

# Behavioural economics can nudge pilots into boosting fuel and carbon efficiency, finds Virgin Atlantic study on GreenAir Online

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Fri 24 June 2016 – Behavioural economics could be one of the most cost-effective ways of achieving fuel and carbon efficiency savings from airlines, finds an academic study involving Virgin Atlantic captains. Working with research economists from the University of Chicago and the London School of Economics, the airline’s fuel efficiency and sustainability teams developed a process that increased the awareness of Virgin’s 335 captains of the measures they could take to improve fuel efficiency through three sets of behaviours: take-off, in the air and upon arrival. As part of the eight-month study, captains were randomised into one of four groups, including one ‘business as usual’ control group and three active intervention groups. Data from more than 42,000 flights was independently analysed, and the result was fuel savings of £3.3 million (\$4.5m) at 2014 prices and CO2 emissions reductions of 21,500 tonnes.



“When the university team approached us about doing an evidence-based employee engagement study on sustainability, we saw it as a fantastic opportunity to work more effectively with our pilots on fuel and carbon efficiency,” said the airline’s Head of Sustainability, Dr Emma Harvey, herself a former academic in this area.

Improving fuel and carbon efficiency has been its top environmental policy, says Virgin Atlantic, since establishing the ‘Change is in the Air’ sustainability programme in 2007 and this has included having standard operational procedure (SOP) information for fuel efficiency in pilot manuals. The airline also uses a fuel

monitoring system provided by Rolls-Royce Controls and Data Services, which has enabled it to more accurately calculate the savings from more efficient A330 and B787 aircraft coming into the fleet. Optimising the way aircraft are flown can also increase efficiencies and pilots routinely receive information on efficient operational techniques. However, the airline says it has been exploring for some time on how to engage with pilots on making best use of the opportunities available.

“Every airline is looking for ways to improve fuel efficiency and working with the university team was an opportunity for us to use our data differently and engage with our captains in a way we hadn’t before,” said Claire Lambert, Fuel Efficiency Manager for Virgin.

In the study, the ‘business as usual’ control group (Group 1) continued receiving standard fuel efficiency information in the usual way. The other three groups (Groups 2, 3 and 4) were sent information on the three sets of behaviours once a month by post, along with personalised feedback about their fuel efficiency practices. However, Group 3 was additionally given targets to aim for and Group 4 was given targets but also with the promise of being able to donate a sum to a charity of their choice if the targets were met.

Analysis found that just by being involved in the study, significant changes were observed across all three behaviours in all four groups. This is a well-documented social phenomenon known as the Hawthorne effect where people change their behaviours as a function of being observed. The study concludes that just raising awareness among pilots is enough to drive changes and an anonymised post-study satisfaction survey showed 81% of those captains responding indicated they would like more fuel efficiency information in the future.

Tailored information with targets and feedback was the most cost-effective intervention, improving fuelling precision, in-flight efficiency measures and efficient taxiing practices by 9% to 20%. Contrary to expectations based on prior studies, charitable contributions for meeting targets did not induce greater effort than personalised targets, but captains in this group reported 6.5% higher job satisfaction than captains in the other groups.

Prior to the study, pilot managers, union representatives and a specialist group of experienced captains were consulted and involved in tailoring its design. “It’s clear captains are happy to be involved in fuel efficiency if it’s approached in the right way,” says the airline. “Now the study analysis is complete, we will be exploring with pilots ways to build on these exciting results.”

At the time of the study, captains received monthly feedback by post but with recent upgrades to the Rolls-Royce CDS system and the introduction of iPads to all pilots, information can now be made in a more timely and targeted way. It is also likely, reports Virgin, the approach will be rolled out to all pilots and across a wider range of SOPs that have an influence on fuel and carbon savings, as well as other areas of the business.

The research speaks to many fields within economics, say the authors of the study. “It demonstrates the potentially large effects behavioural research can have in providing crucially important win-win solutions for the economy and environment,

by improving existing efficiency opportunities in the workplace,” said Dr [Robert Metcalfe](#), economics research scholar at the Becker Friedman Institute, University of Chicago.

“This inexpensive and scalable strategy represents a feasible and cost-effective way to help airline captains use standard fuel efficiency information in a more effective way.”

Links:

[Virgin Atlantic – Details of study](#)

[National Bureau of Economic Research – Academic paper](#)

[The Undercover Economist – ‘How to fuel a rewarding culture’](#)

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