UNIVERSITY OF
FORWARD
THINKING
WESTMINSTER⌗

WestminsterResearch

http://www.westminster.ac.uk/westminsterresearch

Limits to air travel growth: the case of infrequent flyers

Graham, A. and Metz, D.

LIMITS TO AIR TRAVEL GROWTH: THE CASE OF INFREQUENT FLYERS

AUTHOR DETAILS

Dr Anne Graham (*)
University of Westminster,
35 Marylebone Road
London NW1 5LS
UK
Tel: + 44 (0)20 3506 6655
e-mail: grahama@westminster.ac.uk

Dr David Metz,
University College London
Gower Street
London WC1E 6BT
Tel: +44 (0)20 7679 2000
e-mail: david.metz@ucl.ac.uk

(*) Corresponding Author

1

LIMITS TO AIR TRAVEL GROWTH: THE CASE OF INFREQUENT FLYERS

Abstract

Most air travel forecasts predict a long-term rise in demand, with limited consideration of any limits to growth. However for any given population there will be those who have not flown recently ('infrequent flyers'), as well as non-flyers, and little is known about these and whether they are likely to fly in the future. The aim of this paper is to analyse the characteristics of these groups and the reasons for their travel habits, using the UK as a case study. The findings show that infrequent flyers make up a heterogeneous consumer group whose non-flying is influenced more by budget constraints and personal circumstances than specific aviation factors. Comparisons with Belgian, German and Dutch infrequent flyers indicate some similarities, although there are differences in the relative importance of the reasons for not flying. The findings have implications for the aviation industry and regulators, and policy areas related to consumers and climate change.

Keywords: Air travel, frequency, non-flyers, demand, UK

1. Introduction

Forecasts of international air travel project substantial growth. For instance, Boeing (2015) is predicting an average annual growth rate in passenger numbers of 4.0% until 2034. After many years of relatively steady growth, most forecasts assume that past traffic patterns and the relationship with key factors, such as economic growth, can be extrapolated into the future. There are, however, considerations that raise questions about the validity of this conventional wisdom and the implicit assumption that attitudes and behaviour do not change except when driven by these factors. This could have major implications for critical issues such as airport congestion and capacity, and policy areas related to consumer and climate change.

Air travel growth can occur when existing passengers fly more often and/or when new passengers travel for the first time. It is usually assumed that in developed economies growth will predominately come from existing passengers who desire to travel more, whereas in emerging economies growth arises predominantly from new passengers, as the result of growing incomes and greater accessibility to air transport. For this reason the limited research concerning limits to air travel growth has focused primarily on considering the amount of travel undertaken by current regular flyers in the future, particularly in relation to concepts such as market maturity and saturation. Little attention has been given to people who are presently not flying or flying infrequently, the factors that influence these habits, and whether such people will fly more regularly in time to come.

Any group of infrequent flyers – defined as those who did not fly in any twelve-month period - is certain to be heterogeneous. Some people have never flown; some have flown rarely or occasionally; others will regularly take annual holidays by air but may have missed a year for a particular reason such as illness; and for some the interval between annual holiday trips on occasions will be greater than 12 months. Some current infrequent flyers may have flown regularly in an earlier phase of life. Journey purpose is bound to have a major impact since people who travel on business are rarely infrequent flyers.

There are many factors influencing the decision to not fly. These are likely to include the cost (of both the air travel itself and the whole trip) in relation to income; anxieties about safety and security of air travel; consumer needs; inconvenience of air travel compared to other modes and the influence of disruptions; accessibility issues; concerns about the environmental impact of aviation; airport specific factors; and attitudes towards travel generally. A further issue to consider is the level of knowledge that consumers have concerning air travel and whether this has an influence over flying decisions.

Therefore the aim of this paper is to analyse the characteristics and attitudes of infrequent flyers using recent UK survey findings. The following three objectives have been formulated to achieve this aim:

1. To examine the main characteristics of UK infrequent flyers;

2. To assess the main factors affecting decisions not to travel by air by UK infrequent flyers;

3. To explore possible future air travel patterns of current UK infrequent flyers.

In order to assess the uniqueness of the UK case, some comparative analysis has also been undertaken with Belgian, German and Dutch infrequent flyer data.

In the next section a discussion is provided of the key issues related to limits to air travel growth to provide the context for this research. Section 3 describes the scope of the study and data sources. The next two sections present the findings, firstly for the UK and then for the comparator European countries. Section 6 discusses these findings and then the final section concludes.

2. Factors that may limit growth of air travel

There is only limited research related to limits to air travel demand and most of this is linked to concepts such as market maturity and saturation. The basis for this is that the growth in demand for products and services generally can be characterised by three lifecycle phases: low growth following initial introduction with limited consumer awareness and supply; followed by rapid growth as the product achieves greater market awareness and supply expands to fill the new market; and finally slower growth once the product has become established and the market matures and then eventually approaches saturation. It is usual for the rate of growth during the rapid growth phase of the lifecycle to be faster than the rate of growth of the economy as a whole, a situation which cannot persist indefinitely, and hence a transition to slower growth is inevitable.

Thus, in relation to air transport and in very simplistic terms, market maturity is usually characterised by declining growth rates of air travel whereas saturation can be considered to exist if there is no further growth. Graham (2000) suggested a theoretical five stage model of maturity and saturation using income elasticities, with stage 4 (full maturity) when the elasticity is 1, and stage 5 (saturation) when the elasticity value is 0. Vedantham and Oppenheimer (1998) outlined a four stage model, namely latent demand (high growth rates), continual expansion (high growth rates), modal shifts (where aviation is the most efficient means of transport for consumers) and eventual maturity (when low growth rates appear). With their base-demand forecasts, they predicted that maturity would be reached by 2010 for

industrial economies, 2030 for newly industrialized economies, 2040 (post-communist economies), 2050 (rapidly developing economies) and 2060 (slowly developing economies).

Clearly the propensity to fly varies with the market, depending on a variety of factors such as income and economic health, demographic changes, geographical features and competition. . The International Air Transport Association (IATA) (2014) found that in 2013 the average air trips per passenger per year was 1.48 for those with high income, 0.29 for middle-income passengers but only 0.04 for those with low-income. For the same year Airbus (2014) estimated that the equivalent figure for passengers originating in perspective regions ranged from 1.59 in North America, 0.99 in Europe, 0.38 (Middle East), 0.36 (Latin America and the Caribbean), 0.25 (CIS), 0.24 (Asia/Pacific) and only 0.06 in Africa. By 2033 it forecast that the relative ranking of the regions would remain the same but as the result of more flying (assumed to be primarily in developed regions such as North America and Europe) combined with a larger proportion of new flying population (assumed to be in more emerging regions) these average figures were estimated to grow to 2.14 in North America, 1.87 in Europe and in the range of 0.6-1.0 for all the other regions except Africa (which was still expected to have a lower than average value of 0.13).

Propensity to fly will not increase indefinitely but will taper off as the market reaches maturity and approaches saturation. Morphet and Bottini (2014) assumed that market saturation will occur with 2-2.5 trips per capita for non-isolated markets, which were defined as countries where alternative transport modes are available. For isolated markets, for example small islands, where other modes of transport are not available or competitive, or where the market is artificially boosted by connectivity provided by a major hub, more than twice this value was assumed to represent saturation. Specifically for the US, analysis undertaken by Federal Aviation Administration (FAA) staff suggested that the US domestic market for air travel was nearing saturation, which was expected at 2.4 trips per capita compared with the 2010 average of 2.2 (Murphy and Wells, 2010). However, to date, there is limited empirical evidence to support such ideas.

The values of propensity to fly depend on two factors, namely the average number of trips and the proportion of the population that flies. As maturity is reached, the rate of increase of both these factors will slow. However, in practice there will always be sectors of the population who will never travel by air for a number of reasons such as family or work circumstances, poor health/mobility or just a lack of interest. Therefore, there is likely to be a maximum proportion of the population who will travel, although in absolute terms the number could vary because of population changes. Clearly this is an issue most related to 'discretionary' leisure travel rather than 'non-discretionary' business travel, even though it is debatable whether some types of leisure travel (notably visiting friends and relative (VFR) are totally discretionary.

Way back in the 1990s in relation to US citizens, James (1993) observed how the percentage of consumers who had flown had risen from one-half to two-thirds in the 1970s but had been constant in the 70-75% range since 1984. He argued that the 75% limit might be about the most to be expected. More generally Graham (1995) suggested that the maximum potential market, even in the wealthiest countries, was unlikely to exceed around 80% of the population. However the rare empirical evidence that exists regarding those who are not flying in the population usually concerns those who have not flown for only a certain period of time, typically one year. A key question is what proportion of these flew previous to this, and importantly what proportion is likely to fly in the future.

In respect of the UK market, in spite of a popular belief that people are travelling more and that there has been an increase in mobilities associated with VFR travel, because of more people living, working and studying abroad, evidence from the National Travel Survey for England (NTS) shows a relatively stable situation (at least for the last few years) in terms of the number of international round air trips taken (Figure 1). Therefore it is difficult to predict where we stand at present regarding any limits to air travel demand. Fifteen years ago Graham (2000) concluded that that the UK air international leisure travel market was only at the early stages of maturity although the overall leisure travel market seemed to be much nearer to full maturity. The Civil Aviation Authority (CAA) (2005) also considered maturity related to the UK market and observed that, although there was some evidence that certain income elasticities had declined over time, full maturity was still some way off. Later on Graham (2006) discussed the potential impact of the rise of the low cost carriers (LCCs), noting a lack of evidence that these were appealing to the less wealthy parts of the population that had not travelled much by air before; instead, they seemed to be encouraging more frequent flying. Notably, surveys of passengers using UK airports had also shown that in recent years less than 1% of passengers were adults flying for the first time (CAA, 2008).

[FIGURE 1 HERE]

For some time the official forecasts of the UK's Department for Transport (DfT) have assumed a certain degree of market maturity by using declining income elasticities related to judgment-based assumptions for different markets. In 2010 the University of Westminster was commissioned by the DfT to investigate the available evidence on market maturity (University of Westminster, 2010). The resulting report discussed the date from which market maturity might take effect and the scale of the impact, suggesting that different segments of the UK market were exhibiting very different dynamics. A range of assumptions based on this research were incorporated into the latest forecasts and overall this had the effect of reducing the forecast demand by around 7% in 2030 and 21% in 2050, relative to a projection assuming no market maturity (DfT, 2013). However with all these econometric studies there is no real attempt to look behind the figures and to assess whether attitudes and behaviour might change in the future.

Within this context, it is potentially useful to compare air travel with surface travel. Indeed, daily travel per capita in Britain (and other developed economies) has stabilised. In Britain for over 40 years there has been little change in average annual trip rate (about a thousand trips a year) or in average travel time (an hour a day). The average annual distance travelled in Britain (by all modes except international aviation) has also settled at about 7,000 miles per person per year since the mid-1990s (Metz, 2013). This implies that the historic link between income and travel demand no longer holds and these findings in respect of daily travel are consistent with the propositions that (a) time constrains travel, there being many other activities to be fitted in to the 24 hours of the day; and (b) demand for daily travel has saturated (Metz, 2010). It can be conjectured that air travel by UK residents will likewise at some point cease to grow but empirical evidence to support this hypothesis is lacking. In particular, to the best of our knowledge, there is virtually no previous understanding of infrequent flyers and whether their propensity to fly might change in the future and thus contribute to the growth of overall demand for air travel.

3. Scope of the study and data sources

3.1 Countries covered

The UK was used for an assessment of limits to air travel demand, and in particular of infrequent flyers. There are two key reasons for this. First, the UK has a well-developed air transport industry, and since it is an island the choice of other transport modes for long distance travel, which creates a more complex situation, is less likely. Second, an up-to-date data source has recently become available which, to the best of our knowledge, is the first time that such detailed information about infrequent flyers has been gathered. As discussed above there are some indications of demand maturity with this market but research so far has omitted to consider infrequent flyers in relation to this.

Even though the UK is the largest air transport market in the EU, two government surveys have consistently shown that around half of the UK population does not fly in any given year. Figure 1 shows that the NTS found that 55% of English residents took no flights abroad in 2014 (DfT, 2015) whilst the Opinions and Life Style Survey (OPN) recorded a similar figure of 52% in 2014 for all domestic and international flights (DfT, 2014). There has been very little change with the NTS data in recent years (just fluctuating between 53% and 57% since 2006) and likewise with OPN figures have stayed within the range of 50% and 53% during the same period.

In order to assess how representative is the UK case, some comparative analysis has been undertaken with the German, Dutch and Belgian markets. The choice of comparator countries was not ideal because the competition by other modes of transport is much more significant – however this was entirely dictated by the availability of data. All three countries are very significant in terms of EU air passenger traffic - ranking second, sixth and thirteenth out of the 28 respectively in 2013 (Eurostat, 2014).

3.2 Data Sources

The UK data was collected from a survey commissioned by the CAA undertaken by Collaborate Research. This quantitative research was a mixed online and telephone survey in December 2014-January 2015 with a total sample size of 3,000 UK residents (1,530 infrequent flyers and 1,470 frequent flyers) out of a total population of 65 million. The telephone element was included in order to reach those who did not have the internet at home. Quotas were set so that the sample was representative of the UK (e.g. by considering age and gender) and other population variables (e.g. area of residence and socio-economic group) were monitored to ensure that the responses were broadly representative. Prior to this survey there was a qualitative phase undertaken in November 2014. This consisted of six group discussions, eight face-to-face interviews and six telephone interviews. The qualitative research sought to investigate issues, some of which could then be quantified with the survey. Further details of the survey methodology can be found in CAA (2015).

The Belgian, Germany and Dutch data was collected from a survey undertaken in 2013 by KiM Netherlands Institute for Transport Policy Analysis. It was an online survey of 5,142 residents in Belgium (1,555: total population 11 million) The Netherlands (2,039: total population 17 million) and the German federal states of North Rhine-Westphalia (1,048: total population 18 million) and Lower Saxony (500: total population 5 million), which border The Netherlands. For this analysis the German data has been considered as one single data set.

The samples were compared with a number of population variables to assess whether they were representative. Notably for the Belgian and German samples the 65+ age group was underrepresented and there was evidence of some under- or over-representation with some other demographic variables. Also the German data only covers two states. Moreover as this was an online survey, it most probably underestimated the number of infrequent flyers as these are less likely to have access to the internet at home (as indicated with the UK case below). Further details of the survey methodology can be found in KiM Netherlands Institute for Transport Policy Analysis (2015).

Infrequent flyer data was just one aspect of air transport demand that was covered by these two surveys. In both cases the raw data that has not be published was used.

3.3 Terminology

This research uses the following definitions:

- **Frequent flyers** are those who have flown in the 12 months preceding the survey;
- **Infrequent flyers** are those who have not flown in the preceding 12 months;
- **Non-flyers** are those who have never flown.

This terminology is different than that used in the CAA research when recent/non-recent flyers was used instead of frequent/infrequent flyers.

4. Main findings of the UK survey

4.1 Characteristics of UK infrequent flyers

Differences between frequent and infrequent flyers

The CAA survey shows similar overall findings to the NTS and OPN data with 51% of UK residents taking no flights in the last year. Some statistically significant differences using the chi- square (χ^2) test for independence between infrequent and frequent flyers were found (Table 1). Overall younger people and older people were less likely to fly than those in mid-life and for the age groups 16-19 and 55+ (particularly 75+) there were more infrequent flyers than frequent flyers (Figure 2). In terms of socio-economic groupings, the largest groups of infrequent flyers were junior managerial or skilled manual workers, with more frequent flyers than infrequent flyers with middle and senior managerial staff (Figure 3). Overall Table 1 shows where possible (in italics in the first column) that the sample broadly reflects key characteristics, such as age and gender, of the overall UK population.

[TABLE 1 HERE]

[FIGURE 2 HERE]

[FIGURE 3 HERE]

In terms of residency, there were substantially more frequent flyers than infrequent flyers in London, and less in the regions/countries of East of England, Scotland and Wales, which is likely to reflect both demographic characteristics, as well as greater accessibility to air transport and distance from airports (Figure 4). Indeed in the DfT traffic forecasts (DfT,

2013), a variable included in the UK passenger airport allocation model is a generalised cost measure that takes into account the time and money costs of accessing airports. There is also a higher concentration of business and residents with overseas family connections in London and the South East, which is likely to increase the demand for business and visiting friends and relations (VFR) flights. The higher share of frequent flyers in Northern Ireland is undoubtedly affected by its location, divided by sea from the rest of the UK. Predictably disability seems to be another influential factor inhibiting travel. Additional supporting data from the CAA source showed that 66% of People with Reduced Mobility (PRMs) due to a physical disability were infrequent flyers, with 42% stating that access issues were a reason for them not flying. Other (although not unsurprising) significant characteristics were gender (likely to reflect the fact that business travellers, where there tends to be a higher proportion of men than woman, are usually frequent flyers) and access to the internet (making booking air travel more accessible). It was also hypothesised that a higher share of families with children would not travel because of the practical difficulties of flying but this was not supported by the findings. This may be because of the average older age of the infrequent flyers.

[FIGURE 4 HERE]

Types of infrequent flyers

Around a third of the infrequent flyers had flown between one to three years ago and only 16% had actually never flown (Figure 5). Interestingly, however, additional survey data showed that 19% of those who flew one to three years ago appeared to have been relatively regular flyers, taking three or more trips during this time. 17% of infrequent flyers had travelled abroad using another transport mode over the last 12 months.

[FIGURE 5 HERE]

Some of the characteristics identified in Table 1 were also found to be significantly different for diverse types of infrequent flyers (Table 2). In terms of age, whilst for those who had flown 4-10 years ago and more than ten years ago there were higher shares of infrequent flyers within the older age groups, with non-flyers there was a more even distribution across all the ages. Likewise with most types of infrequent flyers, the junior managerial workers were the most numerous, whereas for non-flyers the unskilled manual workers, followed by the skilled workers or unemployed were the most important groups – again suggesting, as with age, a somewhat different profile for the non-flyers. Moreover these non-flyers had fewer disabilities and greater access to the internet than those who had flown more than ten years ago, suggesting a more complex situation.

[TABLE 2 HERE]

4.2 Reasons for UK residents not flying

The CAA data also provided some insight into why infrequent flyers had not flown (Figure 6). Unsurprisingly budget constraints were the most important reason, reflecting the well-known link between air travel and income, and associated factors such as cost of travel and relative exchange rates of currencies. If this was the sole factor inhibiting flying, it could well be that a favourable change in circumstances may enable some of these infrequent flyers to fly more. Likewise there could be less flying with tighter budget constraints, for example,

possibly due to the falling value of the UK pound after the 'Brexit' vote. However this budget factor was only identified by close to half of the infrequent flyers. For around a quarter of the sample, flying had not been an option when they made their travel plans. In addition personal circumstances, such as health issues or family changes, were also identified as reasons for non-flying. Specific aviation factors, such as concerns about air travel (e.g. safety, security), accessibility and the impact of the environment also played a role, albeit to a lesser extent.

[FIGURE 6 HERE]

Considering other reasons for non-flying, the survey data showed that a fairly small share of the infrequent flyers (13%) stated that they preferred different transport modes. Other lesser reasons for not flying included a preference for local holidays, generally not enjoying the experience of flying, or other circumstantial factors (e.g. too busy for travel, divorce, bereavement, looking after pets). Interestingly, for those who had never flown, budget constraints were a key inhibiting factor but air travel concerns and preferences for travelling by other modes also seemed comparatively more important. Specifically as regards security, 10% of non-flyers identified security reasons as a major factor for not flying, with a further 13% citing these as a minor factor.

The CAA survey contained some additional views about safety and security and the difference between frequent and infrequent flyers was tested for significance using independent-samples t-tests. With a number of issues, infrequent flyers seemed more concerned about safety and security than frequent flyers (Table 3). Indeed for non-flyers only 37% thought that safety standards were as high as they could be and only 31% thought flying was safer than other forms of transport.

[TABLE 3 HERE]

How well informed consumers are regarding air travel, and their confidence in booking on-line, may influence their flying habits. Table 4 shows that there were significant differences in the views of frequent and infrequent flyers related to these issues. In all cases the infrequent flyers felt less informed or confident.

[TABLE 4 HERE]

4.3. Future flying plans of UK infrequent flyers

The CAA survey provided some additional insight into the short-term future by considering flying plans for the next year (Table 5). The majority of infrequent flyers, as with the frequent flyers, did not envisage any change in their flying habits, although around a fifth of both these groups thought they would be flying more. Around twice as many infrequent flyers plan to travel more than less. However a substantial share of the infrequent flyers did not know (17%) what they would be doing. Very few of those (6-7%) who had not flown for 10 years, or had never flown, indicated that they would definitely fly more in the future. This suggests that for those infrequent flyers who have flown more recently, their non-flying may be a more temporary state (especially as the evidence shows that some of these had previously been regular flyers), whereas there may be a deep-rooted and permanent reason for non-flyer for those infrequent flyers who have not flown for many years, or have never flown.

[TABLE 5 HERE]

5. Main Findings of the Belgian, German and Dutch survey

Although the survey of Belgian, German and Dutch residents did not have exactly the same questions and had a smaller sample size, there was nevertheless sufficient overlap to enable some broad comparisons to be made with the UK case.

Firstly the residents were asked in 2013 in which year they had last flown (2013, 2012, 2011, 2010 or before, or never flown) (Figure 7). Therefore, residents who had flown in 2013, and to a certain extent 2012, could be considered similar to the UK frequent flyers. Making this assumption the infrequent flyers in Belgium, Germany and The Netherlands represented 45%, 57% and 43% of the total respectively, which is fairly similar to the UK share of 51% (especially as these comparator figures has been somewhat underestimated by categorising all those who travelled in 2012 as frequent flyers). Moreover the share of those who had never flown ranged between 8-16%, close to the UK figure of 16%.

[FIGURE 7 HERE]

Whilst there was much more limited comparable data related to the respondents' profiles, again age and gender seemed to have a statistically significant impact on travel behaviour (Table 6). There was a higher proportion of older ages in most infrequent flying categories but as with the UK case, the ages were more evenly distributed for the non-flyers.

[TABLE 6 HERE]

Reasons for non-flying were only obtained from non-flyers with regard to their future plans, but nevertheless it is useful to compare these with the UK case (Figure 6 – particularly the 'never flown' category). Figure 8 shows that budget constraints were an important factor as in the UK but fear of flying was a much more significant variable, especially in Germany and The Netherlands. Therefore a rise in income levels would not necessarily produce a significant increase in air travel, as frequently assumed when using income elasticities to predict future demand. Environmental concerns were also mentioned by a higher proportion of Belgian and German residents but a lower share of Dutch residents.

[FIGURE 8 HERE]

In terms of future flying, views were only obtained from non-flyers for Belgian, Germany and The Netherlands (Figure 9). 35-50% said they may or will definitely not fly at some point in the future, compared to 72% in the UK who said they would not fly, but in this later case this only related to travel in the next 12 months (Table 5). This suggests that in these countries the share of infrequent flyers is more likely to reduce compared to the UK. However the difficulty here is with the incomparable dataset, particularly as it is not possible to gauge how many respondents in these other countries plan to keep the same flying patterns in the future.

[FIGURE 9 HERE]

6. Discussion of Findings

The first research objective was to examine the main characteristics of UK infrequent flyers. The CAA survey showed that around half of UK residents were infrequent flyers, which is similar to the findings of the NTS and OPN data. Many of the findings, for example the links with age, socio-economic groups, residency, disability and gender, are generally as expected although it is somewhat surprising that even with the two highest socio-economic groups (middle and senior managers) nearly 40% were infrequent flyers. Some of these relationships have also been observed with the NTS and OPN data. There are also different types of infrequent flyers - those who have never flown being of particular interest. Indeed the age profile of non-flyers is rather different from the other types of infrequent flyers.

In spite of the smaller sample size of the KiM survey, and some possible data limitations related to representativeness and lack of common terminology, the findings have provided some interesting comparisons with the UK. Reasonably similar shares exist for infrequent flyers (this varies between the three countries but is not of concern with this research) and likewise the non-flyer group seems to be of a fairly comparable relative size with a rather different age profile. These findings tentatively suggest that the relative size of the UK infrequent flyer group may be similar to elsewhere in Europe (albeit that only three countries have been considered) and that it may perhaps be common for non-flyers to have a rather different profile from other infrequent flying groups.

The second research objective was to assess the main factors affecting decisions not to travel by air by UK infrequent flyers. Overall there is no single characteristic that plays an overarching role in explaining non-flying habits- this was supported by the qualitative stage of the CAA research. Indeed cluster analysis undertaken by Collaborate Research using the CAA survey suggested that infrequent flyers could be classified as four types, namely 'Not travelling abroad', 'Nervous flyers' 'Temporarily flying less' and 'Unconfident People with Reduced Mobility (PRM)'. The most often mentioned reason for not flying was budget constraints. This was not really surprising but less predictable was that most of other reasons for non-flying were more related to consumer preferences and circumstances rather than specific aviation factors.

Interestingly for the non-flyers, budget constraints were still a major reason for non-flying but were mentioned by fewer respondents. This was similar to the other European countries, although a notable difference was that in these countries there seemed to be a greater fear of flying. However, even though in the UK safety and security were not identified as a key barrier to flying, there was some indication that it did have an influence and so it is an area which both the regulators and the airlines could consider for mitigating actions. For nervous flyers, trial flights such as easyJet's 'Fearless Flyer' programme may well have a beneficial impact. Also it may be that more could be done to overcome some of the difficulties perceived by PRMs when deciding to fly, or too ensure that all consumers feel that they are well informed about air travel and are confident about using the internet.

Arguably a more surprising finding, and of relevance to UK climate change policy, is that currently very few people seemed to be avoiding air travel for environmental reasons. By comparison in Germany and Belgium (but not The Netherlands) there seemed to be more concern about the environment. In the UK, greater understanding of public attitudes to aviation's environmental impacts is clearly needed to be able to match up these findings with others, such as the OPN latest survey which found that 81% of British residents strongly agreed/agreed that that people should be able to travel by plane as much as they want

generally, but this reduced to 27% if such travelling was considered to harm the environment (DfT, 2014).

Clearly the prospects for the growth in air travel demand depends on whether infrequent flyers are likely to change their travel habits in the future. The third and final research objective considered this issue. The CAA data provided some insight by indicating that flying habits were not going to change very much, albeit that this was only for the short-term future. In particular many of the non-flyers expressed no interest in starting to fly, at least in the next year. More non-flyers in the other European countries thought that they might fly in the future but this was over a longer time period. However for all countries this is a complex issue, as since budget constraints was the most important variable inhibiting travel, future plans may be, in part, a proxy for expectations of future income.

The impact of budget constraints on flying habits also needs to be related to trends in the cost of air travel. Over the last decade or so, LCCs have dramatically changed the nature of short-haul travel and have significantly reduced air fares. The UK is one of a number of countries where this trend has been particularly pronounced. However the scope for more LCC expansion in the UK leading to further reductions in fares is now generally considered to rather limited and so it seems unlikely that this factor will have a major impact on decreasing the number of infrequent flyers in the future.

Ideally with this research it would have been worthwhile to relate the findings to broader studies about participation in tourism. Since most air trips are for tourism reasons (using the standard tourism industry definition of 'tourism' which includes holiday, VFR and business travel), the linking factor between air travel and tourism research is the mode of transport used. In other words, air travel, together with certain types of sea and surface travel, provides the tourism flows. On average in 2013 40% of EU residents did not participate in tourism – the UK figure was 34%. The main reasons for not participating in tourism were given as financial, health, no motivation, family commitments, and work or study commitments (Eurostat, 2015). Clearly here there is some overlap of research ideas which it would be useful to exploit. In part this was covered in the CAA survey by identifying the proportion of infrequent flyers that had used another transport mode to travel abroad and also by infrequent flyers mentioning that they did not fly because of a preference for other transport modes. However it was not possible to deduce how many of the infrequent flyers did not travel by air, as opposed to not travelling at all for either domestic and/or international tourism purposes. This would perhaps have given a greater insight as to whether influencing factors such as budget constraints and other personal circumstances, related specifically to air travel or any type of tourism trip.

7. Conclusions

In conclusion, this research has achieved its aim in making a substantial contribution to the understanding of the under-researched topic of infrequent flyers. The main findings show that infrequent flyers in the UK are certainly a heterogeneous group with only 16% of these having never flown. The proportion of infrequent flyers decreases with increasing socio-economic status and younger people and older people are less likely to fly than those in mid-life. There is some indication than non-flyers may be rather different than other infrequent flyers.

Bringing together existing data and the analysis undertaken in this paper, it has become apparent that the proportion of infrequent flyers has remained fairly constant over the last few years, although there is some indication that this share may reduce slightly in the short-term future. Yet there is a substantial degree of uncertainty looking forward. Given that many of the factors influencing the decision not to fly are based on personal circumstances, it does not seem very likely, even with industry and regulation attention to some of the inhibiting factors, that there is going to be a very significant change in flying habits of these infrequent flyers. Indeed the UK 'Brexit' vote to leave the EU in 2016, with its immediate implications on the falling pound together with the unknown possible further dampening consequences for UK travel demand to Europe, conceivably could push up the share of UK infrequent flyers, at least in the short-term.

This whole area of research clearly needs further exploration. In particular it would be interesting to examine infrequent flyers of sufficient socio-economic group status to afford to fly, so as to focus on the non-financial issues influencing flying habits. In addition, more analysis of countries or markets with more comparable datasets would undoubtedly help enlarge our knowledge and understanding of infrequent flyers and help separate general generic influencing factors from market specific ones. Furthermore, more effective linking of air transport and tourism data, and an analysis of purpose of trip, could provide a more definitive appreciation as to whether non-flyers are choosing just not to fly or rather to not participate in tourism, which has important consequences for the transport and tourism industries.

Acknowledgements

References

Airbus (2014), *Global Market Forecasts 2014-2033*, Toulouse: Airbus.

Boeing (2015), *Current Market Outlook 2015-2033*, Seattle: Boeing.

CAA (2015), *Consumer Research for the UK Aviation Sector – Final Report*, CAP 1303, London: CAA.

CAA (2008), *Recent Trends in Growth of UK Air Passenger Demand*, London: CAA.

CAA (2005), *Demand for Outbound Leisure Air Travel and its Key Drivers,* London: CAA.

DfT (2015), *National Travel Survey 2014*, London: DfT.

DfT (2014), *Public Experiences of and Attitudes towards Air Travel 2014*, London: DfT.

DfT (2013), *UK Aviation Forecasts*, London: DfT.

Eurostat (2015), *Tourism Statistics – Participation in Tourism*, Brussels: Eurostat

Eurostat (2014), *Record Number of Air Passengers carried at more than 840 million in 2013*, Press release 4 December, Brussels: Eurostat.

Graham, A. (2006), Have the major forces driving leisure airline traffic changed? *Journal of Air Transport Management*, 12 (1), 14-20.

Graham, A. (2000), Demand for air travel and limits to growth, *Journal of Air Transport Management*, 6 (2), 109-118.

Graham, B. (1995), *Geography and Air Transport*, Chichester: Wiley.

IATA (2004), *The Shape of Air Travel Markets over the Next 20 Years,* available from http://www.iata.org/whatwedo/Documents/economics/20yearsForecast-GAD2014-Athens-Nov2014-BP.pdf (accessed 5 September 2015).

James, G. (1993), US commercial aviation: a growth or mature industry, *18th FAA Aviation Forecast Conference Proceedings*, FAA - APO 93-2, 182-202.

KiM Netherlands Institute for Transport Policy Analysis *(2015), Determinants of Propensity to Fly and Airport Choice,* London: Ministry of Infrastructure and the Environment.

Metz, D. (2013), Peak car and beyond: The fourth era of travel, *Transport Reviews*, 33(3), 255-270.

Metz, D. (2010), Saturation of demand for daily travel, *Transport Reviews*, 30(5), 659-674.

Murphy, D. and Wells, M. (2010) *Is the US Domestic Air Travel Market Approaching Saturation? Theory and Evidence*, unpublished paper presented at Transportation Research Board (January).

Morphet, H. and Bottini, C. (2014), *Propensity to Fly in Emerging Economies*, available from https://www.pwc.com/en_GX/gx/capital-projects-infrastructure/pdf/pwc-propensity-to-fly-in-emerging-economies.pdf (accessed 20 May 2015).

University of Westminster (2010), *DfT Air Transport – Market Maturity – Summary Report*, London: University of Westminster.

Vedantham, A. and Oppenheimer O. (1998), Long-term scenarios for aviation: Demand and emissions of CO2 and NOx, *Energy Policy*, 26 (8), 625-641.

Table 1: Profile of UK frequent and infrequent flyers

Characteristics (*italics show the total UK population proportions obtained for UK Office of National Statistics 2013 data*)	Total sample (N=3000)	Infrequent flyers (N=1530)	Frequent flyers (N=1470)	χ² - value	p- value
Age:	(%)	(%)	(%)	76.8	.000
16-19 *(7.2% for ages 15-19)*	6.0	6.2	5.7		
20-24 *(8.1%)*	8.3	7.5	9.0		
25-34 *(16.5%)*	16.5	14.4	18.6		
35-44 *(15.8%)*	16.1	14.8	17.5		
45-54 *(17.1%)*	17.3	15.9	18.7		
55-64 *(13.7%)*	14.0	14.6	13.4		
65-74 *(11.7%)*	11.9	12.2	11.6		
75 plus *(9.9%)*	9.9	14.2	5.4		
Socio-economic group:	(%)	(%)	(%)	184.3	.000
Full time student	2.2	2.1	2.3		
Homemaker	4.5	6.3	2.5		
Junior managerial, clerical or supervisory	24.9	23.7	26.1		
Middle managerial	20.4	15.1	25.9		
Professional or senior managerial	11.4	8.7	14.3		
Skilled manual	19.9	20.9	18.8		
Unemployed or between jobs	6.4	10.3	2.4		
Unskilled manual	10.3	12.9	7.7		
Region/country of residence:	(%)	(%)	(%)	45.8	.000
East Midlands *(7.2%)*	5.7	5.9	5.4		
East of England *(9.3%)*	6.6	7.7	5.5		
London *(13.2%)*	5.8	3.9	7.9		
North East *(4.1%)*	5.3	5.2	5.4		
North West *(11.0)*	17.1	16.6	17.7		
South East *(13.7%)*	21.8	21.8	21.8		
South West *(8.4%)*	6.6	6.8	6.3		
West Midlands *(8.8%)*	8.7	8.8	8.6		
Yorkshire&Humberside *(8.3%)*	5.8	5.8	5.9		
Wales *(4.8%)*	5.5	6.7	4.3		
Scotland *(8.3%)*	7.5	8.2	6.7		
Northern Ireland *(2.8%)*	3.6	2.6	4.6		
Disability or long-term health condition that/would make accessing and/or using airports or flying difficult (% stating yes)	22.1	26.4	17.6	33.7*	.000
Gender (% male) *(49.2%)*	48.5	45.2	51.9	13.1*	.000
Children aged under 16 living in household (% stating yes) *(42.6%)*	27.1	23.5	31.0	20.9*	.000
Access to internet at home (% stating yes) *(84% for Great Britain)*	87.0	82.9	91.2	43.9*	.000

* Continuity correction value as the variable has only two categories
All results are significant at the 0.01 level

Table 2: Profile of different types of UK infrequent flyers

	Flown 1-3 years ago (N=546)	Flown 4-10 years ago (N=425)	Flown>10 years ago (N=308)	Never flown (N=251)	χ^2-value	*p*-value
Age (%):					106.6	.000**
16-19	8.2	4.0	1.9	10.8		
20-24	11.7	5.4	1.6	9.2		
25-34	16.5	15.1	8.8	15.9		
35-44	16.1	15.3	14.0	12.4		
45-54	14.7	16.2	15.9	17.9		
55-64	12.3	16.9	19.5	10.0		
65-74	9.3	11.1	18.2	13.1		
75 plus	11.2	16.0	20.1	10.8		
Socio-economic group (%):					93.2	.000**
Full time student	3.1	1.2	0.6	3.2		
Homemaker	3.3	8.0	7.1	9.2		
Junior managerial, clerical or supervisory	26.6	25.4	23.4	14.7		
Middle managerial	19.2	15.1	12.7	9.2		
Professional or senior managerial	9.9	8.9	7.5	7.2		
Skill manual	21.8	21.6	20.1	18.7		
Unemployed or between jobs	6.8	7.8	13.3	18.7		
Unskilled manual	9.3	12.0	15.3	19.1		
Children aged under 16 living in household (% stating yes)	46.0	28.4	12.3	13.4	31.0	.000**
Access to internet at home (% stating yes)	88.5	82.6	76.3	79.7	23.3	.000**
Disability or long-term health condition that/would make accessing and/or using airports or flying difficult (% stating yes)	24.5	23.5	33.1	27.1	10.0	.019*

* Significant at the 0.05 level
** Significant at the 0.01 level

Table 3: UK residents' views about safety and security

Responses: Strongly agree = 5; strongly disagree = 1	Mean	Std. Dev.	Std Error Mean	t-value	*p*-value
I am quite a nervous flyer:*				- 3.7	.000
☐ Infrequent (N=1251)	2.75	1.297	.037		
☐ Frequent (N=1455)	2.57	1.329	.035		
Safety and security standards when flying are as high as they can be:				6.6	.000
☐ Infrequent (N=1385)	3.49	.942	.025		
☐ Frequent (N=1414)	3.73	.946	.025		
Safety and security standards when flying are higher now than they were 4 or 5 years ago:				6.0	.000
☐ Infrequent (N=1356)	3.92	.852	.023		
☐ Frequent (N=1415)	4.12	.857	.023		
Flying is safer than using other forms of transport:				9.3	.000
☐ Infrequent (N=1418)	3.56	.912	.024		
☐ Frequent (N=1432)	3.87	.871	.023		
The balance between security screening and convenience to passengers is about right:*				6.1	.000
☐ Infrequent (N=1162)	3.50	.895	.026		
☐ Frequent (N=1435)	3.72	.920	.024		
I worry that sometimes security screening procedures are not consistent:*				-2.8	.005
☐ Infrequent (N=1190)	3.49	.996	.029		
☐ Frequent (N=1437)	3.37	1.106	.029		

All results are significant at the 0.01 level

* Not asked to non-flyers. N varies because don't know responses have been excluded

Table 4: UK residents' views about travel information and booking

Responses: Well informed/confident = 5; not at all informed/confident = 1 (Infrequent N=1279; Frequent N=1470. Not asked to non-flyers)	Mean	Std. Dev.	Std Error Mean	t-value	*p*-value
How well informed about comparing the market and deciding on the best option: Infrequent Frequent	 3.32 3.93	 1.137 .898	 .032 .023	15.4	.000
How well informed about what to expect during a journey and how to prepare for it: Infrequent Frequent	 3.54 4.05	 1.103 .854	 .031 .022	13.5	.000
How confident about using the internet to comparing the market and deciding on the best option: Infrequent Frequent	 3.30 4.01	 1.349 1.146	 .038 .030	14.9	.000
How confident about using the internet to book on-line: Infrequent Frequent	 3.35 4.10	 1.441 1.187	 .040 .031	14.9	.000

All results are significant at the 0.01 level

Table 5: Flying plans of different types of UK infrequent flyers in the next 12 months

			Infrequent flyers (N=1530)	Frequent flyers (N=1470)	χ^2 - value	*p*-value
Flight plans (%): More No change Less Don't know			 18.9 54.8 9.7 16.5	 22.9 66.7 6.6 3.9	148.2	.000

	Flown 1-3 years ago (N=546)	Flown 4-10 years ago (N=425)	Flown> 10 years ago (N=308)	Never flown (N=251)	χ^2 - value	*p*-value
Flight plans (%): More No change Less Don't know	 30.0 45.1 12.1 12.8	 20.9 50.4 9.9 18.8	 6.2 64.3 13.3 16.2	 6.8 72.1 0.0 21.1	153.2	.000

All results are significant at the 0.01 level

18

Table 6: Profile of Belgian, German and Dutch frequent and infrequent flyers

| Last flew in:	2013	2012	2011	2010 or before	Has never flown	χ² - value	*p*-value
Belgium: Sample size (Total 1555)	660	201	104	420	170		
Age (%):+						65.5	.000**
18-24	13.8	14.9	8.7	5.0	17.1		
25-34	26.1	26.9	25.0	18.8	17.6		
35-44	23.3	24.9	24.0	20.7	22.9		
45-54	19.5	15.9	18.3	25.2	21.2		
55 plus	17.3	17.4	24.0	30.2	21.2		
Gender (% male)	53.2	53.7	48.1	46.7	40.0	12.6	.014*
Germany: Sample size (Total 1547)++	377	299	103	528	240		
Age (%):+						28.0	.032*
18-24	9.5	5.7	6.8	5.3	7.5		
25-34	18.0	21.1	16.5	11.4	15.8		
35-44	20.4	17.4	16.5	19.3	20.0		
45-54	28.9	29.8	33.0	33.3	32.1		
55 plus	23.1	26.1	27.2	30.7	24.6		
Gender (% male)	57.6	52.8	55.3	46.8	48.8	11.8	.019*
The Netherlands (Total 2039)	688	477	196	517	161		
Age (%):+						75.6	.000**
18-24	12.4	10.3	8.7	4.8	12.4		
25-34	24.1	24.7	17.3	14.1	17.4		
35-44	18.0	17.0	15.8	16.4	16.8		
45-54	20.1	15.5	24.5	21.7	19.9		
55 plus	25.4	32.5	33.7	42.9	33.5		
Gender (% male)	54.8	50.9	49.5	49.7	39.1	13.6	.009*

Significant at the 0.05 level
*** Significant at the 0.01 level*
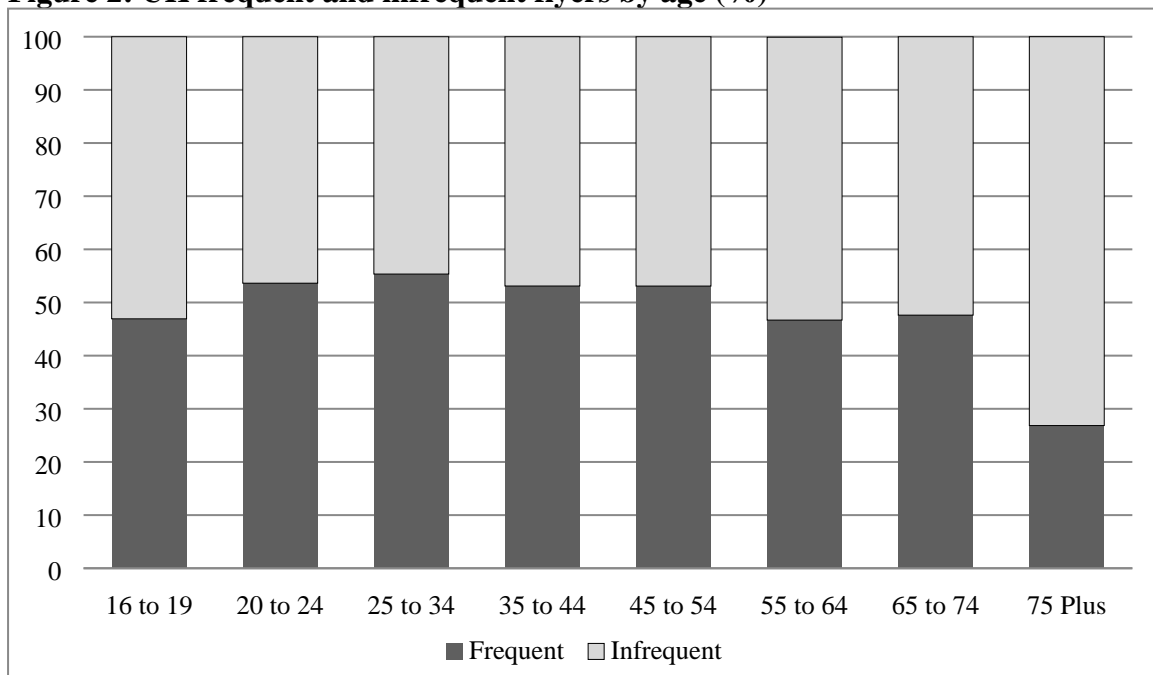*+ The 55-64, 65-74 and 75 plus were combined because of some small sample sizes.*
++ One respondent aged 15 was omitted

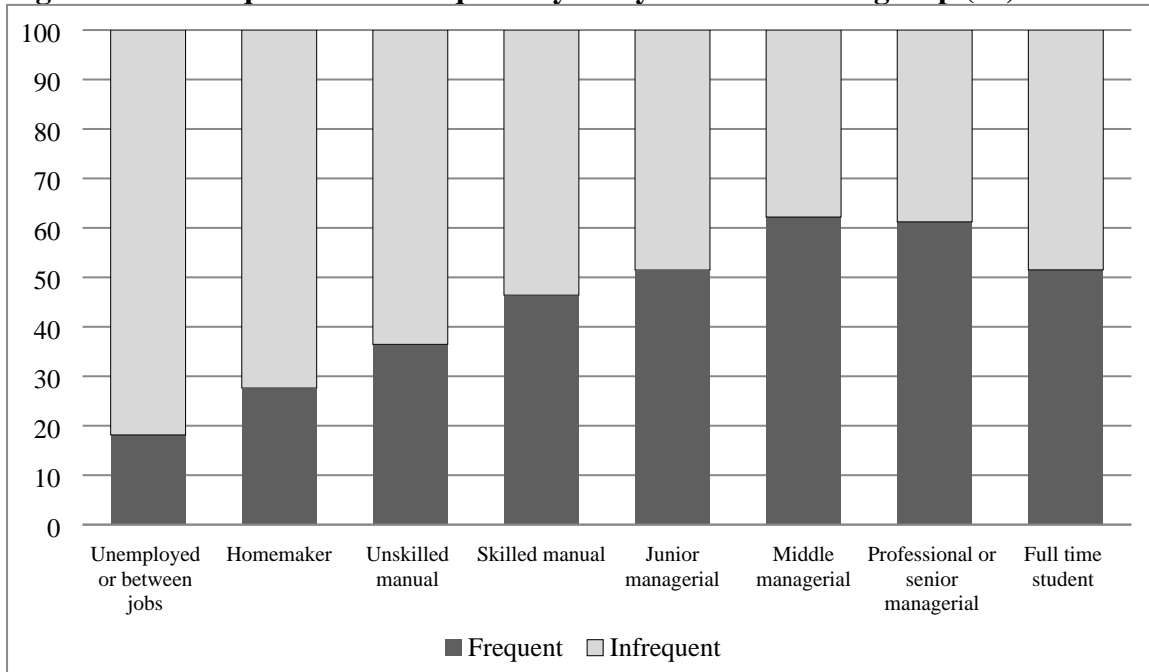**Figure 1: International round air trips taken by English Residents 2006-2014 (%)**
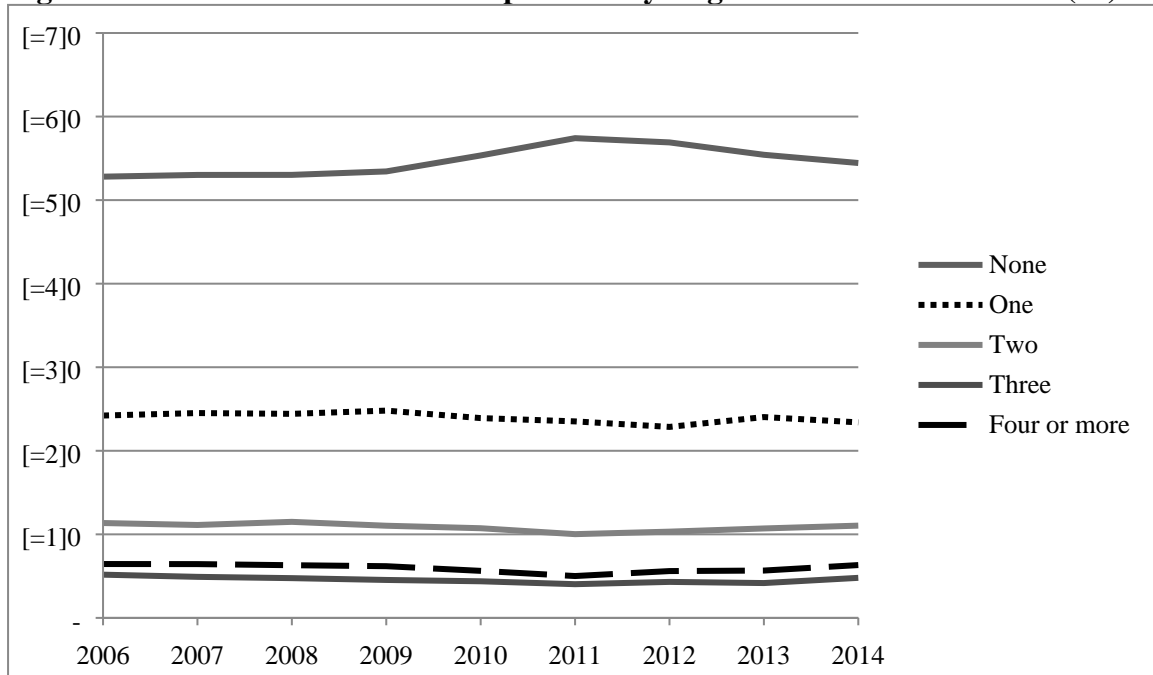
Source: NTS

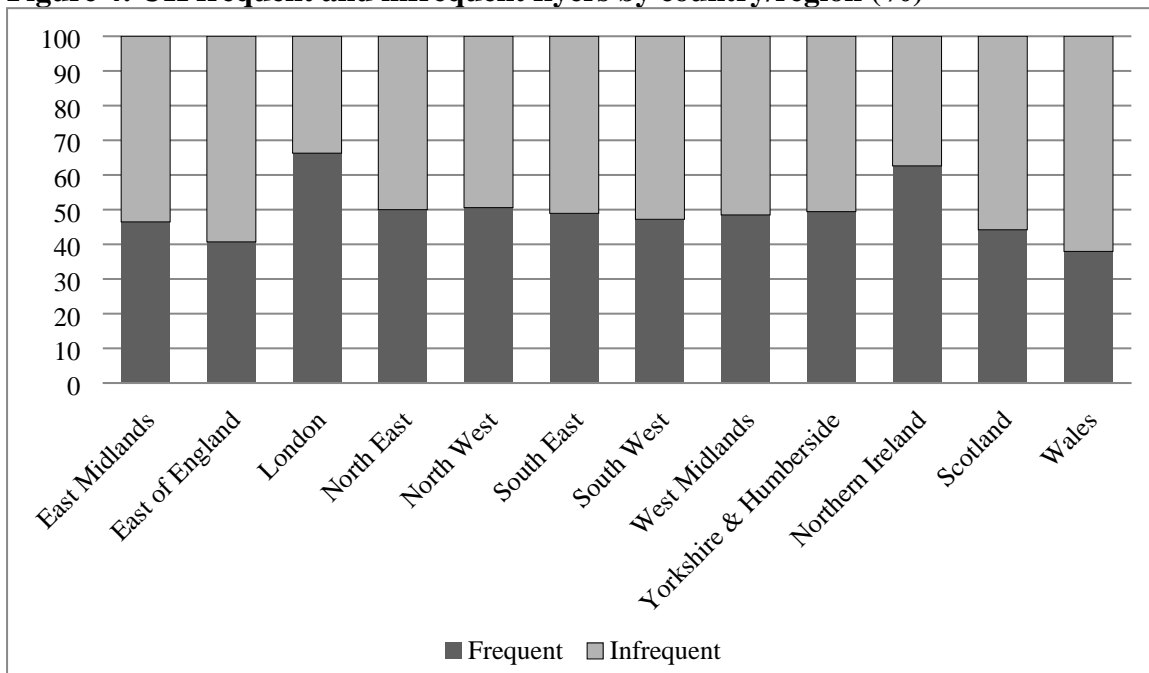**Figure 2: UK frequent and infrequent flyers by age (%)**

Frequent flyers are those who have flown in the 12 months preceding the survey, infrequent flyers are those who have not flown in the preceding 12 months.
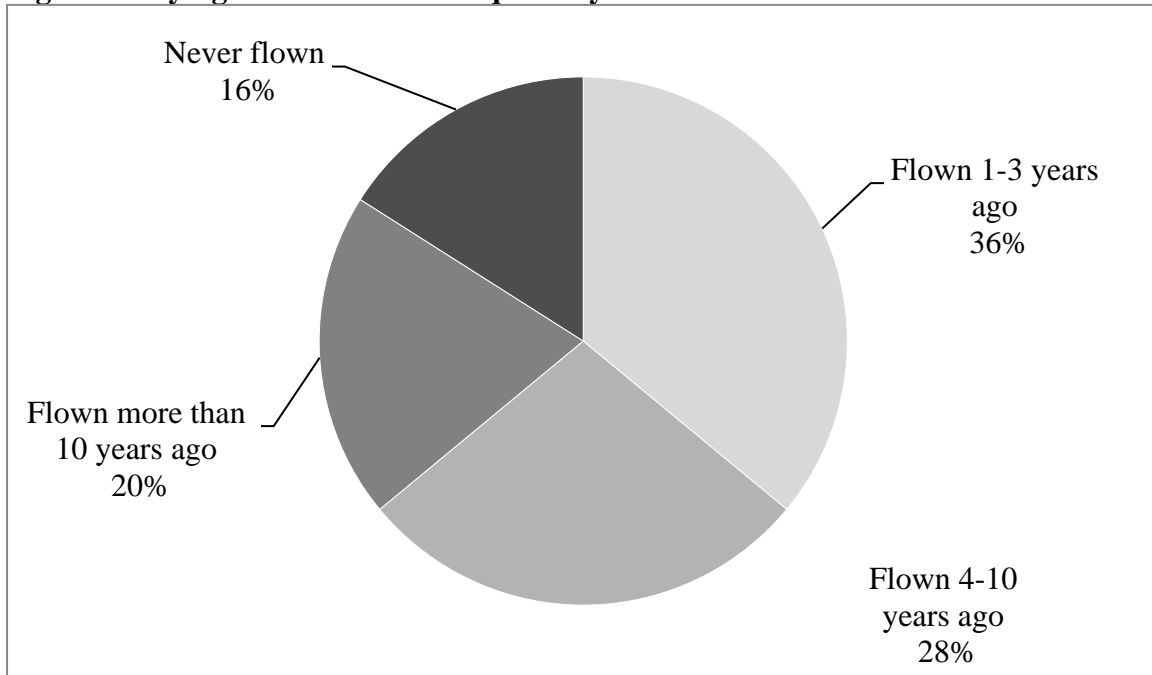
20

Figure 3: UK frequent and infrequent flyers by socio-economic group (%)

Frequent flyers are those who have flown in the 12 months preceding the survey, infrequent flyers are those who have not flown in the preceding 12 months.

Figure 4: UK frequent and infrequent flyers by country/region (%)

Frequent flyers are those who have flown in the 12 months preceding the survey, infrequent flyers are those who have not flown in the preceding 12 months.

Figure 5: Flying habits of UK infrequent flyers

Never flown
16%

Flown 1-3 years
ago
36%

Flown more than
10 years ago
20%

Flown 4-10
years ago
28%

Figure 6: Reasons given by all UK infrequent flyers and those who have never flown for not flying (%)

■ Infrequent flyers □ Never flown
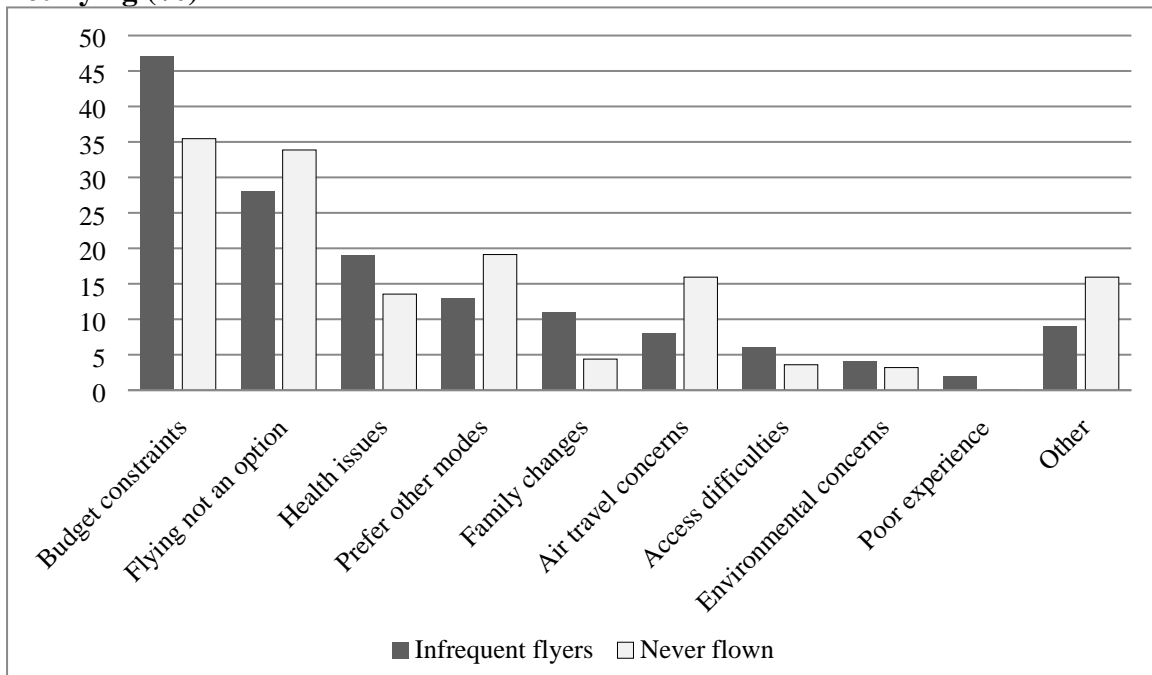
Respondents could provide multiple reasons

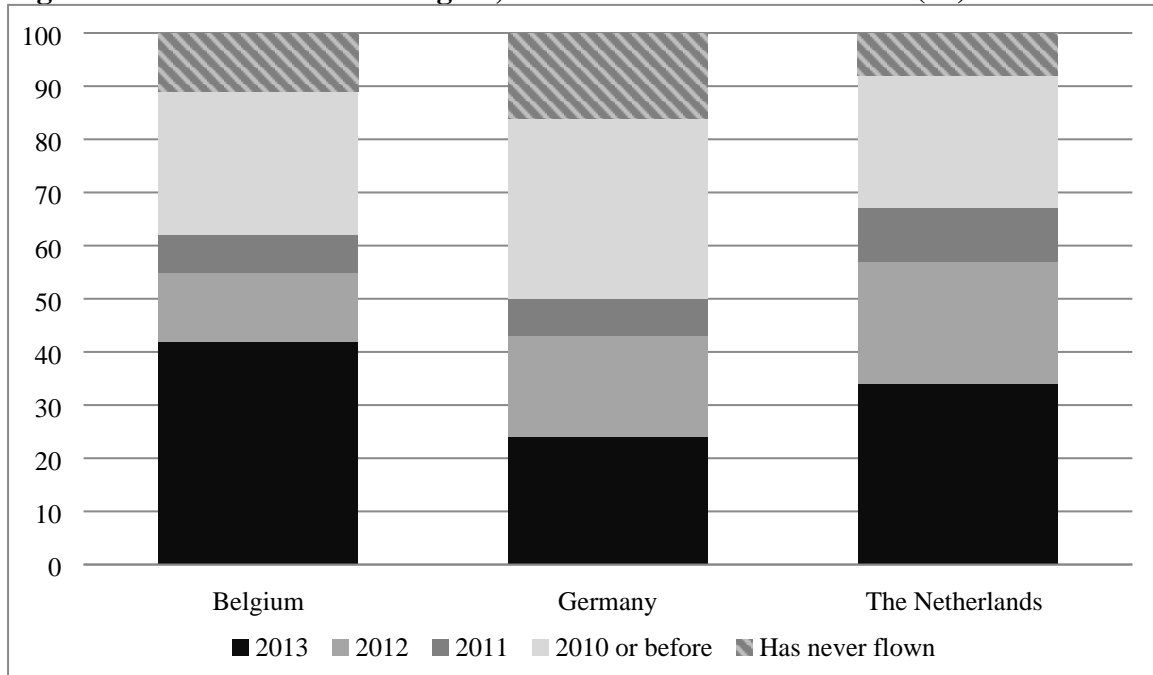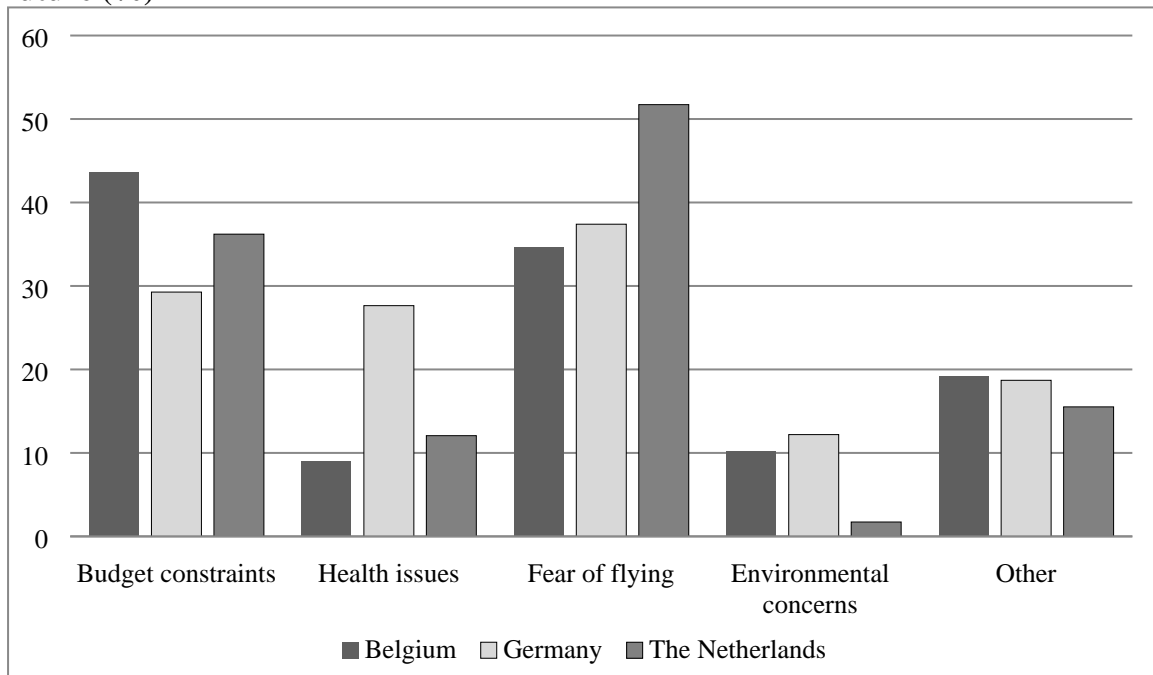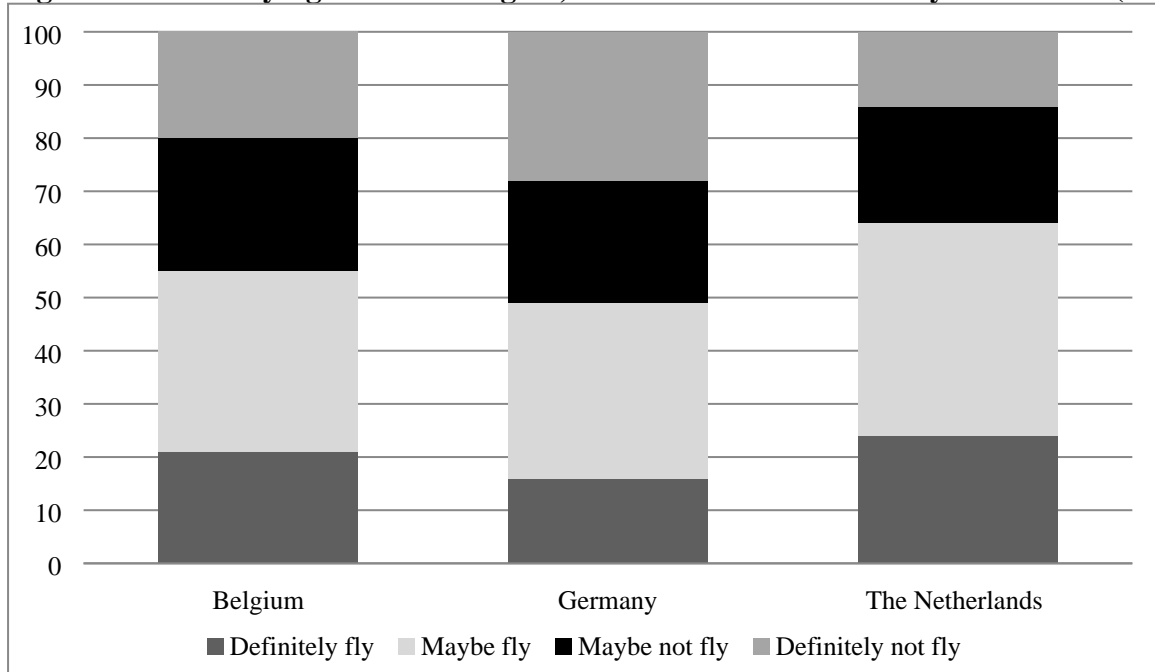**Figure 7: Year last flown of Belgian, German and Dutch residents (%)**

Figure 8: Reasons given by Belgian, German and Dutch non-flyers for not flying in the future (%)

Respondents could provide multiple reasons

Figure 9: Future flying habits of Belgian, German and Dutch non-flyer residents (%)

LIMITS TO AIR TRAVEL GROWTH: THE CASE OF INFREQUENT FLYERS

HIGHLIGHTS

- The characteristics of UK infrequent flyers are analysed.

- Infrequent flyers are primarily influenced by budget constraints and personal circumstances.

- Belgian, German and Dutch infrequent flyers have some similarities.