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Survey FlyingLess 2024

Graphical presentation of aggregated survey results on the topic of flight reduction in academia

INSTITUT FÜR ENERGIE- UND UMWELTFORSCHUNG HEIDELBERG

TdLab GEOGRAPHIE

UNIVERSITÄT HEIDELBERG ZUKUNFT SEIT 1386

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NATIONALE KLIMASCHUTZ INITIATIVE

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Graphical Abstract

Outline

1. About FlyingLess

With the internationalization of science and research, air travel by university staff has also increased - scientists are among the frequent flyers.
The goal of the FlyingLess project is to support universities and research organizations to reduce their air travel emissions, which accounts for a significant share of their total greenhouse gas emissions. FlyingLess develops approaches to reduce air travel in academia that are implemented at different levels (research, teaching and administration). Successful reduction of flight emissions requires broad participation and support, both from the management level and from staff and students. The project is carried out in close collaboration with four partners (University of Konstanz, University of Potsdam, EMBL – European Molecular Biology Laboratory, MPIA – Max-Planck-Institute for Astronomy) as well as further academic institutions collaborating with the project as so-called «Satellites». FlyingLess is lead by the ifeu - Institute for Energy and Environmental Research Heidelberg in close collaboration with the TdLab Geography of the University of Heidelberg. The project is funded over 3 years by the National Climate Initiative (NKI) of the German Federal Ministry for Economic Affairs and Climate Action. Throughout the project, several surveys were conducted among the staff of the involved academic institutions to collect data on travel behavior, reasons for air travel, and attitudes toward business flights. The results of the 2024 survey are presented in this report.

2. Methodological Approach

2.1. Group of respondents and years of the survey

Surveys were conducted in 2022, 2023, and 2024 among the staff of the participating academic institutions. The participating institutions varied from year to year due to changing capacities within the university administrations. Table 1 shows the structure of the sample by participating institutions, year, as well as the status groups recorded during each survey.

The surveys were conducted using an online questionnaire created with limesurvey. Participating institutions were asked to distribute the questionnaire to their staff through their mailing lists. The survey period lasted at least one month. However, since some of the participating institutions were unable to start the survey at the official launch date due to internal coordination, the survey durations varied between the respective institutions. The collected data were cleaned after the completion of the online survey. Incomplete questionnaires were discarded, as well as those that could not be clearly assigned to any of the participating institutions. Additionally, to ensure truthful responses, all questionnaires completed in less than 5 minutes were excluded. The analysis and graphical presentation of the cleaned data were carried out using Microsoft Excel.

Some questions offered additional free text inputs. They are not shown comprehensively. The list reflects a summary of relevant examples. The text is left in original form. Thus, it is not translated or corrected in spelling or grammar.

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Table 1: Survey sample by participating institutions, year and status group

Year	Institution	Scientists		Research management / technology / admin	Students	∑
		Professor and group leaders	Scientists without group lead			
2022	EMBL	37	64	-	-	**101**
	MPIA	7	24	-	-	**31**
	University of Konstanz	71	137	-	110	**318**
	University of Potsdam	44	75	-	186	**305**
	University of Osnabrück	23	26	-	14	**63**
	TH Wildau	5	11	-	14	**30**
	University of Hildesheim	7	41	-	151	**199**
	University of Mannheim	39	46	-	48	**133**
	∑	**196**	**360**	**0**	**523**	**1,079**
2023	EMBL	28	80	39	-	**147**
	MPIA	13	33	7	-	**53**
	University of Konstanz	122	214	145	127	**608**
	University of Potsdam	59	135	33	199	**426**
	University of Osnabrück	23	39	2	24	**88**
	TH Wildau	13	7	29	35	**84**
	University of Hildesheim	1	3	3	11	**18**
	University of Mannheim	68	75	47	91	**281**
	University of Oldenburg	52	110	43	166	**371**
	University of Dresden	91	307	24	264	**686**
	University of Hamburg	113	223	117	655	**1,108**
	∑	**583**	**1,226**	**489**	**1,572**	**3,870**
2024	EMBL	15	47	56	-	**118**
	MPIA	8	21	11	-	**40**
	University of Potsdam	92	166	55	-	**313**
	University of Hamburg	11	14	15	-	**40**
	University of Stuttgart	92	229	66	-	**387**
	University of Greifswald	59	124	28	-	**211**
	University of Zürich	140	236	124	-	**500**
	∑	**417**	**837**	**355**	**-**	**1,609**

2.2. Response rate of the survey

Table 2 shows the response rates of the participating institutions. In total, about 21,722 of university staff was contacted via e-mail to participate in the survey. The survey received 1,609 complete datasets. 908 datasets were excluded from the analysis because they did not meet defined quality requirements (mainly unfinished datasets). The response rate varies between 4.9% and 14.5% resulting in an average of 10%.

Table 2: Response rates of participating institutions

	Employees	Respondents	Response rate
EMBL	1,776	118	6,6%
MPIA	292	40	14%
University of Potsdam	3,006	313	10,4%
University of Stuttgart	5,022	387	7,7%
University of Greifswald	1,451	211	14,5%
University of Zürich	10,175	500	4,9%
∑	21,722	1,609	10%
University of Hamburg*	*8,838*	*40*	*0,5%*

**The University of Hamburg only send survey link via newsletter and not directly via e-mail. Thus, the responses are part of the aggregated results but the response rate of the University of Hamburg is excluded from general response rate calculation.*

2.3. Scope

To assess the representativeness of the survey results the limitations and scope needs to be taken into account: All employees received the same e-mail and had same access to the survey but no systematic randomised selection has been conducted which reduces certain biases of participant groups. Due to data protection policies, certain data could not be collected such as gender or age to further analyse the structure of the sample. At some institutes, there may have been committed members who promoted the survey within their department. On top it needs to be considered that the survey links had no individual key restriction, which holds the option that one could have answered the survey more than once. Despite the limitations, our survey offers broad accessibility to all employees, includes a range of academic institutions, status groups, and disciplines, providing a solid foundation for representative results.

3. Structure of the report

This document is considered to be a graphical presentation of aggregated survey results visualizing the frequencies of answers for each survey question (33 questions for scientists and 31 questions for administration). Chapter 4 visually depicts the aggregated results of the status group scientists across all participating institutions. Chapter 5 compares the status groups of professors and group leaders as well as scientists without professorships/group leaders individually. Chapter 6 compares survey results from the 2022, 2023 and 2024 surveys. Chapter 7 presents the survey results for status group 'Research management / technology / administration.

The results and figures can be used for non-commercial purposes and together with the FlyingLess logo. The previous reports[1] from 2023 and 2022 can be downloaded from the FlyingLess Website (www.flyingless.de)

[1] Merrem, C.; Görlinger, S. (2023): Survey FlyingLess 2023 - Detailed report of the aggregated survey results on the topic of flight reduction in academia. ifeu - Institut für Energie- und Umweltforschung Heidelberg GmbH, Heidelberg. https://flyingless.de/fileadmin/user_upload/FlyingLess/Surveys/FlyingLess_survey_results_2023_2022.pdf (03.02.2025).
Merrem, C.; Görlinger, S. (2022): Survey FlyingLess 2022 - Detailed report of the aggregated survey results on the topic of flight reduction in academia. ifeu - Institut für Energie- und Umweltforschung Heidelberg GmbH, Heidelberg. https://flyingless.de/fileadmin/user_upload/FlyingLess/Surveys/FlyingLess_survey_results_2022.pdf (03.02.2025).

4. Results Scientists (N=1254)

In this chapter, the results of the scientists are presented in aggregated form. The status group consists of the survey results from professors & group leaders, N=417 and scientists without professorship / group leadership, N=837.

4.1. Structure of the respondent group

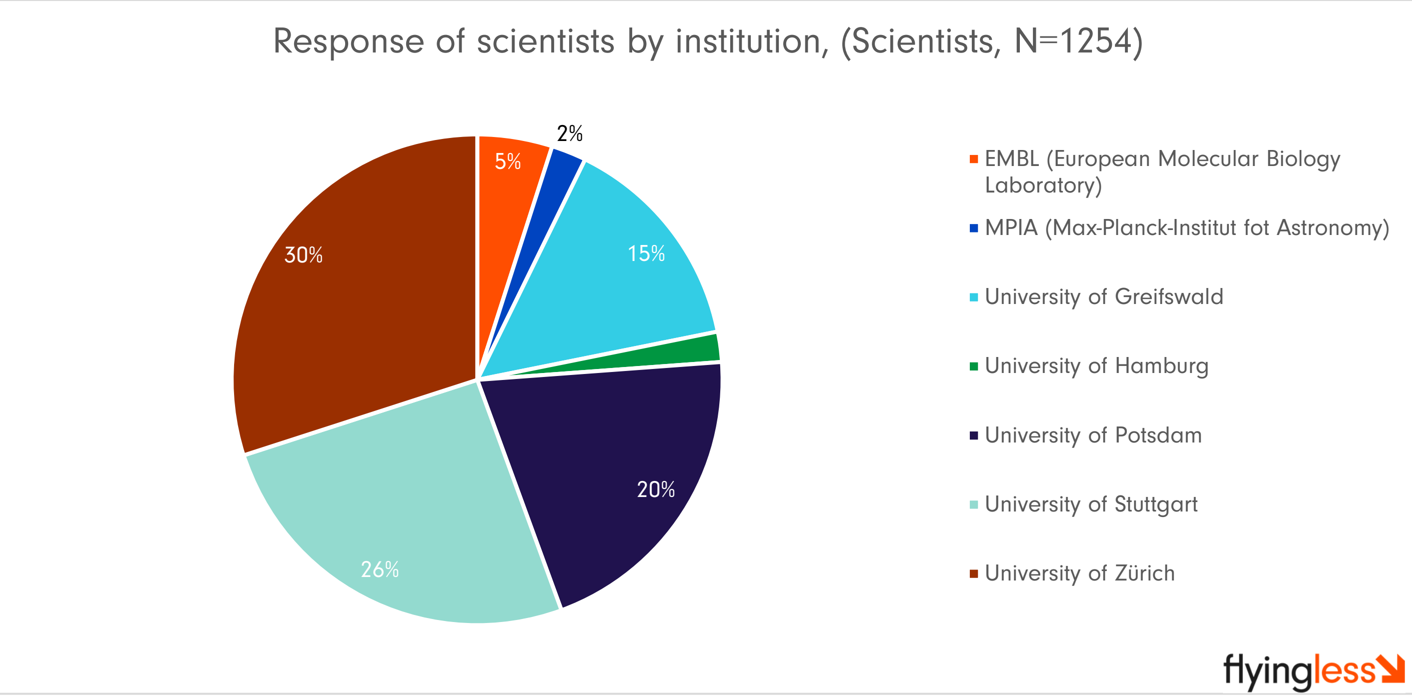

Figure 1: Response by institution. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). Relative frequency of institutional affiliation.

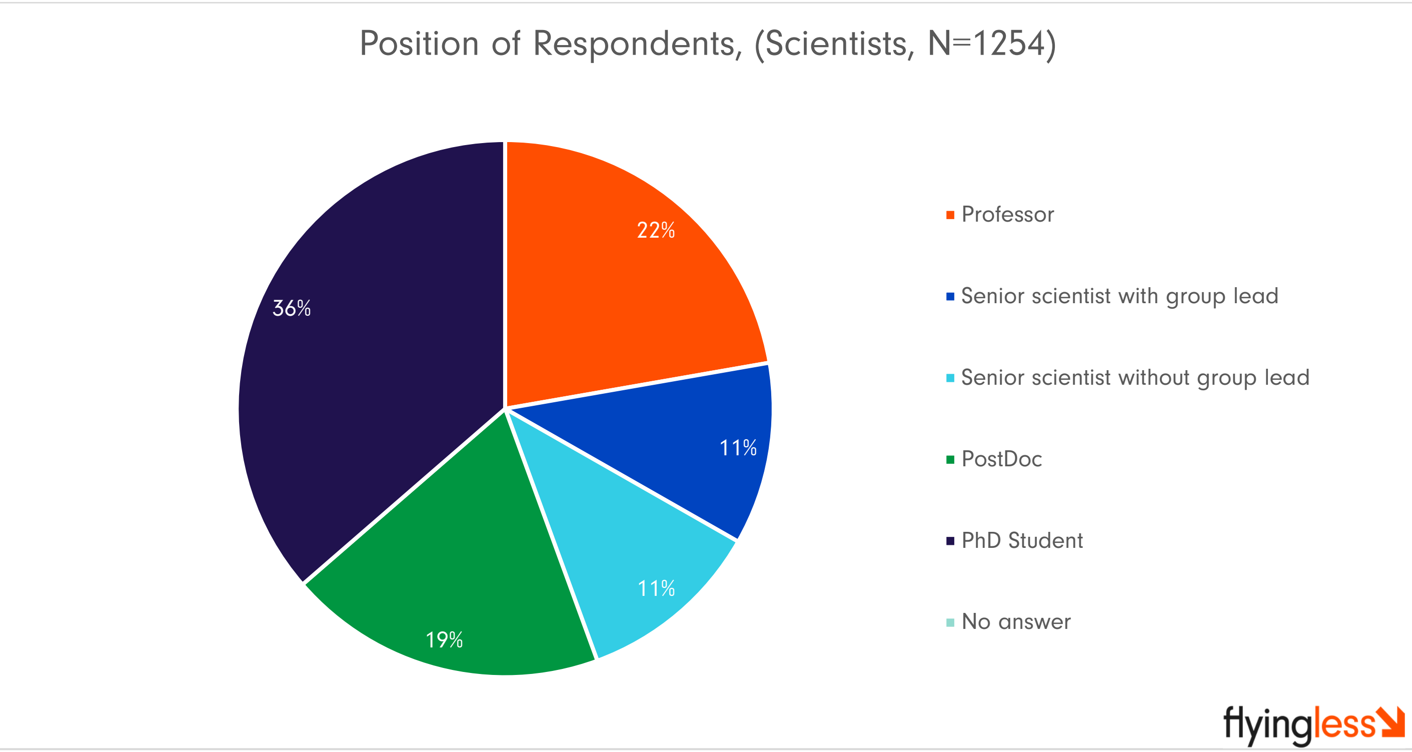

Figure 2: Position of the respondents. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). Relative frequency of the position.

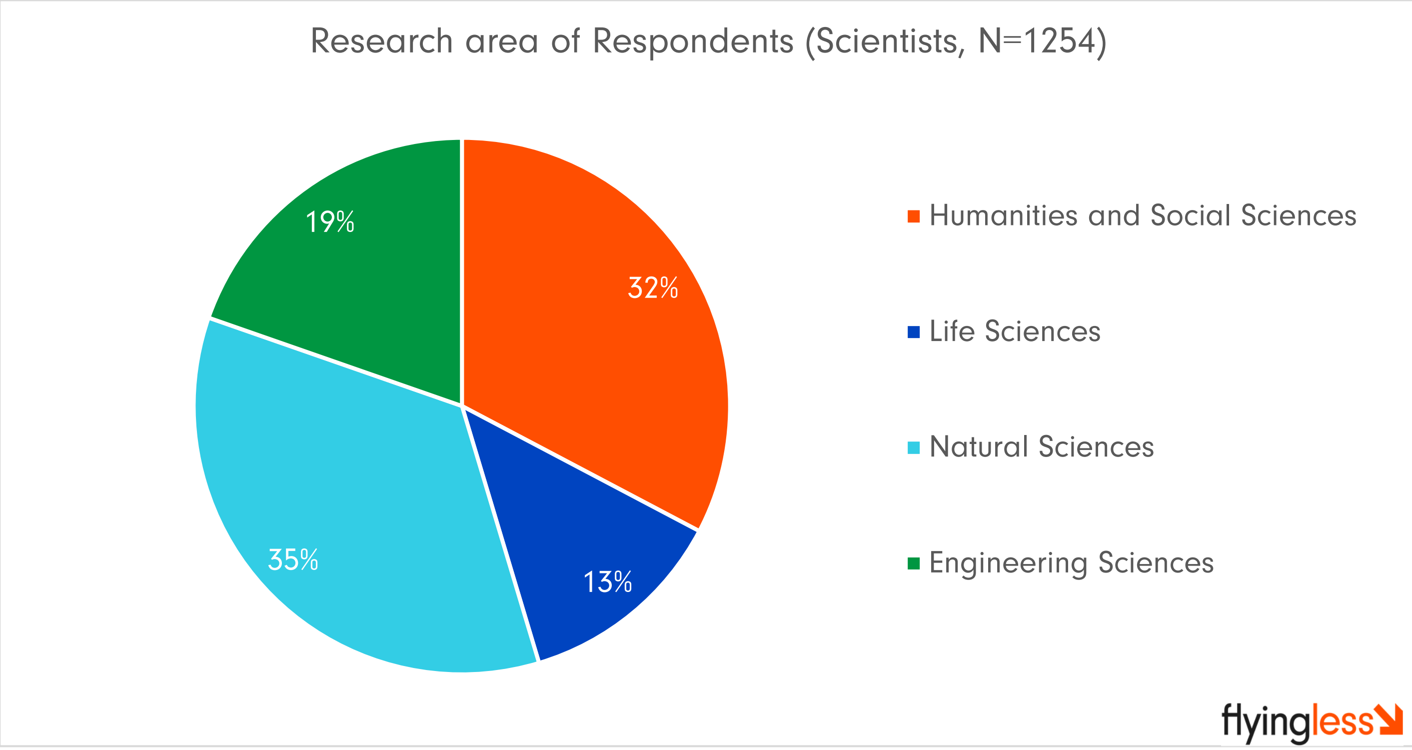

Figure 3: Research area of the scientists. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). Relative frequency of the research area. Categories correspond to the DFG structure.

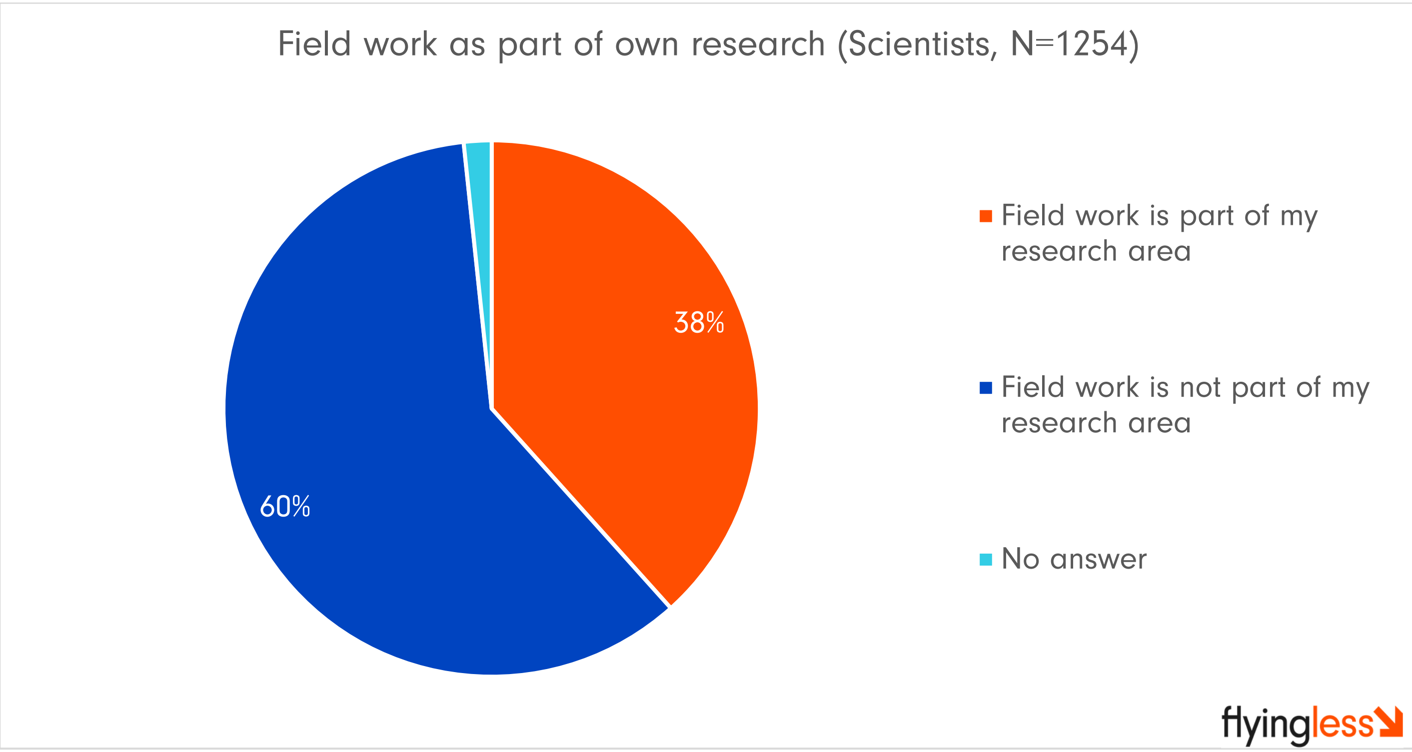

Figure 4: Field work as part of the own research. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). Relative frequency of field research in one's field of activity. Field research defined as collecting raw data outside of a laboratory, library, or workplace (including instrument maintenance/installation, etc.)).

4.2. The topic of academic flight reduction

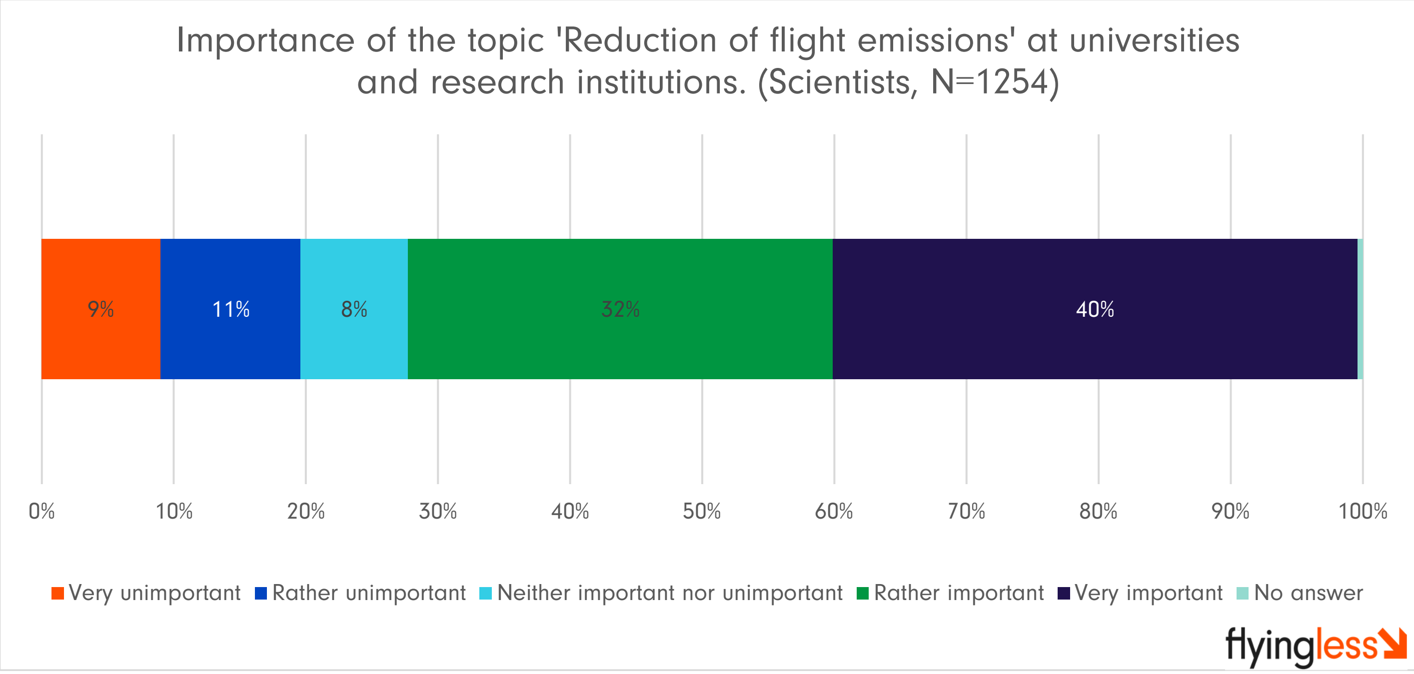

Figure 5: Evaluation of the topic of flight emissions at universities and research institutions. Relative frequency of mentions. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

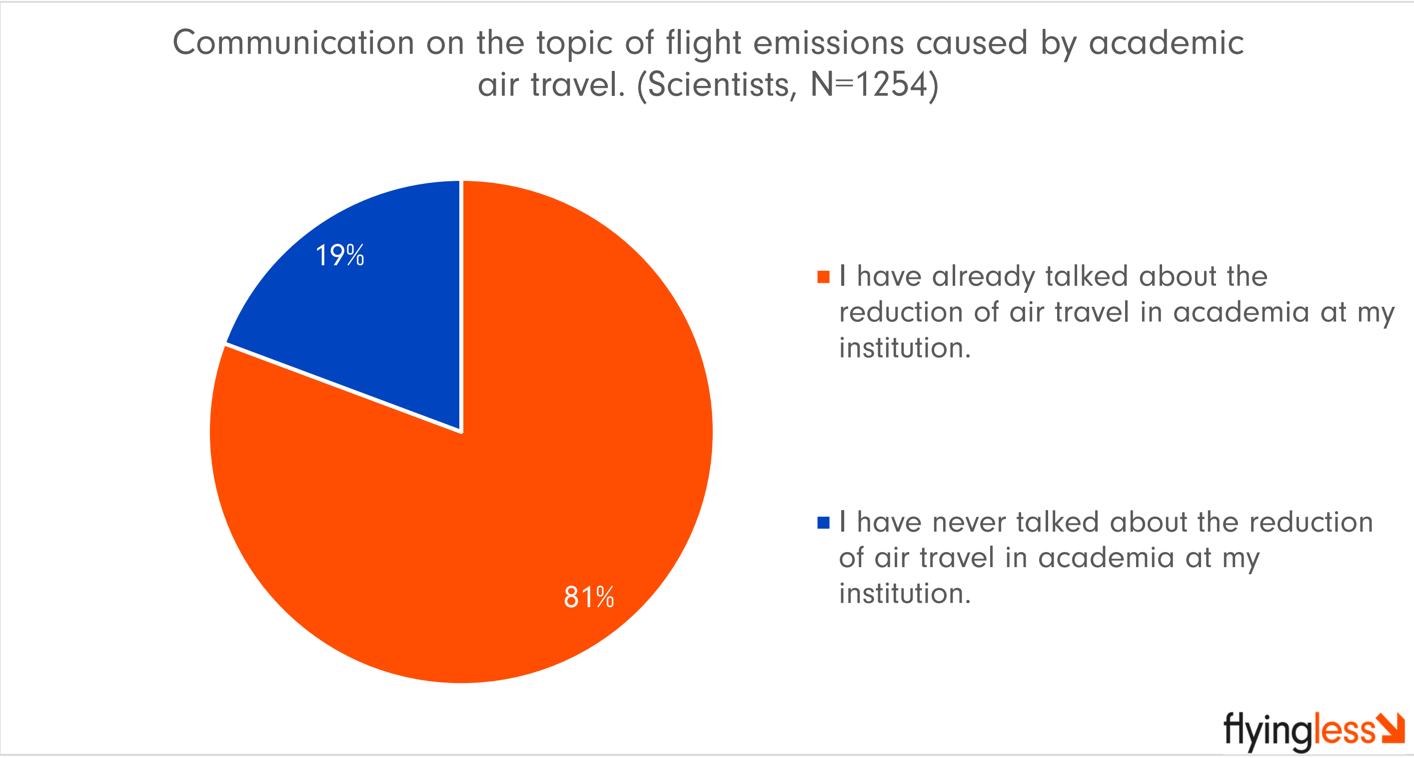

Figure 6: Communication on the topic of flight emissions from academic air travel. Relative frequency of mentions. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

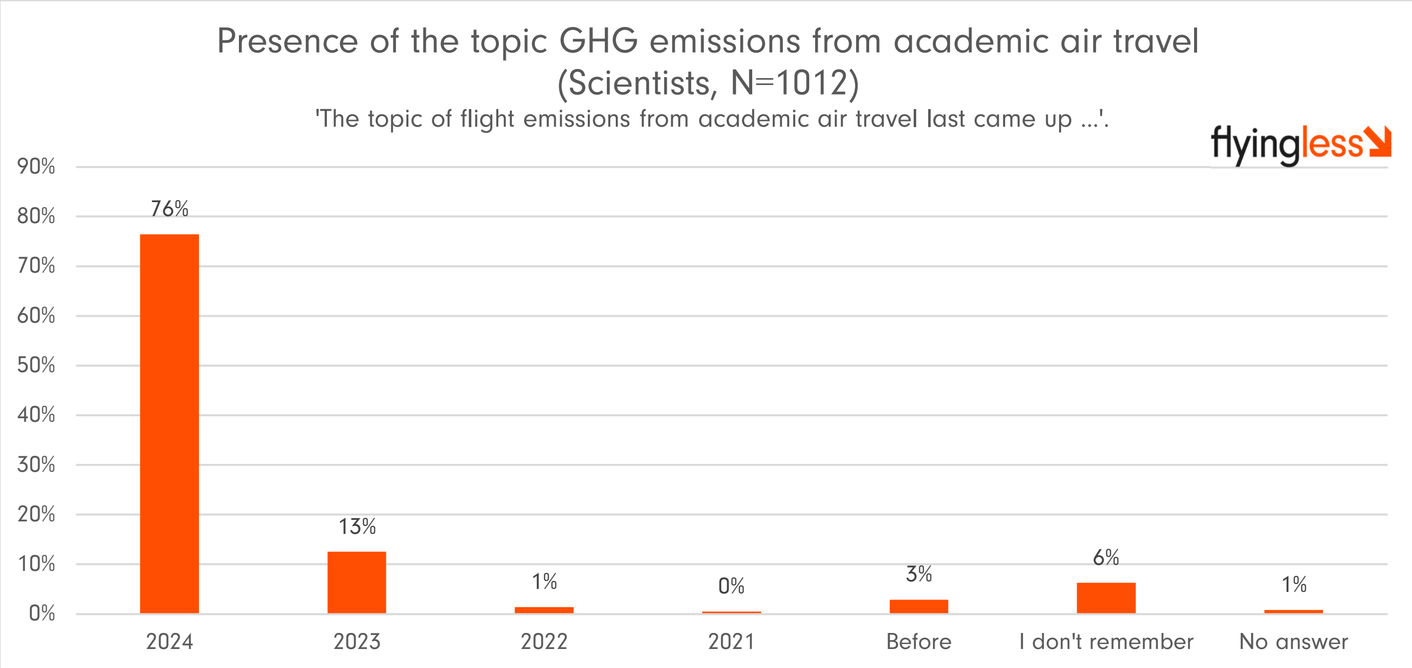

Figure 7: Presence of the topic of GHG emissions from academic air travel among scientists. Indication of the date of the last communication on the subject of flight emissions from academic air travel. Relative frequency of mentions. Status group: Scientists, N=1012 (aggregated from professors & group leaders, N=354 & Scientists without professorship/group lead, N=658). *Scientists who indicated that they had already spoken about the topic of flight emissions in academia were asked about the timing of the last communication about it.*

4.3. Average mobility (flight, train/bus) and use of virtual format per year in 2022 and 2023

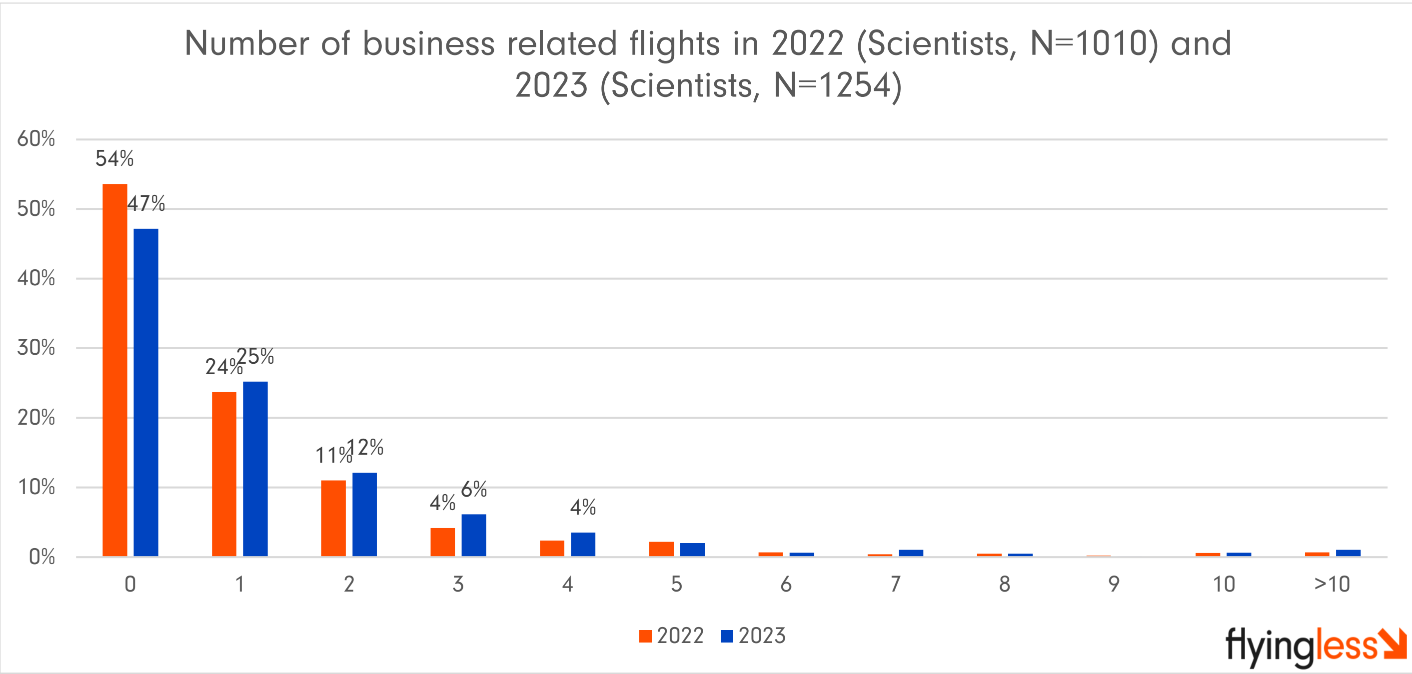

Figure 8: Number of business-related flights in 2022 and 2023 (respondents' estimate). Status groups: Scientists 2022, N=1010 (aggregated from professors & group leaders, N=381 & Scientists without professorship/group lead, N=629), Scientists 2023, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). Relative frequency of mentions (Y-axis) per aggregated number of trips per year (X-axis). Participants who indicated not having worked in their job in 2022 were not surveyed.

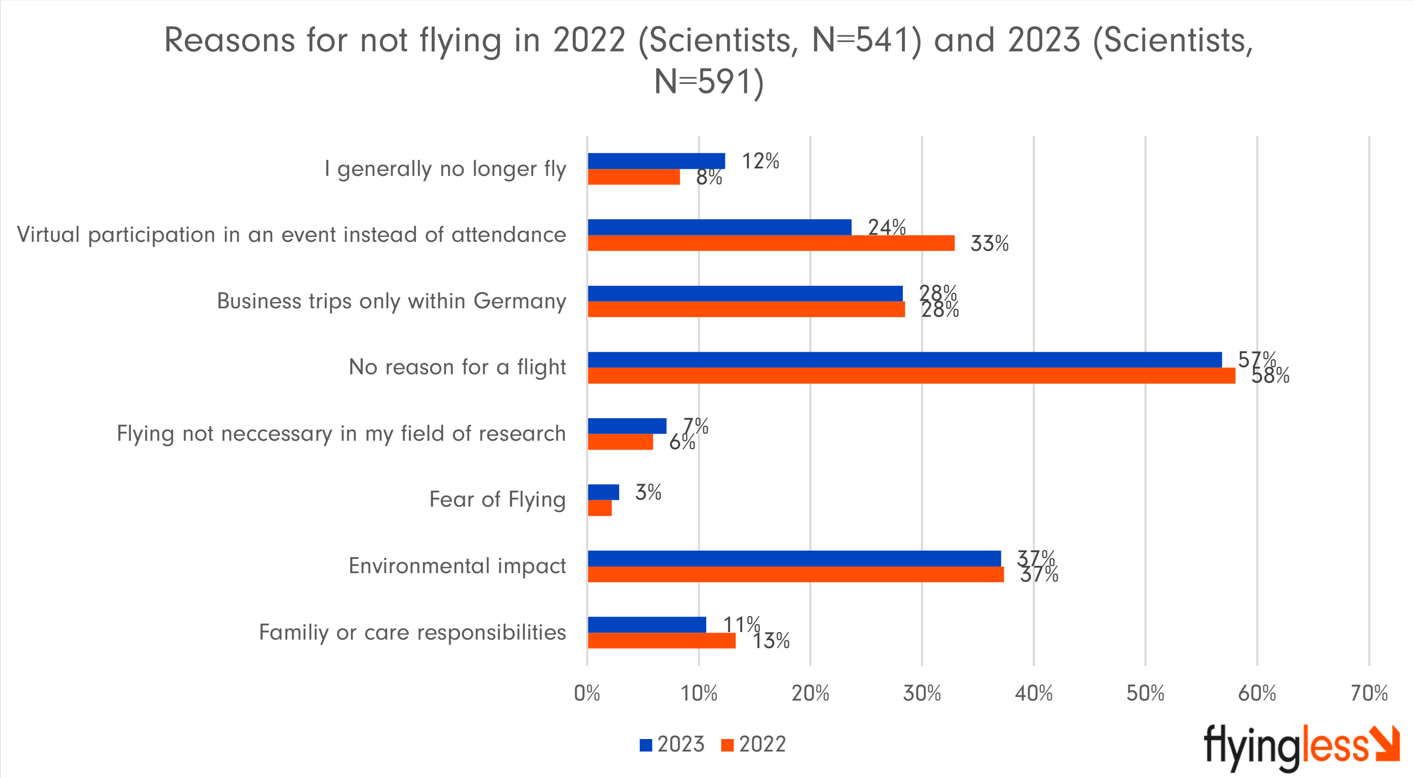

*Figure 9: Reasons for not flying in 2022 and 2023. Status groups: Scientists 2022, N=541 (aggregated from professors & group leaders, N=159 & Scientists without professorship/group lead, N=382), Scientists 2023, N=591 (aggregated from professors & group leaders, N=133 & Scientists without professorship/group lead, N=458). *Scientists who indicated that they did not fly were asked why.*

Other reasons for not flying, that were mentioned by example[2]:

- "Shortly after Covid, we did not plan any trips at all."
- "Ich habe eine Selbstverpflichtung unterschrieben, keine Kurzstreckenflüge zu machen."
- "Wegen Corona hatten viele Konferenzen noch ein gutes online Angebot"

[2]The free text inputs are not shown comprehensively. Only individual examples are shown. The text is left in original form. Thus, it is not translated or corrected in spelling or grammar.

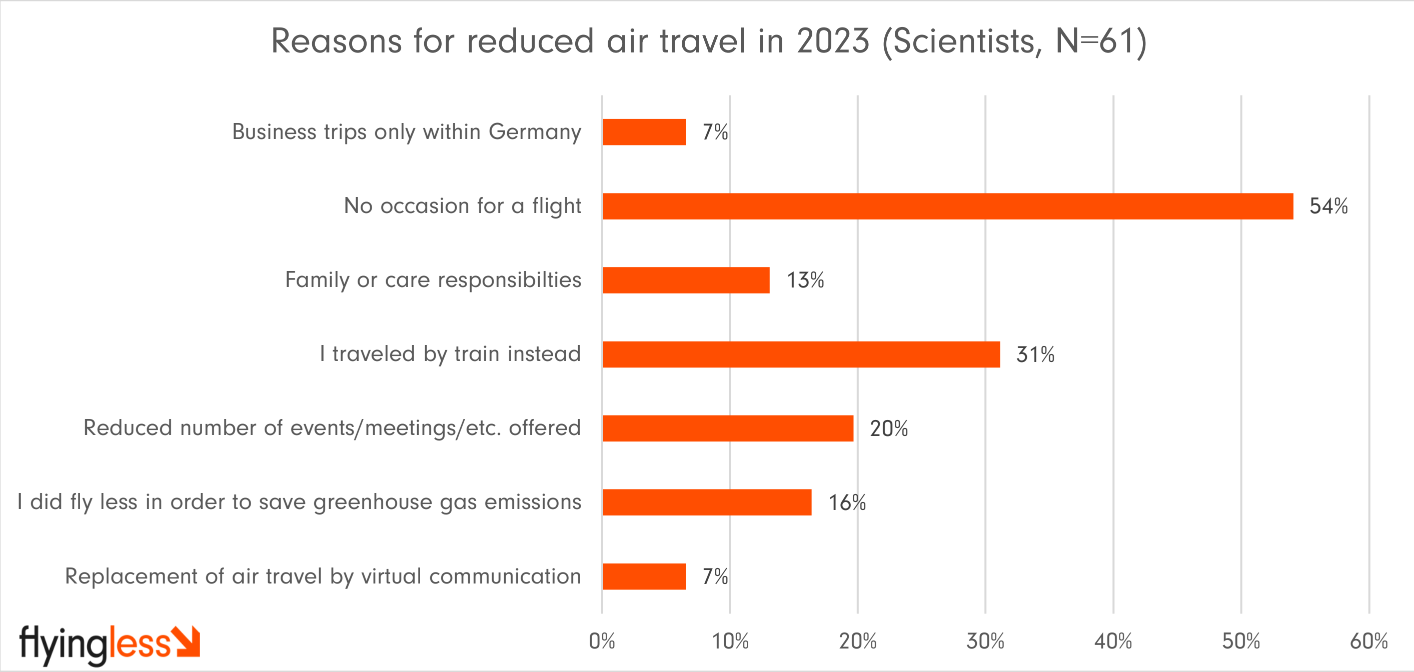

Figure 10: Reasons for reduced air travel in 2023 compared to 2022. Relative frequency of mentions (X-axis) of reasons for a lower flight volume (Y-axis). Status group: Scientists, N=61 (aggregated from professors & group leaders, N=31 & Scientists without professorship/group lead, N=30). *Scientists who indicated they flew less frequently in 2023 than in 2022 were asked why.*

Other reasons for reduced air travel in 2023, that were mentioned (by example):

- «Most important conferences happen every 2 years, 2023 was a "empty" year»

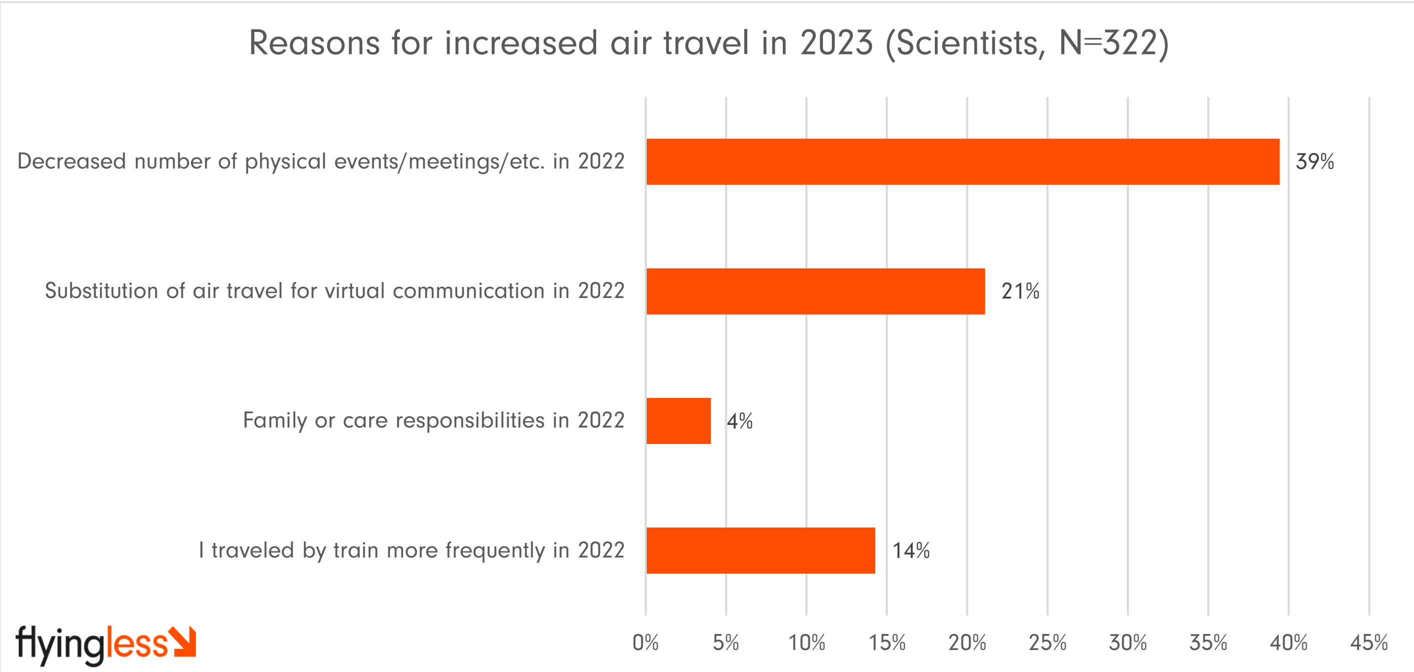

Figure 11: Reasons for a higher number of flights in 2023. Relative frequency of mentions (X-axis) of reasons for a higher flight volume (Y-axis). Status group: Scientists, N=322 (aggregated from professors & group leaders, N=132 & Scientists without professorship/group lead, N=190). *Scientists who indicated they flew more frequently in 2023 than in 2022 were asked why.*

Other reasons for a higher number of flights in 2023, that were mentioned (by example):

- «Beruhigung der Pandemielage»
- «Weil die Reise nicht ohne Flugzeug möglich gewesen wäre»
- «more relevant events in 2023»

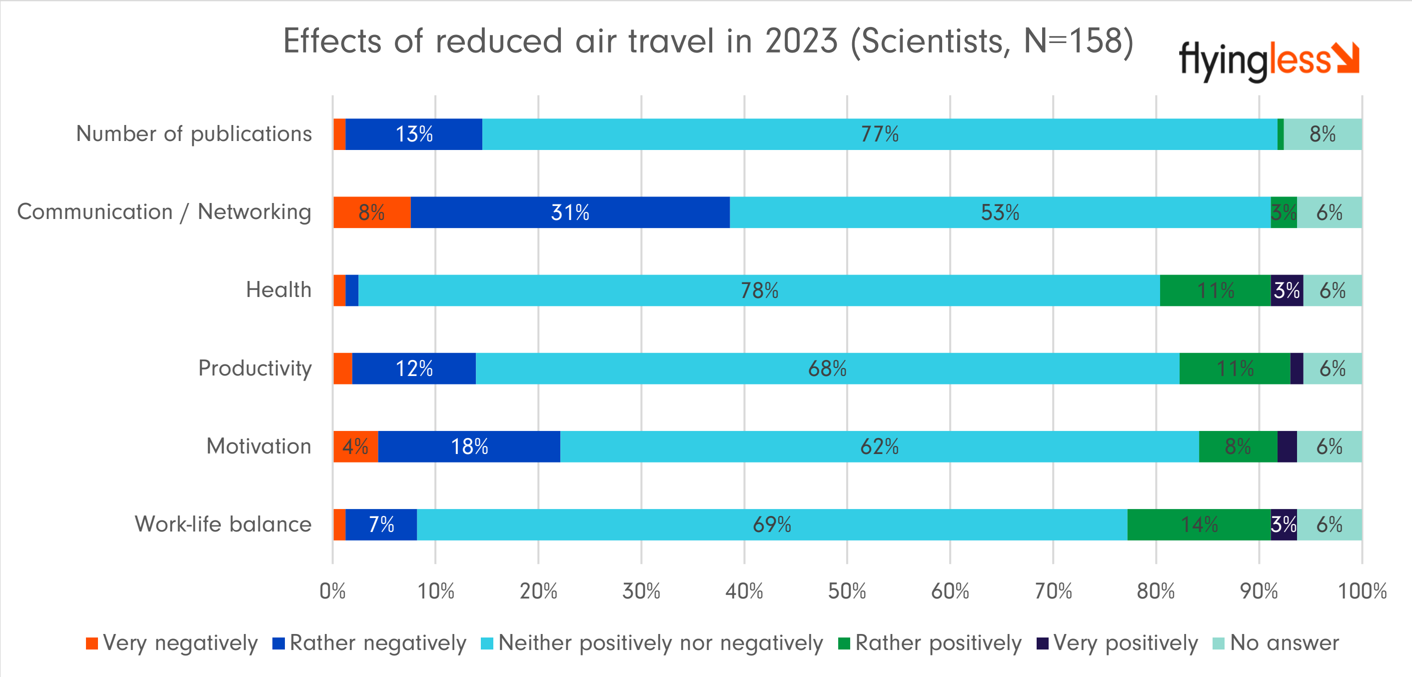

Figure 12: Effects of reduced air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status group: Scientists, N=158 (aggregated from professors & group leaders, N=55 & Scientists without professorship/group lead, N=103). * Scientists who indicated they flew less frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.*

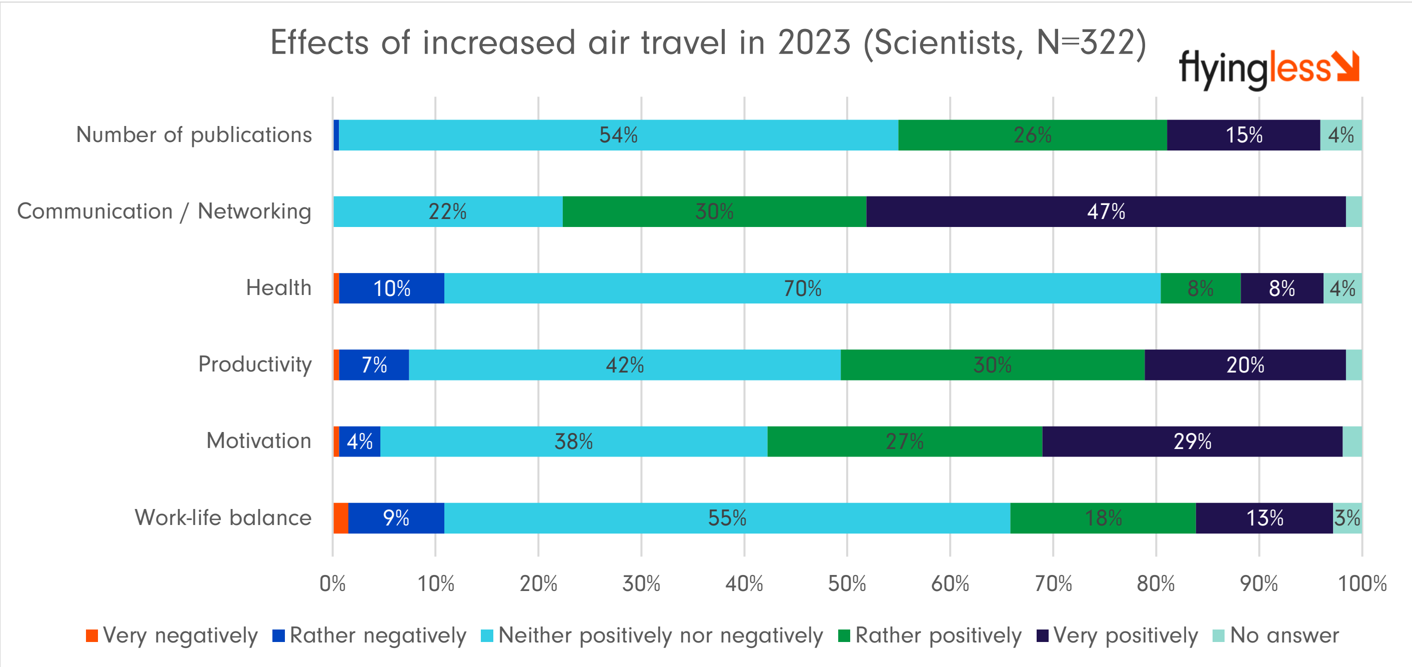

Figure 13: Effects of increased air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status group: Scientists, N=322 (aggregated from professors & group leaders, N=132 & Scientists without professorship/group lead, N=190). * Scientists who indicated they flew more frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.*

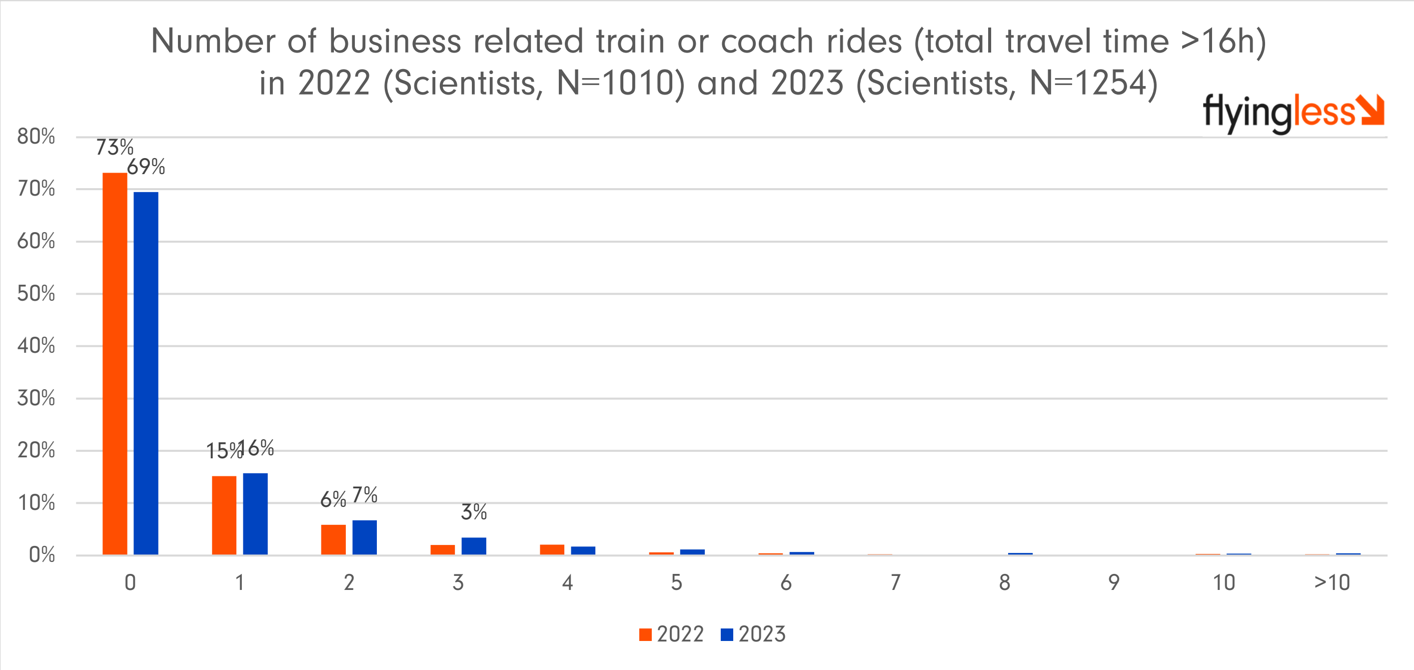

Figure 14: Number of business-related train/coach trips per year (duration > 16h total) in 2022 and 2023. Relative frequency of mentions (Y-axis) per number of train/bus trips per year (X-axis). Status group: Scientists 2022, N=1010 (aggregated from professors & group leaders, N=381 & Scientists without professorship/group lead, N=629), Scientists 2023, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). *Scientists who reported not having worked in their jobs in 2022 were not surveyed.*

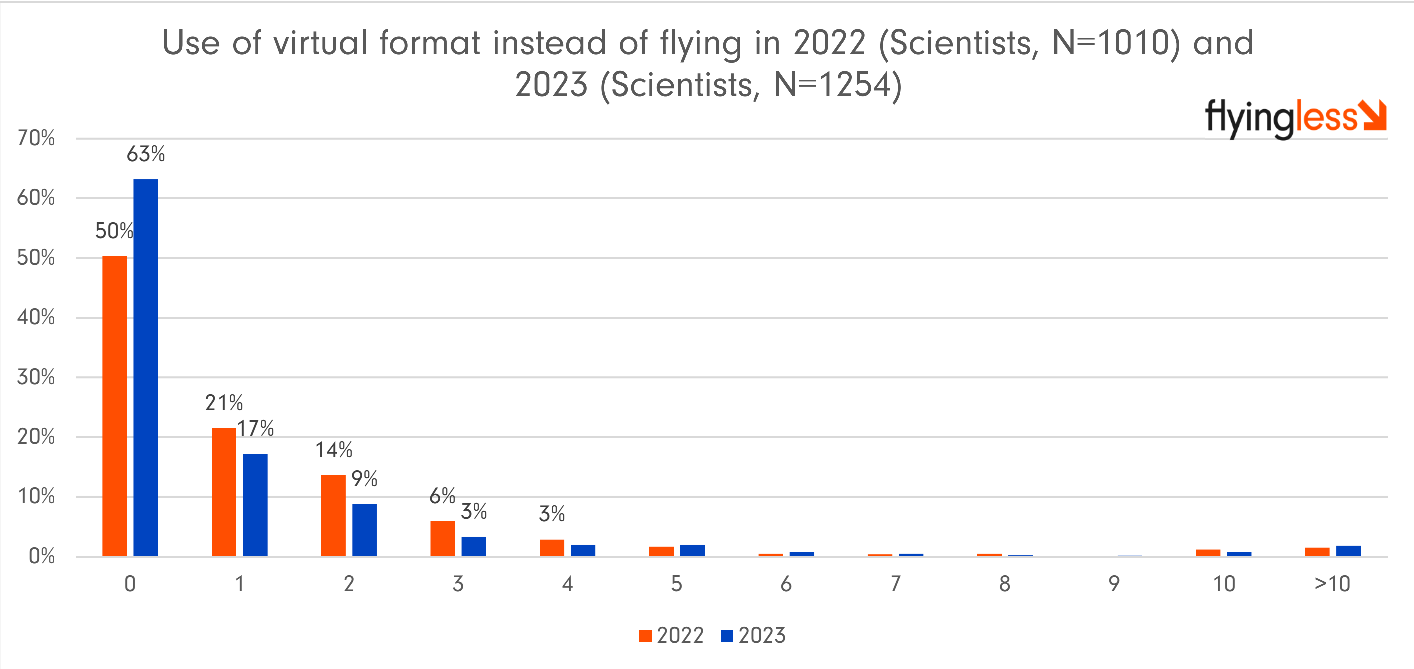

Figure 15: Use of the virtual format in 2022 and 2023 instead of taking a business trip. Relative frequency of mentions (Y-axis) per number of virtual events/meetings in 2022 (X-axis). Status group: Scientists 2022, N=1010 (aggregated from professors & group leaders, N=381 & Scientists without professorship/group lead, N=629), Scientists 2023, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837). *Scientists who reported not having worked in their jobs in 2022 were not surveyed.*

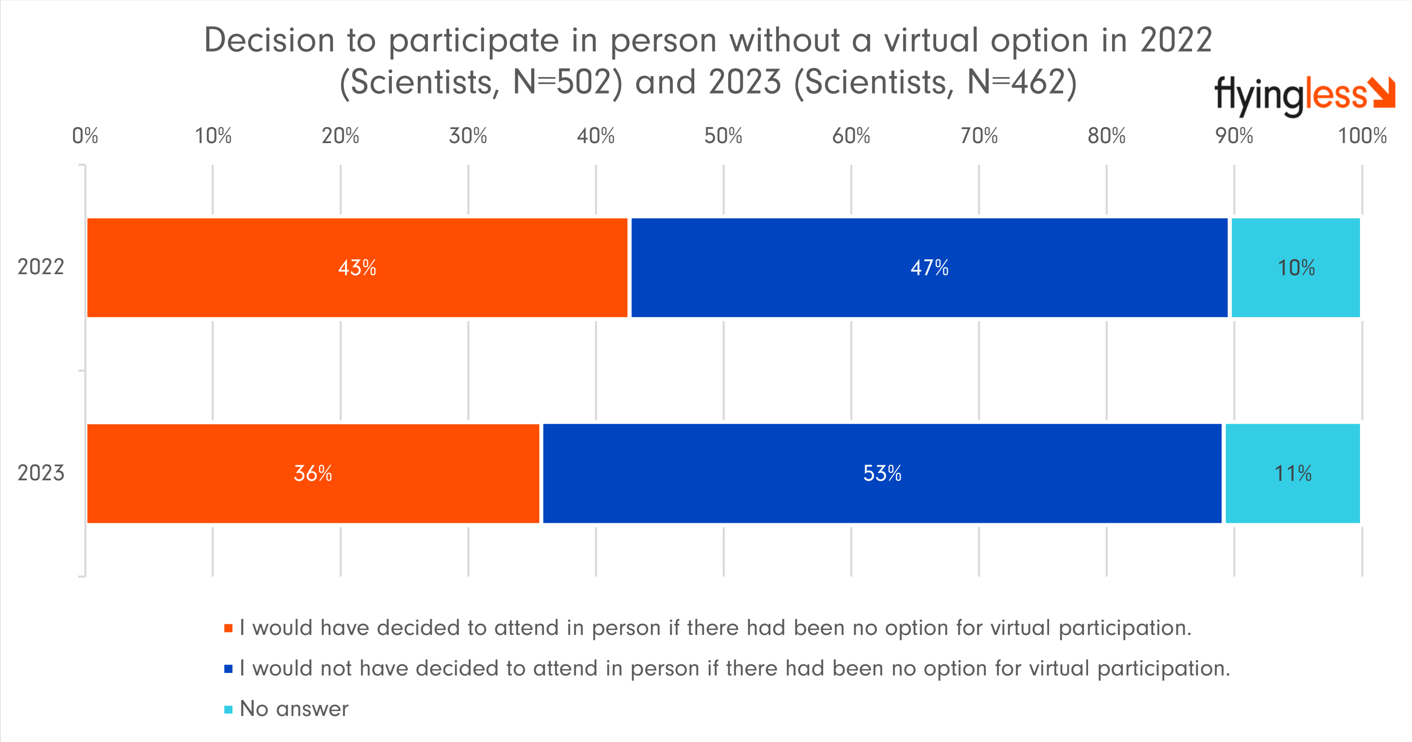

Figure 16: Decision to attend the event without the option of virtual participation in 2022 and 2023. Relative frequency of mentions. Status group: Scientists 2022, N=502 (aggregated from professors & group leaders, N=237 & Scientists without professorship/group lead, N=265), Scientists 2023, N=462 (aggregated from professors & group leaders, N=211 & Scientists without professorship/group lead, N=251). *Participants who indicated that they had chosen the option to participate virtually instead of taking a business trip were asked if they would have participated in the event, had there not been the option to participate virtually.*

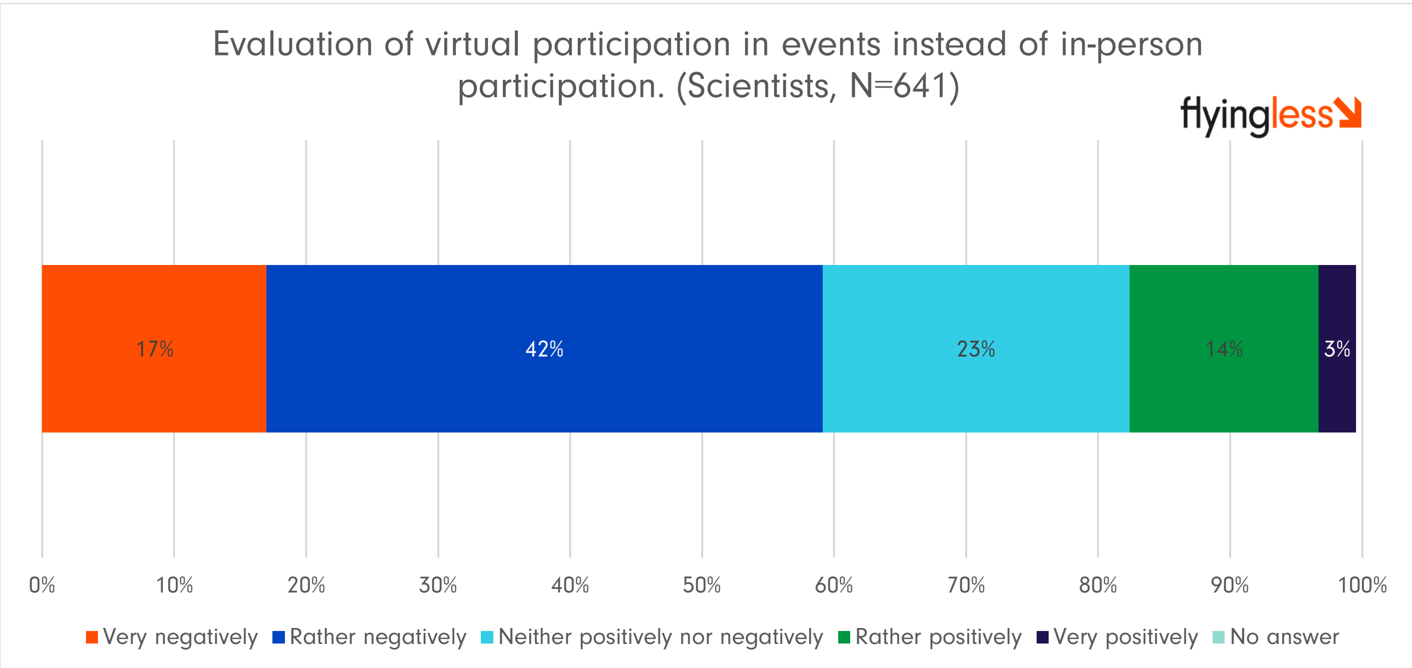

Figure 17: Evaluation of virtual participation in events compared to in-person participation. Relative frequency of mentions (X-axis). Status group: Scientists, N=641 (aggregated from professors & group leaders, N=267 & Scientists without professorship/group lead, N=374).*

4.4. Relevance of different reasons for business air travel

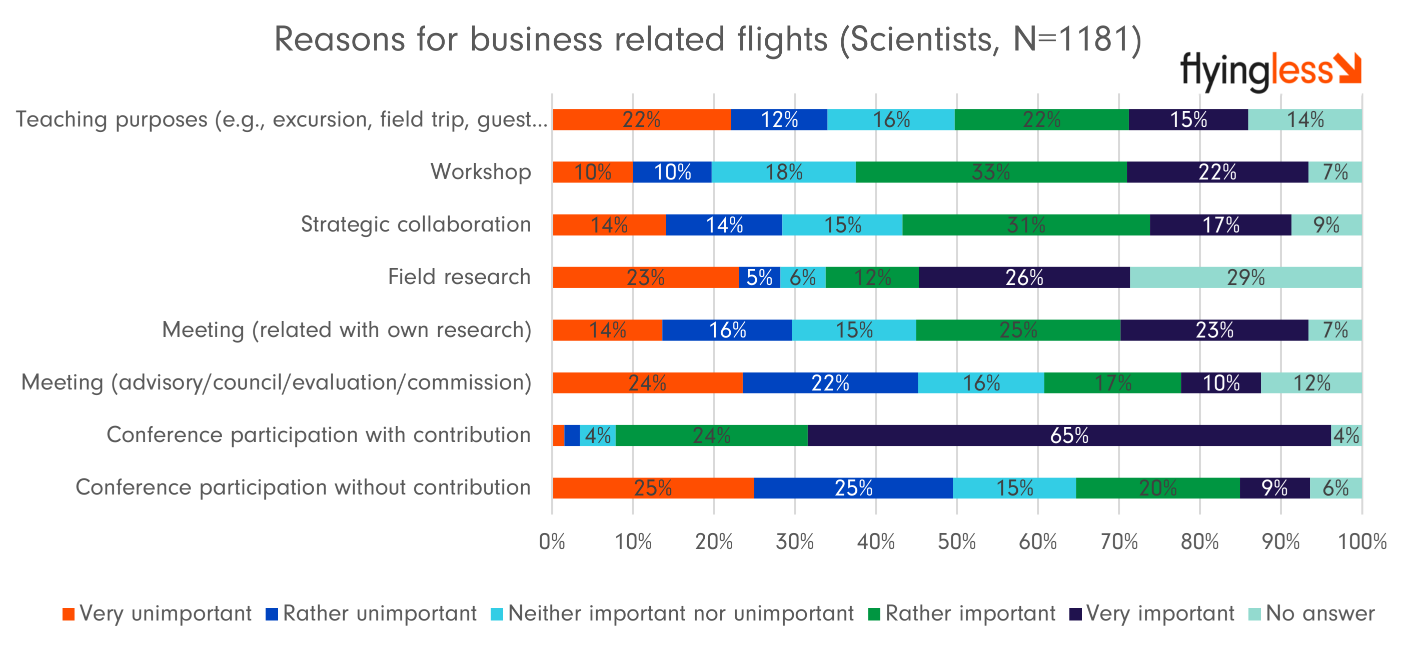

Figure 18: Reasons for business air travel by scientists. Relative frequency of mentions (Y-axis) per subanswer (reason for business-related air travel in the academic sector; X-axis). Status group: Scientists, N=1181 (aggregated from professors & group leaders, N=399 & Scientists without professorship/group lead, N=782). *Participants who indicated that they had not taken a business related flight in 2022 or 2023 were not surveyed.*

Other reasons for business-related air travel within academia, which were mentioned (by example):

- «Forschungsaufenthalte an anderen Laboren»
- «policy development»
- «Prüfer an auswärtigen Unis»

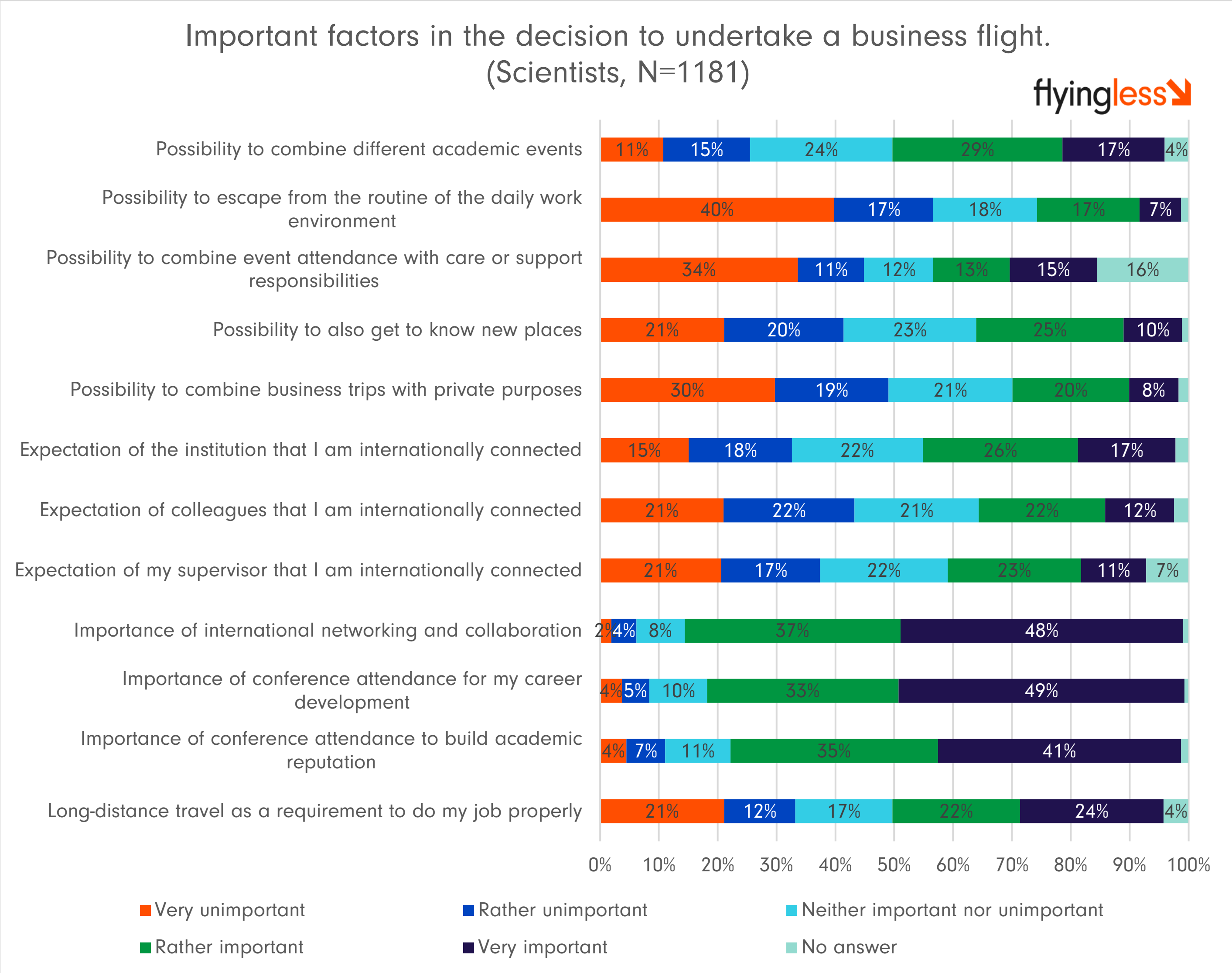

Figure 19: Relevance of various factors when deciding to take a business-related flight. Relative frequency of mentions (X-axis) per subanswer (Factor for weighing a business-related flight in the academic sector.; Y-axis). Status group: Scientists, N=1181 (aggregated from professors & group leaders, N=399 & Scientists without professorship/group lead, N=782). *Participants who indicated that they had not taken a business related flight in 2022 or 2023 were not surveyed.*

Other important factors influencing the decision to take a business related flight or to book a business trip (by example):

- «Zeitersparnis ist der Hauptgrund.»
- «Frage, welche Alternativen zur Verfügung stehen»
- «Wie viel ich in diesem und im vorangehenden Jahr bereits geflogen bin.»

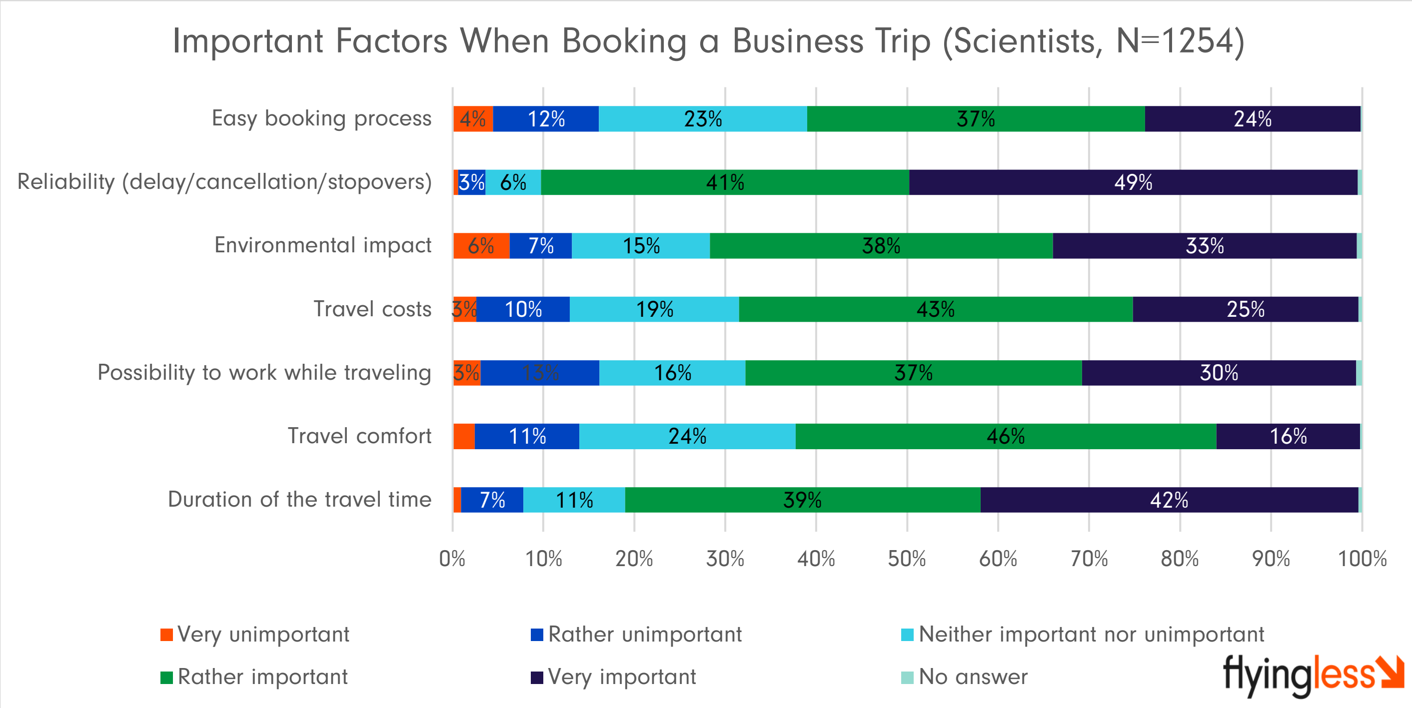

Figure 20: Importance of various factors when booking a business trip. Relative frequency of mentions (X-axis) per subanswer (Factor of choice in the process of travel booking; Y-axis). Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

4.5. Behaviour changes and measures

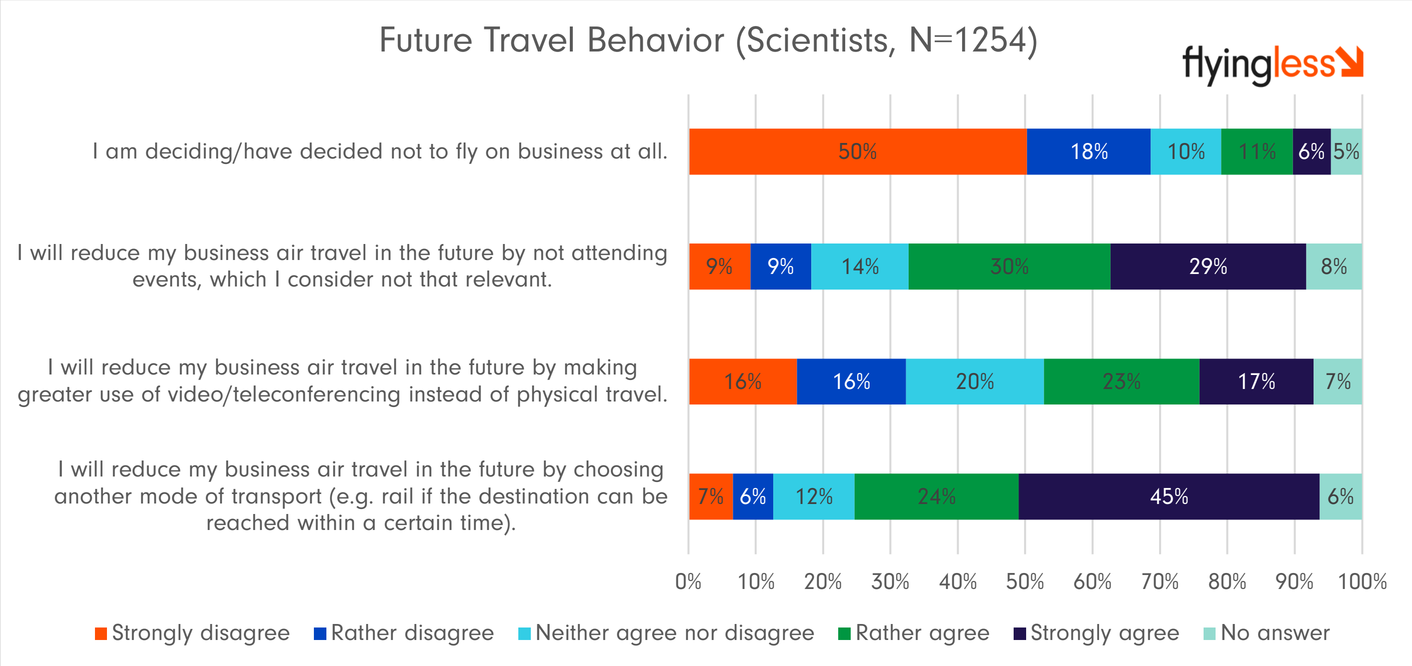

Figure 21: Willingness to change behaviour to avoid air travel. Relative frequency of mentions (X-axis) per subanswer (agreement with statements about future mobility behaviour to avoid official air travel; Y-axis). Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

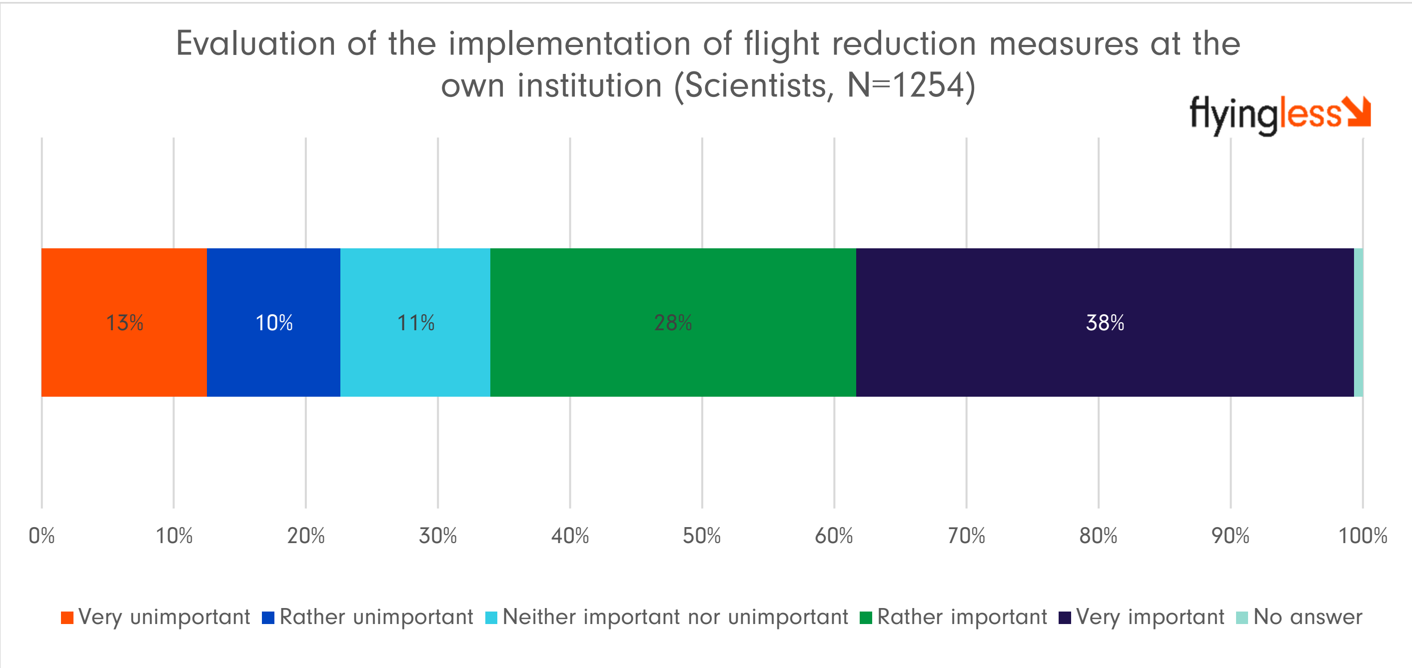

Figure 22: Importance of the implementation of flight reduction measures at the own institution. Relative frequency of mentions (X-axis). Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

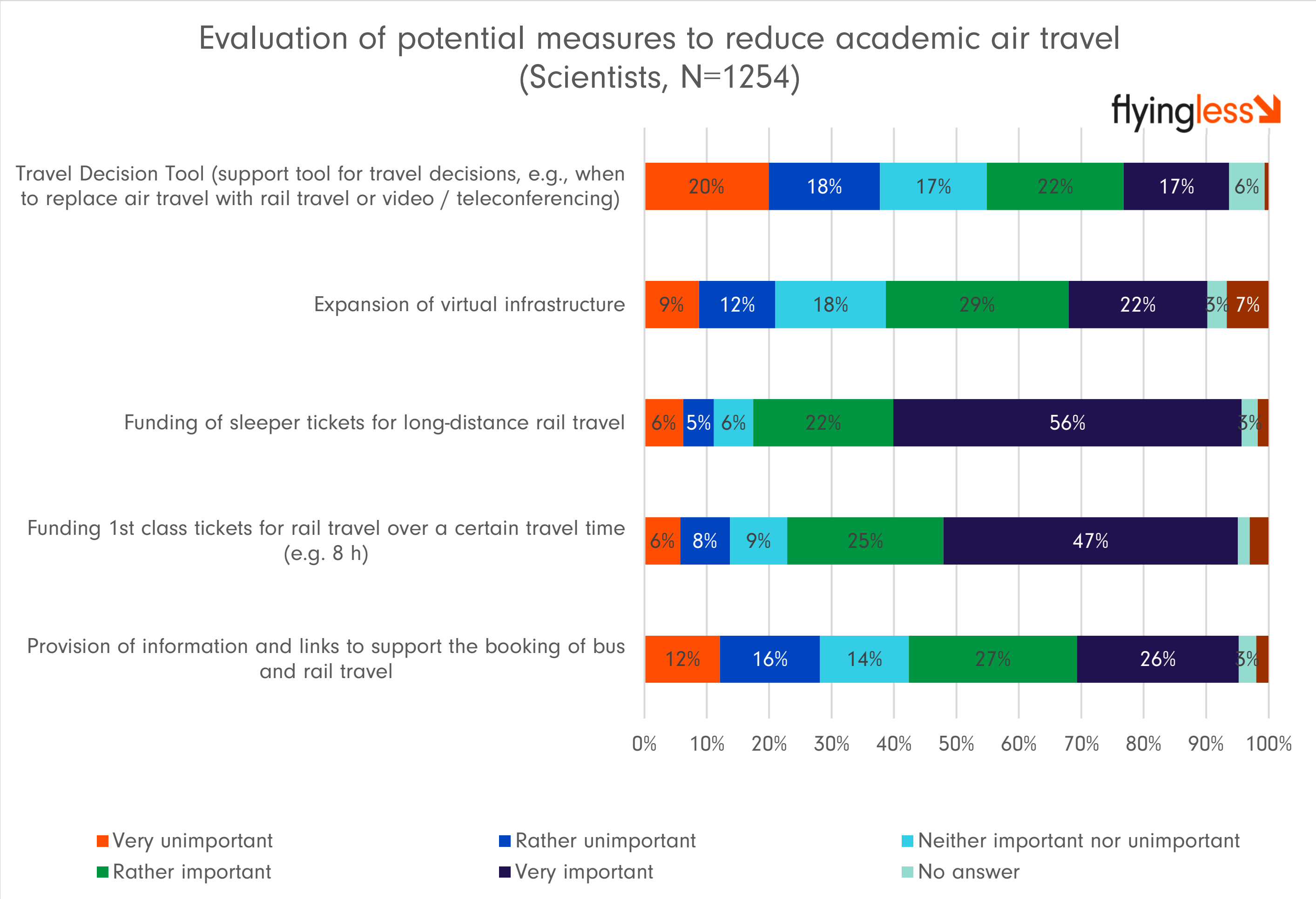

Figure 23: Evaluation of potential measures to reduce academic air travel. Relative frequency of mentions (X-axis) per subanswer (Measures/incentives to reduce academic air travel; Y-axis). Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

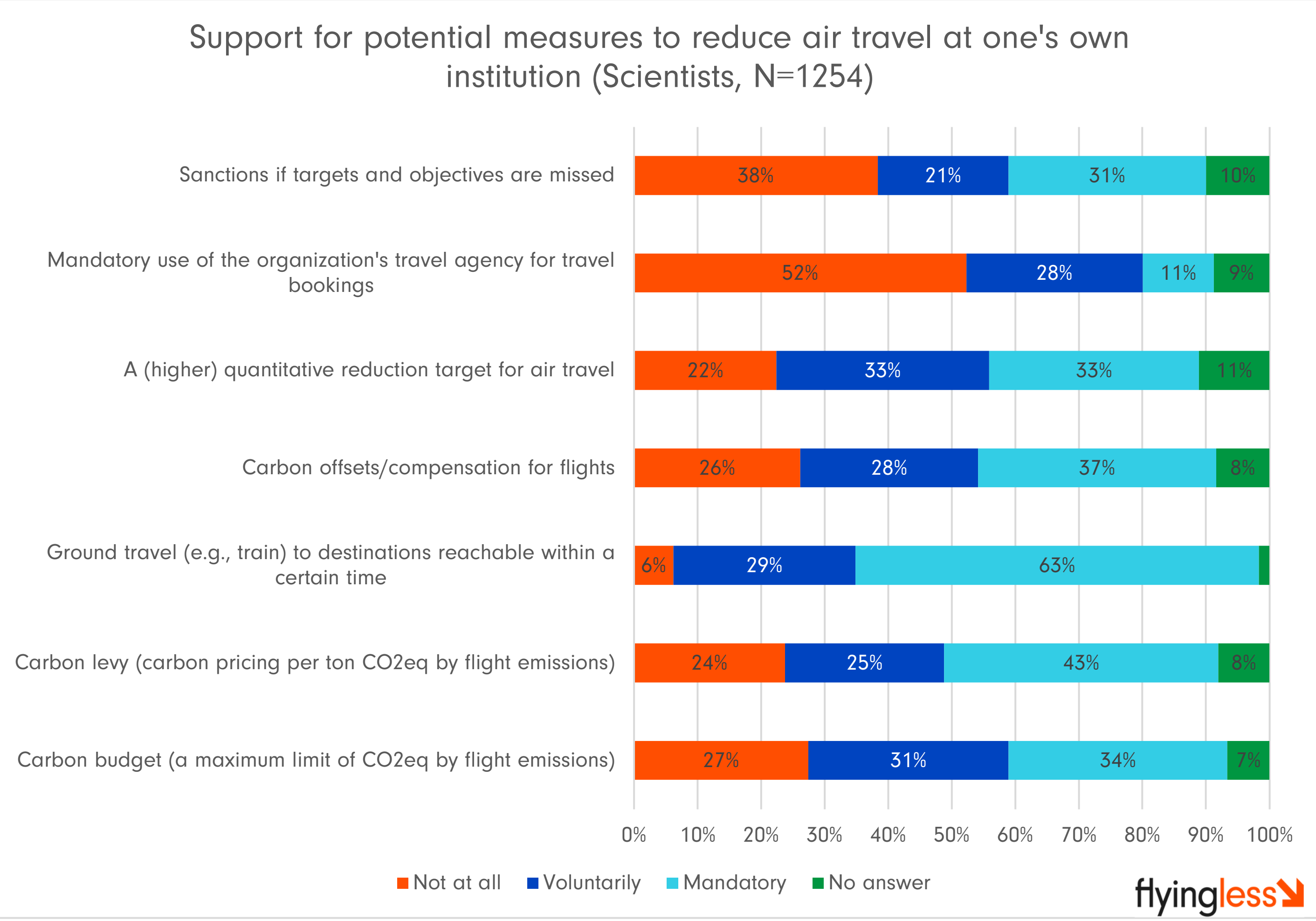

Figure 24: Support of potential flight reduction measures. Relative frequency of mentions (X-axis) per subanswer (flight reduction measures; Y-axis). Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

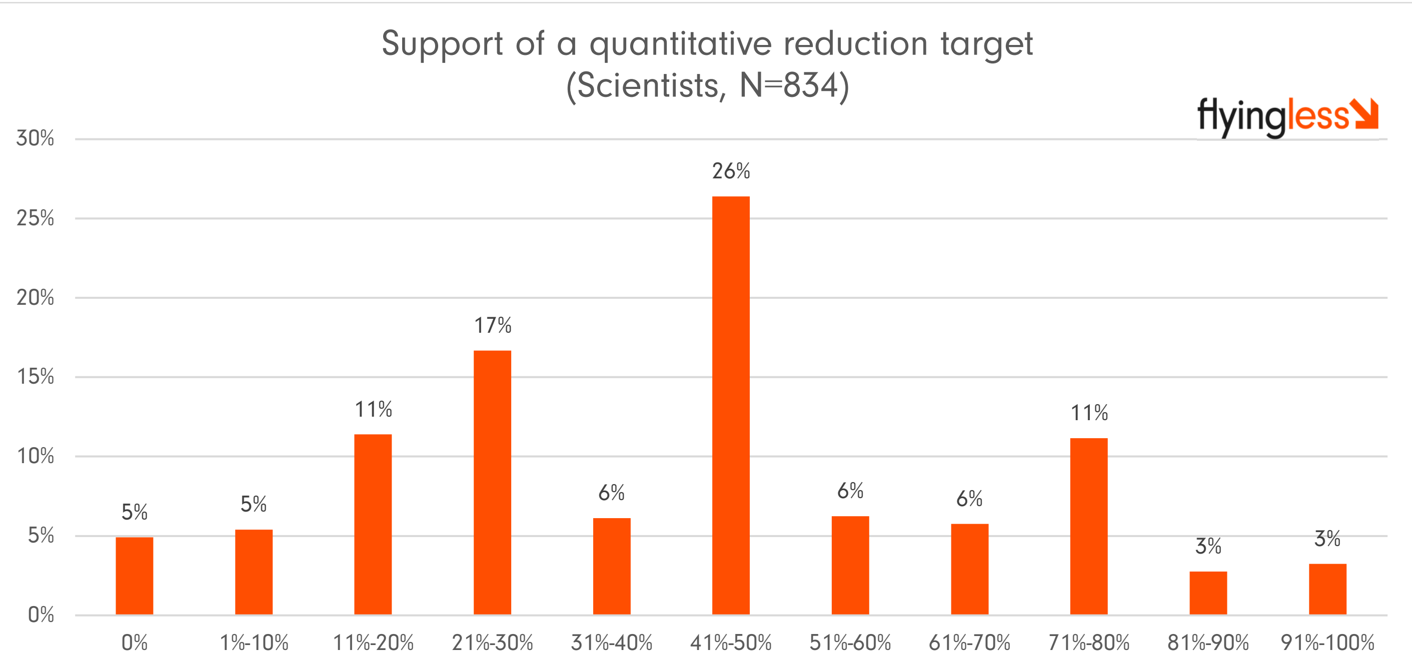

Figure 25: Support a quantitative reduction target by 2030 (respondent's estimate). Relative frequency of mentions (Y-axis) per aggregated amount of reduction of flight emissions in % (X-axis). Status group: Scientists, N=834 (aggregated from professors & group leaders, N=257 & Scientists without professorship/group lead, N=577). *Scientists who indicated they supported a (higher) quantitative reduction target were asked about this.*

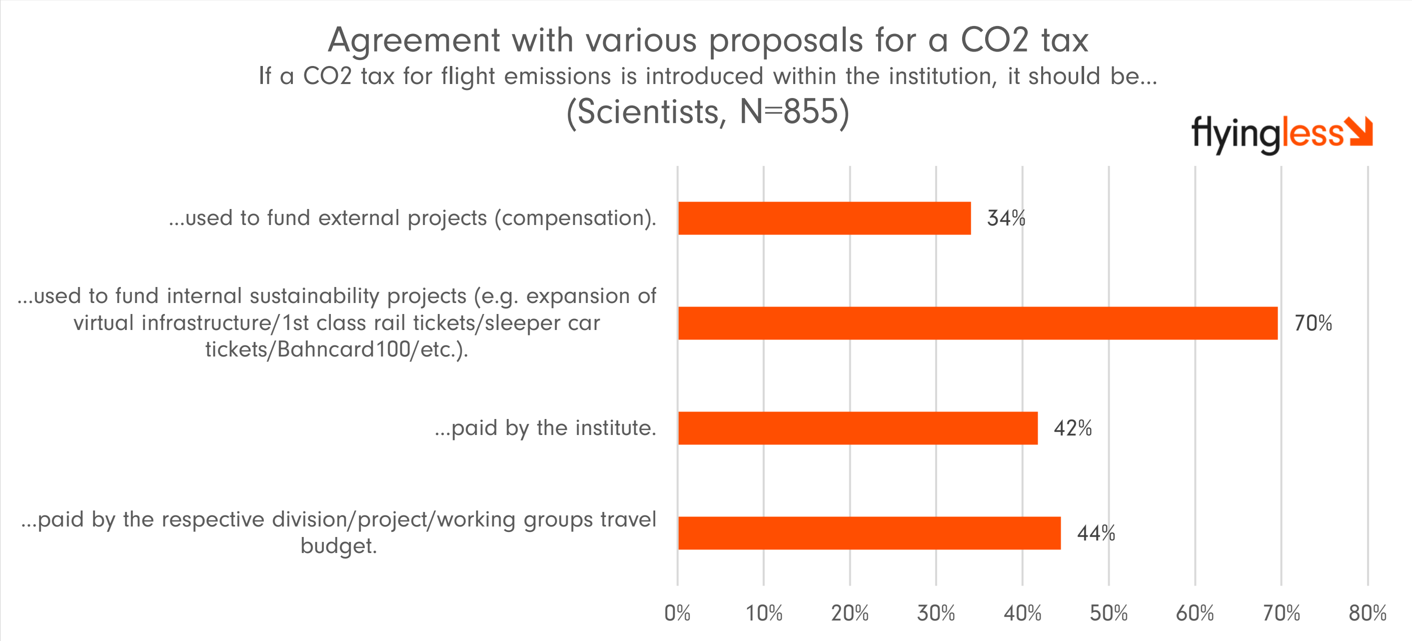

Figure 26: Agreement with different levels of a carbon tax for flight emissions. Relative frequency of mentions (X-axis) of specified options (Y-axis). Status group: Scientists, N=855 (aggregated from professors & group leaders, N=284 & Scientists without professorship/group lead, N=517). *Scientists who indicated they supported a carbon tax were asked for their opinions on the options given.*

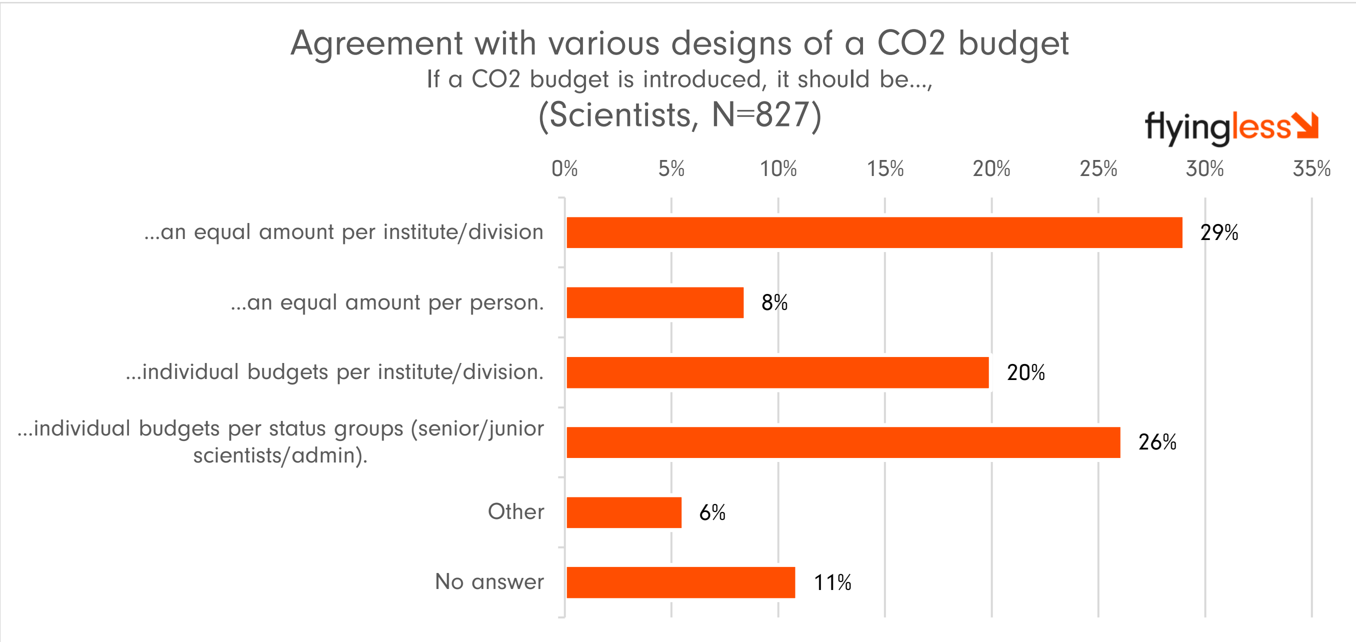

Figure 27: Agreement with different levels of a carbon budget for flight emissions. Relative frequency of mentions. Status group: Scientists, N=827 (aggregated from professors & group leaders, N=244 & Scientists without professorship/group lead, N=583). *Scientists who indicated they supported a carbon budget were asked for their opinions on the options given.*

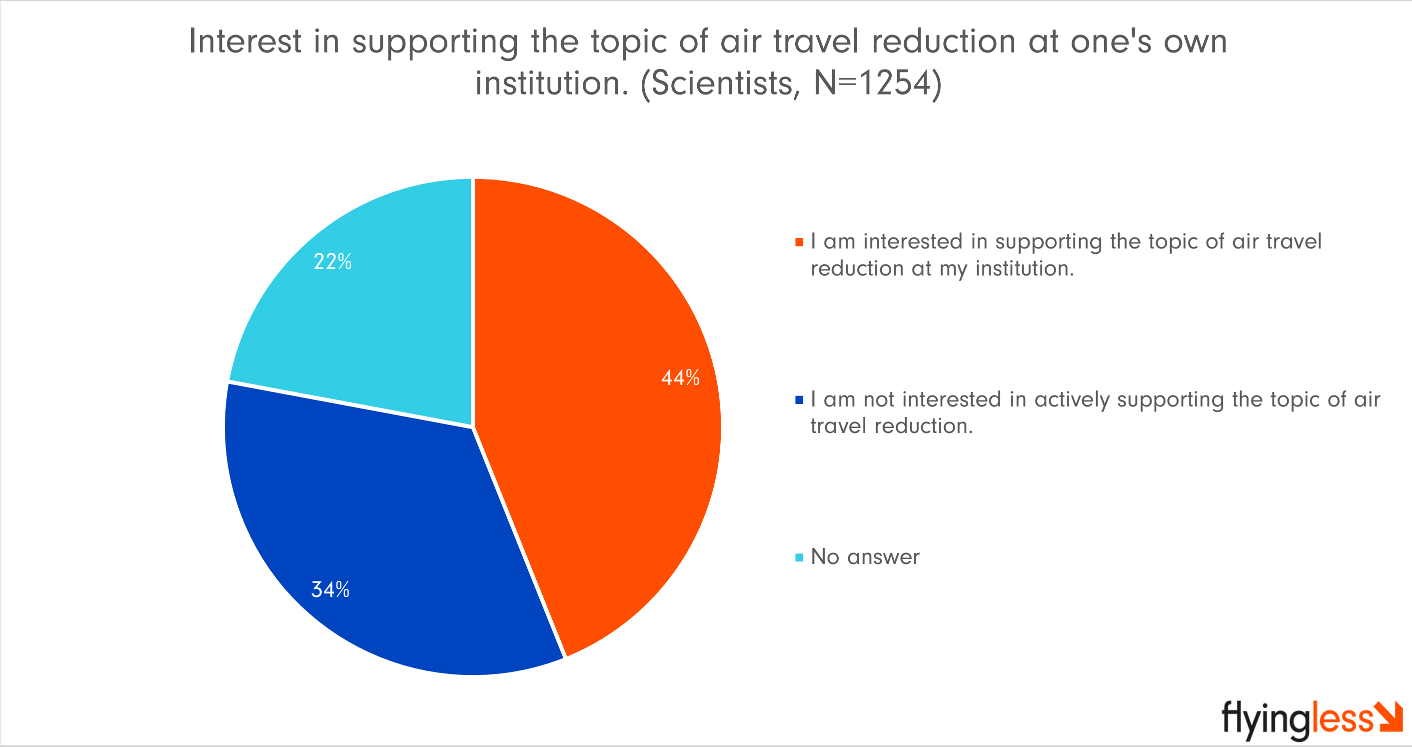

Figure 28: Interest in supporting the issue of flight reduction at the institution. Relative frequency of mentions regarding the interest on supporting the topic of flight reduction at the own institution. Relative frequency of mentions. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

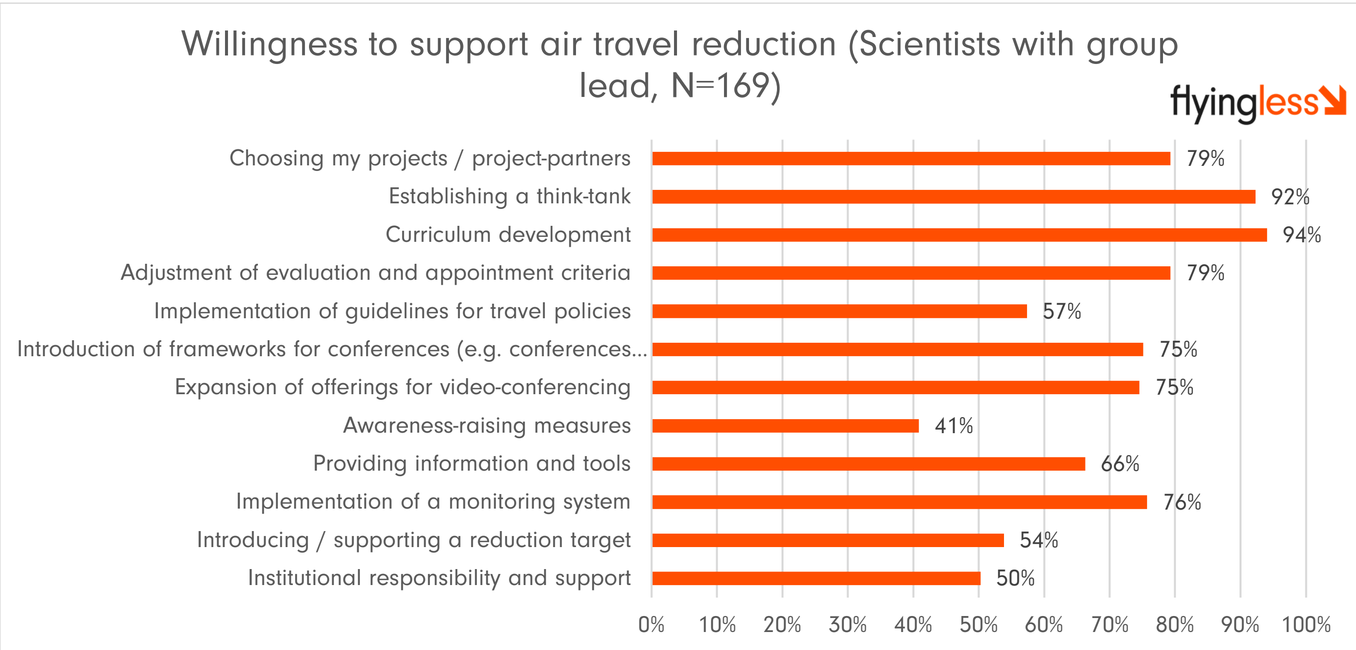

Figure 29: Willingness to support air travel reduction at the own institution. Relative frequency of mentions (x-axis). Status group: Scientists with group lead, N=169. *Participants who stated they were interested in supporting air travel reduction at their own insitution, were asked, how.*

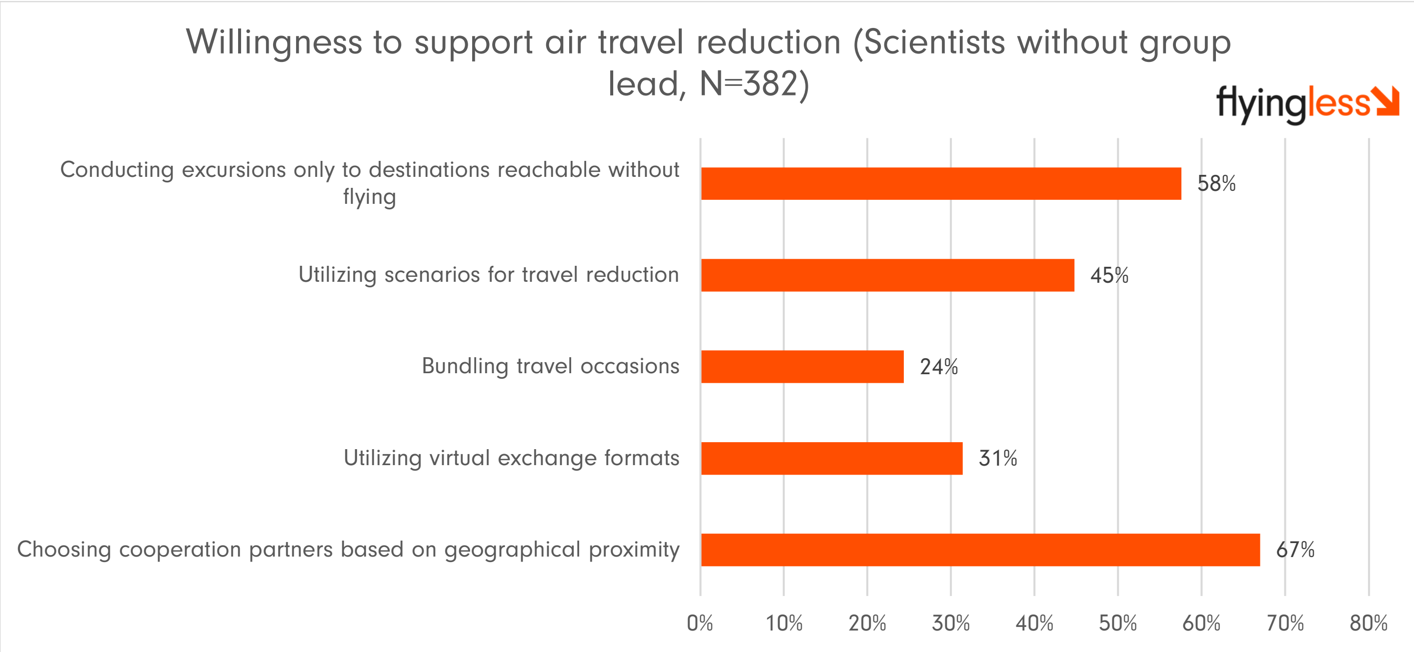

Figure 30: Willingness to support air travel reduction at the own institution. Relative frequency of mentions (x-axis). Status group: Scientists without group lead, N=382. *Participants who stated they were interested in supporting air travel reduction at their own insitution, were asked, how.*

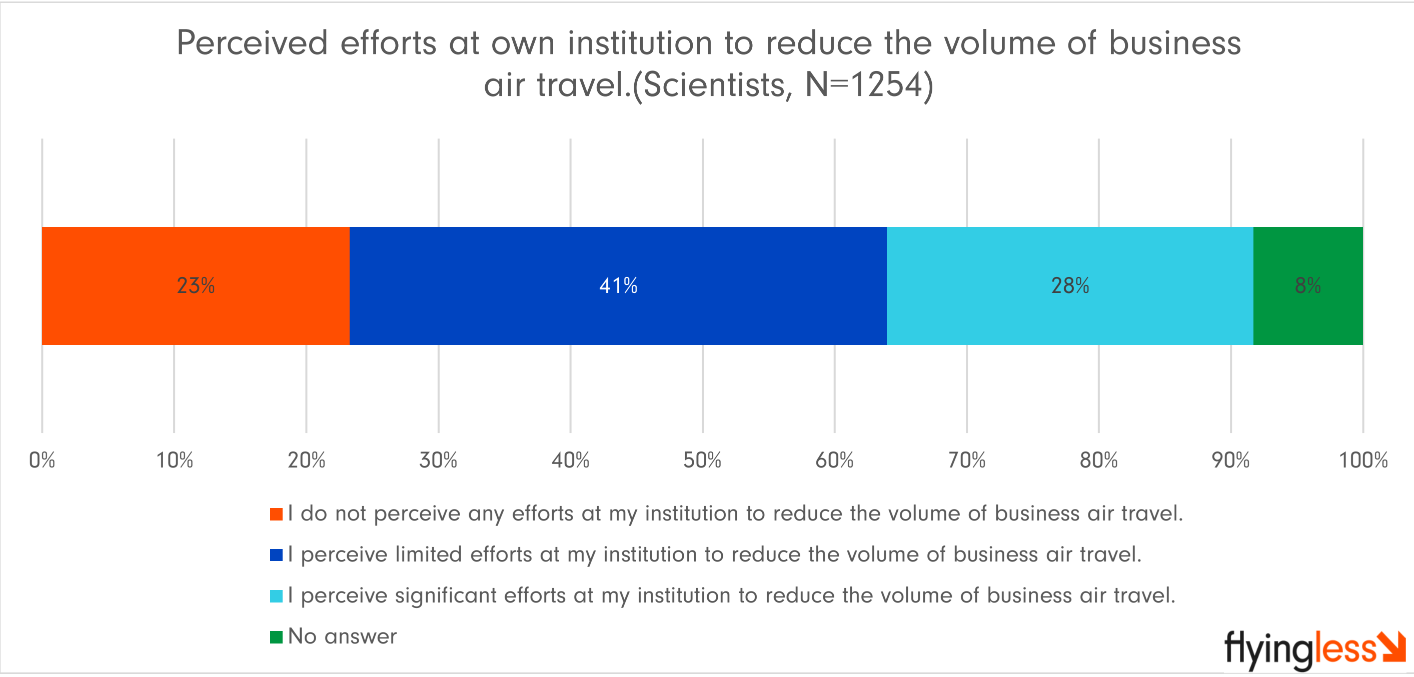

Figure 31: Perceived efforts to reduce the volume of business air travel at one's own institution. Relative frequency of mentions. Status group: Scientists, N=1254 (aggregated from professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

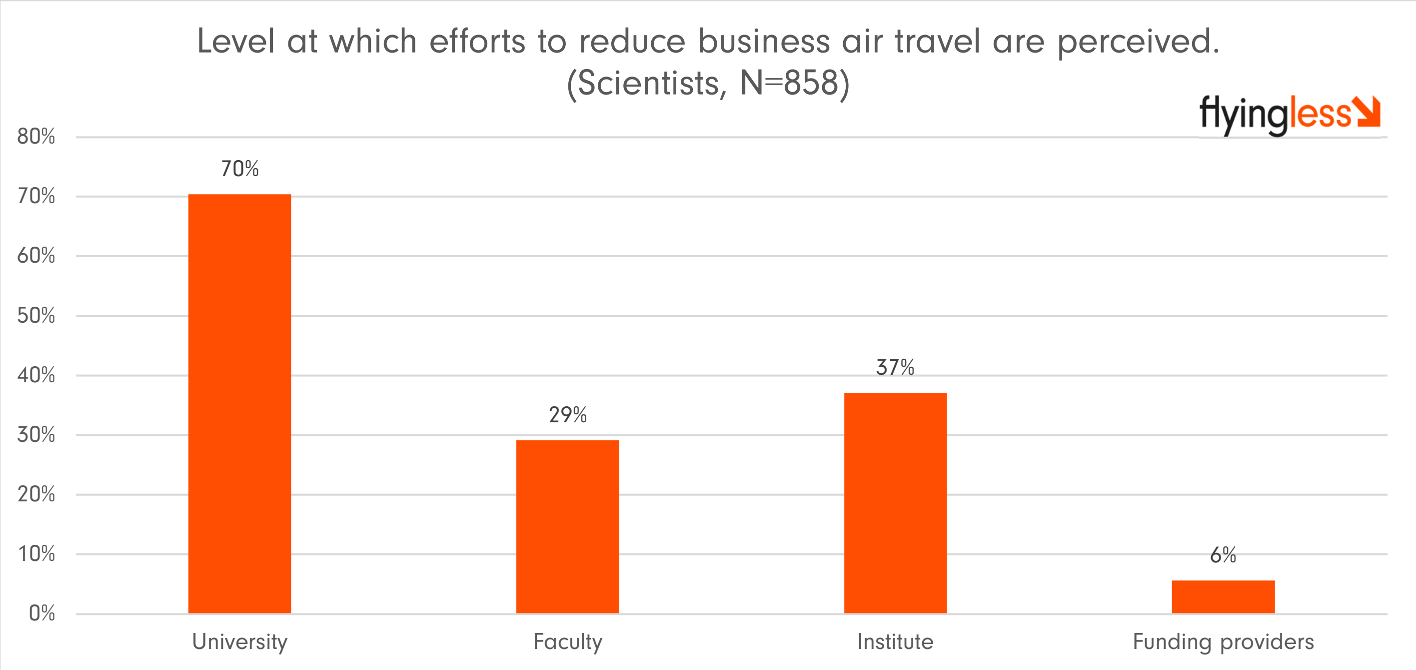

Figure 32: Level at which efforts to reduce business air travel at one's own institution are perceived. Relative frequency of mentions (Y-axis). Status group: Scientists, N=858 (aggregated from professors & group leaders, N=326 & Scientists without professorship/group lead, N=532). *Participants who stated they did not perceive efforts to reduce business air travel at their insitution were not surveyed.*

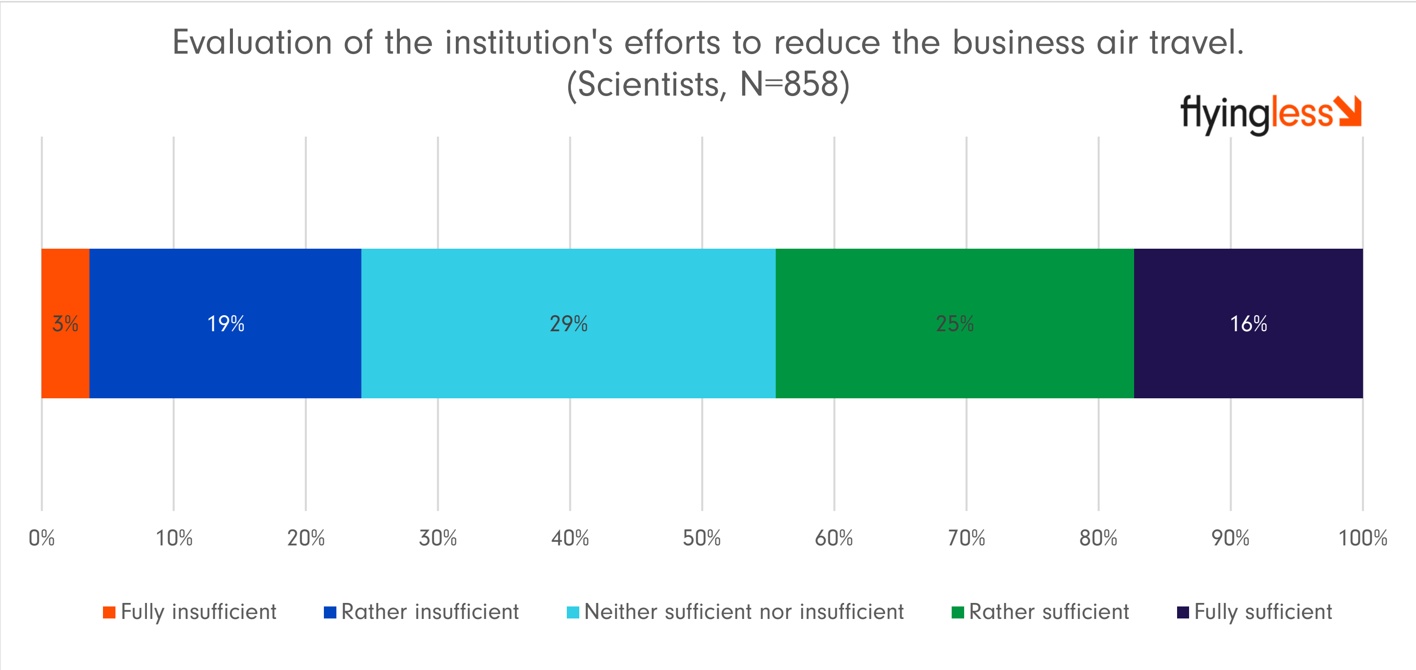

Figure 33: Evaluation of the institution's efforts to reduce business air travel. Relative frequency of mentions (X-axis). Status group: Scientists, N=858 (aggregated from professors & group leaders, N=326 & Scientists without professorship/group lead, N=532). *Participants who stated they did not perceive efforts to reduce business air travel at their insitution were not surveyed.*

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5. Status groups compared

In this chapter, the results for professors & group leaders (N=417) are compared / contrasted with those of scientists without professorships / group leads (N=837).

5.1. Structuring the respondents groups

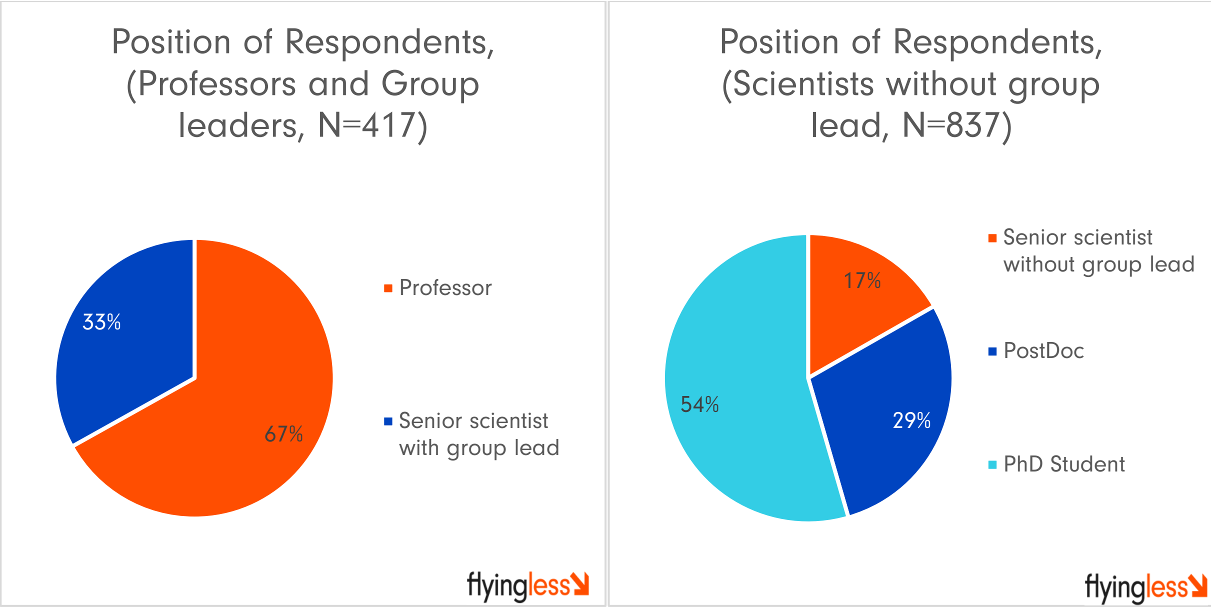

Figure 34: Position of the respondents. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837. Relative frequency of the position indicated.

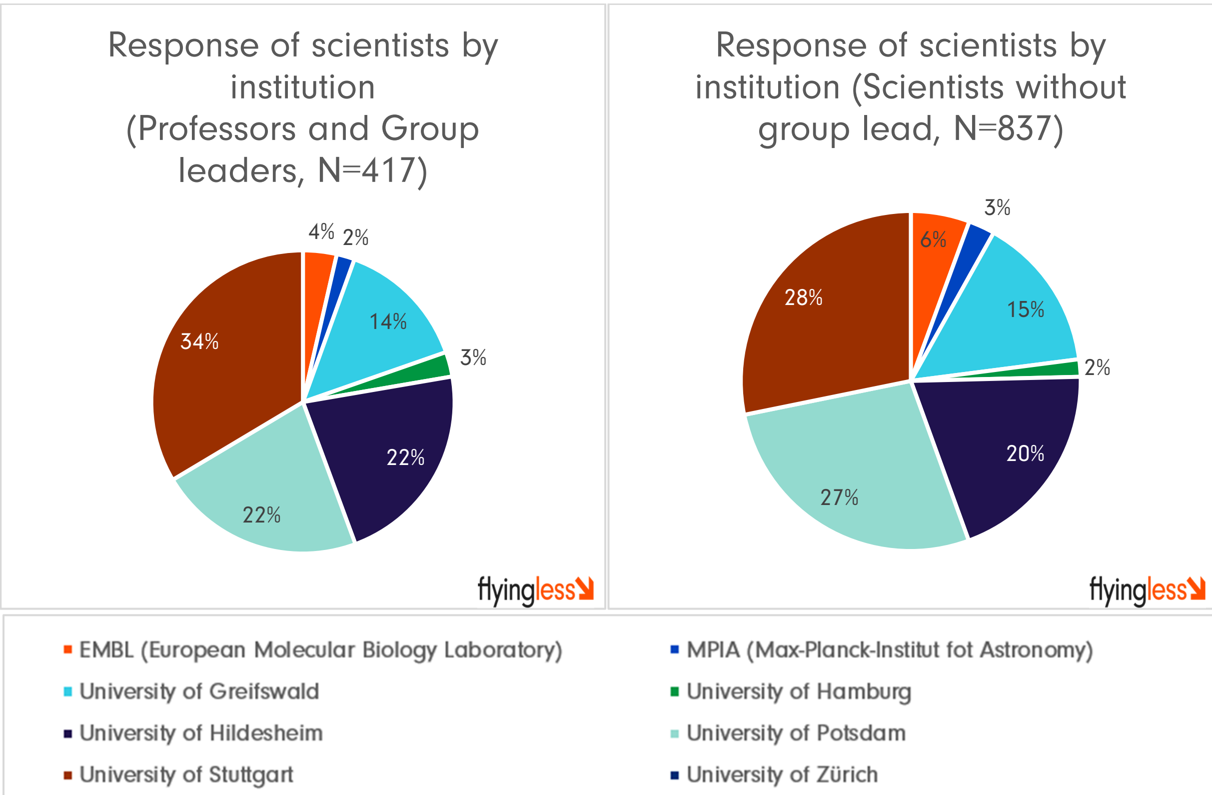

Figure 35: Response by institution. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837. Relative frequency.

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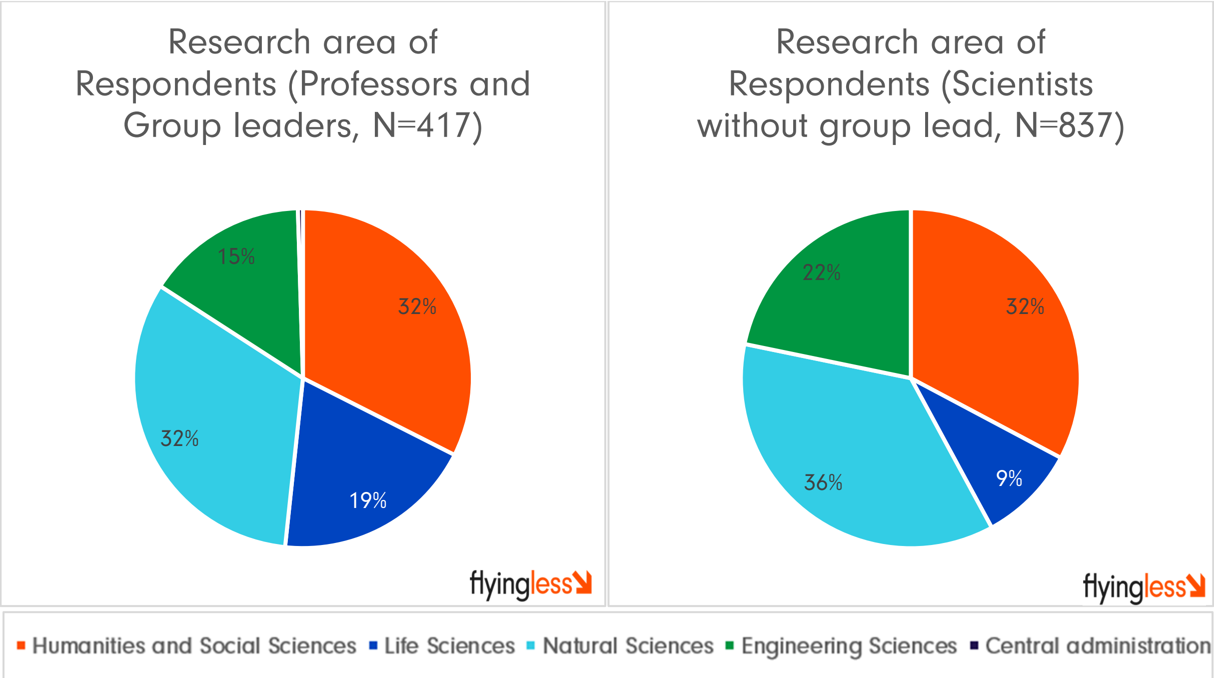

Figure 36: Research area of the scientists. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837. Relative frequency. Categories correspond to the DFG structure.

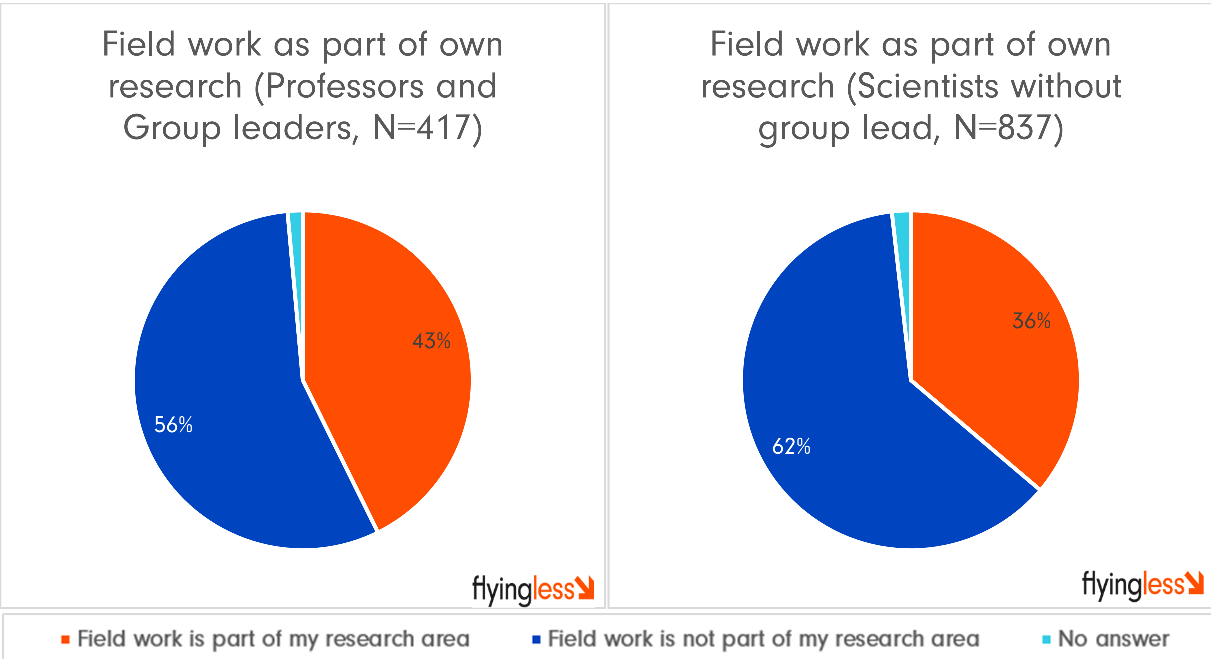

Figure 37: Field work as part of the own research. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837. Relative frequency of field research in one's field of activity. Field research defined as collecting raw data outside of a laboratory, library, or workplace (including instrument maintenance/installation, etc.).

5.2. The topic of flight reduction and communication about it in academia

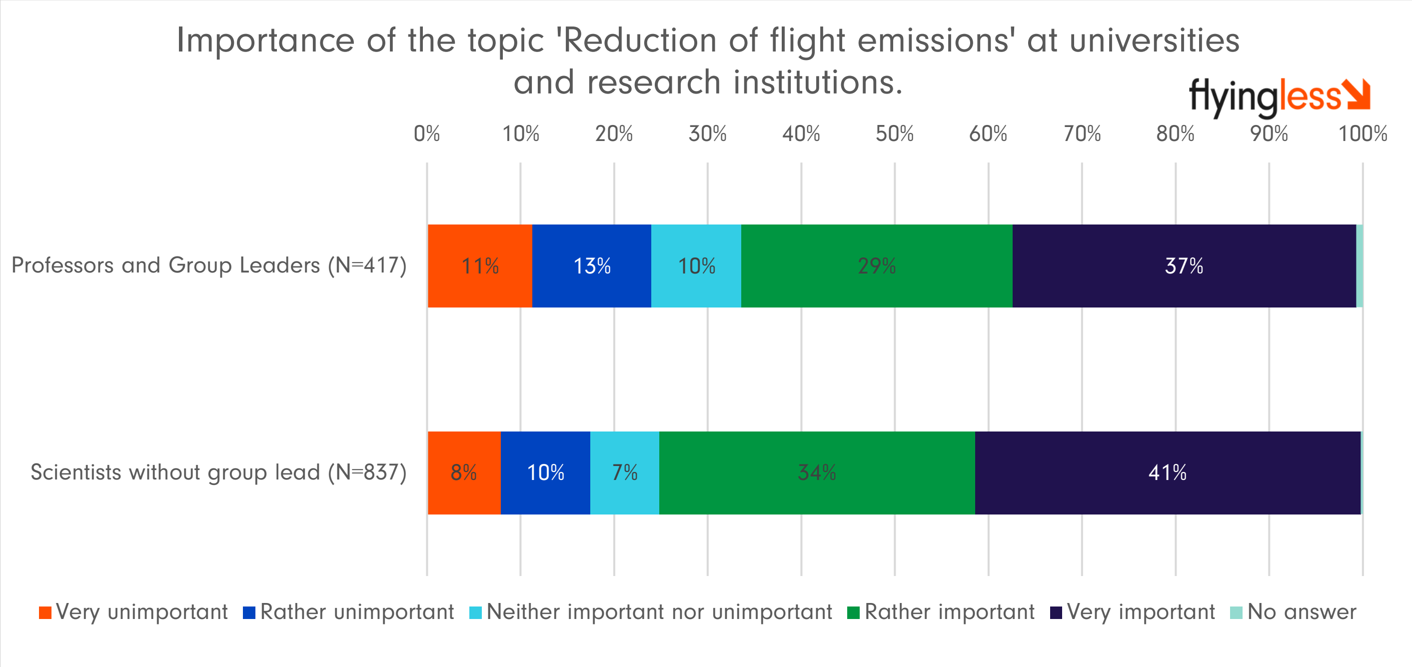

Figure 38: Importance of academic flight emissions. Relative frequency (YXaxis) of the evaluation of the topic of flight reduction in academia. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

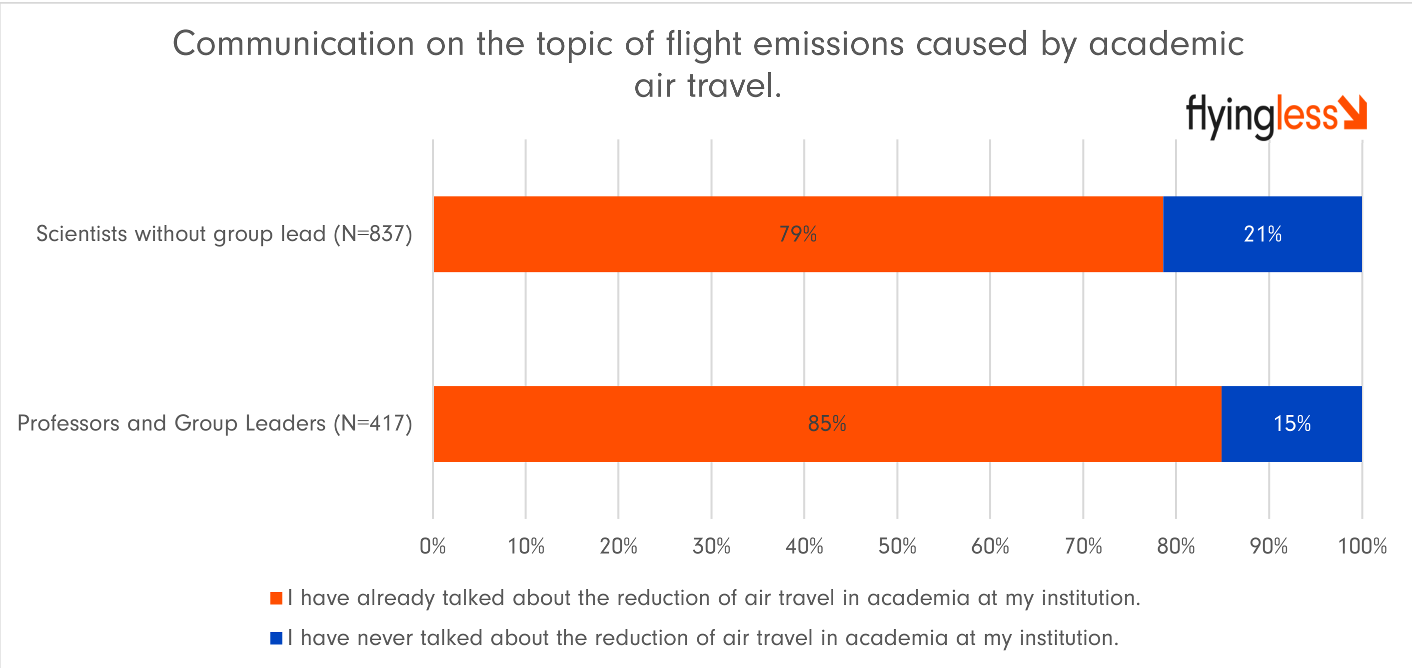

Figure 39: Communication on the topic of flight emissions from academic air travel. Relative frequency of mentions (X-axis). Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837).

5.3. Average mobility (flight, train/bus) and use of virtual format in 2022 and 2023

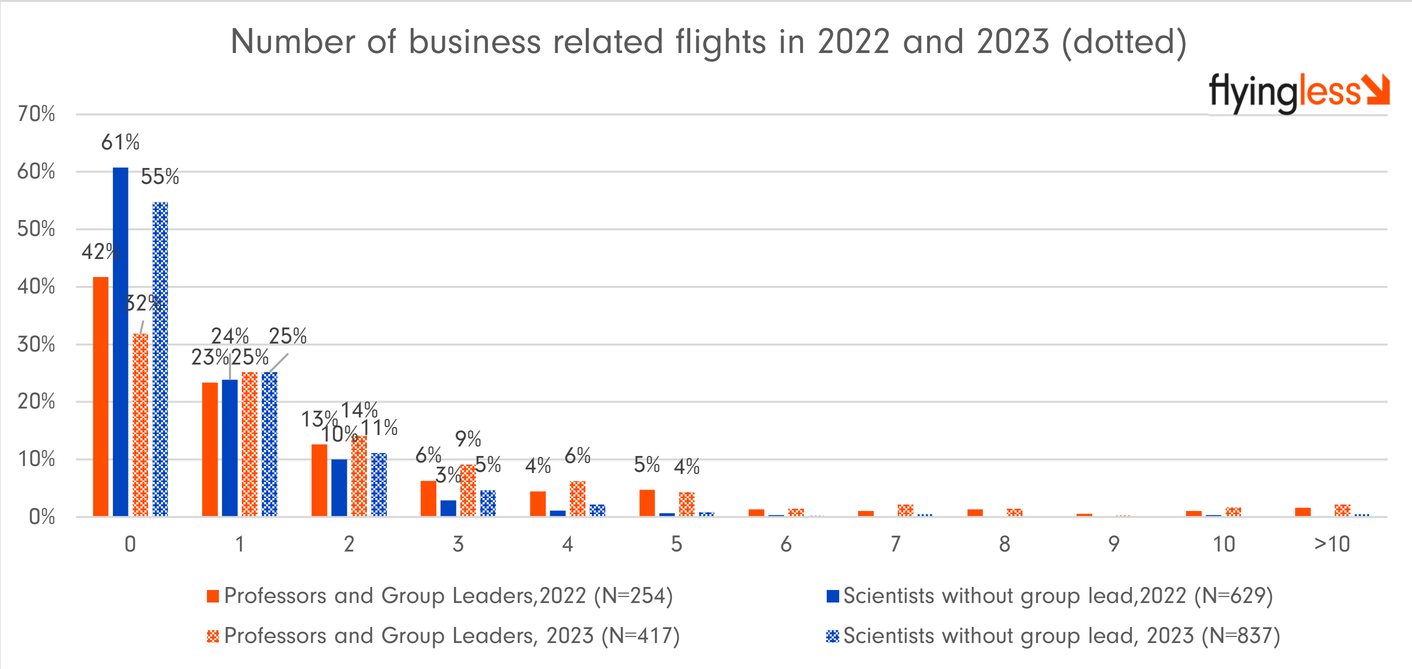

Figure 40: Number of business-related in 2022 and 2023 (dotted). Relative frequency of mentions (Y-axis) per aggregated number of trips per year (X-axis). Status groups compared: Professors & group leaders 2022, N=254, Scientists without professorship/group lead 2022, N=629, Professors & group leaders 2023, N=417, Scientists without professorship/group lead 2023, N=837.

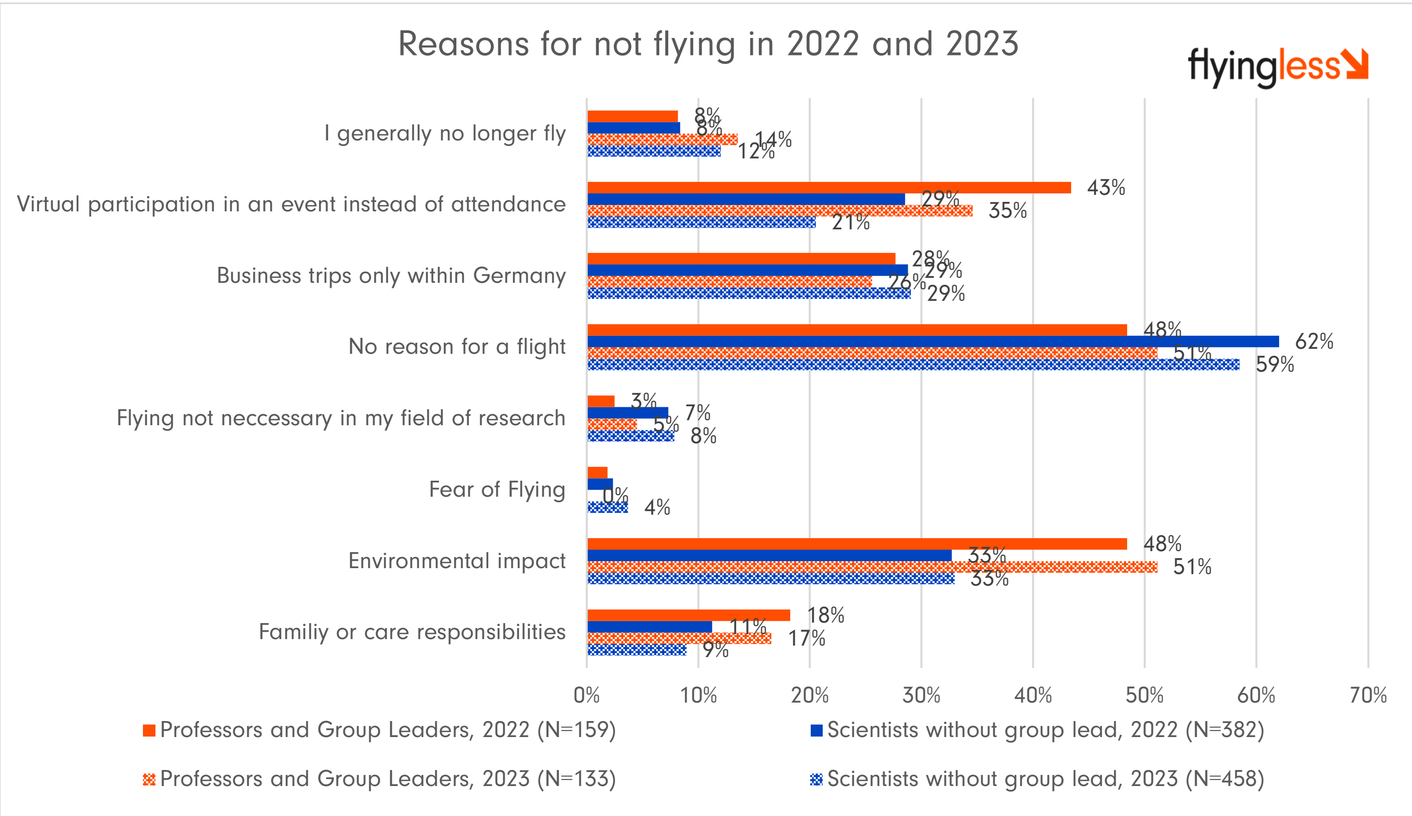

Figure 41: Reasons for not flying in 2022 and 2023 (dotted). Status groups compared: Professors & group leaders 2022, N=159 & Scientists without professorship/group lead 2022, N=382, Professors & group leaders 2023, N=133 & Scientists without professorship/group lead 2023, N=458. Scientists who indicated that they did not fly in 2022 were asked why.

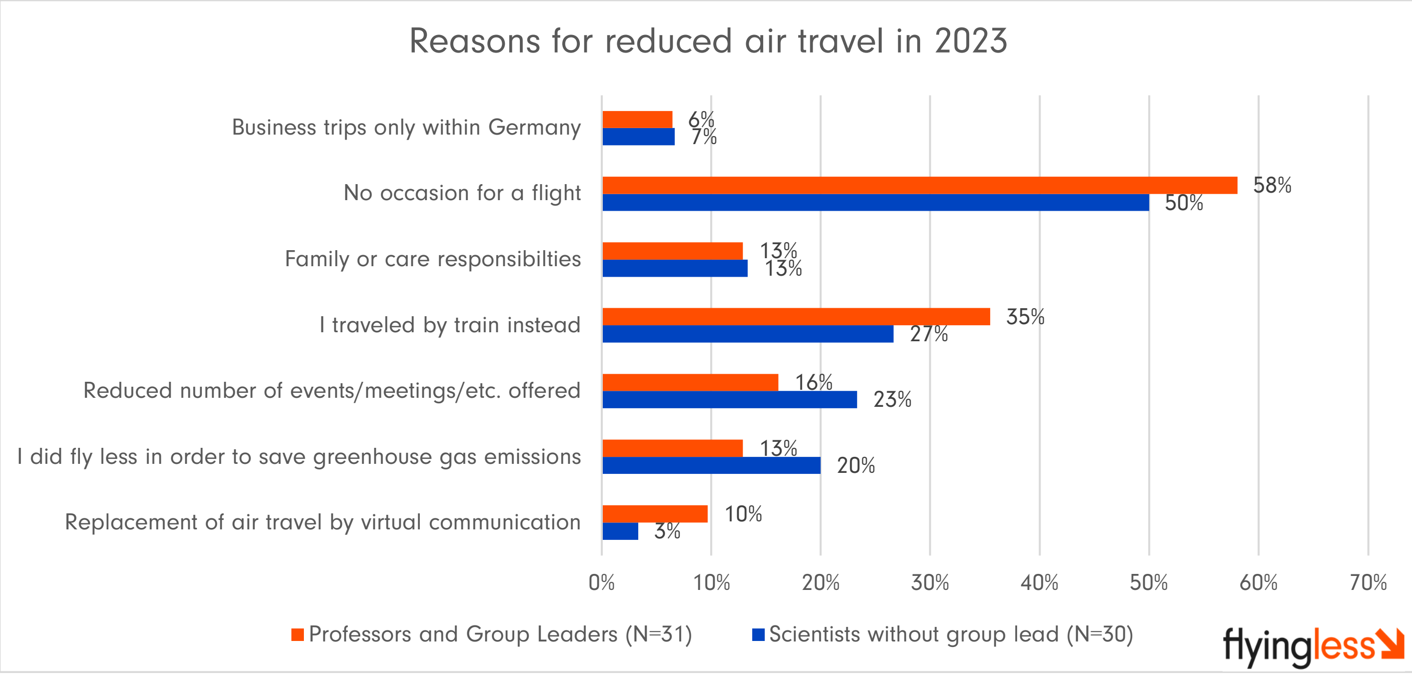

*Figure 42: Reasons for reduced air travel in 2023. Relative frequency of mentions (X-axis) of reasons for a lower flight volume (Y-axis). Status groups compared: Professors & group leaders, N=30 & Scientists without professorship/group lead, N=31). *Scientists who indicated they flew less frequently in 2023 than in 2022 were asked why.*

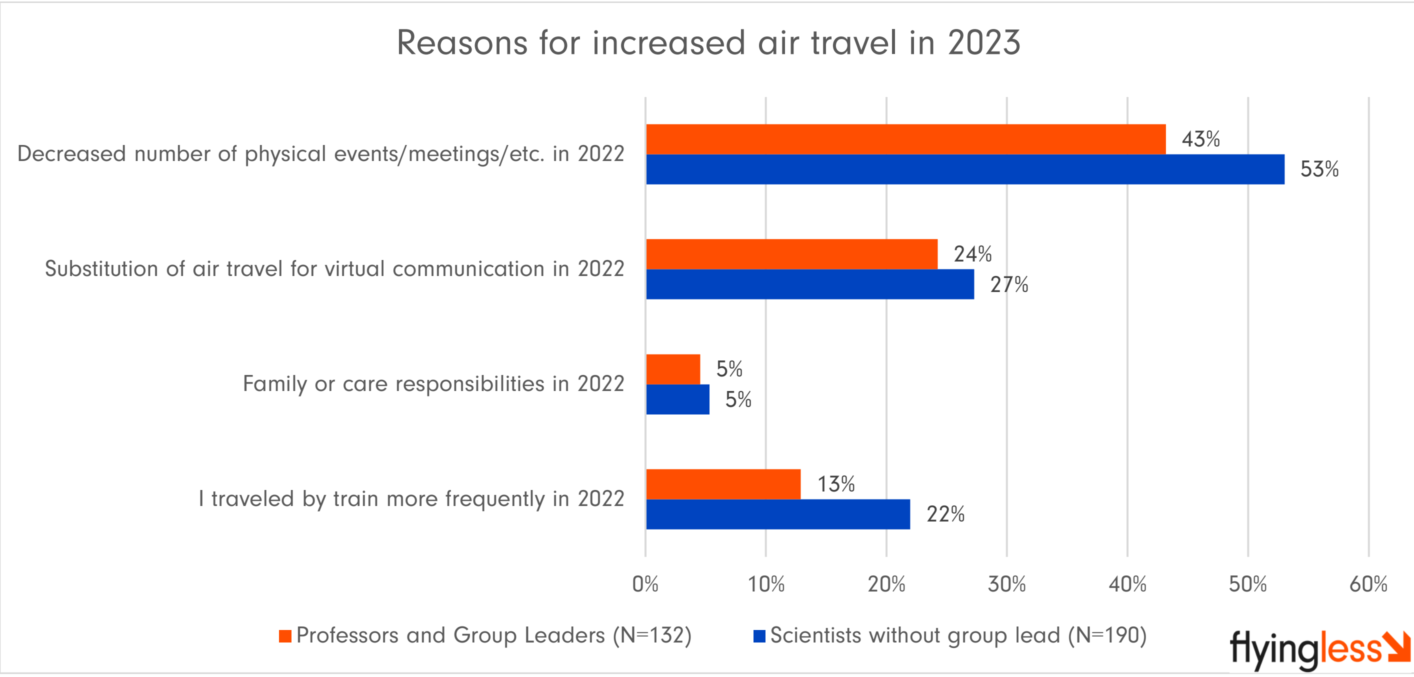

*Figure 43: Reasons for a higher number of flights in 2023. Relative frequency of mentions (X-axis) of reasons for a higher flight volume (Y-axis). Status groups compared: Professors & group leaders, N=132 & Scientists without professorship/group lead, N=190). *Scientists who indicated they flew more frequently in 2023 than in 2022 were asked why.*

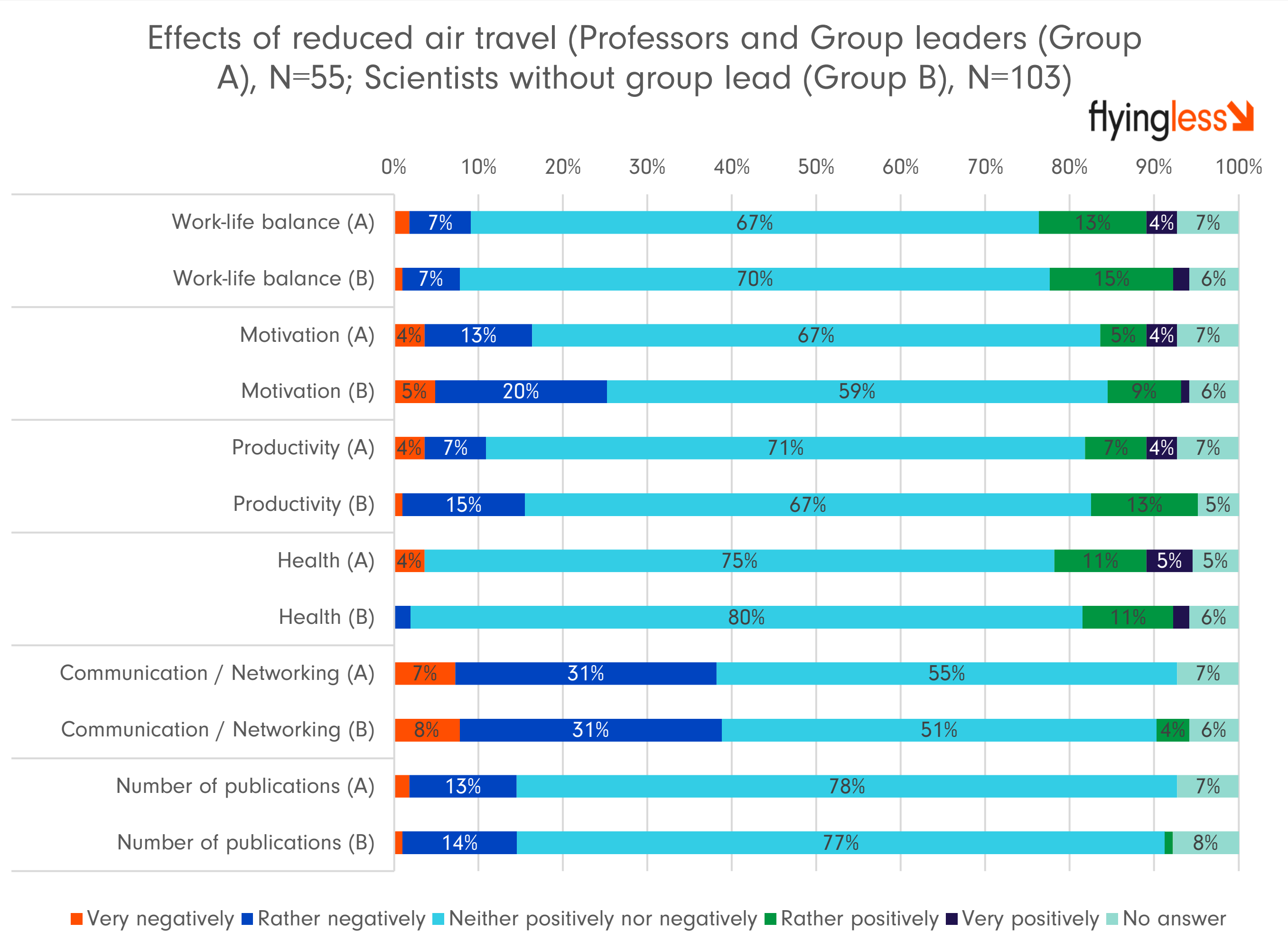

Figure 44: Effects of reduced air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status groups compared: Professors & group leaders, N=55 & Scientists without professorship/group lead, N=103). Scientists who indicated they flew less frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.

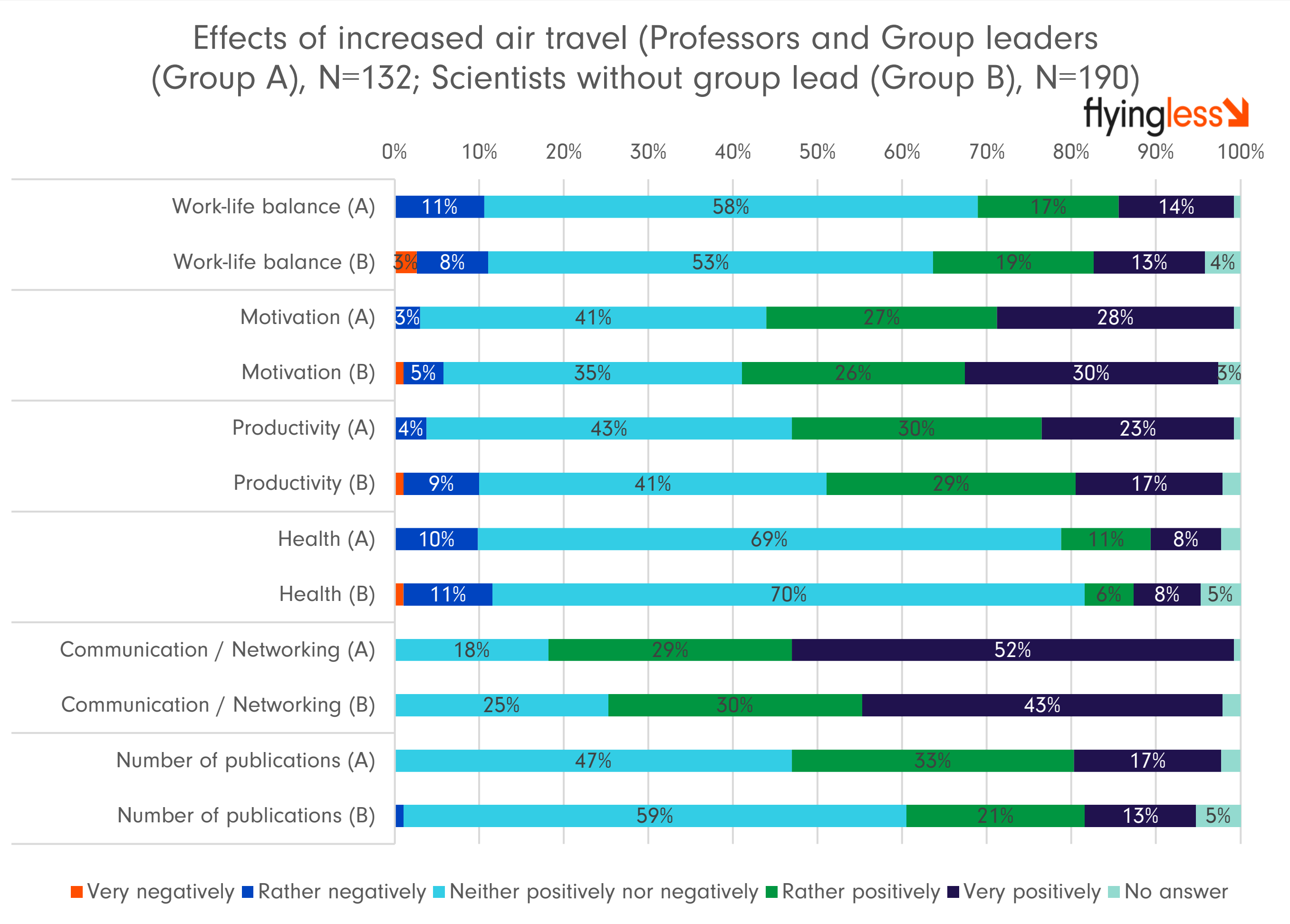

Figure 45: Effects of increased air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status groups compared: Professors & group leaders, N=132 & Scientists without professorship/group lead, N=190). Scientists who indicated they flew more frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.

Figure 46: Reasons for business air travel by scientists. Relative frequency of mentions (X-axis) per subanswer (reason for business-related air travel in the academic sector; Y-axis). Status groups compared: Professors & group leaders, N=399 & Scientists without professorship / group lead, N=782). Participants who indicated that they had not taken a business related flight in 2022 or 2023 were not surveyed.

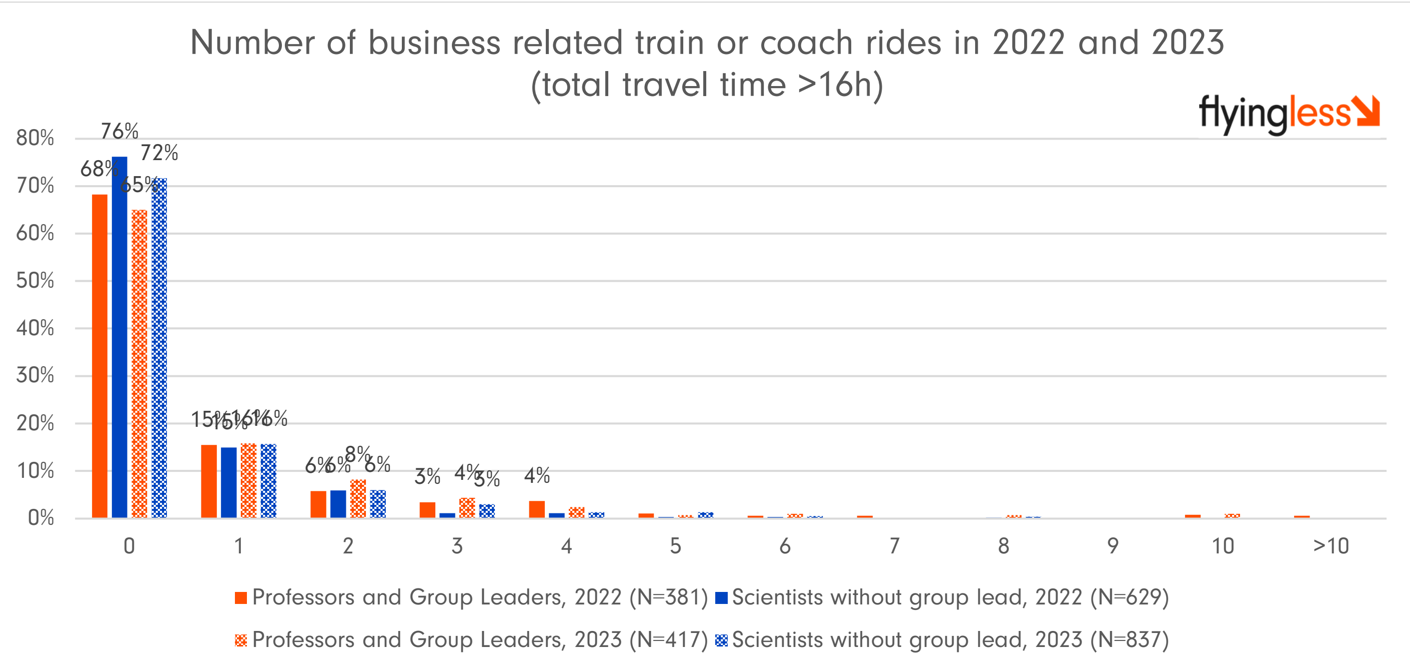

*Figure 47: Average number of business-related train/coach trips (duration > 16h total) in 2022 and 2023. Relative frequency of mentions (Y-axis) per number of train/bus trips per year (X-axis). Status groups compared: Professors & group leaders 2022, N=381 & Scientists without professorship/group lead 2022, N=629, Professors & group leaders 2023, N=417 & Scientists without professorship/group lead 2023, N=837. *Scientists who reported not having worked in their jobs in 2022 were not surveyed.*

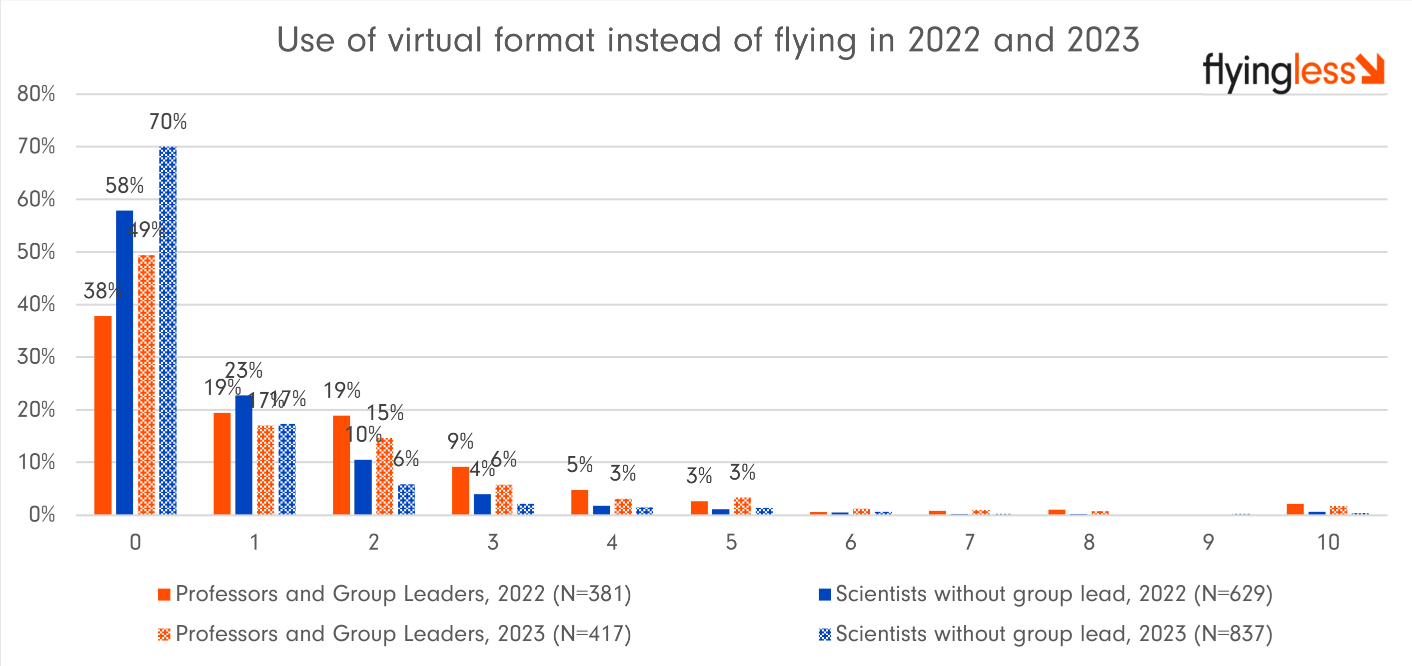

*Figure 48: Using the virtual format in 2022 and 2023 instead of going on a business trip. Relative frequency of mentions (Y-axis) per number of virtual events/meetings (X-axis). Status groups compared: Professors & group leaders 2022, N=381 & Scientists without professorship/group lead 2022, N=629, Professors & group leaders 2023, N=417 & Scientists without professorship/group lead 2023, N=837. *Scientists who reported not having worked in their jobs in 2022 were not surveyed.*

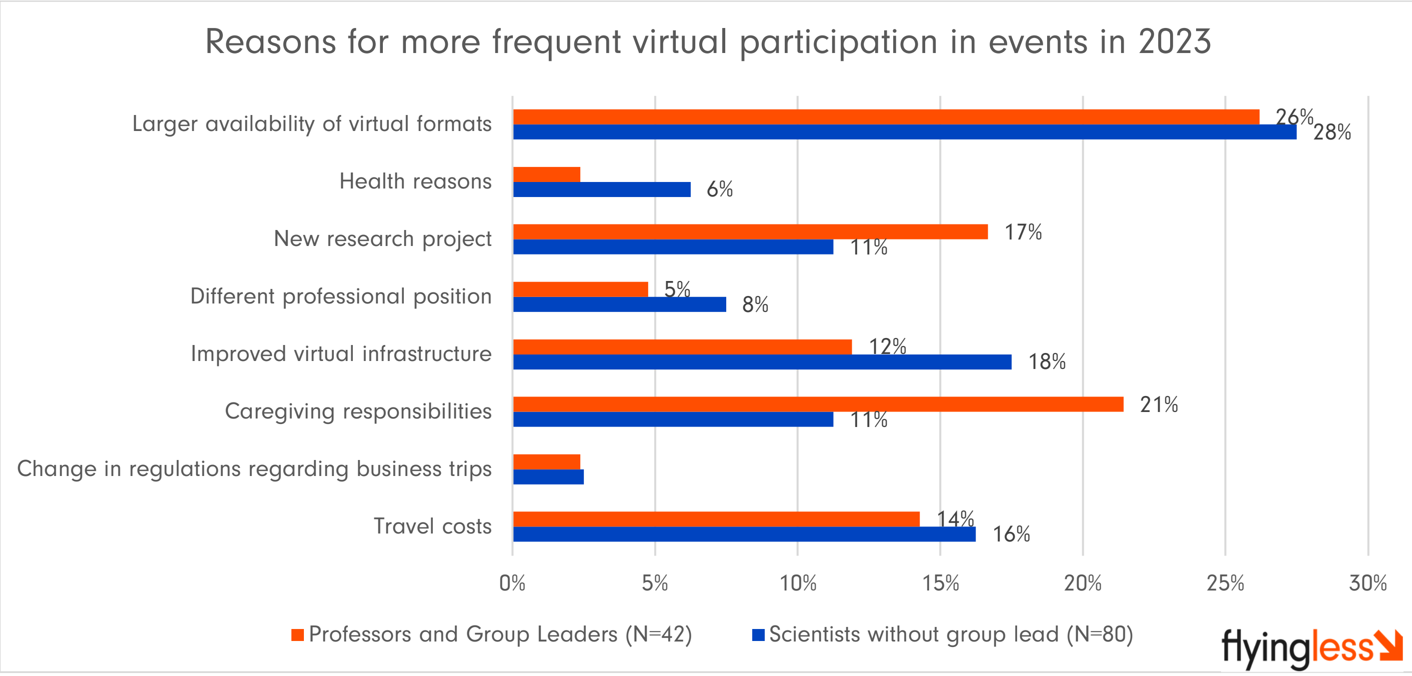

Figure 49: Reasons for more frequent virtual participation in events. Relative frequency of mentions (X-axis). Status groups compared: Professors & group leaders, N=42 & Scientists without professorship/group lead, N=80. Participants who stated using the virtual format more frequently in 2023 compared to 2022 were asked why.

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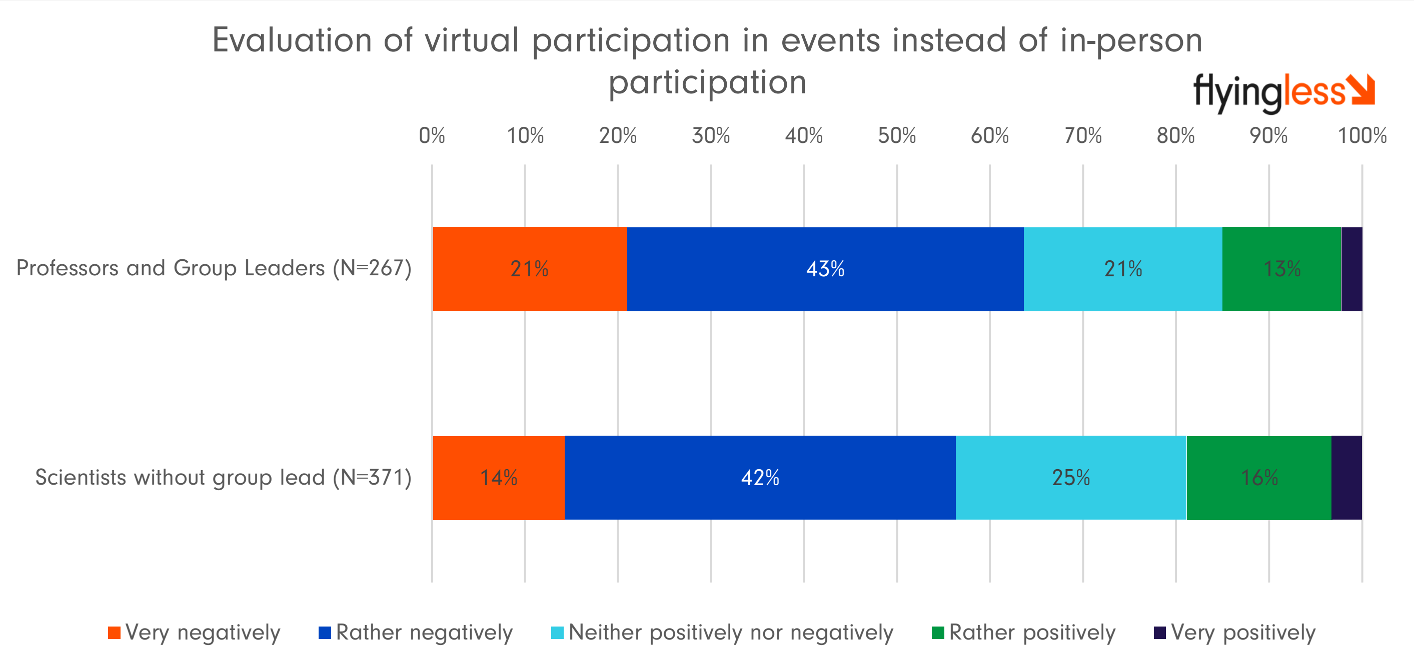

Figure 50: Evaluation of virtual participation in events instead of in-person attendance. Relative frequenvy of mentions (X-axis). Status groups compared: Professors & group leaders, N=267 & Scientists without professorship/group lead, N=371. Participants who indicated no virtual participation in events were not surveyed.

5.4. Behaviour changes and measures

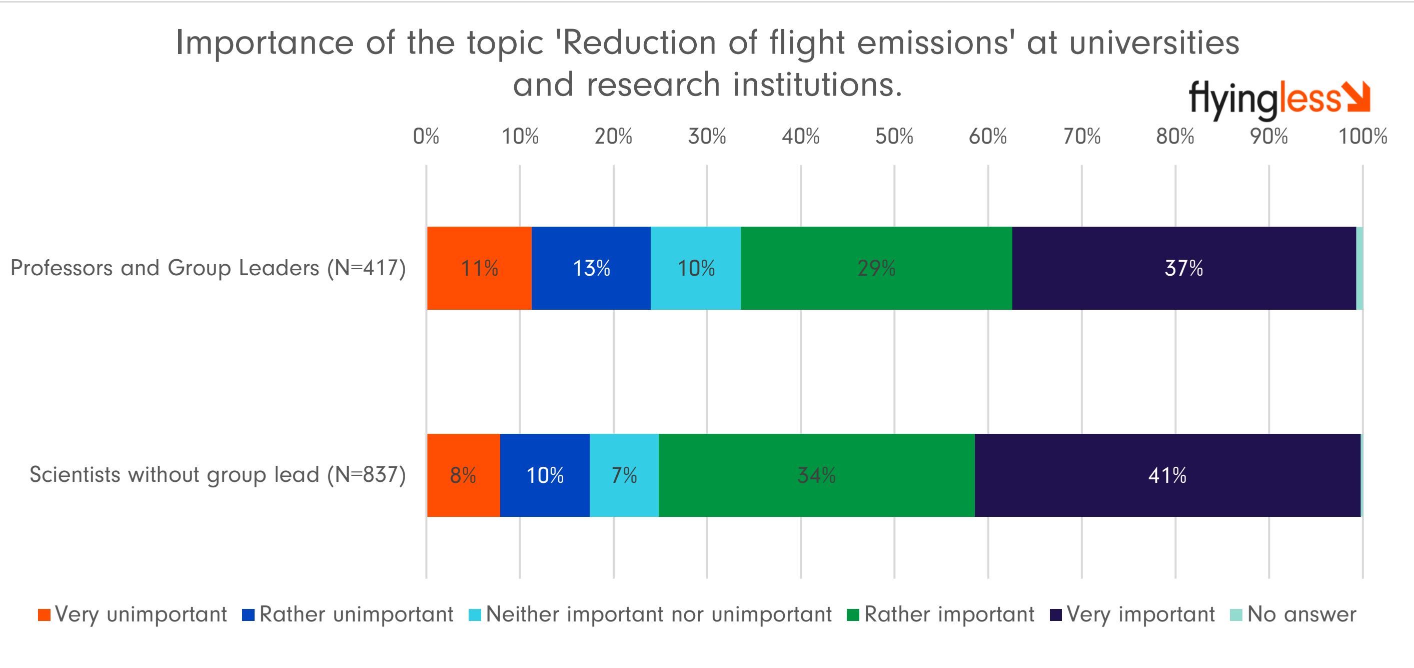

Figure 51: Evaluation of the topic of flight emissions at universities and research institutions. Relative frequency of mentions (X-axis). Status groups compared: Professors & Group Leaders, N=417 & Scientists without professorship/group lead, N=837.

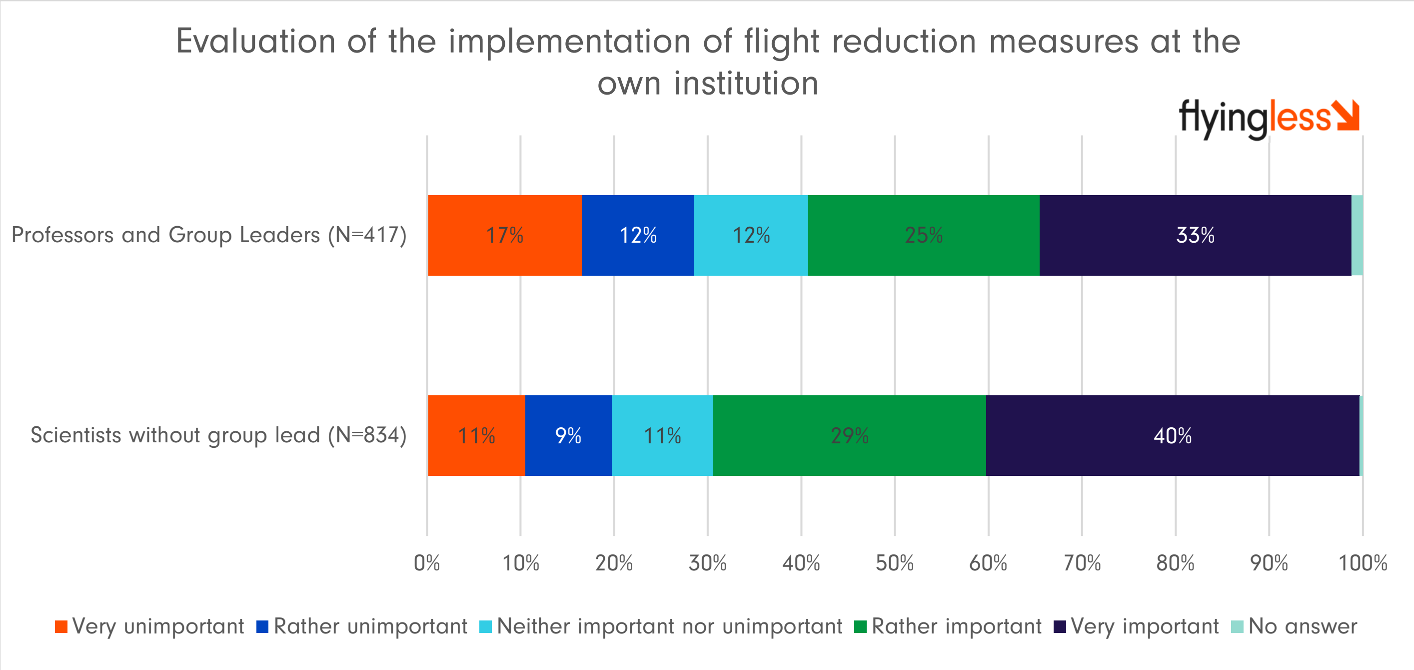

Figure 52: Importance of the implementation of flight reduction measures at the own institution. Relative frequency of mentions (X-axis). Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group, N=837.

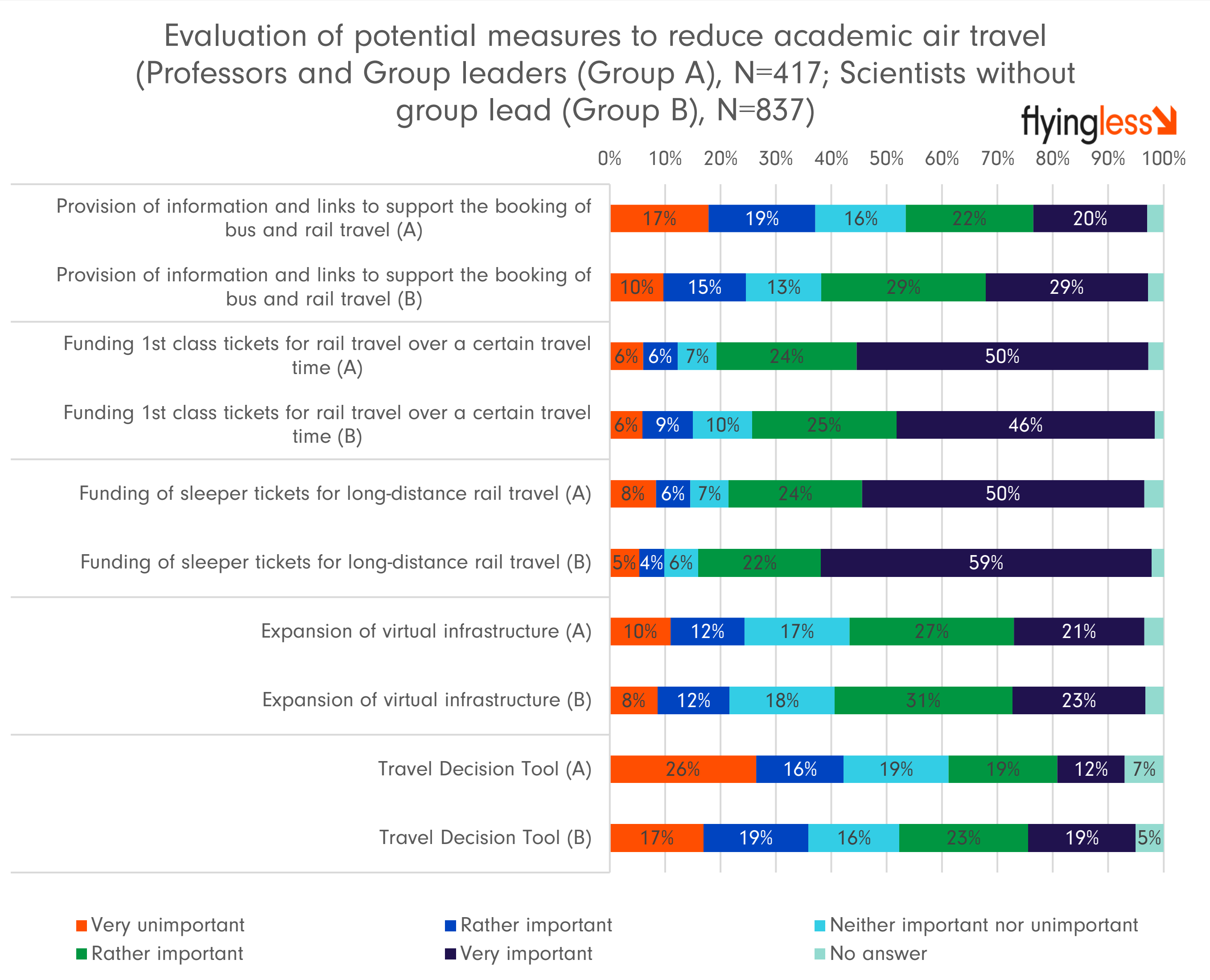

*Figure 53: Evaluation of potential measures to reduce academic air travel. Relative frequency of mentions (X-axis) per subanswer (Measures/incentives to reduce academic air travel; Y-axis). Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837. *Scientists who indicated they supported an expansion of virtual infrastructure were asked about their opinions on specific measures.*

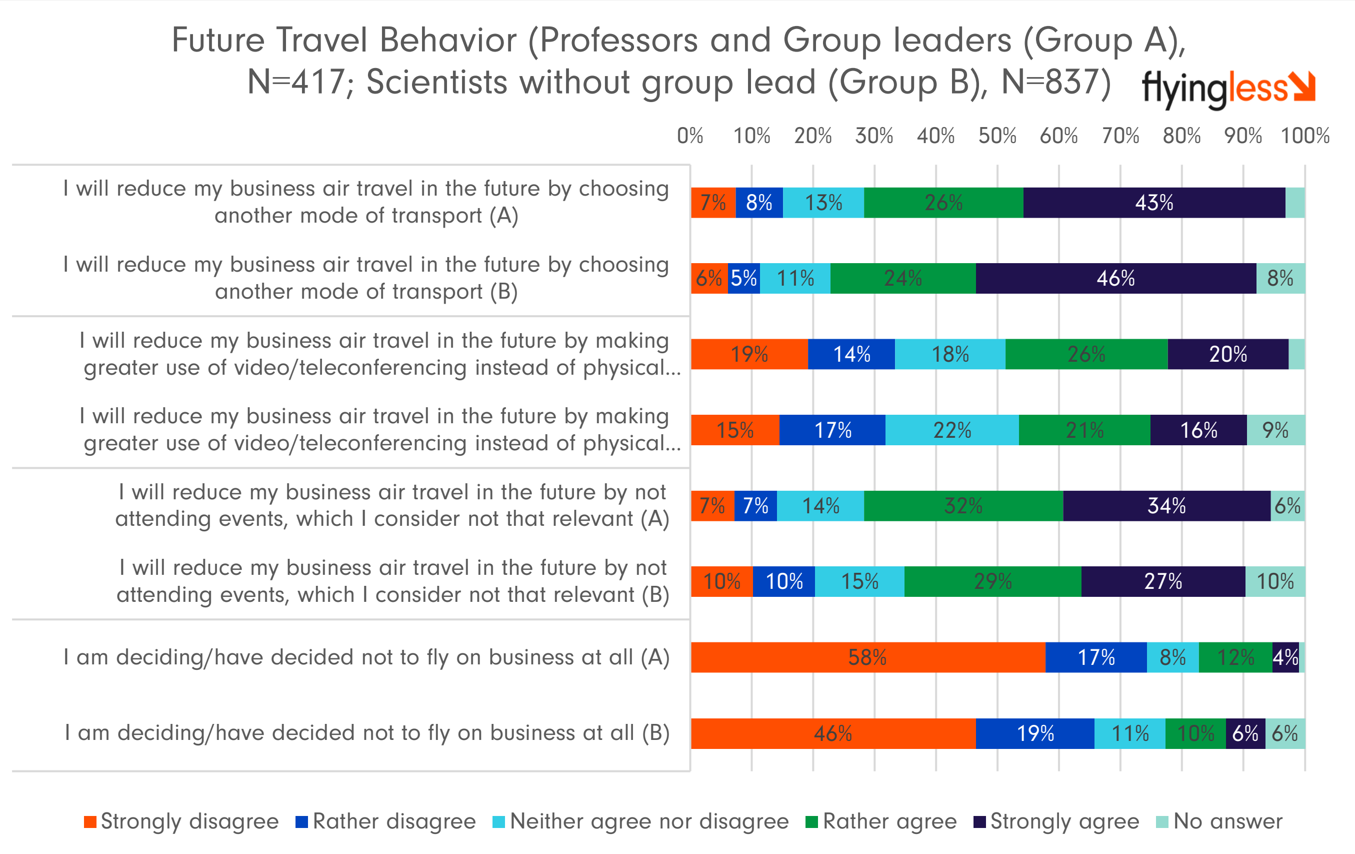

Figure 54: Willingness to change behaviour to avoid air travel. Relative frequency of mentions (X-axis) per subanswer (agreement with statements about future mobility behaviour to avoid official air travel; Y-axis). Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837.

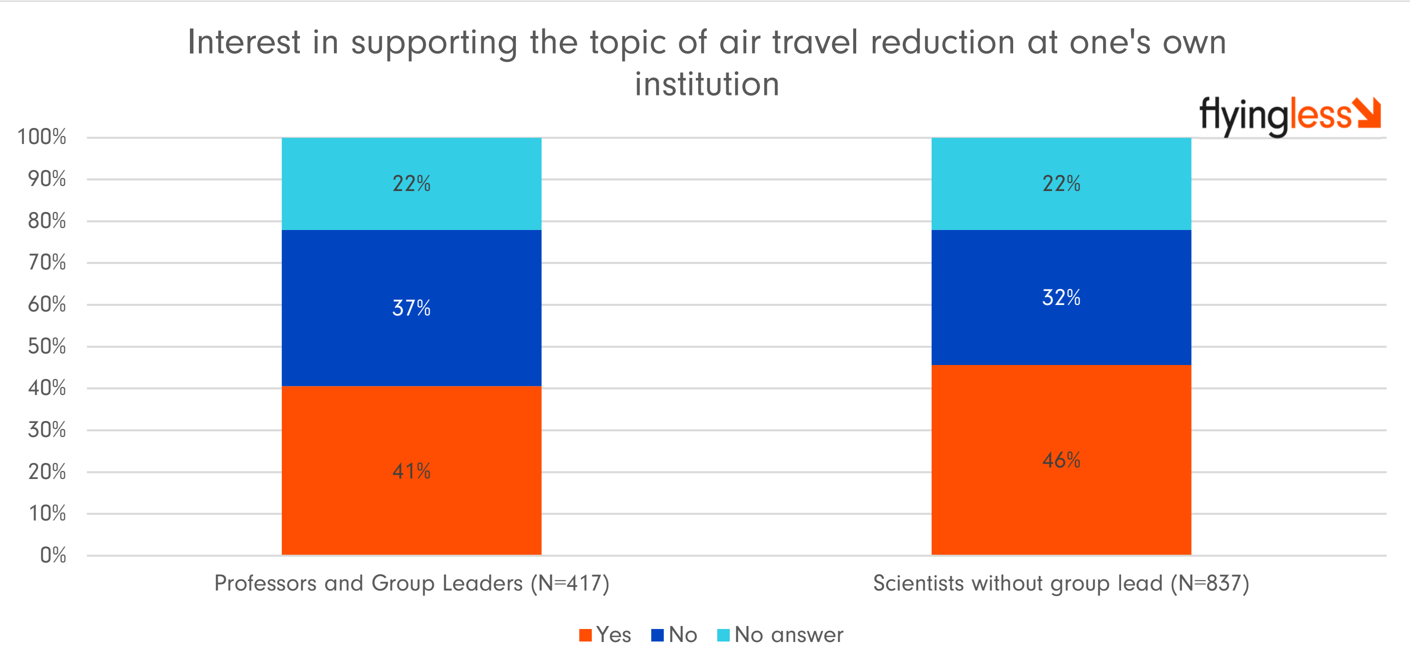

Figure 55: Interest in supporting the issue of flight reduction at the institution. Relative frequency of mentions regarding the interest on supporting the topic of flight reduction at the own institution. Status groups compared: Professors & group leaders, N=417 & Scientists without professorship/group lead, N=837.

6. Timelines (Scientists)

In this chapter, the results from the FlyingLess surveys 2023 and 2024 for scientists are compared. Data about travel behavior before the COVID-19 pandemic was taken from the 2023 survey. Data about travel behavior in 2022 was taken from both the 2023 and 2024 surveys. 2024 responses from institutions that had already participated in 2023 were discarded to avoid double counting of responses.

6.1. Average mobility and use of virtual format per year prior to the COVID-19 pandemic, in 2022 and in 2023

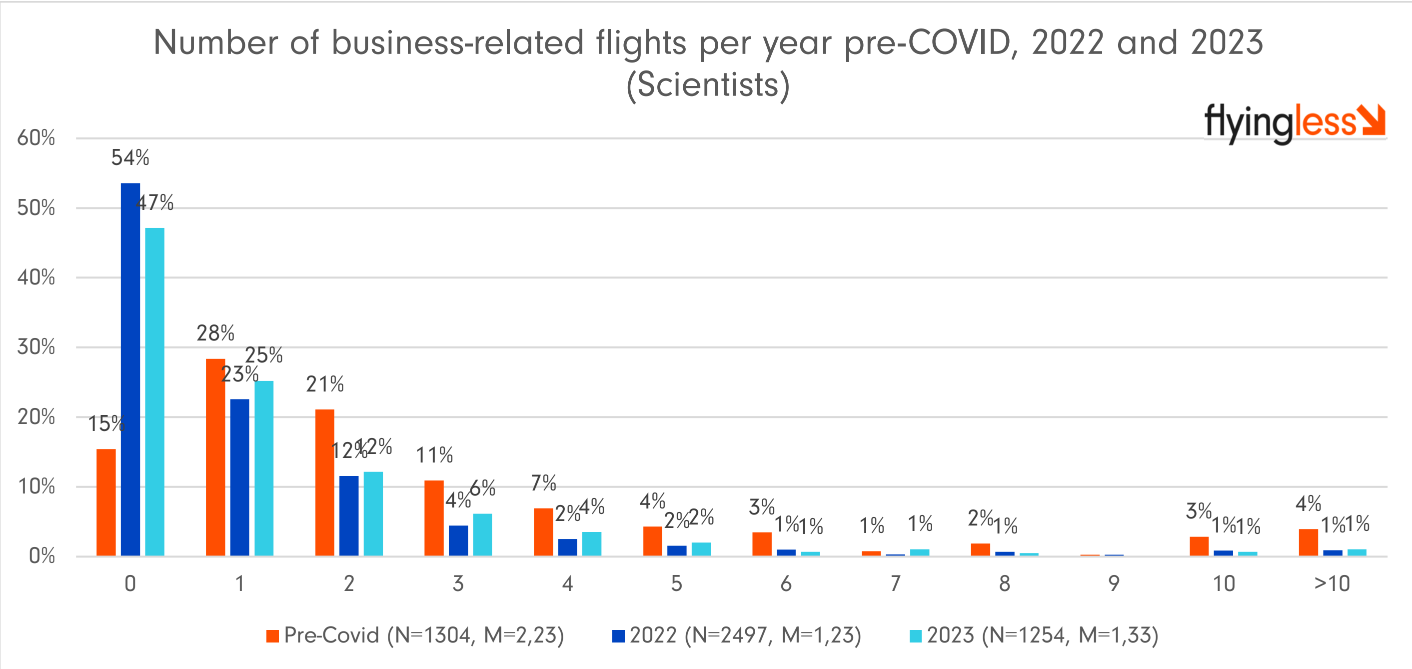

Figure 56: Average number of business-related flights pre COVID-19 pandemic, in 2022 and 2023 FlyingLess survey. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

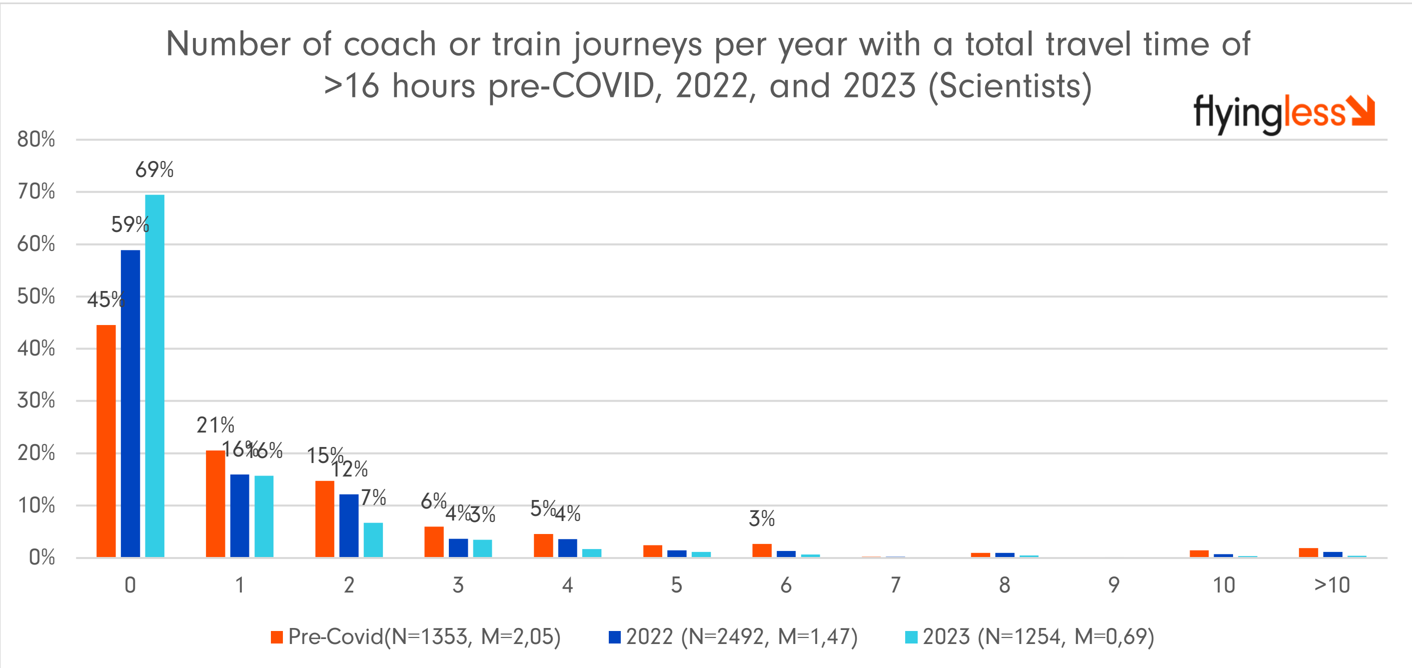

Figure 57: Number of business-related train/coach rides by scientists pre-COVID-19, in 2022 and 2023. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

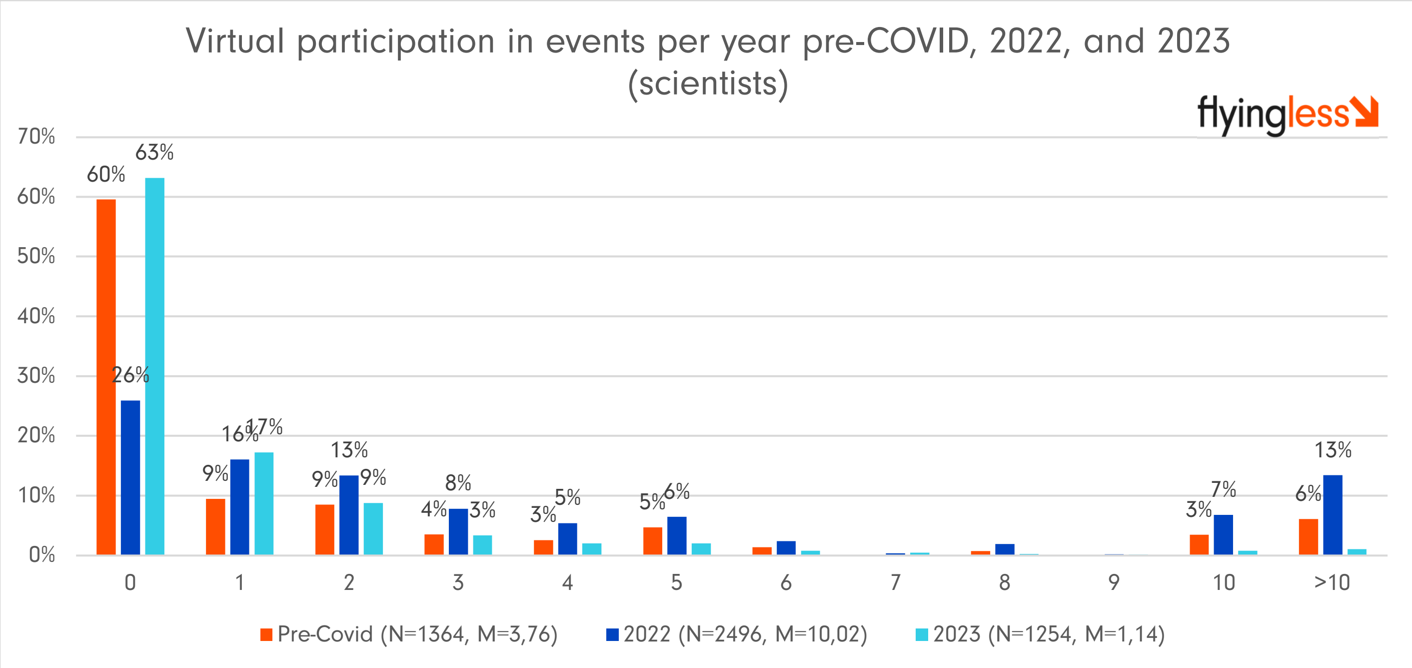

Figure 58: Number of virtual events instead of a business trip by scientists pre-COVID-19, in 2022 and 2023. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

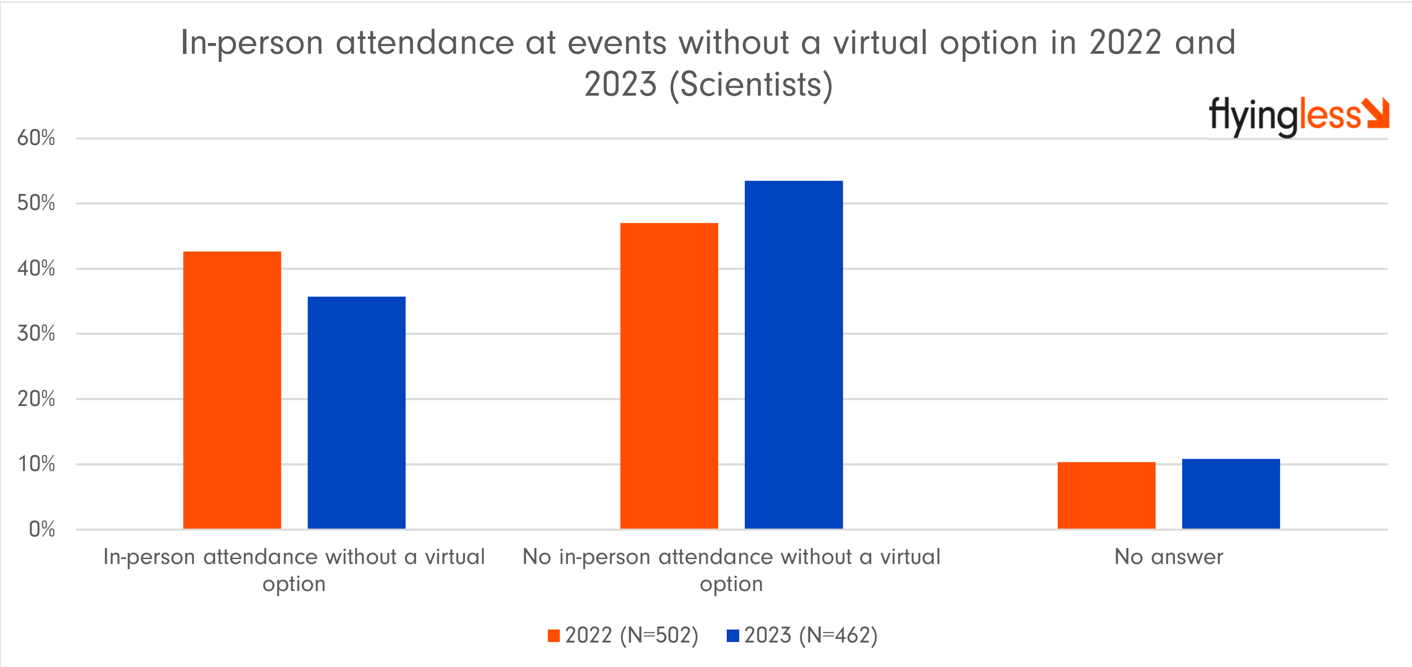

Figure 59: Willingness to attend an event in person when option for virtual participation is not given in 2022 and 2023. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

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6.2. Behaviour changes and measures

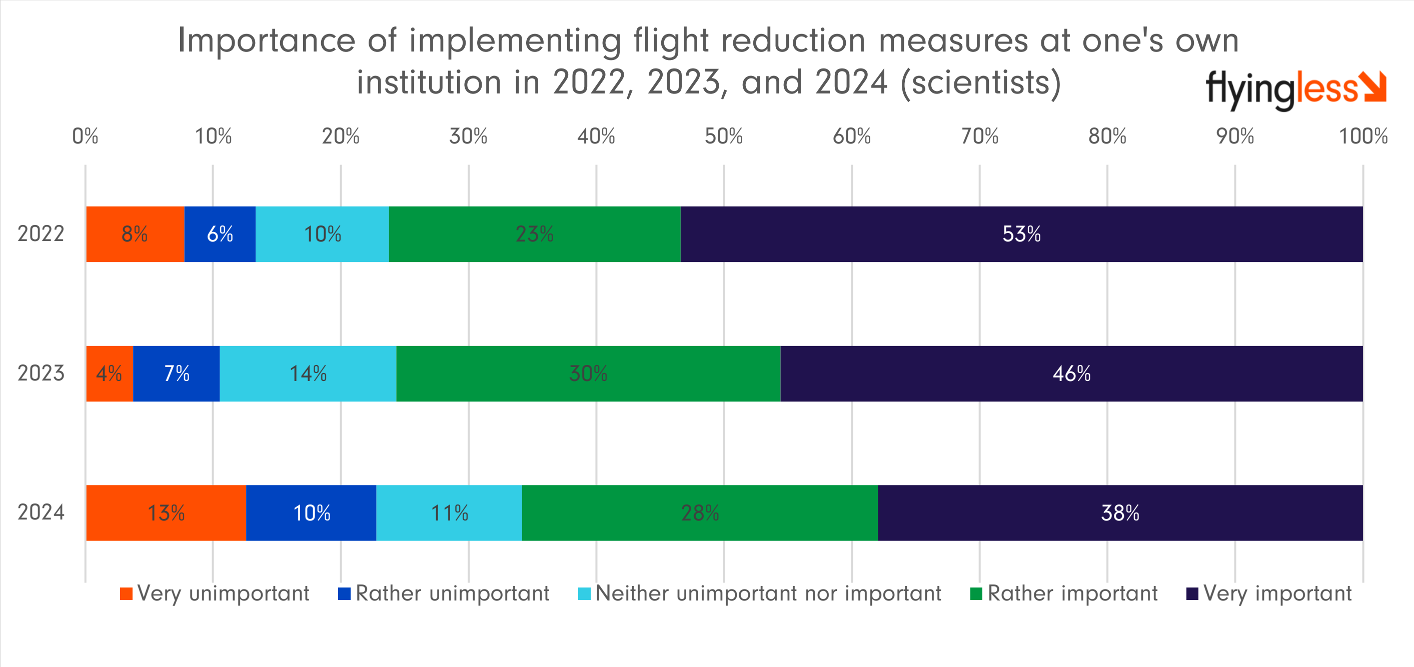

Figure 60: Importance of the implementation off flight reduction measures at the own institution in 2022, 2023 and 2024. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

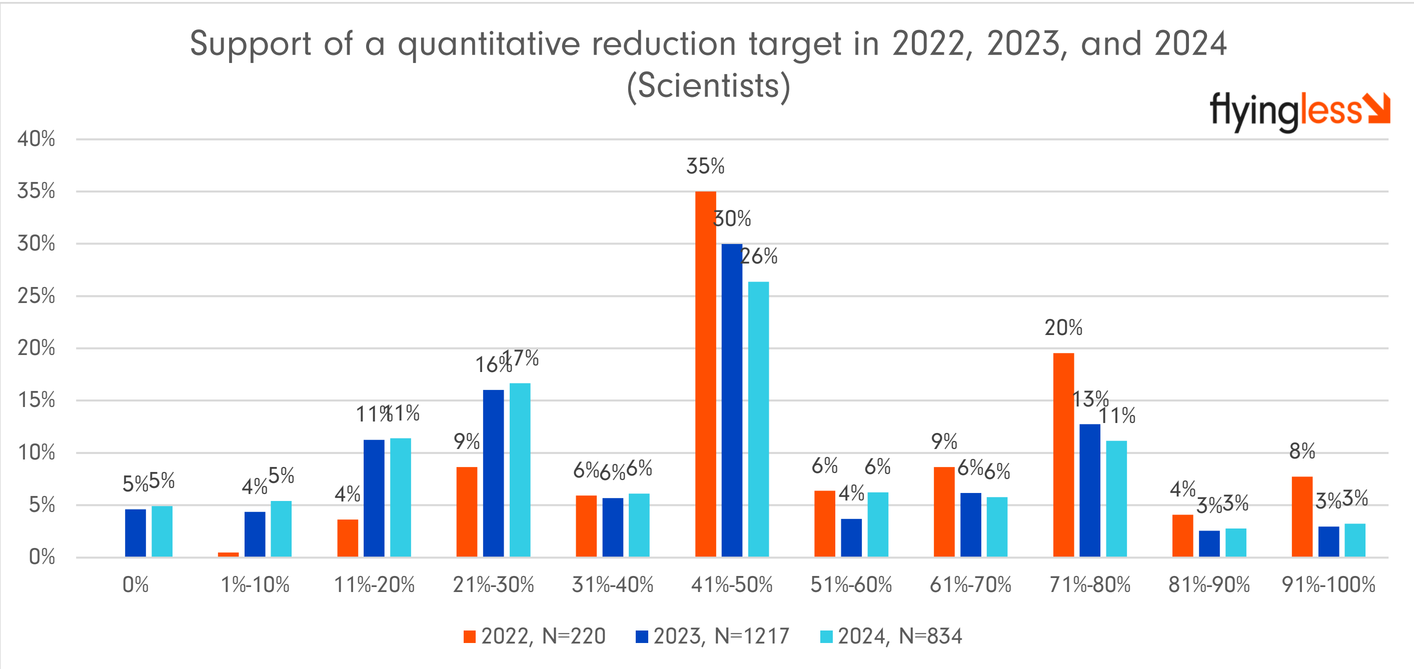

Figure 61: Support of a potential reduciton target by scientists in 2022, 2023 and 2024. Status group: scientists (aggregated from professors & group leaders & scientists without professorship/group lead).

7. Research management/technology/administration (N=355)

In this chapter, the results of the status group management/technoglogy/administration are presented.

7.1. Structuring the respondents groups

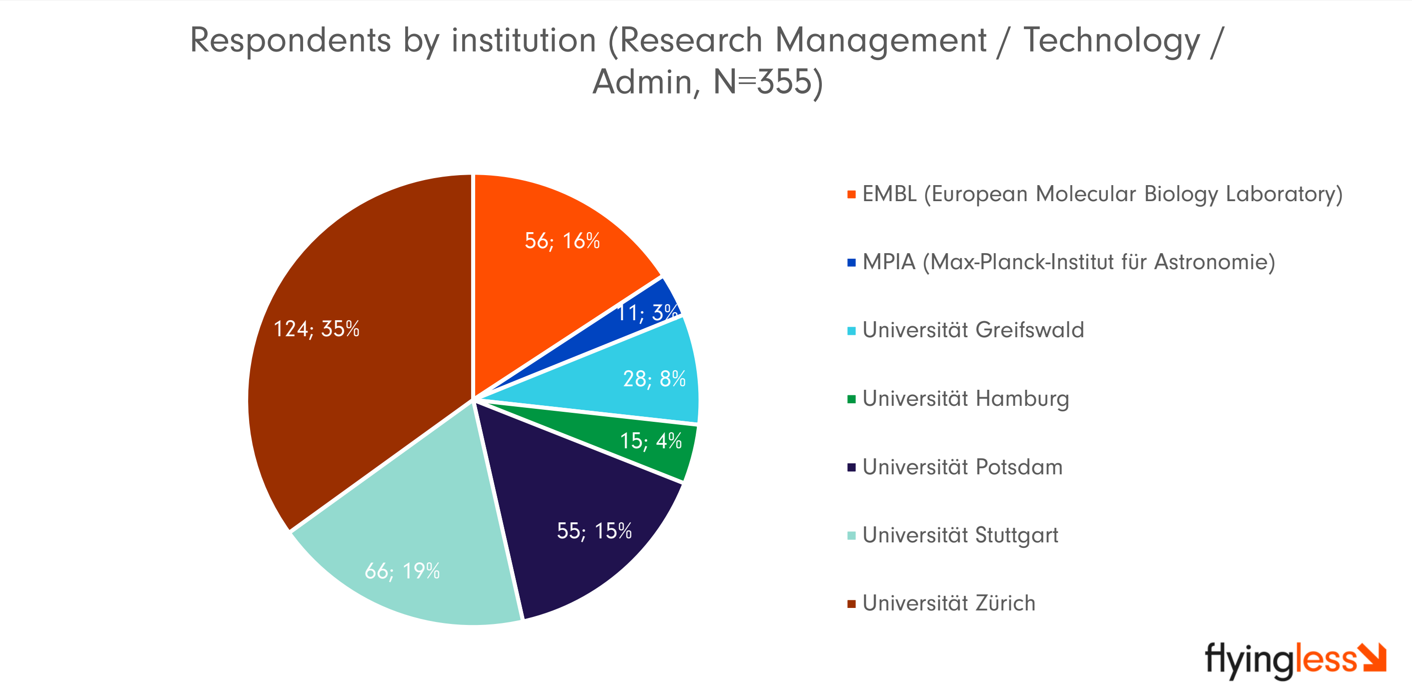

Figure 62: Response by institution. Status group: Research management/technology/admin, N=355. Relative frequency of institutional affiliation.

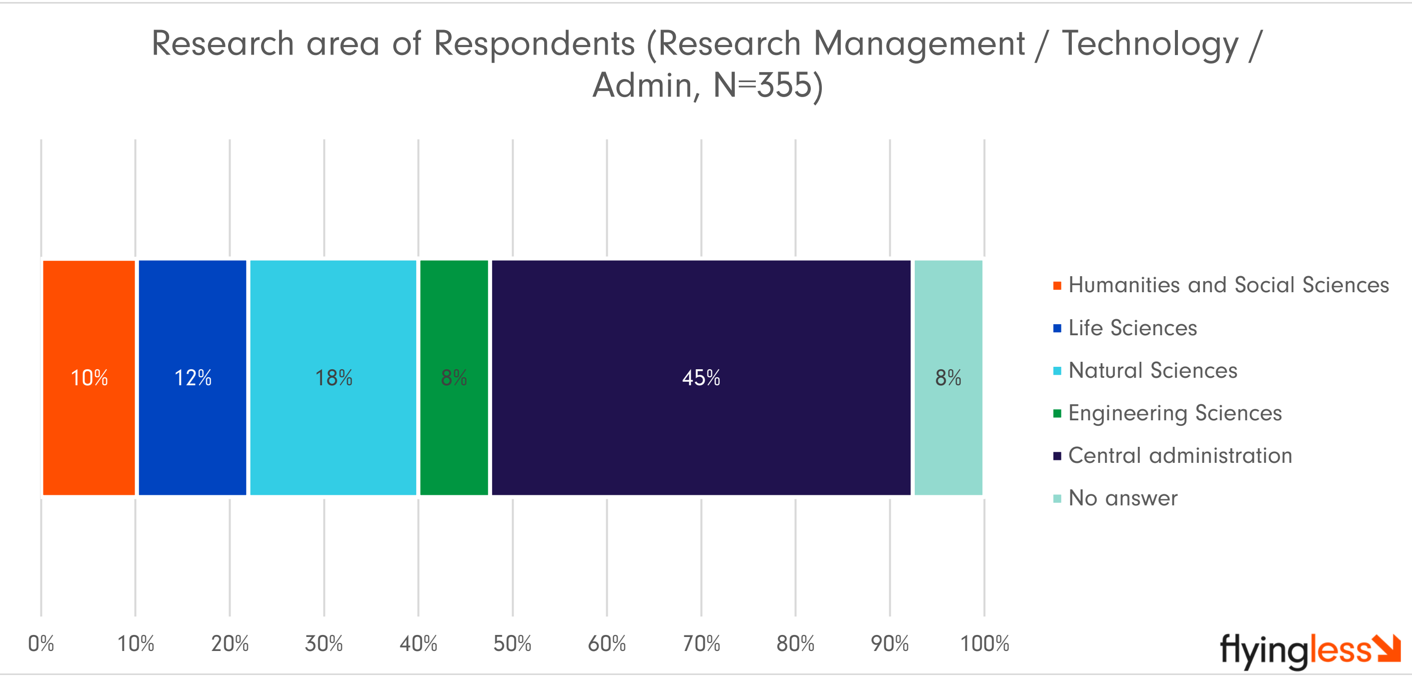

Figure 63: Research area of the respondents. Status group: Research management/technology/admin, N=355. Relative frequency of the research area. Categories correspond to the DFG structure.

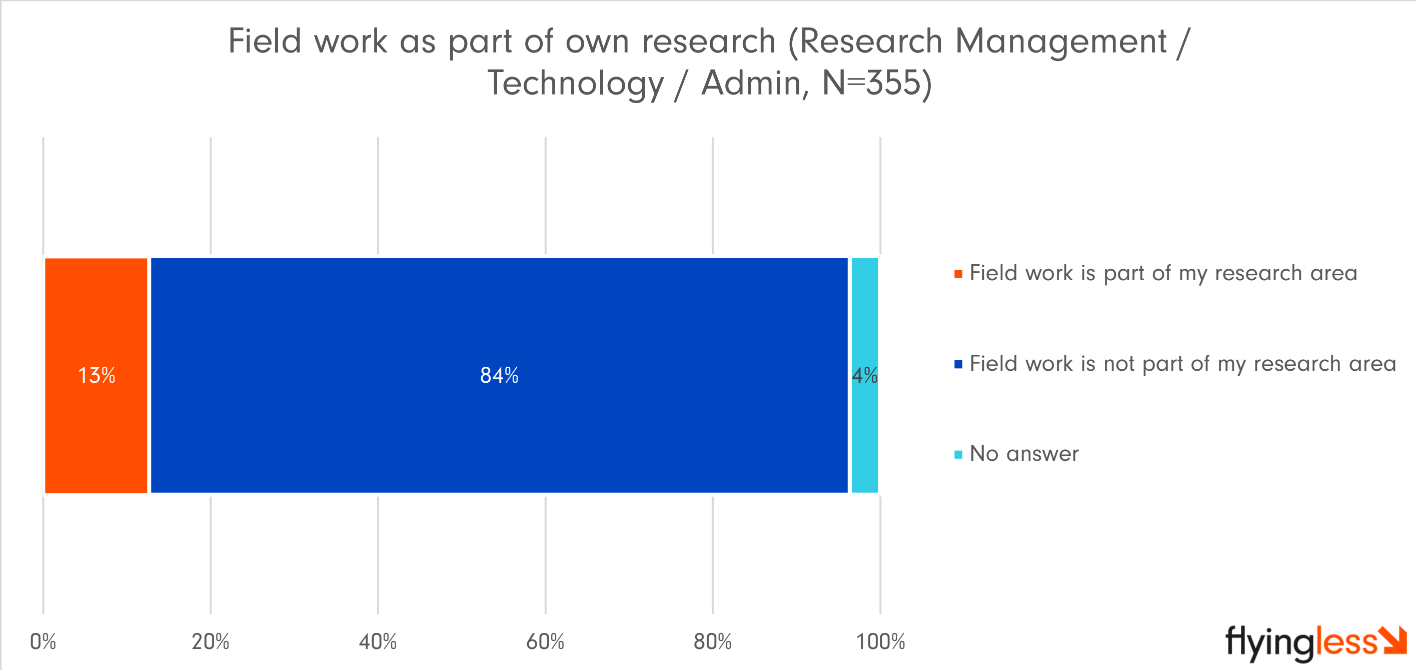

Figure 64: Field work as part of the own research. Status group: Research management/technology/admin, N=355. Relative frequency of field research in one's field of activity. Field research defined as collecting raw data outside of a laboratory, library, or workplace (including instrument maintenance/installation, etc.).

7.2. The topic of flight reduction and communication about it in academia

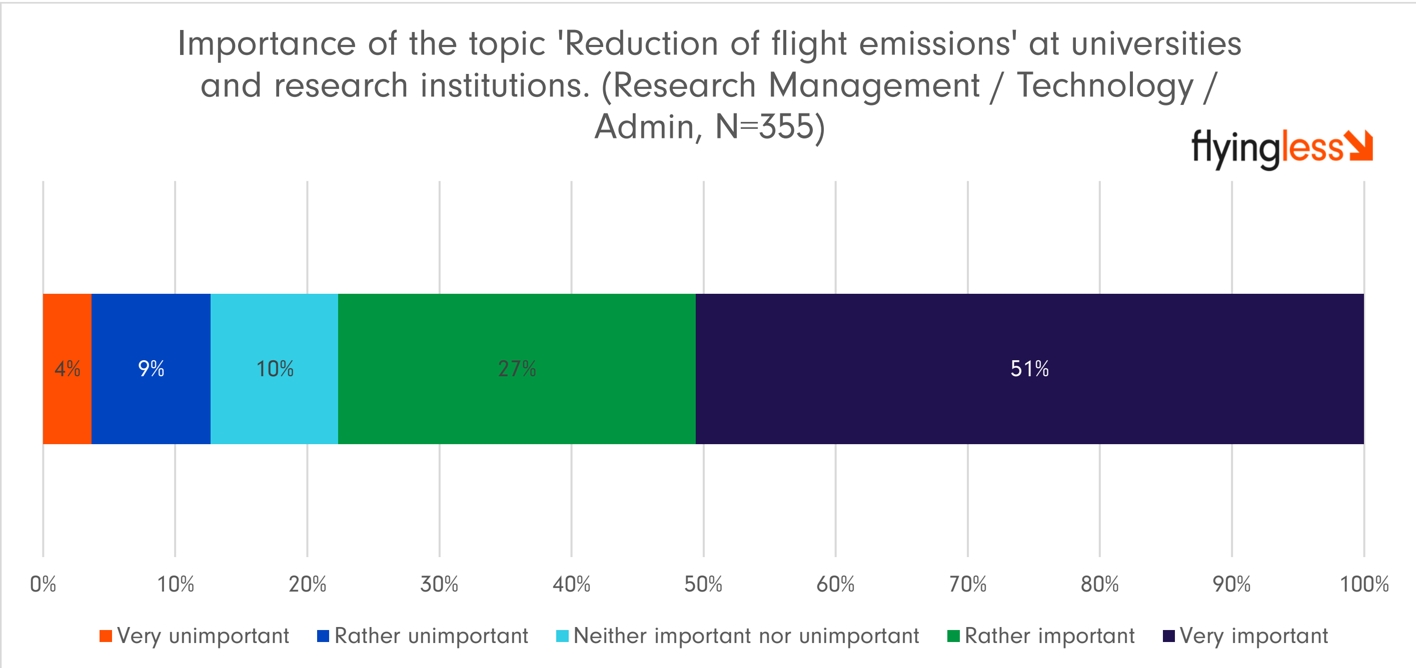

Figure 65: Importance of academic flight emissions. Relative frequency of the evaluation of the topic of flight reduction at universities and research institutions (X-axis). Status group: Research management/technology/admin, N=355.

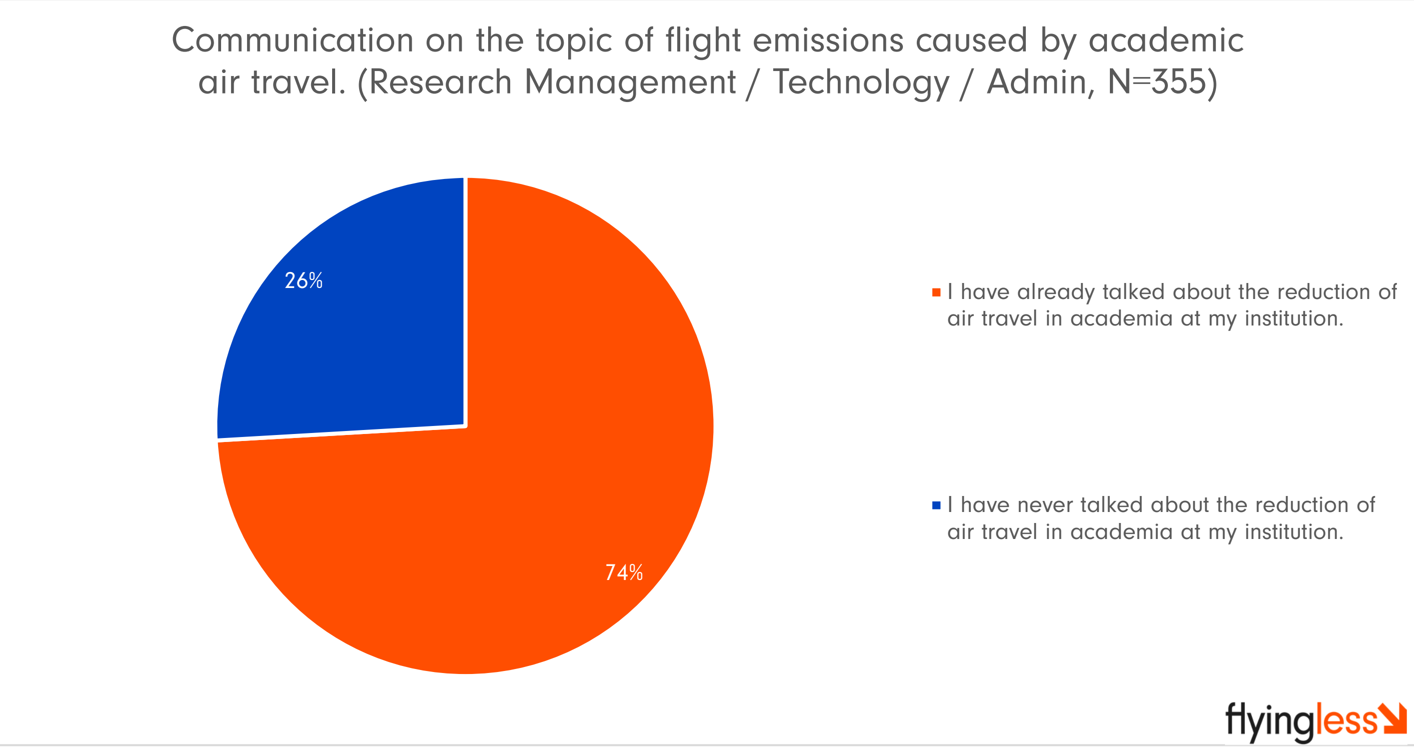

Figure 66: Communication on the topic of flight emissions from academic air travel. Relative frequency of mentions. Status group: Research management/technology/admin, N=355.

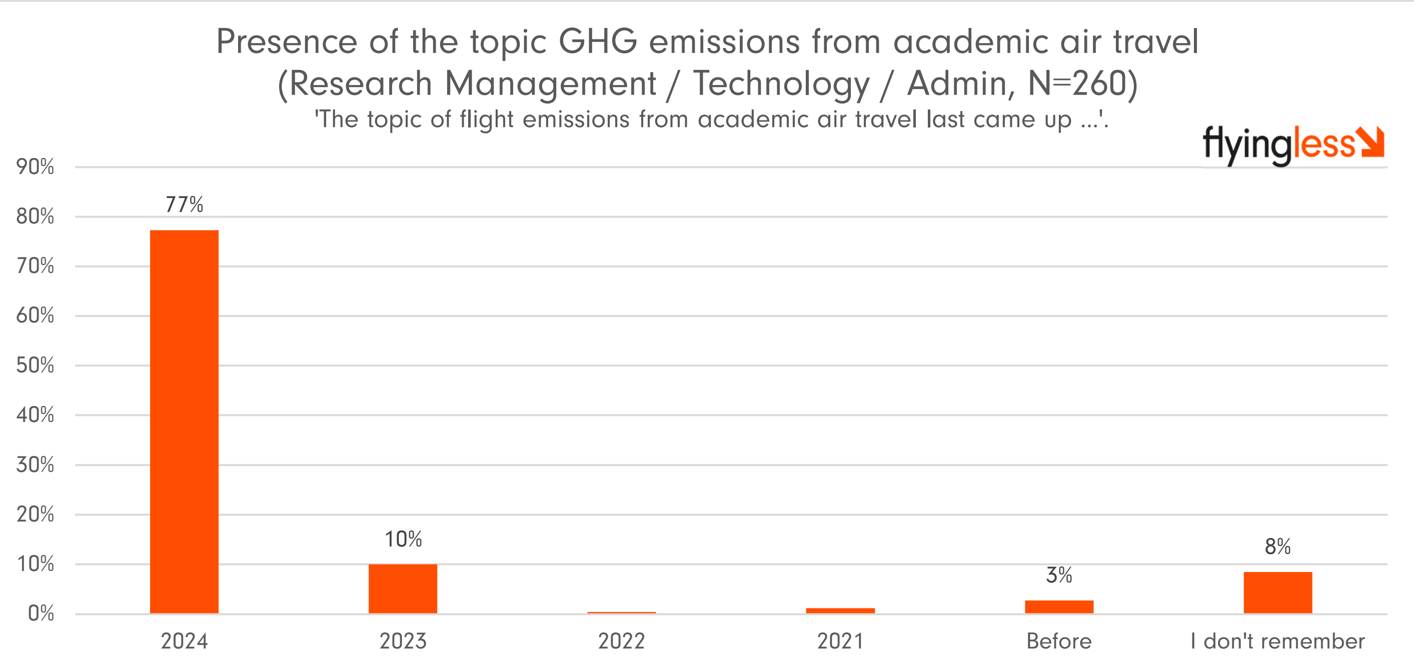

Figure 67: Presence of the issue of GHG emissions from academic air travel among research management/technology/admin. Indication of the date of the last communication on the subject of flight emissions from academic air travel. Relative frequency of mentions. Status group: Research management/technology/admin, N=260. *Respondents who indicated that they had already spoken about the topic of flight emissions in academia were asked about the timing of the last communication about it.*

7.3. Average mobility (flight, train/bus) and use of virtual format per year in 2022 and in 2023

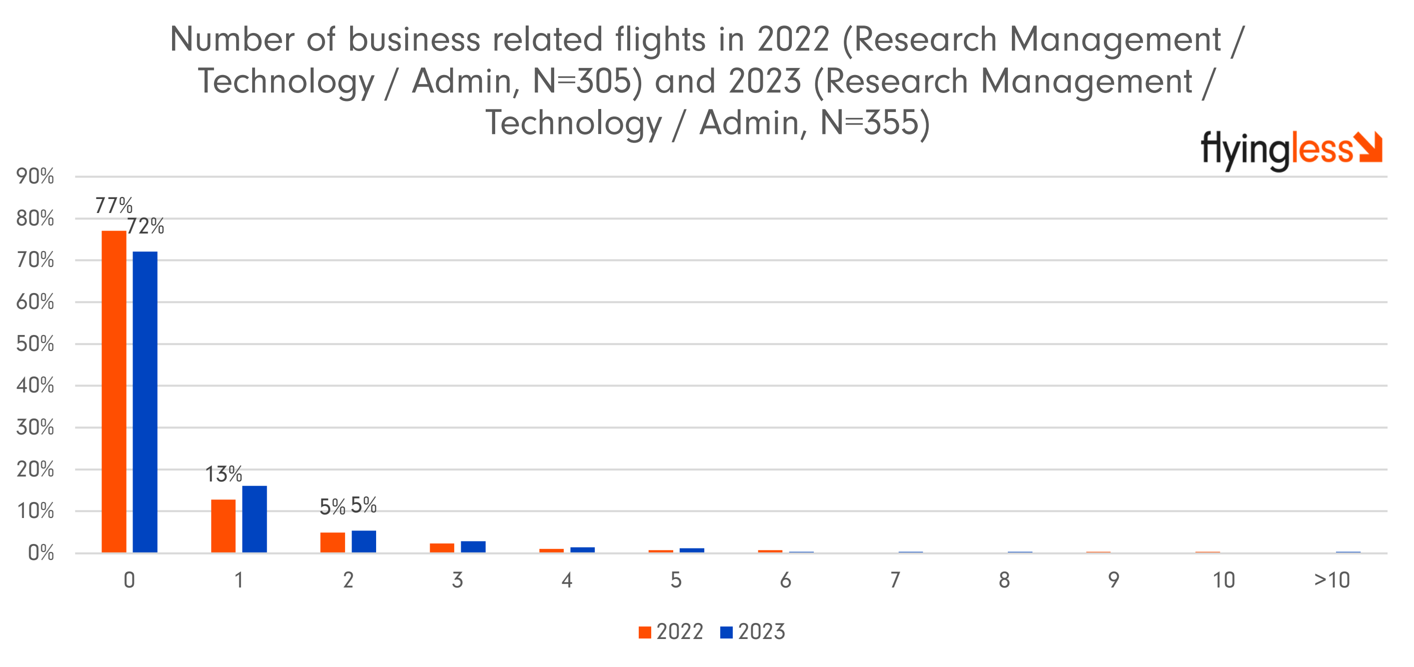

Figure 68: Number of business-related flights per year in 2022 and 2023. Status group: Research management/technology/admin 2022, N=305, Research management/technology/admin 2023, N=355. Relative frequency of mentions (Y-axis) per aggregated number of trips per year (X-axis). Participants who did not work at their current institution in 2022 were not surveyed

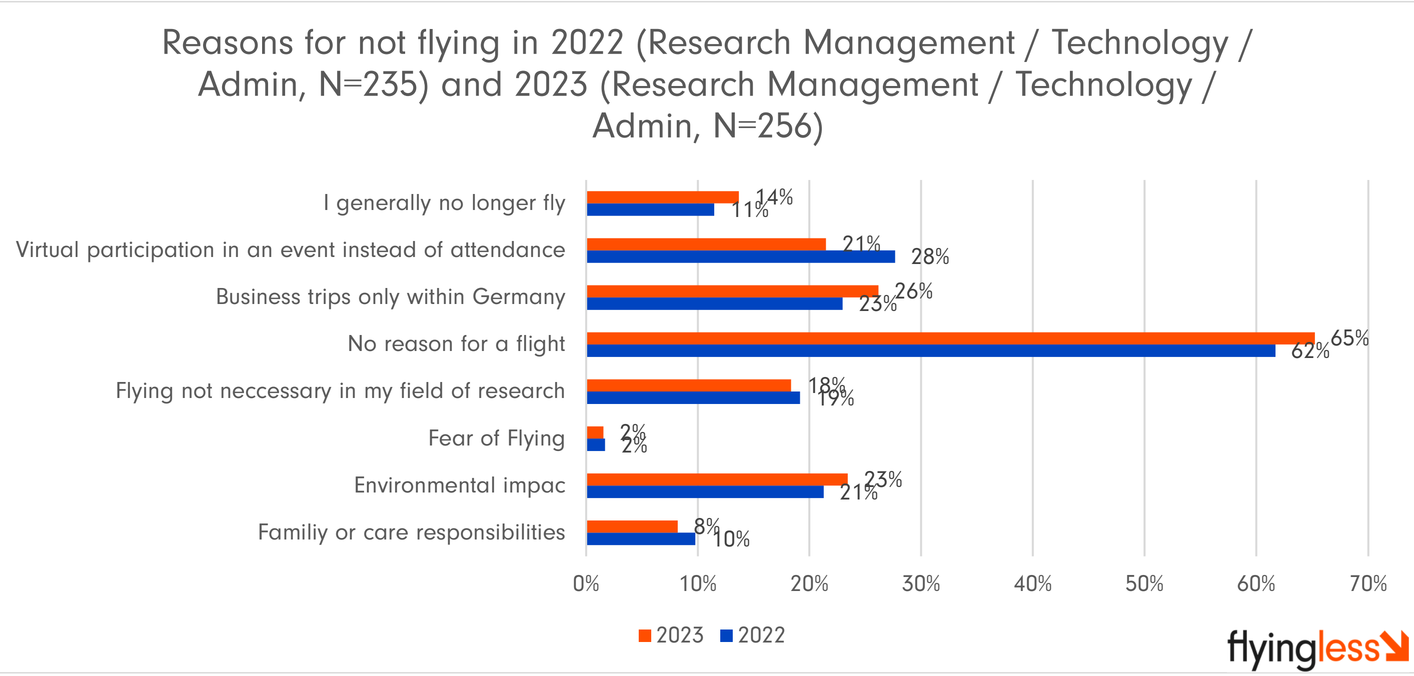

*Figure 69: Reasons for not flying in 2022 and 2023. Status group: Research management/technology/admin 2022, N=235, : Research management/technology/admin 2023, N=256. *Respondents who indicated that they did not fly in 2022 were asked why.*

Other reasons for not flying in 2022, that were mentioned by example[3]:

- «Budget restrictions»
- «Impossible to get a visa»
- «Corona-Einschränkungen»

[3] The free text inputs are not shown comprehensively. Only individual examples are shown.

Figure for reasons for reduced air travel in 2023 for the status group is not shown because of too small sample (N=6).

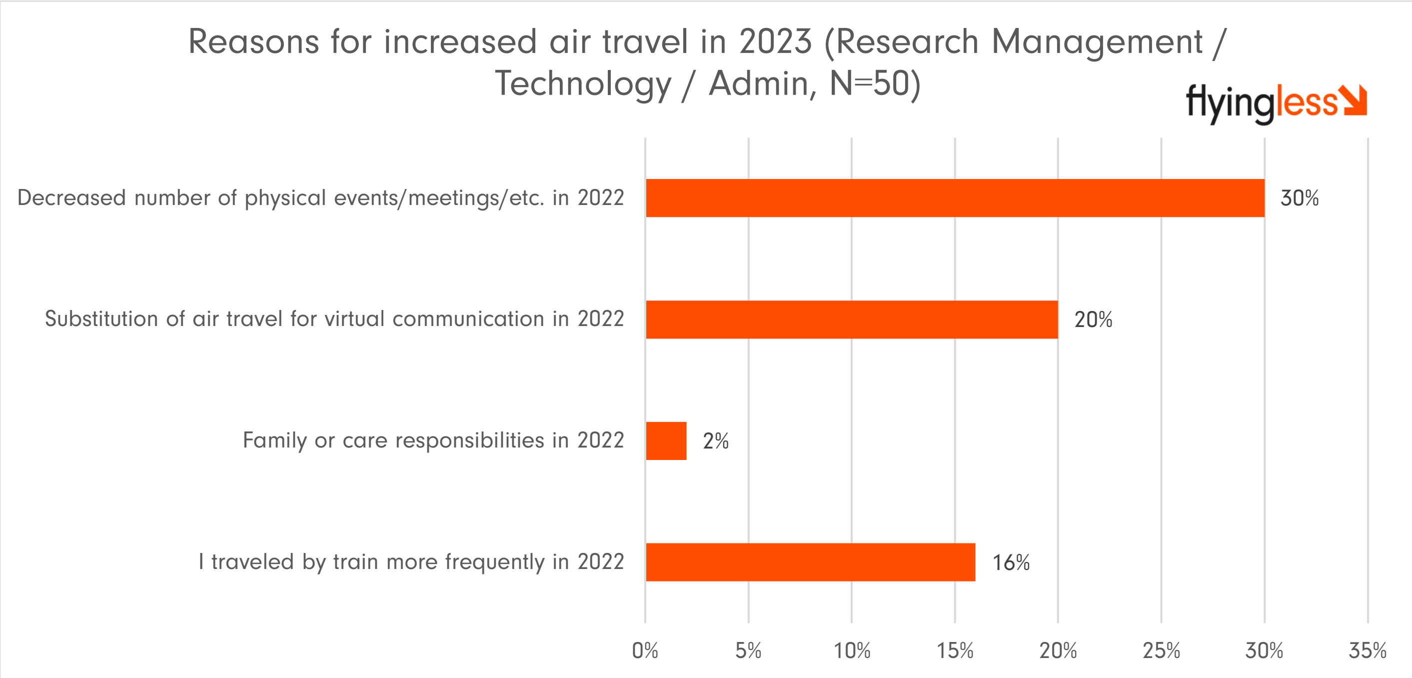

Figure 70: Reasons for a higher number of flights in 2023. Relative frequency of mentions (X-axis) of reasons for a higher flight volume (Y-axis). Status group: Research management/technology/admin, N=50. Respondents who indicated they flew more frequently in 2023 than in 2022 were asked why.

Other reasons for a higher number of flights in 2023, that were mentioned (by example):
- «More responsibilities in 2023»
- «keine Online-Teilnahme möglich»
- «Finanzierung und direkter Kontakt statt virtuell ist manchmal nötig»

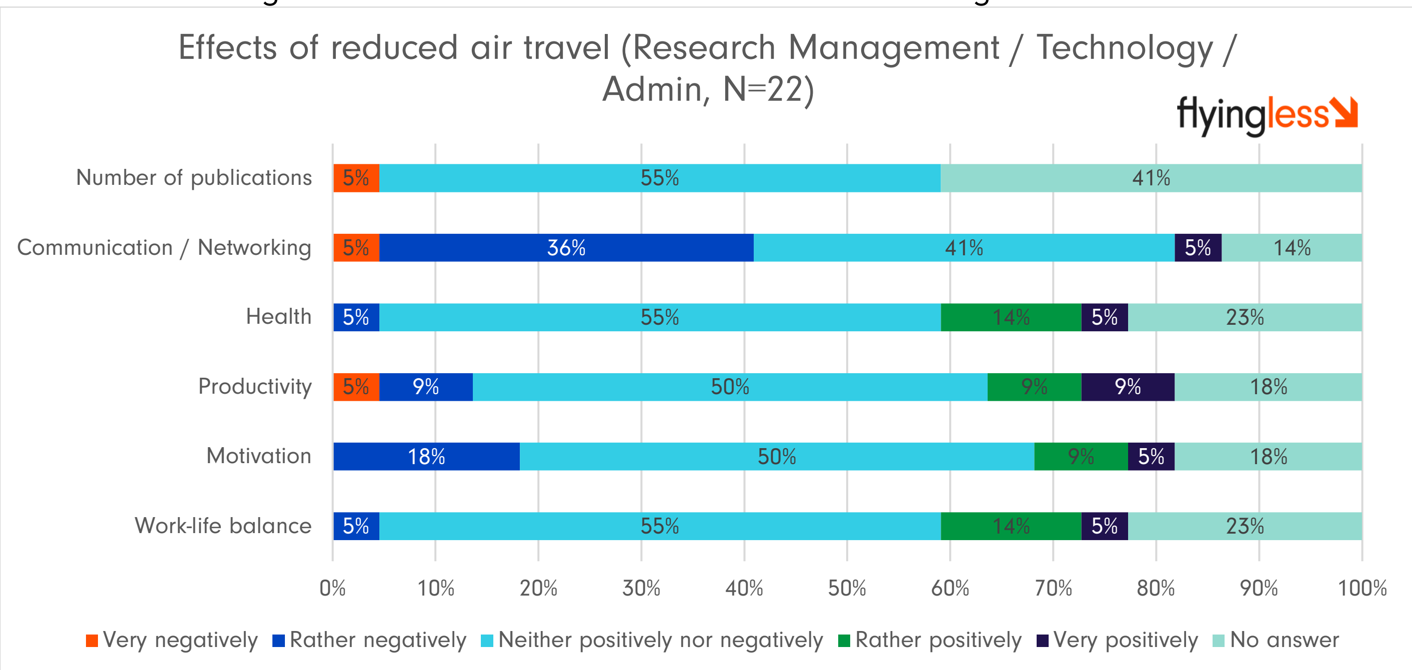

Figure 71: Effects of reduced air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status group: Research Management / Technology / Admin, N=22. Participants who indicated they flew less frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.

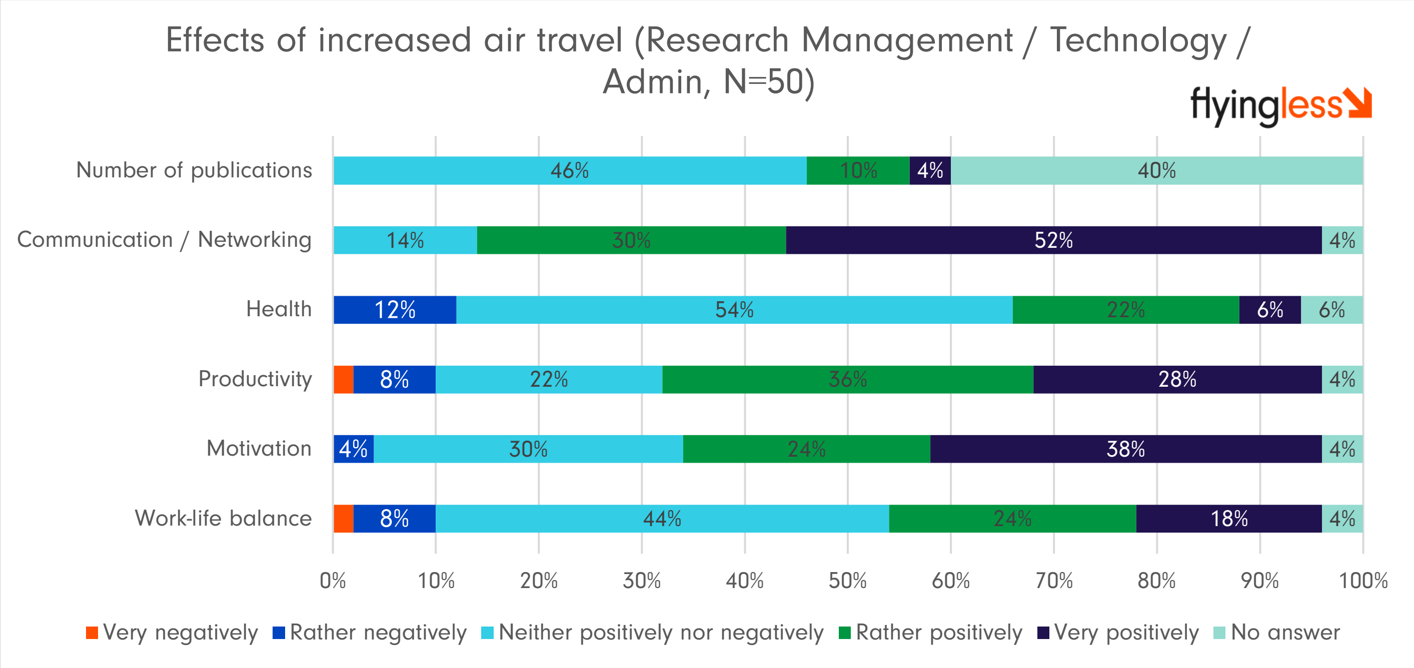

Figure 72: Effects of increased air travel on private and professional life. Relative frequency of mentions (X-axis) of estimates of reduced air travel on various factors (Y-axis). Status group: Research Management / Technology / Admin, N=50. Participants who indicated they flew more frequently in 2023 than in 2022 were asked about the effect on various factors in their professional and private life.

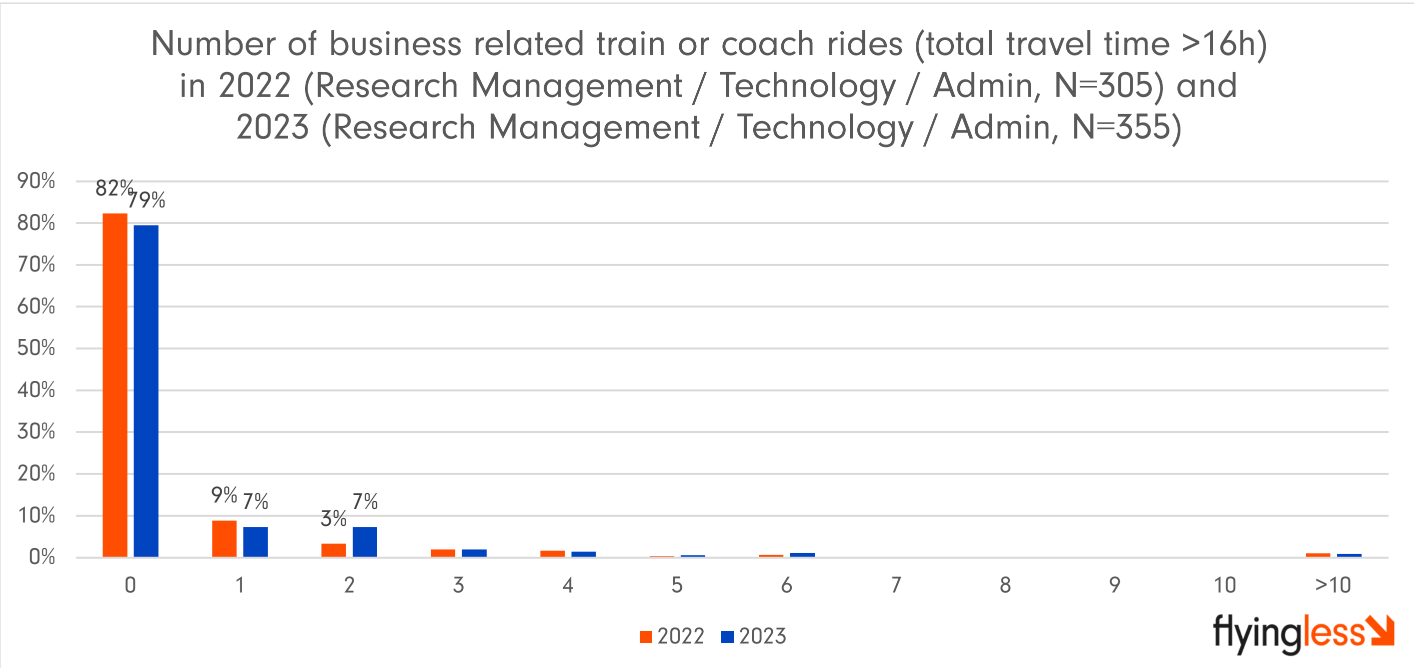

Figure 73: Average number of business-related train/coach trips (> 16h total)) in 2022 and 2023. Relative frequency of mentions (Y-axis) per number of train/coach trips per year (X-axis). Status group: Research management/technology/admin 2022, N=305, Research management/technology/admin 2023, N=355. Respondents who reported not having worked in their jobs in 2022 were not surveyed.

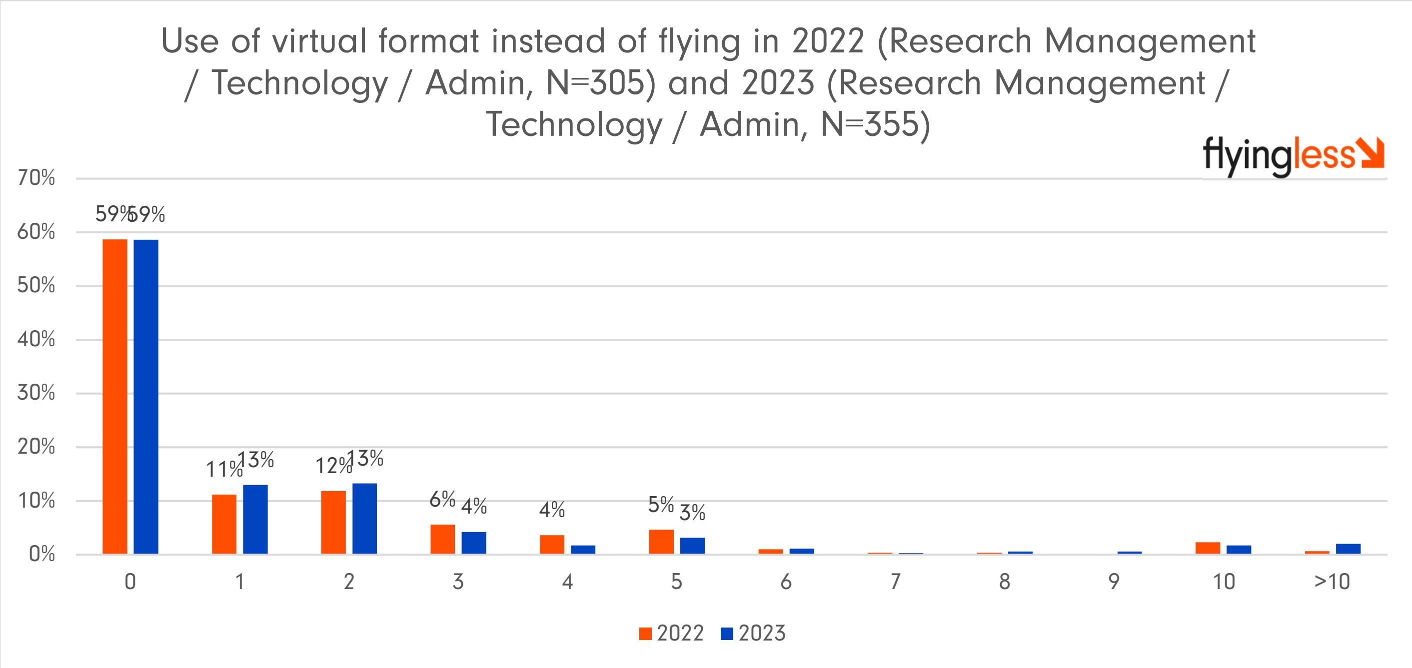

Figure 74: Use of the virtual format in 2022 and 2023 instead of going on a business trip. Relative frequency of mentions (Y-axis) per number of virtual events/meetings per year (X-axis). Status group: Research management/technology/admin 2022, N=305, Research management/technology/admin 2023, N=355. Respondents who reported not having worked in their jobs in 2022 were not surveyed.

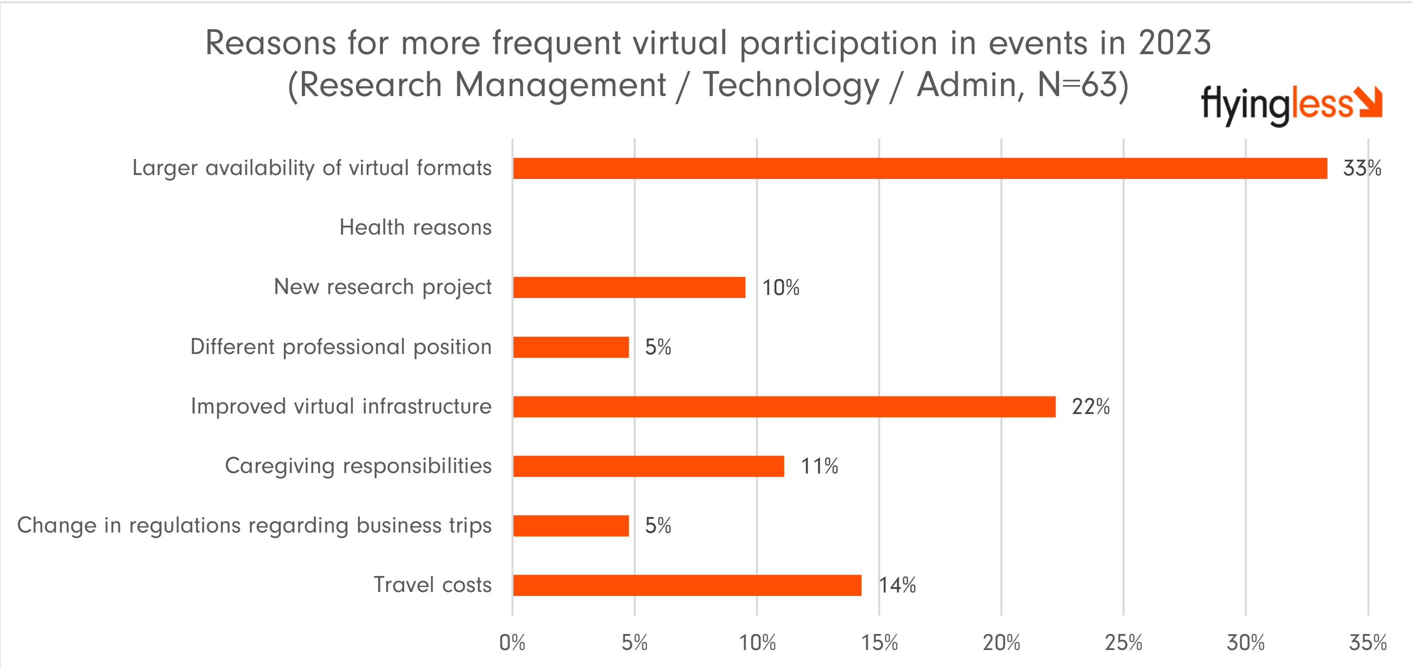

Figure 75: Reasons for more frequent virtual participation in events in 2023. Relatice frequency of mentions (X-axis). Status group: Research management/technology/admin, N=63. Participants who indicated more frequent participation in events in 2023 were asked why.

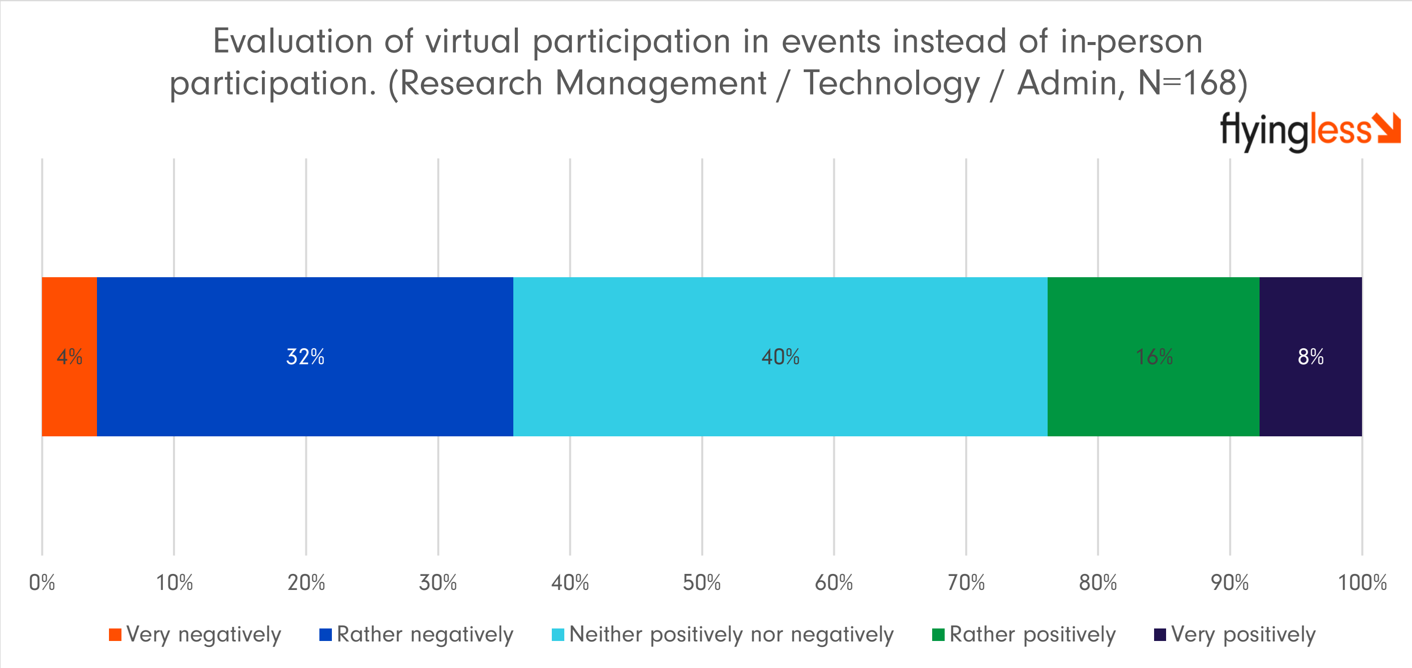

Figure 76: Evaluation of virtual participation in events instead of in-person participation. Relative frequency of mentions. Status group: Research management/technology/admin, N=168. Participants who did not attend any events virtually were not surveyed.

7.4. Relevance of different reasons for business air travel

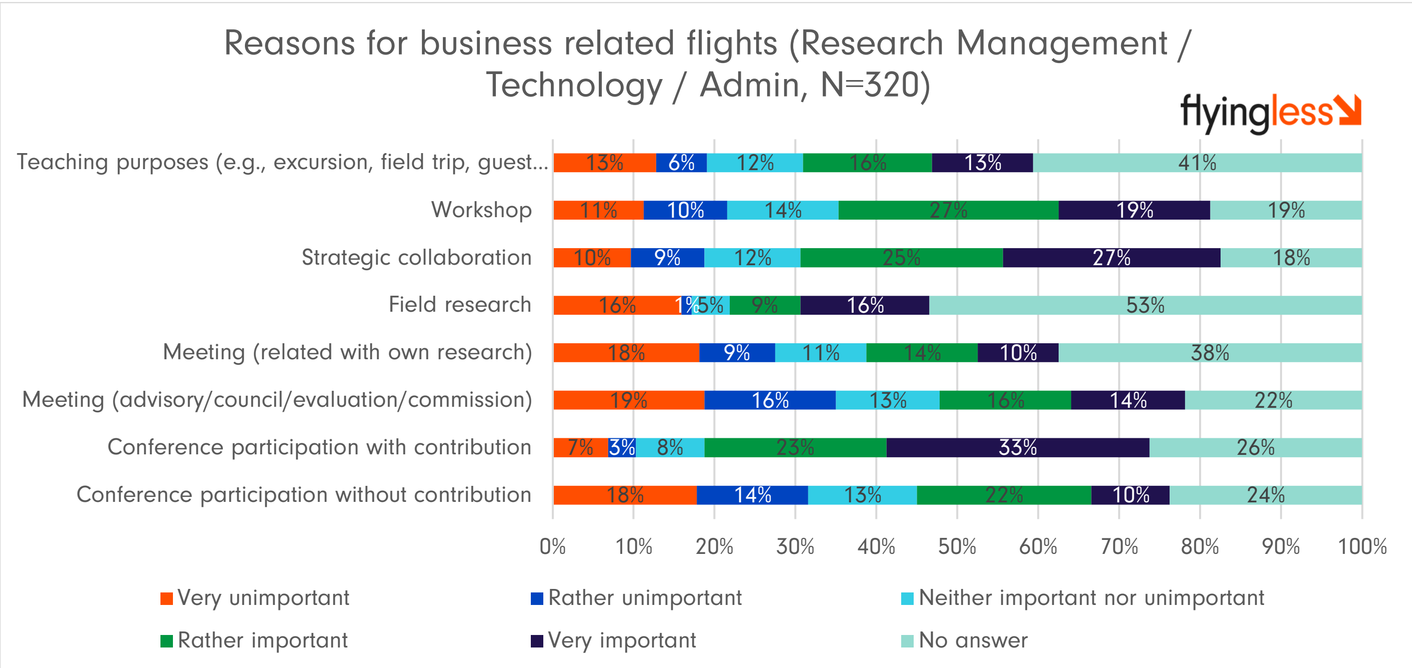

Figure 77: Reasons for business air travel by research management/technology/admin. Relative frequency of mentions (Y-axis) per subanswer (reason for business-related air travel in the academic sector; X-axis). Status group: Research management/technology/admin, N=320.

Other reasons for business-related air travel within academia, that were mentioned (by example):

- „Zeitersparnis gegenüber Nachtzug (> 10 Stunden)“
- „Es ist wichtig, Partner-Hochschulen und Personal vor Ort kennenzulernen“

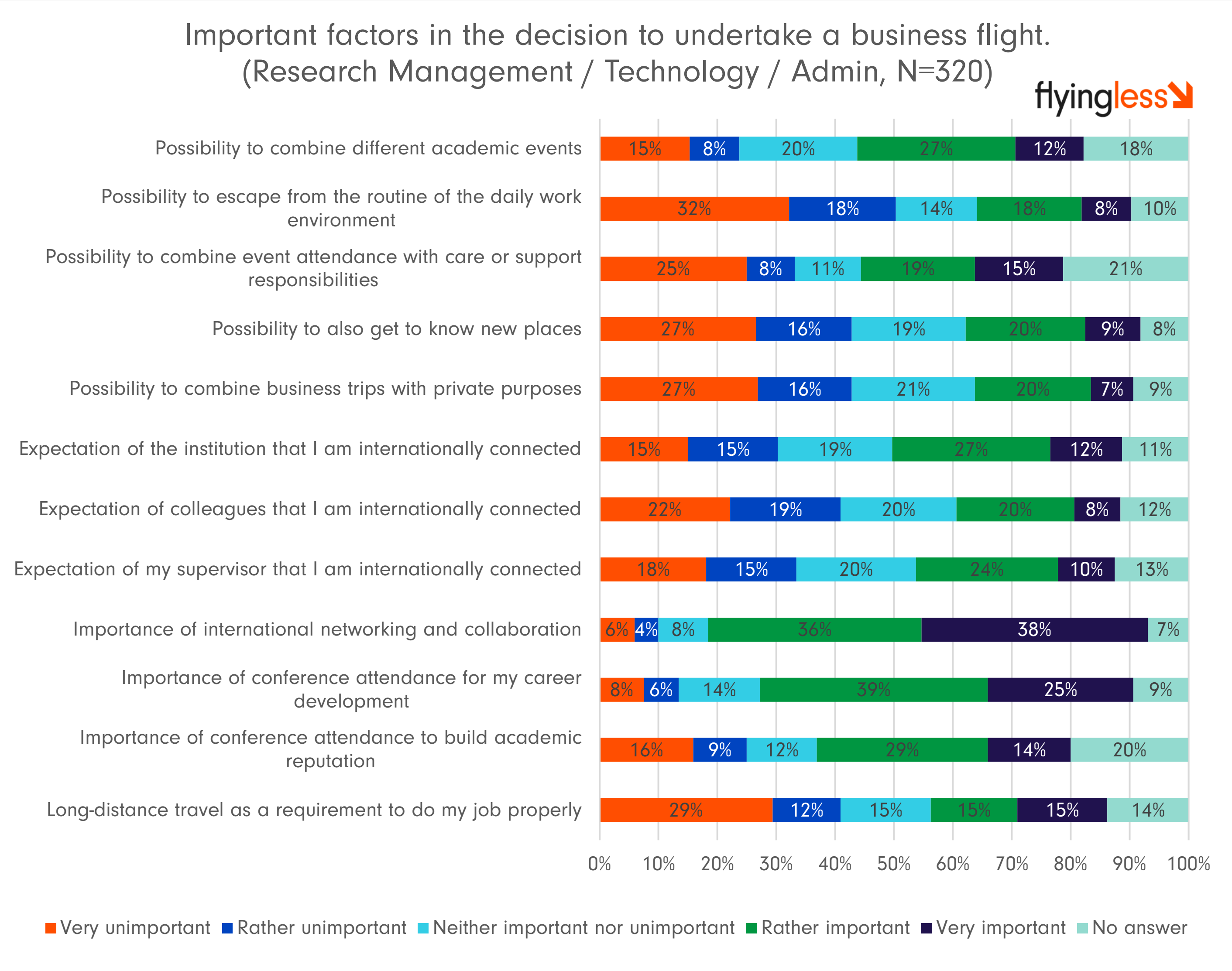

Figure 78: Relevance of various factors when deciding to take a business-related flight. Relative frequency of mentions (Y-axis) per subanswer (Factor for weighing a business-related flight in the academic sector.; X-axis). Status group: Research management/technology/admin, N=320.

Other important factors influencing the decision to take a business related flight or to book a business trip (by example):

- «Wenn ich gemeinsam mit meinem Chef reise (und wir die Konferenz/den Workshop noch vorbesprechen müssen) und dieser sich für einen Flug entscheidet, liegt es nicht in meiner Hand, wie ich reise.»
- «I only take business related flights if it is absolutely necessary. I am required by my position to take 5 long haul business trips per year.»
- «I'd rather travel by train but this is often more expensive than flying and there is a limited travel budget.»

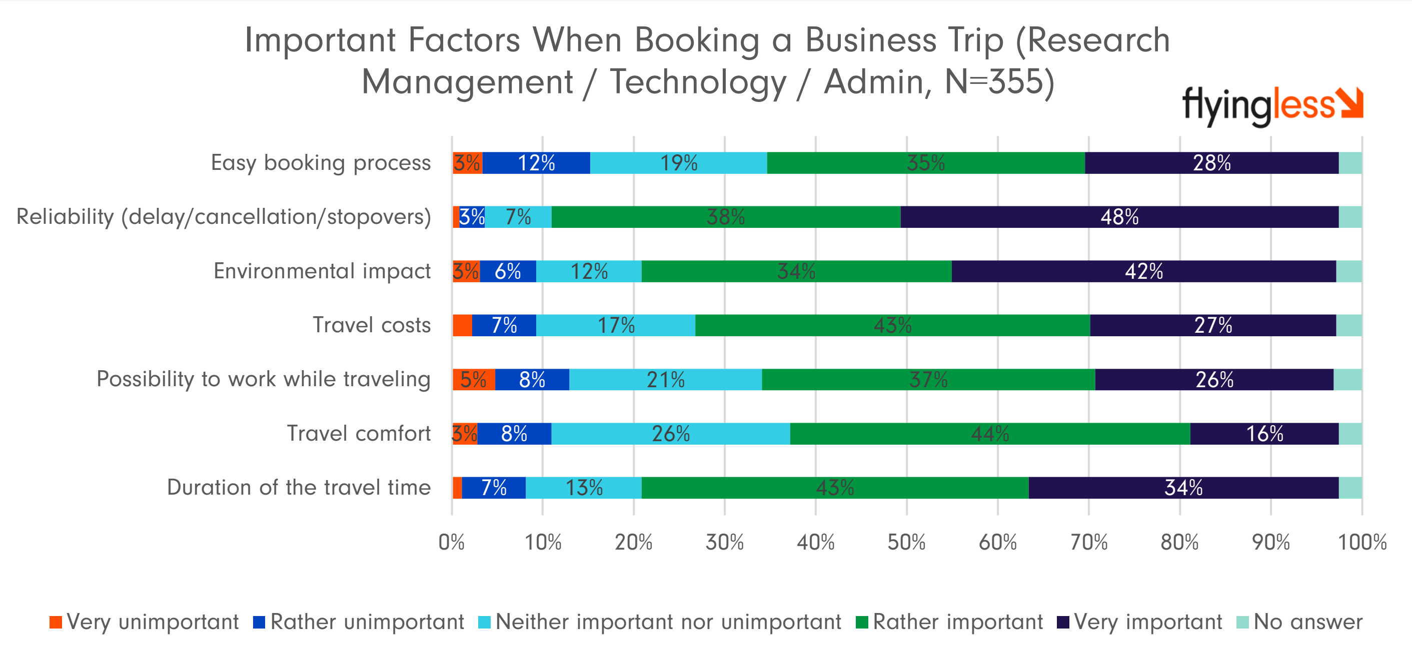

Figure 79: Importance of various factors when planning a business trip. Relative frequency of mentions (Y-axis) per subanswer (Factor of choice in the process of travel booking; X-axis). Status group: Research management/technology/admin, N=355.

7.5. Behaviour changes and measures

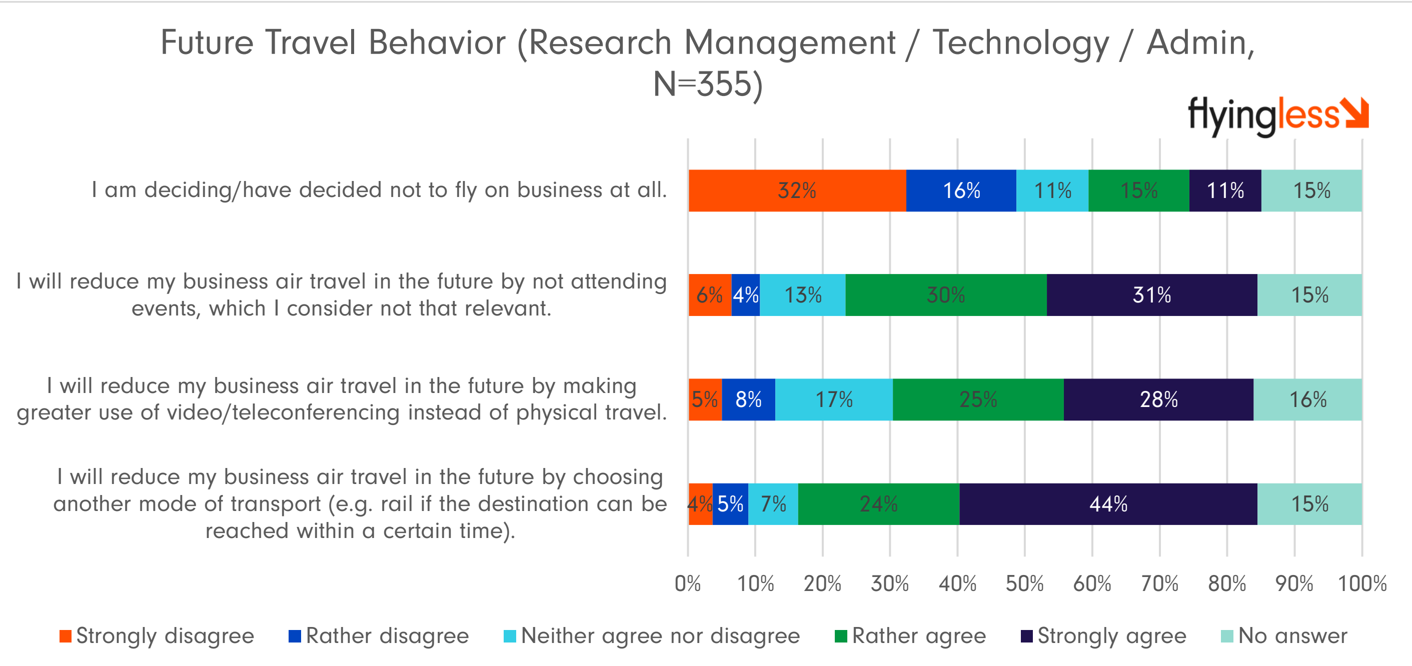

Figure 80: Willingness to change behaviour to avoid air travel. Relative frequency of mentions (Y-axis) per subanswer (agreement with statements about future mobility behaviour to avoid official air travel; X-axis). Status group: Research management/technology/admin, N=355.

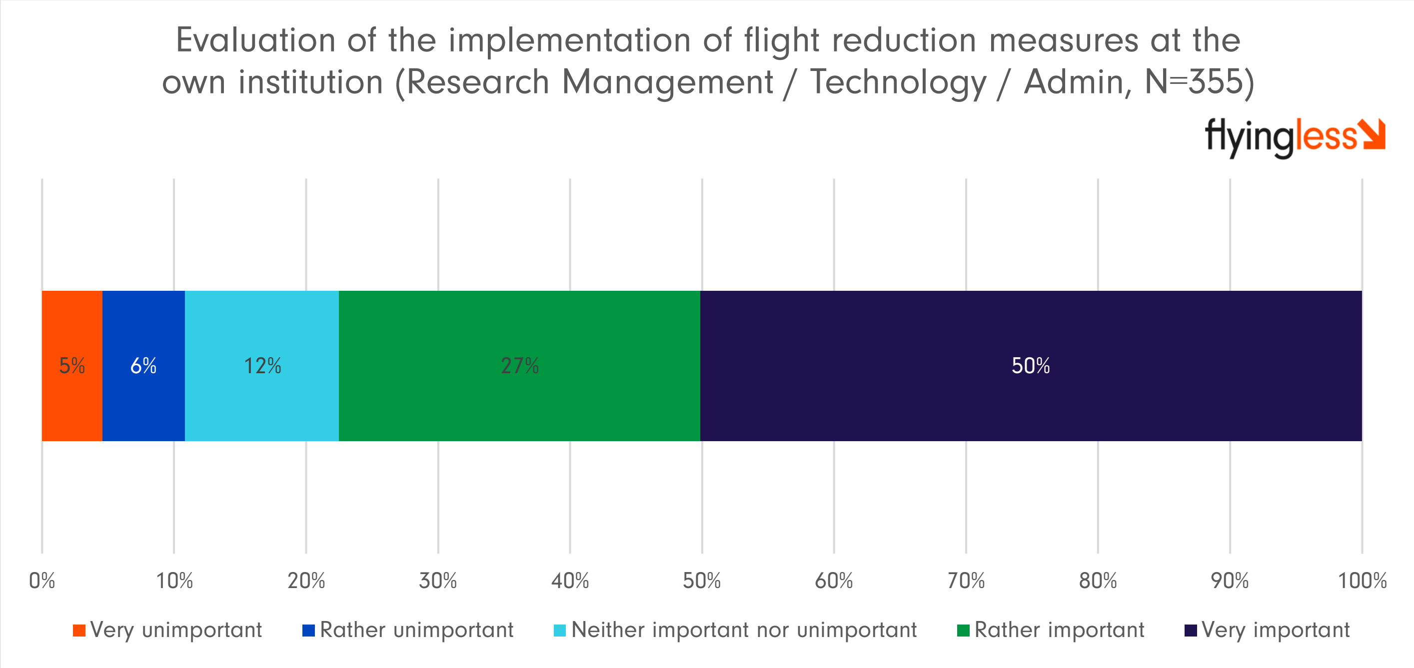

Figure 81: Importance of the implementation of flight reduction measures at the own institution. Relative frequency of mentions (X-axis). Status group: Research management/technology/admin, N=355.

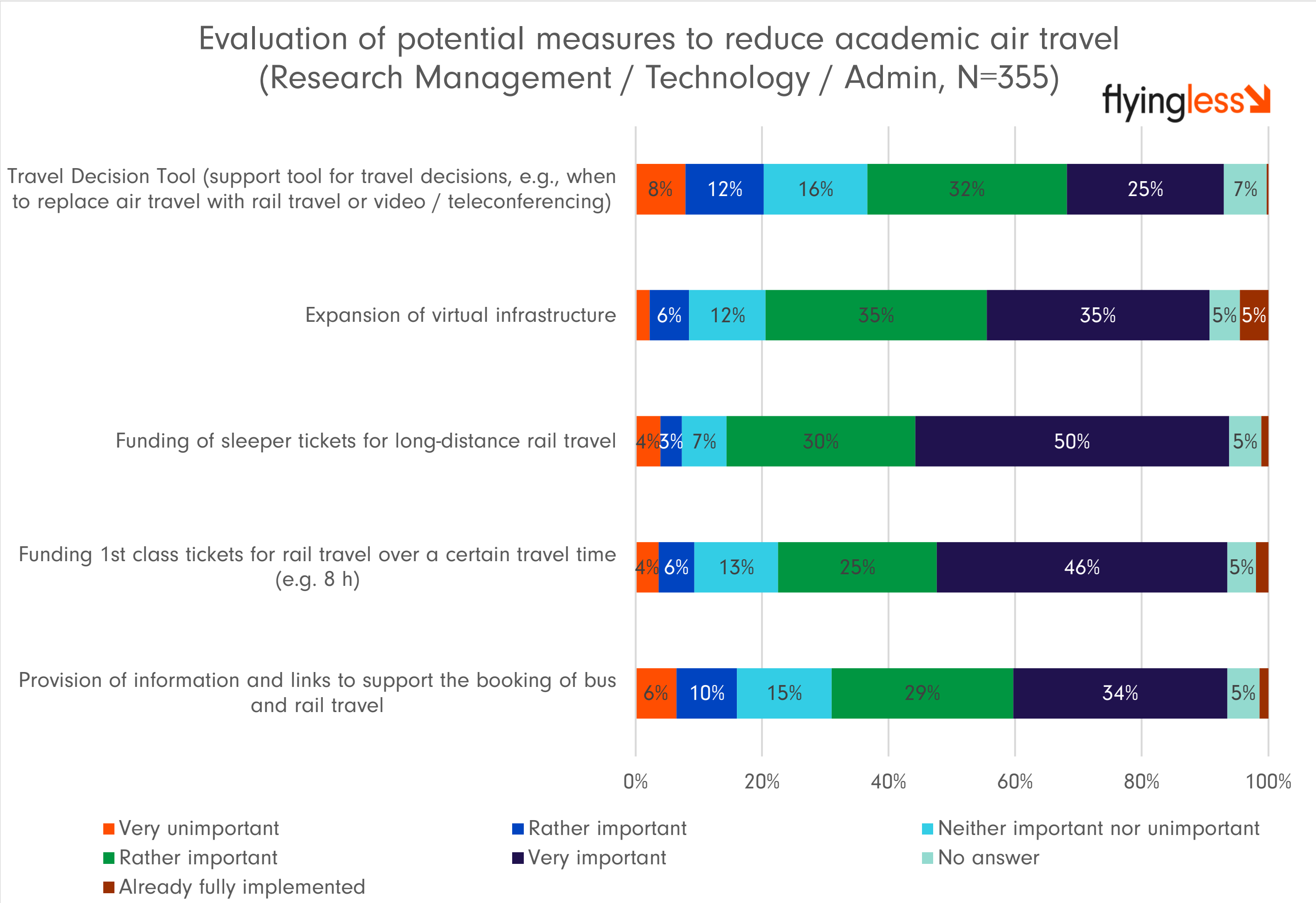

Figure 82: Evaluation of potential measures to reduce academic air travel. Relative frequency of mentions (Y-axis) per subanswer (Measures/incentives to reduce academic air travel; X-axis). Status group: Research management/technology/admin, N=355.

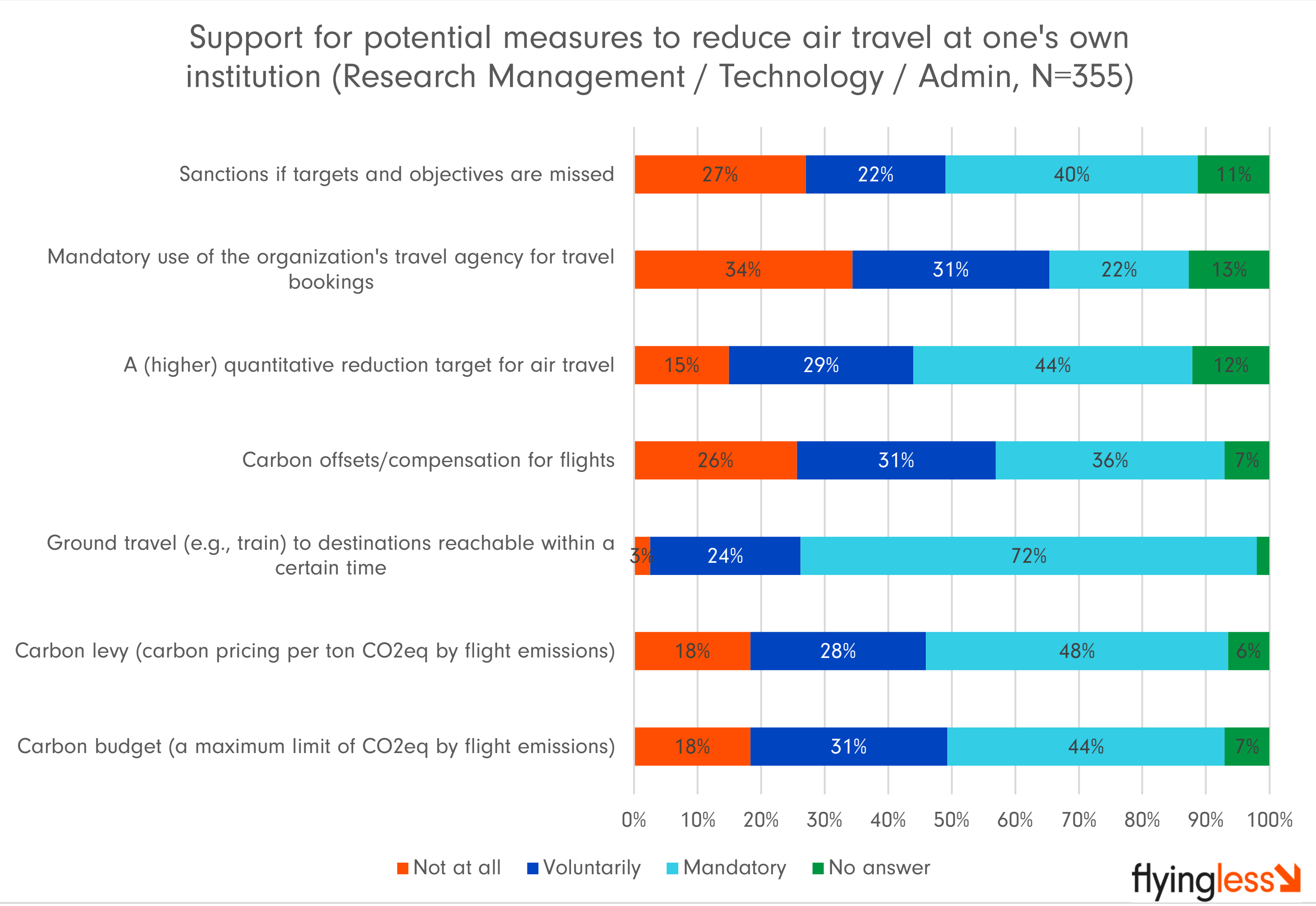

Figure 83: Support of potential flight reduction measures at the own institution. Relative frequency of mentions (Y-axis) per subanswer (flight reduction measures; X-axis). Status group: Research management/technology/admin, N=355.

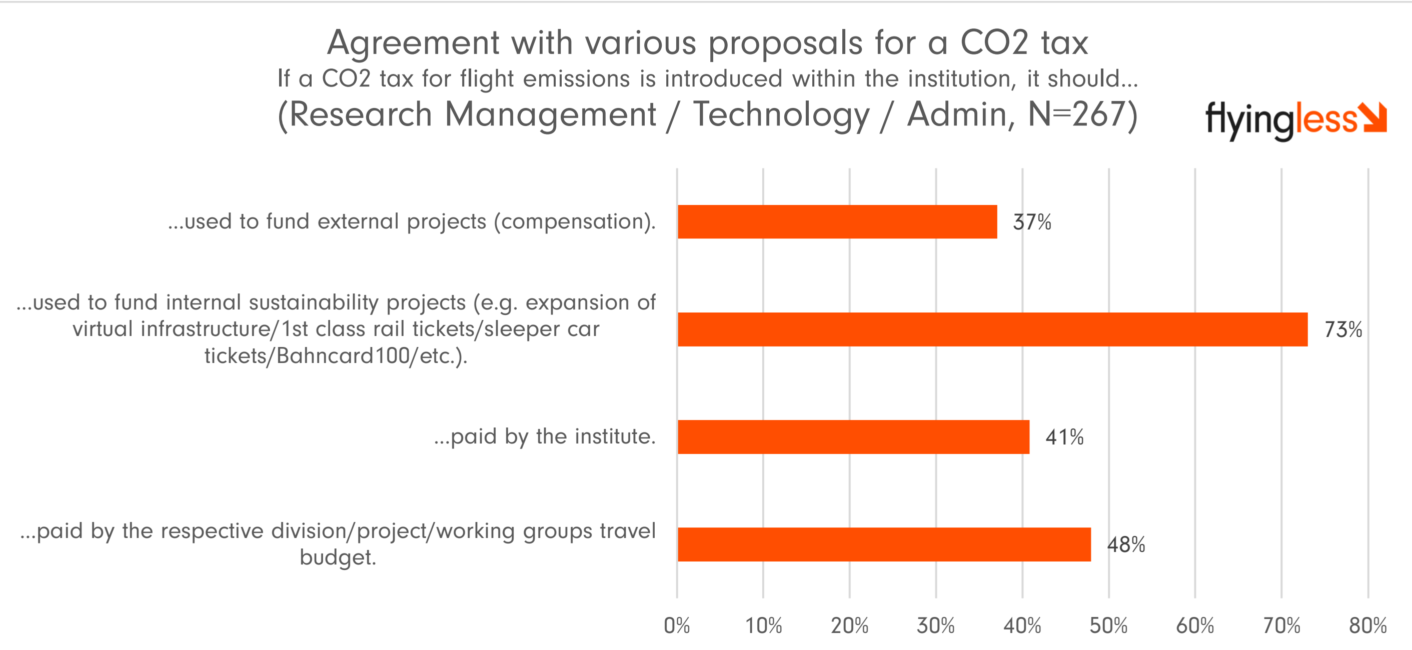

Figure 84: Agreement with different levels of a carbon tax for flight emissions. Relative frequency of mentions (X-axis) of specified options (Y-axis). Status group: Research management/technology/admin, N=267. Respondents who indicated they supported a carbon tax were asked for their opinions on the options given.

Other options for designing a carbon tax, that were mentioned (by example):
«ab einer gewissen Häufigkeit der Flüge auch privat bezahlt werden»

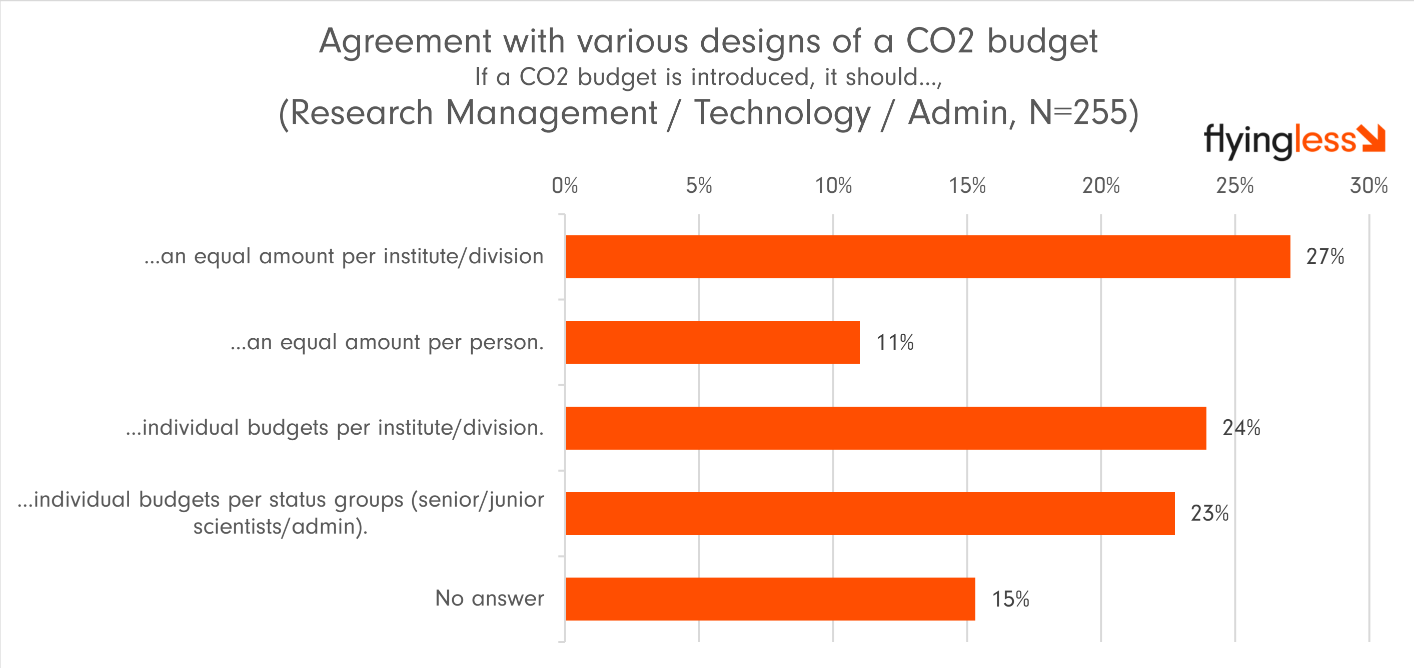

Figure 85: Agreement with different levels of a carbon budget for flight emissions. Relative frequency of mentions (X-axis) of specified options (Y-axis). Status group: Research management/technology/admin, N=255. Respondents who indicated they supported a carbon budget were asked for their opinions on the options given.

Other options for designing a carbon budget, that were mentioned (by example):

- «depends on each division's needs»
- «sollte individuell beantragt werden»

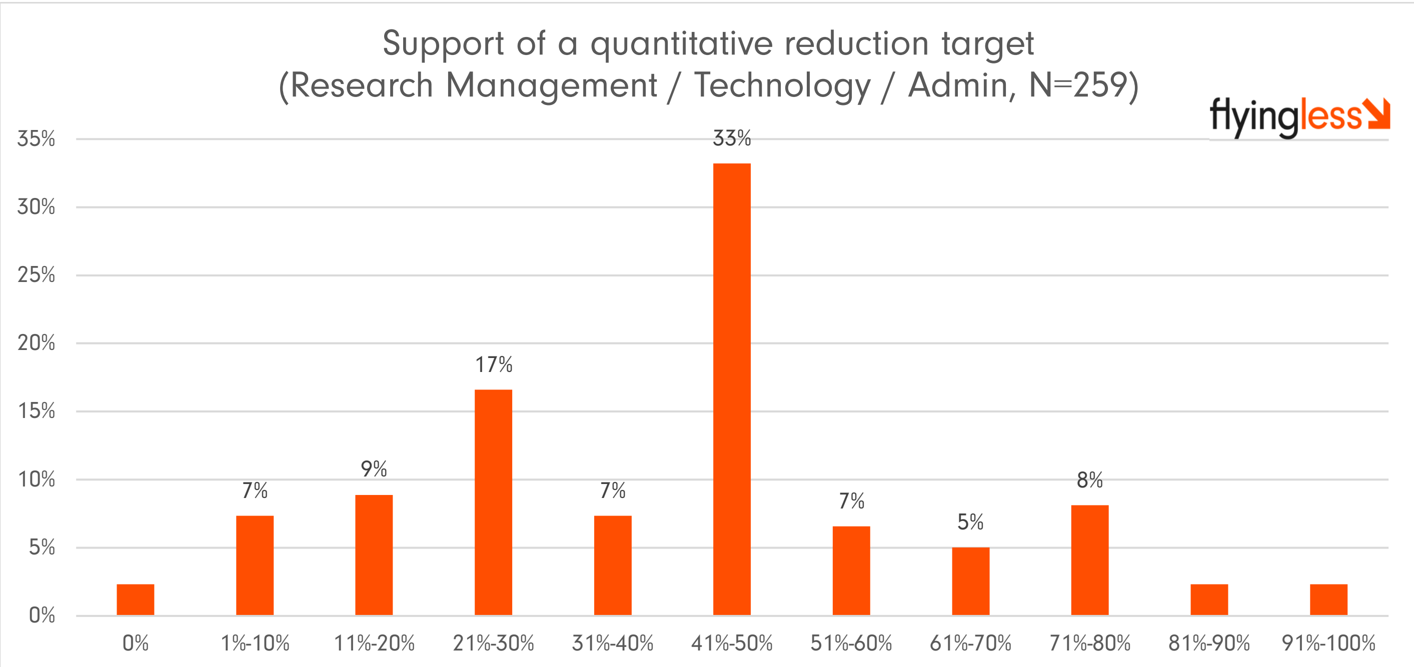

Figure 86: Support of a quantitative reduction target. Relative frequency of mentions (Y-axis). Status group: Research management / technology / admin, N=259. Respondents who indicated they supported a (higher) quantitative reduction target were asked about this.

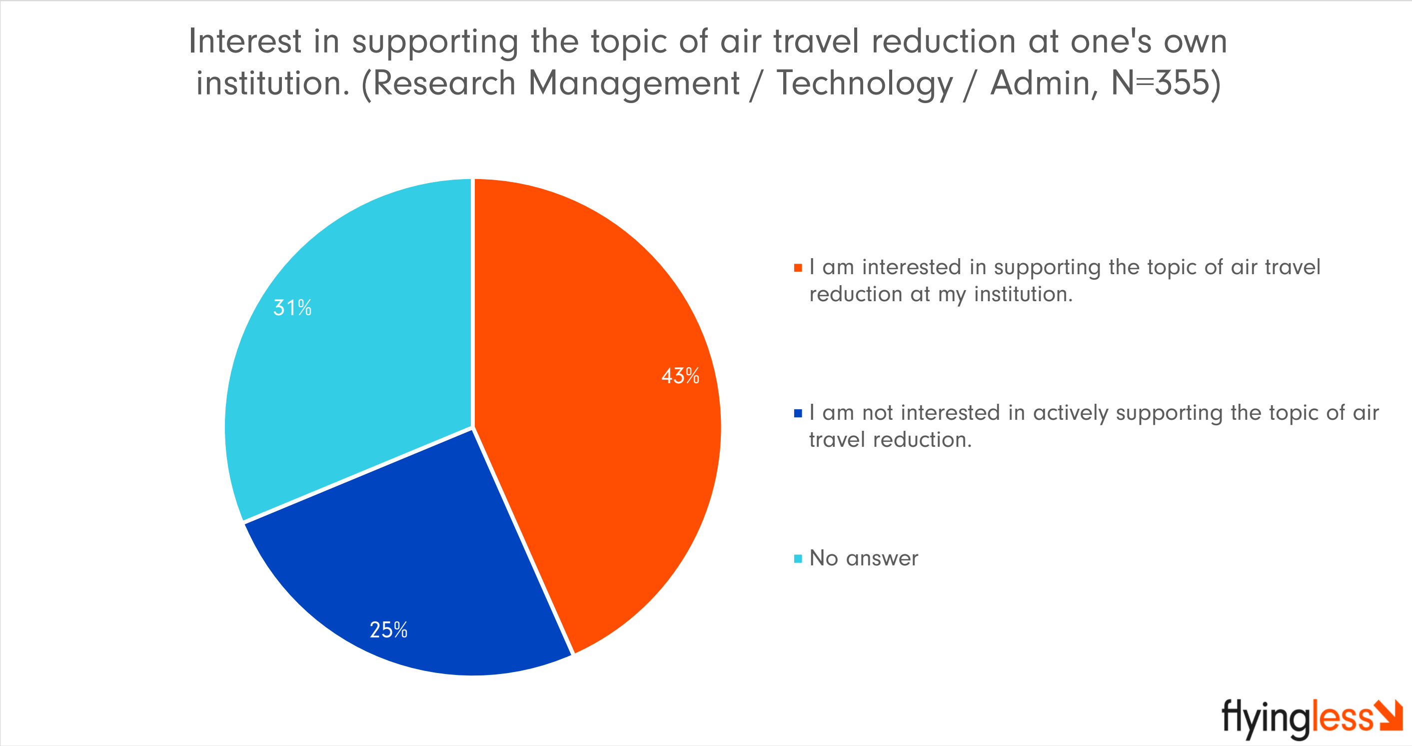

Figure 87: Interest in supporting the issue of flight reduction at their own institution. Relative frequency of mentions regarding the interest on supporting the topic of flight reduction at the own institution. Status group: Research management/technology/admin, N=355.

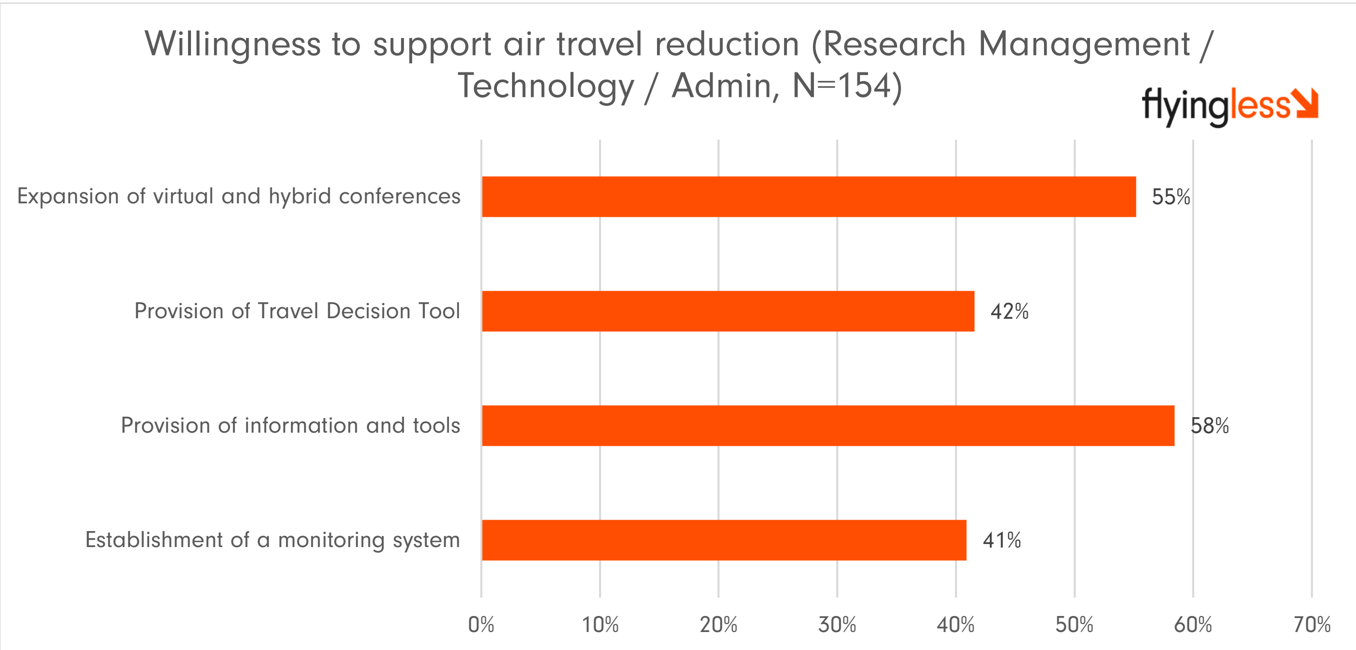

Figure 88: Willingness to support air travel reduction at the own institution. Relative frequency of mentions (x-axis). Status group: Research Management / Technology / Admin, N=154. *Participants who stated they were interested in supporting air travel reduction at their own insitution, were asked, how.*

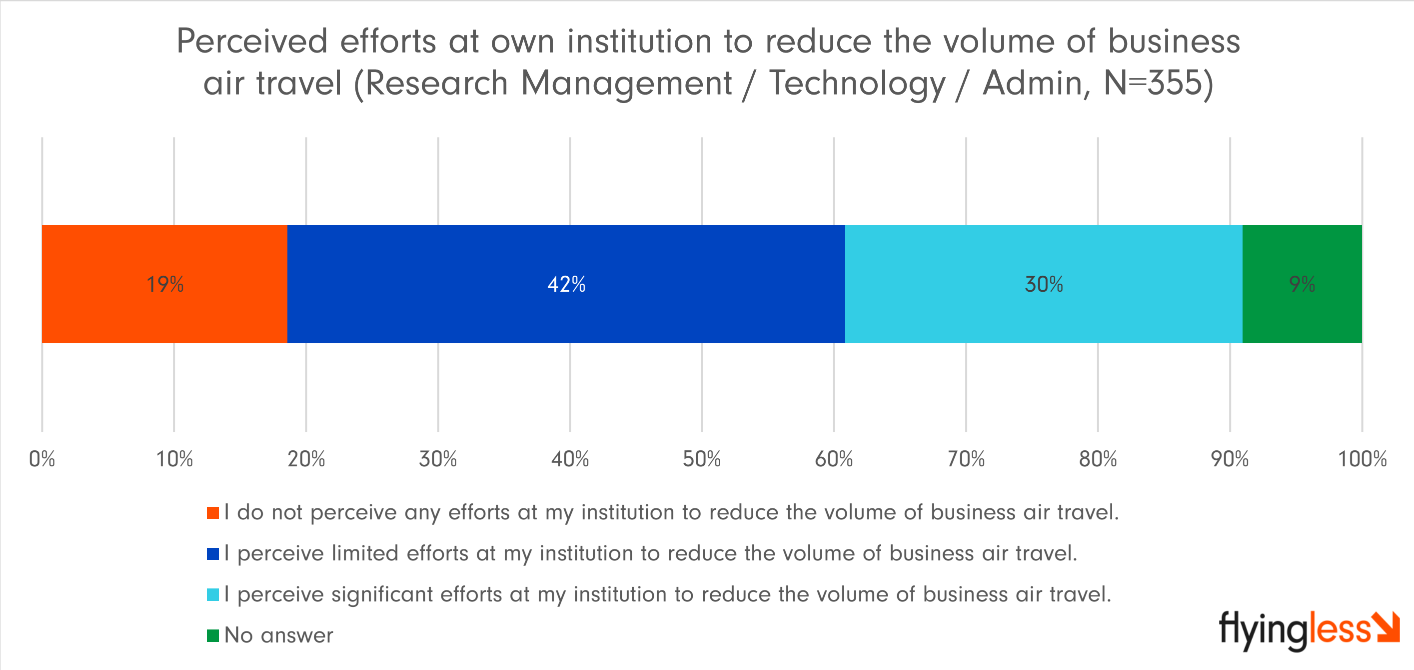

Figure 89: Perceived efforts to reduce the volume of business air travel at one's own institution. Relative frequency of mentions. Status group: Research management/technology/admin, N=355.

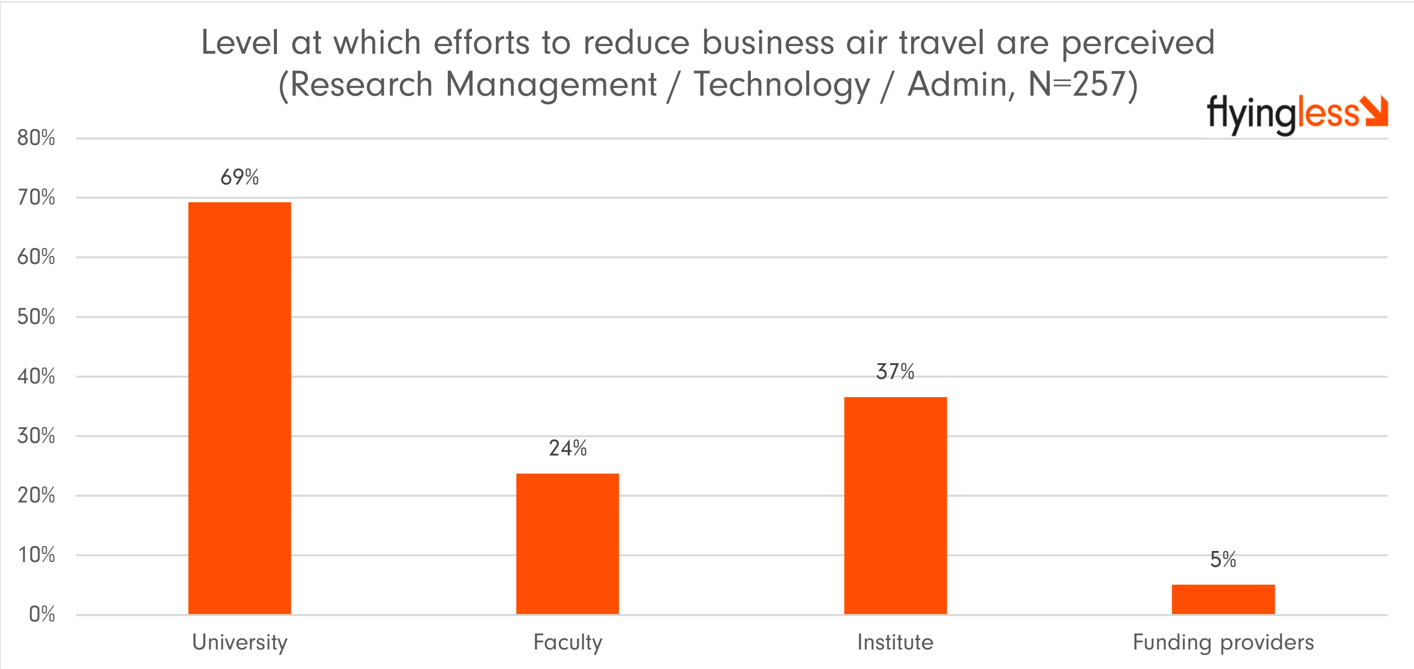

Figure 90: Level at which efforts to reduce business air travel at one's own institution are perceived. Relative frequency of mentions (Y-axis). Status group: Research management/technology/admin, N=257.

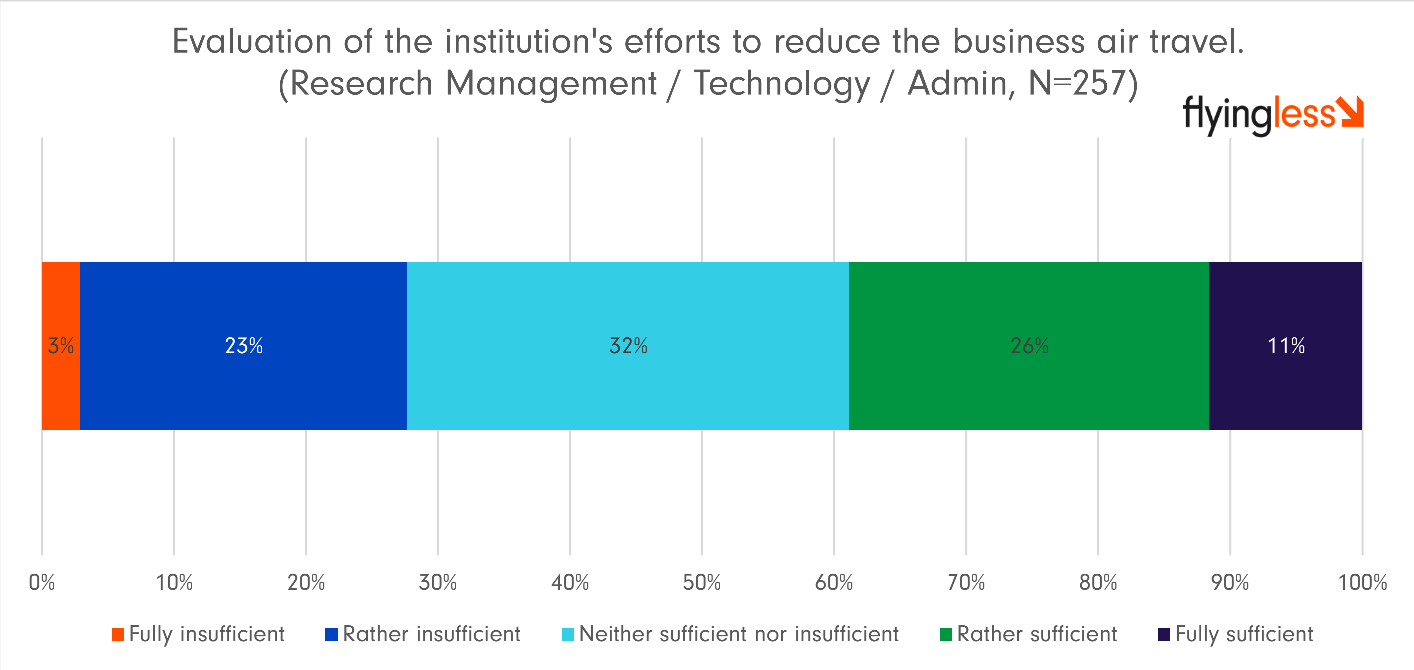

Figure 91: Evaluation of the institution's efforts to reduce business air travel. Relative frequency of mentions (X-axis). Status group: Research management/technology/admin, N=257.

About FlyingLess

With the internationalization of science and research, the air travel of university members has increased – scientists are among the frequent flyers.

The aim of the FlyingLess project is to support universities and research organizations in reducing air travel, which accounts for a significant proportion of their total greenhouse gas emissions.

FlyingLess develops approaches to reduce air travel in the academic sector, which are implemented at different levels (research, teaching and administration).

The project is being conducted in close collaboration with four pilot institutions - the EMBL (European Molecular Biology Laboratory) and the MPI Astronomy in Heidelberg as non-university research institutions, and the Universities of Konstanz and Potsdam as higher education institutions.

Further information can be found on the website www.flyingless.de.

The project is led by the ifeu insitute Heidelberg in close cooperation with the TdLab Geography at the Institute of Geography of Heidelberg University.

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