



# Aviation Medical Consult

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Study on the perception and  
prevention of health complaints in  
Frequent Flyers

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# Introduction

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## Task

“**Environs International**” and “**ibt market research**” conducted a survey among frequent air travelers in The Netherlands. A group of 100.000 active respondents was approached with a specific set of questions, based on a 2009 FAA funded study:

***EXPOSURE TO AIRCRAFT BLEED AIR CONTAMINANTS AMONG AIRLINE WORKERS  
A GUIDE FOR HEALTH CARE PROVIDERS April 2009***

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*Funding for this project has been provided by the Federal Aviation Administration Office of Aviation Medicine and is part of a collaborative project between the Occupational Health Research Consortium in Aviation (OHRCA) and the Airliner Cabin Environment research (ACER) Center of Excellence. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for the contents thereof.*

## Background

The air quality in aircraft can give rise to health complaints. Air travelers can experience various complaints, including serious ones that may lead to avoiding behavior, loss of health or work: people cannot, may or want to fly anymore.

# Introduction

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## Goal

The aim of the research is threefold:

1. Determine what percentage of the frequent flyers during and after a (long) flight experience physical complaints and/or discomfort and/or fatigue and concentration problems (in a general sense) and - where relevant - determine the nature, frequency, seriousness and consequences of these complaints.
2. Determine the size of the group of frequent flyers with "complaints" and how many of them are suffering "serious, fly-related complaints".
3. Create a profile of both groups, based on which personal and behavioral characteristics of these groups can be distinguished from those without complaints.

## Research target group

The research focuses on the frequent air traveler - from now on called frequent flyer or FF - who is defined as someone of 30 years or older, who has carried out at least 6 flights in the past 12 months, of which at least one flight of 5 hours or longer. Here, a flight is defined as a flight movement with one take-off and landing. So a flight with a transfer or a return will count as two flights.



# introduction

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**Research set up:** Focus is on frequent air travelers (FF)

It is assumed that frequent air passengers will more often suffer from relevant complaints than occasional air passengers. In addition, the importance of finding a solution will be greater for them than for the occasional air passenger.

The research was conducted online among members of Toluna's research panel. This is a panel with more than 100,000 Dutch people who have indicated that they are willing to cooperate more or less regularly in research. Participation was asked for an investigation about "traveling". In no way was the introduction referred to complaints, well-being or health in order to prevent 'self-selection'.

## **Accountability**

A sample was drawn from the panel, which is representative of the Dutch population on the basis of gender, age (30 years and older) and regional distribution.

A total of 8,333 people aged 30 or older were approached for participation; 500 of these have made at least 6 flights in the past 12 months, 1 of which is at least 5 hours - or the frequent flyers (FF) >> this group has completed the full questionnaire.

After completing the fieldwork, the total response was weighted according to the proportions in terms of gender, age and region as it occurs in the Netherlands.

## **Research period**

A pilot survey was conducted in September to test the questionnaire for relevance and comprehensibility. The research reported here took place from 13 to 24 October 2016.

# Introduction

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## Structure of the questionnaire

1. After identifying whether the respondent belonged to the target group or not, some general questions about their travel behavior were asked - as a background and for warming up - such as the furthest destination, favorite airlines, the nature of the flights (business or private).
2. To make the step towards the health complaints in a neutral way, the first question was about all the discomforts that could occur before and during the flight.
3. After that, eight specific complaints were asked, all of which can be caused or exacerbated by the air quality in the aircraft.
4. After determining whether the respondent has had the relevant health complaint during or after a flight, he was asked about the relationship that the respondent made between the complaint and the fact of being onboard a flight; the seriousness of the complaint and any measures to treat the complaint.
5. To all who have experienced 1 or more complaints and who relate this complaint (s) largely to flying - score 4 or 5 on a 5-point scale - are finally asked some questions about the possible consequences and the solutions they have possibly sought: doctor's visit, self-medication, leave earlier, fly back later, etc.

The results described on the following pages are also shown in this order as much as possible.



# Description and identification Frequent Flyers

## **Size of target group FF**

Based on the screening-questions, we calculated that 6.6% of the Dutch population aged 30 and older meets the definition of frequent flyer - as recorded by us prior to the investigation.

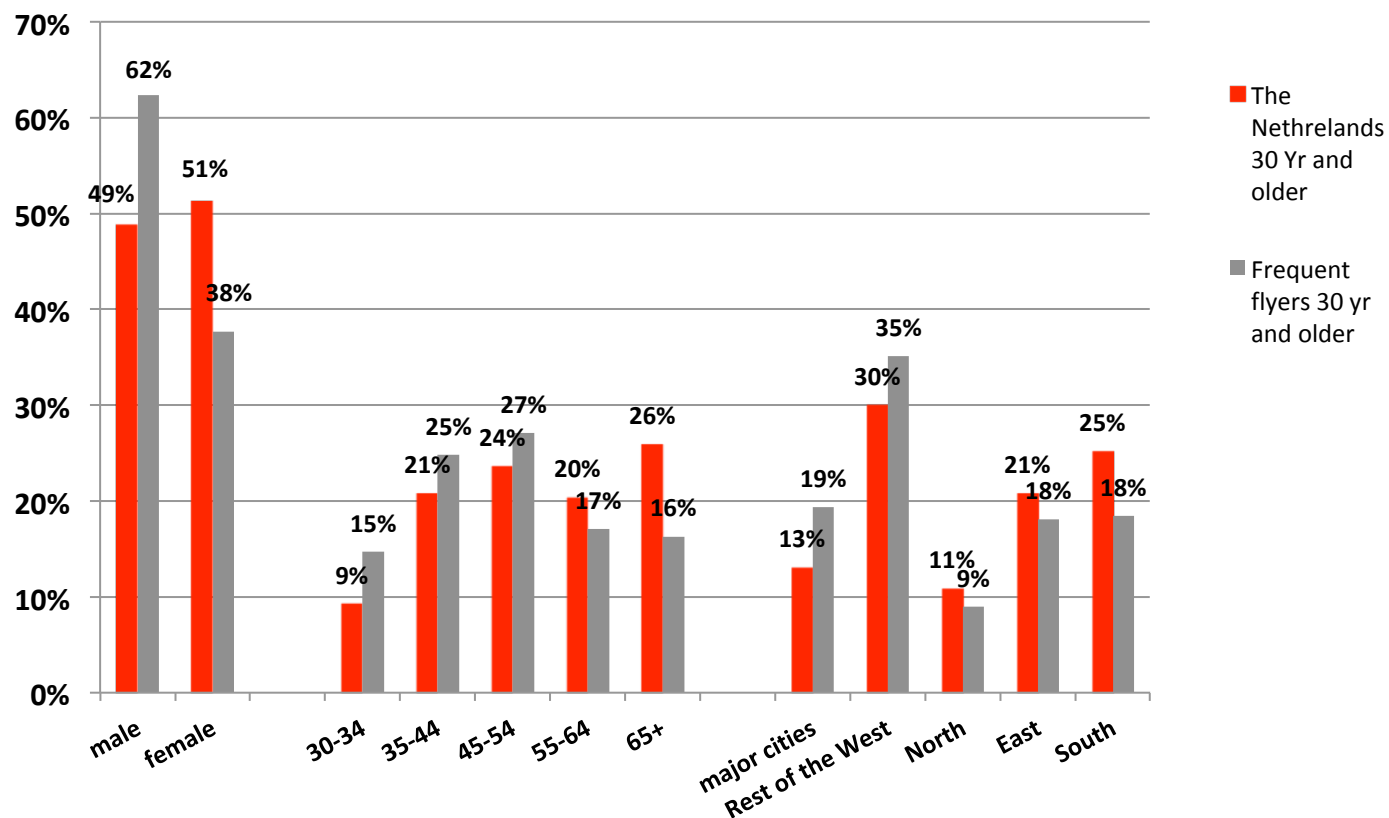
An estimated 675,000 Dutch people fall into this category.

The results in this first chapter describe the Frequent Flyers group in comparison with the Dutch population aged 30 and older (Source: Golden Standard, MOA).

After this description / comparison, the report focuses on the frequent flyer.



# Frequent flyer NL 30+

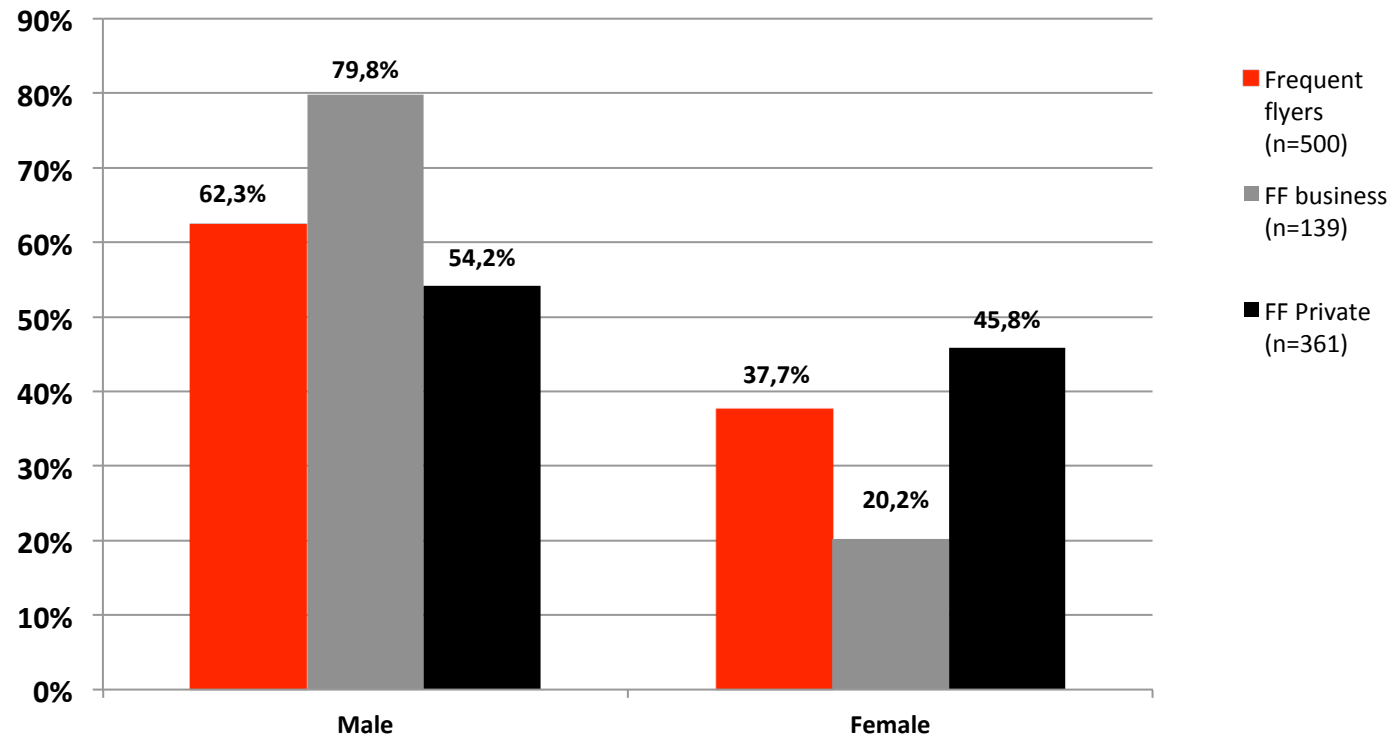


Note: A FF is more often male, younger and living in the Western parts of The Netherlands





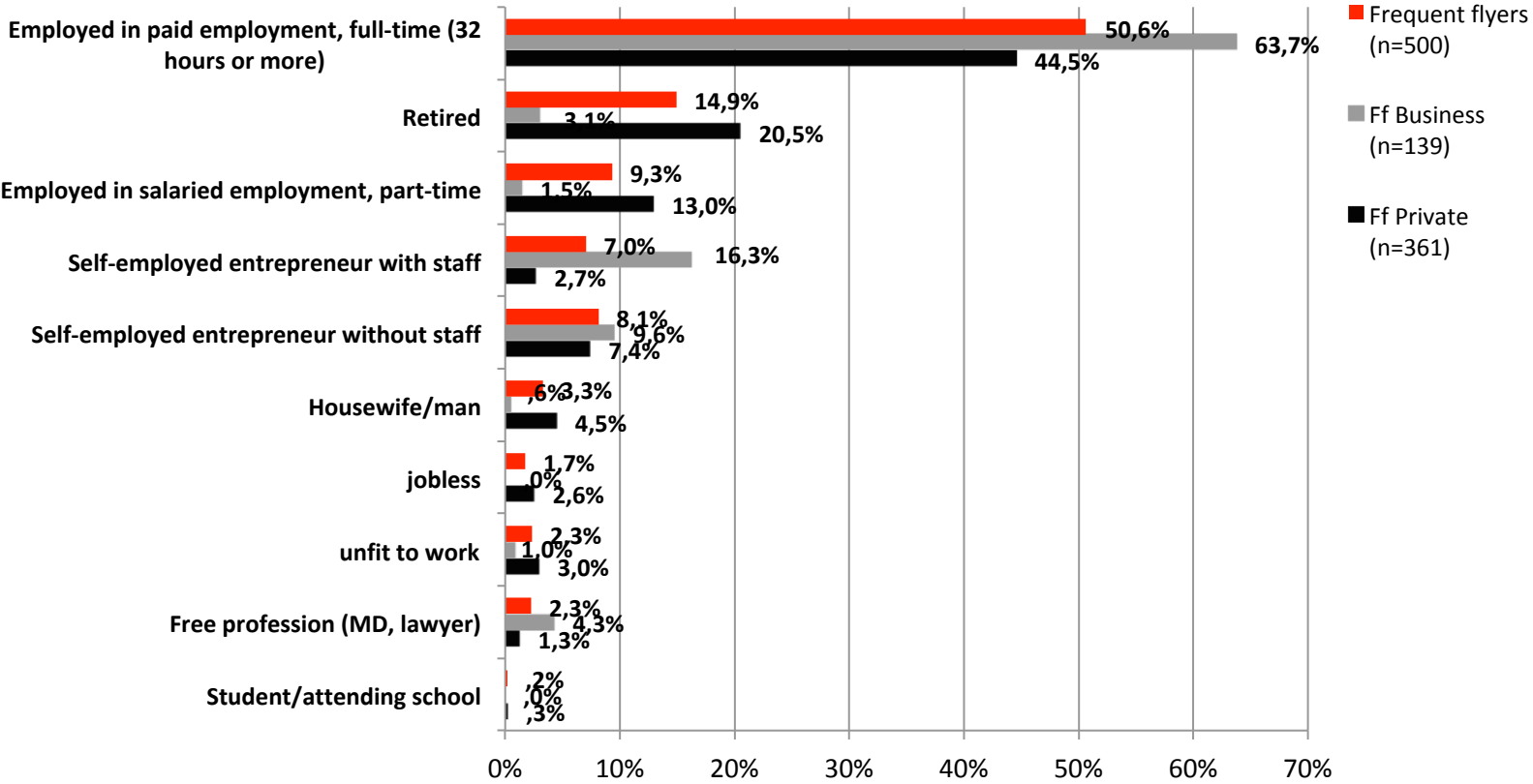
# Gender



ENote: As we have already seen, male are overrepresented within the FF, but this is being reinforced within the FF business group. 80% of the business FF is male and 20% is female.

For additional info on business / private FF, see "Characteristics of flight movements".

# Employment



Note: The business FF is more often employed (as an entrepreneur or full-time employee) than the private FF. Approximately 20% of the private FFs are retired and 6% (now) unemployed or incapacitated for work.



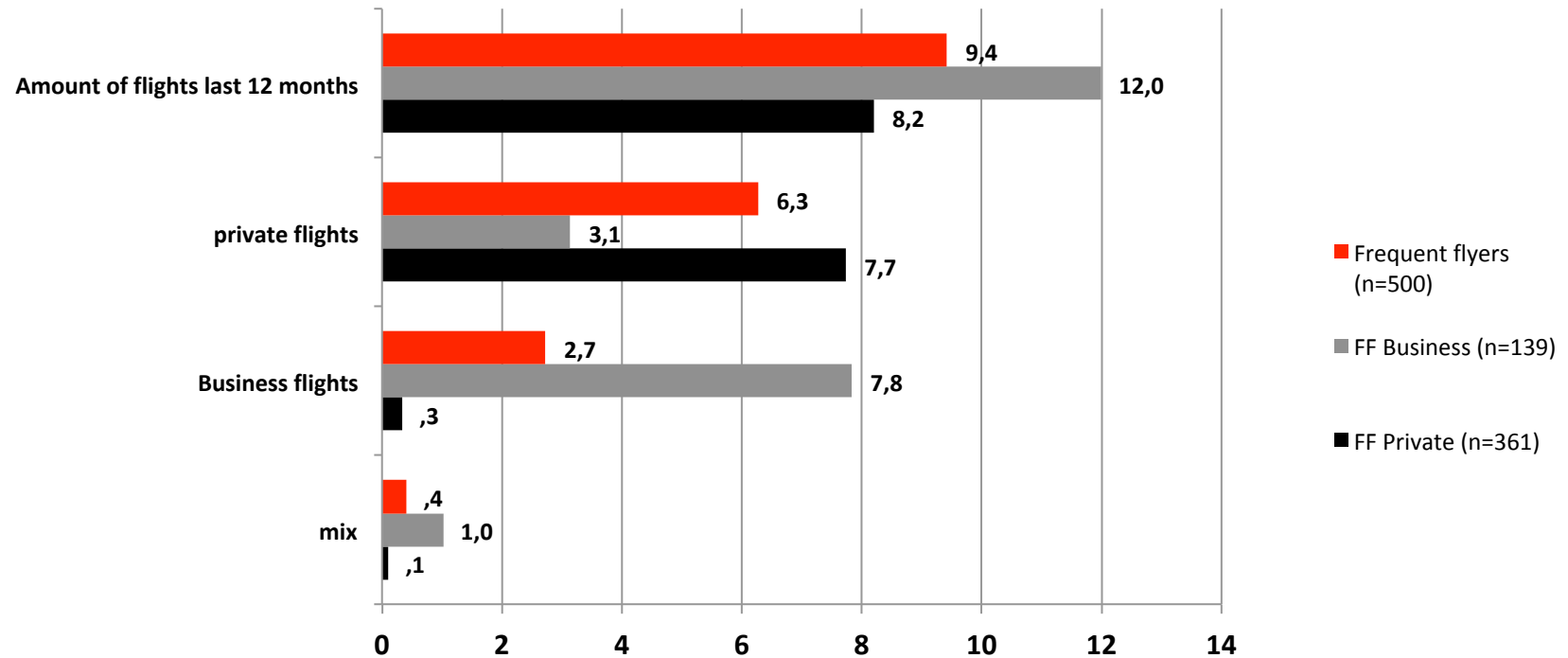
# Characteristics of flight movements FF

Description of flying-related backgrounds of the target group FF:

- Number of flights
- Frequency flying in recent years
- Business - private relationship
- Participation in FF programs
- Participation Privium
- Favorite airline



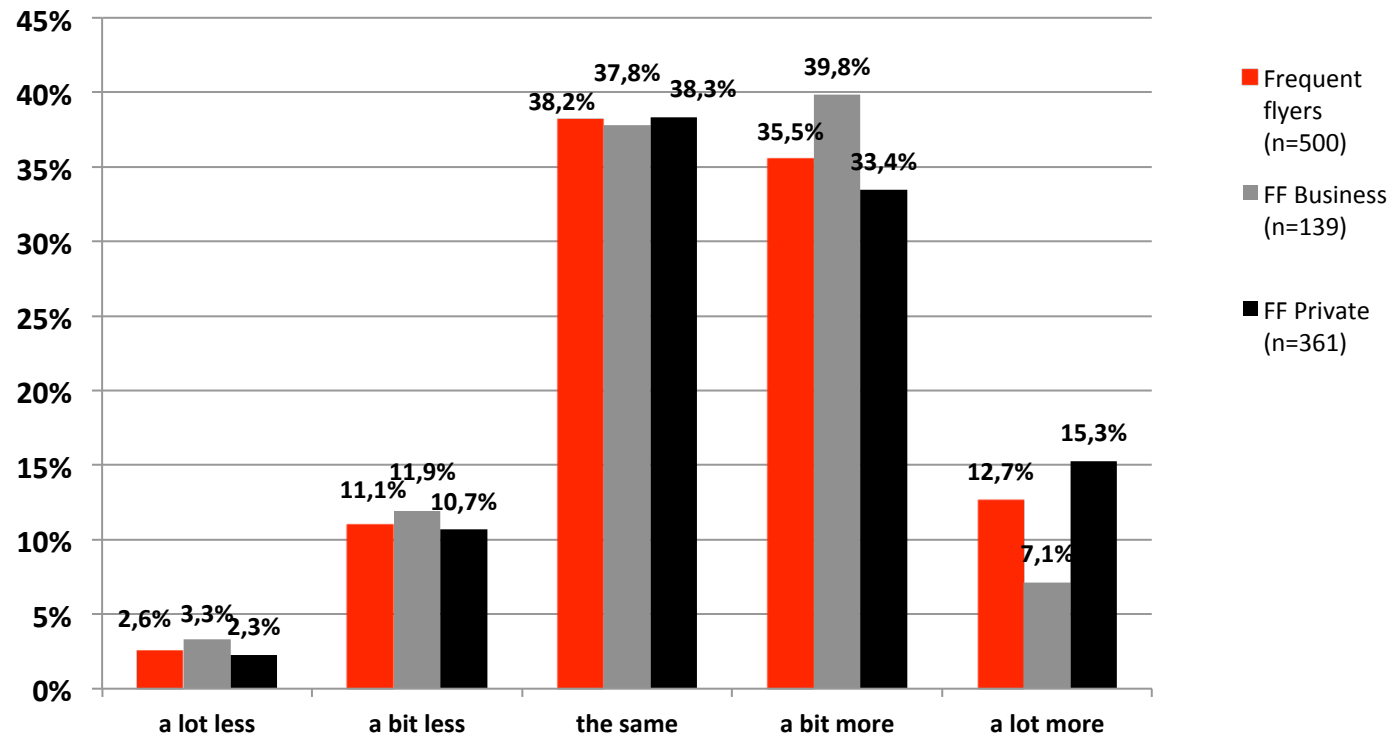
# Number of flights; average private/business



Note: on average the FF have made 9,4 flights in the past 12 months. The business FF made 12, 8 of which were business. Incidentally, the bandwidth is large: it varies from 6 (= minimum to be FF) to 60 on an annual basis per FF.

About 1/3 of the flights are business, 2/3 private.

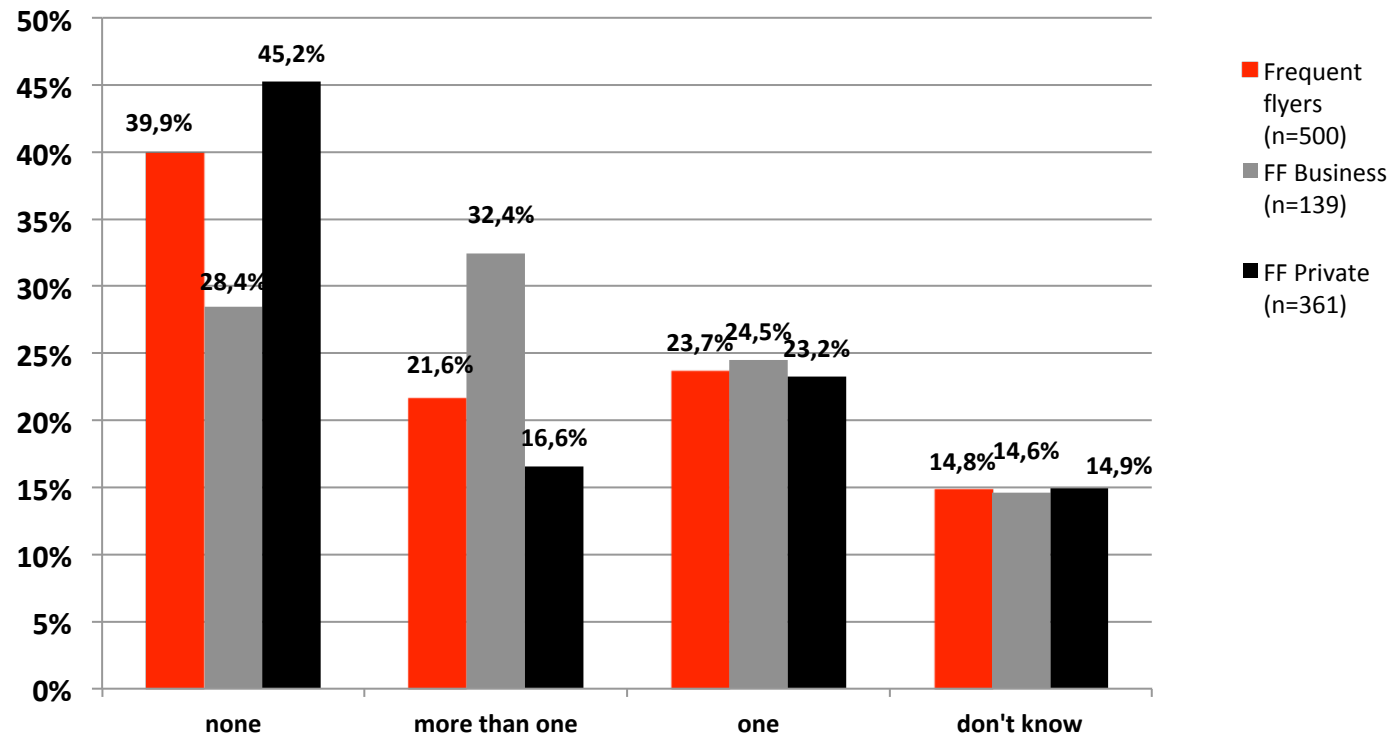
# Flight frequency of last year compared with two previous years



Note: (3 + 11 =) 14% flew less this year than before; (35 + 13 =) 48% flew more often; The latter applies to both private and business FF!



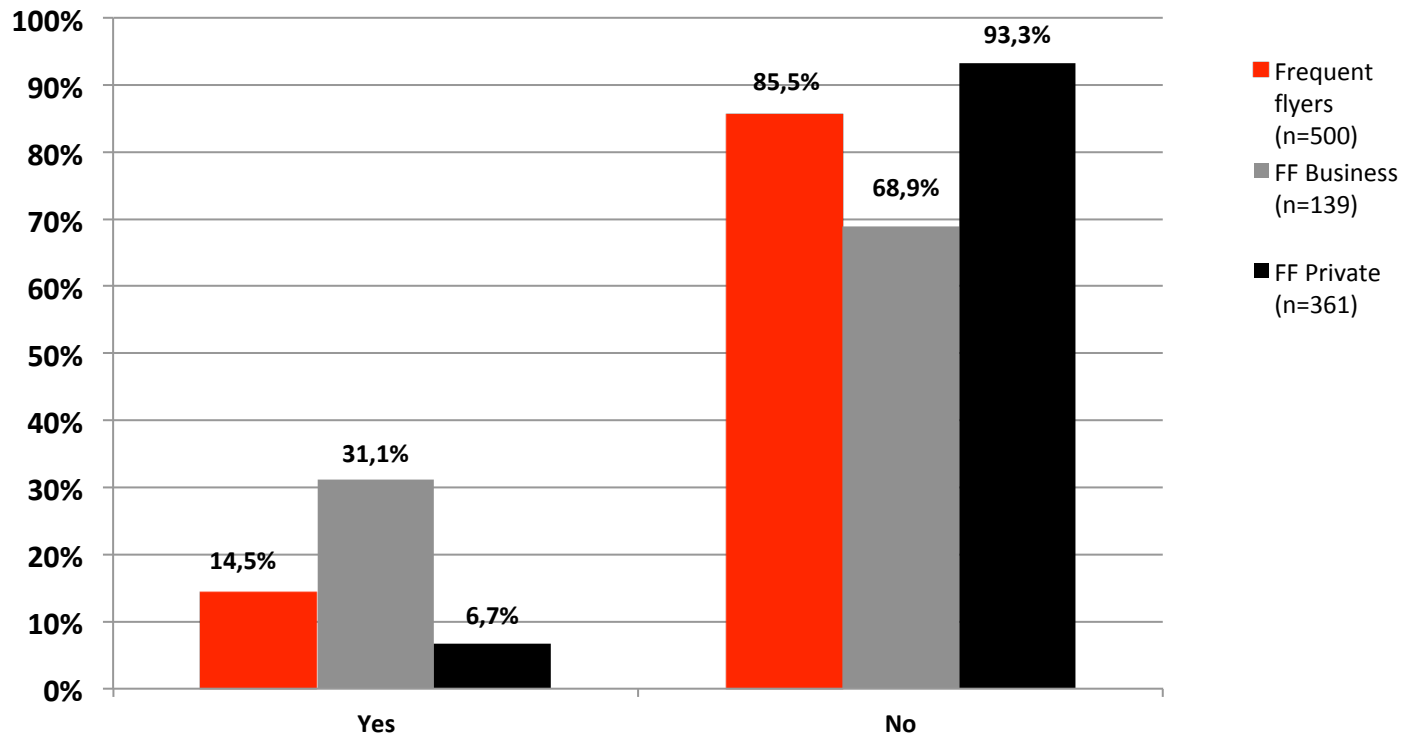
# Participation in Frequent Flyer programmes



Note: 40% of FFs - despite 6+ flights per year - do not participate in an FF program and another 15% do not or not consciously: 45% do. Of the business FF, 57% consciously participates and 32% even more.

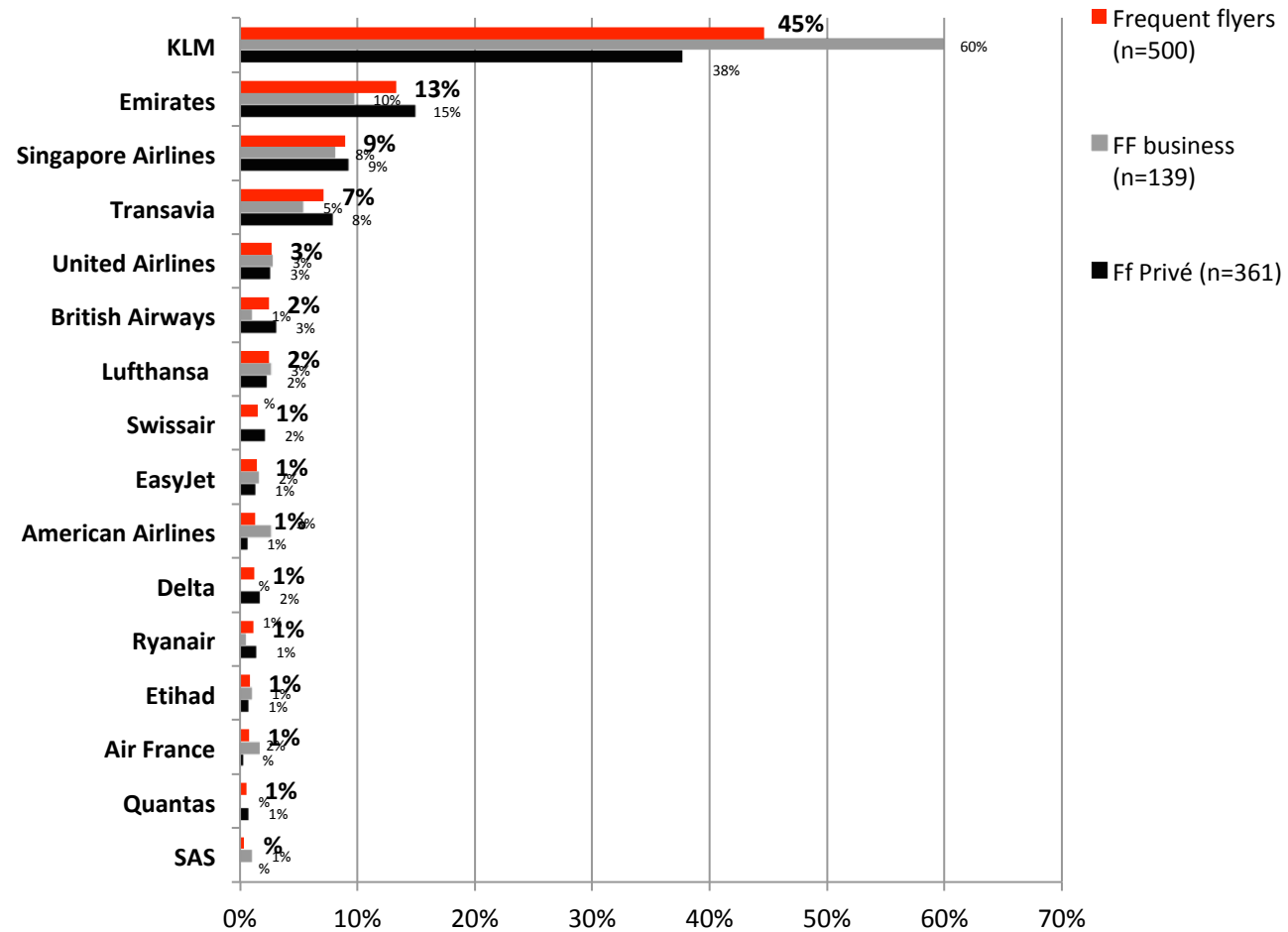


# Privium member



Note: 40% of FFs - despite 6+ flights per year - do not participate in FF program and another 15% do not or not consciously: 45% do. Of the business FF, 57% consciously participates and 32% even more.

# Preferred Aircarrier



Note: Dutch FF like to fly with KLM, Emirates and / or Singapore. In fourth place and as the first of the budget companies, Transavia.



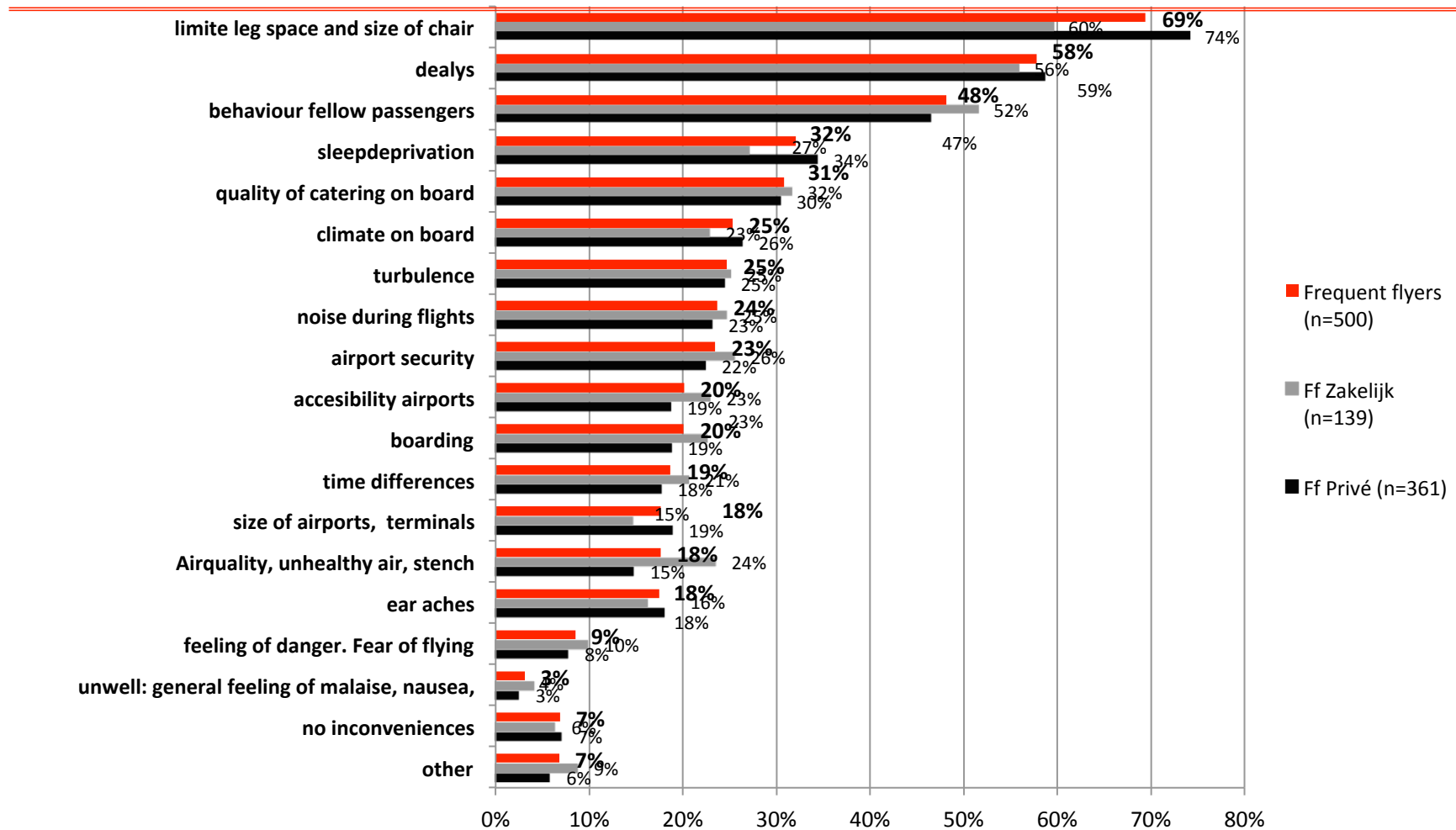


## Inconveniences experienced during flights

Before discussing specific health complaints, during a 'warm-up' we asked about the broader spectrum of inconveniences that can occur just before, during and after the flight.

Respondents have been able to name up to 5 discomforts, in addition to a list of 19 possibilities to add other problems or inconveniences to them.

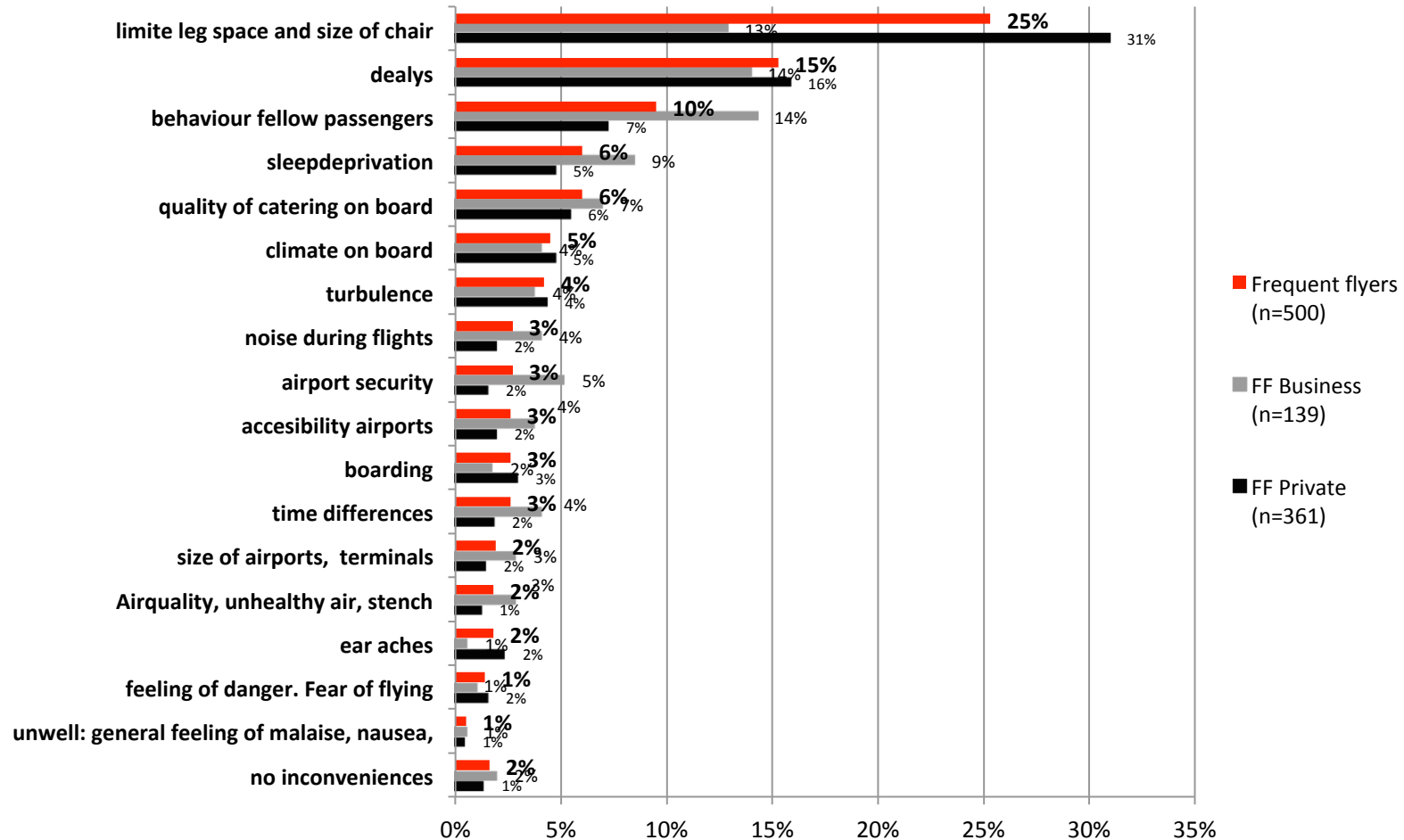
# Most frequent inconveniences(max. 5)



Note: With approximately 70% of the FF, "small legroom" is the most common discomfort, followed by delays (around 60%) and behavior of fellow passengers (about 50%). Air quality is mentioned by almost 20% of all FF; of the business FF almost a quarter of them call this a major inconvenience.



# Greatest discomfort, (zooming in on the first one)



Note: about what is perceived as the biggest inconvenience, private and business differ. For the private FF, small legroom is clearly the biggest inconvenience: almost a third calls this first. Business FF experience equally small space, delays and the behavior of fellow passengers as the greatest inconvenience.



# PREVALENCE AND SEVERITY OF FLYING RELATED HEALTH COMPLAINTS

The research focuses on the health complaints that can occur in relation to flying.

In consultation with Aviation Medical Consult, 8 specific health complaints have been described that may occur during or after a flight. These complaints are:

- memory disorders and/or concentration problems
- Loss of field of vision
- anxiety attacks / hyperventilation
- headache
- dizziness (balance disorders, ringing in the ears)
- fatigue
- pulmonary or respiratory problems (shortness of breath, short of breath, apnea)
- loss of strength (muscles) / numbness in hands and/or feet

After determining whether the FF is experiencing one or more of these complaints, the following in-depth questions follow:

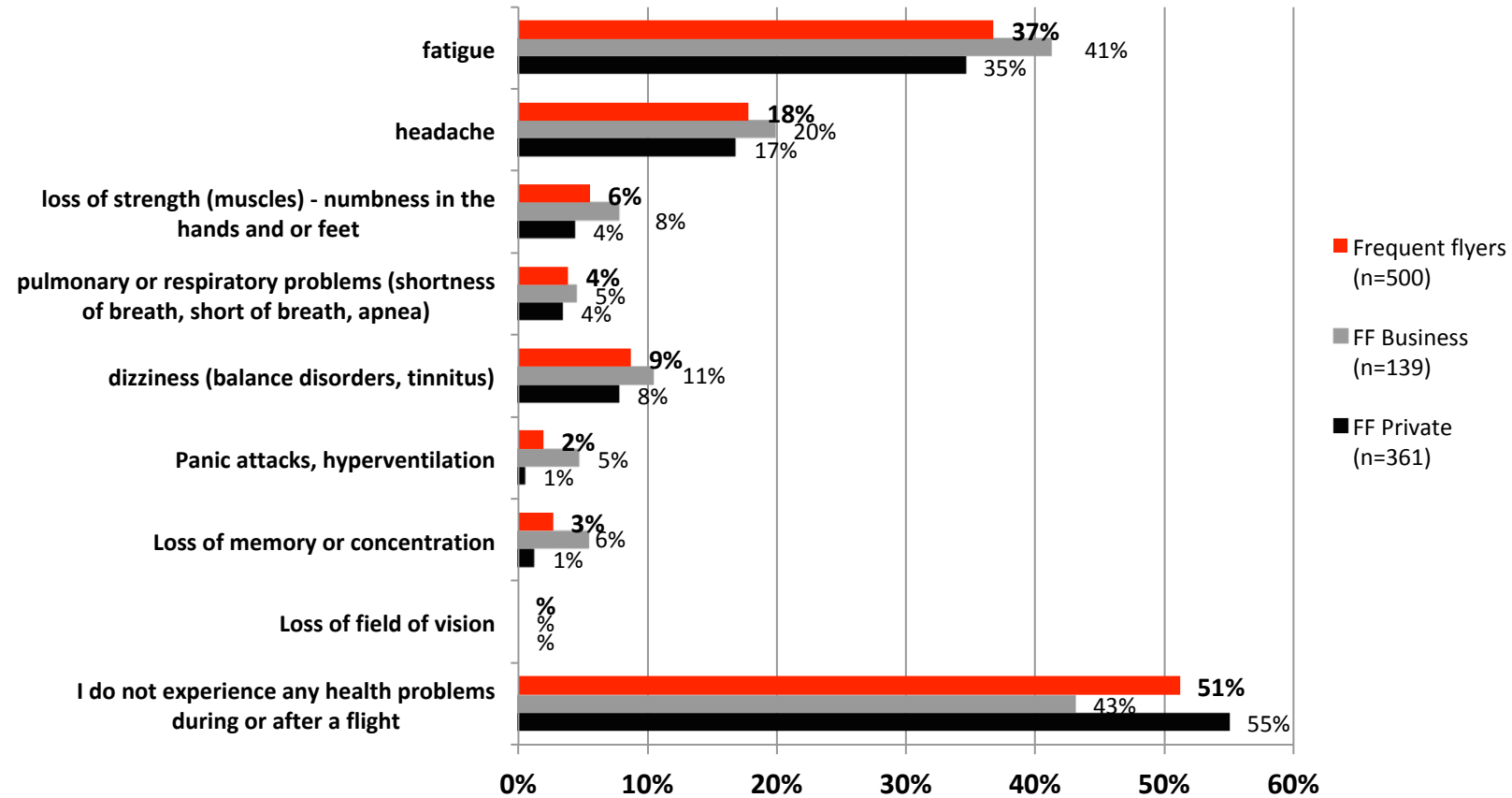
- How often does the complaint occur,
- How serious is the complaint
- To what extent does the respondent attributes the complaint to flying.

These results are shown below for the three most frequently mentioned complaints.

N.B. Four of the complaints are only shown by frequency: due to the limited occurrence of these complaints no meaningful breakdowns can be given for this sample size. 8th complaint, failure of part of the field of vision, is not described in more detail. No reports were made about this in our sample.



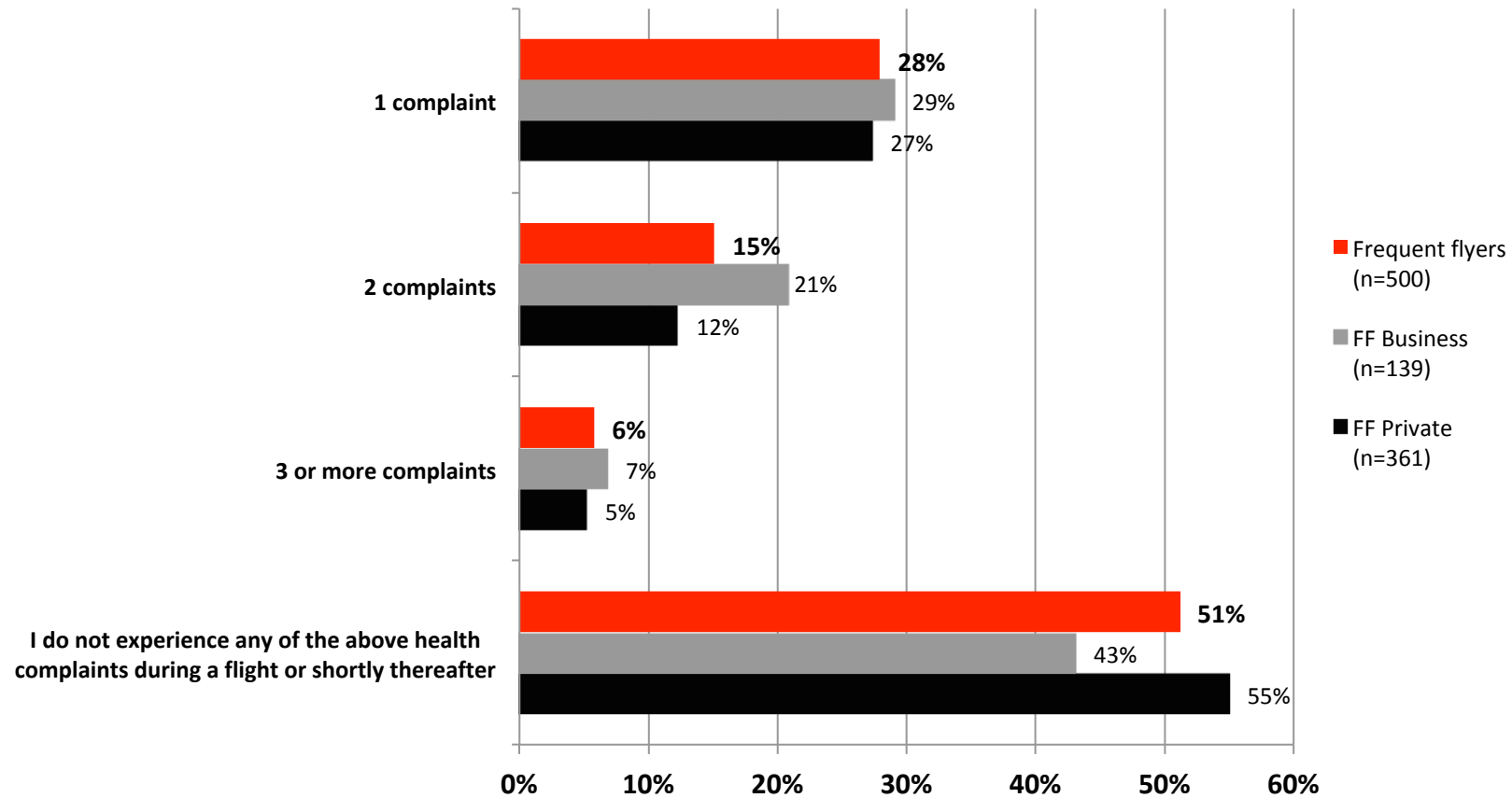
# Healthcomplaints during or shortly after



Note: over 50% have none of these complaints during or after flying (43% of business FF). • The most frequently mentioned complaint (37% of the FF) is fatigue, followed by headache (18%). This is followed by dizziness (9%) and loss of strength (6%). In all cases relatively more business FF suffer from this than private FF.



# Amount of complaints per FF

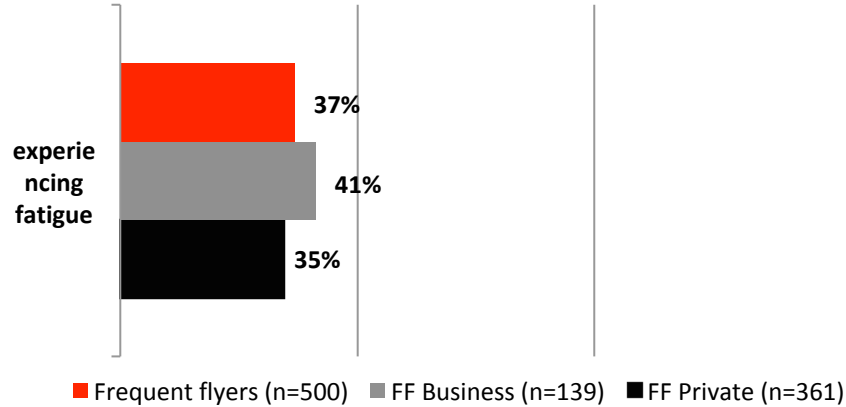


Note: 28% mentions one complaint and 21% of the FF has 2 or more of these 8 complaints. The business FF not only has complaints more often, but also more than one.

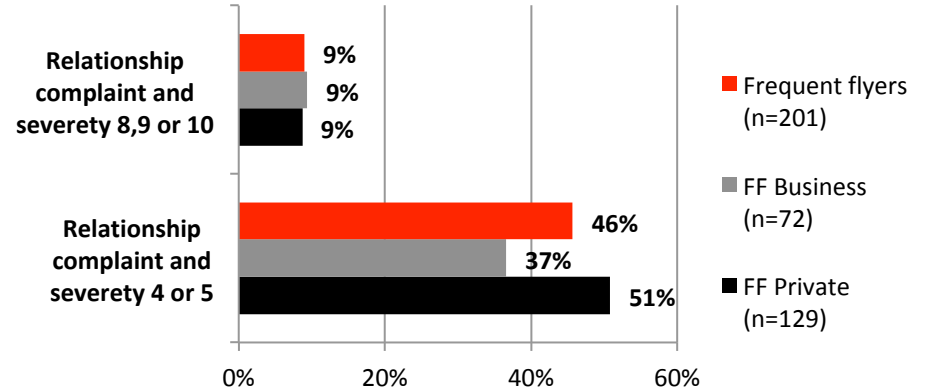


# FATIGUE

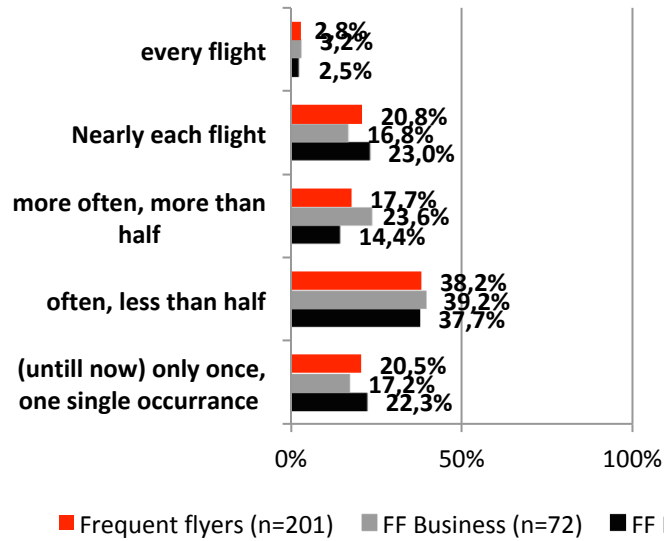
Basis: All Frequent Flyers



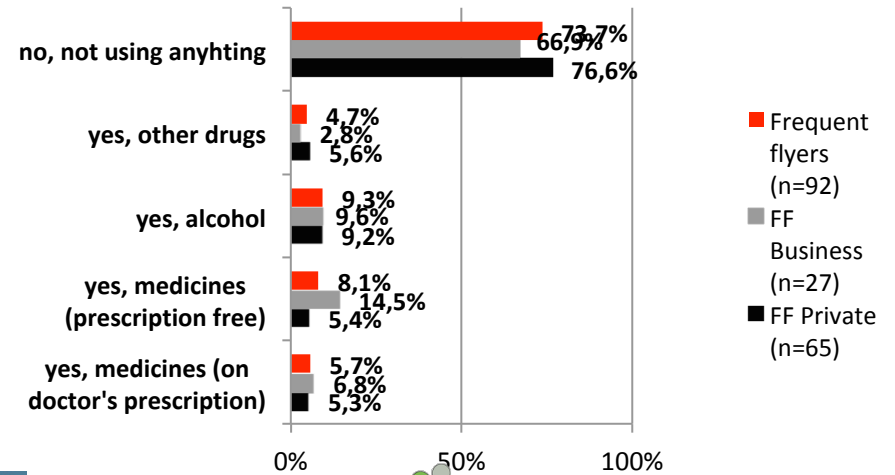
Basis: individuals with a complaint



Basis: suffered a complaint



Basis: has had complaints and sees a connection with flying



# Explanation of graphs about Fatigue

37% referred to this complaint (41% of the business FF)?

9% rated the complaint 8 or higher (score 10 = very serious)

24% endure it (almost) every time and another 18%, so a total of 42% of those with fatigue experience it in more than half of the flights.

at 38% this was less than half and at 20% it has so far been limited to 1 x

46% of those with this complaint make a connection with the flight

And a quarter of that (26%) took or took one or more measures:

9% alcohol used

8% took medication without a prescription

6% took prescription drugs

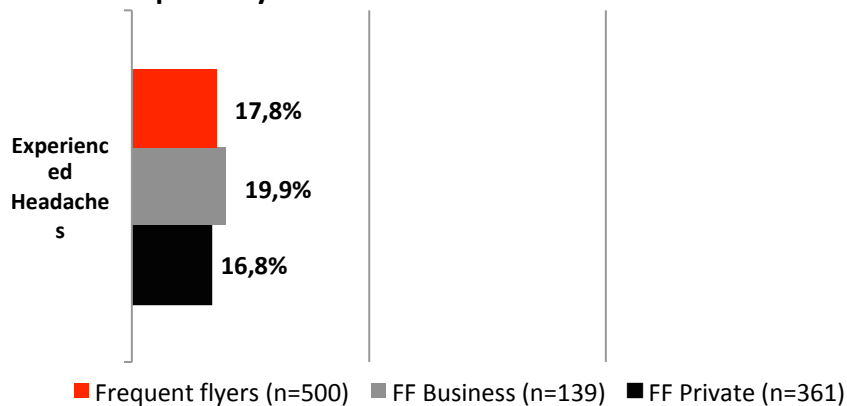
6% of 46% = 2.8% of those with this complaint

2.8% of those with the complaint =  $2.8\% * 37\% = 1\%$  of all FF

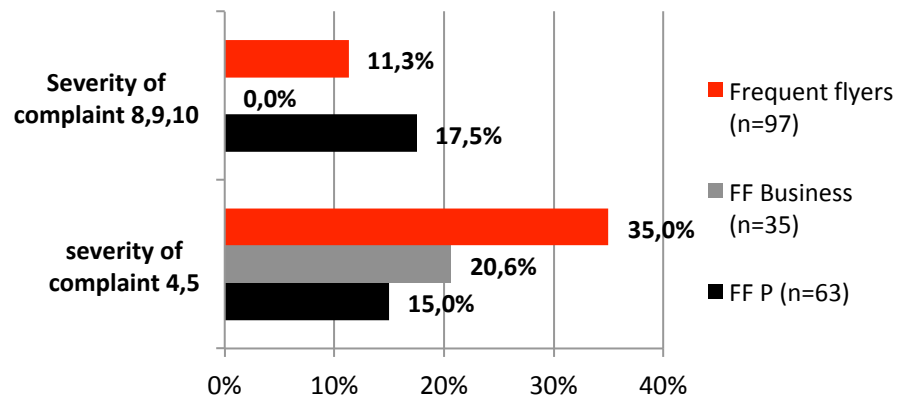


# Complaint: Headache

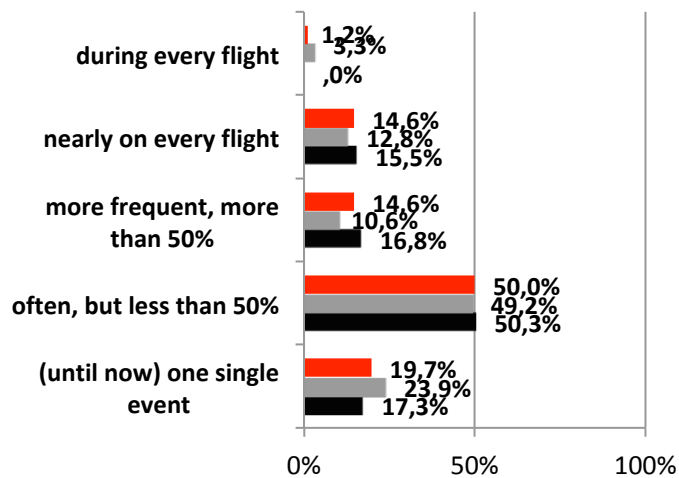
All Frequent Flyers



Has experienced complaint



Experienced complaint



■ Frequent flyers (n=97) ■ FF business (n=35) ■ FF Private (n=63)



## Additional information on Headaches

18% mentioned this complaint (20% of the business FF)?

Of these, 11% rate the complaint with a score of 8 or higher (score 10 = very serious)

16% have it (almost) every time and another 15%, so in total about 30% of those with headache complaints are affected by more than half of his / her flights.

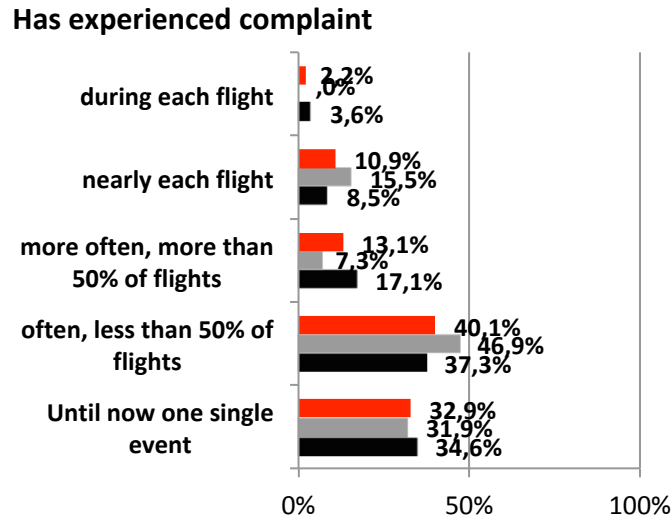
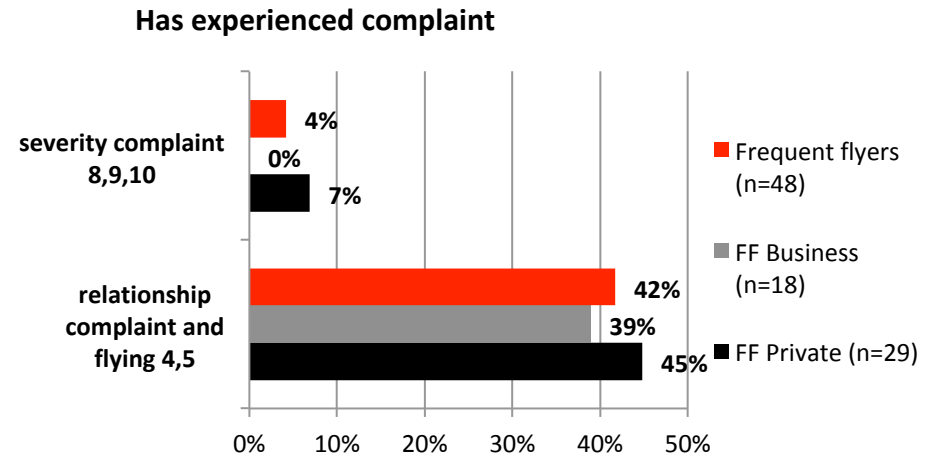
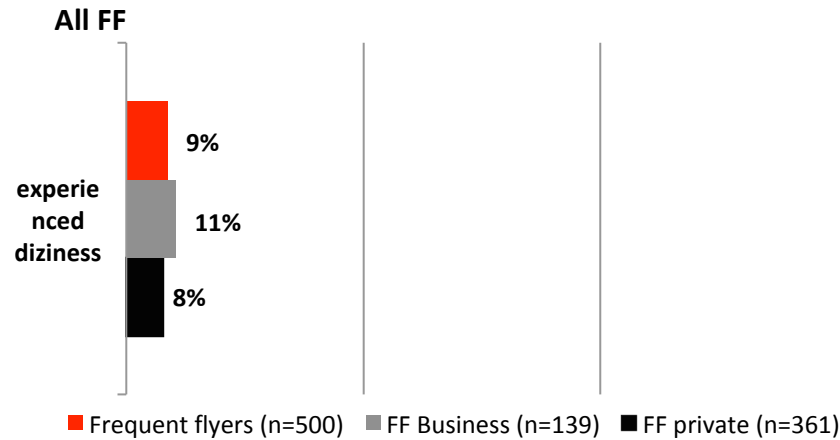
at 50% this was less than half and at 20% it has been limited to 1 x so far

35% of those with this complaint do relate this to a flight

56% of these take one or more measures

Given the small numbers in the sample, a further breakdown by measures is not justified

# Complaint: Dizziness



## Explanation of graphs about Dizziness

9% mentioned this complaint (11% of the business FF)?

Of these, 4% give the complaint score 8 or higher (score 10 = very serious)

And 13% have it (almost) every time and another 13% - thus a total of 26% - of those with dizziness complaints experience it in more than half of his / her flights.

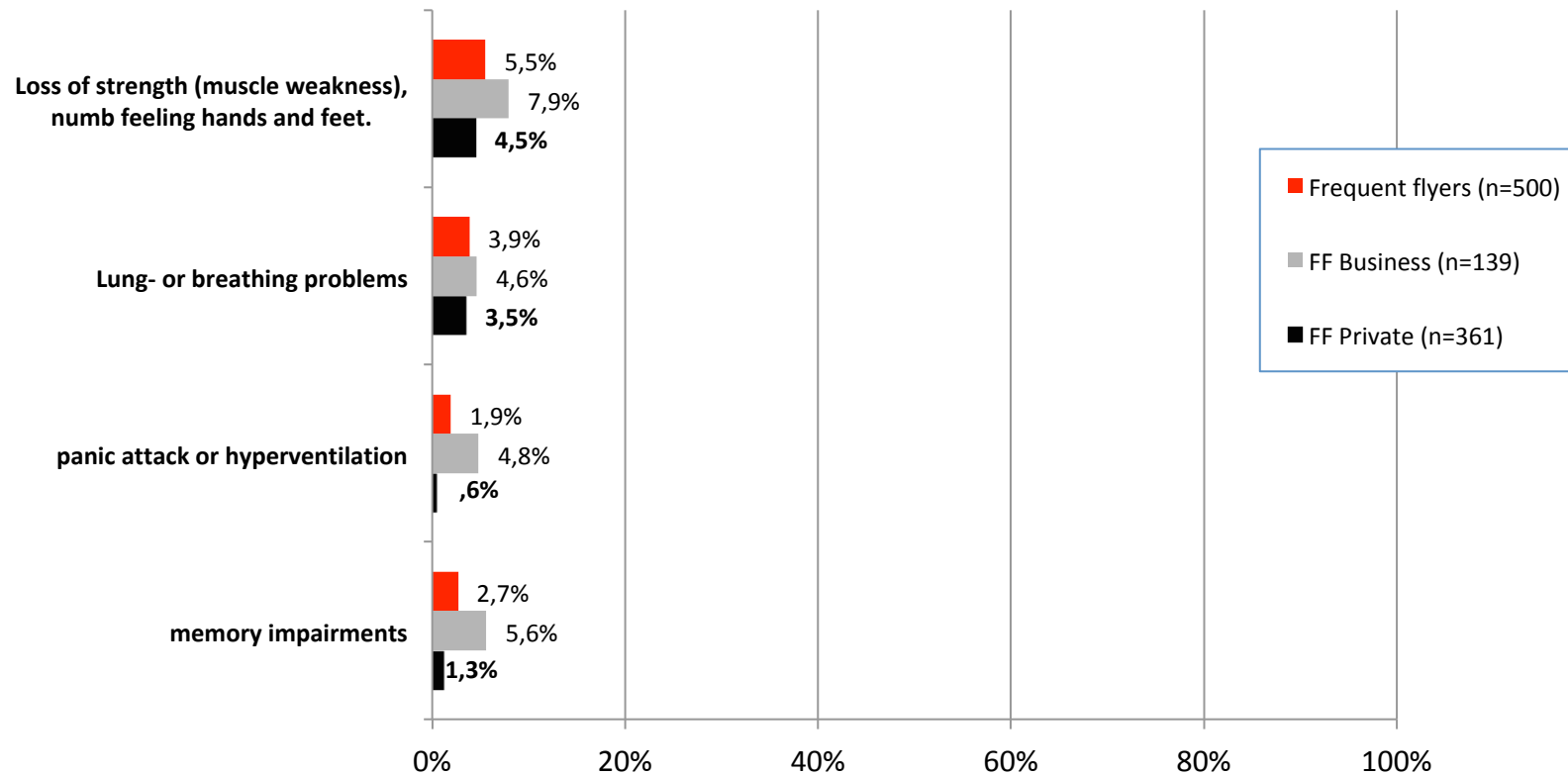
at 40% this was less than half and at 33% it has so far been limited to 1 x

42% of those with this complaint make a connection with the flight

And 35% of them take one or more measures

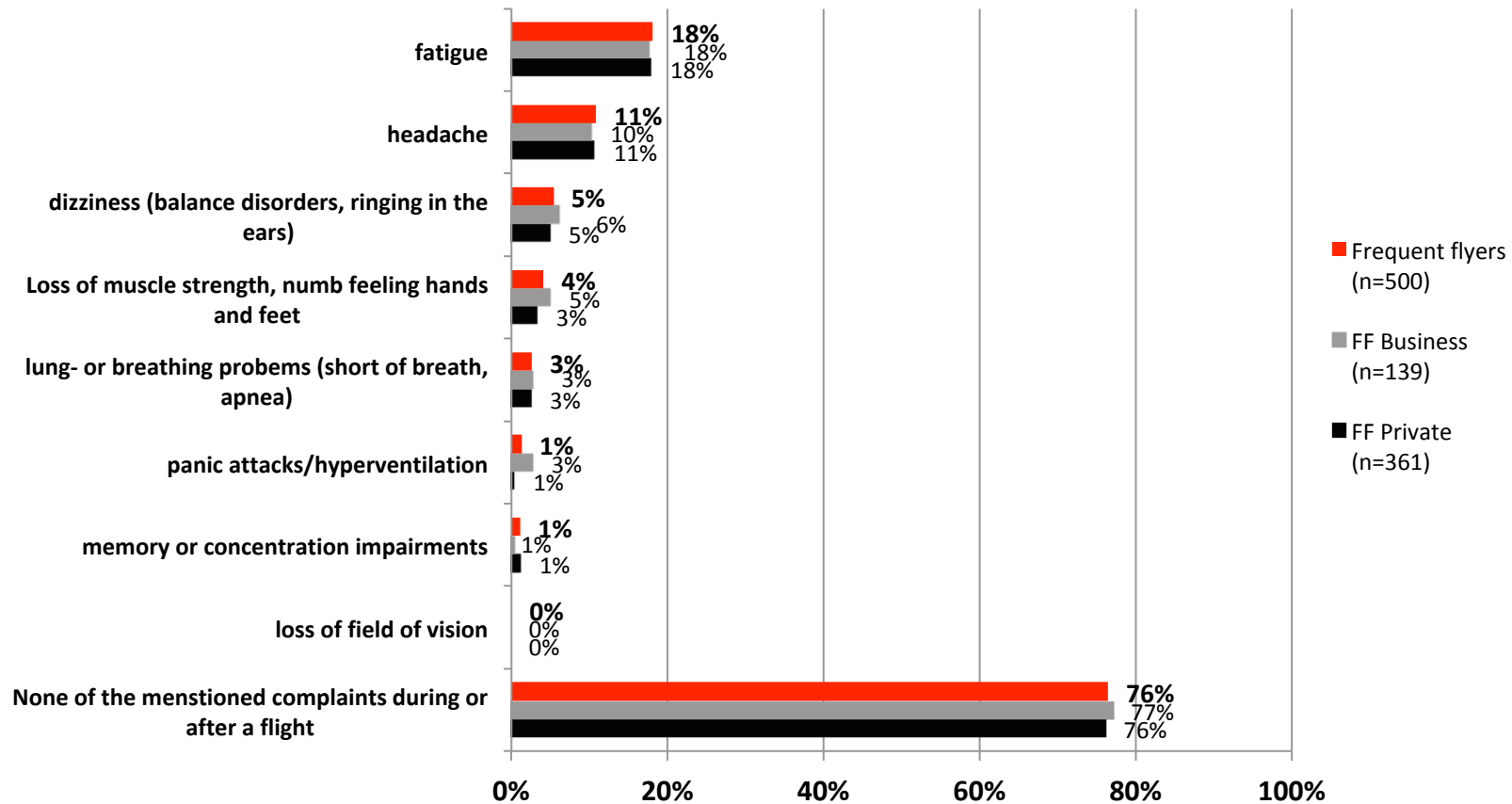
Given the small numbers in the sample, a further breakdown by measures is not justified

# Infrequent complaints



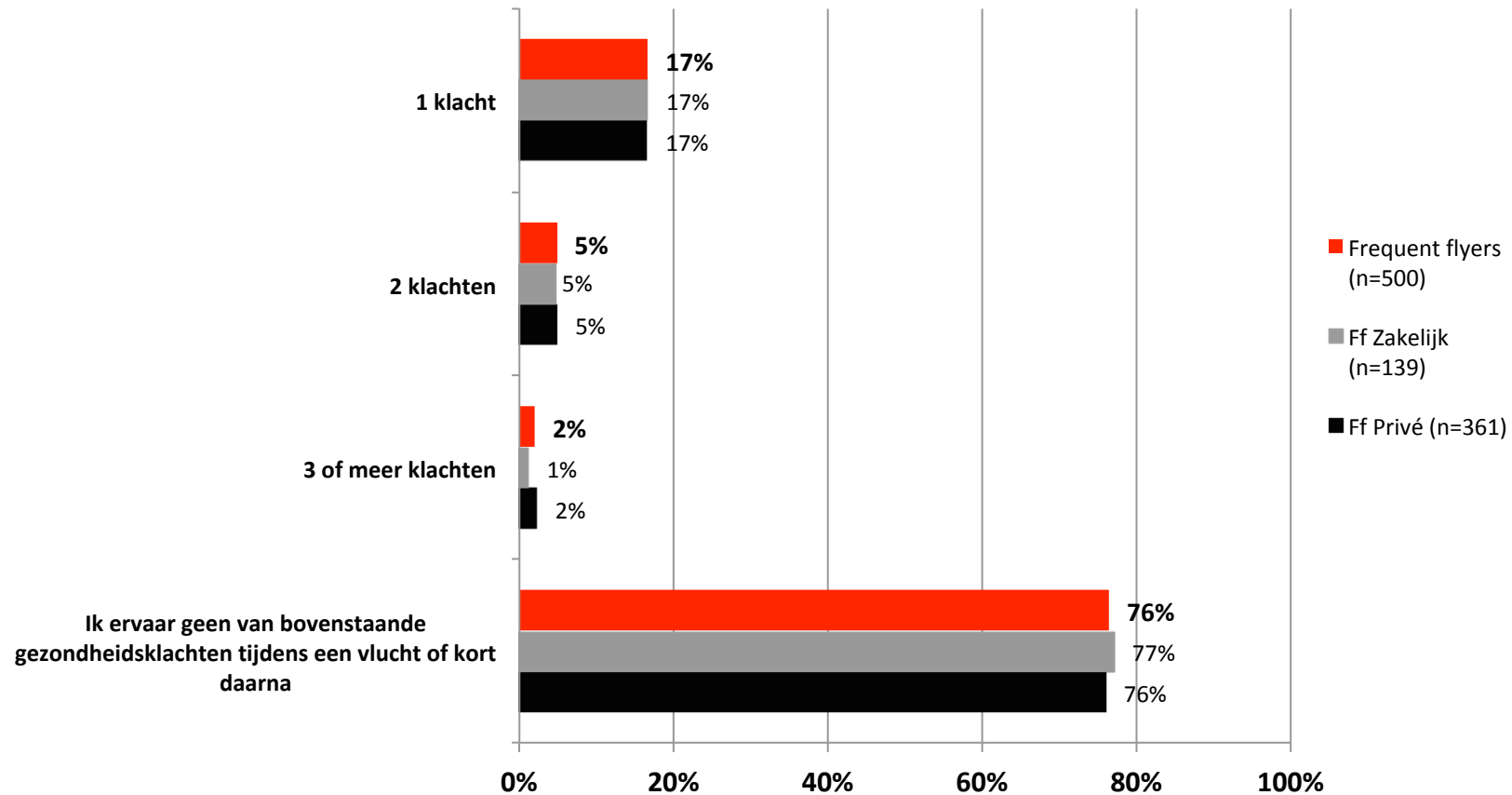
The other complaints are experienced by 2 to 6% of the FF, relatively more often by the business FF. • Due to the limited occurrence of the complaint, a further breakdown is not statistically justified.

# Severity of complaints, as experienced by FF (score 4-5 of scale 1-5)



note: most frequen mentioned complaints related to flying by FFs are fatigue and Headache. 1 in 20 indicates dizziness, 1 in 25 experiences loss of strength / numbness in hands and / or feet.

## Number of complaints by FF, related to (score 4-5 on a scale of 1-5)



Note: Distinction between business and private FF has disappeared (see slide 22). Relatively speaking, business FF relate the complaint less often to flying than the private FF .

# Actions and experiences in response to experienced health complaints that are strongly attributed to 'flying'

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In the last part of this research, we zoomed in on the FF with health complaints whom they themselves relate strongly to flying - or have given a score of 4 or 5 on a five-point scale: To what extent do you blame your symptoms.

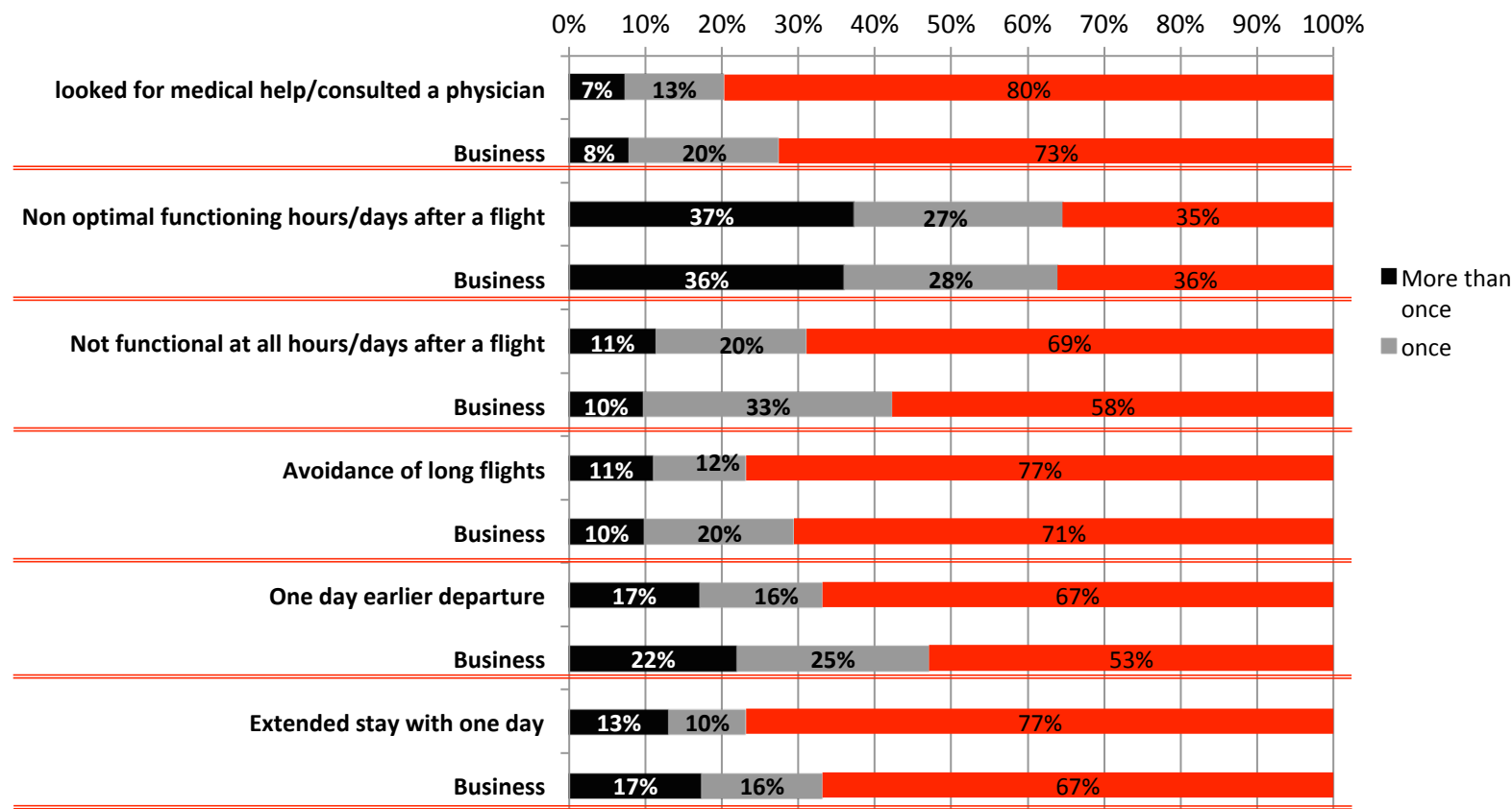
We asked for possible actions and changes in their behaviour, to find a solution for the health complaints and for problems with daily functioning as a result of flying.

This FF group is 23.6% of all FF.



# Actions and experiences undertaken?

Basis: All FF with 1 or more flight-related complaints, 23.6% of all FF; 22.9% of all business FF



Note: The first bar with description always concerns all FF with 1 or more complaints, then the results of the business FF. Not being able to function optimally is the most experienced experience (more than 1/3 of all FF with complaints) .1 in 5 of business FF flies one day earlier to the destination to be able to deal with the complaints first.



# For consideration - discussion

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From the results it can be concluded that:

- 49% of the FFs experience, to a greater or lesser extent, one or more of the relevant complaints.
- 25% of the FF does experience one or more of these health complaints, but does not relate them to flying or only to a limited extent.
- 24% of all FF have experienced one or more health complaints, which they consider as strongly related to flying (the flight).

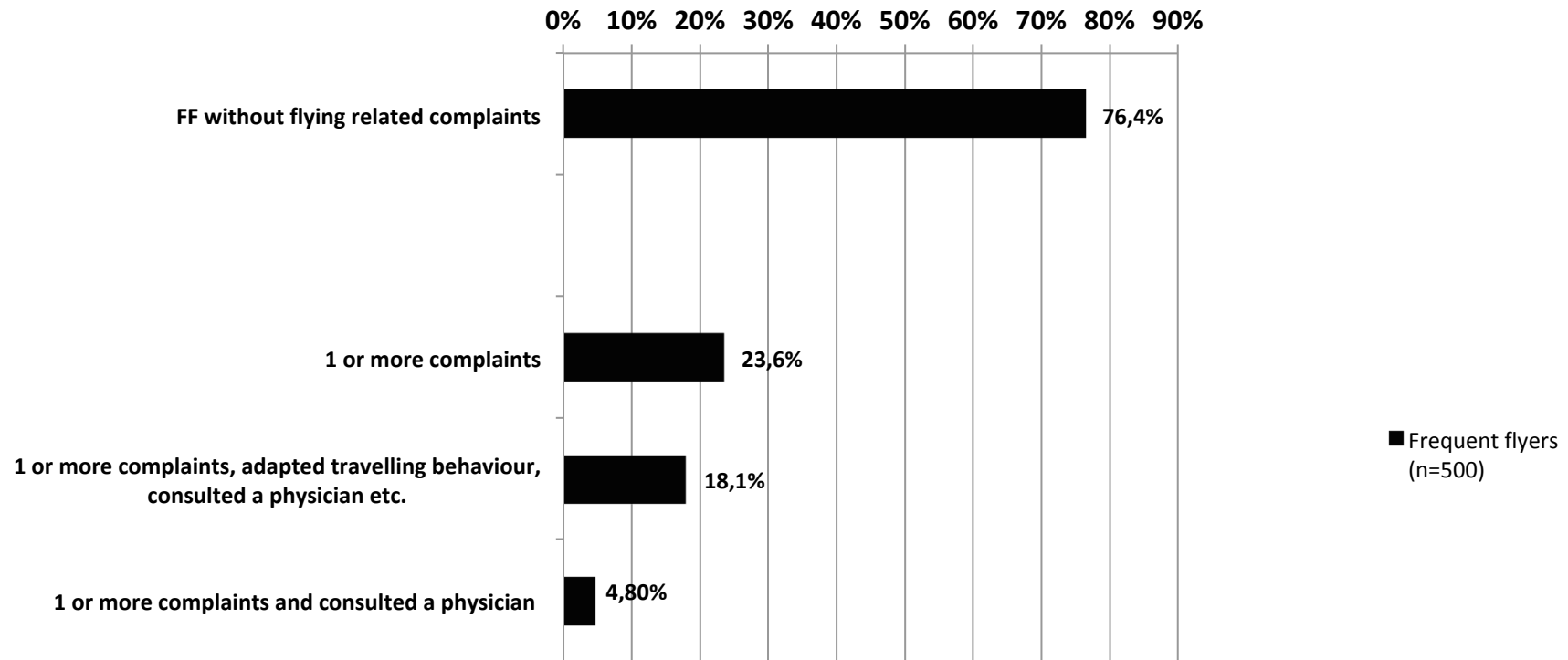
Initially, 24% of the FF has at least one relevant complaint and this relates to flying.

In the following slides, is the group with complaints more closely defined as a basis for the discussion.

This always in conjunction with some characteristics that show how this target group compares to the average frequent flyer; this in so far as the size of the target group allows for in actual numbers.



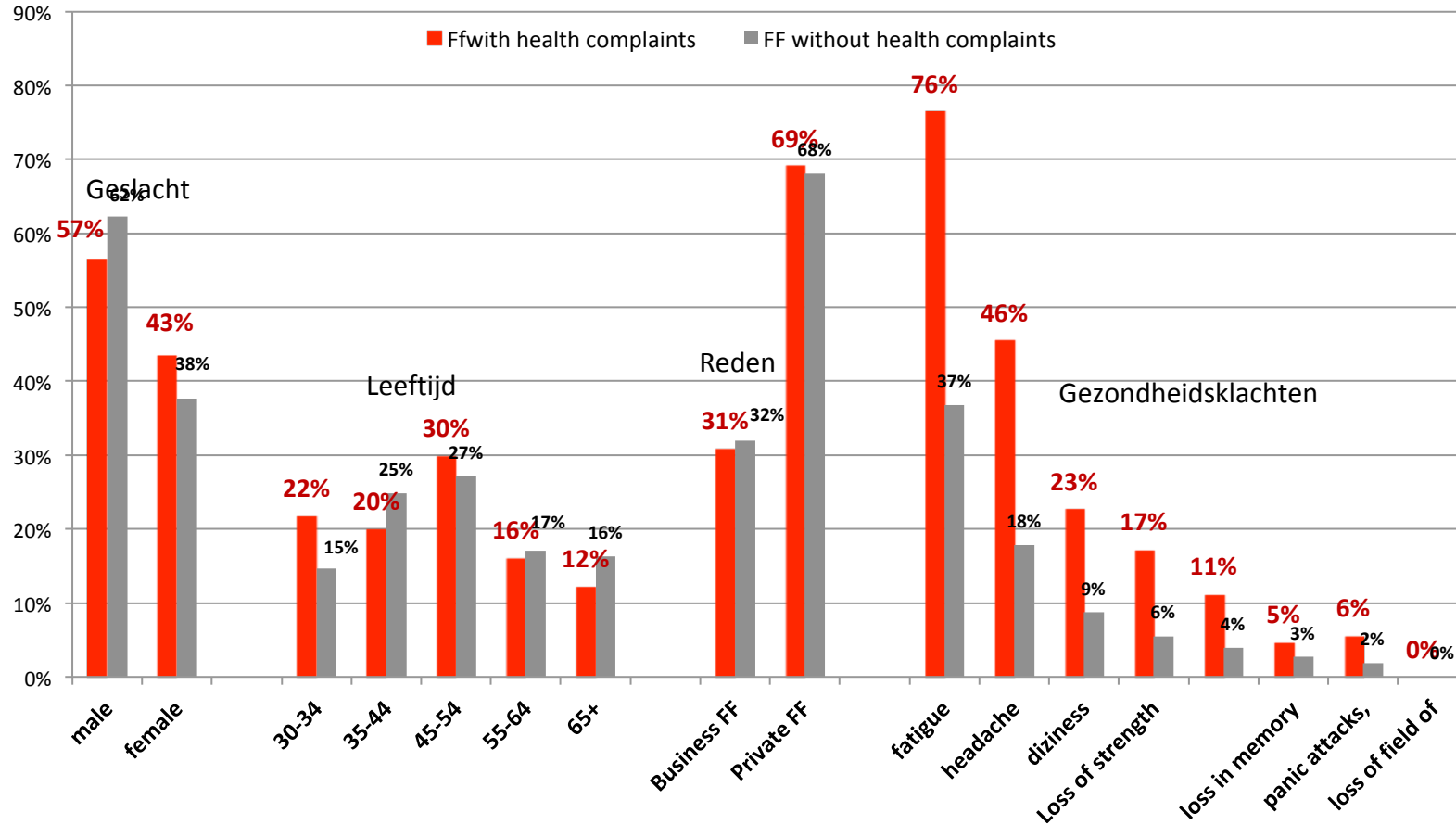
# FF with 1 compliant which is considered to be related to flying



Should it be decided for the target group that FF have at least sought medical help for their health complaint (there is already an active search for help), the potential target group would consist of 4.8% of the FF: this amounts to about 30,000 Dutch people aged 30 or older.

The profile on the next slide is given for all FF with at least 1 fly-related complaint - so without the addition of a consultation for a doctor

# Profile FF with flying related complaints vs FF

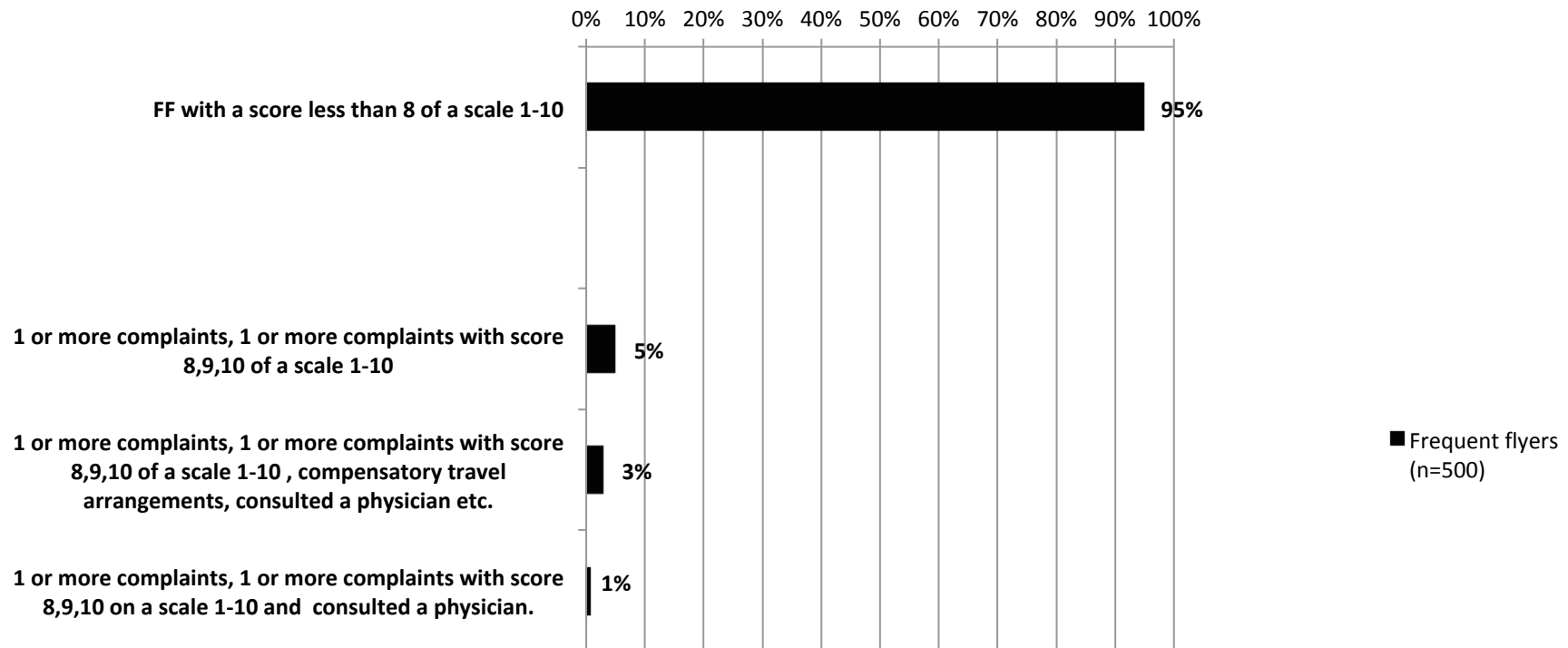


Note: eg gender: of the FF without complaints 62% is male, 38% is female; of the FF with complaints is 57% male, 43% female.

FsF with flight-related health complaints are relatively more often female (absolute numbers are male!), Complaints occur relatively often between 30 and 34 years. Although in absolute terms complaints occur more often with private FF, there is relatively no difference.



# FF with 3 or more complaints, to a high degree considered to be related to flying



In terms of size, the group consists of: 1 or more flight-related health complaints, with 1 of the complaints are in any case so serious that at scale 1-10 an 8 or higher is given for this, out of about 34,000 Dutch people aged 30 or older.

Given the limited size in the sample (5.1%, unweighted 23 respondents), no further characterisations of this group can be given.