

SMARTER TRAVEL SOLUTION TO 'PERVASIVE' LOCAL POLLUTION

A PIONEERING study by young researchers using bikemounted monitors has found high pollution levels across shopping and residential areas of the southside, with traffic fumes mostly to blame.

South Seeds had set out to uncover and share data on pollution levels between Queen's Park and the Clydeside site of the crucial COP26 climate summit before it was postponed due to the Covid-19 pandemic.

We found that Victoria Road is among areas most affected by pollution from private vehicles, but readings fall to much safer levels along the road's traffic-restricted areas, which are due to grow as part of the city's aim to become carbon neutral by 2030.

"PM2.5 particulate air pollution is pervasive across the southside," said Dr Daniel



Thomas of the University of Strathclyde, the study's scientific leader. "We see significant pollution on the South City Way – but the tenemented area where people live and shop has

higher levels than further into town where the bus gate reduces motor traffic." Air pollution is linked to a number of serious health conditions, and is the main driver of climate change.

COP26 is now scheduled for Glasgow in November 2021. "Pollution is such a day-today issue. And climate change makes me really afraid," said 22-year-old Ryn, one of our six volunteer researchers.

Testing, testing – meet South Seeds' young researchers

SAY HELLO to Sylvia, Jamie, Thomas, Chandler, Daniel and Ryn – South Seeds' volunteer pollution researchers.

Glasgow is home to a high proportion of young people, with more than 120,000 of the city's population aged 20 to 29 years old. South Seeds' young research sextet answered a call to help gauge the city's air quality. But what they've uncovered

has made some question their future in the city.



From left: Thomas, Daniel, Ryn, Chandler, Sylvia and Jamie, with their state-of-the-art bike-mounted pollution monitors

"Some scenarios show that car use may go up, and if that is the case I will move to a city which tackles car use," said Thomas, 22, an architectural technology student. Shawlands resident Jamie, 24, is communications and

marketing officer for Glasgow University Students' Representative Council. "The pollution we measured shows the impact of motor vehicles on this city. I want to live in a cleaner, greener city," he said.

Sylvia lives in Govanhill. The 26-year-old environmental chemist was "shocked" by the pollution levels, but said she's staying put, as she has "a lot of hope that legislation will drive down pollution in the future". Find out more on p4&5

ELCOME TO our southside community newspaper in which we shine a spotlight on the issue of air pollution, and share what we can do to combat it.

Our intrepid volunteer researchers have been gathering pollution data over the last couple of months – and now we can share the results. Bad air affects each

and every one of us,



whether we drive, walk, cycle or use public transport. But it hits Glasgow's poorest and most-deprived citizens worst, even though they often create the least pollution. More than 350 Glaswegians die early each year due to air

pollution's toxic effects. Many more suffer a reduced quality of life. Heart disease, cancer, severe asthma and dementia are linked to the polluted air we breathe. Children are especially vulnerable, as their organs and

AIR

immune systems are still developing.

So what can we do? Most urban air pollution comes from private cars. If life's all about the journey, why not give active travel a go, and get your exercise as you commute? Or let others take the strain of getting you from A to B by using public transport. You'll also save cash, another way you'll be able to breathe more easily.

'THERE'S NO SAFE LEVEL'

OUR BIKE-MOUNTED air pollution monitors were assembled by Dr Daniel Thomas, Chancellor's Fellow, University of Strathclyde.

Dr Thomas said: "We chose bicycles for three reasons: 1. Cycles do not create air pollution that would interfere with the measurements; 2. Bicycles can cover fairly large distances and go to most places;

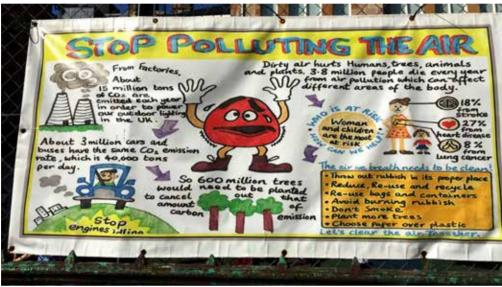
3. They do not go too fast and so a reading every five seconds gives good coverage." The design was adapted

from the Open-Seneca design developed in Cambridge.

The sensors contain a battery, a circuit board, a microprocessor, a GPS chip, a tiny LCD display, an SD card a VOC/CO2 sensor, and a particulate matter sensor.

"The most interesting component is the particulate matter sensor. It contains a tiny laser which is used to detect particulate matter (PM) pollution. It directly measures PM2.5 particles, particles less than 2.5 micrometres, one 400th of a millimetre," said Dr Thomas.

"There is no safe level of exposure to PM2.5 but the WHO (World Health Organization) recommends keeping levels of PM2.5 below '10 μ g/m3 for the



A plea from Pollokshields Primary pupils and, below, a pollution monitor

spaces such

as narrow

streets with

tall buildings

can become

very polluted. PM can be

ventilation systems.

removed by HEPA filters on

"The reason for collecting

motivate improvements in

the areas that would most

benefit. If people can know

breathing is that might

how polluted the air they are

motivate them to ask for the

changes that would reduce

annual average and 25 µg/ m3 for the 24-hour mean (not to be exceeded for more than three days/year)'.

"People in motor vehicles experience higher levels of pollution than those walking or cycling as the filters do not stop the fine particles and the air intake tends to be accurate data was to find out right next to the exhaust pipe where the pollution is and of the vehicle in front.

"PM can be absorbed by people or pets breathing it in (not so great), although trees and hedges can help reduce levels of pollution."

Good air flow can help blow away PM, but enclosed



People in motor vehicles experience higher levels of pollution than those walking or cycling

this pollution."

DR DANIEL THOMAS Chancellor's Fellow, University of Strathclyde

At a glance PARTICULATE POLLUTION



It may be tiny, but particulate matter (PM) has very big and serious health impacts. It is produced by combustion (cars, vans, bonfires, log-burning stoves), construction (dust), and the wear of tyres and brakes on the road. Particulate pollution is particles sized less than 2.5 micrometres

1/400th of a millimetre. PM is much easier to measure accurately with a low-power sensor than other pollutants such as nitrogen dioxide. It can travel long distances but it can vary a lot over small distances.

These fine particles are small enough to penetrate deep inside our lungs and make their way into our blood and around our bodies, and have been found in essentially all parts of the human body.

This can cause a range of health impacts as they damage tissue and can help carry bacteria and viruses past our natural defences and deep inside our lungs.

Particulate matter causes, or makes worse, asthma, breathing difficulties, dementia, heart and lung disease, and cancer.

Scotland (PHINS). He added: "Glasgow's carbon emissions are being driven by transport, and in particular



FEELING **CAR SICK?**

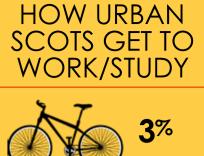
GLASGOW ISN'T known as "the sick man of Europe" for nothing. Home to some of the UK's most polluted streets, its citizens have the lowest life expectancy and quality of life in Scotland, due to a cocktail of factors – including air pollution. "To reduce our emissions overall we need to reduce road traffic, and in particular private motor vehicle traffic," said Bruce Whyte, public health programme manager at the Glasgow Centre for Population Health. "This means reducing parking, putting in bus gates (bus prioritisation lanes), reducing

road speeds (a citywide 20mph limit, to encourage more cycling and walking, and to make it safer), building a network of safe cycle routes, using parks and on-road segregation lanes, and investing in bike hire schemes that reach across the whole city. "Essentially we need to plan for and make a shift to a low-carbon transport system, and shift investment priorities from road to active and sustainable transport." Whyte also jointly coordinates the national Public Health Information Network for



vehicles, which had been falling, started to rise in 2017. This is thought to be due, at least in part, to an increase in the proportion of larger new cars (SUVs) being registered, with higher emissions."

> We need to shift to sustainable and active transport that's low carbon



At a glance







cancer

nentia

Figures: Transport Scotland 2019

heart disease

strokes

Idle killers: cut your engine, save lives

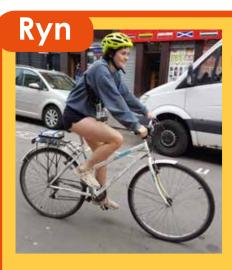
JUST ONE MINUTE idling your engine pollutes the air with enough toxic gases to fill 150 balloons with harmful chemicals including cyanide, NOx, CO2, ozone and PM2.5. The exhaust fumes of petrol and diesel vehicles contain more than 50 chemicals, and are a contributory factor in



40,000 premature deaths a year in the UK from causes including heart disease, strokes, asthma, dementia, cancer and lung disease.

der

So, when your vehicle isn't moving, please turn off your engine and help save lives – including perhaps your own. Let's make all of Glasgow a no idling zone.



don't think ve had a conversation about air pollution since school science class

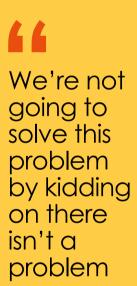
"I volunteered because it sounded really interesting and a good way to do something good for the community I've just moved into.

"I got a bike this summer and was really excited by it as it's a fantastic way to exercise, and typically the fastest way to get around the city. I cycle because I genuinely enjoy it.

"I am relatively new to cycling in Glasgow, but I have learned my way quickly. My main routes are Victoria Road and Nithsdale Road. I have never cycled in a city other than Glasgow (having grown up in a rural area) and there are some really difficult places to share the road. Pollokshaws and Great Western Road come to mind as being particularly poor for cycling.

"We're all breathing in air all the time but I don't think I've had a conversation about pollution since school science class. You hear about it as this big bad entity in terms of global warming but pollution is such a day-to-day issue.

"And climate change makes me really afraid, and being so young it'll be a permanent factor in my life and for everyone else coming into adulthood."



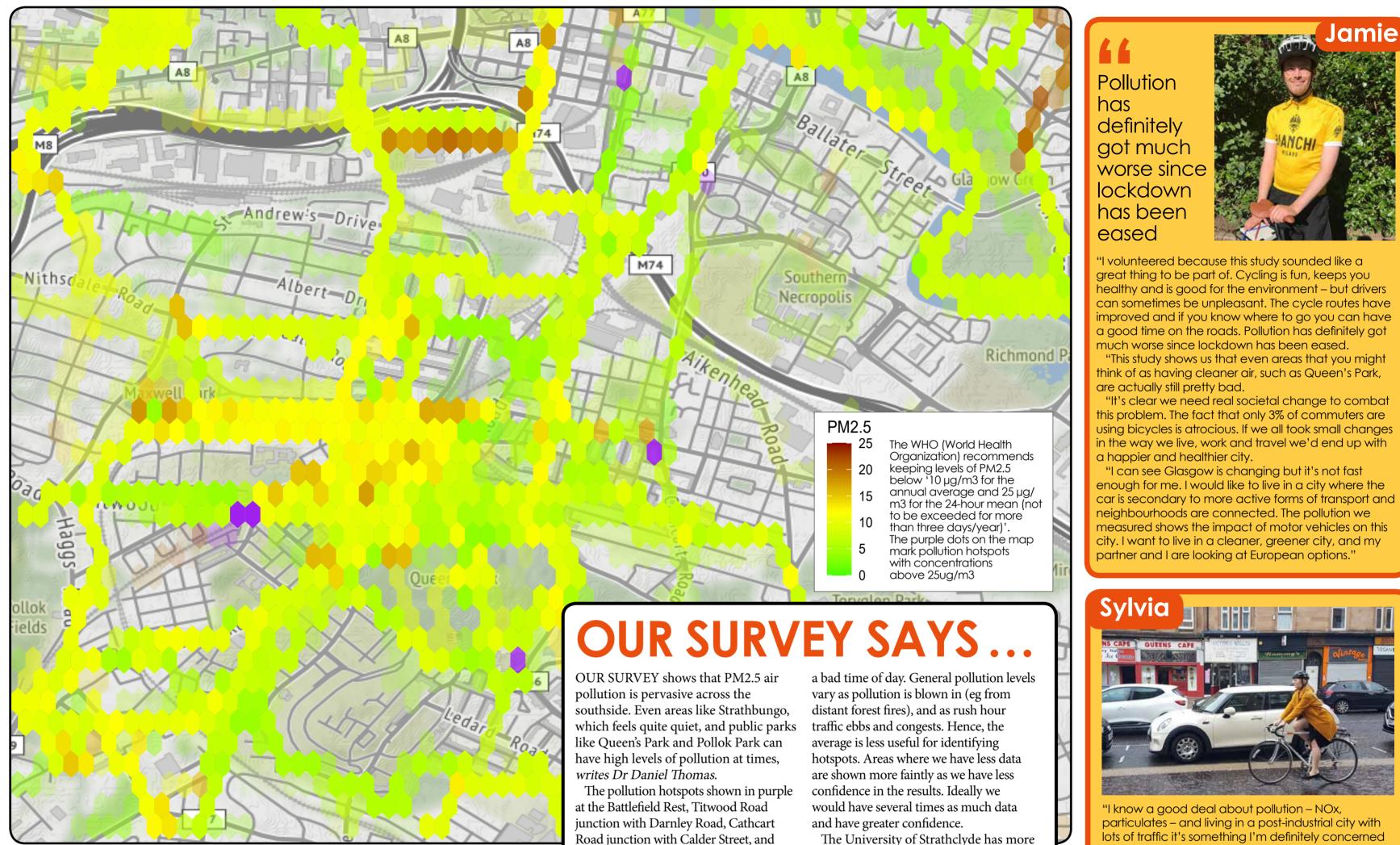


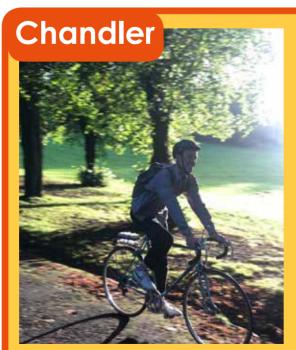
"I live opposite Carolside Primary and 40% of the pupils are driven to the school, despite living less than a mile from it. Lots of parents sit idling their engines outside. A small number of people are causing pollution problems for everyone else – but it affects them and their children too.

"I am co-convenor for GoBike in Glasgow, and find cycling is left to those confident to deal with motor traffic. This leaves a lot of the city inaccessible to most by cycle but hopefully that is changing with Spaces for People. Doing small stuff helps – we can change things for the better if enough of us do it. Most car journeys are less than 2km, and if we can reduce that aspect of car use then we'll all have better air to breathe.

"I was disappointed to find that PM2.5 was at an unnecessary level. It made me realise there was no place to hide from it. I don't think we are going to solve this problem by kidding on their isn't a problem.

"Some scenarios show that car use may go up, and if that is the case I will move to a city which tackles car use. Quality of life is important to me. I'm currently studying and will make a decision on my options when my studies are complete and I know more about the plans to improve Glasgow's environment."





Car use needs to be discouraged

"Cycling's convenient and good for the environment. It helps to reshape the way we use space by getting cars off the road. Cars have ruined communities and cycling is the way to bring a lot of life back – but people need confidence. Pollution and congestion hold a lot of people back, and car use needs to be discouraged.

"There are clear choke points. I'm worried about levels of pollution around schools. The South City Way seems to have done a good job suppressing this, and next steps should involve developing branches of partially or wholly pedestrianised streets to improve health and safety.

"Thinking there may be an increase in air pollution is disheartening and puts me off wanting to live in Glasgow. Paris is attractive, with its recent huge reduction in car use. I don't need to move somewhere which is the finished product – but I'd like to live in a city which is moving towards something better."

People cycling are exposed to less pollution than people driving and so results would likely be worse for people who drive. We see significant pollution on the South City Way but the tenemented area where people live and shop has higher levels than further into town where the bus gate reduces motor traffic. We also see a few low-pollution cycle routes such as the White Cart Way as it follows the river away from traffic. The map shows the 90th percentile of observed pollution levels to show what pollution levels are like on a bad day or at

Eglinton Street near Bridge Street subway are more likely to be due to motor traffic. There are also high levels of pollution on Scotland Street. In places like Strathbungo (and Pollok Park and Newlands Park), log burning stoves are likely a significant contributor to pollution.

The University of Strathclyde has more air pollution sensors on order and in the future we hope to do even larger surveys that will allow us to monitor changes over the course of the day and over larger areas of the city. The university is also installing 25 advanced static sensors outside schools in Glasgow as part of the GEMM project. These will be combined with weather data and advanced algorithms and enable the sources of pollution, including CO2, to be determined on a 1km grid.

The official air pollution monitor on Nithsdale Road supposed to be collecting data on southside air quality has been out of action for 11 months, meaning that our data is the only indication of current pollution levels - which are likely to get worse if people move to private motor vehicles from public transport/active travel options.



about. It puts me off cycling a bit.

"Pollution is not only an environmental issue but a public health issue. PM2.5 is small enough to travel to our lungs when inhaled and is known to contribute to respiratory issues. Considering that Covid-19 is a virus which also affects the respiratory system, pollution is a public health issue which must be addressed.

"I don't have that many friends who drive – maybe that's being a young person in a city. Most use public transport, cycle or walk. I see myself living in Glasgow long term, however this data is really quite shocking. Even with my scientific background I had thought of the air here on the southside as fresh.

"Finding out that there could be harmful effects from the air where I live is concerning. I have a lot of hope that legislation will drive pollution down in the future. I'm sure that within my lifetime there will be all sorts of actions which we will all take to achieve cleaner air in the city."

I don't have many friends who drive. Most cycle, use public transport or walk

outh Seeds sees ..

WHAT IT'S LIKE **TO DRIVE AN ELECTRIC CAR**

Helen lives in Govanhill, and doesn't own a car as she finds it's cheaper and less hassle to hire one or use a car club vehicle when she wants to drive somewhere.

Here, she talks us through her first time behind the wheel of an electric car.

"Before ever driving in a fully electric vehicle I had some concerns about it running out of battery halfway into my journey," Helen says.

"But I needn't have worried – I could have easily managed the 120-mile return trip without charging halfway.

"Before getting to the car I'd read the 'how to' user guide on the Co-wheels website and to get in the carl scanned my Cowheels membership card on a card reader on the windscreen, which unlocks and locks it. It was very intuitive once I got in.

"I drove a BMW i3,

which has a range of 160 miles, but I wanted the full EV experience so charged it up while I was stopped anyway (in Edinburgh). To find a charging point I used an app called 'Zap map' which maps all the electric charging points, and they're also findable at

chargeplacescotland.org "Charging was really easy, and free, and gave me an almost full battery in under two hours.

"I wanted to keep my speed down to conserve battery, and really loved how smooth and relaxing the ride was, as there is no engine noise.

"The car couldn't have been simpler to drive. It's an automatic – so it's just forward, back and stop!

"I was very impressed and will definitely be using the Co-wheels cars again. In fact, if I had the choice I would go for electric over petrol car every time."



Charging: 'really easy, and free

Hedges help soak up smog

MORE HEDGE planting would cut southside pollution levels and boost biodiversity, studies have shown.

A combination of on-street trees, hedges and other vegetation barriers, 'green walls' and 'living roofs' would naturally trap and remove pollutants, helping to make our air cleaner.

"Trees and hedges, as well as other green infrastructure, must be used to help create healthier, less polluted cities



that are also more pleasant for everyone to live and work in," said Professor Prashant Kumar, leader of an international 2017 study into mitigating air pollution.

Where there are large buildings close to roads, the researchers found that low hedges can be better than trees at combating pollution.

• EXPOSURE TO air pollution may increase the risk of death from Covid-19, a study of 46,000 coronavirus fatalities by the Office for National Statistics revealed.

The research, in August, found that even single-unit rises in exposure to particulate pollution in the years prior to the pandemic could increase death rates by up to 6%.

A single-unit increase in exposure to nitrogen dioxide was linked to a 2% rise in Covid-19 fatality rates.

Even before the pandemic air pollution was a factor in more than 350 early deaths in Glasgow every year.

Pollution = climate breakdown

ONE YEAR from now, Glasgow will be in the world spotlight as host city of international climate summit COP26.

Private transport is still a huge challenge in Scotland in terms of carbon emissions, but especially in urban areas it also causes poor air quality.

Trees, parks and other green spaces can help clean the air, but many of the southside's Victorian tenements were built on what are now busy roads, with little in the way of pollution-reducing vegetation.

More than a quarter of homes in Govanhill are overcrowded, with car ownership figures 22% below the Glasgow average – yet many of these families could end up suffering the worst



Despite the lower levels of car ownership, many Govanhill families could end up suffering the worst impacts of air pollution

DR KARIN HELWIG

Master's programme coordinator, Glasgow Caledonian University Centre for Climate Justice

impacts of urban vehicle pollution. That's a real case of climate injustice. It's great to see that with South Seeds the community are keeping a close watch on air pollution levels, and I am delighted to see one of our students on GCU's MSc in climate justice is involved in this project.

During the pandemic, many people have

become reluctant to use public transport and it feels like we are at a crossroads. Either people will jump in the car and cause yet more air pollution (not great as respiratory illnesses increase risks for people who catch the virus) or provided there is safe cycling infrastructure and access to bikes – it might provide the nudge to make people start cycling!

Try an electric vehicle – on us

The perfect time to try out an electric car just got even better as South Seeds has teamed up with Co-wheels car club to deliver an exclusive discount offering free membership, with no minimum monthly spend, and £30 of driving credit. Co-wheels has electric

and hybrid vehicles ready and waiting in Allison Street, Kenmure Street and Torrisdale Street. To access this great

money-saving opportunity, sign into the Co-wheels website at www.co-wheels.org.uk/ glasgow_ccc, follow the prompts, then use the

promotion code SOUTHSEEDS as directed. And say hello to cleaner motoring that's also cheaper and more convenient than owning your own vehicle.



Growing a greener Glasgow

South Seeds



WE'RE GETTING THERE

GLASGOW'S LEZ (low emission zone) was introduced at the end of 2018, making it the first one in Scotland. The aim of the LEZ is to reduce air pollution in the city centre – which was home to some of the UK's most polluted streets – by a gradual strengthening of restrictions on vehicle emissions. It has already improved air quality as the most polluting buses have been upgraded to lower-emission models, but there remains work to be done, and it is due to include all vehicles by 2022/23, with some exemptions. Find out more at www.glasgow.gov.uk/LEZ

From the southside the low emission zone is entered by the Sheriff Court before you cross the Clyde. And with loweremission buses also making the return journey, there has been a knock-on effect on the southside's air quality.

Many of the upgraded buses now run along Victoria Road and Pollokshaws Road, which means pedestrians and cyclists (and drivers) having to breathe in fewer fumes, while the southside's 'pavement cafe culture' is bringing community benefits and looks set to expand further as air quality hopefully continues to improve.

There are plans for stronger

The bus gates in Glasgow ...

THE CITY'S bus gates help speed up public transport travel times and cut pollution by excluding private vehicles, and make the streets safer for pedestrians and cyclists. Between 7am and 7pm, only buses, taxis, licensed private hire cars, registered goods vehicles (vans to HGVs) and cycles are allowed through the gates. Since last year the



number of bus gates has increased, leading to a huge reduction in private vehicles in the city centre, which speeds up public transport



1212

restrictions on private vehicles, alongside the phase-out of new petrol and diesel sales by 2030. The good news is we're expecting a rise in cleaner alternatives to these current models of car ownership. So for those who still need to

drive into the city centre, car club membership or hiring will increasingly become the norm - and the smartest option.



and makes for a better cycling and walking environment. Since lockdown a few miles of segregated bike lanes have been installed, making it much easier to cycle through the city, and when gyms and health centres closed many found cycling an easy way to keep fit. The number of people cycling in Scotland grew by 43% between March and August.

The view from Vicky Road

How do you feel about air pollution?



ANTHONY, 30, PERSONAL TRAINER 's smoggy here n Glasgow. People could walk, or use public ansport or to cut air pollution

CATHLEEN, 71, PENSIONER 'm not very concerned about air pollution except when can smell it.



OBSTETRICIAN ve got two kids and I'm worried about their future because of pollution and climate change. Everyone's actions are important.

NICK, 44, **SPORTS WRITER**

Vith George quare, our cityentre showpiece esembling a glorified car park

you'd have thought it was the perfect time to extend the low emission zone.



JADE, 34, **TRAINEE TEACHER** problem. Covid has shown that we can all make changes so it's

about us all doing something. If everyone took small actions it would make a big difference.



YUSRA, 16 SCHOOL PUPIL The problem is the number of cars. People should think about using bicycles more

as that's much healthier, and think about pollution more as it's really got out of control, and it's ... crap.

Choose active or low-carbon travel and the person most likely to benefit is you. But lots of other southsiders will too, and this handy guide to the options on offer lets you say

READY...STEADY

YOU'LL HAVE noticed a few changes around the area lately.

Word on the street is the new cycle lanes on Victoria Road will be completed by the end of the month, while shiny new electric hire vehicles, charging points and electric hire bikes have been springing up too – plus more people than ever have taken to two wheels (their own or hired) and walking to get about.

These shifts in transport habits fit with Glasgow's stated aim of becoming a

carbon neutral city by 2030, the same year that the UK government is now planning to ban the sale of new petrol and diesel vehicles.

Along with giving us all cleaner air to breathe, active travel saves you money and time, as you can regularly achieve your equivalent of 10,000 steps per day while getting from A to B. Make

Next, try a nextbike

Whether you're keen to go electric or happy keeping it conventional, Nextbike is the operator of the city's on-street bike hire scheme.

They have four electric bikes



outside Queen's Park station for rent, and if you're just getting back into pedal power the electric nextbike will get you whizzing about with minimal effort.

They're charged on a payas-you-ride basis of £2 per 20 minutes or £30 per 24 hours.

They have stands of conventional cycles in Queen's Park, Govanhill and East Pollokshields, and, in a great boost for cycling, nextbike's conventional models are FREE to ride for the first 30 minutes of a hire, until March 2021.

There are a number of ways to get started, but the easiest way is to download the nextbike app. www.nextbike.co. uk/en/glasgow

Let the bus or train take the strain

The southside is really well served by public transport. From Queen's Park station

there are trains every 6-17 minutes to Central Station, while an all-day First Bus ticket costs £4.50. It lets you change buses and get to where you want without the stress of driving, then not being able to find a parking space.

Rock down to ... electric avenue

Local carsharing club Co-wheels has two shiny new electric cars (and a hybrid) just waiting for whenever you need them – rather than your own car sitting costing you money when you don't. Co-wheels has teamed up with Glasgow City Council to put electric and hybrid cars to rent on the street and install chargers. At the moment the electricity is free. The electric cars are on Allison Street, Albert Avenue and Kenmure Street, and there is a hybrid car on Torrisdale Street. Electric vehicles don't emit fumes from burning petrol



Rent-a-bike (for Good)

Bike for Good don't just sell bikes, mend



cycling, walking and public transport the way forward and you can even visit www. travelinescotland.com/ and it'll work out the journey options and timings for you. Or check out our suggestions below to find out what's best, and let's all give the thumbs up to positive change.

or diesel. And, as we reported in the South Seeds Travel Times (available at southseeds.org), driving a car club vehicle for 5,000 miles a year can save you more than £200 annually over owning a car if you're not using it to commute.

www.co-wheels.org.uk/glasgow_ccc

bikes, and campaign on cycling issues – they even rent push bikes and electric bikes for FREE. They also have maintenance classes and support people to learn how to become a confident cyclist, and take up the mode of

transport so good for

you it's now being prescribed by GPs.

So, if you fancy giving cycling a whirl, get along to Bike for Good in Langside Lane. You won't look back. www.bikeforgood.org.uk



This newspaper is produced by South Seeds, an environmental and community action organisation based at 514 Victoria Road, Glasgow G42 8BG, with funding from the Glasgow Centre for Population Health. South Seeds is a Scottish charity (No. SCO42244)

