



FlightSim Community Survey 2019

Final Report

Copyright Notice

© 2020 Navigraph



By licensing our work with the CC BY-SA 4.0 license it means that you are more than welcome to copy, remix, transform and build upon the results of this survey and then redistribute it to whomever you want in any way.

You only have to give credit back to Navigraph and keep the same license.

<https://creativecommons.org/licenses/by-sa/4.0/>

Preamble

This is the annual flightsim community survey, a collaborative effort between partners – developers, companies and organizations in the flightsim domain – coordinated and compiled by Navigraph. This survey is freely distributed for the common good of the flightsim community to guide future projects and attract new pilots.

This flightsim community survey is the largest and most comprehensive of its kind. This year 17,800 respondents participated in the survey. This is an 18.6% increase from last year when 15,000 participated. This year's survey consisted of 93 questions, compared to last year's 77 questions. However, this year many more of the questions were conditional, allowing us to add new sections and ask in-depth questions only to those respondents for whom it was relevant. New sections this year contained questions specifically aimed at pilots using flight simulator software on mobile devices and helicopter flight simulators. We also added questions on combat simulators, air traffic control and flight planning. Finally, because of the upcoming release of the new Microsoft Flight Simulator 2020, we added questions on this topic as well.

Our main objective this year was to recruit more and diverse partners to broaden the reach of the survey to get an even more representative sample of the community. This year we had 29 partners. Last year we had 20 partners. This probably contributed to the fact that 61% of this year's respondents were new to the survey. Even though only 39% of this year's respondents participated last year we note that many of the results on important questions, such as simulator software preference, exhibit a very low variance from 2018 to 2019.

To conclude, we are very happy with the outcome of the survey this year. Thank you to all of you who participated – respondents and partners!

A handwritten signature in black ink that reads "Magnus Axholt". The signature is written in a cursive, flowing style.

Magnus Axholt
CEO & Co-Founder

Table of Contents

- 1. Introduction..... 9
 - 1.1. Partners 9
 - 1.2. Purpose and Target Audience 11
 - 1.3. Data Protection 11
 - 1.4. Previous Work 11
- 2. Method..... 13
- 3. Analysis..... 14
 - 3.1. Respondents..... 14
 - 3.2. Demographics..... 15
 - 3.2.1. Age..... 15
 - 3.2.2. Gender..... 16
 - 3.2.3. Employment Status 17
 - 3.2.4. Country 18
 - 3.2.5. Education..... 19
 - 3.2.6. Income..... 20
 - 3.2.7. Other Hobbies 21
 - 3.2.8. Other Simulation Interests 22
 - 3.3. Relation to aviation 23
 - 3.3.1. Work 23
 - 3.3.2. Pilot License..... 24
 - 3.3.3. Simulation in Relation to Aviation..... 25
 - 3.3.4. Flight School Enrollment 26
 - 3.3.5. Flight Lesson Consideration..... 27
 - 3.4. Simulator Habits - Combat 28
 - 3.4.1. Combat Simulation Interest 28
 - 3.4.2. Combat Simulator Preference 29
 - 3.5. Simulator Habits - Mobile..... 30

3.5.1. Mobile Simulation Interest.....	30
3.5.2. Mobile Simulator Preference	31
3.5.3. Mobile Simulator Feature Importance.....	32
3.5.4. Mobile Simulator Device	33
3.6. Simulator Habits - Air Traffic Control	34
3.6.1. ATC Simulation Interest.....	34
3.6.2. ATC Simulation Usage.....	35
3.6.3. ATC Simulation Factor Importance.....	37
3.7. Simulator Habits – General	38
3.7.1. Aircraft Types.....	38
3.7.2. Experience	39
3.7.3. Usage	40
3.7.4. Roles	41
3.7.5. Platforms	42
3.7.6. Purpose.....	43
3.7.7. Flight Rules	44
3.8. Consumption Habits	45
3.8.1. Software Expenses	45
3.8.2. Hardware Expenses	46
3.8.3. Preferred Online Stores.....	47
3.8.4. Freeware versus Payware.....	48
3.8.5. Subscriptions	49
3.8.6. MSFS2020 Purchase Likelihood.....	50
3.8.7. MSFS2020 Effect on Spending.....	51
3.9. Community	52
3.9.1. Conference Attendance.....	52
3.9.2. Popular Conferences	53
3.9.3. Future Conference Attendance	54
3.9.4. Conference Preferences	55
3.9.5. Contribution	56

3.9.6. Communication Platforms.....	57
3.9.7. Virtual Airline Membership	58
3.9.8. Virtual Squadron Membership.....	59
3.9.9. Online Flying.....	60
3.9.10. Online Network Preference.....	61
3.9.11. Important Factors for Joining Online Networks.....	62
3.9.12. ATC Importance on Routing	63
3.9.13. Reasons for Not Flying Online	64
3.10. Simulator Platform	65
3.10.1. Simulator Software.....	65
3.10.2. Simulator Software Change.....	66
3.10.3. Operating System	67
3.10.4. Xbox Consoles.....	68
3.10.5. Internet Connection Speed	69
3.10.6. Auxiliary Systems.....	70
3.10.7. Qualified Training Device	72
3.11. Virtual Reality	73
3.11.1. Ownership	73
3.11.2. Brand	74
3.11.3. VR Simulator Software	75
3.11.4. Motion Sickness.....	76
3.11.5. VR Controls.....	77
3.11.6. VR Flight Types	78
3.11.7. VR Plugins/Mods	79
3.12. Addons in General	80
3.12.1. Addon Type Importance.....	80
3.12.2. Addon Purchase Influences	81
3.13. Aircraft Addons.....	82
3.13.1. Aircraft Feature Importance.....	82
3.14. Scenery and Weather	83

3.14.1. Scenery Importance	83
3.14.2. Weather Sources	84
3.14.3. Weather Importance	85
3.15. Traffic and Air Traffic Control	86
3.15.1. ATC Importance	86
3.16. Charts Products and Addons	87
3.16.1. Charts Products Popularity	87
3.16.2. Charts Products Awareness	88
3.16.3. Charts Preference	89
3.17. NavData/FMS Data	90
3.17.1. NavData/FMS Data Products Popularity	90
3.18. Flight Planning	91
3.18.1. Usage	91
3.18.2. Purpose	92
3.18.3. Flight Planning Software Popularity	93
3.18.4. IFPS/CFMU Validation	94
3.19. Media	95
3.19.1. Media Consumption	95
3.20. Video	96
3.20.1. Platform Preference	96
3.20.2. Paid Content	97
3.21. Survey Meta Analysis	98
3.21.1. Participation	98
3.21.2. Survey Experience	99
4. Results	100
4.1. A Word on Sampling Bias and Validity	100
4.2. Demographic	100
4.3. Simulation Platform	101
4.4. Simulation Habits	101
4.5. Online Flying	101

4.6. Spending.....	101
4.7. MSFS2020 Anticipation	101
4.8. Survey Meta Analysis.....	102

1. Introduction

1.1. Partners

The flightsim community survey 2019 is a collaborative effort conducted by the developers, organizations and companies alphabetically presented in the list of partners below.

- Aerosoft*
- Avitab
- Carenado
- Flight Sim Labs*
- Flight1
- FlightSim.com
- FlyJSim*
- FSElite*
- FSEXpo
- GeoFS*
- HeliSimmer.com*
- HiFiSimTech
- Infinite Flight*
- IVAO
- JonFly
- Laminar Research
- MilViz
- Navigraph
- ORBX
- PC Pilot*
- PilotEdge*
- PMDG*
- ProjectFly*
- QualityWings
- SimBrief
- SimFlight
- SimVRLabs*
- Thresholdx.net*
- VATSIM

Last year the survey was supported by 20 partners. This year 29 partners contributed. The new partners are marked with an asterisk in the list above.

Notably partners representing mobile device simulator software and helicopter simulation have been added to the partner list.

The role of a partner is to contribute with suggestions for survey questions; review the survey draft before its distributed; and finally distribute the link to members, users, readers or customers via social media, newsletter, forum posts and/or website. In return, a partner will get two version of this report – one reflecting the general population, and one reflecting the respondents who stated that they have some relationship with the partner based on the first set of question in the survey.

Navigraph is responsible for coordinating, designing, compiling and funding the survey, as well as authoring this document.

We welcome additional partners for next year as it contributes to an even more representative sample of the community.

1.2. Purpose and Target Audience

The primary purpose of the survey is to provide the participating partners with information about the flight simulation community so that they are better able to:

- recruit new pilots to the flight simulation community
- develop products and services in response to pilots' needs and requests

The secondary purpose of the survey is to provide all members of the flight simulation community with information so that they are better able to:

- find resources to develop their flight simulation interest
- maintain and develop the community

1.3. Data Protection

The data was collected from the respondents anonymously without storing any personally identifiable information. The results are presented in aggregated form, never individually. The data was collected in the legitimate interest pursued by Navigraph and the partners. To the best of our judgement, the survey was conducted in a fashion compliant with the General Data Protection Regulation (EU) 2016/679. For any questions regarding user privacy, please contact info@navigraph.com.

1.4. Previous Work

VATSIM conducted a survey in 2006¹. It had 6,691 respondents.

AVSIM has previously published a demographic survey for the flight simulation community. The most recent one was made in 2013². It had approximately 2,800 respondents.

Laminar Research has collected usage data from its X-Plane simulator and published two reports³ in November 2017, and June 2018.

Navigraph has previously conducted customer surveys. In 2017⁴ it had 3,187 respondents. In 2016 2,200 participated. While these surveys had significant portions aimed at product feedback specific for Navigraph, it also had demographics questions included from the AVSIM survey.

¹ <https://www.flightsim.com/vbfs/content.php?7782-VATSIM-User-Survey-Results>

² <https://www.avsim.com/forums/topic/430855-results-of-the-2013-avsim-community-demographics-survey/>

³ <https://developer.x-plane.com/category/x-plane-usage-data/>

⁴ <http://blog.navigraph.com/post/167492052421/survey-results-prepar3d-x-plane-up-fsx-down>

Navigraph has also, with the help of partners, conducted a previous flightsim community survey in 2018⁵ which had 15,000 respondents.

It is our impression that there have been additional small surveys completed in the past. Either they have been published by various developers with the intent of obtaining specific product feedback; or they have been published by interest organizations with the intent of obtaining feedback of the particular operations of that organization.

The flightsim community surveys 2018 and 2019 are different in that they have:

- a larger sample size, i.e. more than twice as many as the largest flight simulation community survey to date
- a sample which represents multiple user groups, i.e. users from various developers and members from various organizations

⁵ <https://download.navigraph.com/docs/navigraph-flightsim-community-survey-2018-final.pdf>

2. Method

Navigraph began by posting an official invite on social media and in the Navigraph newsletter for partners to collaborate on the survey. Partners who participated to the survey earlier years were contacted directly via email. To get a representative sample of the community partners were chosen from as many different parts of the flightsim community as possible.

Partners were asked to submit questions of particular interest to them. Navigraph edited, consolidated, and designed the questions. The questions were then remitted to the partners for review before the survey was published.

All partners were asked to publish an individual survey link at a specific date and time. The partners were free to choose how to distribute the link, but many chose to publish on social media, forums, websites, and in newsletters. While the individual links permitted tracking of how successful each partner was at gathering respondents to the survey, it was not this link which governed the grouping of respondents into partner user groups. Instead, to determine which user groups a respondent belonged to the survey began with a question which asked which partners the respondents had interacted with recently. The reason respondents were grouped into user groups was so that individual survey reports could be compiled. In an individual survey report the user group of a particular partner is compared to all other user groups, thus allowing a partner to compare their user group to the community.

The respondents were not compensated for their contribution. The incentive for the respondents to contribute to the survey is the possibility to guide development in the flightsim community. The incentive for the partners to contribute to the survey is the individual survey reports which juxtaposes the general flightsim user group to the individual user group of each partner.

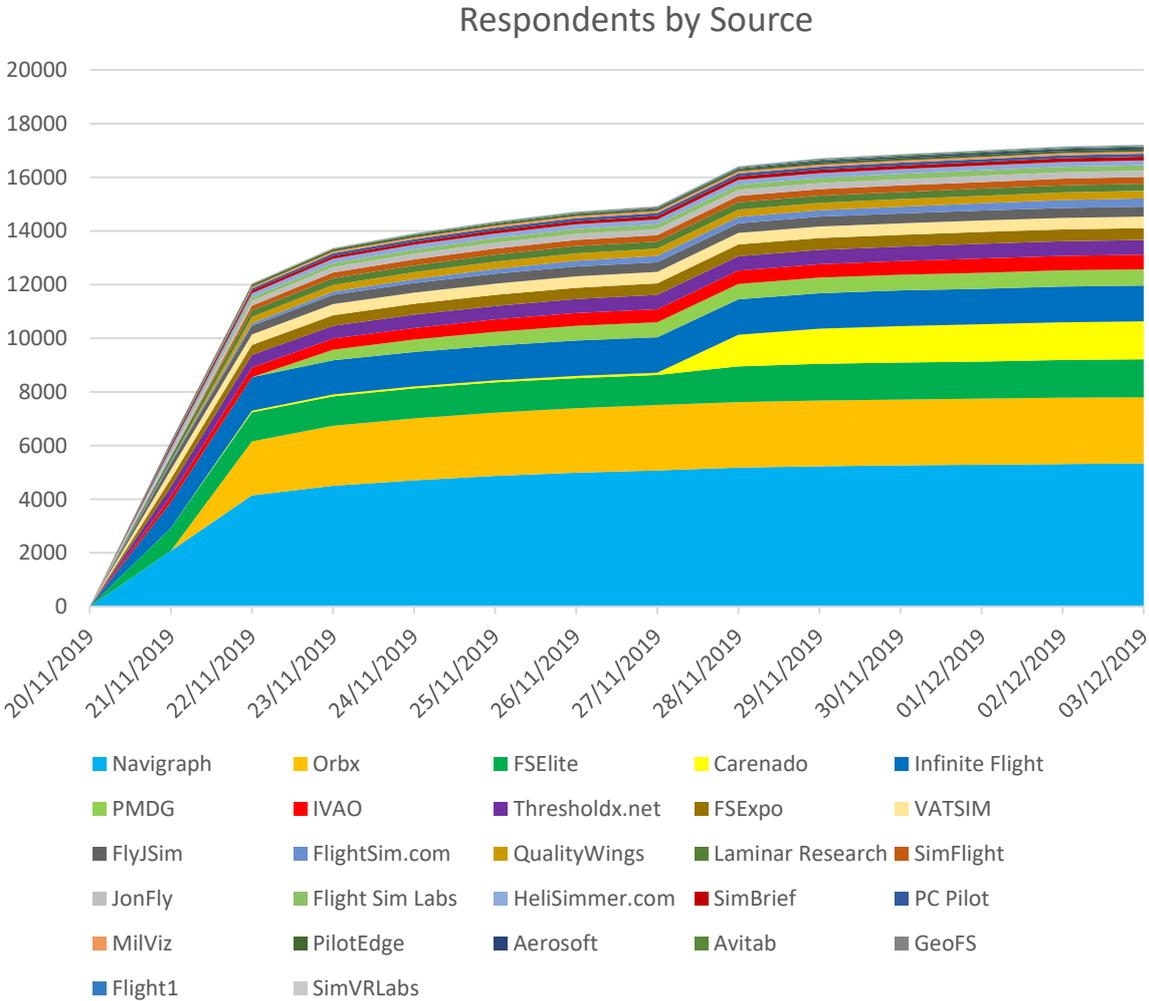
The information presented in this survey report is only diagrams over aggregated data. No other analysis as to statistical significance, power, or confidence interval has been done.

3. Analysis

3.1. Respondents

The survey had 17,800 respondents out of which 69% of the respondents completed the survey and spent on average 21 minutes. Last year 73% of the respondents completed the survey and spent on average 20 minutes.

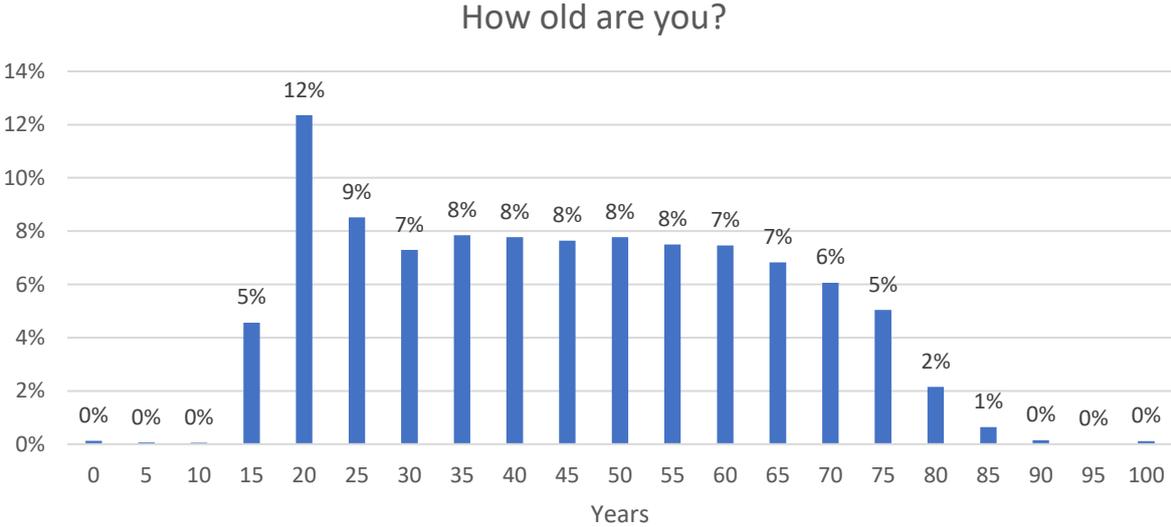
The diagram below illustrates the progress of survey completion over time. The diagram shows which individual survey link (mentioned above) each respondent clicked to take the survey, reflecting the individual contribution of each partner in attracting respondents. The partners are ordered by the total number of attracted respondents, with Navigraph, Orbx, FSElite, Carenado and Infinite Flight representing the top 5.



3.2. Demographics

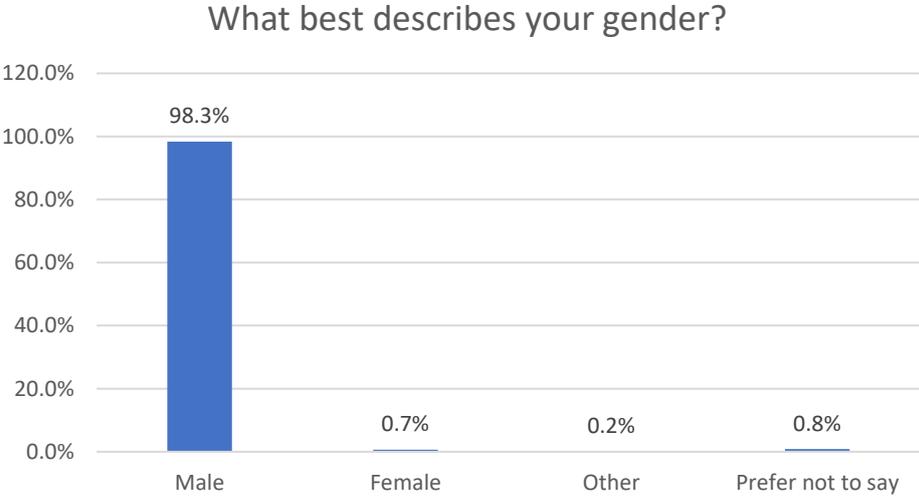
3.2.1. Age

The rather even distribution shows that flight simulation is interesting to people of all ages. While the bulk of the users are in the range of 15-85 years, we notice a peak around 20 and an impressive tail towards 85. Last year's survey had a similar age distribution with a peak around 20.



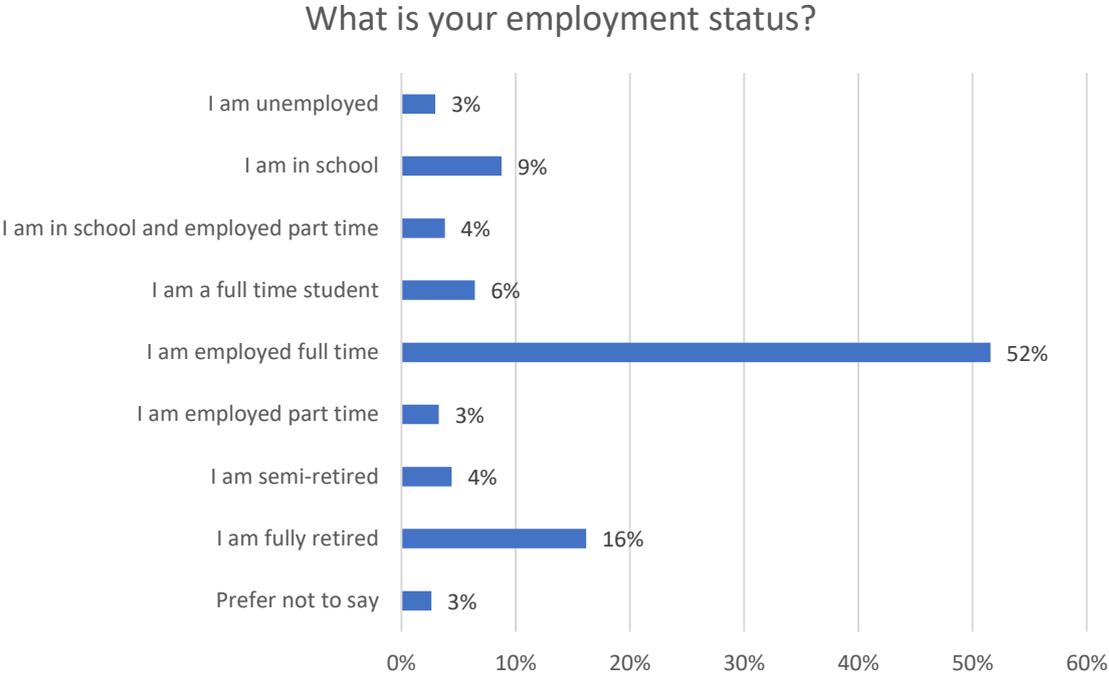
3.2.2. Gender

Flight simulation continues to be a predominantly male activity. The results are the same as last year.



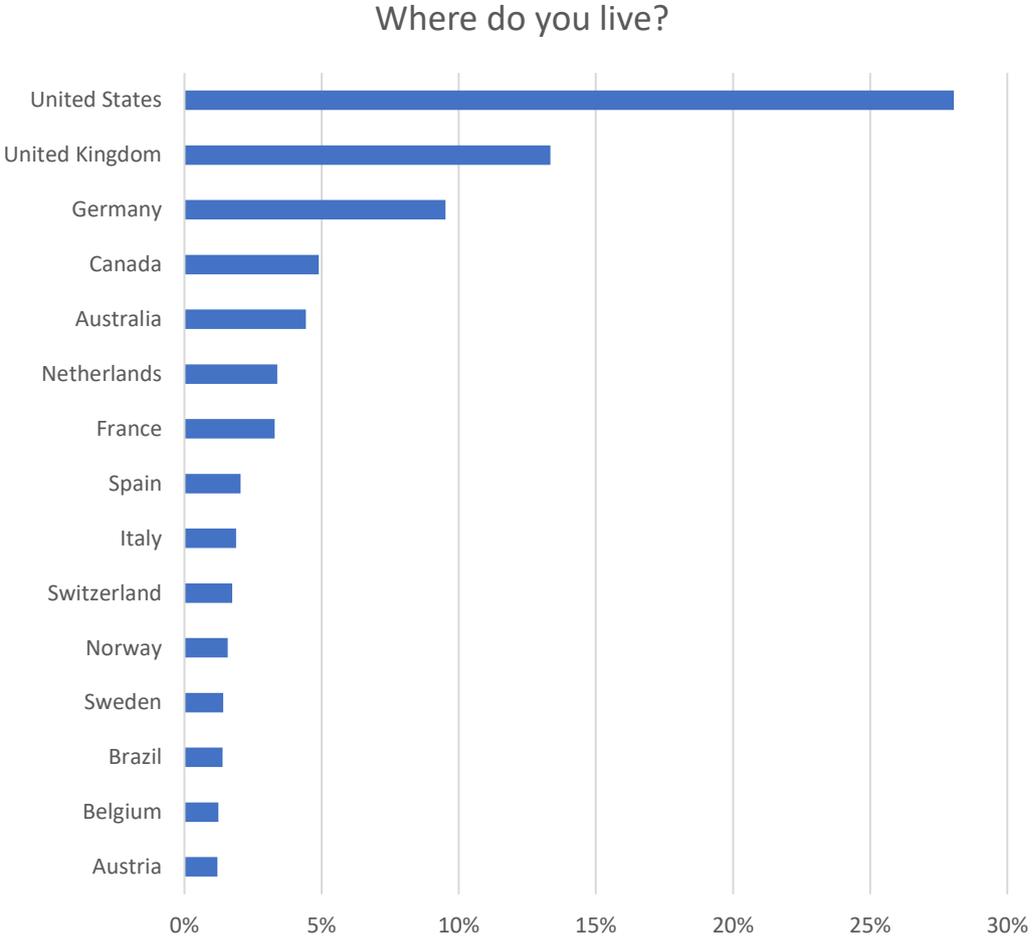
3.2.3. Employment Status

Most flight simulator pilots are either full time employed or fully retired. This was also the result in 2018.



3.2.4. Country

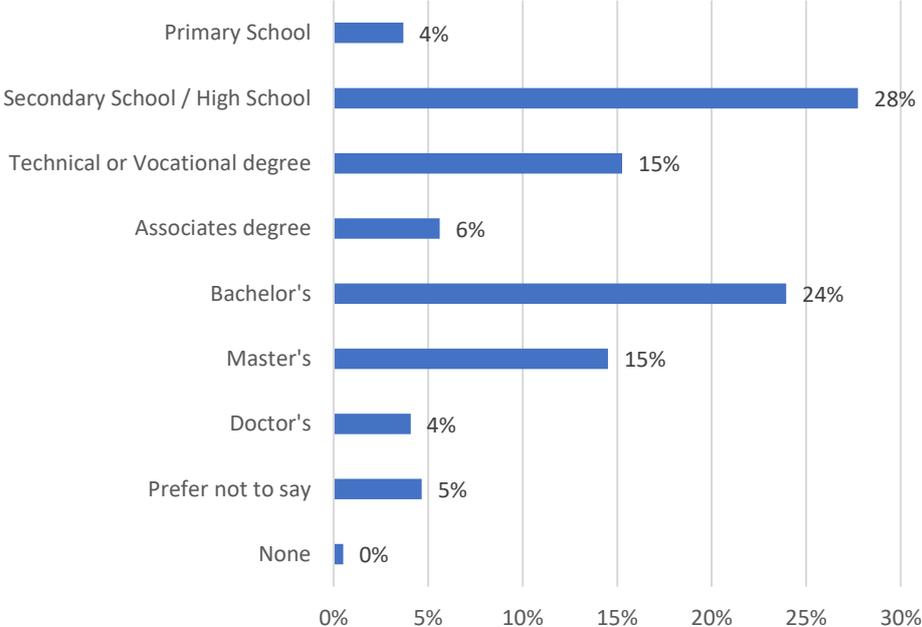
Most of this survey's respondents live in the US. The top eight countries are the same as in the 2018 survey.



3.2.5. Education

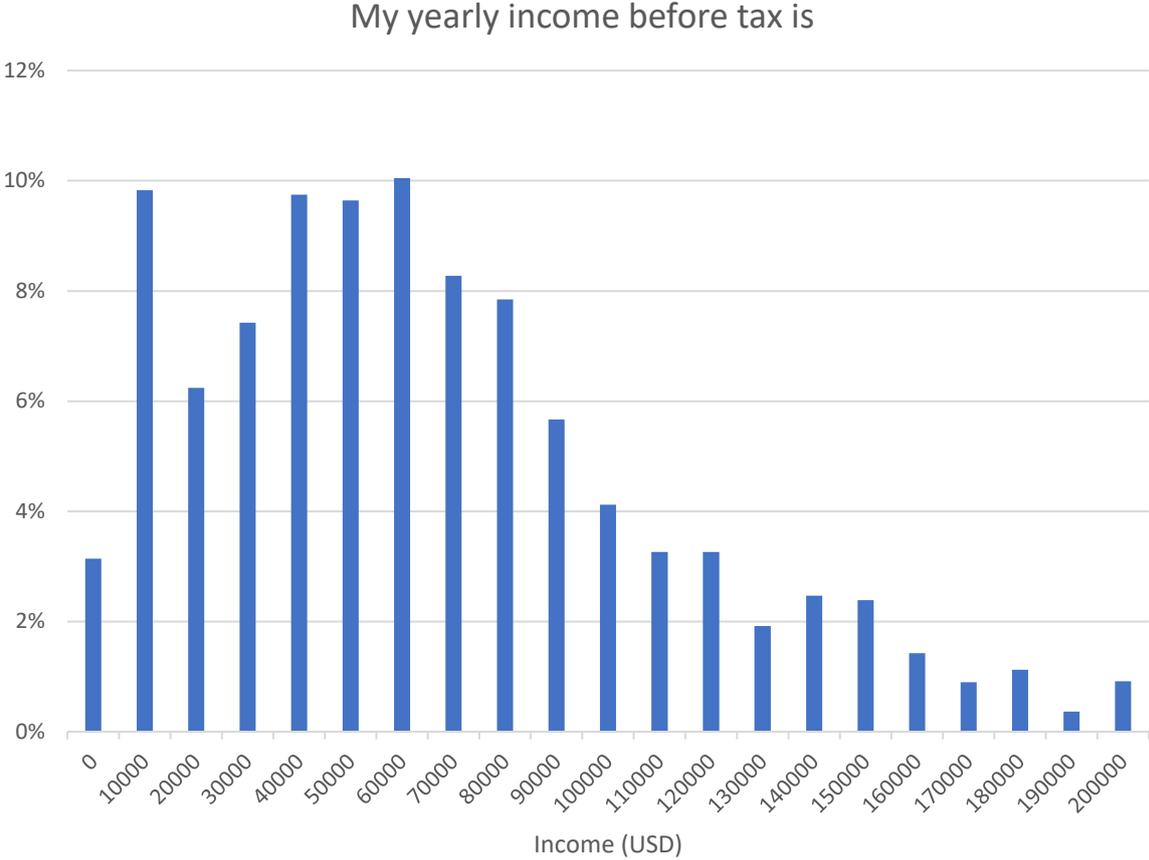
Last year respondents indicated Bachelor's as the highest level of completed education. This year, the majority indicated Secondary School / High School.

What is the highest level of education you have completed?



3.2.6. Income

Respondents were asked to enter their annual income before tax in their local currency. Exchange rates as per December 2019 were then used to calculate the income in US Dollars. The distribution is approximately the same as last year's survey. Most respondents are in the interval between \$40,000 and \$60,000. However, this year we see notably more respondents in the \$10,000 bracket compared to last year.



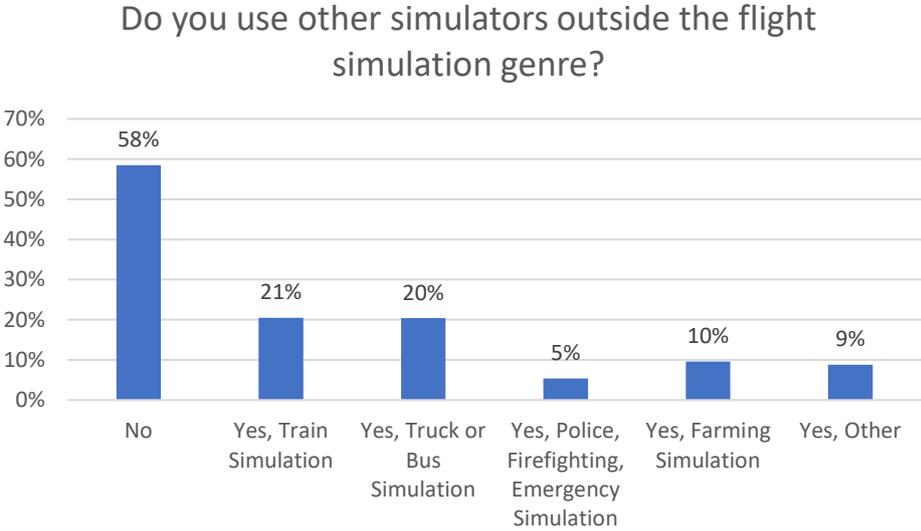
3.2.7. Other Hobbies

This year we added a question to get to know the community a bit better. We asked respondents about their main hobby or interest aside from flight simulation.

1. Aviation (8.9%)
2. Flying (6.6%)
3. Music (6.3%)
4. Photography (4.8%)
5. Gaming (4.5%)
6. Sports (4.0%)
7. Travel (3.1%)
8. Golf (2.6%)
9. Computers (2.4%)
10. Reading (2.0%)

3.2.8. Other Simulation Interests

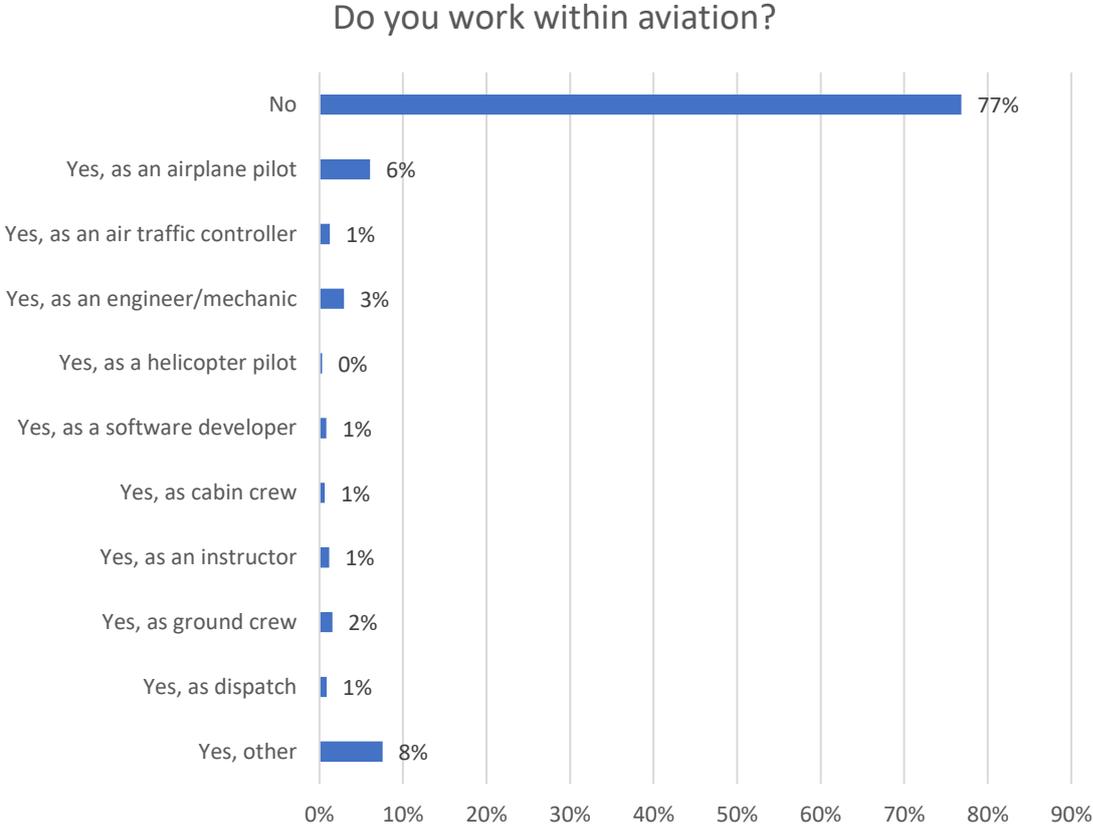
This year we also wanted to know if flight simulator enthusiasts also engage in other types of simulation. It turns out that about one fifth of the respondents also use train, truck or bus simulators in addition to flight simulators.



3.3. Relation to aviation

3.3.1. Work

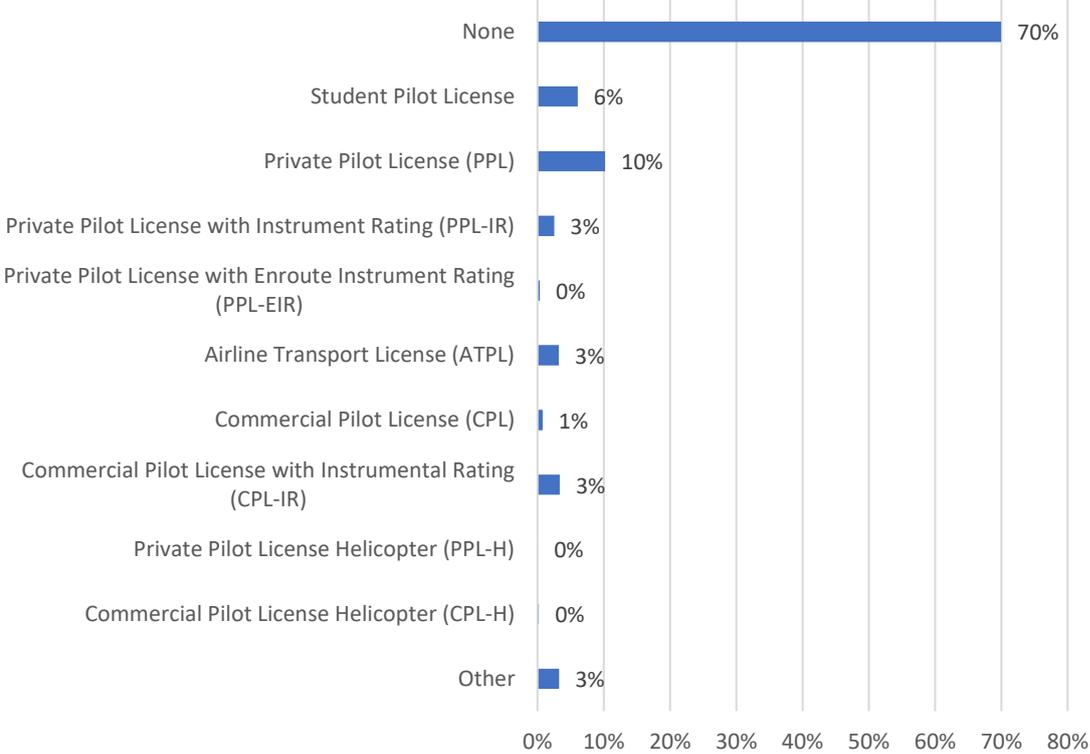
Just like last year 22% of respondents work within aviation. This diagram looks identical to last year’s survey with the exception that the number of airline pilots dropped from seven to six percent.



3.3.2. Pilot License

Compared to last year, we see that the total amount of licenses held by respondents have increased by three percent. Specifically, student licenses have increased by one percent, and private pilot licenses have decreased by one percent.

What pilot license do you currently have?



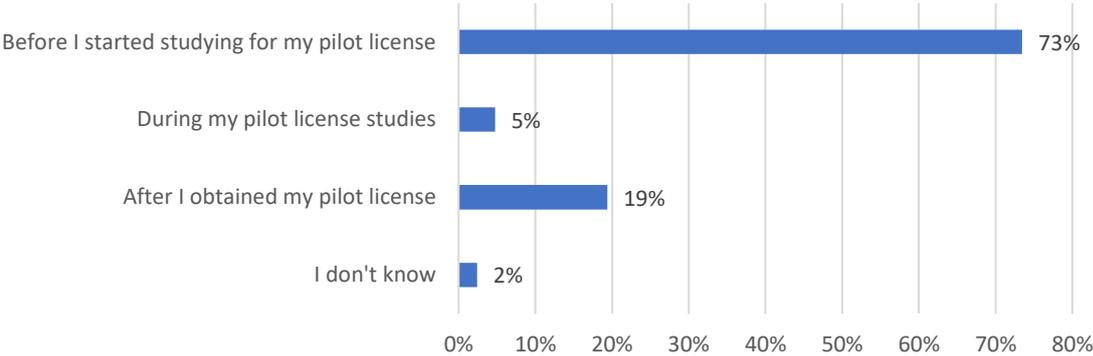
3.3.3. Simulation in Relation to Aviation

This question was conditional and only presented to the respondents who stated that they had some sort of pilot license.

This year 73% stated that they had a flight simulator before starting to study for a pilot license. This is an increase by 5% since last year.

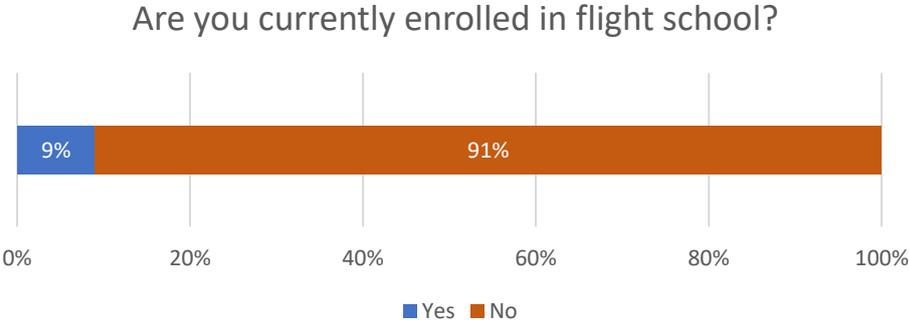
19% say they started flight simulation after obtaining their license. Last year this number was 25%.

When did you get your first flight simulator?



3.3.4. Flight School Enrollment

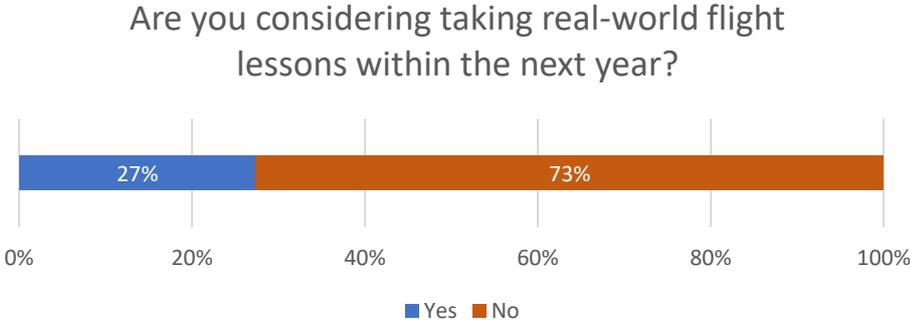
The distribution of respondents who currently are enrolled in flight school is the same this year as 2018.



3.3.5. Flight Lesson Consideration

This question was added to the 2019 survey and only presented only respondents who stated that they are not enrolled in a flight school.

27% of respondents who are not currently enrolled in a flight school are considering taking real-world flight lessons within the next year.

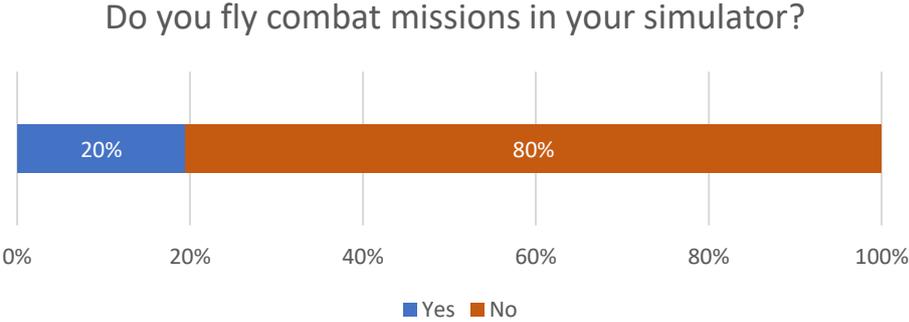


3.4. Simulator Habits - Combat

This section on combat simulation is new to the 2019 survey. We started by asking if respondents even fly combat missions. We then proceeded with some follow up questions to those who were interested in combat flight simulators.

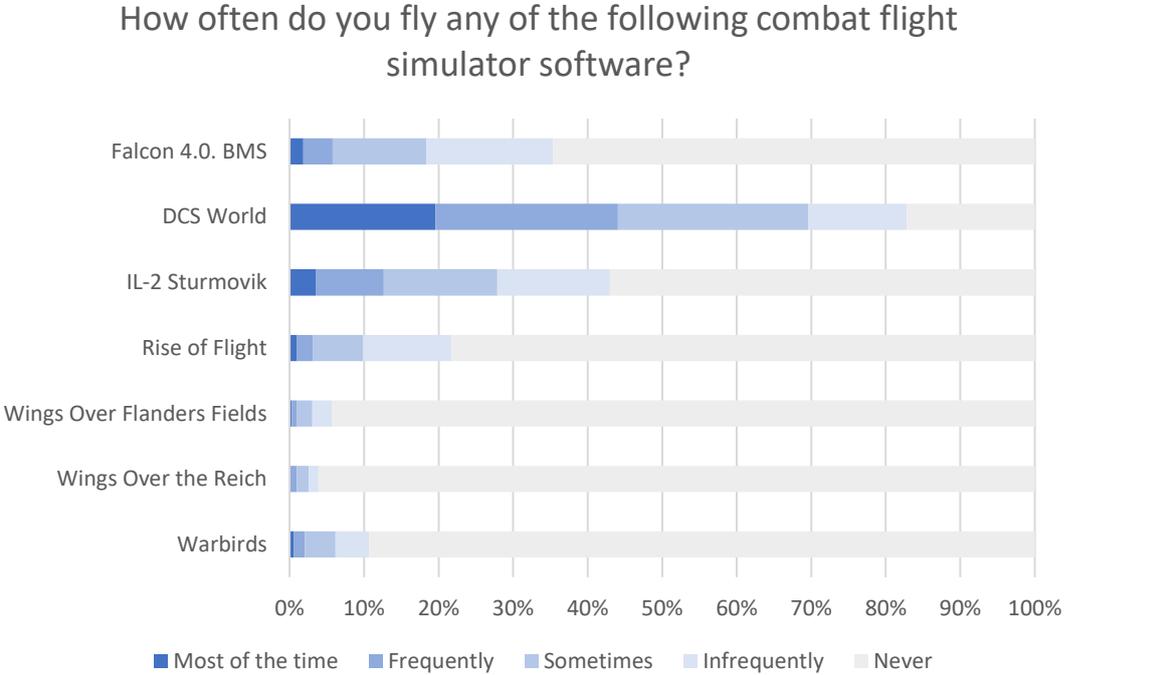
3.4.1. Combat Simulation Interest

One fifth of all respondents say they fly combat missions.



3.4.2. Combat Simulator Preference

This question was presented only to the respondents who stated that they fly combat missions. Among those respondents DCS World appears to be the most popular flight simulator for combat missions.

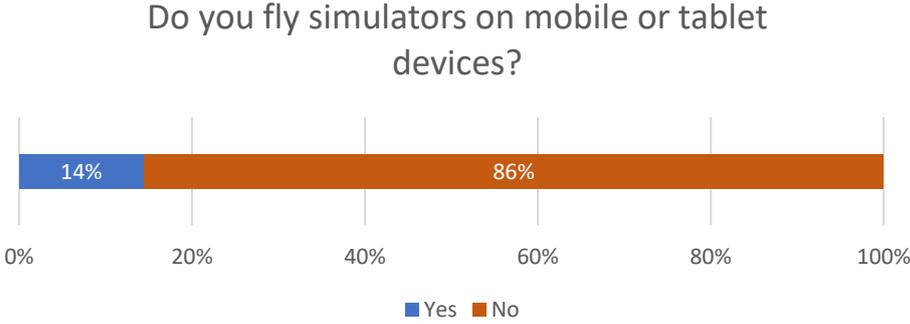


3.5. Simulator Habits - Mobile

This year we also added questions regarding flight simulation on mobile devices. For those respondents who stated that they flew on mobile devices we proceeded to ask some additional questions.

3.5.1. Mobile Simulation Interest

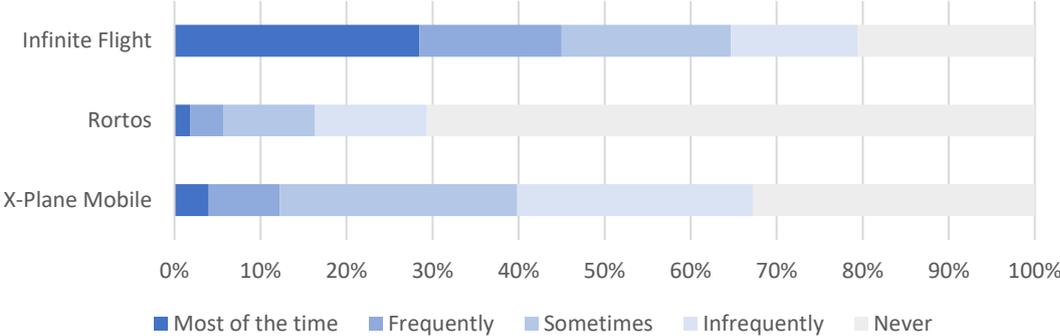
14% of all respondents also fly simulators on a mobile device.



3.5.2. Mobile Simulator Preference

This question was conditional and only presented to the respondents who stated that they fly on mobile devices. Of the three options below, Infinite Flight is the most popular mobile flight simulator software.

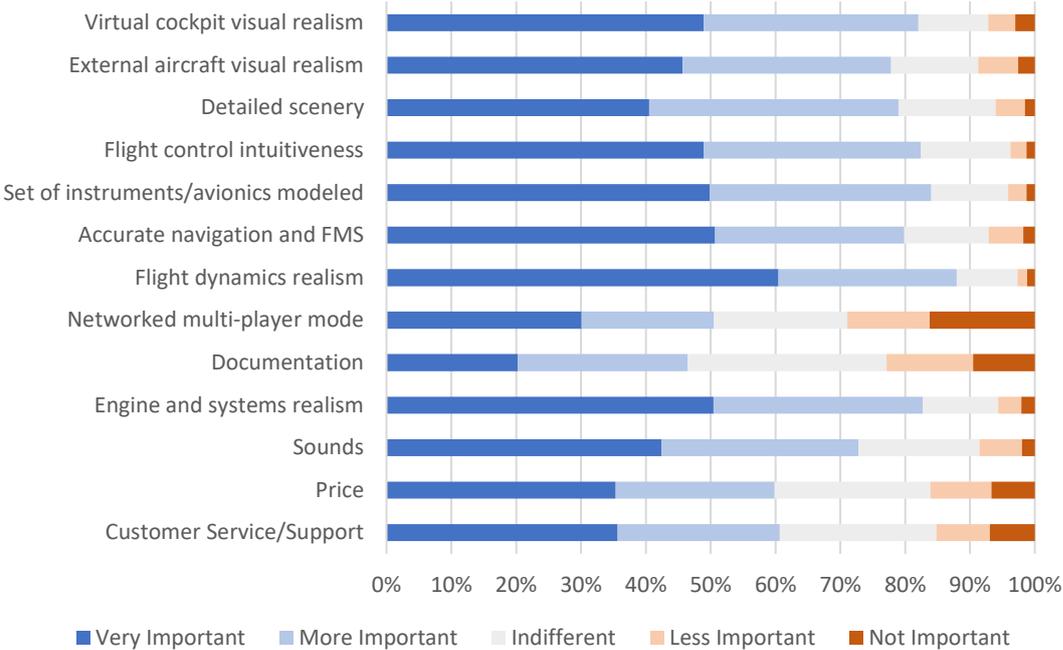
How often do you fly any of the following mobile flight simulator software?



3.5.3. Mobile Simulator Feature Importance

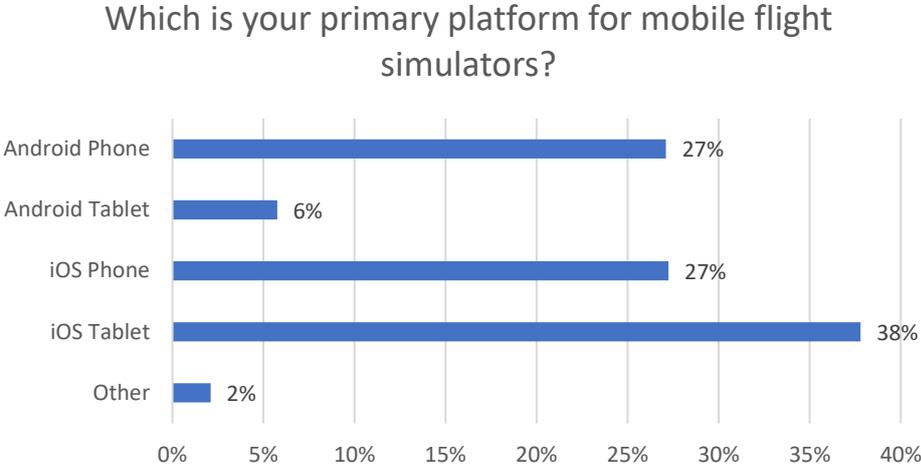
This question was conditional and only presented to the respondents who stated that they fly on mobile devices. We wanted to know which feature of the flight simulator software that was the most important. It turns out that realistic flight dynamics is the most important while documentation and networked multi-player mode are the least important.

What are the most important features for you in a mobile flight simulator software?



3.5.4. Mobile Simulator Device

Continuing with conditional questions only presented to those respondents who stated that they fly on mobile devices we asked which hardware they preferred. It turns out flight simmers prefer iPads.

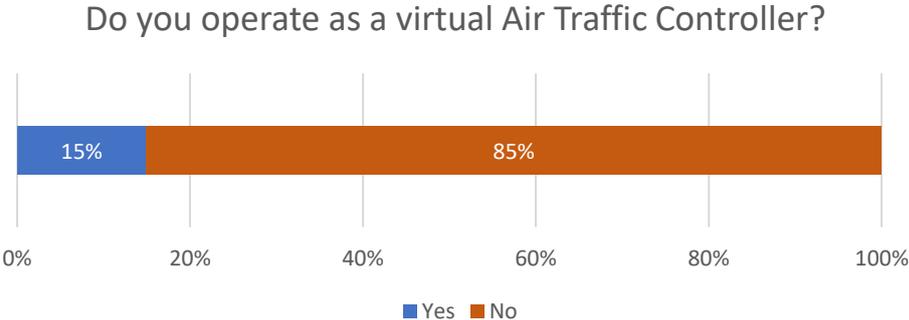


3.6. Simulator Habits - Air Traffic Control

In last year’s survey we did ask about ATC habits, but more in the context if simmers prefer to fly or to control. This year we separated this question, allowing us to ask individual questions to controllers, airplane pilots and helicopter pilots.

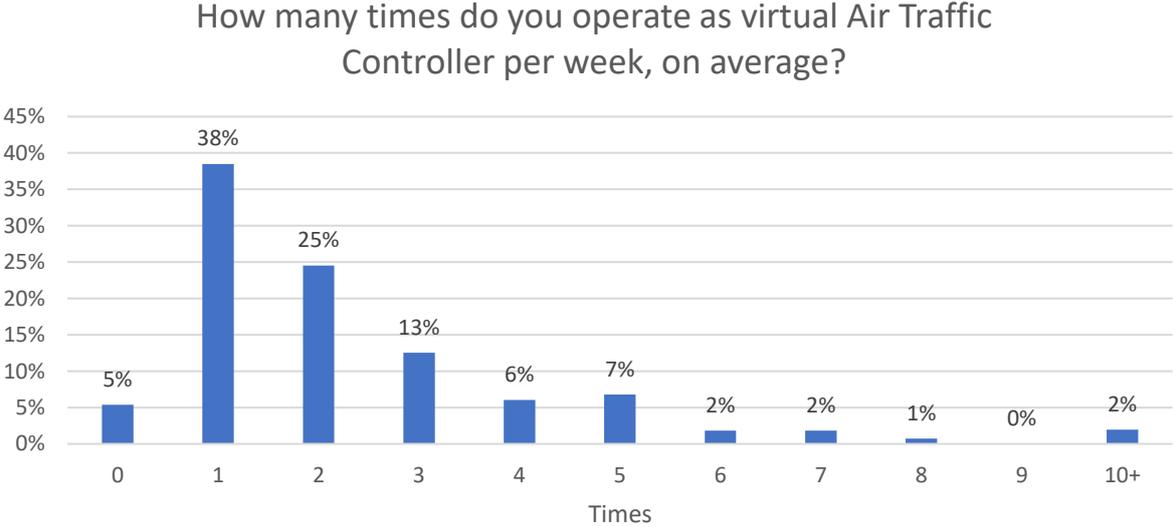
3.6.1. ATC Simulation Interest

15% of the respondents say they operate as virtual air traffic controllers. However, the purpose of this question was primarily to screen for the coming follow up questions. To get a better comparison of last year’s question which was designed as a five-point Likert scale ranging from Never to Always, please see question 3.7.4.



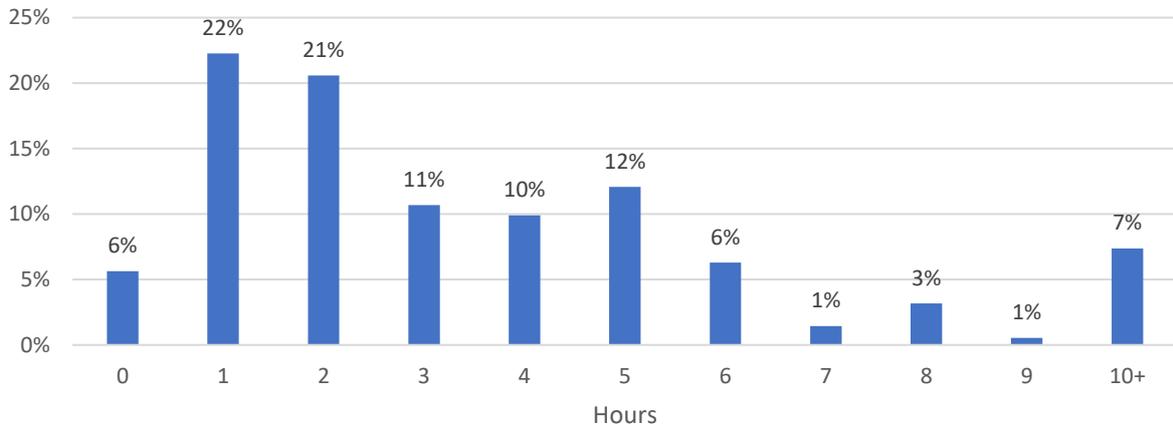
3.6.2. ATC Simulation Usage

Let's begin by looking at how many times per week respondents do air traffic control. This question was conditional and only presented to the respondents who stated that they operate as air traffic controller. Last year this question was not conditional resulting in many respondents not interested in air traffic control responding zero times per week. However, after normalizing last year's values, the distribution of this year is very comparable. Most controllers operate once per week. We also see a decreasing trend in that fewer respondents state that they fly two, three and four times per week.



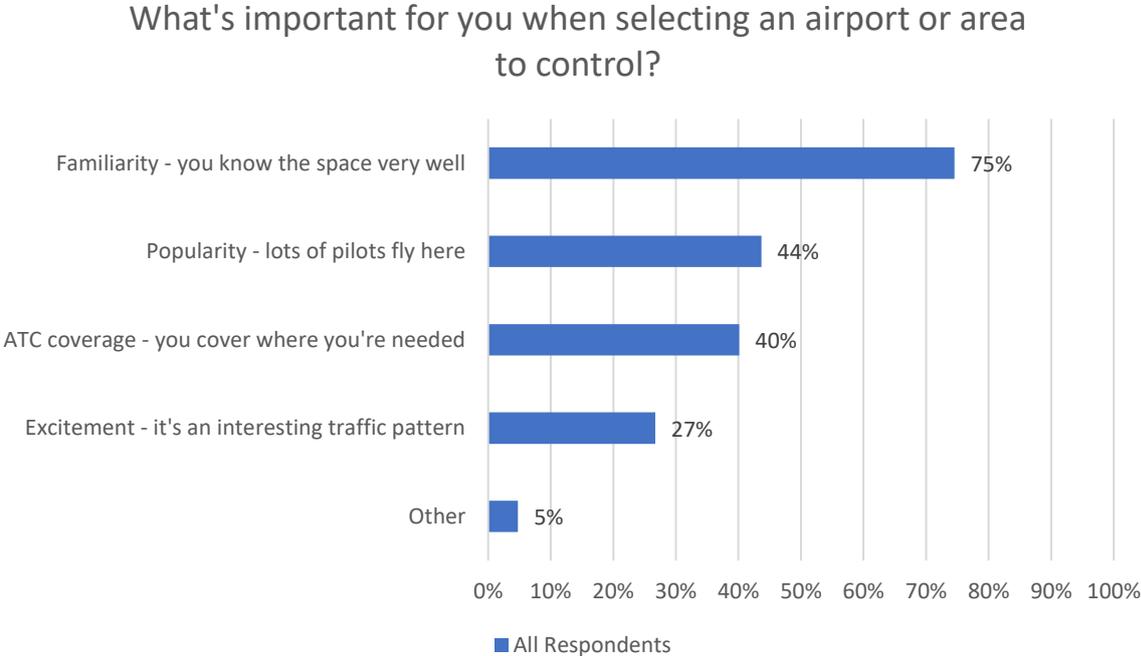
We also asked about the number of hours spent on air traffic control per week. Unfortunately, not only was this question not conditional last year, it also was asked using too large of an interval ranging from 0 to 50 hrs/week. After removing those who answered 0 hrs/week and renormalizing, we saw that 65% of last year's respondents stated 5 hrs/week and 22% stated 10 hrs/week. This is why we decided to change the range to 0-10 hrs/week this year. With higher resolution we now see that respondents typically spend 1-2 hrs/week on air traffic control.

How many hours do you operate as virtual Air Traffic Controller per week, on average?



3.6.3. ATC Simulation Factor Importance

This question was conditional and only presented to respondents who stated that they operate as air traffic controller. We wanted to know why a controller selects a particular area to control. It turns out familiarity of the airspace is the most important factor.

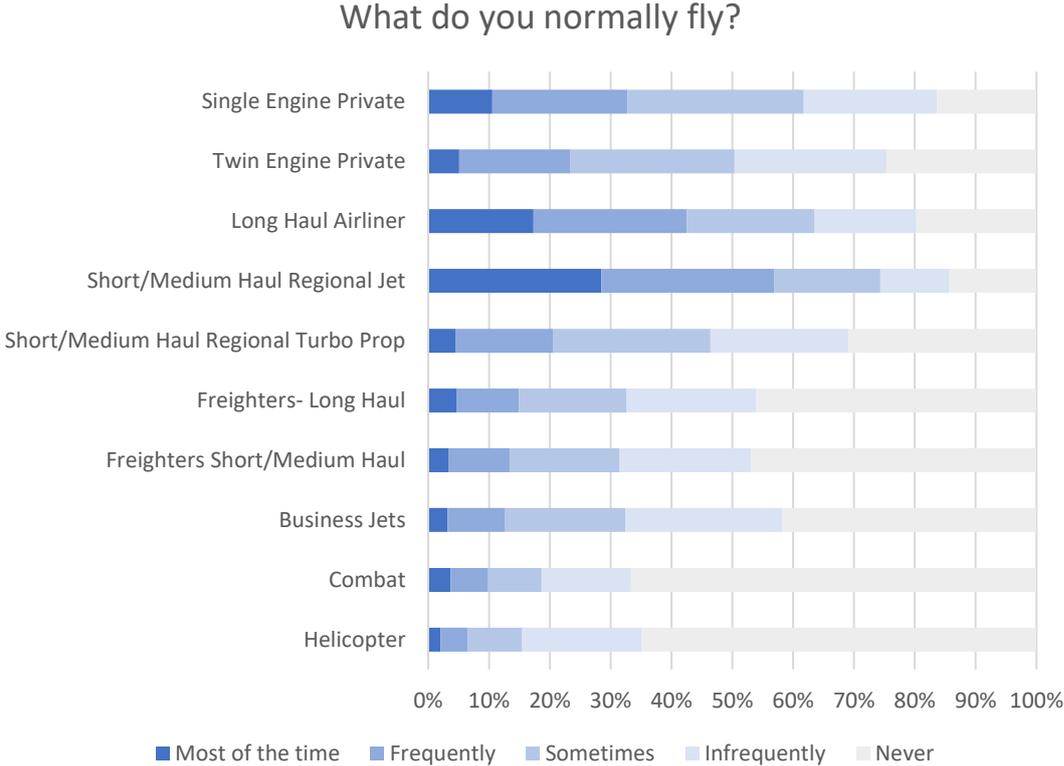


3.7. Simulator Habits – General

This section on general simulator habits was presented to all respondents.

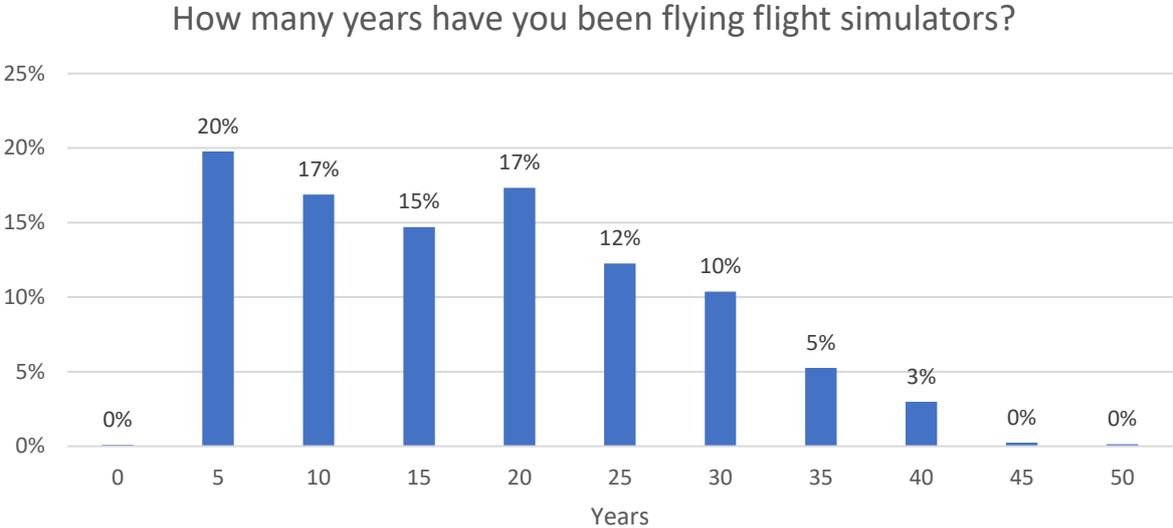
3.7.1. Aircraft Types

We asked all respondents which aircraft type they normally fly. The distribution of aircraft preference this year is identical to last year, where short/medium haul and single engine private aircraft are the most common, and helicopter and combat are the two least common.



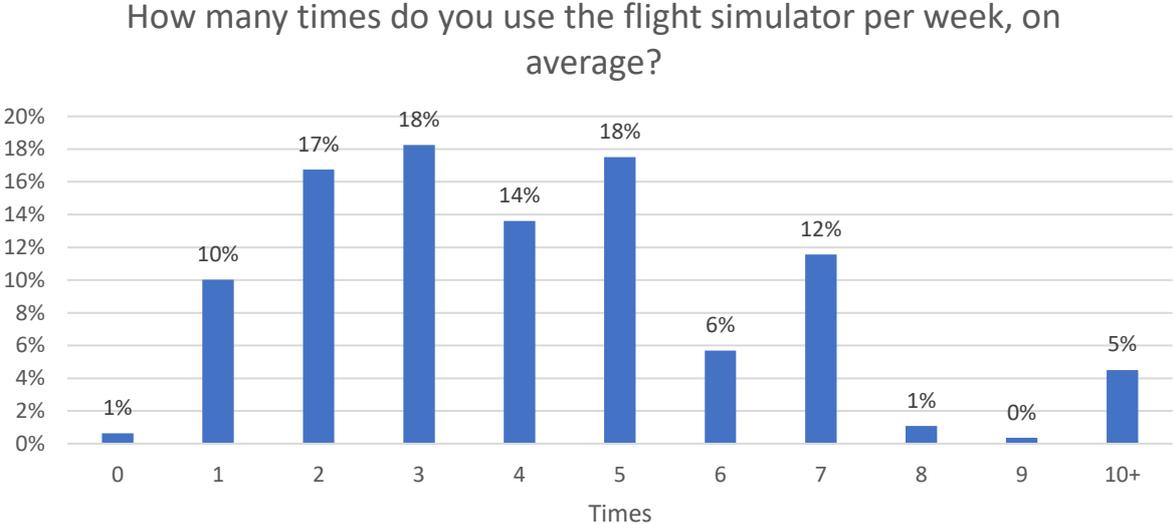
3.7.2. Experience

When asking respondents of how many years they have been flying flight simulators the distribution is almost identical to last year.

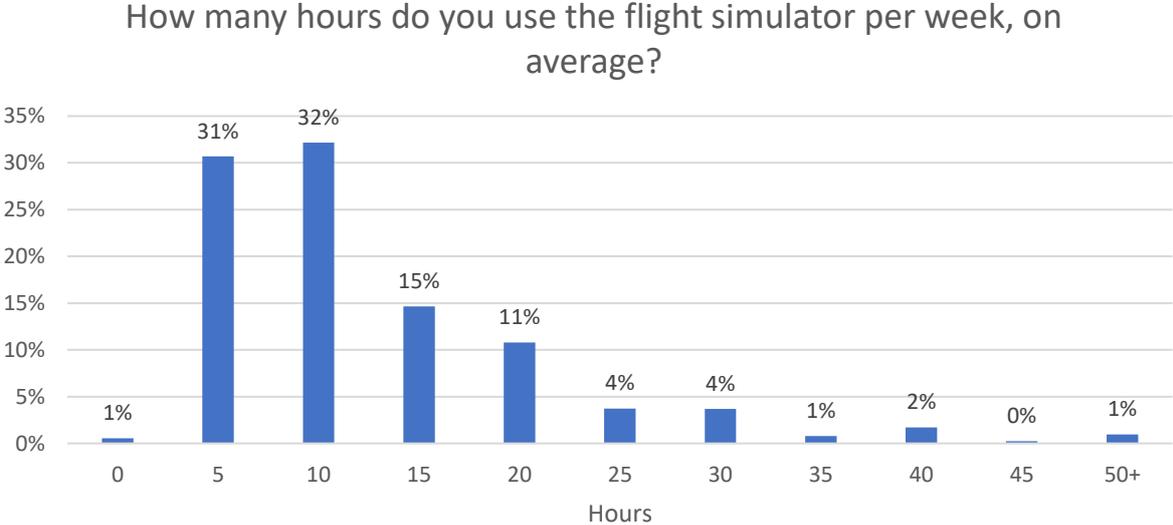


3.7.3. Usage

All respondents were asked how many times per week they use a flight simulator. The distribution is identical to the previous year.



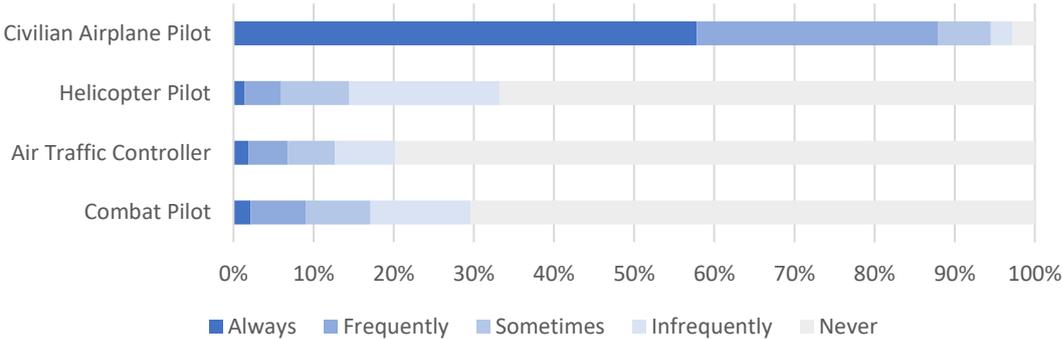
We also asked how many hours per week respondents use their flight simulator software. Last year most respondents indicated five hours per week, but this year the majority say they use the simulator ten hours a week.



3.7.4. Roles

Last year this question was asked only to distinguish between pilots and controllers. This year we added helicopter pilot and combat pilot. Last year 68%, 19%, 8% and 2% indicated that they always, frequently, sometimes or infrequently flew as pilots. This number is comparable to what we see in this year's survey. The corresponding numbers for controllers were 1%, 5%, 6% and 10% which is almost what we see in this year's survey.

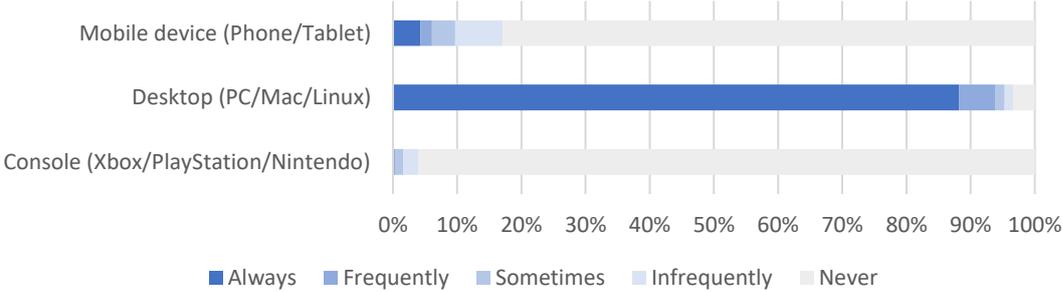
Which type of simulation do you normally do?



3.7.5. Platforms

This question is new to the 2019 survey. It shows that respondents tend to use a desktop as a flight simulation platform, but sometimes use a mobile device too. However, not very many respondents use a gaming console for flight simulation.

How often do you fly simulators on the following platforms?

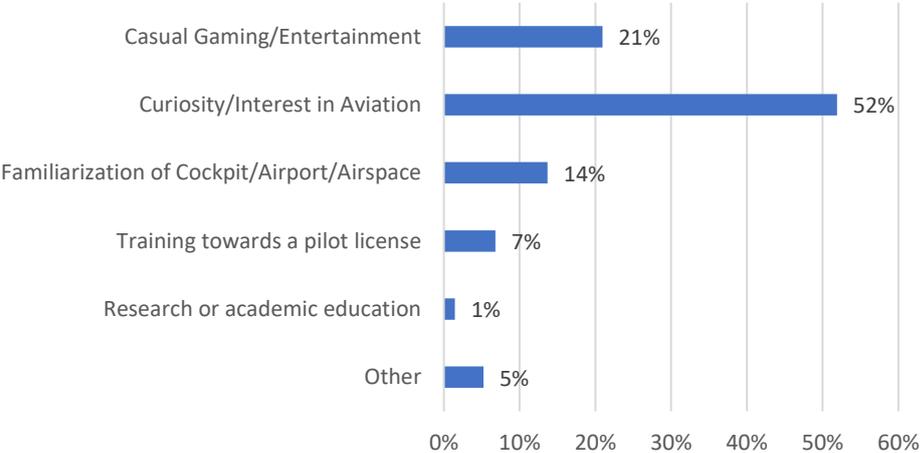


3.7.6. Purpose

While this question was also present in last year’s survey, this year we slightly modified the answer options: “Entertainment” became “Casual Gaming/Entertainment”, “Interest” became “Curiosity/Interest in Aviation”, “Familiarization” became “Familiarization of Cockpit/Airport/Airspace”, and “Training” became “Training towards pilot license”. “Research and Academia” was kept to “Research and Academic Education”.

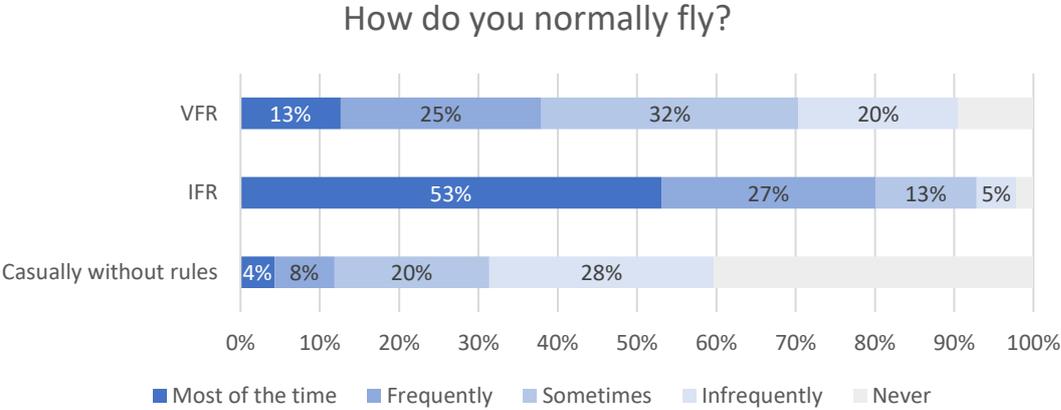
This year we see that “Entertainment” dropped from 40% to 21% when the word “gaming” was included. “Interest” increased from 41% to 50% when “curiosity” was included. “Familiarization” increased from 6% to 14% when the clarification “cockpit/airport/airspace” was included. “Training” was unchanged at 7%. “Research” dropped from 2% to 1%.

What is the main purpose for your flight simulation?



3.7.7. Flight Rules

The IFR and VFR options are comparable to last year’s results. However, this year we also added “Casually without rules” as an answer option to this question. We see that some respondents fly without firmly committing to flight rules.



3.8. Consumption Habits

3.8.1. Software Expenses

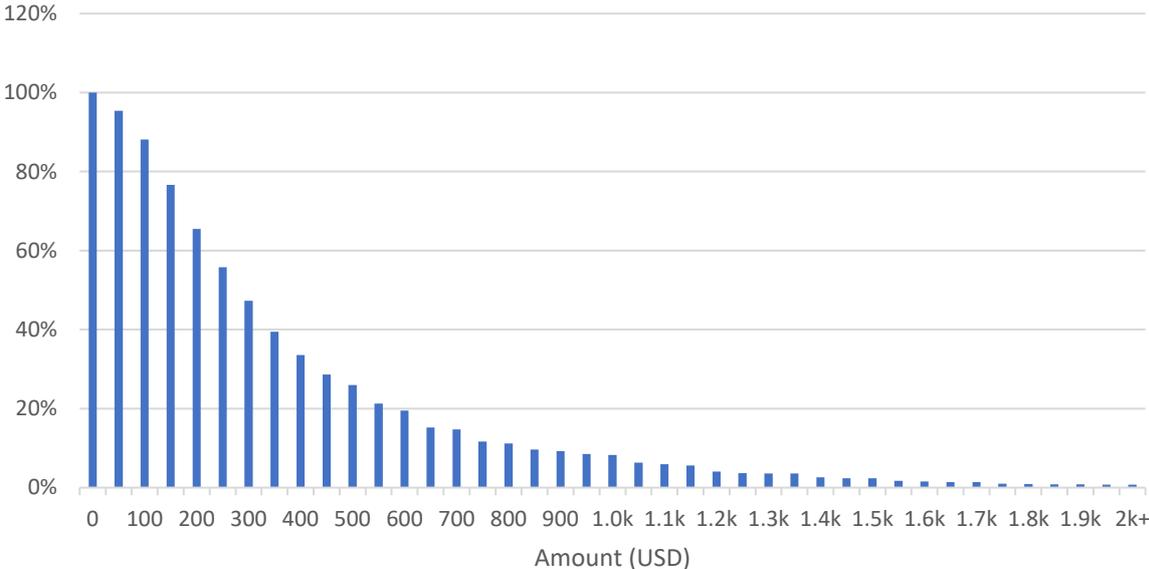
This year we have changed the software spending graph. Last year, we did not include respondents who stated that they had not spent anything during the past 12 months. This year we decided to include also those respondents who entered a 0 value, but not those who left the field empty.

We also decided to only include the cumulative graph since this is the most informative of the two graphs in last year's survey.

The effect of the changes described above on the cumulative graph make it slightly more steep this year. Approximately 90% spend \$100 or more per year. However, in the far end of the graph we still see some 25% of respondents spending \$500 or more per year, and approximately 10% are spending \$1,000 or more per year.

The average software spending is \$1,325, but a more reliable measurement is the median which is \$245. Last year the median was \$250.

How much do you estimate you have spent on flight simulation software in the last 12 months?

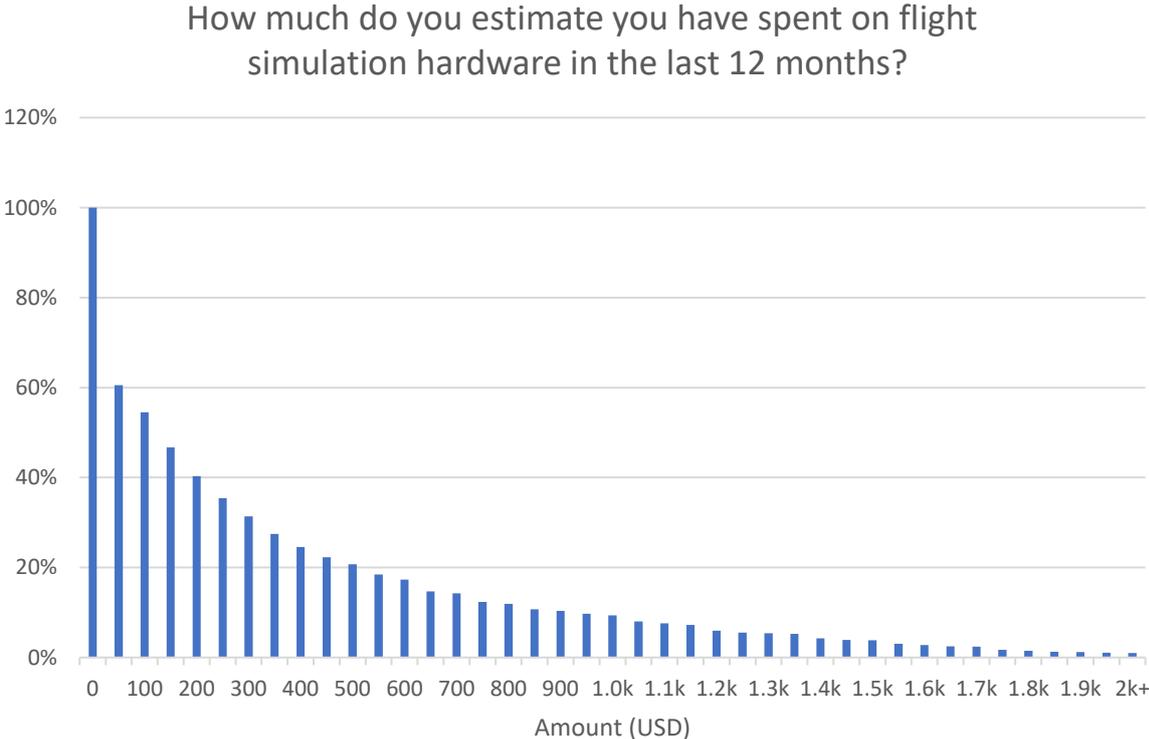


3.8.2. Hardware Expenses

We adjusted hardware expenses the same way we adjusted software expenses described above.

Similar to the diagram for software expense, the adjustment creates a steeper drop off. In general, this graph indicates that respondents reported spending less compared to last year.

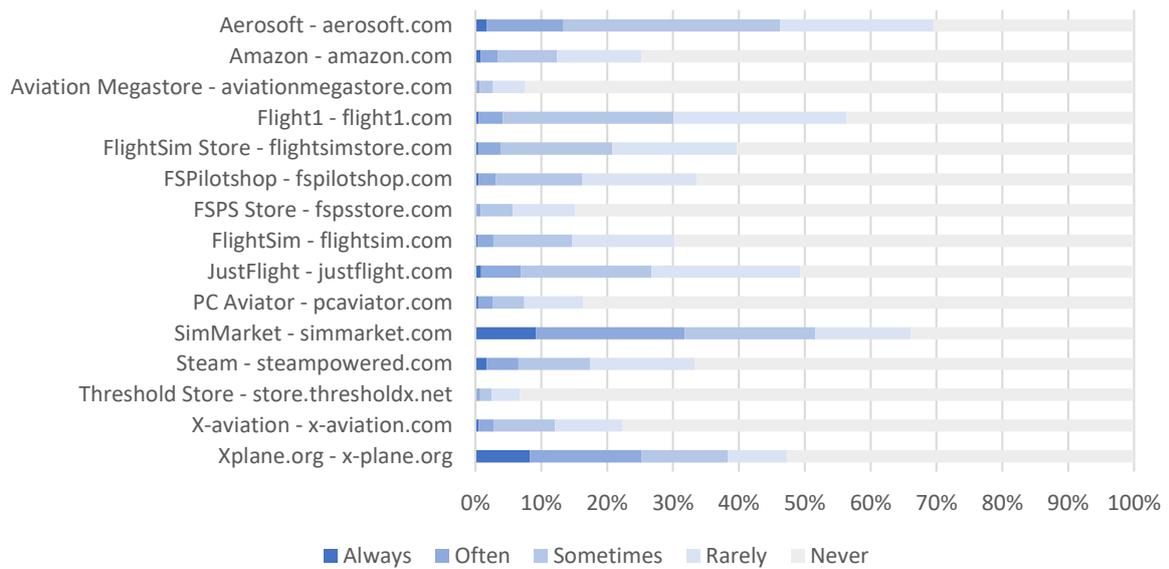
The average hardware spending is \$1,399, but a more reliable measurement is the median which is \$111. Last year the median was \$200.



3.8.3. Preferred Online Stores

Comparing the diagram over preferred online stores with last year we see that FlightSimStore has dropped from 50% to 40% and FSPilotShop has dropped from 45% to 35%. At the time of writing this report neither of the websites could be reached. X-plane.org grew from last year 26% to 47% this year. The rest of the stores have results comparable to last year. New in this year's survey is the Threshold Store.

How often do you purchase flight simulation products from these online stores?



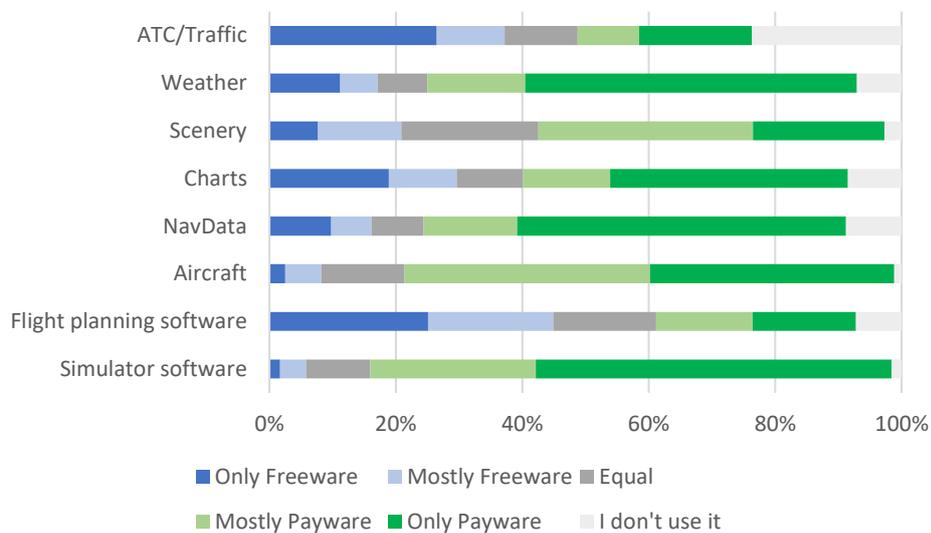
3.8.4. Freeware versus Payware

We improved this question compared to last year by adding “I don’t use it” as an answer option. We also changed the answer option “Traffic” to “ATC/Traffic”.

Just like last year flight planning software tends to be freeware, and simulator software tends to be payware.

“ATC/Traffic” increased from 0% to 25% freeware this year, probably because of the addition of “ATC” to the answer option.

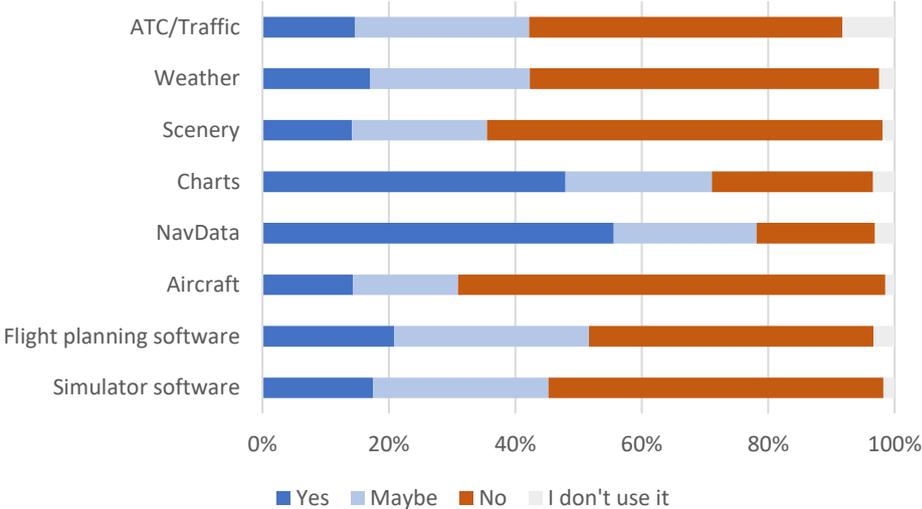
Considering all the software and data which you use for flight simulation, what tends to be freeware versus payware?



3.8.5. Subscriptions

This question is new to this year's survey. Similar to the previous question on payware versus freeware, we wanted to investigate which types of software that you could consider signing up for as a subscription.

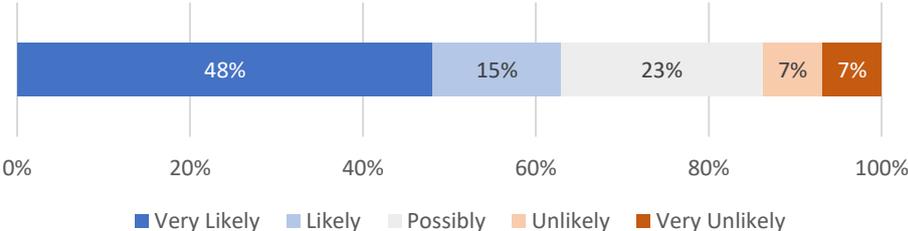
Considering all the software and data which you use for flight simulation, what could you consider using as a subscription-based service?



3.8.6. MSFS2020 Purchase Likelihood

In 2019 Microsoft announced a new flight simulator was under development. We have therefore included this question to measure the anticipation of the MSFS2020 release.

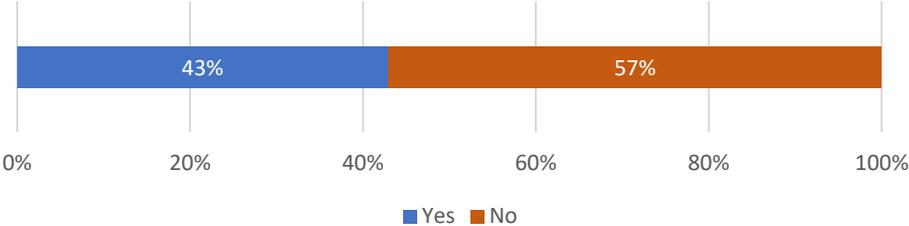
How likely is it that you will buy Microsoft Flight Simulator 2020 when it becomes available?



3.8.7. MSFS2020 Effect on Spending

This question was included in this year’s survey to determine if respondents were hesitating in investing in their current flight simulator platform in anticipation of the new flight simulator software from Microsoft.

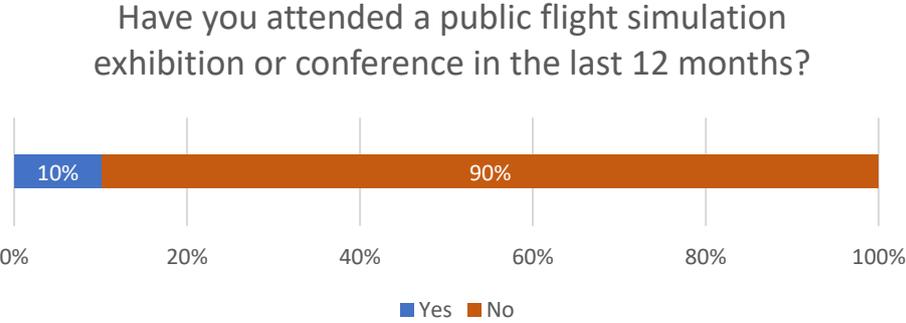
Are you postponing any flightsim product purchases in anticipation of the upcoming Microsoft Flight Simulator 2020?



3.9. Community

3.9.1. Conference Attendance

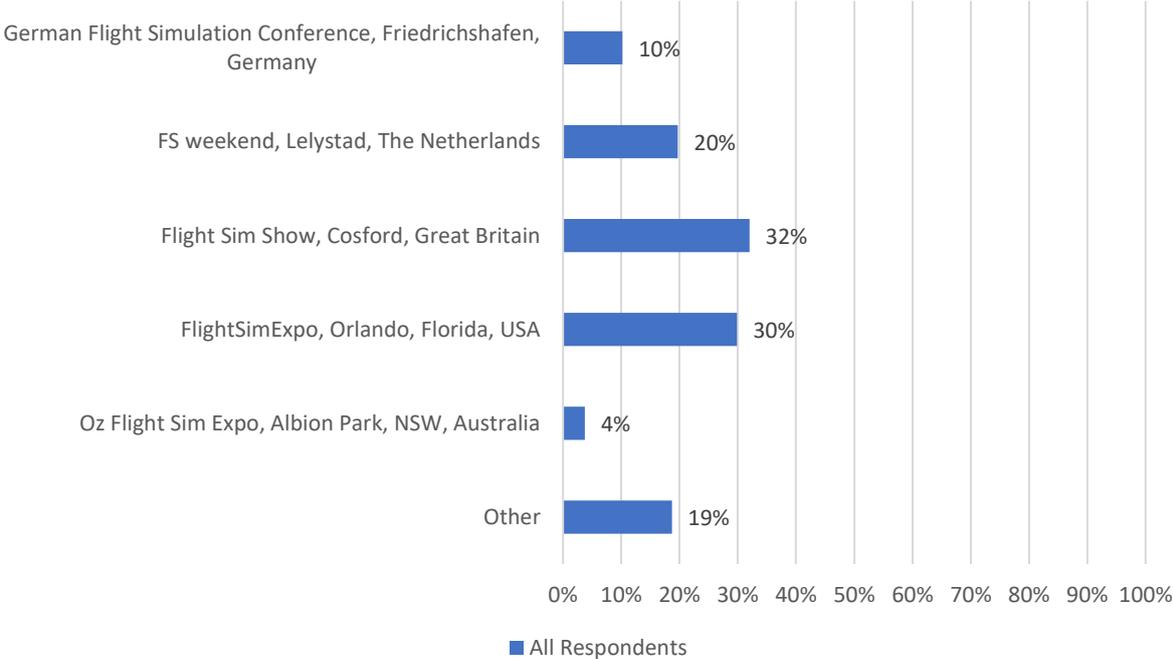
Last year 21% of the respondents had attended a public flight simulation exhibition in the last 12 months. This year this number is down to 10%.



3.9.2. Popular Conferences

This question was question was only presented to the respondents who stated that they had attended a conference in the last 12 months. Last year, this question was not conditional, but the results are still comparable – Flight Sim Show and FlightSimExpo were the two most popular events.

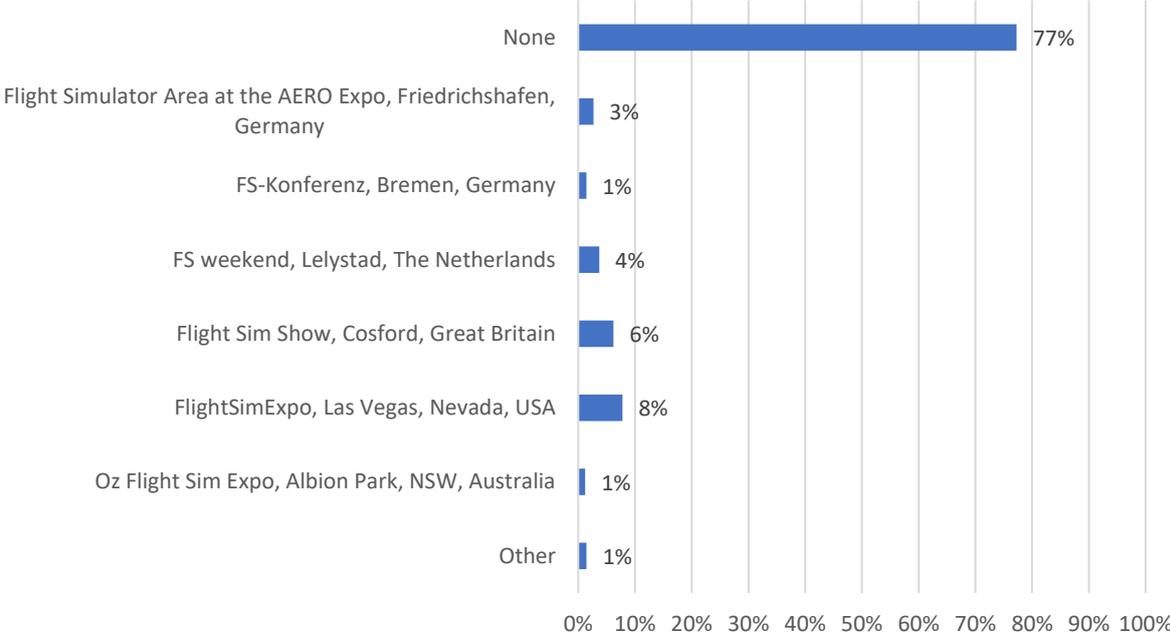
Which flight simulation exhibitions or conferences have you attended, in the last 12 months?



3.9.3. Future Conference Attendance

This question is new to this year’s survey. Of those who plan to attend a flight simulation event this year FlightSimExpo in Las Vegas seems to be of most interest among the respondents.

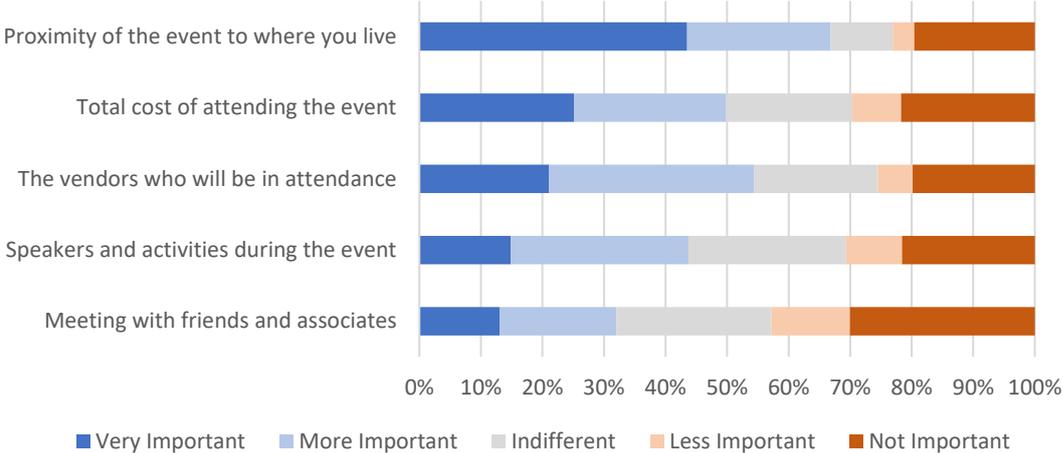
Which flight simulation events or conferences do you plan to attend during the next 12 months?



3.9.4. Conference Preferences

The most important factor when attending a flight simulation conference is the proximity of the event. The least important factor is meeting with friends and associates. These results are comparable to last year.

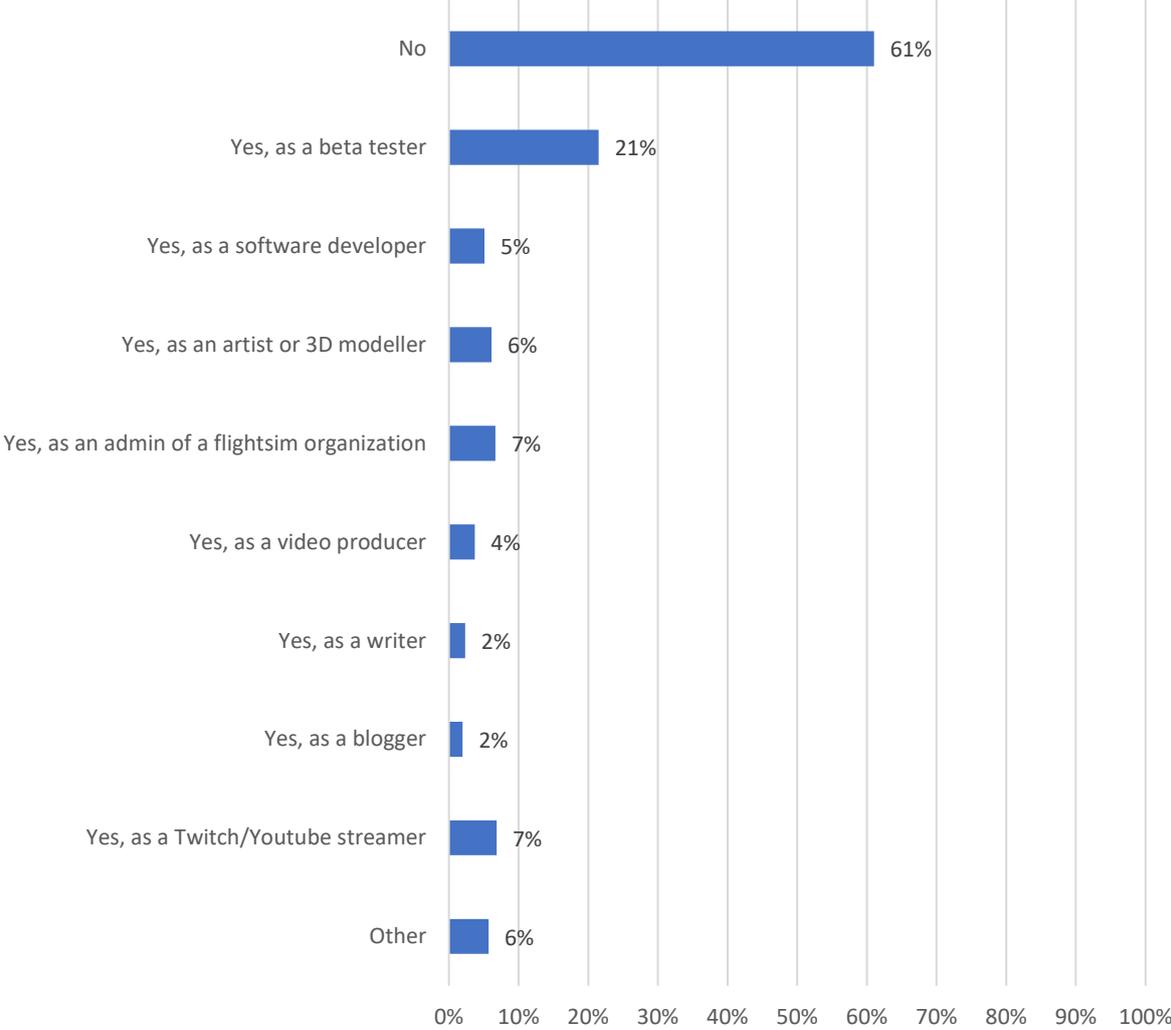
What is the biggest motivating factor in attending a flight simulation conference in-person?



3.9.5. Contribution

This year we have a higher rate of contribution to the flight simulation community. Last year 76% stated that they did not contribute, compared to this year’s 61%. This may be because we added the answer option “beta tester” which is also the most common form of contribution.

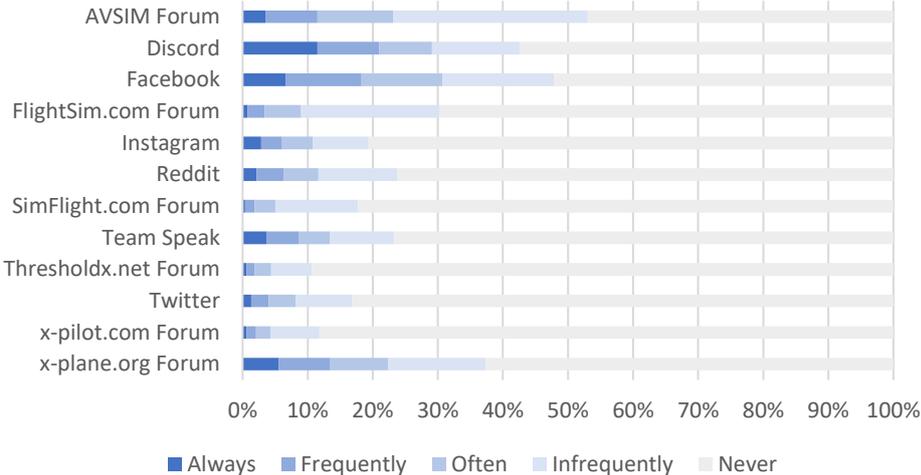
Do you contribute to the flight simulation community?



3.9.6. Communication Platforms

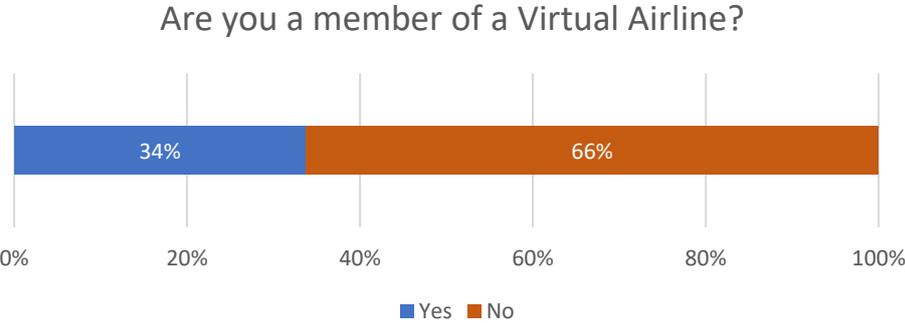
The AVSIM Forum continues to be the most frequently used platform for communication with others in the flight simulation community.

How frequently do you use the following platforms for the purpose of communicating with others in the flight simulation community?



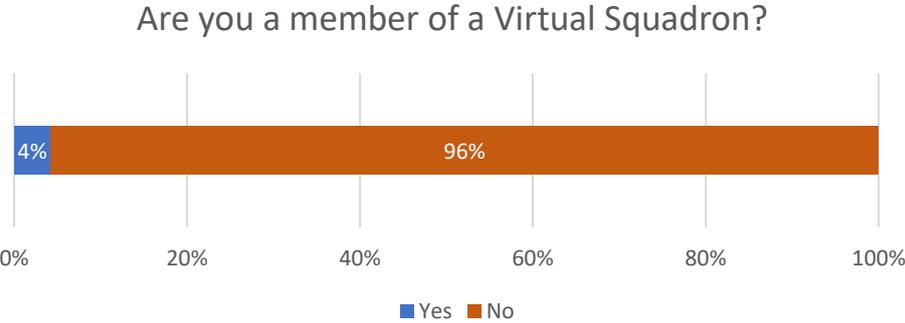
3.9.7. Virtual Airline Membership

Last year 33% of the respondents were a member of a virtual airline.



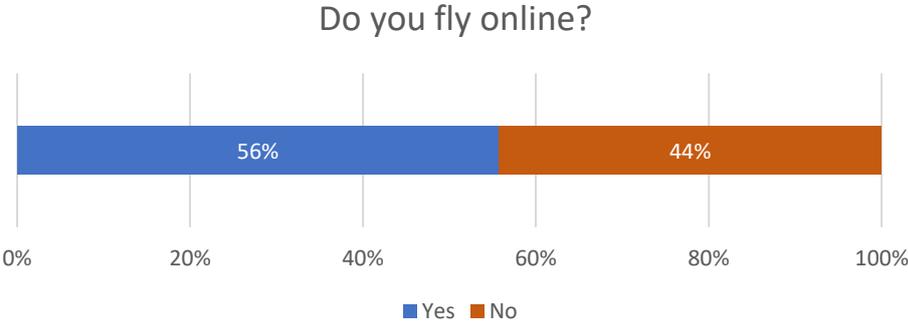
3.9.8. Virtual Squadron Membership

This question is new to this year's survey.



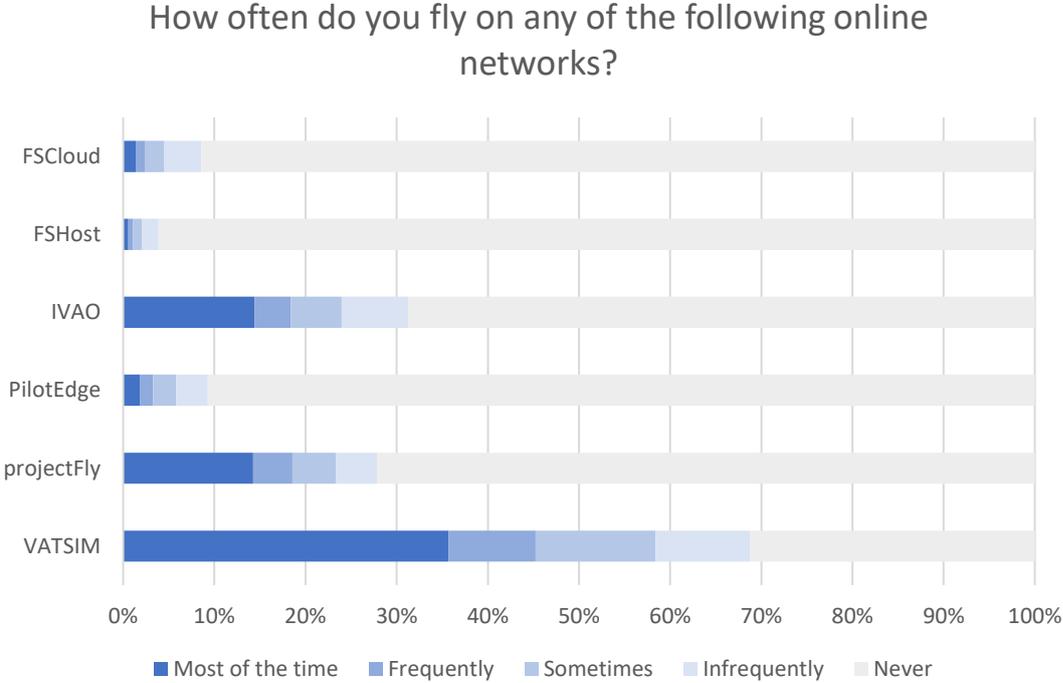
3.9.9. Online Flying

We started by asking whether respondents fly online or not. 56% stated that they fly online.



3.9.10. Online Network Preference

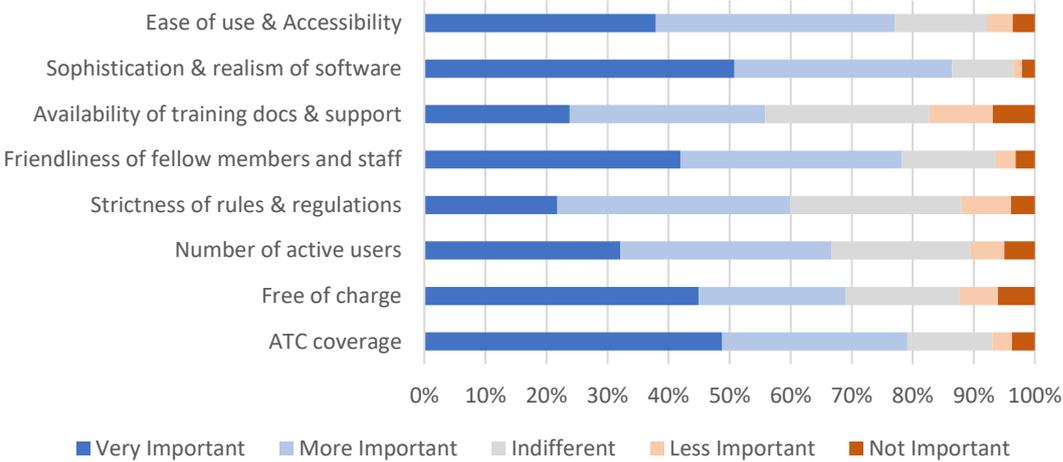
The following question regarding network preference was only asked to the respondents who stated that they fly online. Last year, this question was not conditional. However, after re-normalizing the results it is clear that VATSIM continues to be the more popular network followed by IVAO and projectFly as a close third.



3.9.11. Important Factors for Joining Online Networks

This question is new to this year’s survey. Sophistication and realism of the software, the ATC coverage, and free membership are the most important factors when joining a network.

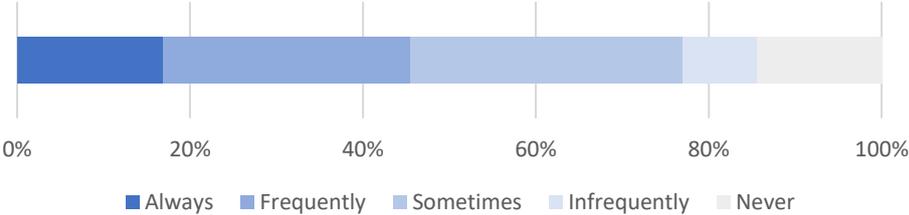
What is important to you when considering joining a network?



3.9.12. ATC Importance on Routing

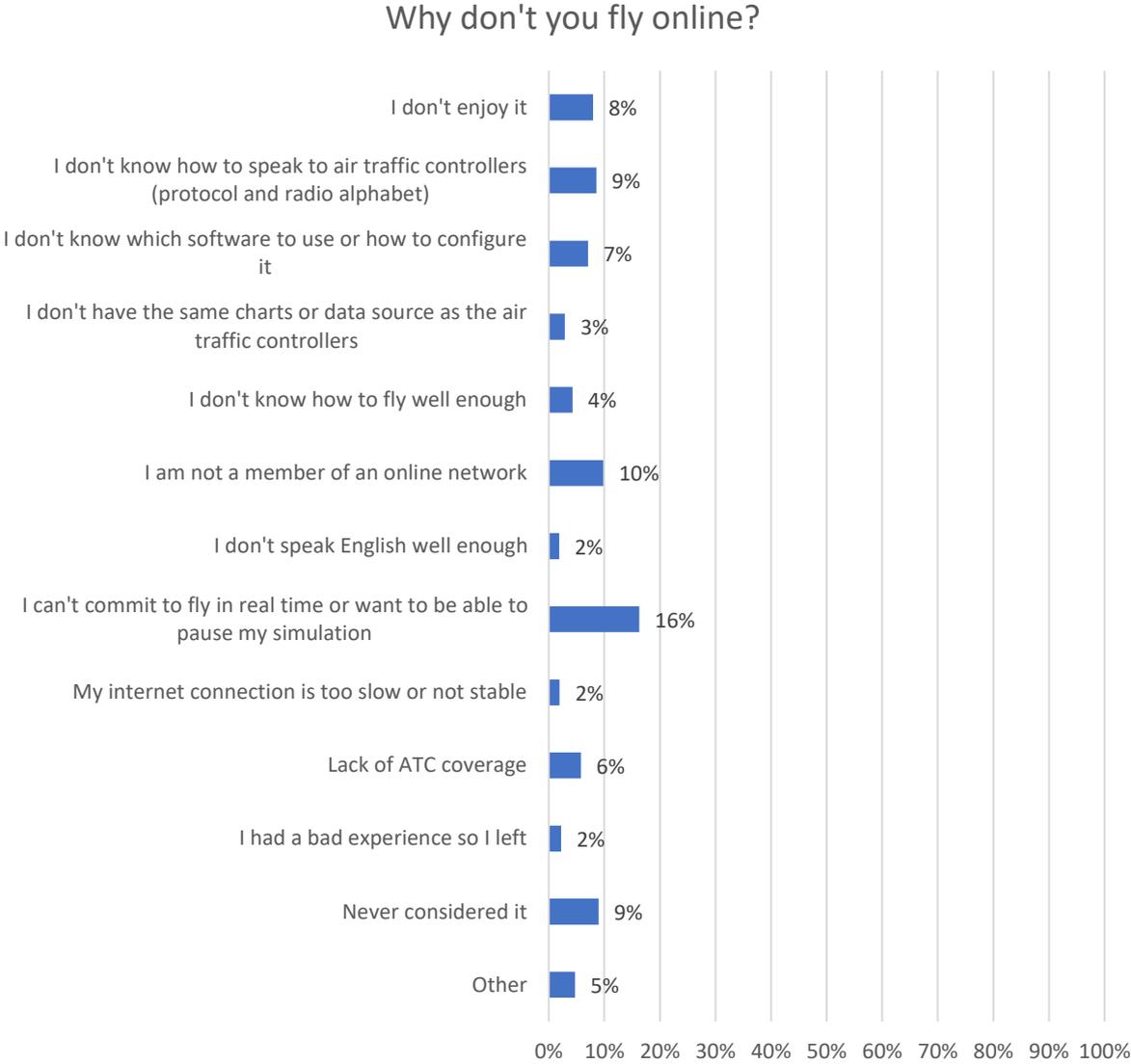
This question is new to this year's survey.

Does the availability of ATC influence your choice of origin, route or destination?



3.9.13. Reasons for Not Flying Online

This question was conditional and only shown to respondents that stated they did not fly online. Similar to last year, the commitment to fly in real time is the single largest reason for not flying online.

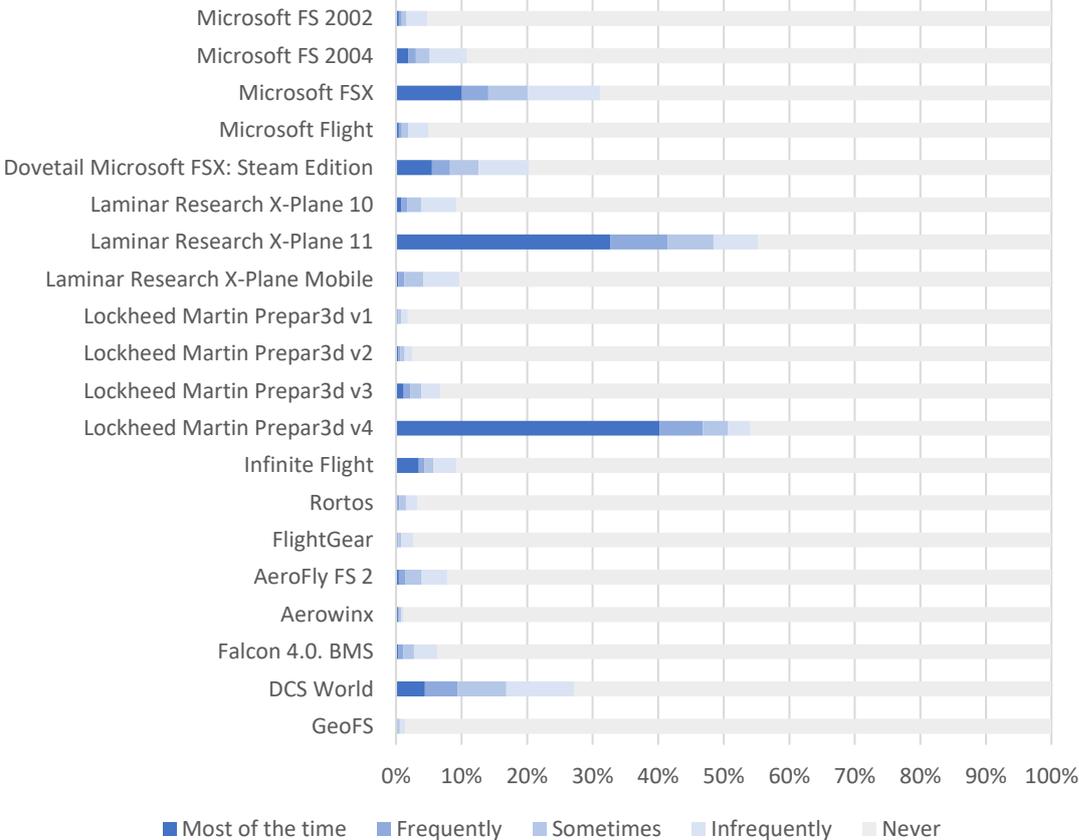


3.10. Simulator Platform

3.10.1. Simulator Software

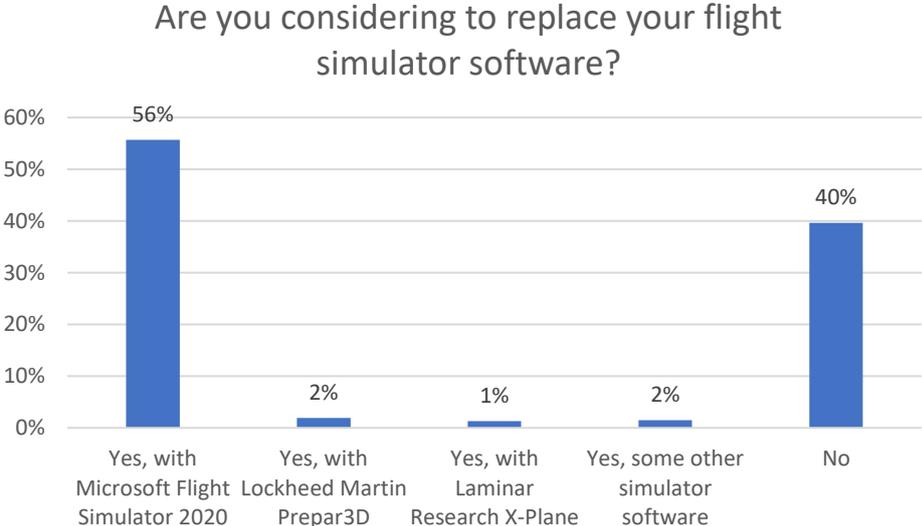
Last year the most popular flight simulator software was X-Plane 11 closely followed by Prepar3D, with the notable difference that there were more frequent users of Prepar3D compared to X-Plane 11. This year the results are the same. Some 31% fly Microsoft FSX which is also comparable to last year.

How often do you fly any of the following flight simulator software?



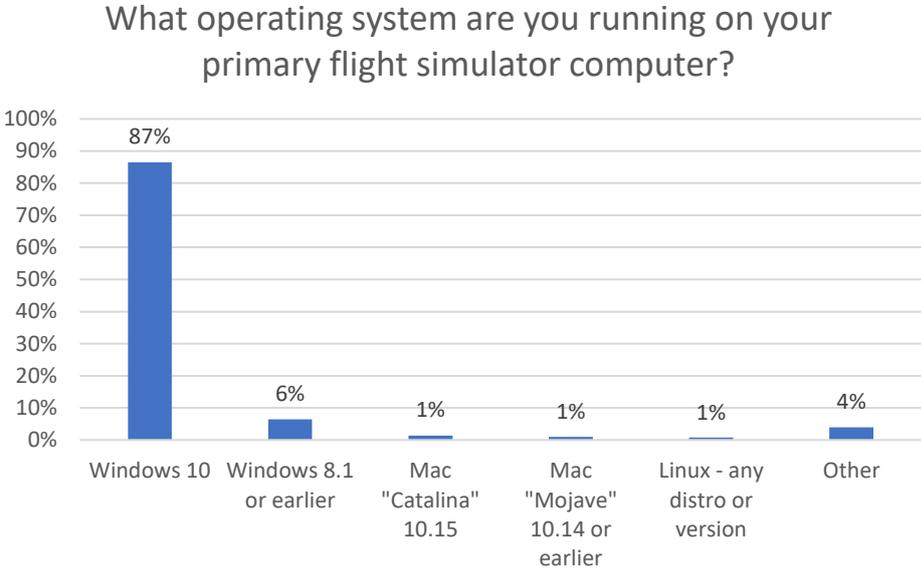
3.10.2. Simulator Software Change

Last year 16% considered changing to Prepar3D. This year only 2% are considering doing the same. Similarly, 20% considered changing to X-Plane last year. This year only 1% are thinking about changing to x-Plane. The majority, 56%, are considering changing to MSFS2020. 40% are happy with their choice of flight simulator software.



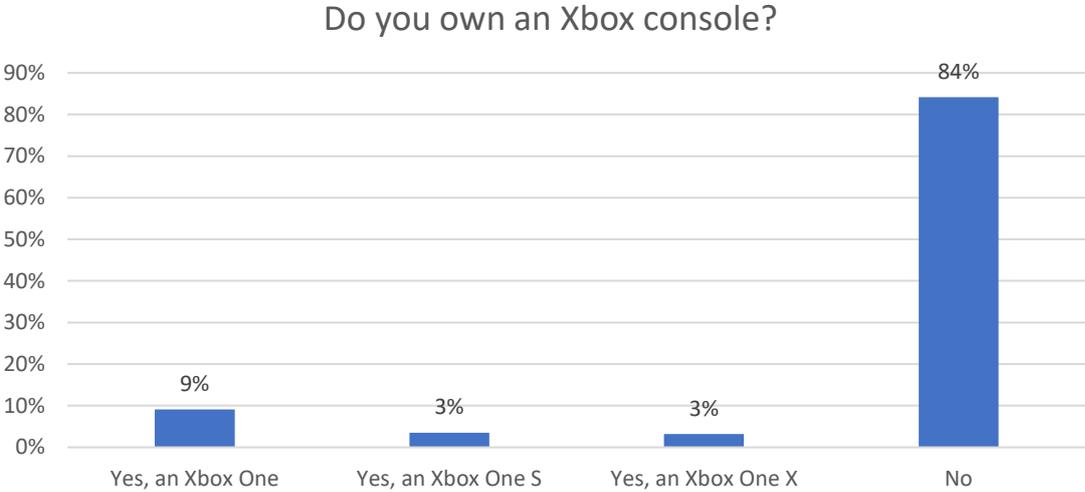
3.10.3. Operating System

Windows continues to be the most popular operating system. Last year 84% used Windows 10, compared to 87% this year. Last year 12% used Windows 8.1 or earlier, compared to 6% this year. Mac and Linux distributions remain the same.



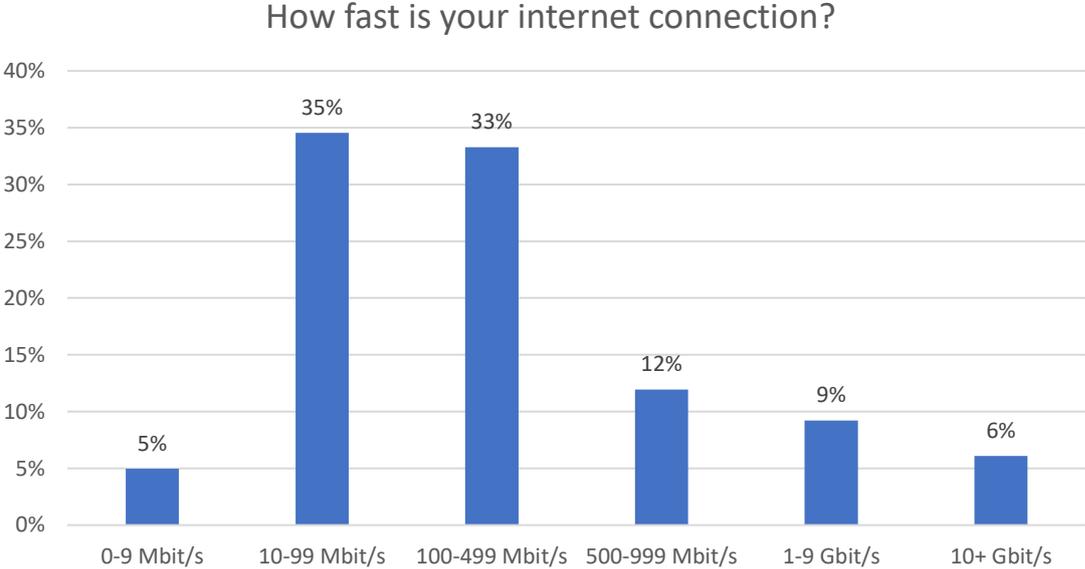
3.10.4. Xbox Consoles

Since MSFS2020 will be available on Xbox we decided to check how many of the respondents that own an Xbox console.



3.10.5. Internet Connection Speed

Most notably, 100-499 Mbit/s has grown from 22% to 33% over the last year. Last year 11% had access to 0-9 Mbit/s, 55% 10-99 Mbit/s, 22% 100-499 Mbit/s, 7% 500-999 Mbit/s and 5% 10+ Gbit/s.

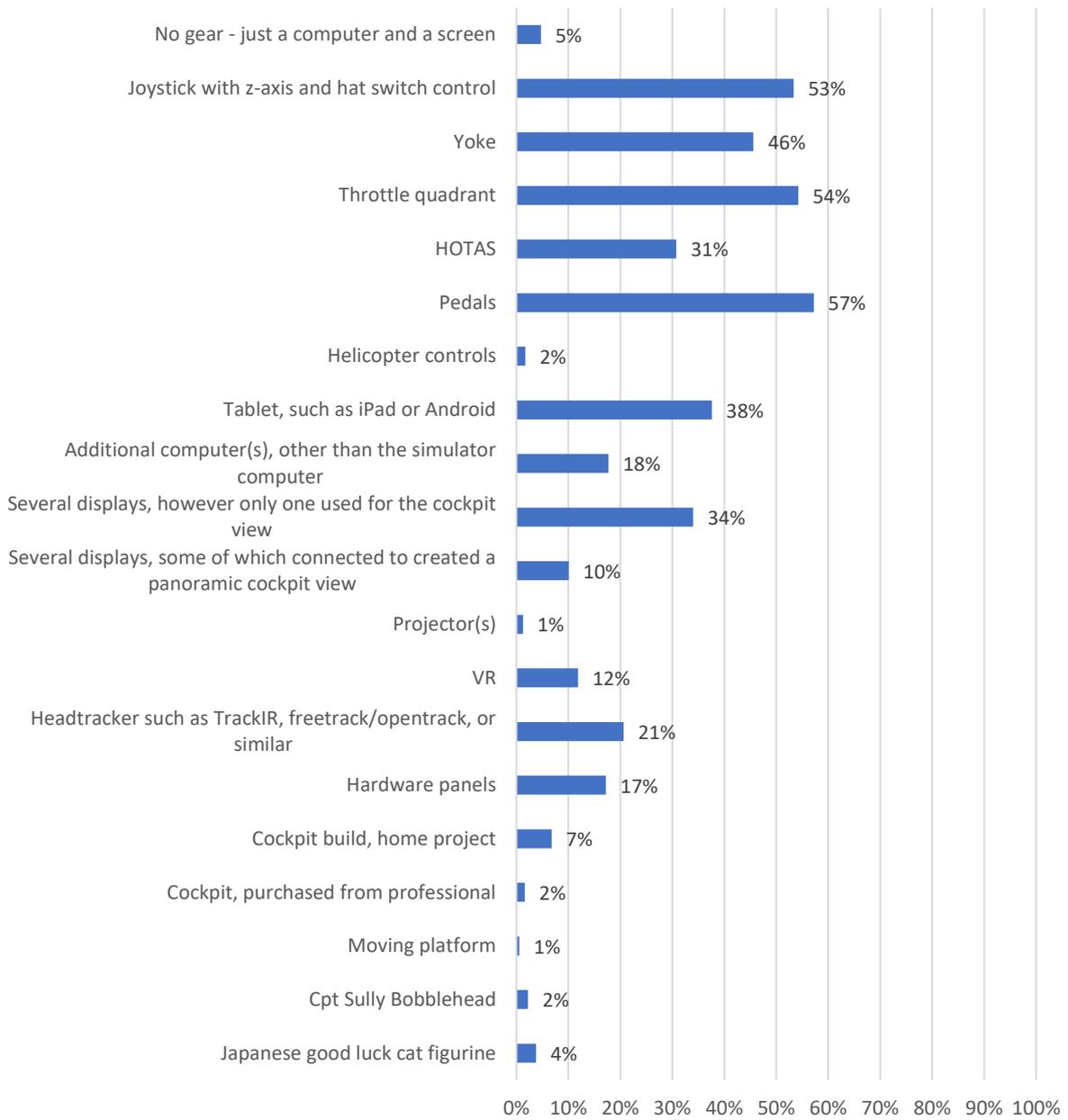


3.10.6. Auxiliary Systems

This year we made some changes to this question. “Throttle” was changed into “Throttle quadrant” and “Throttle HOTAS” was changed into “HOTAS” for clarification. We also added “Helicopter controls” and “Hardware panels”.

Within a few percentages of variation, the distribution is approximately the same as last year.

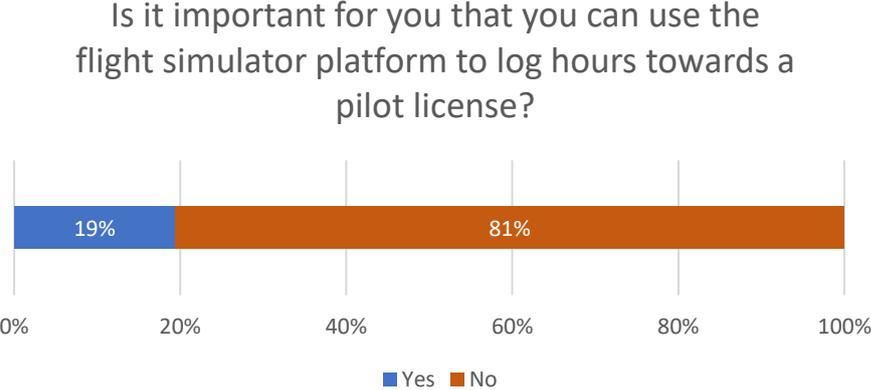
What does your simulator setup look like? Check everything that applies to you.



3.10.7. Qualified Training Device

Last year this question was phrased “Is it important for you that your flight simulator is considered a Qualified Training Device approved or certified by FAA or EASA?”. Last year 22% said “Yes”, 72% said “No” and 65 said “I don’t know what you are talking about”.

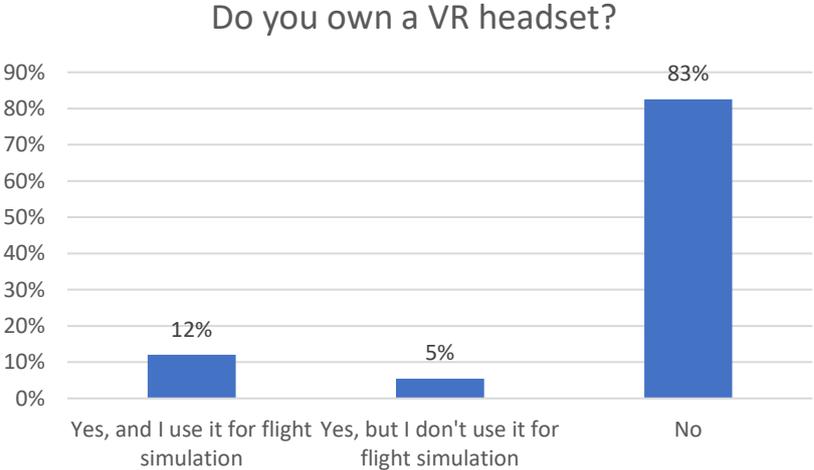
This year we simplified the question a bit, but the response is still comparable to last year: Approximately one fifth of the respondents want to be able to use the simulator as a training device towards their license.



3.11. Virtual Reality

3.11.1. Ownership

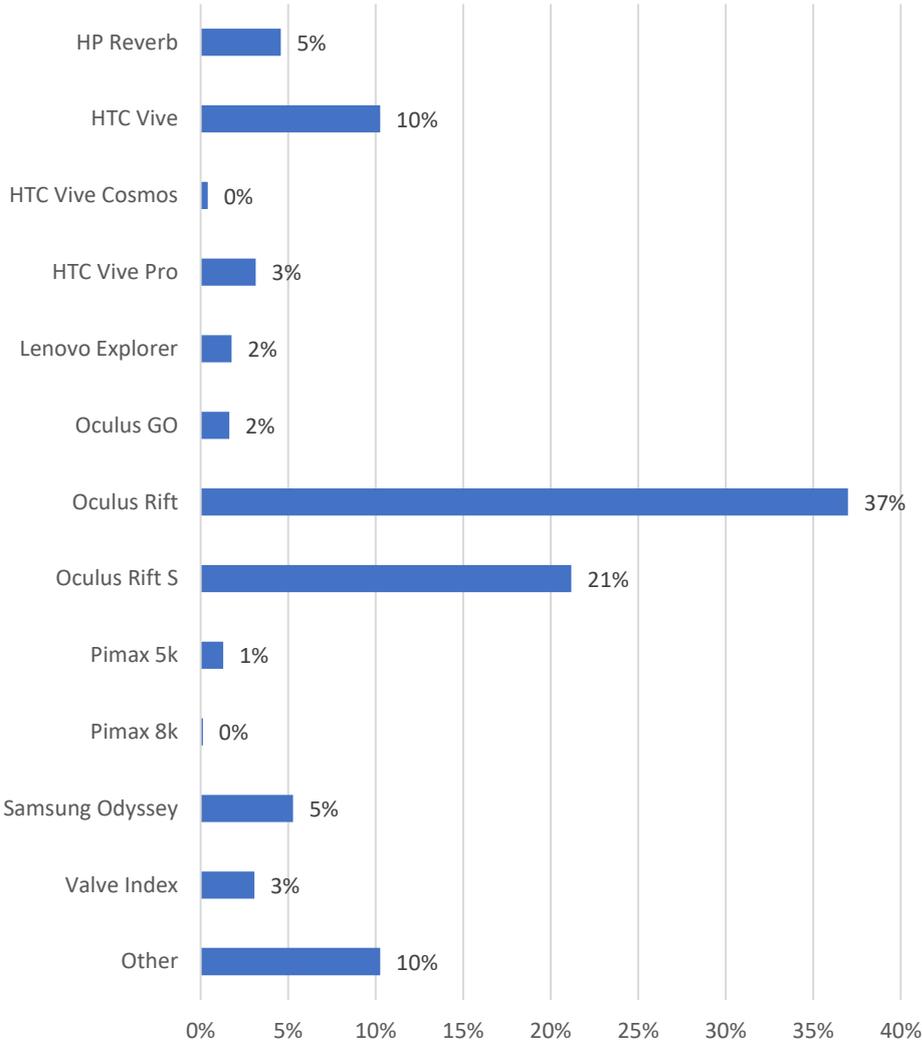
The results for VR are comparable to last year. This is also true to VR in the Auxiliary System section above.



3.11.2. Brand

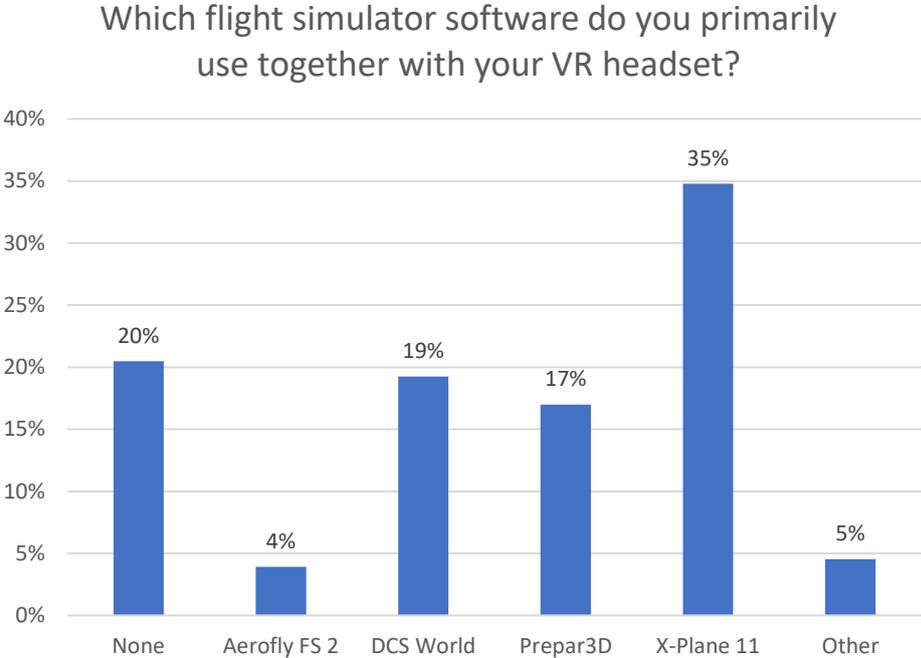
The following questions regarding VR were only asked to respondents who stated they owned a VR headset. This year we added nine answer options to this question, but Oculus Rift continues to be the most popular headset.

Which VR headset do you primarily use?



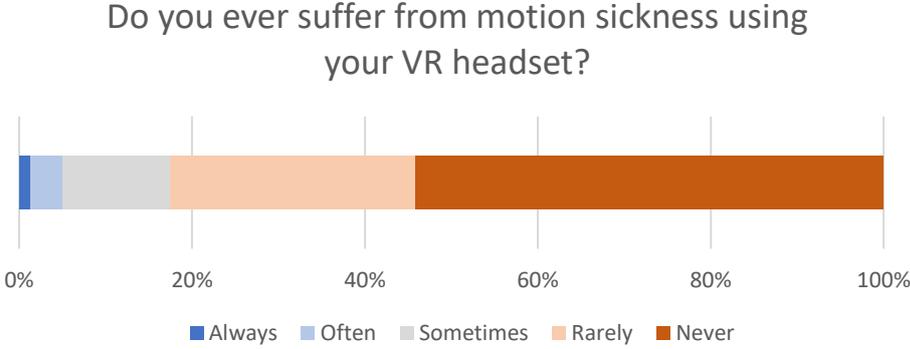
3.11.3. VR Simulator Software

This question was conditional and only presented to respondents who stated that they own a VR headset. X-Plane continues to be the most popular flight simulator software for VR. However, this year DCS World past Prepar3D in popularity.



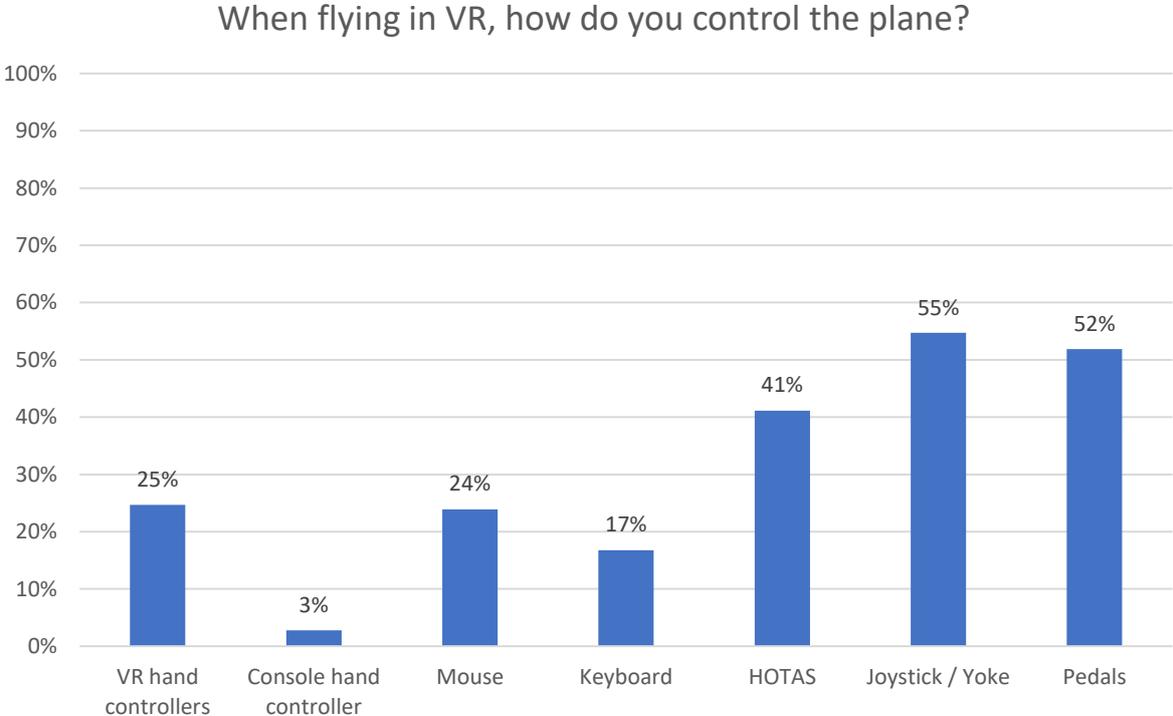
3.11.4. Motion Sickness

This question was conditional and only presented to the respondents who stated that they own a VR headset. The results for motion sickness are comparable to last year.



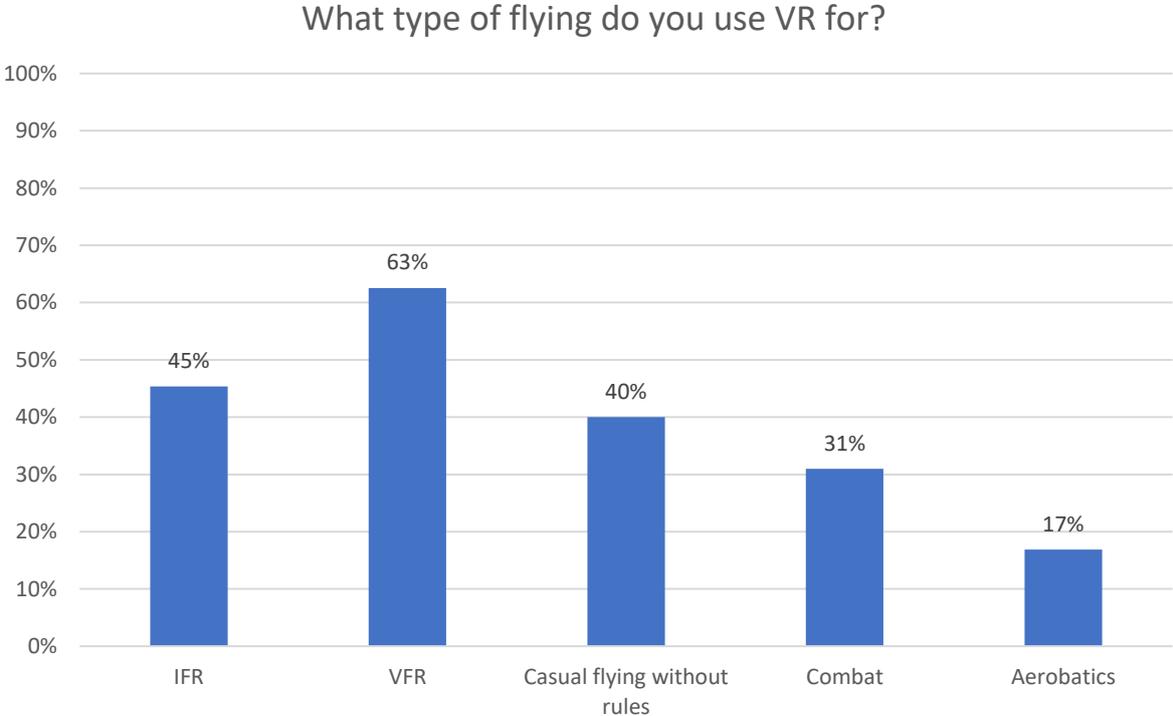
3.11.5. VR Controls

This question was conditional and only presented to the respondents who stated that they own a VR headset. "HOTAS" was added as an answering option and is clearly a popular auxiliary system in a VR setup.



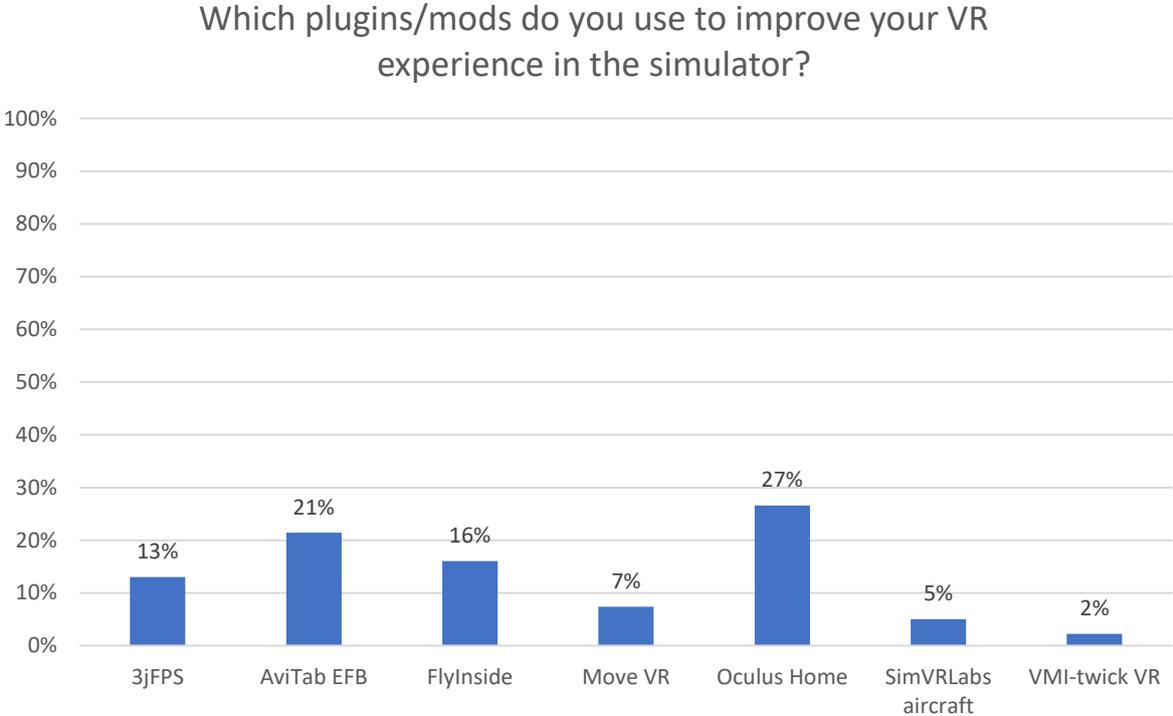
3.11.6. VR Flight Types

This question was conditional and only presented to the respondents who stated that they own a VR headset. Last year this question only asked whether a pilot uses VF for IFR flights. This year we expanded this question to cover also other types of flight.



3.11.7. VR Plugins/Mods

This question was conditional and only presented to the respondents who stated that they own a VR headset.

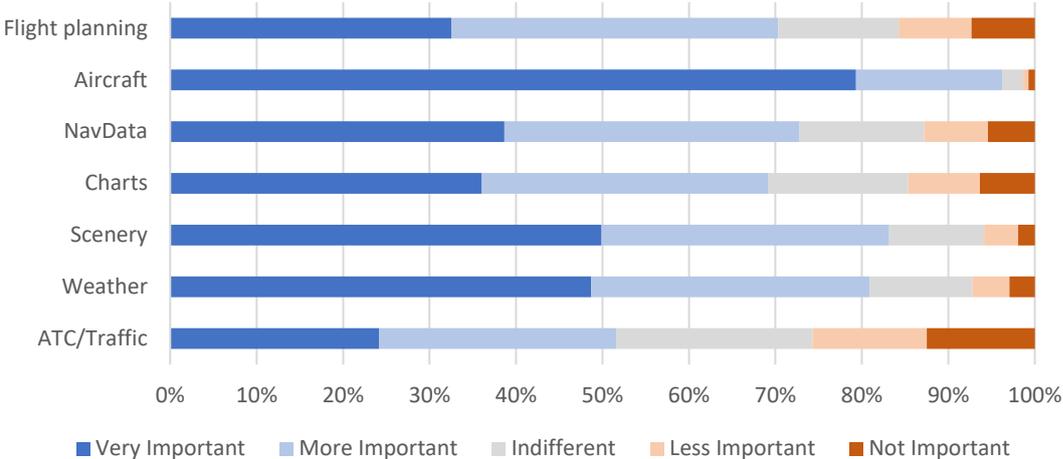


3.12. Addons in General

3.12.1. Addon Type Importance

It appears that aircraft, scenery and weather are the most important addon software types to the respondents.

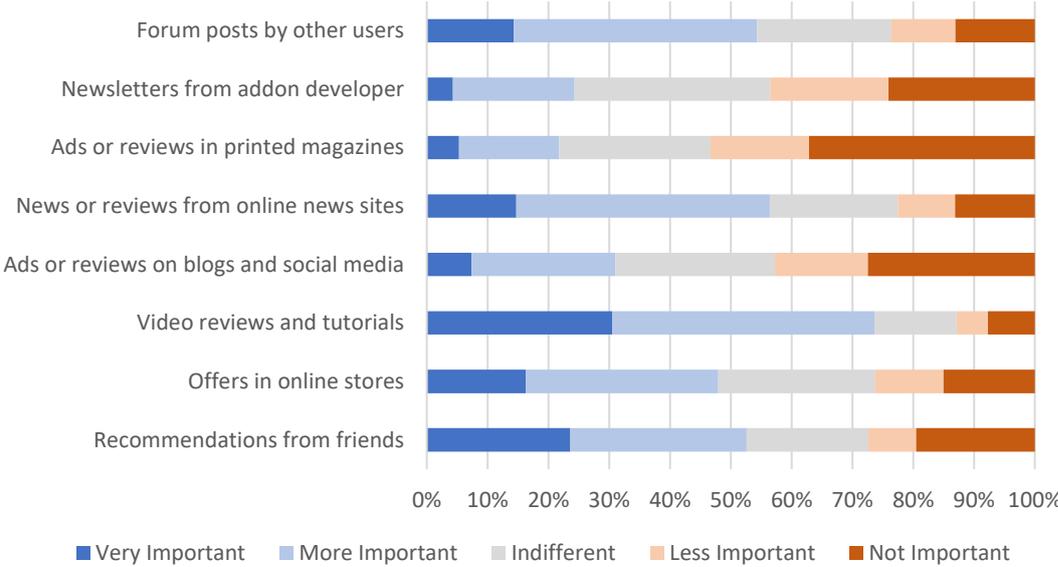
Considering all of the addon software and data you use for flight simulation, which ones do you find the most important?



3.12.2. Addon Purchase Influences

This question was generalized to cover all types of addon software in this year’s survey. Similar to last year respondents tend to trust video reviews and tutorials, as well as recommendations from friends, when deciding which addon software to purchase. Ads and newsletters from developers has the least influence in the purchase decision.

What influences you the most when deciding to purchase addon software?

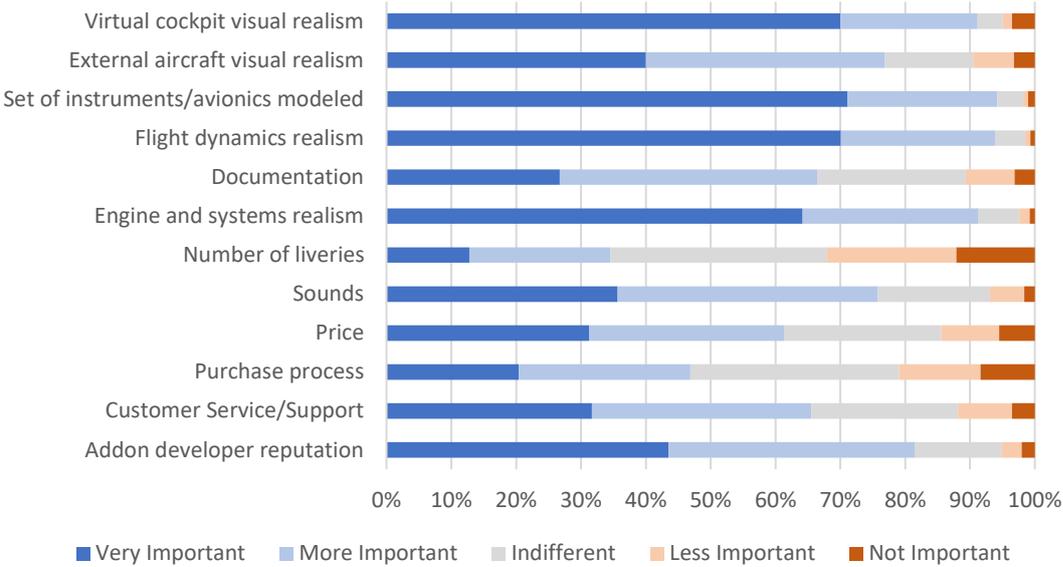


3.13. Aircraft Addons

3.13.1. Aircraft Feature Importance

Compared to last year, it is the same set of features that are important to the respondents this year when it comes to purchasing an aircraft addon.

What are the most important features for you, when deciding which addon aircraft to purchase?

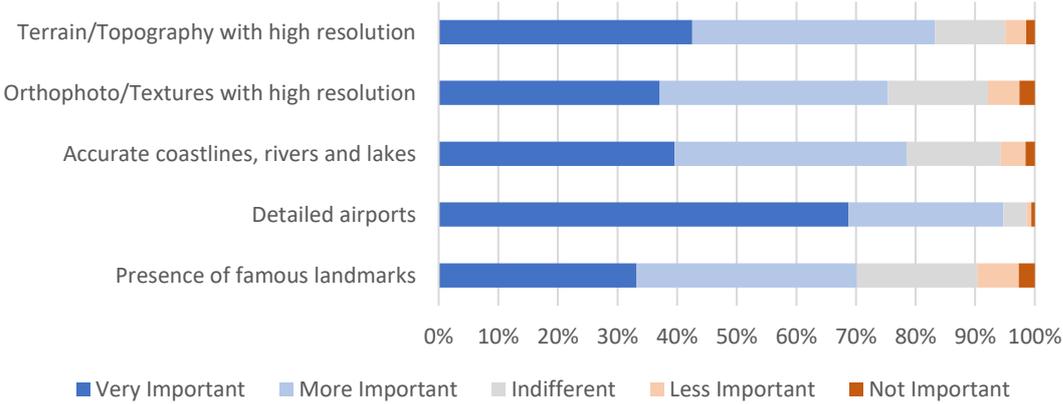


3.14. Scenery and Weather

3.14.1. Scenery Importance

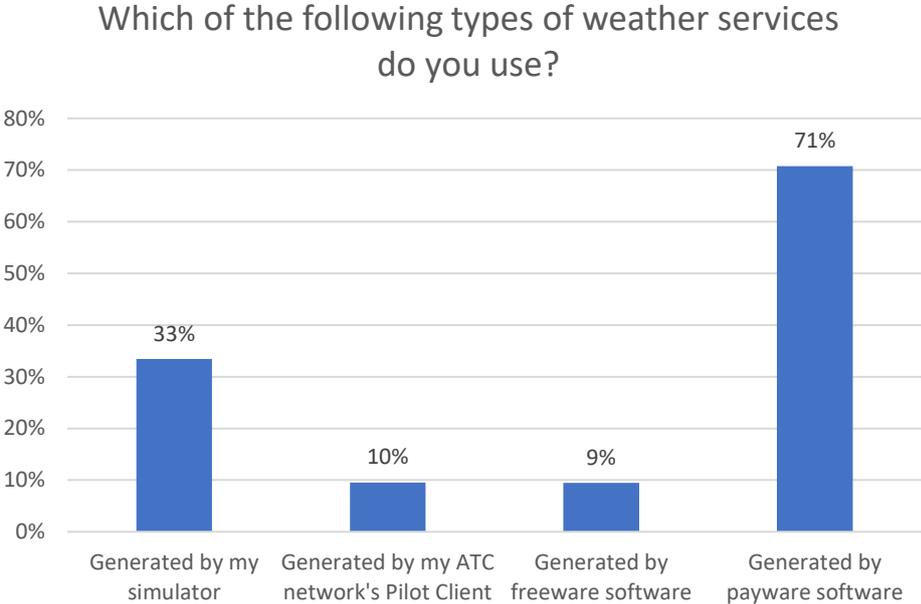
Just like last year, detailed airports remains the most important aspect of scenery addons. Presence of famous landmarks is the least important, both this year and last year.

Based on the type of flying you do, which aspects of a scenery addon is important to you?



3.14.2. Weather Sources

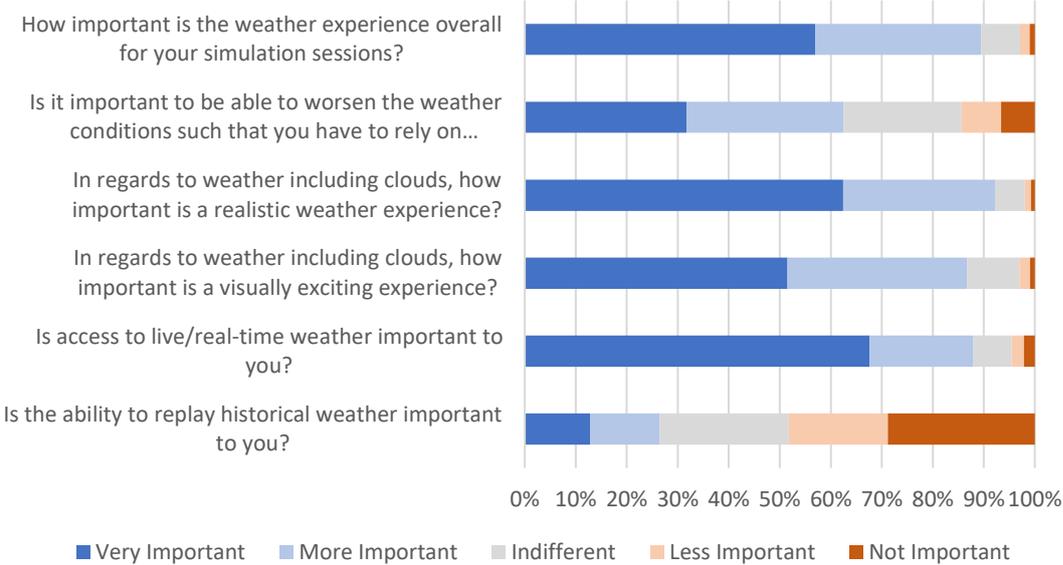
This question is new to this year's survey. We wanted to know which type of software is used to control the weather in the simulator.



3.14.3. Weather Importance

Access to live/real-time and a realistic weather experience remains the most important features for weather addons. The ability to replay historical weather is the least important feature also this year.

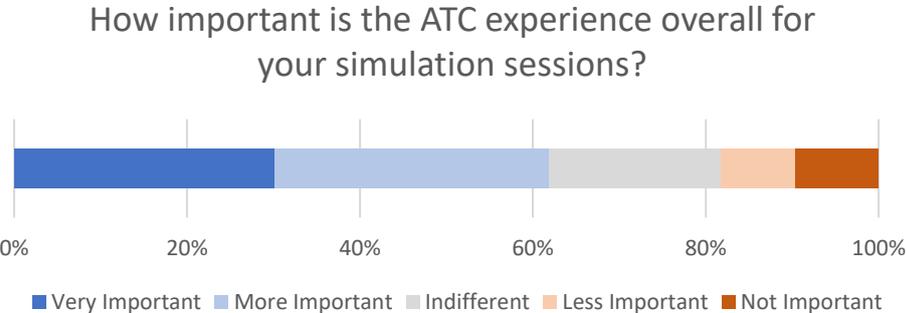
Considering the weather inside the simulator, please rate how important the following aspects are to you.



3.15. Traffic and Air Traffic Control

3.15.1. ATC Importance

The distribution for ATC importance is comparable to that of last year's survey.

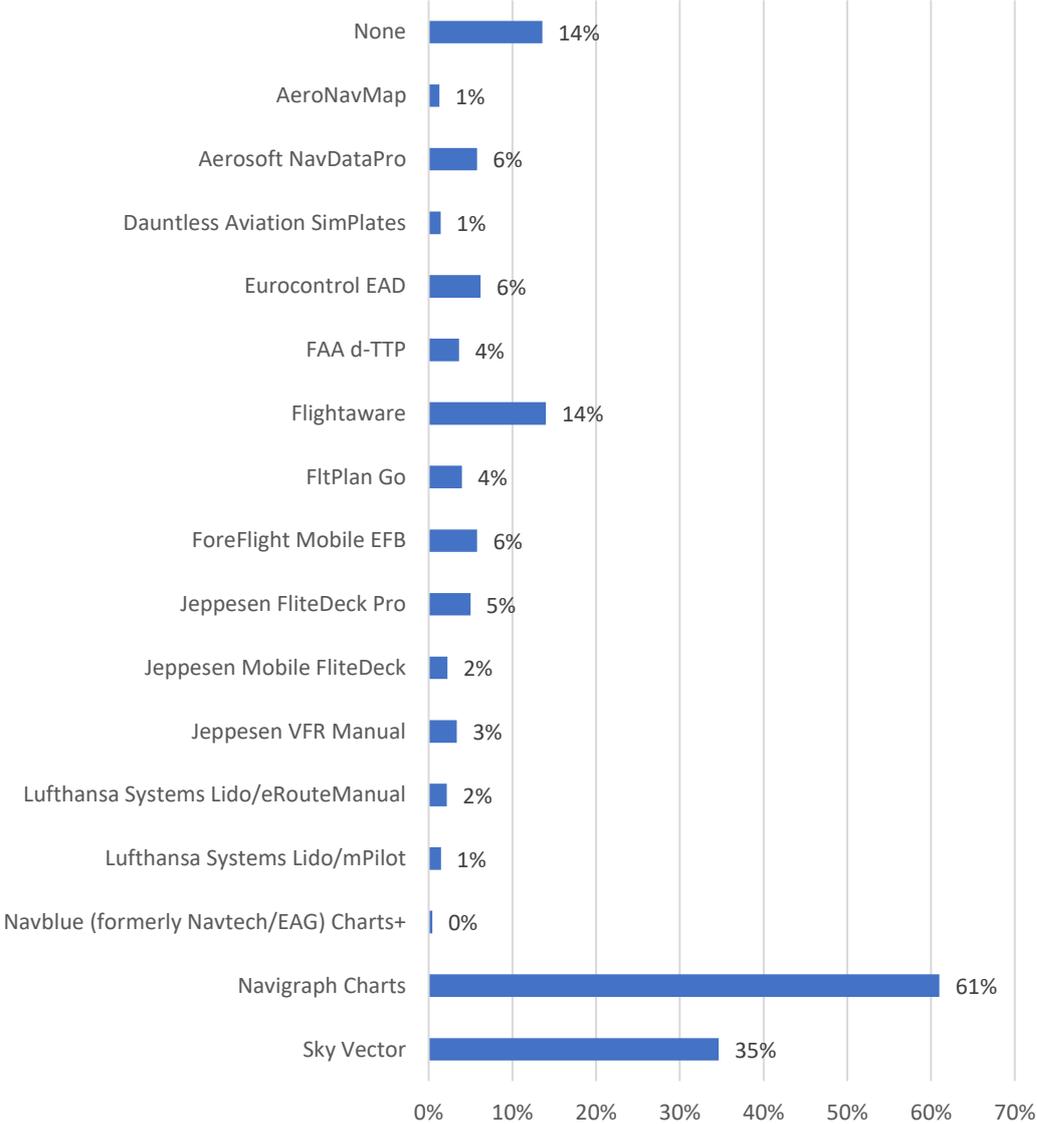


3.16. Charts Products and Addons

3.16.1. Charts Products Popularity

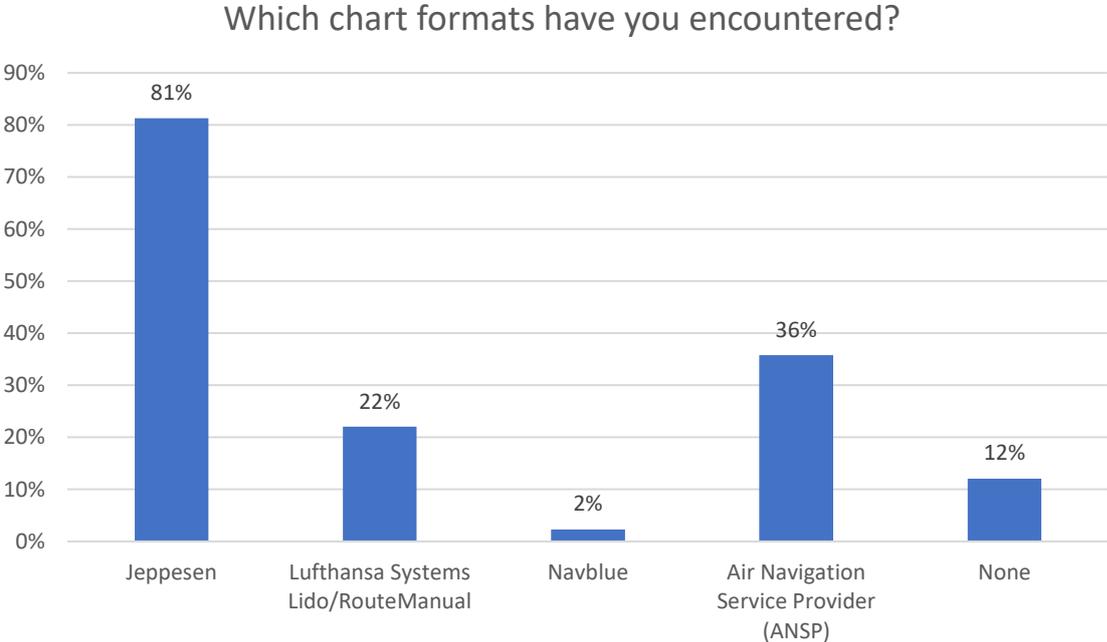
Navigraph Charts, SkyVector and FlightAware continue to be the most commonly used charts products.

Which charts products do you use?



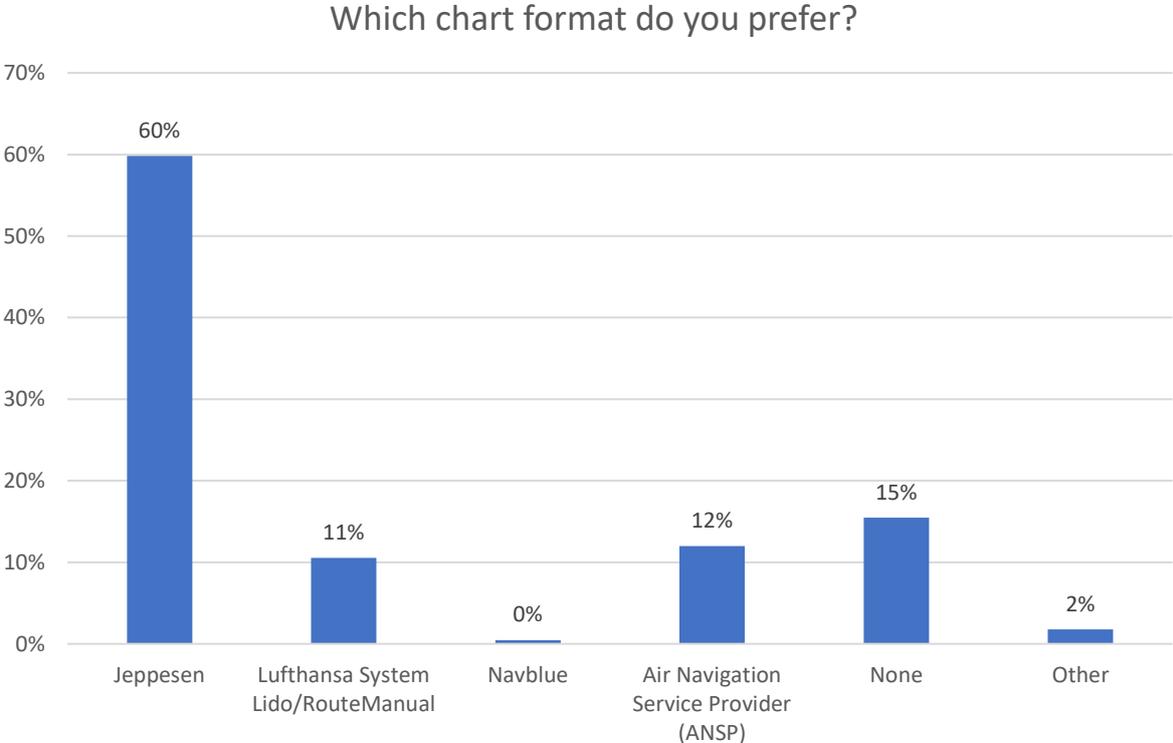
3.16.2. Charts Products Awareness

In last year's survey 81%, 24%, 5%, 35% and 12% of the respondents had encountered Jeppesen, Lufthansa, Navblue, or ANSP, respectively.



3.16.3. Charts Preference

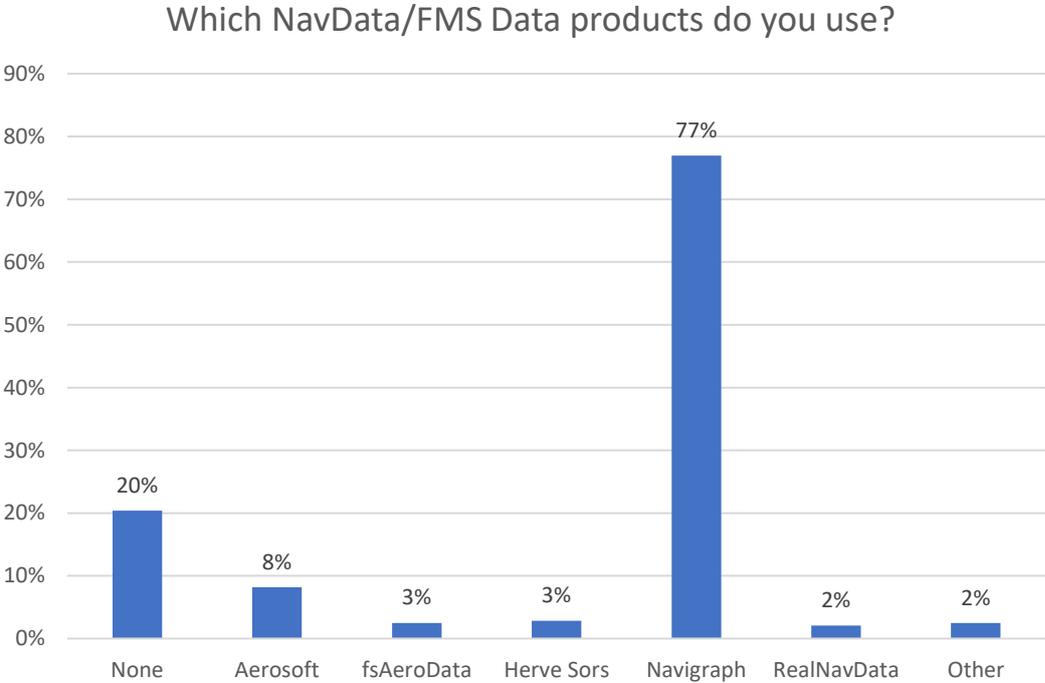
In last year’s survey 60%, 11%, 1%, and 13% of the respondents preferred Jeppesen, Lufthansa, Navblue, or ANSP, respectively. Same as last year 15% did not prefer any of the formats.



3.17. NavData/FMS Data

3.17.1. NavData/FMS Data Products Popularity

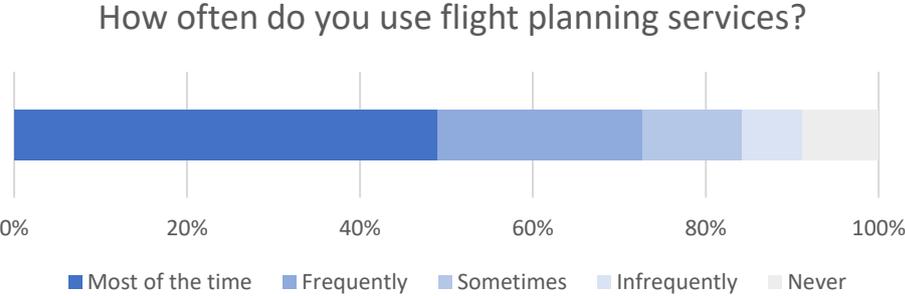
The distribution of NavData/FMS Data preference is almost identical to last year's survey.



3.18. Flight Planning

3.18.1. Usage

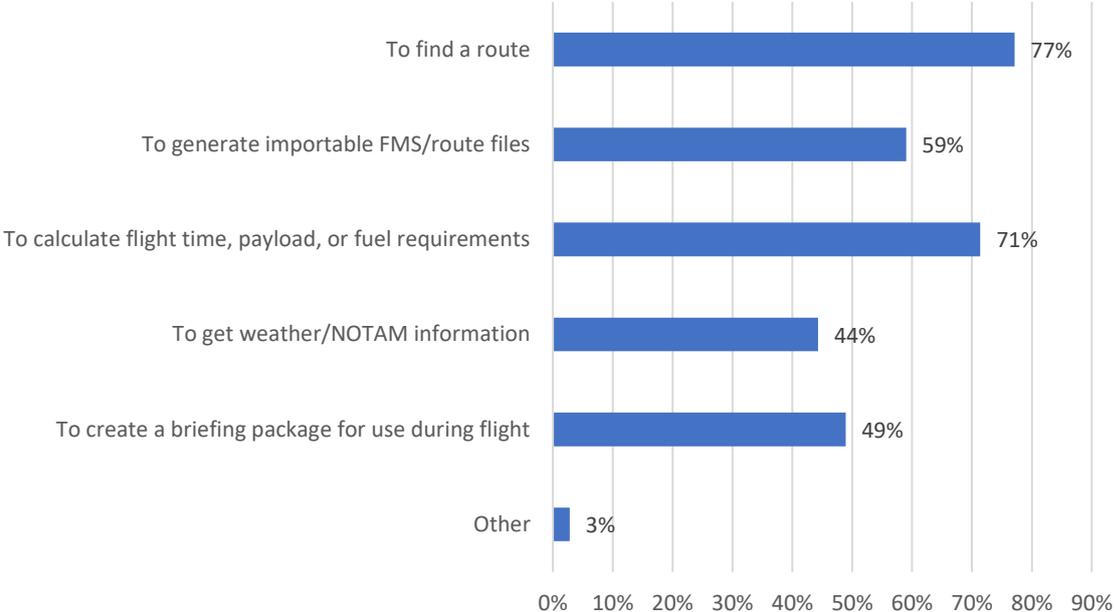
Approximately 50% of the respondents use flight planning services frequently.



3.18.2. Purpose

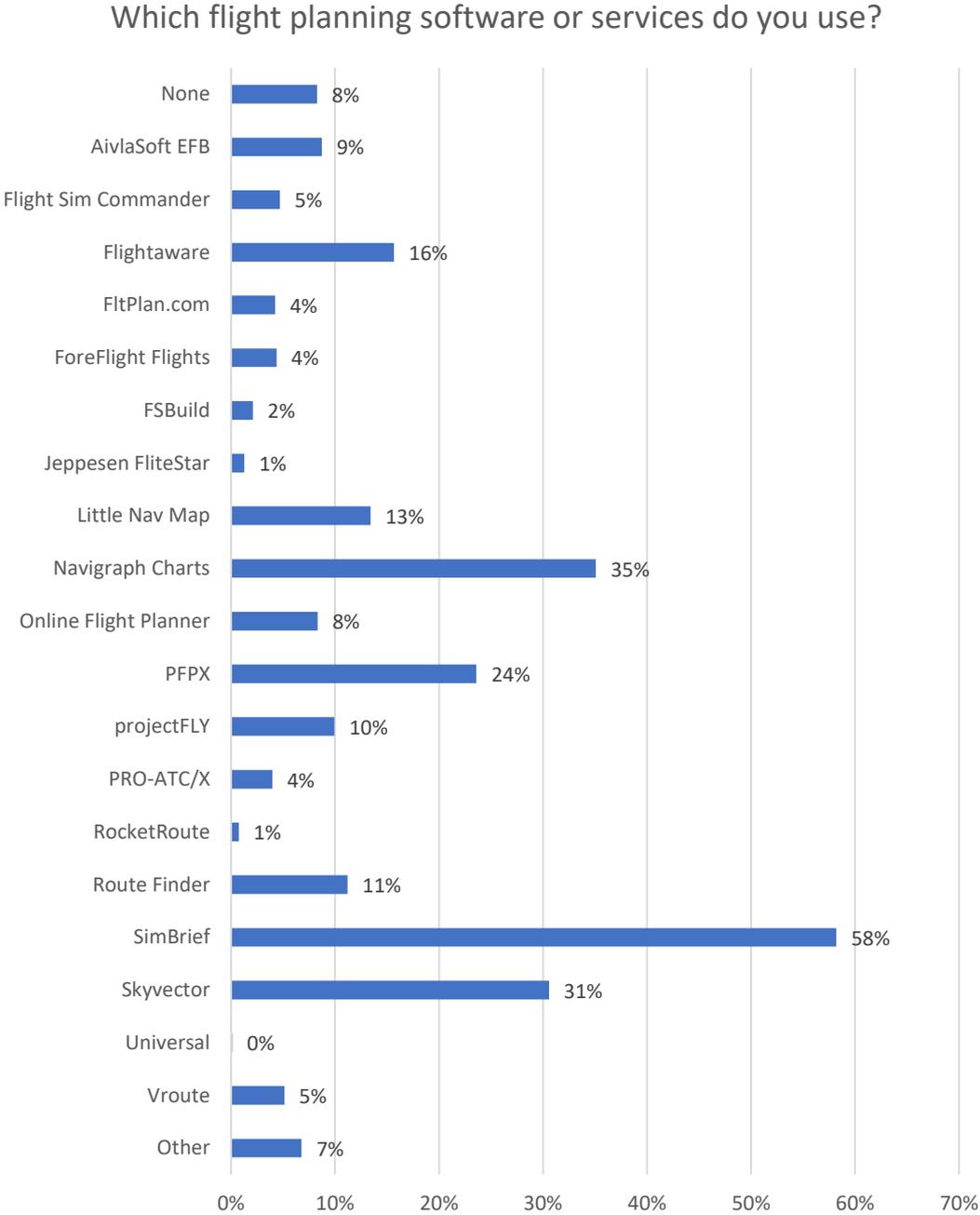
This question is new to this year’s survey. We wanted to investigate which parts of flight planning that are important.

Why do you use flight planning services?



3.18.3. Flight Planning Software Popularity

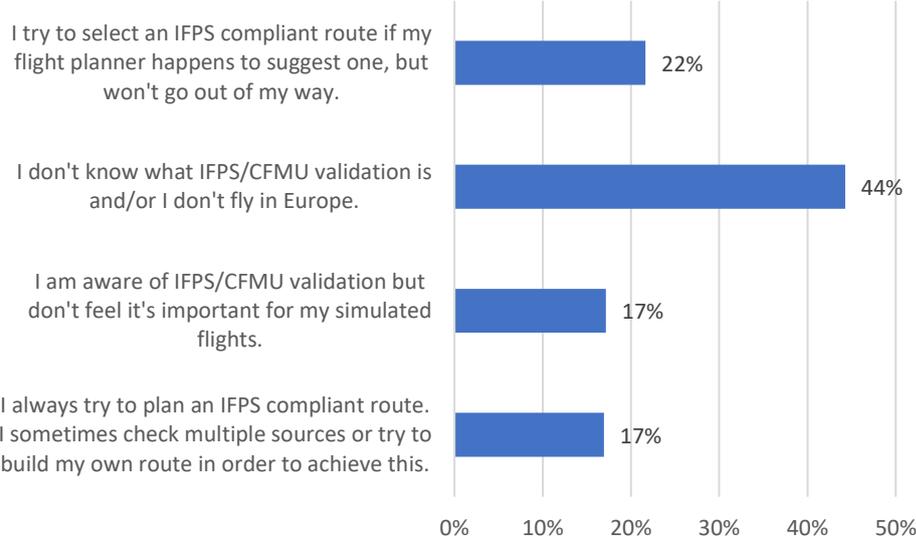
Simbrief is the most preferred flight planning software also this year, followed by Navigraph Charts and SkyVector.



3.18.4. IFPS/CFMU Validation

This question is new to this year's survey. Most pilots are not familiar with, or do not need, IFPS/CFMU validated routes.

When planning a flight within Europe, do you feel it is important that your route passes real world IFPS/CFMU validation?

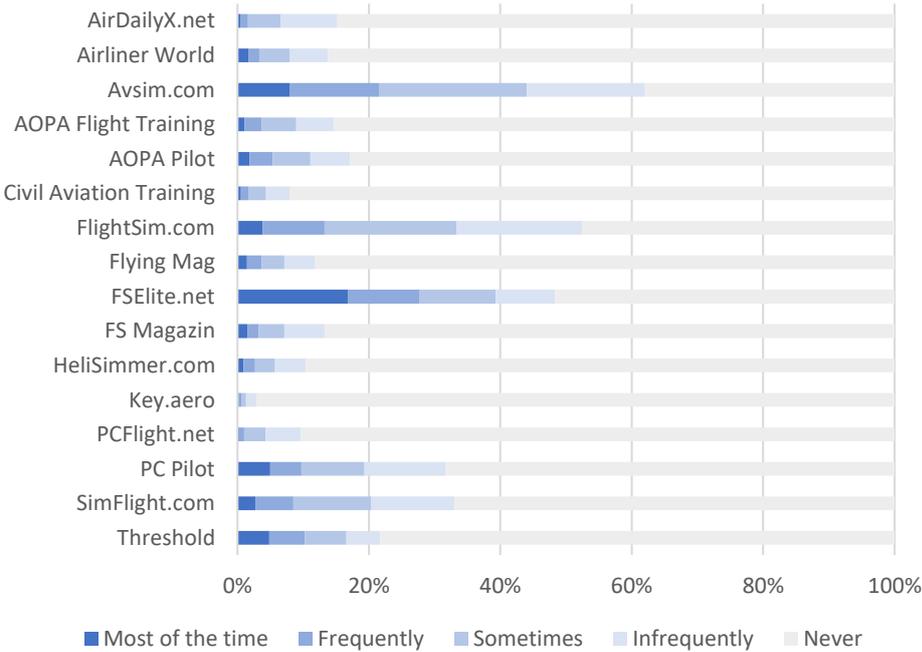


3.19. Media

3.19.1. Media Consumption

Avsim.com continues to be the most popular flightsim or aviation related media. FlightSim.com and FSElite.net are also popular.

Which flightsim or aviation related media do you consume?

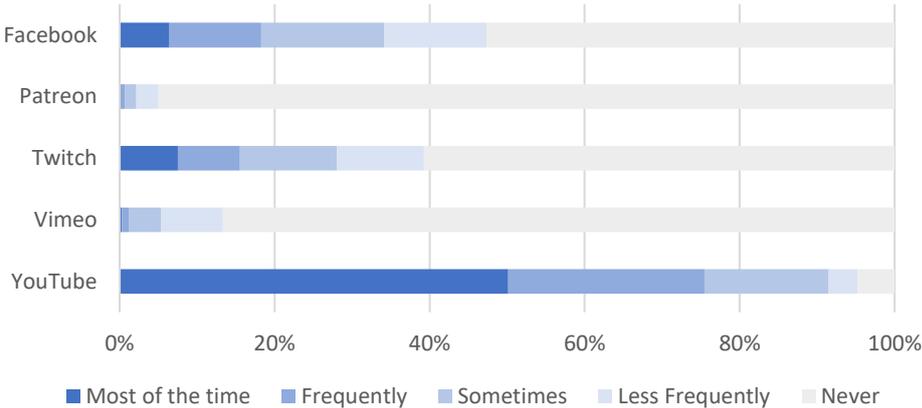


3.20. Video

3.20.1. Platform Preference

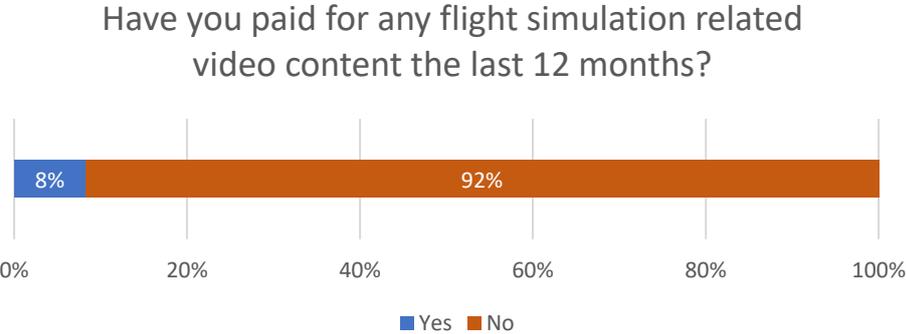
This question was redesigned for this year's survey. YouTube answering options were consolidated into one, and Facebook was added. YouTube remains the most popular platform. Facebook is also important. Twitch has grown since last year.

Which video platforms do you use for consuming flight simulation related content?



3.20.2. Paid Content

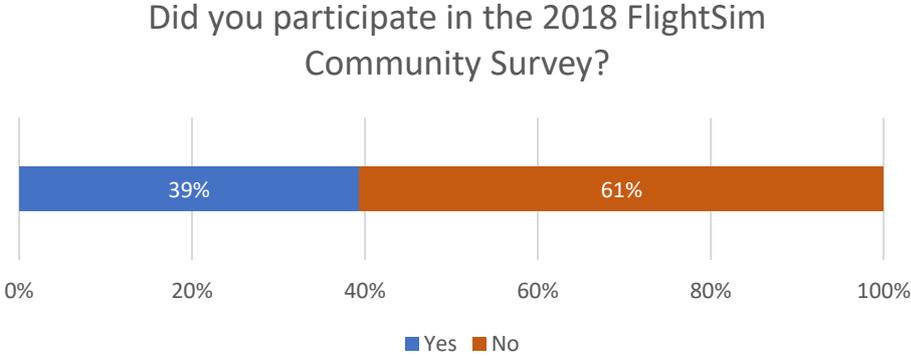
Last year 9% of respondents had paid for video content.



3.21. Survey Meta Analysis

3.21.1. Participation

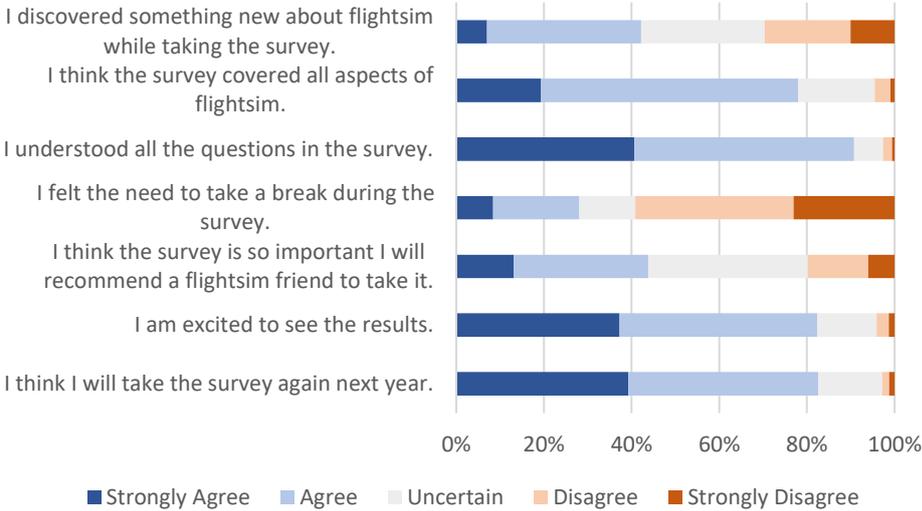
This question is new to this year’s survey. We included this question to see if the reach of the survey had been extended this year. 61% of this year’s respondents did not take the survey last year.



3.21.2. Survey Experience

This question is new to this year’s survey. We included this question to investigate how the respondents experienced the survey.

Please rate the following statements about the current survey.



4. Results

4.1. A Word on Sampling Bias and Validity

Since respondents were not selected according to a random sampling technique, but instead voluntarily chose to participate themselves, there may be a bias in the data collected. This is true for any survey where respondents are invited to participate without randomizing the respondent selection according to the topics the survey set out to investigate.

We want to highlight the fact that this chapter is merely summarizing the collected survey data - not drawing any conclusions. That's why it has been renamed from "Conclusion" to "Results". Since we cannot check whether the dataset is a representative sample of the flight simulation population, we do not conclude anything with absolute certainty. For this reason, we have chosen not to calculate confidence intervals or margin of errors.

So, what can be said about this dataset? First of all, with 17,800 respondents, this dataset must be considered to be large compared to other surveys of its kind. The bigger the sample, the more likely that it is resembling the population. A high number of respondents can mitigate the effect of any selection bias which may be present.

Secondly, while the dataset may not be generally conclusive for the entire population, we can still claim that the 17,800 respondents that decided to participate in the survey did indeed reply this way.

Thirdly, we can track trends and make relative comparisons between years. 61% of this year's participants were new to the survey and did not take the survey last year. Many of the survey questions have same, or very similar, distributions when comparing two consecutive years. If a sampling bias were present one might anticipate some variance – especially when the second year had 61% new respondents. If the variance between two samples is low one might reason that the result is representative of the population – or that the same type of bias is present in both samples. Low variance in samples over consecutive years may increase the confidence of a representative result, but we will still not be able to be absolutely certain.

With these words of caution let's consider the data that was collected.

4.2. Demographic

Almost all respondents are male.

The respondents reported an age distribution mainly ranging between 15-85 years, with a notable peak around 20 years. However, the distribution is quite evenly spread out, so it makes little sense to discuss any average age.

Most of the respondents are from the US and about half as many come from the United Kingdom. Many respondents also come from Germany, Canada and Australia.

22% reported to work within aviation. Six percent are airline pilots. 10% have a PPL. Nine percent are enrolled in a flight school.

These results are very similar to last year's survey.

4.3. Simulation Platform

Most of the respondents fly Laminar Research X-Plane 11, when considering also infrequent use, whereas Lockheed Martin Prepar3D v4 sees the most frequent use. This result is the same as last year's survey.

4.4. Simulation Habits

- Typically, respondents fly 5-10 hrs/week distributed over 2-3 times/week
- 20% of the respondents also fly combat missions
 - DCS World is most frequently used
- 14% also fly simulators on a mobile device
 - Infinite Flight is the most popular app
 - Respondents prefer iPads
- 15% also say they operate as virtual air traffic controllers
 - Typically, respondents engage in this activity 1-2 hrs/week
 - Airspace familiarity tend to guide the choice of airport
- Most respondents fly Short/Medium Haul
- Most respondents fly IFR compared to VFR
- The main purpose for flight simulation among the respondents is curiosity or an interest in aviation (52%)

4.5. Online Flying

56% of the respondents fly online. Most respondents are members of VATSIM. The main reason for respondents not flying online is that one cannot commit to real time flights.

4.6. Spending

Respondents report spending about the same as last year on software (\$245/yr), but less on hardware (\$111/yr).

4.7. MSFS2020 Anticipation

56% of the respondents consider replacing the flight simulation software with Microsoft Flight Simulator 2020 when it becomes available.

48% of the respondents think it is very likely they will buy the Microsoft Flight Simulator 2020 when it becomes available. 7% of the respondents think it is very unlikely. 43% of the respondents are postponing product purchases in anticipation of the release of Microsoft Flight Simulator 2020.

4.8. Survey Meta Analysis

Although this survey consisted of 93 questions, compared to last year's 77 questions, only eight percent felt strongly that they needed to take a break. Most respondents think we covered all aspects of flight simulation and will take the survey again next year.