

Work Commute Survey Results

City of Greater Bendigo has recently embarked on a challenge to increase the use of active, public and shared commute methods to 20% or more by 2026.

In July 2022, Council conducted a survey to establish a baseline for staff commuting habits and associated carbon emissions. The information will enable Council to make more targeted decisions in the future. This results page is best viewed on desktop. If viewing on mobile, you may have to rotate view and scroll sideways to view full content.

This survey is built by the volunteer team at Civic Makers.

Things to note before reading the result

Travel methods have been grouped into **Active-Public-Shared** methods and **Individual** methods:

Active/Public/Shared Methods:

Lower carbon emission per km travelled per person



Walk/Run/
Cycle



Bus/train



Taxi/shared/
carpool

Individual Methods:

Higher carbon emission per km travelled per person



Car

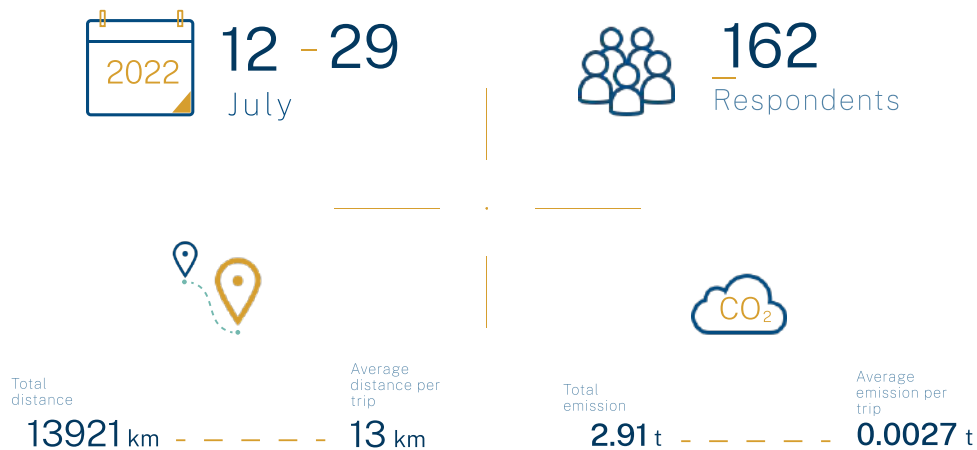


Motorbike

Overview

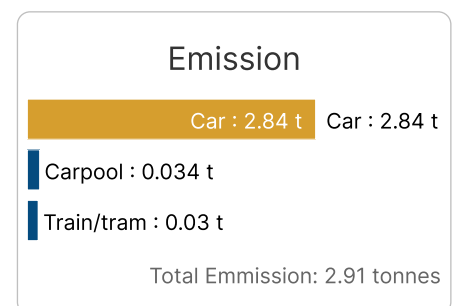
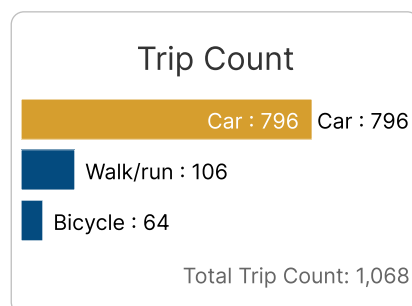
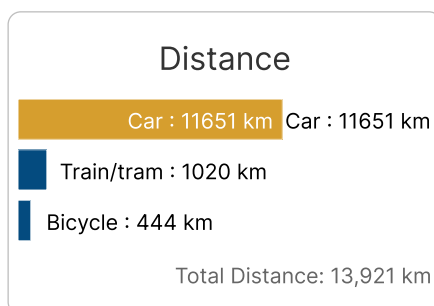
The Work Commute survey was conducted on 12 to 29 July 2022 and recorded responses from 162 people. The results provide a snapshot of how staff travel to and from work, in the week before the survey.

Respondents commuted a total distance of 13,921 km and produced a total trip emission of 2.91t in one week. This is roughly enough CO₂ to fill 13 Olympic sized swimming pools. The average distance travelled is 13 km, with an average of 2.7 kg of emissions per trip.



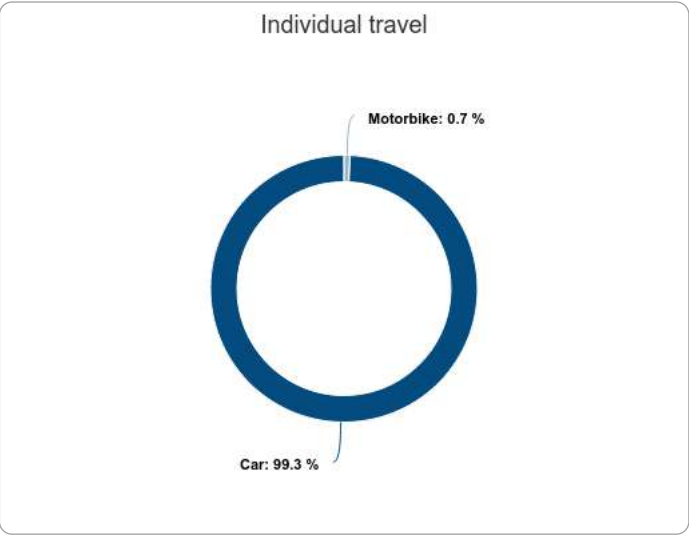
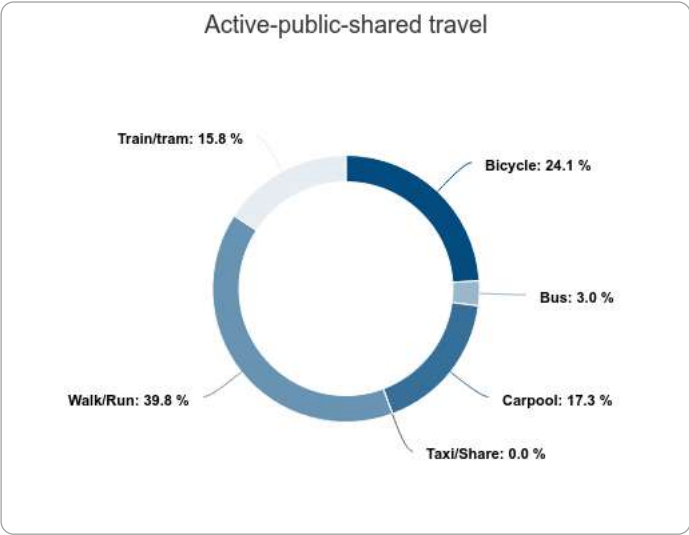
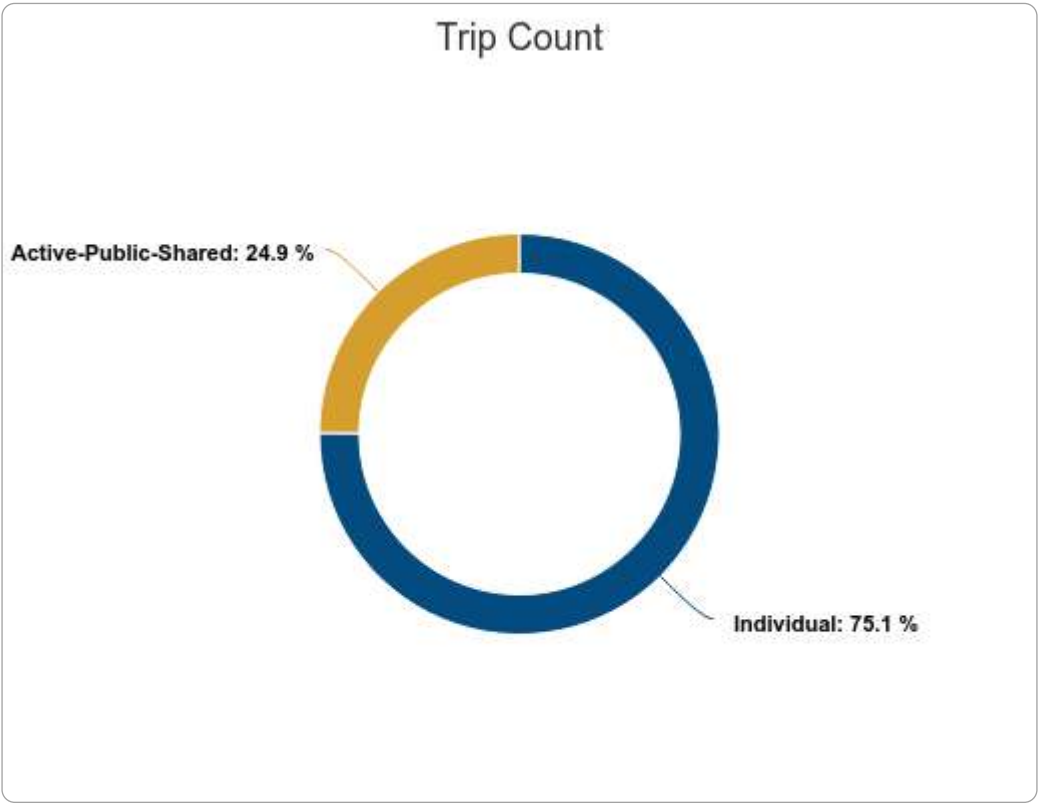
Top three travel methods

The following three charts illustrates the top three travel methods by Distance, Trip Count and Emissions.



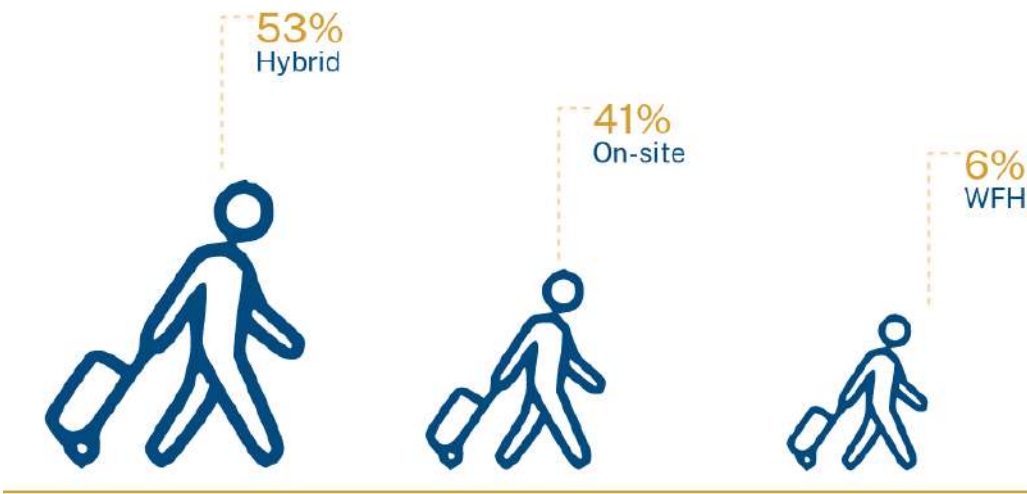
Trip count and travel methods

The three graphs below helps us understand how staff commute to work. The ‘Trip Count’ graph shows the total number of trips. The other graphs break this down into the various transport types.



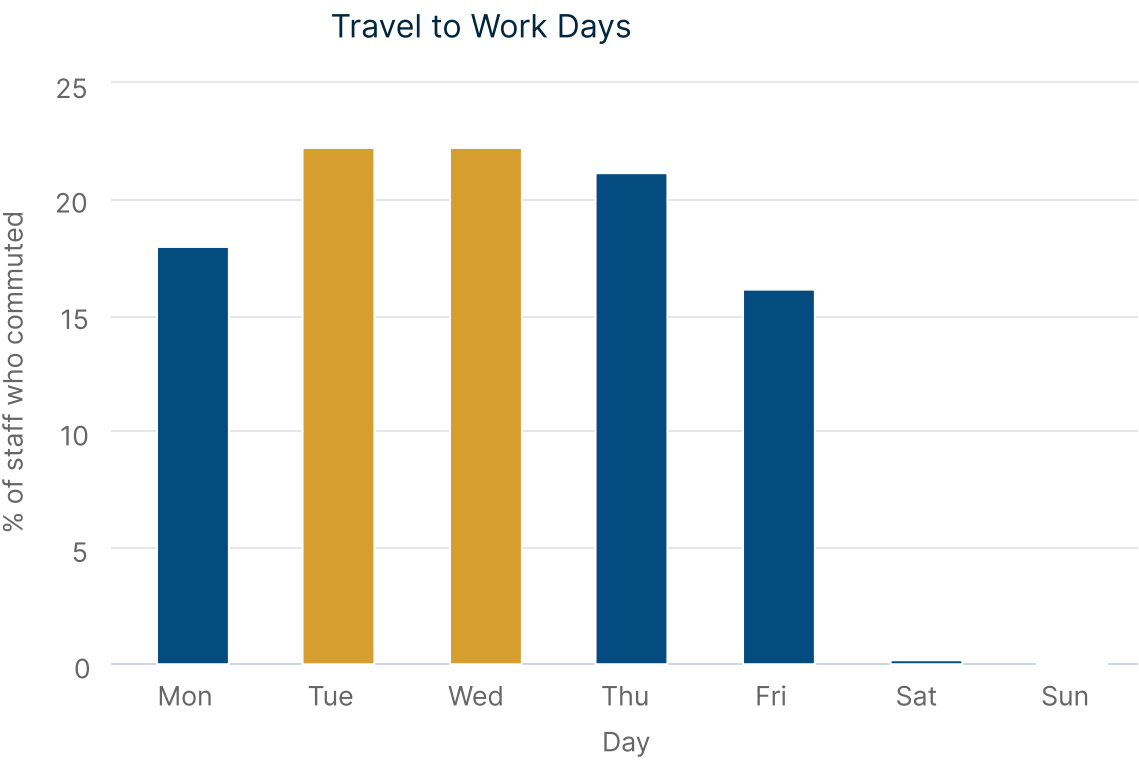
Work arrangement

The information below illustrates respondents’ working arrangements across the week and helps identify staff commuting habits.



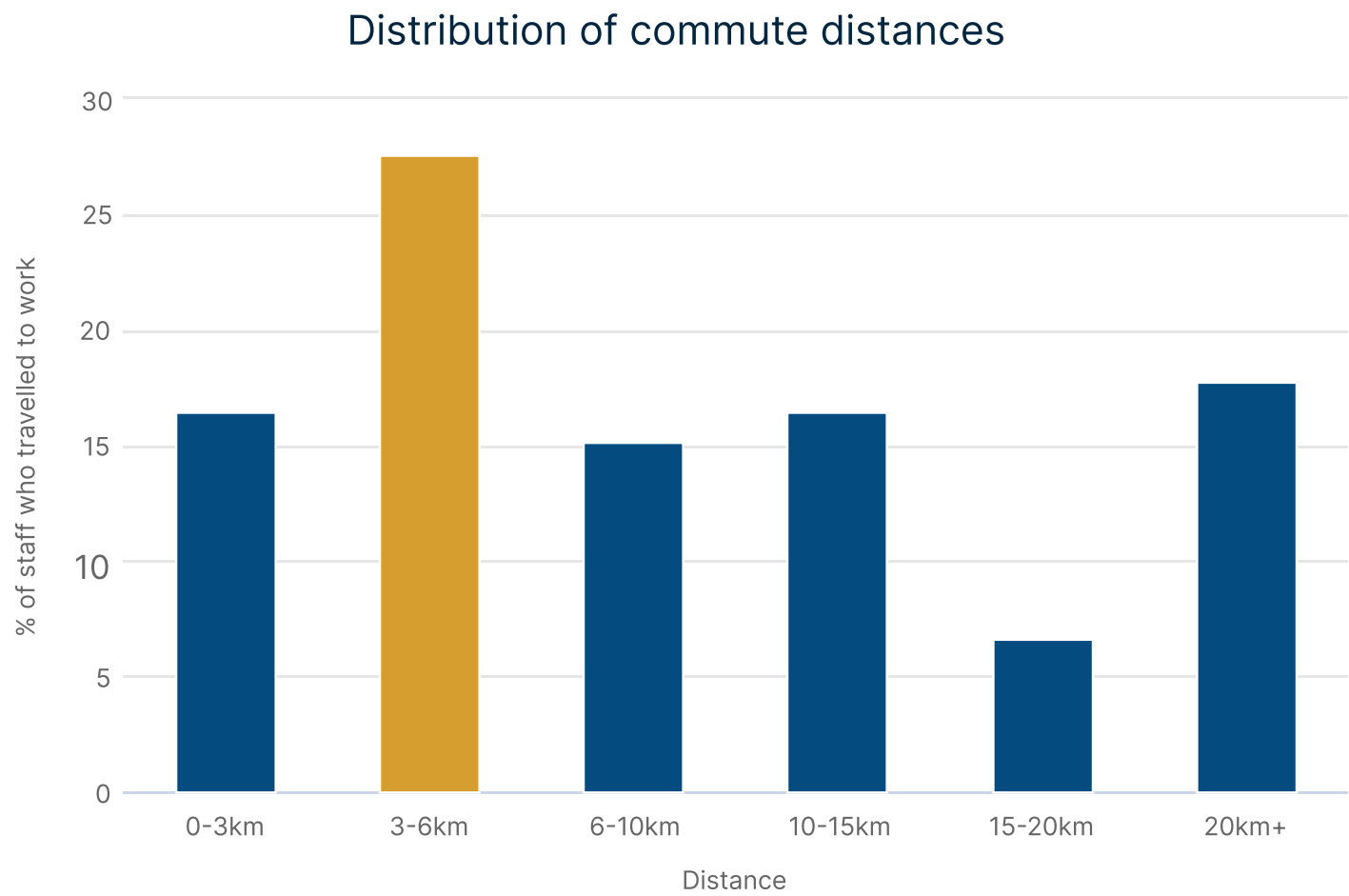
Travelling to work days

The chart below shows the distribution of staff commute days throughout the week. It helps us understand travel patterns for onsite and hybrid work arrangements. The bar(s) in yellow shows the day(s) staff members most often commute to work.



Distribution of commute distance

The graph below shows a rough distribution of staff according to the length of their commutes. This information is useful to understand the distances staff travel to work, and how they are distributed along those distances.



Distance travelled by mode of transport

The following graph helps us compare the travel modes (individual vs. active/public/shared) preferred by staff within various commute distances.

Active/Public/Shared Methods:

Lower carbon emission per km travelled per person



Walk/Run/
Cycle



Bus/train



Taxi/shared/
carpool

Individual Methods:

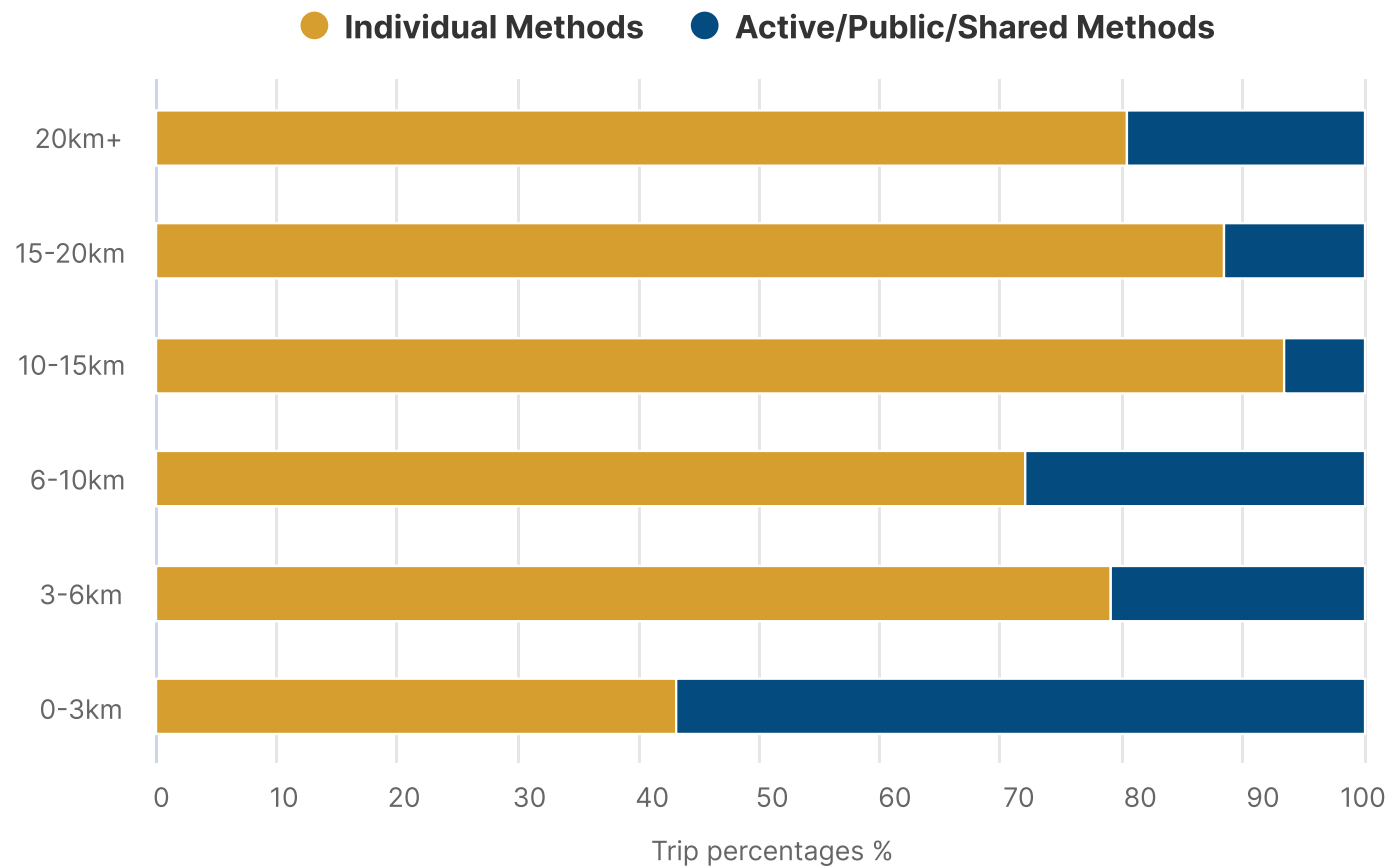
Higher carbon emission per km travelled per person



Car



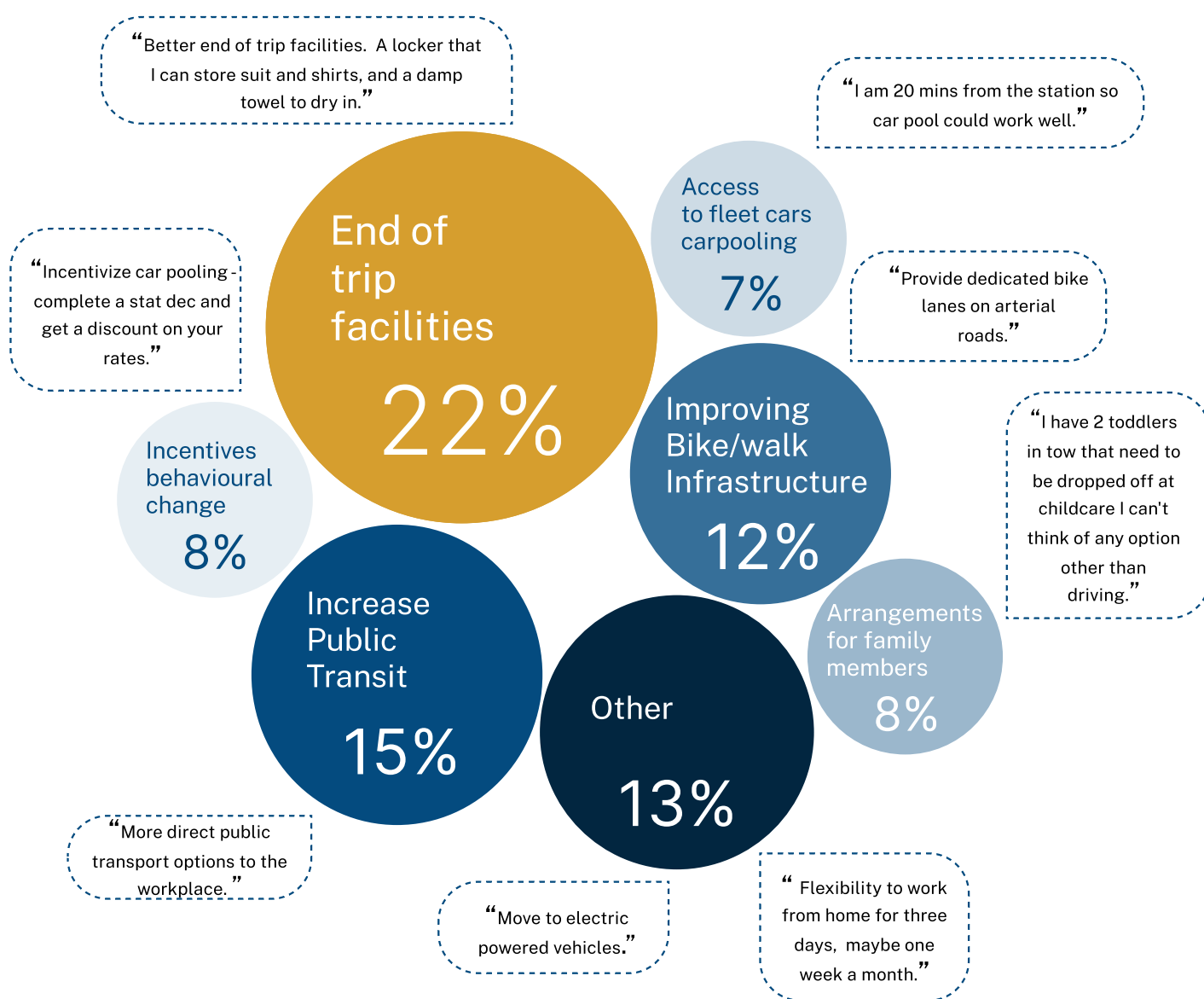
Motorbike



Staff suggestions

Participants were provided with an option to suggest ways that Council can support and incentivise staff to choose more sustainable modes of transport to and from work.

These numbers show the percentage of all people in the survey who suggested this improvement. Some people are in more than one category, and some people didn't have any suggestions - that's why the numbers don't add up to 100%. A stand out in the responses is the suggestions to improving Cycling/Walking infrastructure, increase Public Transit and End-of-Trip facilities at workplace.



Carbon Emissions Calculating and Reporting

What is this?

The carbon calculator uses commuting information supplied by Council staff to calculate the volume of carbon emissions associated with staff commuting to and from work.

The results display valuable insights on commuting habits, preferred transport types, and emissions generated. These insights can help inform Council's 2026 goal to increase the use of Active, Public, and shared commute methods to 20% or more.

How does it work?

We use the responses collected from the two week-long survey on how employees travelled to work to estimate how much CO₂ is emitted by employees' commutes in one typical work week.

162 employees responded to the survey, sharing their mode of transport, the distance of their commute, and what days they worked on site or from home. People who carpooled also told us how many passengers were in the car with them.

Since we only have answers for one week for a portion of employees, we can't say what the whole council's emissions would be, but we can better understand commute patterns and the emissions that are associated with them.

CO2e emissions from employee travel =

To calculate each employee's commute emissions, we looked at how far they travelled by each mode of transport, and used this emissions table to calculate the emissions from that travel¹:

Mode of Transport	Emissions Factor (kg of CO2 emitted per person km travelled):
Car	0.244
Motorbike	0.12
Bus	0.018
Train/Tram	0.029
Bicycle/Walk/Run	0

The total emissions caused by each vehicle by each employee during their typical work week is calculated as:

$$T \times 2 \times N \times E / P$$

T = daily one-way distance between home and work (km)

2 = multiplies T to capture the return trip to home from work

N = number of days travelled by this mode of transport in a week

E = the “emissions factor” of that mode of transport (as per the table above)

P = the number of people in the car (for carpoolers only)

CO₂e emissions from employee travel =

Example 1 – single mode:

Employee A lives 10km from the office, and travelled by car to work 5 days a week. Their emissions would be:

Car = 10 km x 2 ways x 5 days x 0.244 kg/km = 24.4 kg

Total emissions = 24.4kg Co₂ produced in the week

Example 2 – carpool:

Employee B lives 10km from the office, and travelled by car to work 5 days a week, with 1 other person in the car.

Car = 10 km x 2 way x 5 days x 0.244 kg/km / 2 passengers = 12.2 kg

Total emissions = 12.2 kg Co₂ produced in the week

Example 3 – mixed mode:

Employee C lives 20km from the office, and travelled by train 2 days/week, and by car 1 day/week.

Train/tram = 20 km x 2 ways x 2 days x 0.029 kg/km = 2.32 kg

Car = 20 km x 2 ways x 1 day x 0.15 kg/km = 9.76 kg

Total emissions = 12.08kg Co₂ produced in the week

¹ 2018. *Transport Strategy Refresh: Transport, Greenhouse Gas Emissions and Air Quality*. [ebook] Melbourne: City of Melbourne, p.4. Available at: <https://s3.ap-southeast-2.amazonaws.com/hdp.au.prod.app.com-participate/files/6615/2948/1938/Transport_Strategy_Refresh_Zero_Net_Emissions_Strategy_-_Greenhouse_Gas_Emissions_and_Air_Quality.pdf> [Accessed 11 August 2022].

What can you achieve with the Calculator?

The results from the carbon calculator provide a point-in-time snapshot of a Council's staff commute emissions. Analysing trends and patterns relating to transport modes and daily emissions will allow Council to devise strategies such as ridesharing, incentivised modes of transport, or flexible work arrangements, to name just a few.

Who made this calculator?

While the formula was developed by the Greenhouse Gas Protocol Centre of Excellence, the survey and results page were built by a volunteer group of problem solvers, [Civic Makers](#), trying to solve the question of “How can we make our communities better?” using civic-tech. We can't solve every problem related to our community at once, so we decided to build tools that support Council sustainability initiatives. Civic Makers is run by [Code for Australia](#). Code for Australia is a for-purpose B-Corp that believes meaningful change takes place when people come together to design, develop, and deploy solutions that meet everyone's needs.

Why did we make this calculator?

Due to climate change, we want to use our technical skills for the public good by supporting governments in responding to the climate crisis. We believe assisting them with this calculator would be an excellent place to direct our efforts while council budgets and resources are under pressure.