Centre for Climate Change and Social Transformations

Tyndall°Centre for Climate Change Research

Aviation by sustainability researchers: who does it, and how can we reduce it?

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Background (1)

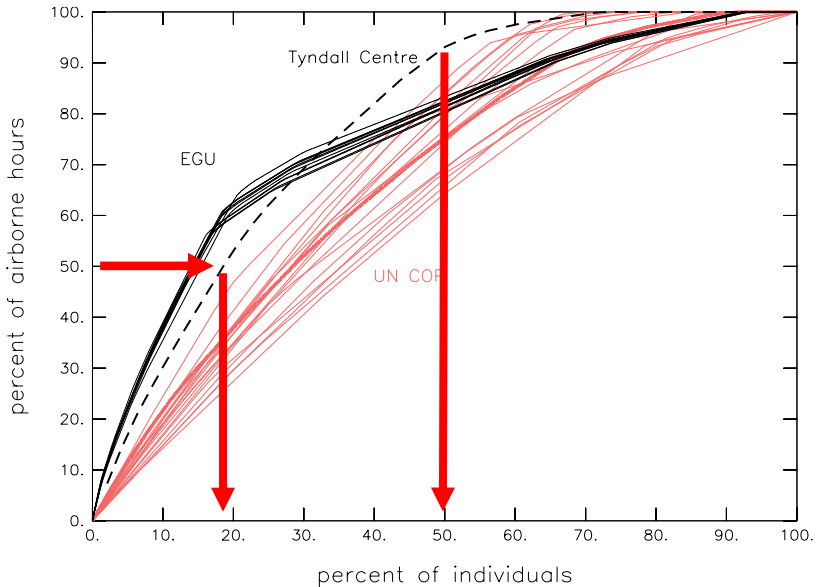
- Work-related travel (e.g., conferences), esp. flying, likely to be main carbon emitting activity from research (Rosen, 2017)

- Climate scientists who reduce their carbon footprint are more credible and more likely to inspire behaviour change (Attari et al., 2016)

Background (2)

- Tyndall Centre for Climate Change Research focus on walking the walk
  - Working paper and recommendations
  - In-house travel tracker

- Preliminary research:
  - Few individuals doing most flying (Tyndall)
  - Personal and structural influences




Tyndall°Centre
for Climate Change Research

Towards a culture of low-carbon research for the 21st Century

Corinne Le Quéré, Stuart Capstick, Adam Corner, David Cutting, Martin Johnson, Asher Minns, Heike Schroeder, Kate Walker-Springett, Lorraine Whitmarsh, Ruth Wood

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Tyndall Centre for Climate Change Research Working Paper 161

International researcher flying survey 2017

Aims

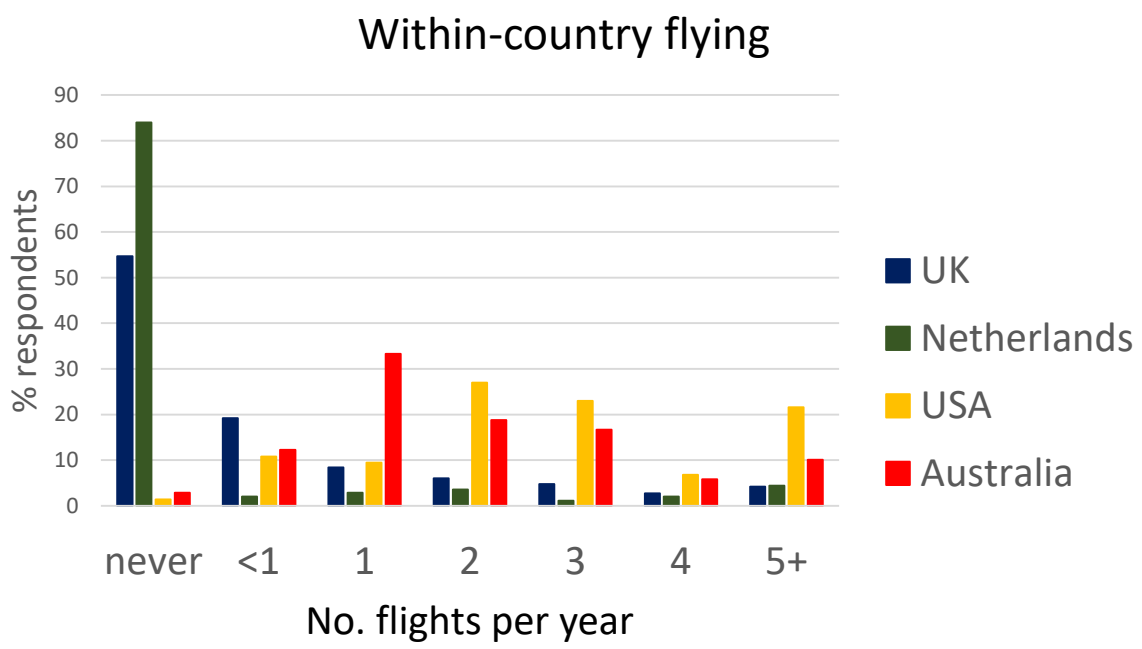
- Assess who is flying more/less: climate change researchers?
- Examine attitudes, choices, influences on flying (and not flying)
- Obtain wider, more representative researcher sample
- Test information effects (framing)

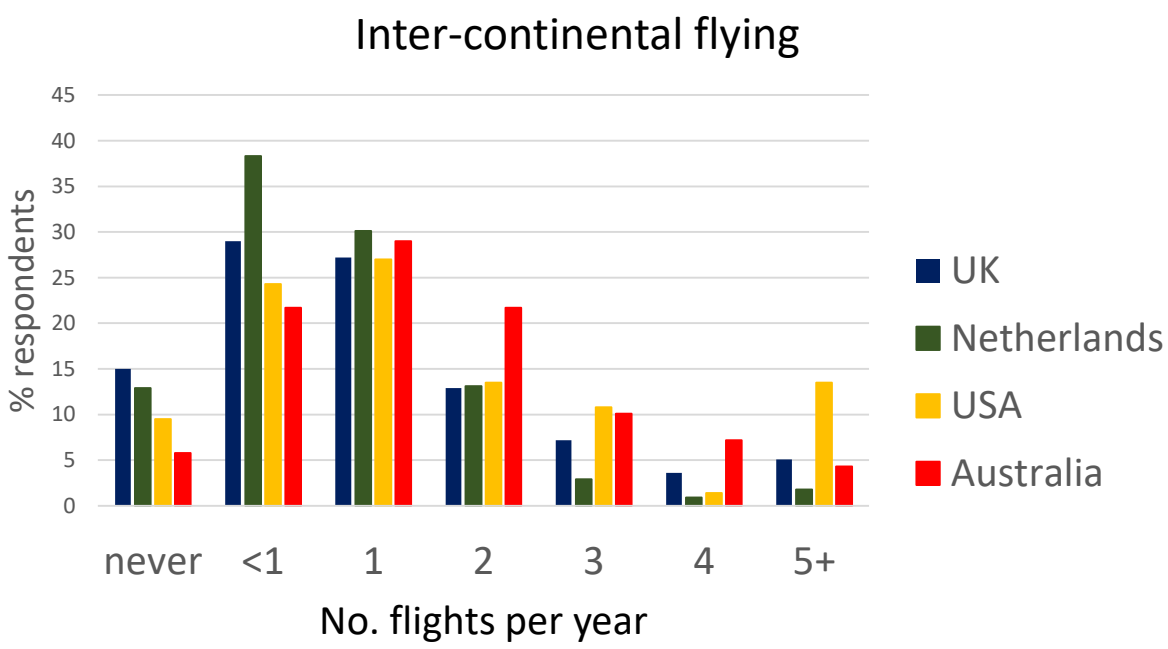
Survey methods: study 1

- **Contact** potential participants across 30 universities
  - stratified random sample from QS World University Rankings
  - various disciplines across science and humanities e.g. biology, history, environmental sciences
  - ~10,000 emails sent; Dillman method + to *Future Earth* network

- Final sample = **1,408** (14% response rate)
- 43% female; broad age, career range; 59 countries (esp UK, NL, USA, Aus)
- **Measures:** travel behaviours, attitudes and contextual factors; climate change knowledge and concern; ‘willingness to pay’ modal shift scenarios

Levels of flying (by country)

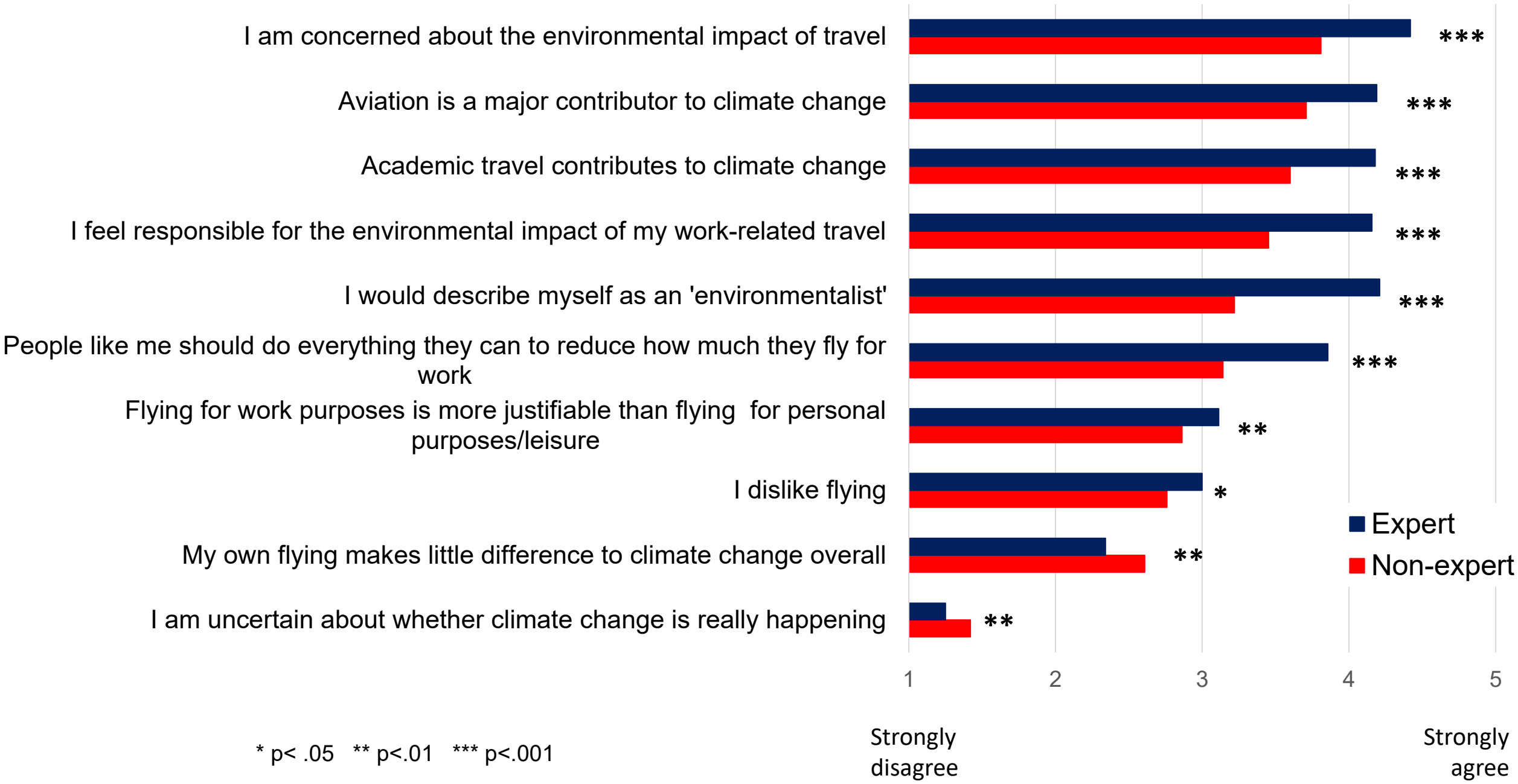




Attitudes: climate change experts vs non-experts

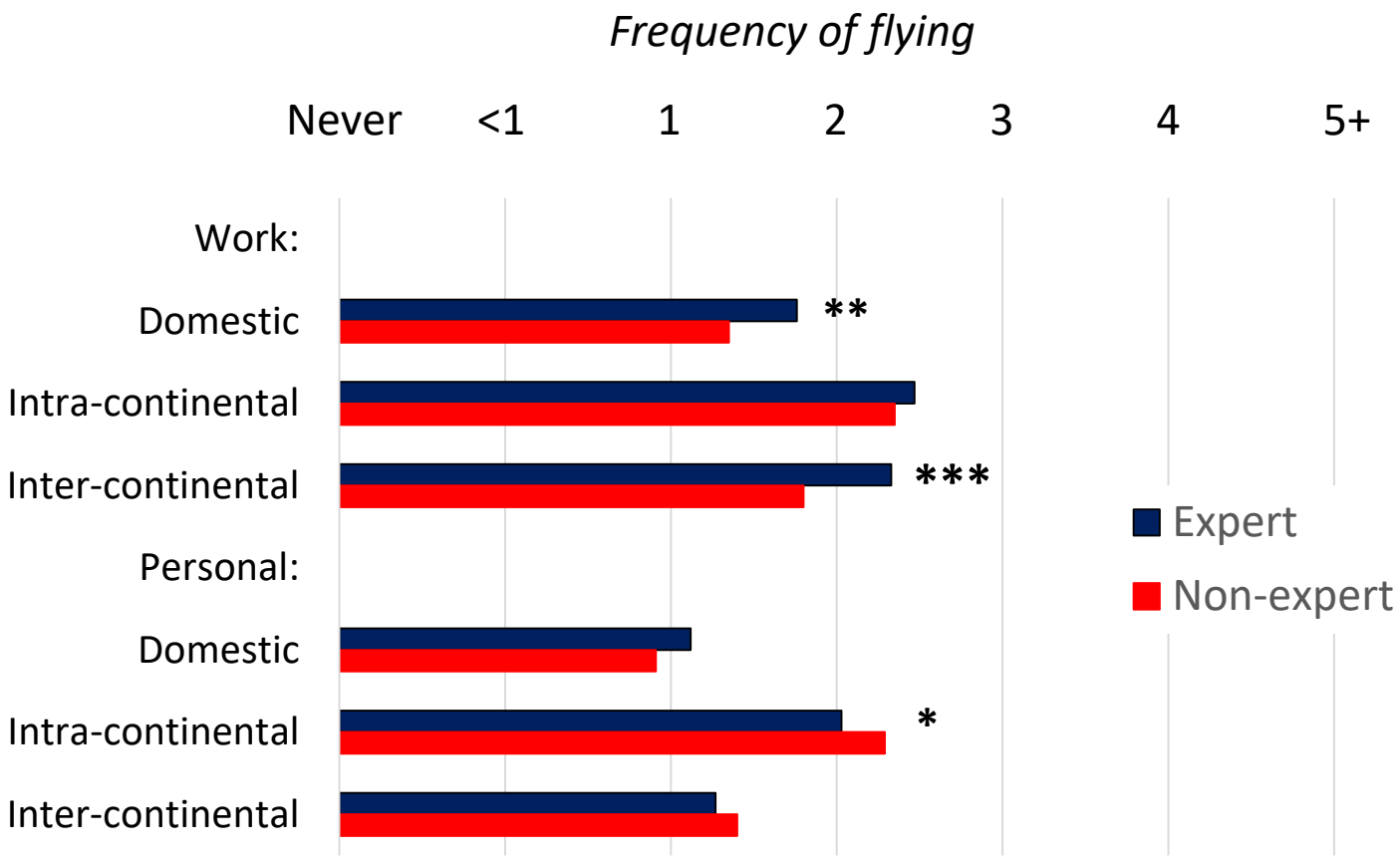
Analysis: climate change/sustainability a ‘major’ part of their job (‘experts’ 17%; N=219)

versus ‘not at all’ (‘non-experts’; 65%; N=832)


I am concerned about the environmental impact of travel
Aviation is a major contributor to climate change
Academic travel contributes to climate change
I feel responsible for the environmental impact of my work-related travel
I would describe myself as an 'environmentalist'
People like me should do everything they can to reduce how much they fly for work
Flying for work purposes is more justifiable than flying for personal purposes/leisure
I dislike flying
My own flying makes little difference to climate change overall
I am uncertain about whether climate change is really happening
***
***
***
***
***
***
**
*
**
**
Expert
Non-expert
1
2
3
4
5
Strongly disagree
Strongly agree

* p< .05 ** p<.01 *** p<.001

Amount of travel (climate change expertise)



Frequency:
Never (0) to 5+ trips per yr (5)

* p< .05 ** p<.01 *** p<.001

What predicts flying overall?

Some significant predictors of flying for work:

- Seniority
- Location
- Personal (non-work) flying
- Climate change/ sustainability part of job (holds when controlling for fieldwork)

Non-significant predictors:

- Gender
- Age
- Having children

	Beta	**t**	**Sig.**
Gender	-0.04	-1.51	0.13
Age	-0.03	-0.57	0.57
Student	0.09	1.39	0.17
Researcher	**0.17**	**2.62**	**0.01**
Asst/Assoc Professor	**0.26**	**3.89**	**0.00**
Professor	**0.42**	**7.14**	**0.00**
UK	**-0.15**	**-3.58**	**0.00**
Mainland Europe	**-0.13**	**-3.05**	**0.00**
North America	-0.03	-0.81	0.42
Asia	0.04	1.29	0.20
Africa	0.00	-0.10	0.92
South America	-0.06	-1.90	0.06
Conduct fieldwork	**0.08**	**2.82**	**0.01**
CC major part of job ('experts')	**0.09**	**2.35**	**0.02**
CC knowledge	**0.08**	**2.27**	**0.02**
CC worry	-0.02	-0.72	0.47
Total personal flights	**0.36**	**12.73**	**0.00**

Total R^2 =.27

Willingness to pay more (time and money)

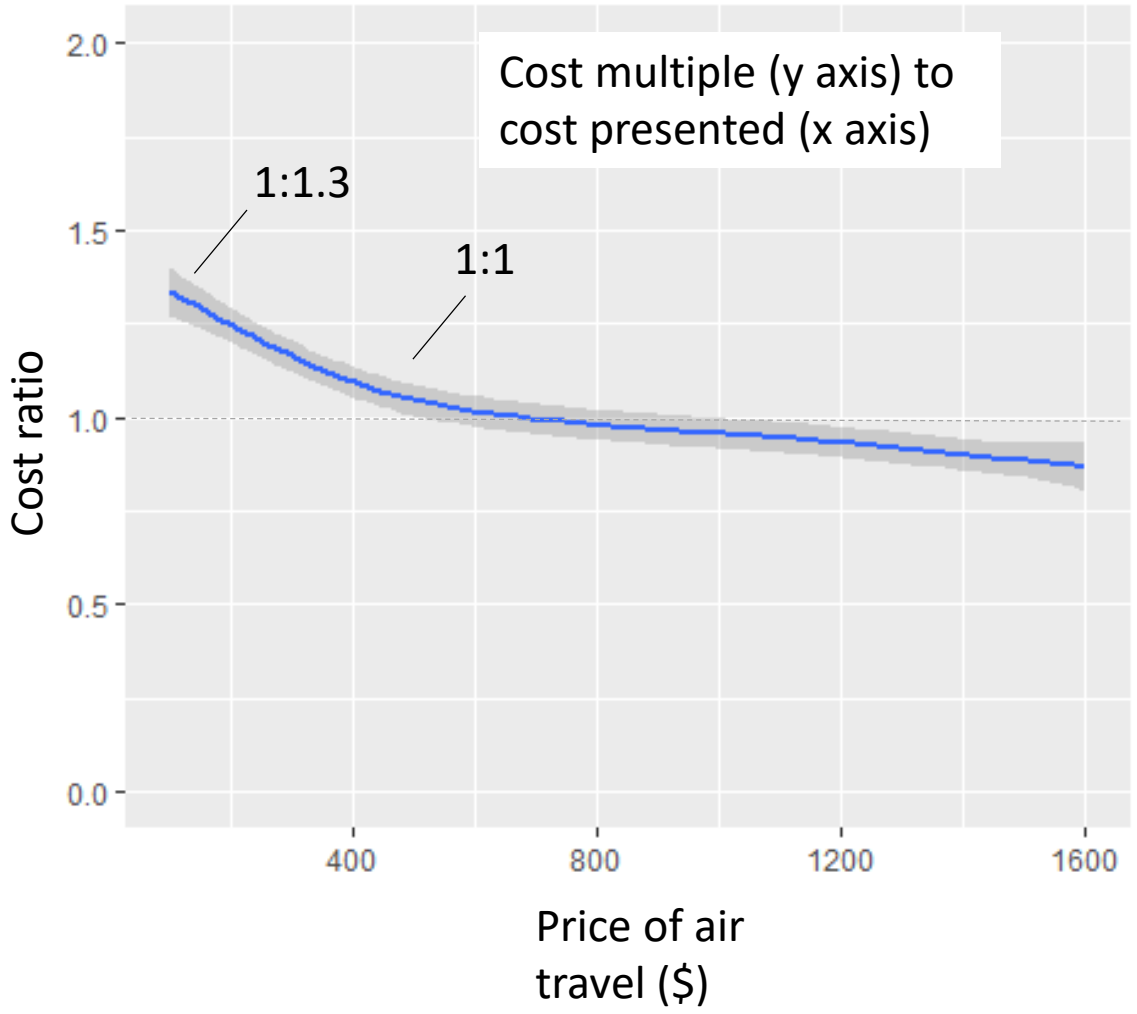
Will people spend more time using other means?

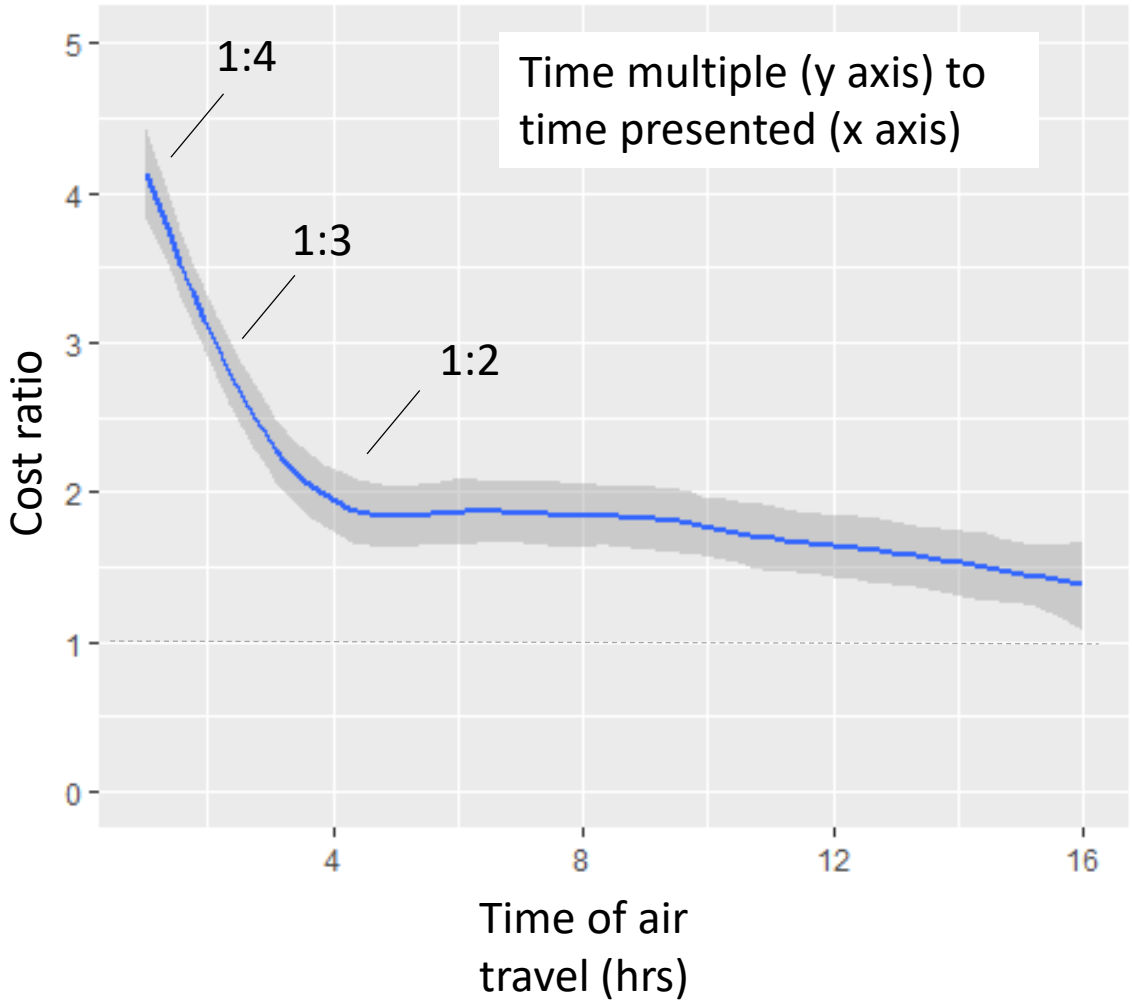
Consider a journey that you wish to take for work that would take [1, 3, 5… 15] hours by plane. What is the longest period of time you would be willing to spend using a non-aviation means of transport (e.g. train, car) instead, in order to undertake this journey?

Will people pay more money to use other means?

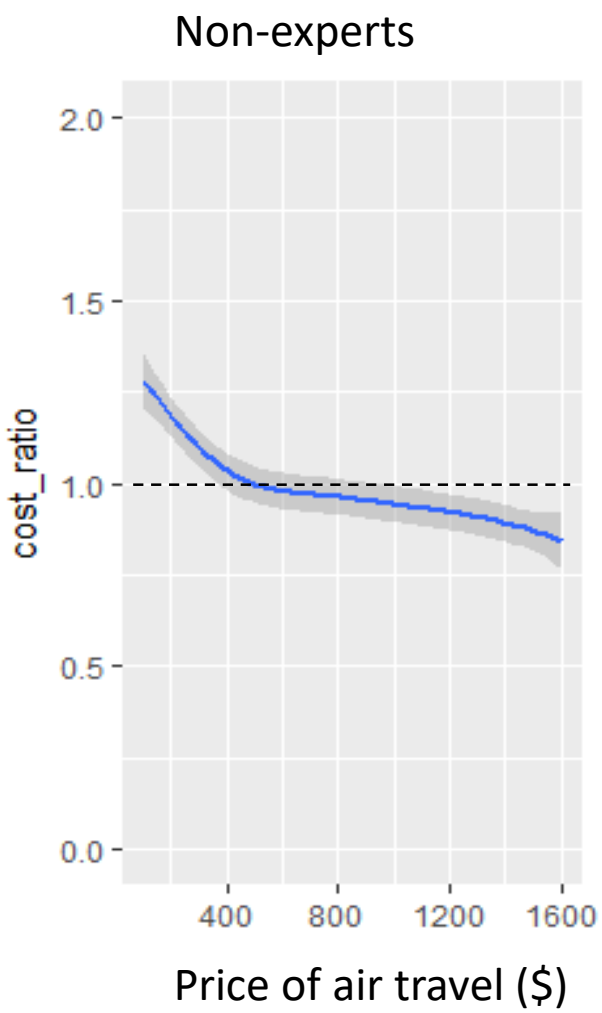
Consider a journey that you wish to take for work that would incur the following cost in US dollars, if travelling by plane: [$200, $400, $600… $1600]. What is the highest cost you would be willing to incur in order to take this journey by non-aviation means of transport instead, assuming a similar period of time spent travelling?

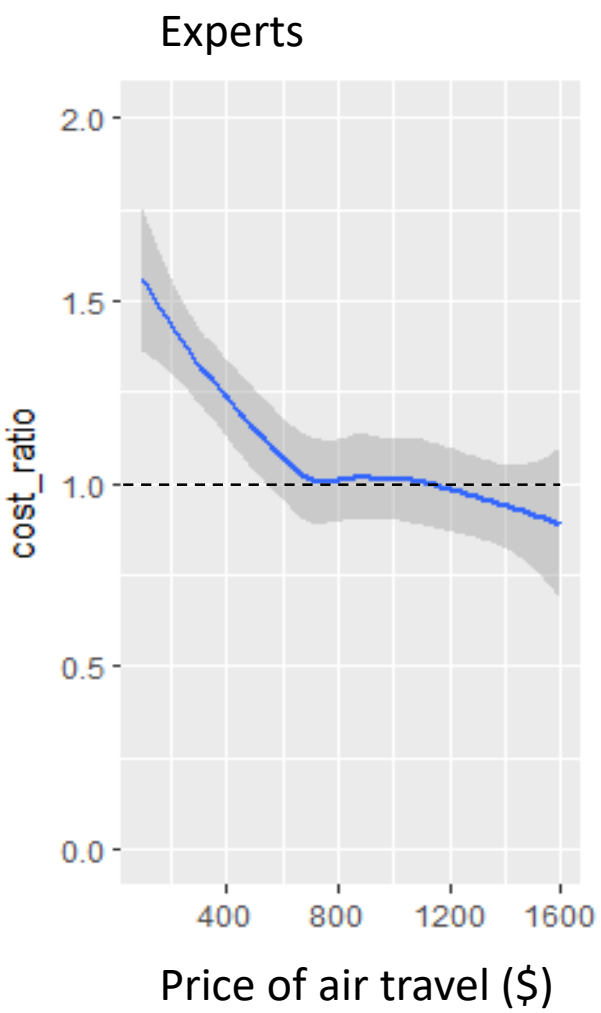
Willingness to pay ratios

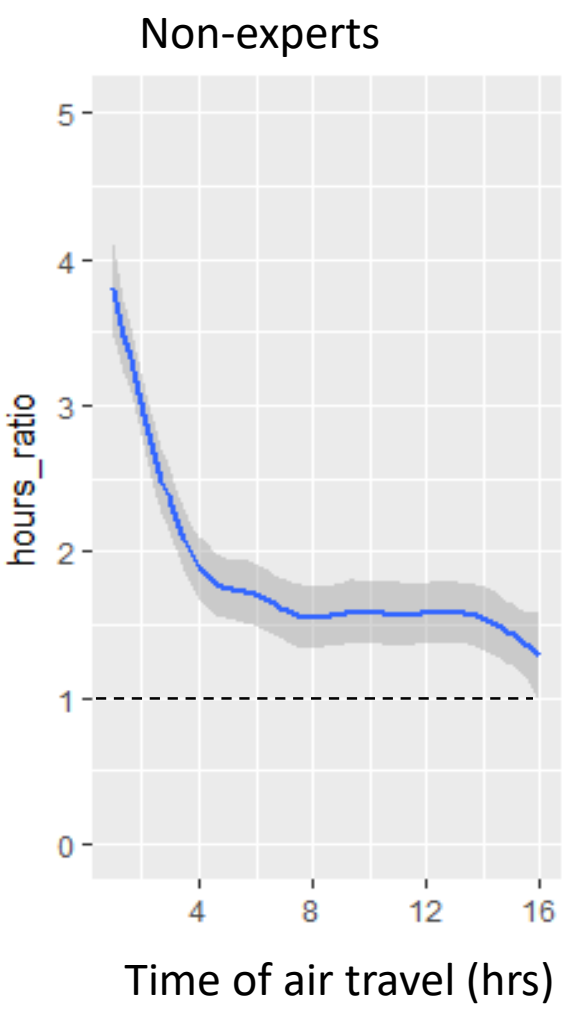


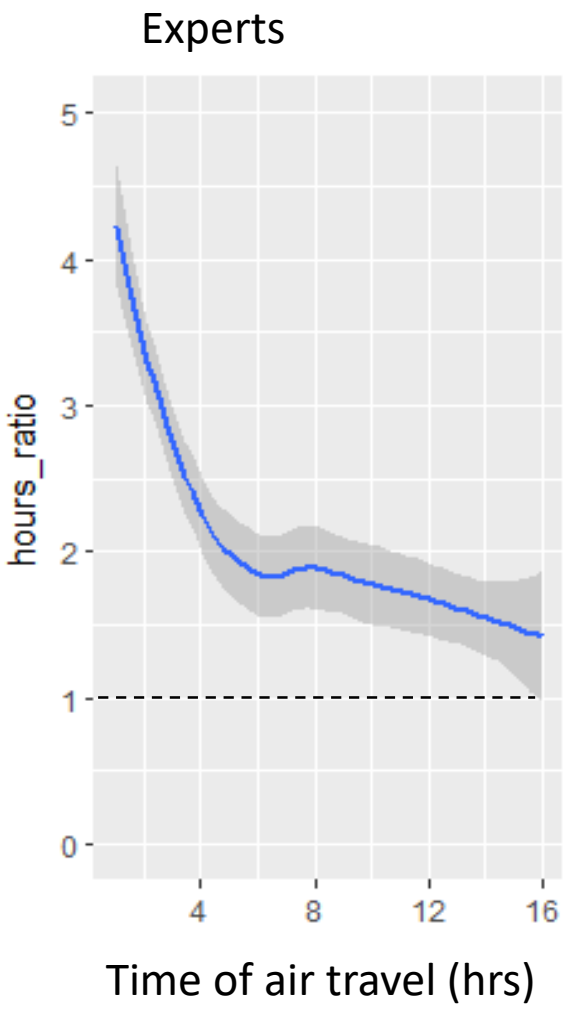


Willingness to pay ratios









Study 2:
Does information framing influence intentions?

Aim: examine effect of framing climate change impacts of travel on travel attitudes and intentions

Sample:
Prolific Academic participant panel (N=375); filter = academics/researchers

Random assignment to one of three conditions:

- **Technical** (factual info about environmental impacts)
- **Justice** (unequal global distribution of responsibility & impacts of climate change)
- **Control** (how to change a car tyre)

Measures: travel intentions, support for institutional policies,
environmental values (New Environmental Paradigm) and contextual factors

Study 2:
Does information framing influence intentions?

Technical/ impacts framing
"The aviation industry is one of the fastest growing sectors in the world. In 2010 there were 1.9 billion flights a year globally; by 2015 this figure reached 3.6 billion. […] Academics and researchers are among these passengers, travelling frequently for conferences, project meetings and fieldwork. Air travel is responsible for significant quantities of carbon dioxide (CO2), a major cause of climate change. […] Air travel typically emits more CO_2 per kilometer than other modes of transport such as trains, cars, coaches and ferries. […]

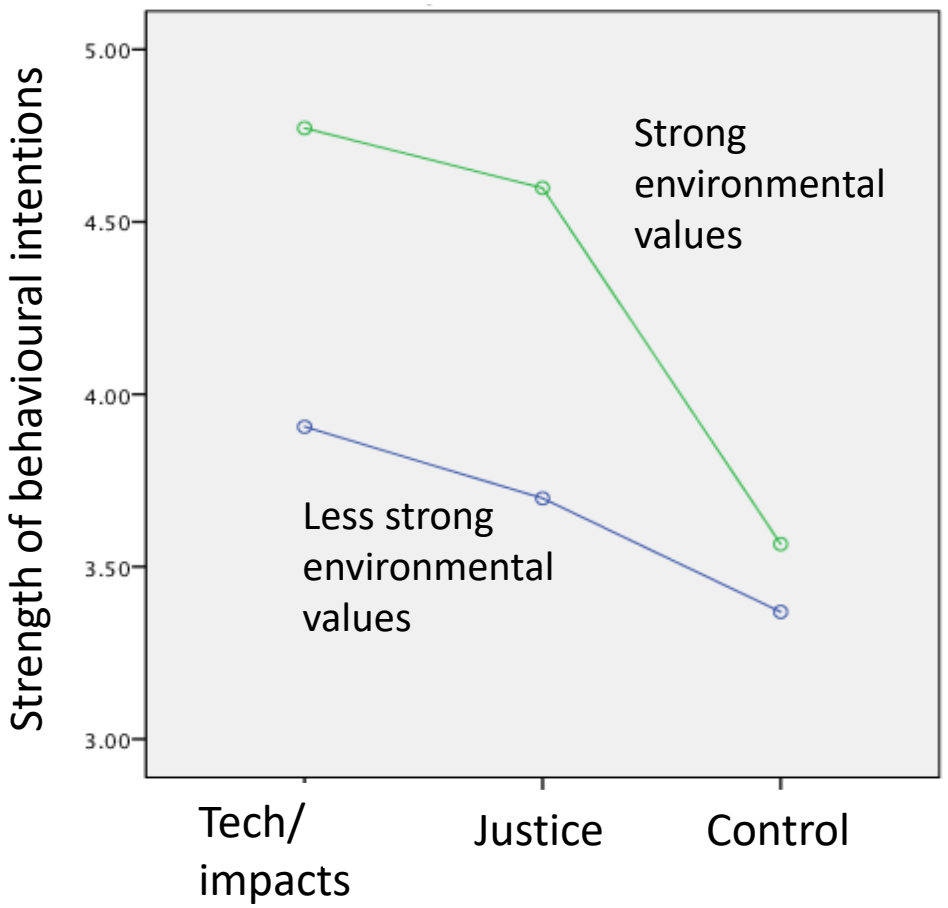
Justice framing
"The risks and impacts of climate change are not shared equally. […] Although the poorest people in the world are the ones who will suffer the most from the impacts of climate change, they've done the least to cause it. The world's richest 10% produce half the world's carbon emissions; by contrast, the poorest half of the world's population produce only a tenth of global emissions (Oxfam, 2015). […] In the UK, aviation emissions of the top 10% of earners are around six times the size of the lowest 10% of earners (JRF, 2015). Air travel is responsible for significant quantities of carbon dioxide (CO2), a major cause of climate change. […]

Both conditions:

It has been argued that one of the ways in which academics and researchers can help to limit their own emissions is by reducing their air miles, in particular by limiting their flying for work events (e.g., conferences). […]

Study 2: Does information framing influence intentions?

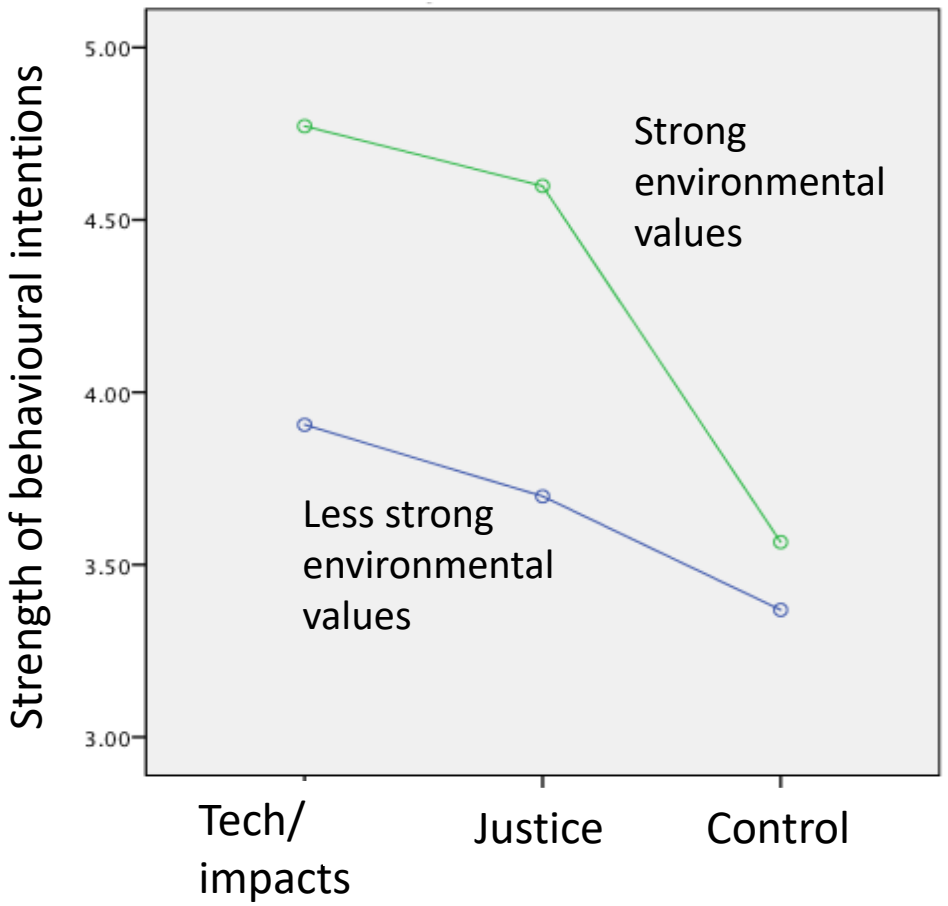
Behavioural intentions to reduce work flying



Main effect of condition: F (2,362) = 12.02, p <.001, η_p^2=.06
Main effect of NEP: F (1,362) = 18.04, p <.001, η_p^2=.05
Non-sig. interaction: F (2,362) = 2.22, p =.11, η_p^2=.01

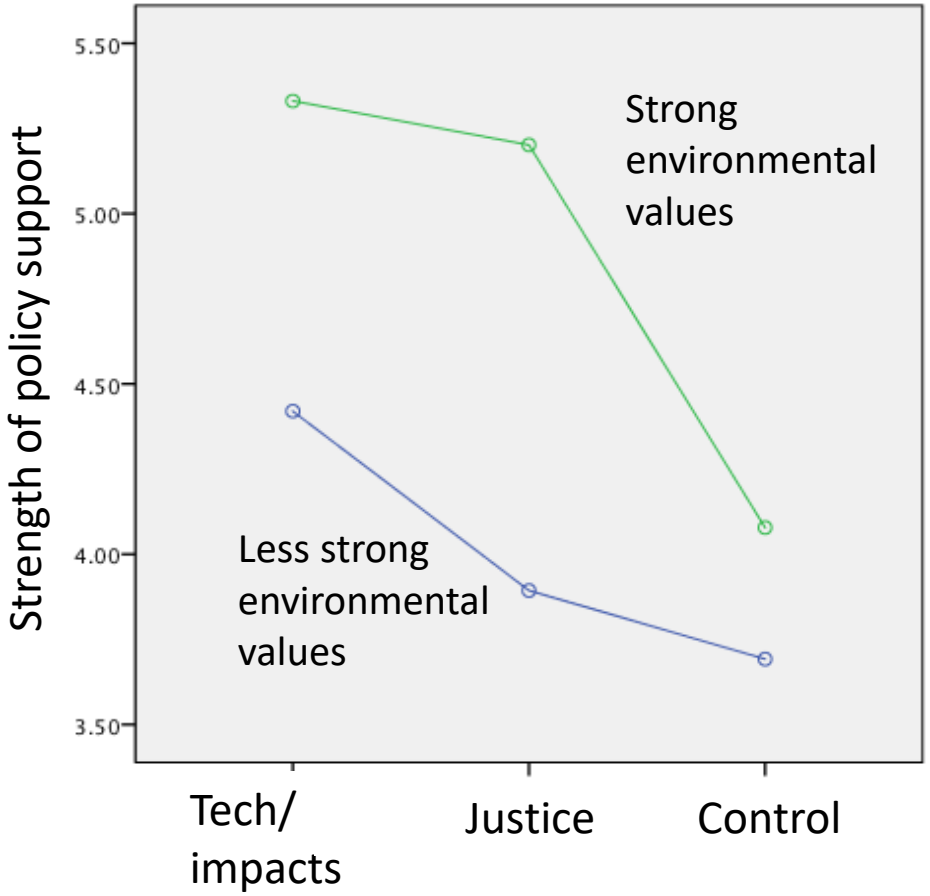
Study 2: Does information framing influence intentions?

Behavioural intentions to reduce work flying



Main effect of condition: F (2,362) = 12.02, p <.001, η_p^2=.06
Main effect of NEP: F (1,362) = 18.04, p <.001, η_p^2=.05
Non-sig. interaction: F (2,362) = 2.22, p =.11, η_p^2=.01

Support for institutional policies to reduce flying



Main effect of condition: F (2,389) = 13.80, p <.001, η_p^2=.07
Main effect of NEP: F (1,389) = 30.12, p <.001, η_p^2=.07
Marginally sig. interaction: F (2,389) = 2.79, p =.06, η_p^2=.01

Conclusions and reflections

- Climate change/ sustainability researchers fly more than other researchers – despite knowledge, attitudes, fieldwork, etc.
- More senior researchers fly more than junior researchers
- Those with high personal flights also fly more for work – income effect?
- Some willingness to pay for alternatives; especially time costs for shorter journeys
- Information about environmental impacts and social justice affects attitudes and intentions
- Other measures not covered here (offsetting, policy, use of virtual options and low-carbon alternatives)
- Publishing this work…

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Thank you ☺

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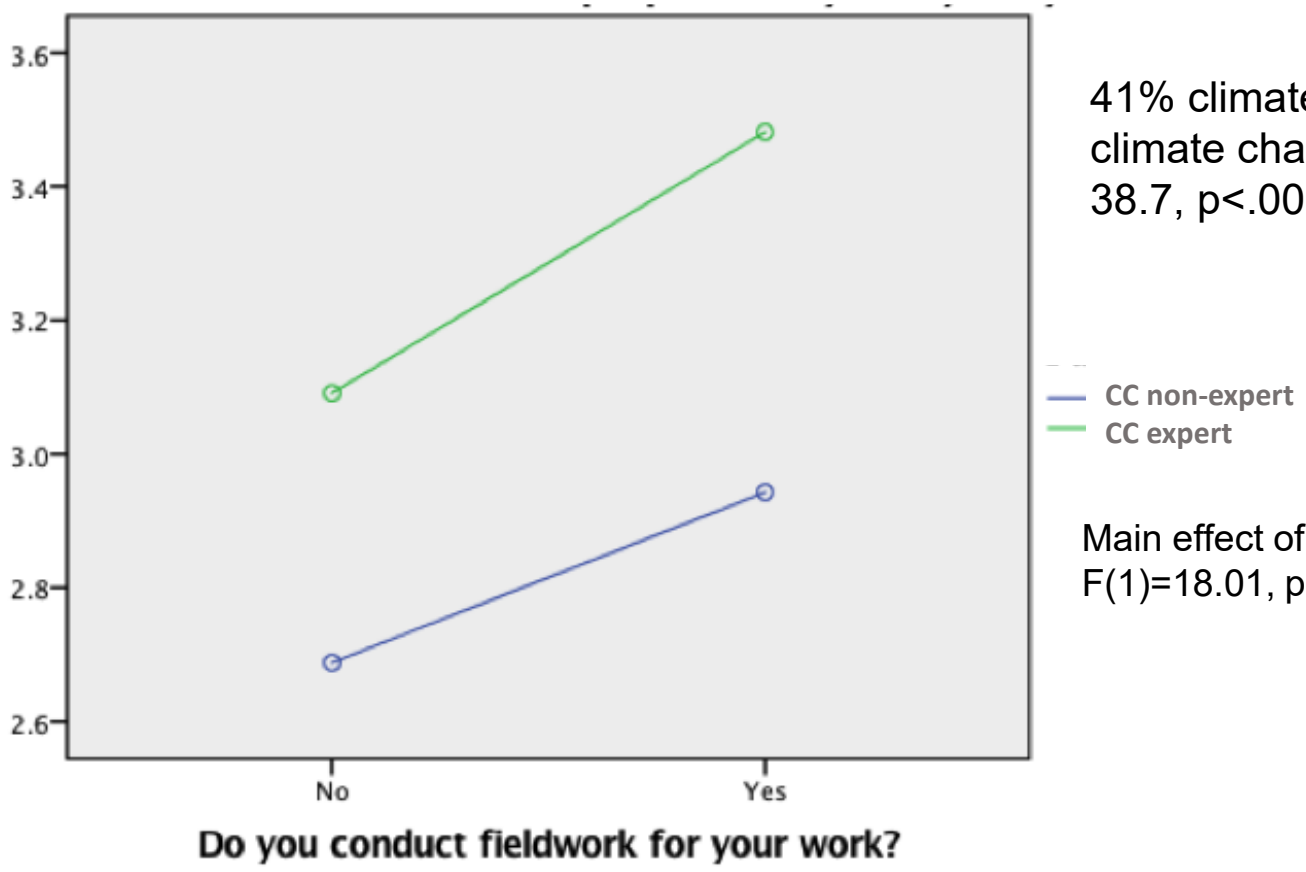
What predicts flying?

Fly for work (intercontinental)



41% climate change non-experts vs. 65% climate change experts conduct fieldwork (X^2 = 38.7, p<.001)

Main effect of job type:
F(1)=18.01, p<.001