

# Maths Research Tackles Problems of Bike + Car

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Influencing the commuter's choice between car and bike transport.

(PhysOrg.com) -- The efforts to get more people out of cars and on their bikes in the UK could be being hampered by Governments' own transport strategies, claims new research from the University of Derby.

Between 2008 and 2011 around £140m is to be spent in the UK by Cycling England, part of the Department for Transport, on trying to increase the number of people cycling.

Dr John Stubbs, University of Derby Senior Lecturer in Geography, has looked at official cycle and car usage figures from the last half-century. He says that a fundamental flaw in past and current national transport strategies indicates that the number of 'bike miles' travelled each year will continue to decline, and 'car miles' increase, unless there is a radical

shift in Government policy.

His argument is that by building new, or expanding old, roads at the same time as investing millions of pounds into promoting more cycling, successive Governments have been locked into a never ending circle.

This is summarised as:

- Governments invest in cycling to reduce traffic congestion and air pollution, and improve people's health;
- as cycling facilities improve, data shows it is more likely that commuters will choose to cycle rather than drive for their journey;
- more people cycling, and parallel UK investment in building new roads or expanding old ones, increases the available road space, again making car travel more attractive;
- commuters are then more likely to choose the convenience of the car for their next journey, again increasing traffic congestion.

His research was presented for the first time on Wednesday night (October 14) at a free public lecture at the University's Kedleston Road site, Derby. It is one of a series of talks arranged by the East Midlands' Branch of the national Institute of Mathematics and its Applications.

Dr Stubbs, who is a cyclist, said: "By trying to improve cycling and car use at the same time, you effectively ensure that cycling will always lose out.

"There is the immense difficulty for any Government in deciding to get out of this vicious circle by drastically cutting back on its roads investment, with plenty of people ready to say it would harm the

economy. But how much is traffic congestion costing the UK every year?

He added: "My intention with this research is not to 'bash the car driver' but the beauty of taking a mathematical approach to this problem, looking at Governments' own figures from the last 50 years, is that the results are there for anyone to see.

"You could be a confirmed car driver, and not particularly environmentally minded, and still be convinced by the argument that something needs to change."

Worryingly, Dr Stubb's analysis of past data from official sources such as the Department for Transport shows that cycling could decline ever faster as car usage grows in future, if a fresh approach is not taken.

Starting from known 2008 figures of 401.7 billion kilometres (billion km) travelled by car and 4.7 billion km by bike in the UK, he estimates that by 2025 that split, measured in kilometres travelled, could have widened to:

- 478.8 billion km travelled by car and 4.1 billion km by bike (lowest estimate);
- 546.7 billion km travelled by car and 3.9 billion km by bike (mid-range estimate);
- 656 billion km travelled by [car](#) and 3.8 billion km by bike (highest estimate).

(This compares with the Department for Transport's own estimate for 2025 of a total 518.9 billion kilometres being travelled by cars, in the UK).

His research concludes that any future [Government](#) may have to return

to so far controversial ideas of managing people's demand to use the road - possibly through a combination of road pricing and congestion charges - while continuing to make other modes of transport, such as [cycling](#), more attractive, perhaps through financial incentives similar to the current Cycle To Work scheme (which enables employees to buy a new bike tax free).

Provided by University of Derby

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