing required by car owners. Petrol companies such as BP and Z will sell more petrol. Other producers can benefit from government action taken trying to reduce congestion, for example bus companies that benefit from bus lanes, and building companies that build more roads and bus lanes.

Part E: Compare and contrast the impact of congestion on the two groups discussed in Part C. Use economic models in your answer.

As discussed in Part C, congestion has a negative impact on both households and producers. The worse congestion is, the worse off both groups will be and any measures to reduce congestion will overall benefit both groups.

4

However, it is likely that overall, congestion has a greater impact on households than producers. One way this can be shown is through the AS / AD model below. The model shows the impact of lower productivity and higher transport costs caused by the congestion. These cause the Aggregate Supply Curve to decrease, shown as a leftward shift from AS1 to AS2.



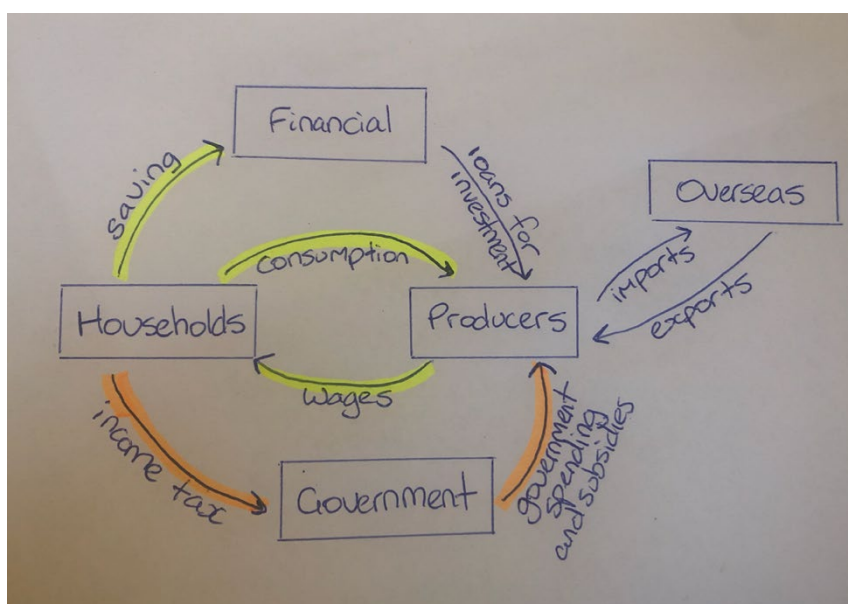
The result of this is an increase in the price level from PL_1 to PL_2 , and a decrease in the level of real GDP from Y_1 to Y_2 , moving the economy further away from the full employment level of output (Y_f). These two changes are negative for the economy, but will be worse for households than for producers.

The first reason is related to the increase in the price level from PL_1 to PL_2 , which is inflation.. The AS curve is decreasing because the higher transport costs force producers to increase their prices to maintain their profit margins. Therefore they are protected somewhat from having to pay higher prices for other goods and services because they have increased their own prices. On the other hand, households will have to pay the higher prices with the same level of income, decreasing their real income. Some households may be able to get a wage increase to counter this decrease in real income.

The second reason is related to the decrease in real GDP from Y_1 to Y_2 . The overall level of spending on goods and services in the economy decreases. Because labour is a derived demand, some businesses will reduce worker hours or reduce their workforce. So even if they have a decrease in sales, they are able to reduce their costs by reducing their wage bill. However, households who have a person who loses their job will simply have a loss in income and may struggle to pay their rent, food, and electricity bills.

Therefore the AS / AD model shows that the effects of congestion are worse for households than producers.

The effect of congestion on households and producers can also be shown using the circular flow model.



The flows highlighted in yellow are likely to decrease because of congestion. Due to individuals having less time available for working, the wage flow to households will be lower. This in turn decreases the consumption and savings flows, both of which are negative for households. This decrease in consumption is also negative for producers who rely on retail spending from consumers.

The flows highlighted orange are likely to increase. If the government is trying to reduce congestion then they may increase income taxes, which means households have less disposable income which can further reduce consumption and saving. On the other hand, some producers may benefit from increased government spending on projects such as building bus and cycle lanes. Some flows won't have any significant effect, for example producers who rely on export revenue aren't likely to experience any change in their sales from congestion issues.

Overall the circular flow model shows that households will be more negatively affected than producers. Households are negatively affected by the decrease in flows highlighted in yellow, with the result being a decrease in their standard of living. Some producers will be negatively affected by these decreases, but other producers will see an increase in sales (from consumers or government) or not be affected at all.