REDUCING AIR TRAVEL IMPACT AT DUKE UNIVERSITY

Incentivizing reductions in academic air travel andidentifying opportunities for carbon offsets

ENVIRON 245 Project Brief
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BACKGROUND

First developed in 2009, Duke University's Climate Action Plan established the goal of carbon neutrality by 2024. Since then, the University has reduced emissions by 20%. However, air travel continues to be a significant contributor of emissions, making up 14 % of Duke's total emissions (Elliott 2019). Sustainable Duke and the Duke Carbon Offsets Initiative, the clients for this project, are charged with ensuring that the University reaches its carbon neutrality goal by reducing carbon emissions and purchasing offsets. In order to achieve this goal, research was undertaken on ways to incentivize employees and students to travel less or more sustainably and ways to creatively fund the purchase of carbon offsets for air travel.

RESEARCH QUESTION

What are ways to incentivize members of the Duke community to modify or limit their air travel? How can Duke sustainably fund offsets in cases where air travel is necessary?

SIGNIFICANCE

Air travel has been a well-established component of academic and student functions at many universities. However, this does not come without its financial and environmental costs. Finding ways to both reduce Duke's reliance on air travel and the funding of offsets can simultaneously decrease expenses and Duke's impact on the environment.

OBJECTIVES

01 Investigate attitudes towards air travel in the Duke community

02 Find ways to motivate Duke faculty and staff as well as students to rely less on air travel

03 Identify opportunities to offset carbon emissions produced by air travel

METHODS AND APPROACH

Survey Analysis

Purpose: To investigate attitudes within the Duke community on air travel and carbon offsets.

Process: A 2013 air travel survey and a 2020 Campus Sustainability Committee air travel survey provided by Sustainable Duke were coded and analyzed.

Analysis Method: The data were thematically coded into categories for respondents' attitudes towards the importance of air travel, alternative transport methods, and teleconferencing.

Air Travel Spend Dataset

Purpose: To understand air travel spending and destination trends at Duke University.

Process: The FY2019 dataset containing quantitative air travel spend data (provided by Sustainable Duke) was analyzed using Excel.

Analysis: The data set was analyzed using Excel functions and graphs were created to help visualize the most frequent air travel destinations and average spending on air travel.

Benchmarking Research

Purpose: To provide baseline information about academic air travel decisions and emissions offset programs.

Process: Information from research conducted at the University of Maryland, the University of Adelaide (Australia), and the École Polytechnique Fédérale de Lausanne (Switzerland) was collected and analyzed.

Analysis: Common themes amongst these peer universities were identified, compared to one another, and compared to Duke University.

CONNECTION TO SUSTAINABILITY

Environmental: Working to help reduce Duke's air travel related carbon emissions and reach the 2024 carbon neutrality goal.

Social: Providing recommendations for alternatives to air travel to promote a mindset of sustainability and collective action to reduce carbon emissions.

Economic: Reducing air travel helps the university reduce carbon emissions and save money.

DATA

Motivations for Air Travel

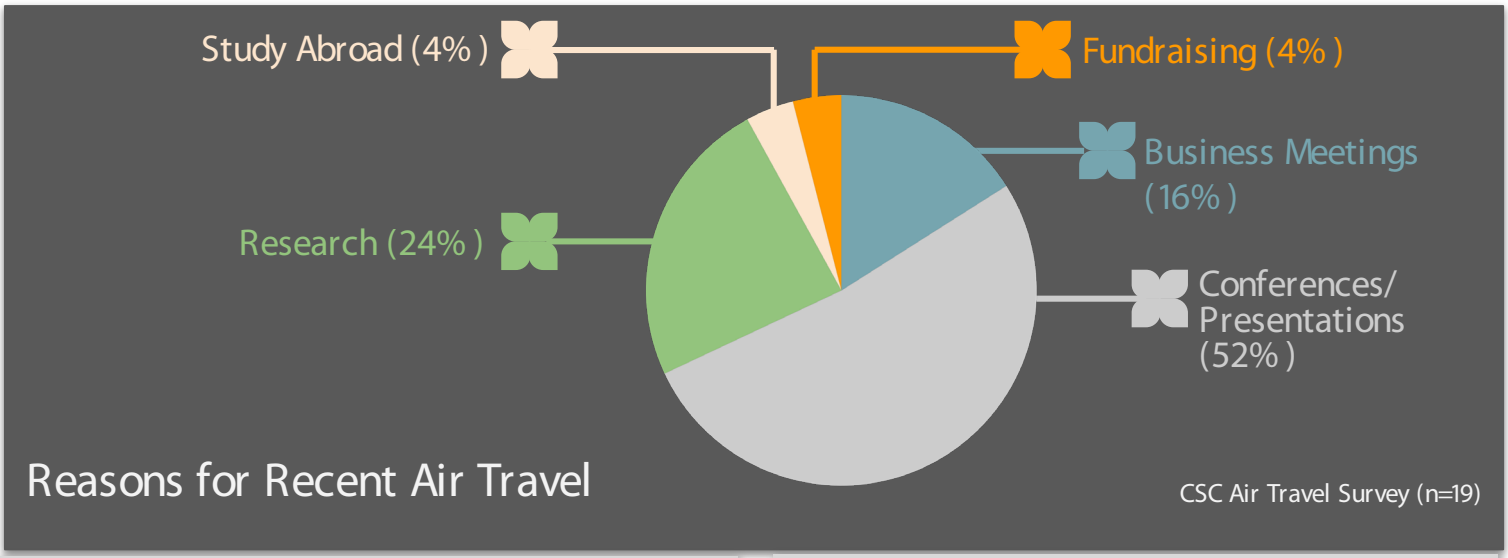
Through thematic coding of open-ended responses from Duke faculty and staff members surveyed in the 2013 Air Travel Survey, it was found that **presenting/collecting research (37%)** and **networking (33%)** were the main motivations for their air travel at Duke. Other motivations included air travel being a necessary component of their job (i.e. being a professor at Duke's Kunshan school), for professional development, and for learning purposes. A multiple-choice question in the same survey demonstrated that out of the 421 respondents, **42%** of them reported **attending conferences** as the main reason they take trips.

"A large part of my work depends on building relationships and participating in communities - which are difficult to do remotely."

"It's important to meet with other researchers to discuss science problems at conferences. Collecting data in the field is also integral to my research."

"I don't know what is allowed or what is not. When can I use Duke funds to pay for carbon offsets? Do we have a preferred place that is vetted for authenticity that we should use?"

-Duke Air Travel Surveys



Peer Institutions

The University of Adelaide (Australia):

- Identified factors that motivate academic air travel
- Study found that consistent messaging about the impact of air travel on carbon emissions can greatly affect faculty and staff behavior

École Polytechnique Fédérale de Lausanne (Switzerland):

- Recommends the following measures:
  1. Eliminate business-class travel
  2. Avoid layovers when possible
  3. Replace short plane trips with rail or car travel

The University of Maryland (U.S.A.)

- Implemented a carbon surcharge of $0.0027/ passenger mile on university funded air travel to fund offset purchases
- UMD air travel became carbon neutral in 2018

Arizona State University (U.S.A.)

- Employs a flat fee of $10/round trip flight, regardless of destination or number of stops
- Uses fees to fund local carbon offset initiatives

University of British Columbia (Canada):

- A 2019 study at UBC found that when controlling for academic age and field, there was no relationship between air travel and academic productivity

Attitudes Towards Carbon Offsets

When asked about their opinion on their department purchasing carbon offsets to account for the impact of air travel, 48% of respondents indicated support for this idea. However, 30% of respondents (both in support of and against the idea) had budget/financial concerns about implementing a carbon offset program in their department. Some of these responses included, **"I would rather us spend the money in other areas,"** and **"I would approve as long as it didn't impact our current operating budget."** Other common themes expressed about a departmental carbon offsets initiative were uncertainty about the effectiveness of carbon offsets and concerns regarding implementing such an initiative.

Airline Comparison

Duke's most frequently used airlines are American, United, Delta, Southwest, and Jetblue in that order based on financial data. American and United had similar emissions goals because of IATA policy, but each focuses on achieving these goals in different ways: American through aircraft upgrades and United through alternative fuel.

Delta and **Jetblue** both committed to carbon neutrality in early 2020. Encouraging faculty and staff to choose these airlines could help reduce Duke's air travel carbon footprint.

CONCLUSIONS

Easily attainable policy measures (described in greater detail in 'Peer Institutions') include: **the restriction of academic air travel to economy class, the replacement of short-distance air travel with other forms of transportation, and the reduction of layovers.**

Evidence strongly suggests that these actions would be effective in a Duke context. Other policies, such as the carbon surtax on flights (calculated per passenger mile) show promise in reducing Duke's carbon footprint.

A set of key concerns and potential policy remedies were identified at Duke and peer institutions. They include:

- Incongruity between university efforts to reduce air travel and academic pressure to travel
- Associations made by faculty and staff between academic air travel and professional prestige
- Unreliability of and lack of access to alternative methods (i.e. auto/rail travel, teleconferencing) as replacements for academic travel
- Lack of awareness of carbon offsets

RECOMMENDATIONS

Incentivize and Promote Alternatives to Air Travel

Short distance air travel creates greater carbon emissions per passenger mile than long distance air travel; therefore, Duke should incentivize the use of alternative transportation, such as car or rail, by banning non-essential round-trip air travel to distances within a certain radius of Duke. Given its proximity to Duke, Washington, D.C. is an example of a destination where air travel should be discouraged; travel by car or train both takes less time and emits less carbon per trip than air travel. Other local distances should also be considered. Additionally, Duke should also encourage reductions in academic air travel. Duke could also recommend the use of carbon neutral airlines, such as Delta or Jetblue.

Implement a per-flight Flat Carbon Offset Fee

The University of Adelaide study identified that consistent messaging about the impact of air travel on carbon emissions can affect faculty and staff attitudes toward air travel. Additionally, in the 2013 Duke faculty and staff survey, many respondents iterated their lack of awareness of the contributions of air travel towards overall carbon emissions. A flat-rate air travel offset charge is one of the easiest offset-funding methods to understand, which would increase both awareness/understanding of offsets and increase overall support.

Provide Better Technological Resources for Teleconferencing

2020 saw the spread of the COVID-19 virus, which has forced many universities to switch to a model of virtual teaching, teleconferencing, and remote learning. This situation shows that teleconference alternatives clearly can be accessible substitutes for in-person meetings. Duke should continue to provide resources (such as Zoom or Skype), continue to make them easily available to faculty and staff, and promote their use outside of the university.

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Image 1: David Xian