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# AIR QUALITY MONITORING PROJECT RESULTS

Monitoring primary school children's air quality in Liverpool

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CREDIT: DYSON

## Pleasant Street Primary School Liverpool

Between 7<sup>th</sup> March and 18<sup>th</sup> March 2022, 43 children from year 4 to year 5 at Pleasant Street Primary School measured the air pollution they were exposed to during their typical school week using a portable air pollution monitor inside a backpack.

➔ During this study and with the help of all of our young “air quality scientists”, we were able to:

**1.** Measure the levels of air pollution children are exposed to during a typical school week when travelling to and from school and while at school.

**2.** Highlight how the amount of pollution children breathe varies depending on how they travel to and from school, comparing travelling by car, bus or walking.

**3.** Identify places with relatively high levels of air pollution in the local area, which can then be avoided when walking, scooting or cycling.

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Although air pollution is potentially harmful to everyone, children are particularly vulnerable, due to their immature and developing immune system and lungs, lower body weight and relatively high inhalation rate<sup>1</sup>.

One of the main pollutants of concern in Liverpool, and which we measured during this study, are fine particles PM<sub>2.5</sub>.



CREDIT: DYSON

<sup>1</sup> Royal College of Physicians (2016) Every breath we take: The life long impact of air pollution.

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## → The local area

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Pleasant Street Primary School is located in central Liverpool. The school is situated in the heart of the city near roads which are often heavily congested.



Image capture: March 2022 © 2022 Google

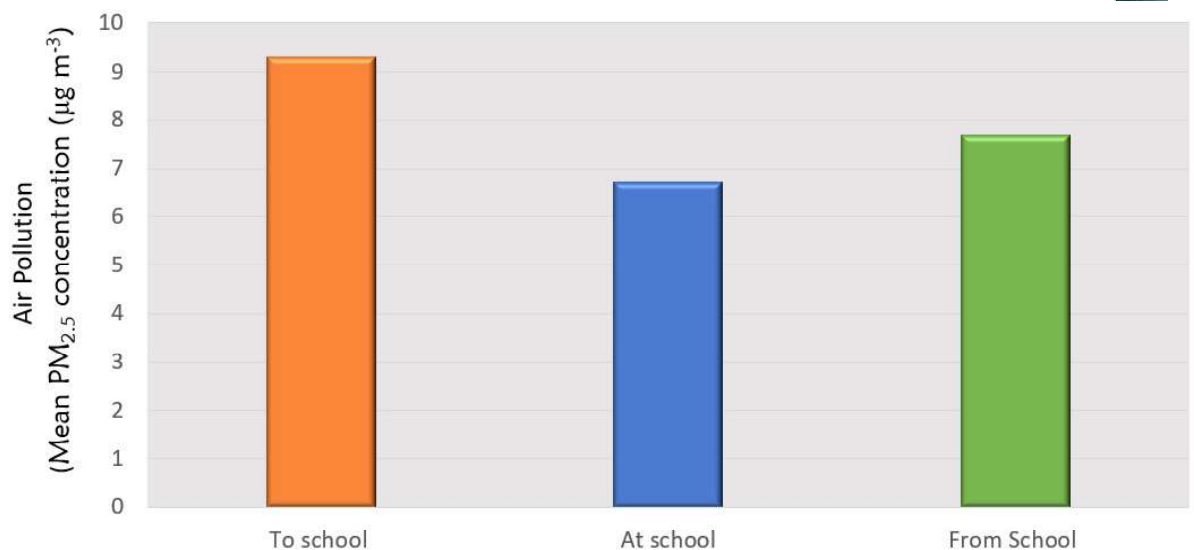
## → Child exposure to harmful pollutants during a typical school week

The monitors inside the bag gathered data from Monday morning to Friday morning.

We checked the  $PM_{2.5}$  average concentrations at the nearest long term monitoring site, Liverpool Speke during the period the children were conducting their measurements:

	Mean ( $\mu g m^{-3}$ )
$PM_{2.5}$ reference	8.1

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We found that during the monitoring week, on average, the children from Pleasant Street Primary School were exposed to levels of  $PM_{2.5}$  air pollution nearly 1.5 times higher when travelling to school in the morning than while at school. Levels were also higher during the afternoon journey from school.

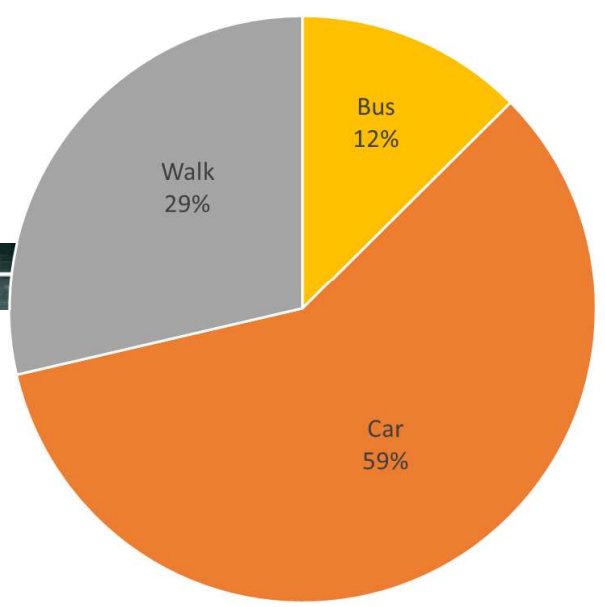
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→ Travelling to and from school

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As with the daily commute, travel to and from school usually occurs during the most polluted times of the day and can account for a large proportion of a child's daily exposure. During the monitoring week the 43 children that took part in this study carried out 255 journeys (including to and from school). We asked them to fill in a diary telling us which mode of transport they used to travel each of these journeys.

Travel modes to and from school

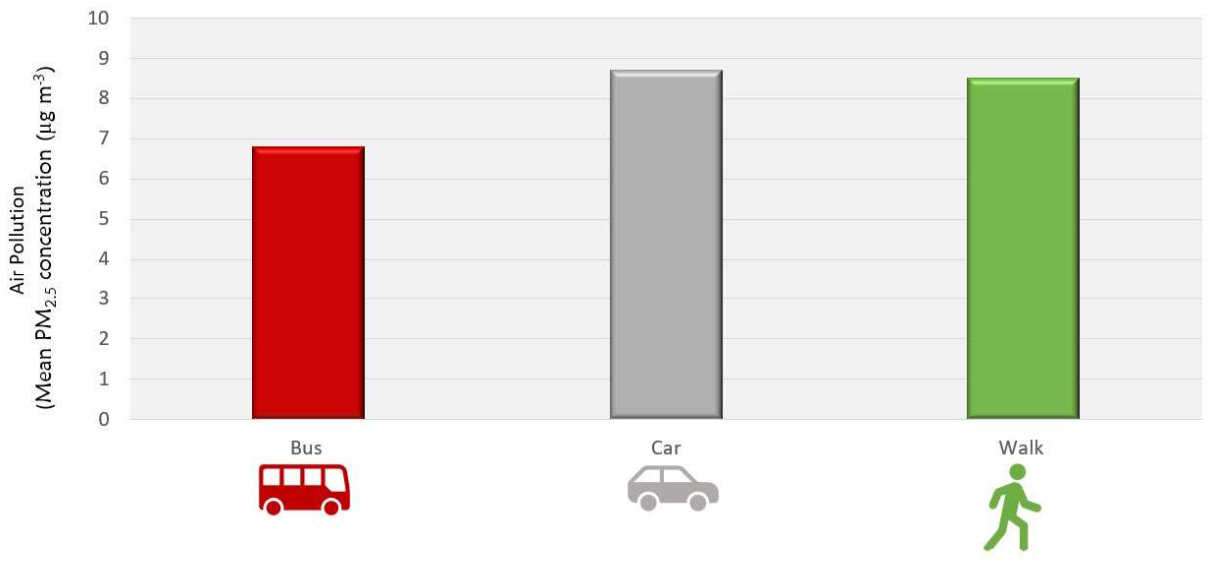


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Using the information from the diaries and the data from the backpacks, we identified that during the monitoring week, the children that travelled to and from school by car and walking were exposed to higher levels of air pollution than those that travelled by bus.

However, studies in other schools in Liverpool and the UK, have shown that walking to school will expose you/your child to lower levels of pollution than travelling in a car. Potential reasons why walking had similar exposures to cars in this study is due to the central location of the school where children need to walk on busy streets to get home.

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## → Places with high levels of air pollution in the local area

Map 1



Map 1 shows the PM<sub>2.5</sub> pollution measurements for one journey from school along Brownlow Hill and along Edge Lane. Grove Street and Edge Lane shows up as more polluted (red/orange dots), while parks and quieter roads are cleaner (green/yellow dots).

Sometimes quiet roads can show up as occasional red dots, as polluting vehicles drive past but they are cleaner on average.

## → What can we do to reduce children's exposure to air pollution?

- ⇒ Studies at other schools in the UK have shown that walking to school will typically expose you/your child to lower levels of pollution than travelling by car. Also try to use quieter streets when walking.
- ⇒ Walking or cycling to school will not only expose you/your child to less pollution, it will provide all of the benefits of exercise and expose your/their classmates to less pollution by improving air quality around the school.
- ⇒ If the school is close to a major road, ask what steps have been taken to protect pupils from air pollution in the school buildings and playground.
- ⇒ Ask if the school has a travel plan and check if it has consideration for active travel and local air quality.
- ⇒ If you do drive, close windows and vents when driving along busy roads or sitting in queuing traffic, while setting the car's ventilation system to recirculate.
- ⇒ To learn more about air quality in Liverpool visit <https://letscleartheairliverpool.co.uk/> and <https://kids.letscleartheairlcr.co.uk/>

If you have any questions regarding the air quality project at Pleasant Street Primary School or want to find out more, please contact [s.lim@imperial.ac.uk](mailto:s.lim@imperial.ac.uk) or [keith.dooley@liverpool.gov.uk](mailto:keith.dooley@liverpool.gov.uk)



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