NEW ECONOMICS FOUNDATION

The economic impact of restrictions on night flying: A review and new evidence

Consultation submission | Dr Alex Chapman | September 2021

Key points

- NEF reviewed York Aviation's report 'The Economic Impact of Night Flying in the UK' identifying significant flaws. We present an alternative narrative on the economic impact of night flying policy changes grounded in the latest academic research and government policy and data.
- York Aviation's assessment of the economic impacts of night flying policy changes is incomplete, missing critical economic impacts in the domains of noise, greenhouse gases, and outbound tourism.
- Benefits in the form of reduced costs of monetised noise and greenhouse gas emissions estimates are likely to more than offset all of the direct costs presented by York Aviation in relation to restricted night flying.
- Benefits to the UK's balance of trade resulting from reduced outbound tourism are not quantified by York Aviation, and would further improve the net economic impact of new restrictions on night flying. These impacts would additionally align with the UK government's strategic objective of improving the relative performance of domestic versus international outbound tourism.
- Claims around direct job losses resulting from curtailment of night flying are likely overstated and do not align with the latest government jobs data from the aviation sector.
- NEF present evidence of a system shift in the business air travel-economy relationship. The business air travel intensity of the UK economy is now in decline and the sector is almost certain to shrink long-term after the Covid-19 pandemic. A robust and conservative assessment of the business impacts of night flying policy changes would lead to a zero-impact conclusion.
- York Aviation's estimates of business productivity impacts ('wider impacts') are dramatically overstated, out of step with the latest academic research, and contain methodological vulnerabilities which have not been sensitivity tested.

Introduction

The New Economics Foundation conducts research, policy impact analysis, and consultancy on economic issues in the aviation sector. NEF have conducted a short, rapid review of the York Aviation report titled 'The Economic Impact of Night Flying in the UK' published in July 2021 which was commissioned by Airlines UK and submitted to the government's consultation on night flying. The aim of the report is stated as *"to undertake an assessment of the economic impact of night flying in the UK" (p.1)*.[1] For simplicity we focus exclusively on York Aviation's 'Scenario 1' economic modelling outputs. This is their most extreme scenario, in which all night time flying is banned. York Aviation forecast a decline in UK passenger departures of 20.7 million passengers per year. Three other policy options are explored with lower but still negative impacts on UK passenger departures, for which economic impact estimates might be revised down proportionately. This review was supported by the Aviation Environment Federation (AEF).

Scope of the assessment

The primary purpose of York Aviation's report is stated as *"to update, refresh and extend previous research undertaken in this area to provide a strong evidence base as to the economic benefits associated with night flying that will assist policy makers and other stakeholders in making informed judgements around future night flying policy." (p.1).* It should be noted that the purpose of this report is specifically to present evidence on the "economic benefits" of night flying. The report does not assess the economic costs of night flying and therefore none of the numbers included in the report represent the net economic impact of policy changes in the night flying arena.

Missing impacts

The report from York Aviation misses three critical costs which would need to be included in order for a net economic impact estimate of changes in night flying policy to be deduced. This includes (i) monetised noise impacts, (ii) greenhouse gas emissions estimates, and (iii) changes to net flows of tourism spending. York aviation specifically recognise this deficiency in their analysis where they state: *"York Aviation and the project sponsors recognise that there are potentially significant societal costs from night flying, particularly from noise, and that these are vital considerations in the Balanced Approach." (p.9)*.

[1] York Aviation (2021) The Economic Impact of Night Flying in the UK.

The cost of noise and greenhouse gases

A full assessment of noise and carbon costs was not in scope of this submission. However, for indicative purposes we can refer to existing assessments of monetised noise and greenhouse gas impact.

Monetised noise

A reduction in night time air traffic movements will result in a decline in night time noise impacts. Modern policy analysis takes consideration of this impact, and monetisation approaches are commonly used, as recommended in the Government's Green Book and Transport Analysis Guidance (TAG).

The DfT have estimated that the net present value (NPV) of noise impacts from the proposed expansion of Heathrow Airport up to the year 2084/85 is around -£600m to -£1bn in 2014 prices. This equates to an annual value of around £20m to £40m. However, only a small proportion of the proposed flights at Heathrow would take place during night time hours. As the negative noise impacts of flying are concentrated in the night time period, a full assessment of the noise impacts of the policy under consultation would lead to a significantly higher estimate. It is possible that a full assessment of the direct noise impacts of Scenario 1 would estimate monetised noise impacts at well over £200m per year. This benefit will be realised predominantly in the forms of avoided healthcare costs resulting from avoided health impacts such as stroke, and improved productivity, but broader impacts on individual mental wellbeing must be considered. Very high certainty can be placed on the conclusion that monetised noise impacts are material, and likely to significantly offset the direct economic losses claimed by York Aviation. It is imperative that the true noise cost be robustly modelled and factored into the economic analysis underpinning the policy consultation.

Monestised greenhouse gas

Policy impacts on greenhouse gas emissions resulting from aviation should be modelled and monetised. Guidance from HM Treasury, DfT, and BEIS is explicit in this regard. It is also critical to note that the significant majority of greenhouse gas emissions costs are not currently internalised within the aviation sector. Gaps and giveaways in current carbon charging legislation mean that no payment is presently made by aviation sector businesses for over 90% of operational emissions. Carbon costs are therefore presently borne by wider UK society. A reduction in air traffic movements equivalent to a reduction in passenger numbers of 20.7 million will significantly reduce greenhouse gas emissions. Modelling by NEF published in 2021 indicates the relative magnitudes of greenhouse gas emissions costs

for different airport expansion schemes.[2] BEIS have since updated their carbon values, with a very significant upwards revision.[3]

Using the underpinning modelling we can provide indicative estimates of the monetised carbon impact of a reduction in UK passenger numbers of 20.7 million. Using the new BEIS 'Central' carbon values schedule we can estimate that the direct air travel carbon emissions of 20.7 million passenger departures would have a value in the order of £400m - £500m in the year 2030. Applying the BEIS multiplier for non-CO_2 emissions increases this value to an indicative estimate of £800m - £1bn per year. Higher estimates would be derived if changes to arriving flight numbers were also accounted for or if the higher multipliers for non-CO_2 effects indicated by recent research were applied.[4] In summary, the value of carbon emissions avoided is material, and likely of significant magnitude to cancel out a large proportion of the direct economic benefits claimed by York Aviation.

Over-claimed jobs impacts

The majority of the jobs impact estimated by York Aviation is associated with jobs in the 'wider impacts' category. These jobs are simply derived from the productivity (GVA) estimates calculated from business impacts, these are addressed in the subsequent section. The remaining jobs impact comes from changes in direct, indirect, and induced jobs.

The Business Register and Employment Survey suggests there were 139,000 jobs linked to aviation in the UK economy in 2019, inclusive of air cargo jobs.[5] In the same year there were 300 million passenger departures according to Civil Aviation Authority data. This implies at the UK level there were 463 aviation sector jobs per million passenger departures. York Aviation predict a loss of 16,000 direct jobs will accompany a change in passenger departures of 20.7 million. This implies 773 jobs per passenger. The methodology applied by York Aviation to calculating direct job losses is not clear, and no explanation is apparent as to why the job rate is 67% higher than that achieved by the sector at-large. It is possible that

[2] NEF (2021) Turbulence Expected: The Climate Cost of Airport Expansion. New Economics Foundation

[3] https://www.gov.uk/government/publications/valuing-greenhouse-gas-emissions-in-policy-appraisal/valuation-of-greenhouse-gas-emissions-for-policy-appraisal-and-evaluation

[4] Lee, D. S., Fahey, D. W., Skowron, A., Allen, M. R., Burkhardt, U., Chen, Q., Doherty, S. J., Freeman, S., Forster, P. M., Fuglestvedt, J., Gettelman, A., De León, R. R., Lim, L. L., Lund, M. T., Millar, R. J., Owen, B., Penner, J. E., Pitari, G., Prather, M. J., … Wilcox, L. J. (2021). The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. Atmospheric Environment, 244, 117834.

[5] SIC codes: 51101 (scheduled air passenger transport), 51102 (non-scheduled air passenger transport), 51210 (freight air transport), 52102 (operation of warehousing and storage facilities for air transport services), 52230 (service activities incidental to air transportation), and 52242 (cargo handling for air transport activities)

York Aviation have considered jobs which fall outside of the six aviation sector BRES codes to be in scope of the 'direct jobs' calculation. This however, would likely double count jobs which are being captured in the 'indirect and induced' categories, which are presumably (although again it is not clear) calculated using a multiplier.

A final consideration relevant to the jobs issue is that of displacement. Of a potential 20.7 million passengers who are forecast by York Aviation not to fly, a significant proportion would likely spend their travel fare on other services in the UK economy. This in turn would produce jobs in other areas of the economy, such as in domestic tourism. A similar process could also occur through the relocation of spending by outbound international tourists from overseas destinations to UK destinations. The DfT's TAG guidance recommends a default assumption of 100% displacement.[6]

York Aviation's job estimates are only calculations of aviation-sector related job impacts, and not 'system level' job changes. It seems highly likely that the job numbers presented by York Aviation are overstated and that at the UK level, changes in job numbers would be much less pronounced.

Outbound tourism

The largest component of the UK aviation passenger market is that of outbound international tourists. As has been well documented, the UK has a significant travel spending deficit, leading to more money being spent overseas by UK residents than is spent within the UK by visiting overseas residents. The single largest impact of a reduction in passengers resulting from a night flying policy change would be a reduction in outbound international tourists. This would act effectively to reduce the UK's trade deficit and increase the amount of money available to be spent domestically in the UK. It would be possible to quantify this impact, but York Aviation have chosen not to do so, thereby undermining the completeness of their economic assessment.

It is important to note that a reduction in outbound tourism and consequent reduction in spending overseas would be well aligned with the government's objectives for UK tourism at-large. Since 2011 the UK has had a clear strategy in favour of incentivising uptake of domestic tourism by UK residents. Indeed the DCMS 2011 Tourism Strategy explicitly states a desire to balance the proportion of inbound and outbound international tourists.[7]

"we must create an underlying trend of rebalancing this area of the visitor economy. There will be big variations from year to year but, over time, our goal should be to persuade more of us to holiday at

[6] TAG (2018) Transport Analysis Guidance (TAG) Unit A2.1 ' Wider Economic Impacts Appraisal'.
[7] DCMS (2011) Government Tourism Policy. Department for Culture, Media, and Sport

home. In measurable terms we should increase the proportion of UK residents who holiday in the UK to match those who holiday abroad each year"(p.16)

This sentiment is matched in more recent government policy documents. The UK Government's 2021 Tourism Recovery Plan[8] has a key focus on improving the competitiveness of domestic tourism against outbound international tourism, stating its objective:

"Whilst leisure travel and overnight stays in self-contained accommodation have been permitted in England since 12 April, the return to outbound tourism was not permitted until 17 May and various restrictions on overseas travel remain in place even now. The UK government wants to embrace this opportunity by boosting domestic demand, making domestic stays attractive and marketing the UK's assets…

Whilst the outbound travel market will thankfully return as people start to book their holidays overseas, the government also wants to embed domestic travel as a sustained customer behaviour – ensuring not only that people enjoy the Great British Summer in 2021 but that people who take domestic trips across the UK this year do so again and again in years to come" (p.33)

Given the importance of these objectives in UK Government policy, a holistic assessment of night flying policy impacts would quantitatively assess the relative impacts of reductions in outbound tourist trips on the UK's tourism economy and balance of trade.

Over-claimed wider impacts (business impacts)

So-called 'wider impacts' constitute the large majority (over 80%) of losses forecast under York Aviation's night flying policy scenarios. These impacts relate to the somewhat nebulous concept of 'business productivity' as measured in GVA. York Aviation's modelling is heavily dependent on these estimates because, as demonstrated above, their 'direct' benefits are likely to be cancelled out by noise and carbon impacts.

The calculation of business benefits can broadly be summarised under two key steps (i) the calculation of how many business passengers will fly and (ii) the calculation of the relative impact of those trips on the UK economy. Each step is associated with an elasticity which first (i) connects UK economic activity with demand for business air travel and then (ii) connects business travel with its impact on UK economic activity. This reciprocal relationship means accurate assessment is fraught with difficulty and understanding causality can be very difficult. The York Aviation estimate is highly unrealiable for a number of reasons.

[8] DCMS (2021) The Tourism Recovery Plan. Department for Digital, Culture, Media & Sport.

Reliance on non-peer reviewed evidence

The absence of academic research underpinning the economic claims made in York Aviation's submission is conspicuous. York Aviation's Figure 2, which presents their overall economic impact estimates, highlights some very large claimed impacts under the category 'wider impacts'. It is vital to note that these figures are wholly dependent on an 'elasticity' which derives from a 2013 Oxford Economics study.[9] While many other pieces of data, from official sources, are inputs to the model, it is this elasticity which converts business air travel into 'wider impacts' on GVA. The precise value of this elasticity it vitally important to the outcome, or in other words, the claimed economic impacts are highly 'sensitive' to this value.

Oxford Economics' elasticity does not derive from peer reviewed academic research, and no such evidence is presented in support of the elasticity used. Nor, to our knowledge, has the elasticity been subject to any independent evaluation, and critically, no evaluation has been undertaken which consider shifts in recent years which suggest business air travel and GDP growth have de-coupled (discussed in detail later). Indeed, the conclusions drawn by the Oxford Economics study are very different from those drawn by many peer reviewed academic studies.

In the academic literature there is a general consensus that during a certain, early, phase of a country's development, air passenger growth can support GDP growth. However, there is growing academic evidence that these effects weaken as a country becomes more developed and more connected.[10] Many studies have struggled to identify a causal relationship between higher air passenger numbers and increased GDP growth in more developed nations,[11, 12] including in samples inclusive of UK data.[13] Some studies have even found a negative relationship[14] with others suggesting this may link to the extractive impacts of

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[9] Oxford Economics (2013). Impacts on the UK Economy through the Provision of International Connectivity.
[10] AitBihiOuali, L., Carbo, J. M., & Graham, D. J. (2020). Do changes in air transportation affect productivity? A cross-country panel approach. Regional Science Policy & Practice, 12(3), 493–505.
[11] Mukkala, K., & Tervo, H. (2013). Air Transportation and Regional Growth: Which Way Does the Causality Run? Environment and Planning A: Economy and Space, 45(6), 1508–1520.
[12] Rashid Khan, H. U., Siddique, M., Zaman, K., Yousaf, S. U., Shoukry, A. M., Gani, S., Sasmoko, Khan, A., Hishan, S. S., & Saleem, H. (2018). The impact of air transportation, railways transportation, and port container traffic on energy demand, customs duty, and economic growth: Evidence from a panel of low-, middle-, and high -income countries. Journal of Air Transport Management, 70, 18–35
[13] Küçükönal, H., & Sedefoğlu, G. (2017). The Causality Analysis of Air Transport and Socio-economics Factors: The Case of OECD Countries. Transportation Research Procedia, 28, 16–26.
[14] Sahin, O., Can, N., & Demirbas, E. (2019). The Effects of Infrastructure Determinants on Economic Growth: European Union Sample. Eurasian Journal of Business and Economics, 7(13), 11–27.

aviation in regions with a heavy bias towards outbound tourism.[15] Other studies suggest that transportation intensity has reached "saturation" in many developed nations and as such the causal relationship between incremental changes in air travel and economic growth has broken.[16] Given the significant concerns about the credibility of the modelling in the Oxford Economics paper, York Aviation's total reliance on its output, and lack of any sensitivity testing around its value, very limited weight should be placed on any related outputs.

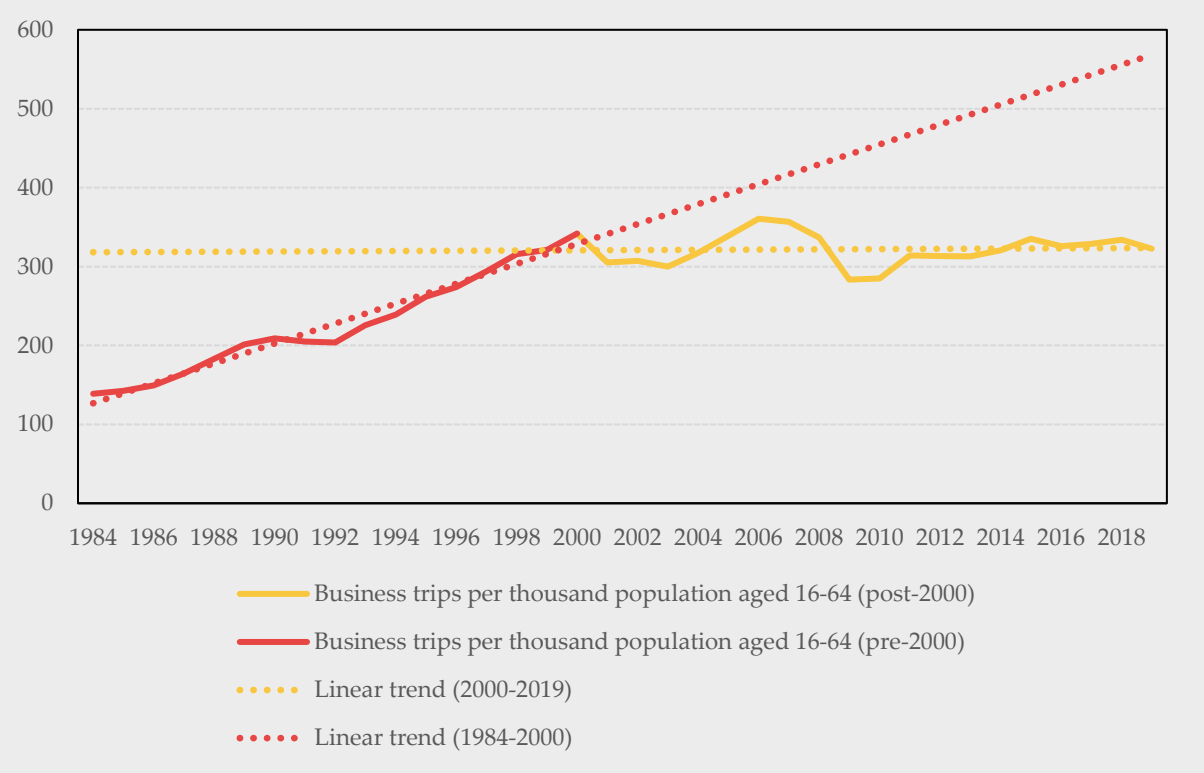
A system shift in the business travel-economy relationship

A second major concern with the assumptions underpinning York Aviation's business impacts (wider impacts) estimates is that they are out-of-date, and fail to capture important recent changes in the business air travel-economic growth relationship. A key consideration regarding the validity of the Oxford Economics elasticity is the period of UK economic history over which it was calibrated, 1980-2010. Using an elasticity calibrated using data from this period means assuming that the future relationship between business air travel and economic growth will mirror that seen over this 30 year period. We already have concrete evidence that this is not the case. New NEF analysis, scheduled for publication in late 2021, highlights that a tipping point has already been passed and business air passenger growth and economic growth have now decoupled.

The first 'tipping point' evidenced in data collected by the Office for National Statistics and analysed by NEF is in 'business air trip intensity'. Between 1984 and 2000 the number of business air travel trips taken per working age adult in the UK was growing rapidly. Around the year 2000 something changed, and the rate of trips per working age adult ceased growing (**Figure 1**). Our second 'tipping point' is estimated to take place after the financial crisis of 2007/08. Between 1984 and 2006 business air visits were rising rapidly relative to GDP, reflecting growing air-travel intensity of the UK economy. After 2006 an opposite trend emerges of declining business air travel usage relative to GDP (**Figure 2**). This clear reversal signals declining dependence of the UK economy on air travel and likely links to the rise of online communication and changes in the structure of the UK economy.

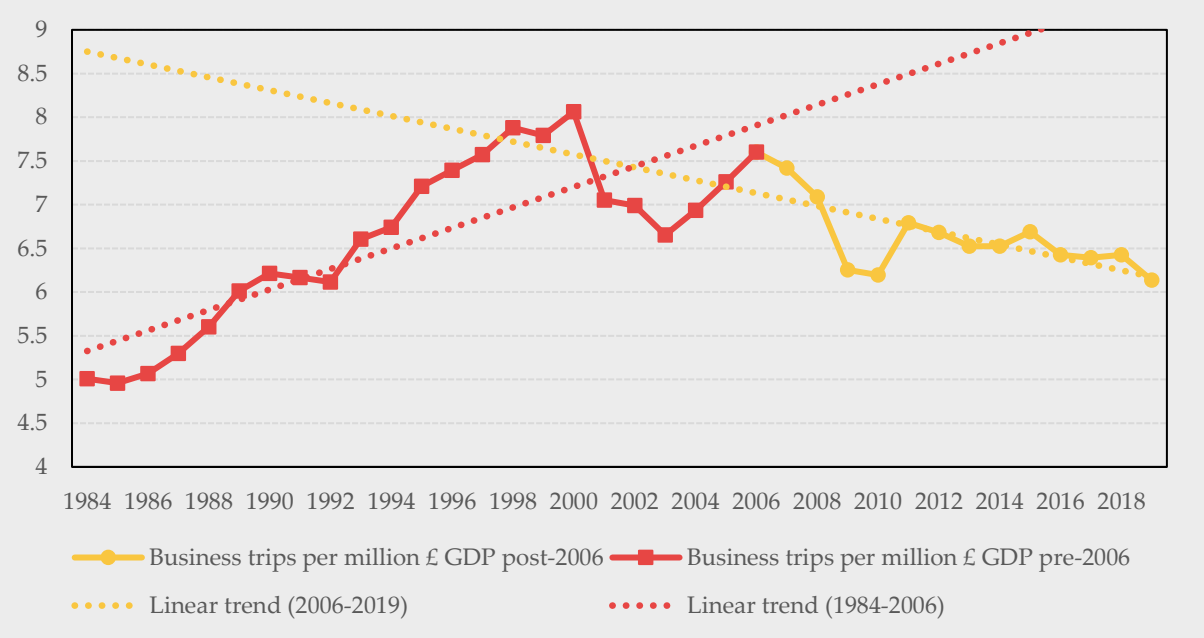
[15] Allroggen, F., & Malina, R. (2014). Do the regional growth effects of air transport differ among airports? Journal of Air Transport Management, 37, 1–4.
[16] Arvin, M. B., Pradhan, R. P., & Norman, N. R. (2015). Transportation intensity, urbanization, economic growth, and CO2 emissions in the G-20 countries. Utilities Policy, 35, 50–66.

Figure 1: Trends in business air trips per thousand population aged 16-64



Source: Office for National Statistics, Travelpac and LFS

Figure 2: Trends in business air trips per million GDP



Source: Office for National Statistics, Travelpac and LFS

York Aviation have failed to provide an adequate explantion of how they calculated the number of business flights which will not take place as a result of their proposed night flight policies. Footnote 13 hints at how York Aviation calculated the number of business passengers and the amount of cargo currently moved at night, but no explanation is given on the treatment of displacement under each policy option. York Aviation have also declined to state what they expect will happen with the demand for business air travel moving forward.

Upcoming NEF analysis suggests it is highly unlikely that business air travel demand will return, long-term, to its peak in 2006. Our upcoming forecast will suggest that the most likely outcome is a very short-term boost in business air travel, as pent-up demand is satisfied, followed by a levelling off of business air travel demand with absolute passenger numbers at least 10-20% lower than pre-crisis. Our estimate is widely supported by aviation sector executives, consultants, and think tanks.[17] A survey by Bloomberg News suggested 84% of international large businesses intend to spend less on travel after the pandemic, with a typical reduction in spending of around 30% expected.

It is difficult to guage the overlap between the ongoing and expected loss of business air travel demand due to structural shifts in the economy, and the loss which would result from a change to night flying policy. A conservative assumption would be that the overlap is total, and therefore the policy changes proposed would result in zero loss of business air travel.

An additional factor supporting the conclusion that the business passenger impact of the proposed policies would be very low is the tendency of business passengers to be less price sensitive than leisure travellers. Indeed, analysis for the DfT has suggested that when business air travellers were asked what they would do if their chosen flight was not available, 80.4% would still travel by air on a different flight.[18] It is impossible to assess whether York Aviation's modelling is compatible with these findings. However, it is virtually certain that York Aviation's estimates of the Wider Impacts of the proposed policies are grossly overstated.

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[17] Bloomberg News (2021) Forever Changed': CEOs Are Dooming Business Travel — Maybe for Good. Bloomberg News, 31st August 2021. URL: https://www.bloomberg.com/news/features/2021-08-31/will-business-travel-come-back-data-show-air-hotel-travel-forever-changed

[18] DfT (2018) Dynamic surveying for aviation: Business passengers. Department for Transport

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