

# Travel to shopping and leisure activities causes more air pollution than commuting

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Data analysis work conducted at the University of the West of England (UWE Bristol) reveals that Bristol car travel to shopping and leisure activities contributes more air pollution than through commuting and

business travel. It has also found that men contribute more road emissions than women.

The research assessed the role of people and society in creating pollution and is part of UWE Bristol-led ClairCity. This is an EU project that aims to raise awareness of air pollution and carbon emissions, and the impact on citizens' health in cities.

The team, also comprising Transport & Mobility Leuven, used innovative transport and emissions modeling integrated with travel survey data to examine data from the Bristol region and found that, looking across all ages, genders, and income brackets, over half of our emissions such as Nitrogen Oxides (NO<sub>x</sub>) and PM<sub>10</sub> (fine particles) come from trips to the shops or other activities not related to work such as restaurant outings.

Professor Enda Hayes of the Air Quality Management Resource Centre at UWE Bristol said: "The project has taken an innovative step of apportioning air pollution to people's day to day behaviors and activities by merging travel survey data with socio-economic and transport data. This gives us a much clearer insight into the motives behind the trips that we make, and raises awareness of our behavior and impact on pollution."

The project also took a closer look at who is creating the most emissions. It found that Bristolian men contribute 10% more to road NO<sub>x</sub> emissions than Bristolian women (40% vs 30%). This is largely because they use their car for commuting and business more than women. Both sexes contribute about the same NO<sub>x</sub> from bus trips.

Those aged 26-49 years old produce the most air pollutants through greater use of their cars for leisure activities and commuting to work, the research also found.

People with higher incomes travel more often by car than those from lower income households, resulting in higher emissions. The overall proportions for travel to each activity stays the same, but the amount of travel, and therefore emissions, increases. This means that richer people [travel](#) by car to more work locations, more [leisure activities](#), and more business trips.

Professor Hayes said: "Traditional air quality and carbon policy has often focused on addressing morning and evening commuting, but our evidence helps to paint a clearer picture of which societal activities produce which emissions, and how. By doing so, it may contribute to the air quality and [carbon policy](#) debate, by highlighting behavior in society as an important factor in achieving low carbon, healthy futures for our cities."

Air pollution causes five deaths per week in Bristol. Poor air quality disproportionately harms children and the elderly, causing respiratory diseases, cancer and heart conditions. Bristol City Council is legally required to reduce [air pollution](#) levels and has recently released a Clean Air Plan.

Reducing [carbon emissions](#) in cities is critical to achieve major cuts in carbon globally, so reducing climate risks. Bristol City Council and the surrounding authorities have pledged to be carbon neutral by 2030.

ClairCity has been involving city residents in future policy ideas since 2016. Policy suggestions will be combined with citizen preferences and aspirations, in order to generate sophisticated future scenarios that model the options available to each [city](#). This unique approach is raising awareness of air quality in our cities and ultimately allows us to work towards a future with clean air.

Provided by University of the West of England

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