



Navigraph

FlightSim Community
Survey 2022

Final Report

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Preamble

We are happy to report that the world's largest flight simulation survey grew even bigger this year. In 2020 an incredible 23,500 respondents contributed to this survey. In 2021, 24,200 respondents participated. This year, 2022, an impressive 25,427 respondents answered the 67 questions Navigraph and survey partners had prepared. Well done everyone!

Since 2018 the FlightSim Community Survey covers questions such as flight simulator preference, flight simulation habits, flight training, various demographics, virtual reality, graphics card, console usage, hardware and software spending, preferences in add-on software, and much more. Each year we cull a few old questions for the benefit of new ones. This year we asked at which age respondents got involved with flight simulation; which phases of flight could use better software; and how many minutes pilots spend on preparing versus actual flying.

While we are very thankful for each and one of you respondents, contributing with your feedback, we also must recognize the contributions and the collaborative effort among survey partners – developers, companies, organizations, and media outlets in the flightsim community. Together we design the questions and help distribute the survey to our users, customers, members, and readers.

Navigraph's role is to organize, design, and compile the survey and make the results freely available for the common good of the flightsim community to guide future projects and ultimately to attract new pilots.

At Navigraph Andreas Goodholm, Malin Söderlund, Jenny Tjernell, Emma Wikefeldt, Stephen O'Connell, and I have communicated, analyzed, edited, and coordinated the efforts in producing this survey. It's been hard work, but also fun and interesting. We hope you enjoy reading it!

Stockholm, December 2022

A handwritten signature in black ink, reading "Magnus Axholt". The signature is fluid and cursive, with the first name "Magnus" written in a larger, more prominent script than the last name "Axholt".

Magnus Axholt
CEO & Co-Founder

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1. Introduction

1.1. Partners

The FlightSim Community Survey 2022 is a collaborative effort conducted by the developers, organizations, and companies alphabetically presented in the list of partners below.

- Aerosoft
- Airfoillabs
- BelGeode
- BRAVO737
- Carenado
- Cruiselevel.de
- Delta Virtual Airlines
- Fenix
- Flight1
- FlightGear
- FlightSim.com
- FlightSimulator.blog
- Fly By Wire
- FSElite
- FSExpo
- FSHub
- FSMagazin
- FSNews24
- GeoFS
- Glass Cockpit
- HeliSimmer.com
- Honeycomb
- Infinite Flight
- IVAO
- Laminar Research
- MSFS Addons
- Navigraph
- ORBX
- PilotEdge
- PMDG
- RealSimGear
- SimFlight
- SimWorks Studios
- The Flight Lounge
- TorqueSim Aircraft Development
- VATSIM

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

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 judgment, 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, they also had demographic questions included from the AVSIM survey.

Navigraph has also, with the help of partners, conducted a previous flight community survey in 2018⁵ which has 15,000 respondents, in 2019⁶ which had 17,800 respondents, in 2020⁷ which had 23,500 respondents, and in 2021⁸ which had 24,200 respondents.

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>

⁵ <https://navigraph.com/blog/flightsim-community-survey-2018-results>

⁶ <https://blog.navigraph.com/post/190623949491/flightsim-community-survey-2019-results>

⁷ <https://blog.navigraph.com/post/640055551804489728/flightsim-community-2020-survey-results>

⁸ <https://navigraph.com/blog/survey2021>

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 on the particular operations of that organization.

The FlightSim Community Surveys 2018, 2019, 2020, 2021, and 2022 are different in that they have:

- a larger sample size, i.e. many more respondents compared to any previous flight simulation community survey to date
- a sample which represents multiple user groups, i.e. users from various developers and members from various organizations

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 contributed to the survey in 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 areas of particular interest to them. Navigraph edited, consolidated, and designed questions based on the partners' areas of interest.

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. The individual links permitted tracking of how successful each partner was at gathering respondents to the survey.

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 possibility to direct the survey into various areas of interest and reach a wider audience compared to publishing an individual survey themselves.

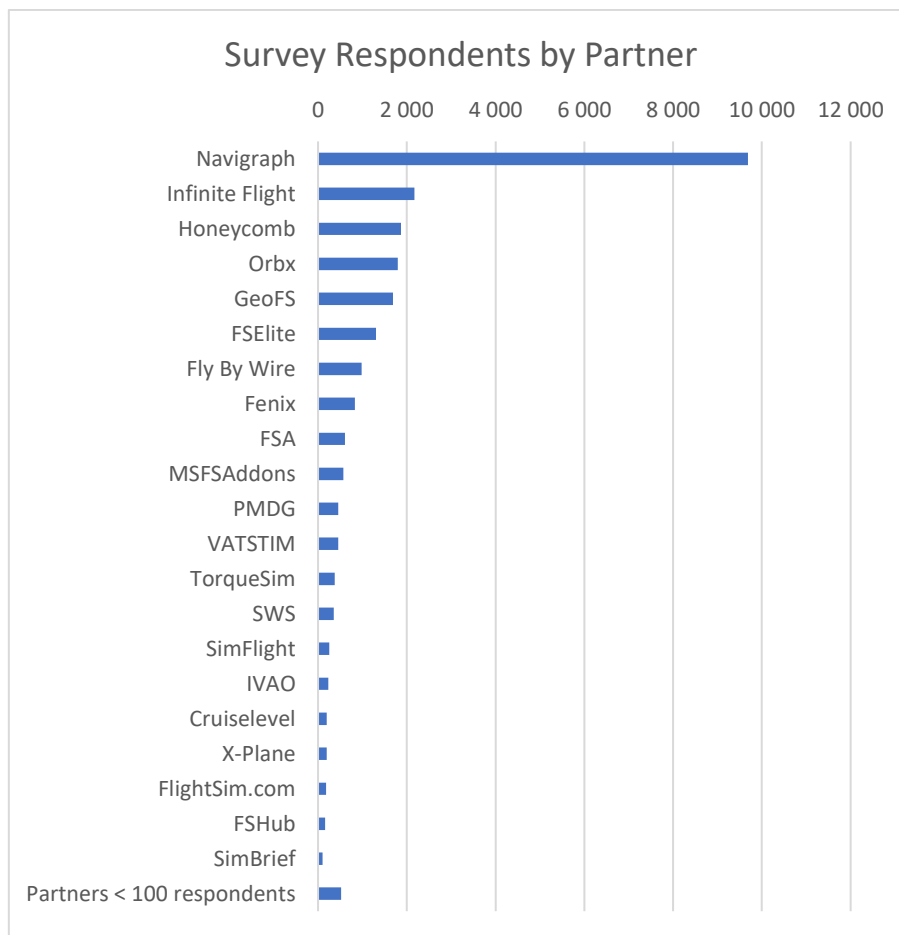
The information presented in this survey report is only diagrams over aggregated data. No other analysis as to statistical significance, power, or confidence interval has been done.

3. Analysis

3.1. Respondents

The survey had 25,427 (24,200) respondents out of which 63% (70%) completed the 67 (93) questions in the survey and spent on average 16 (21) minutes. (Last year's values are within parentheses.)

The diagram below illustrates the number of respondents clicking a link published by a survey partner over time starting from November 18 when the link to the survey was first published, until noon of November 29 when the survey closed. Navigraph, illustrated at the top of the diagram contributed with the most respondents followed by Infinite Flight, Honeycomb, Orbx, and FSElite. All partners who contributed with less than 100 respondents are aggregated into the bottom bar.

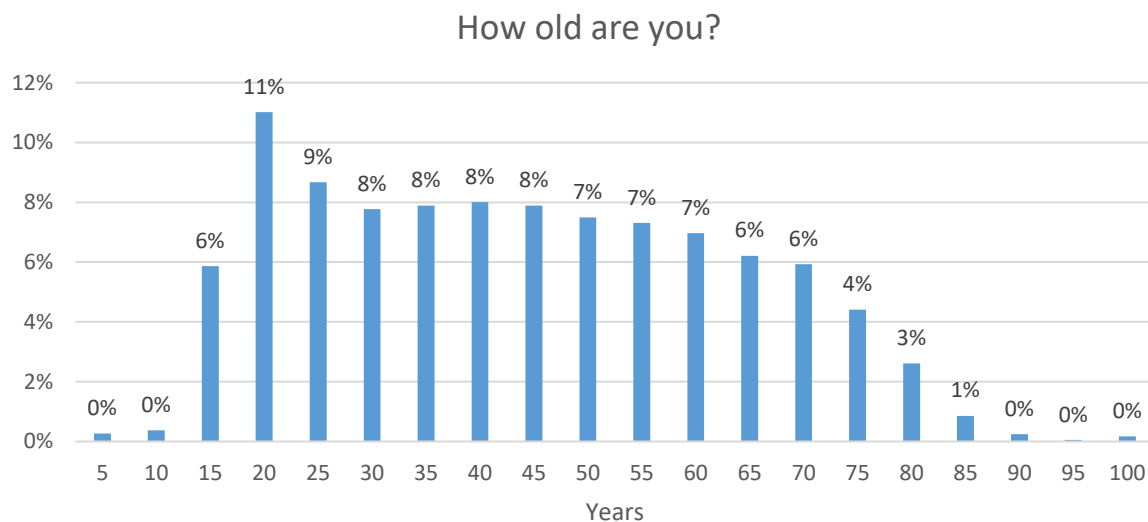


3.2. Demographics

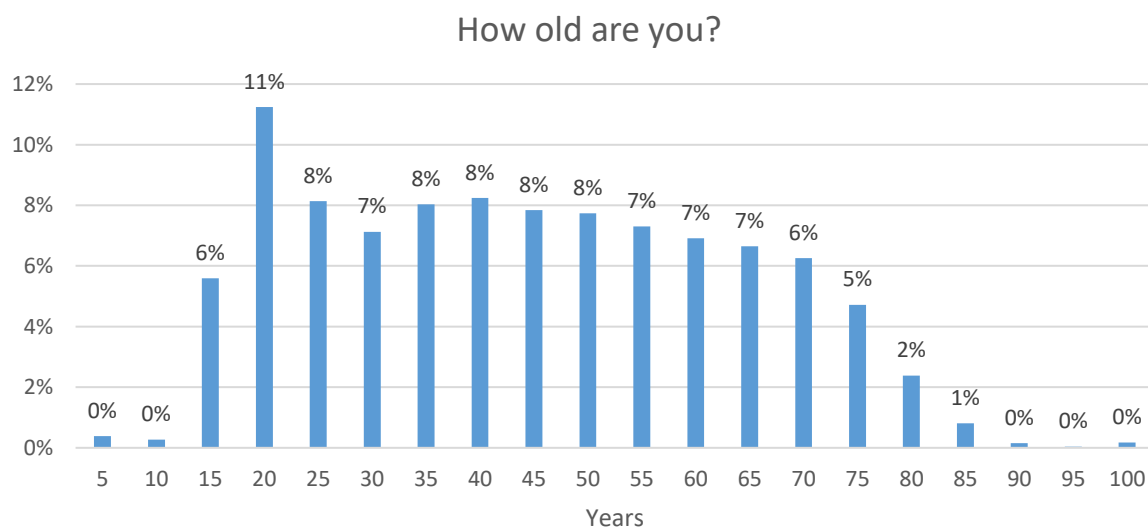
3.2.1. Age

The even distribution suggests 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.

The age distribution this year is very similar to those of the four previous surveys, in terms of range but also with a distinct peak around 20.

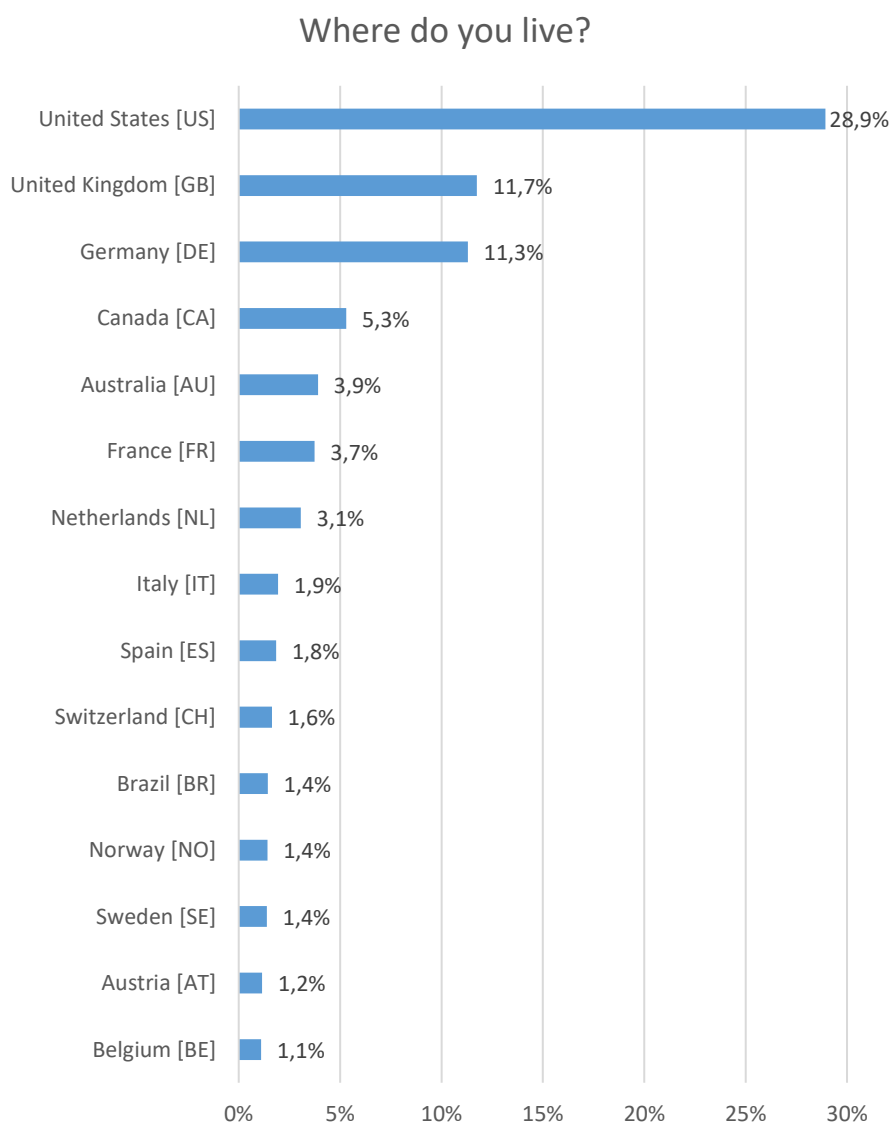


Last year's result:

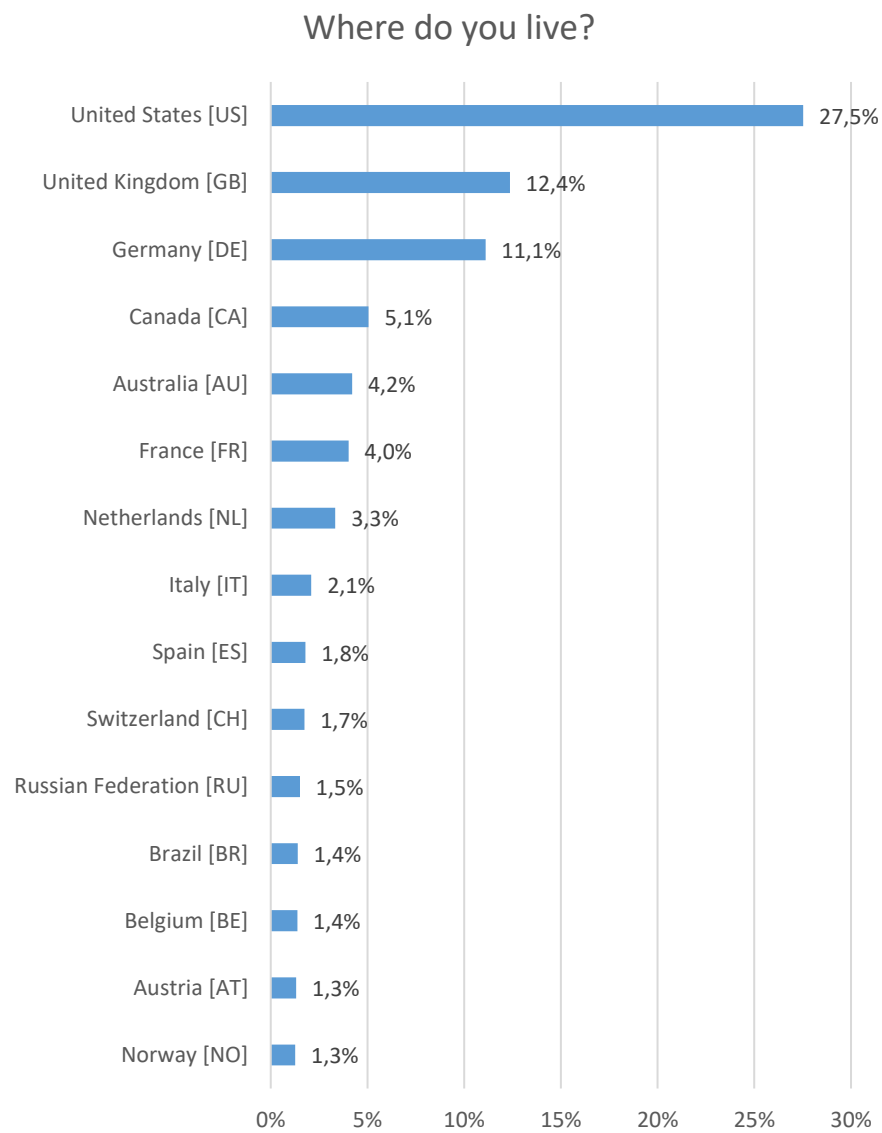


3.2.2. Country

The top five countries are the same this year as the two previous years. France, the Netherlands, Italy, Spain, and Switzerland follow next, just like in previous years. This year we can also see Scandinavian countries such as Norway and Sweden climbing onto the list.



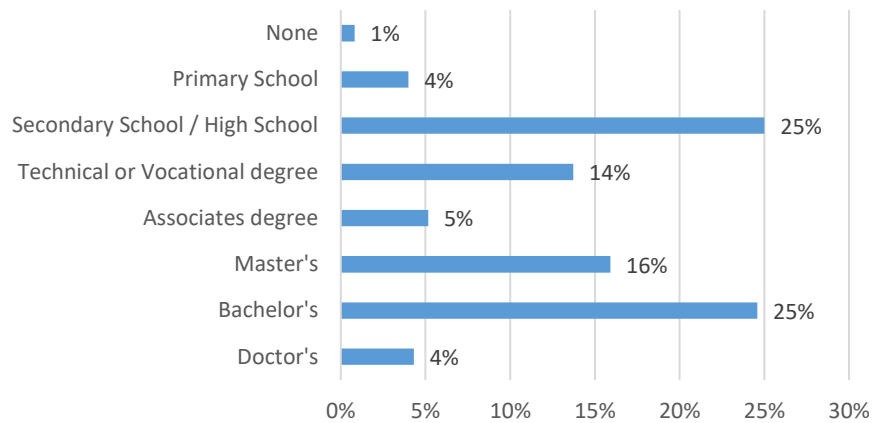
Last year's result:



3.2.3. Education

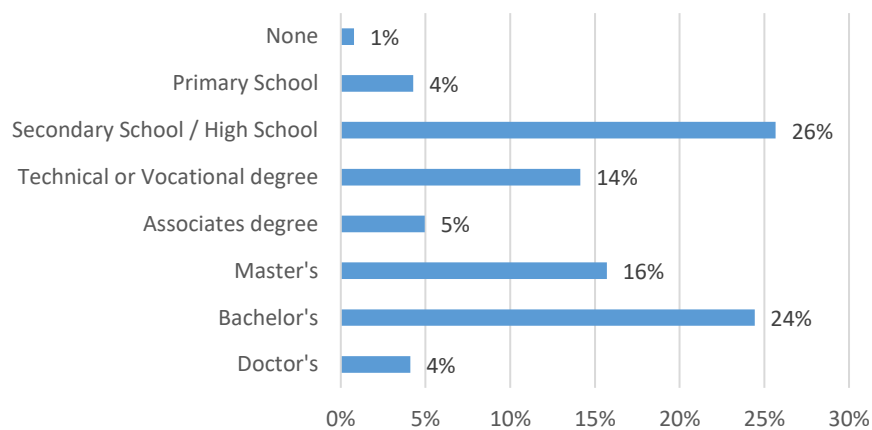
Secondary School and bachelor's degrees share the most common levels of education this year. This is the same result as the previous three years.

What is the highest level of education you have completed?



Last year's result:

What is the highest level of education you have completed?

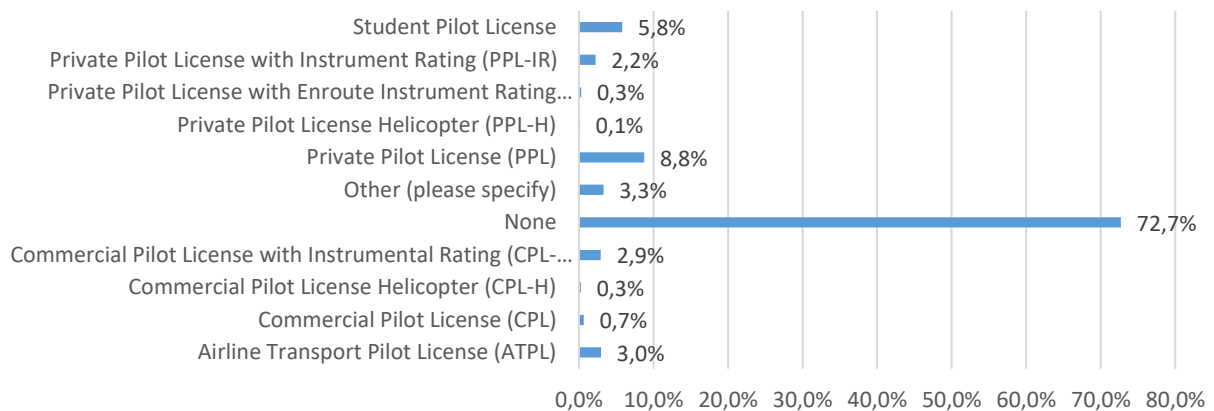


3.3. Relation to Aviation

3.3.1. Pilot License

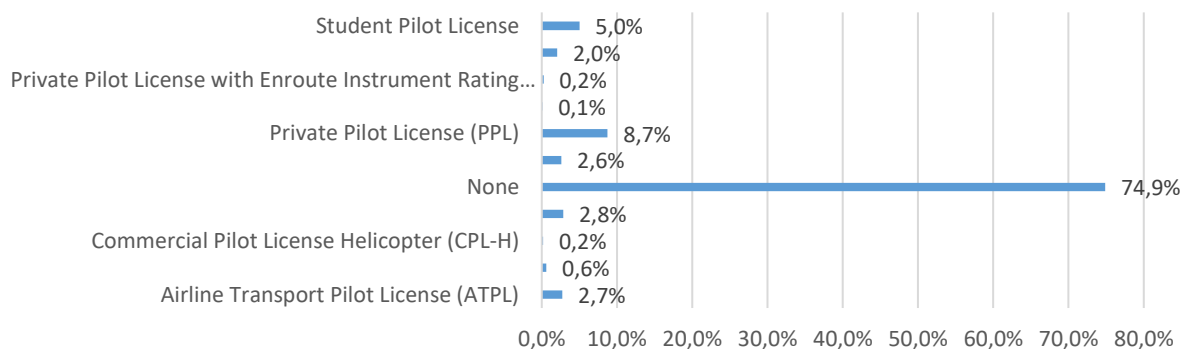
One in four flight simulator pilots holds a pilot license. A total of 9% have a Private Pilot License (PPL). A comparable result from when we asked this question in the 2021 survey can be viewed below.

What pilot license do you currently have?



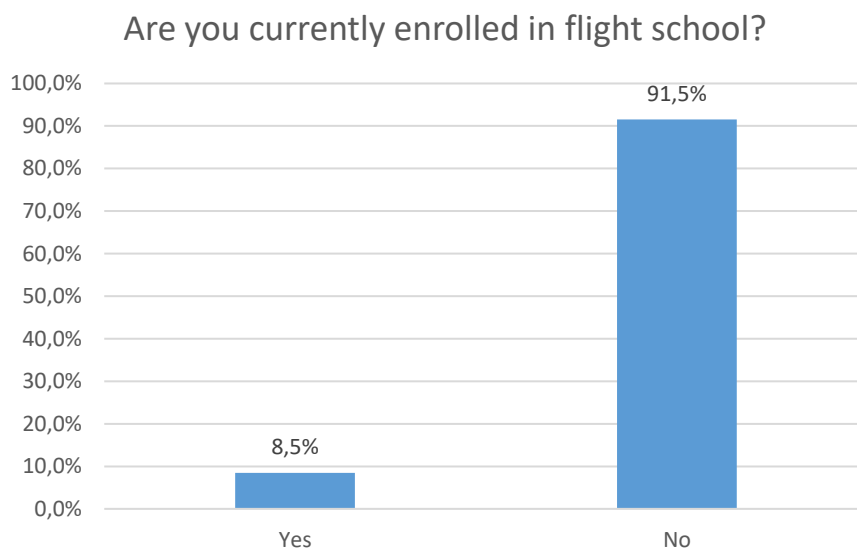
Last year's result:

What pilot license do you currently have?

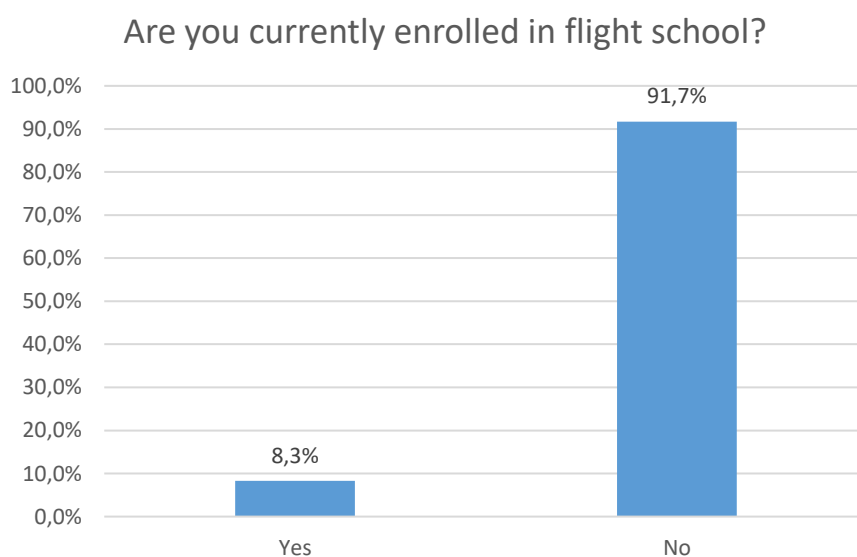


3.3.2. Pilot Dreams

Over 8% of the simulator pilots are enrolled in a flight school, and the distribution of respondents this year is almost identical to what was presented in the past three years' survey.

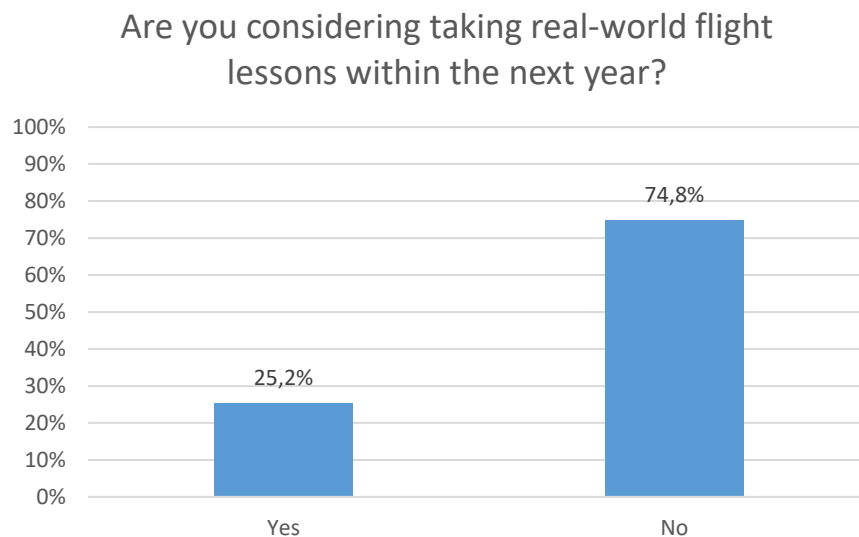


Last year's result:

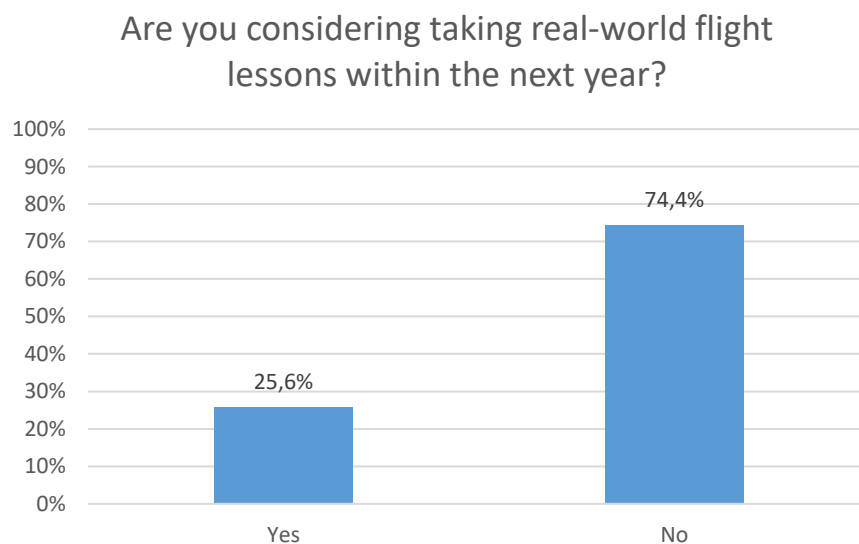


3.3.3. Flight Lesson Consideration

This question was only presented to respondents who stated that they are not enrolled in a flight school. In the vein of last year's result, one in four are considering taking real world flight lessons within the next year. We can see a similar result from this year's survey.



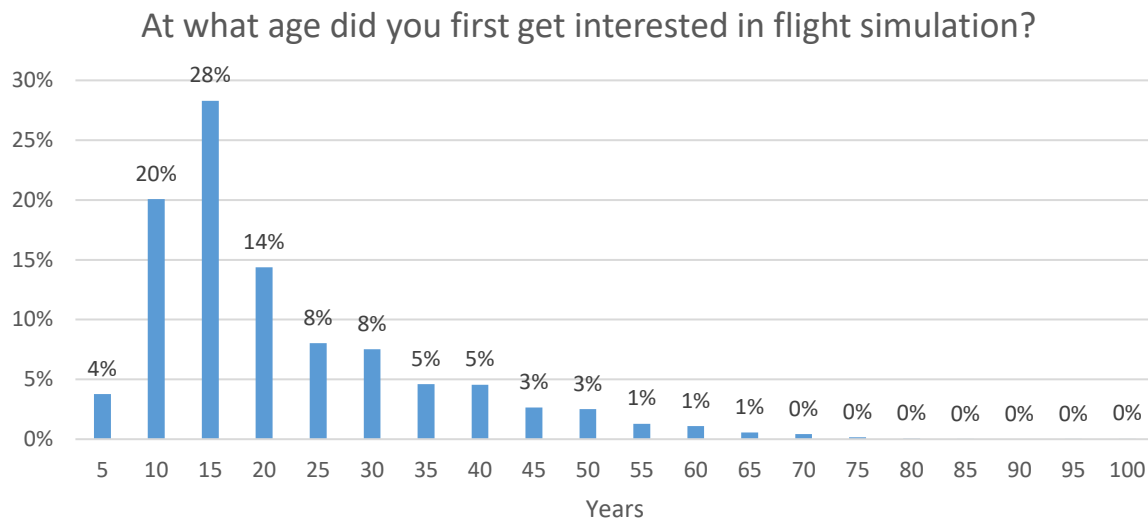
Last year's result:



3.4. Relation to Simulation

3.4.1 First Encounter

This is a new question for this year's survey. At what age did you first get interested in flight simulation? We can see that for most of the respondents their interest in flight simulation started between 10 and 25, with a peak at 15 years of age.



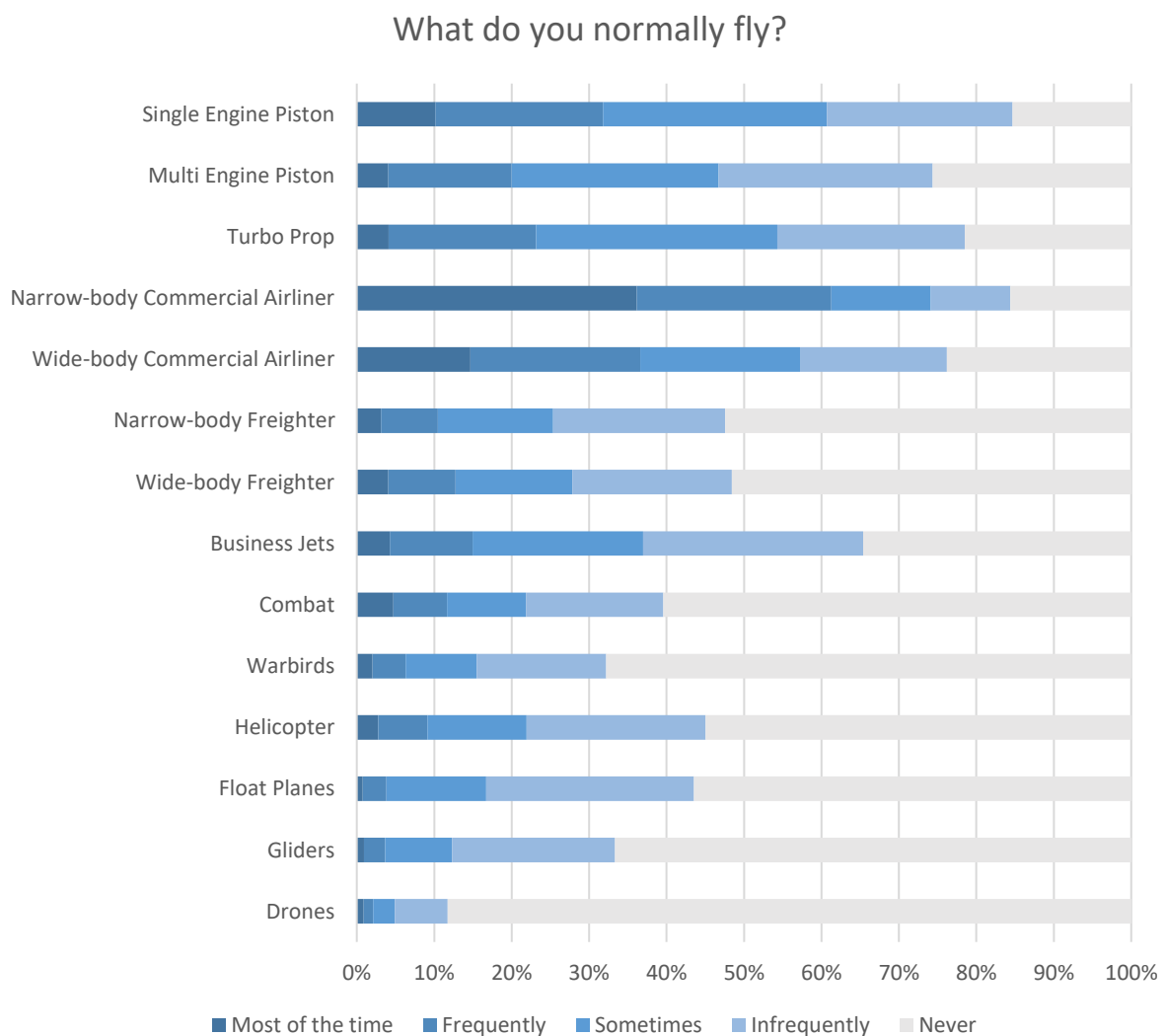
3.5. Simulator Habits – General

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

3.5.1. Aircraft Types

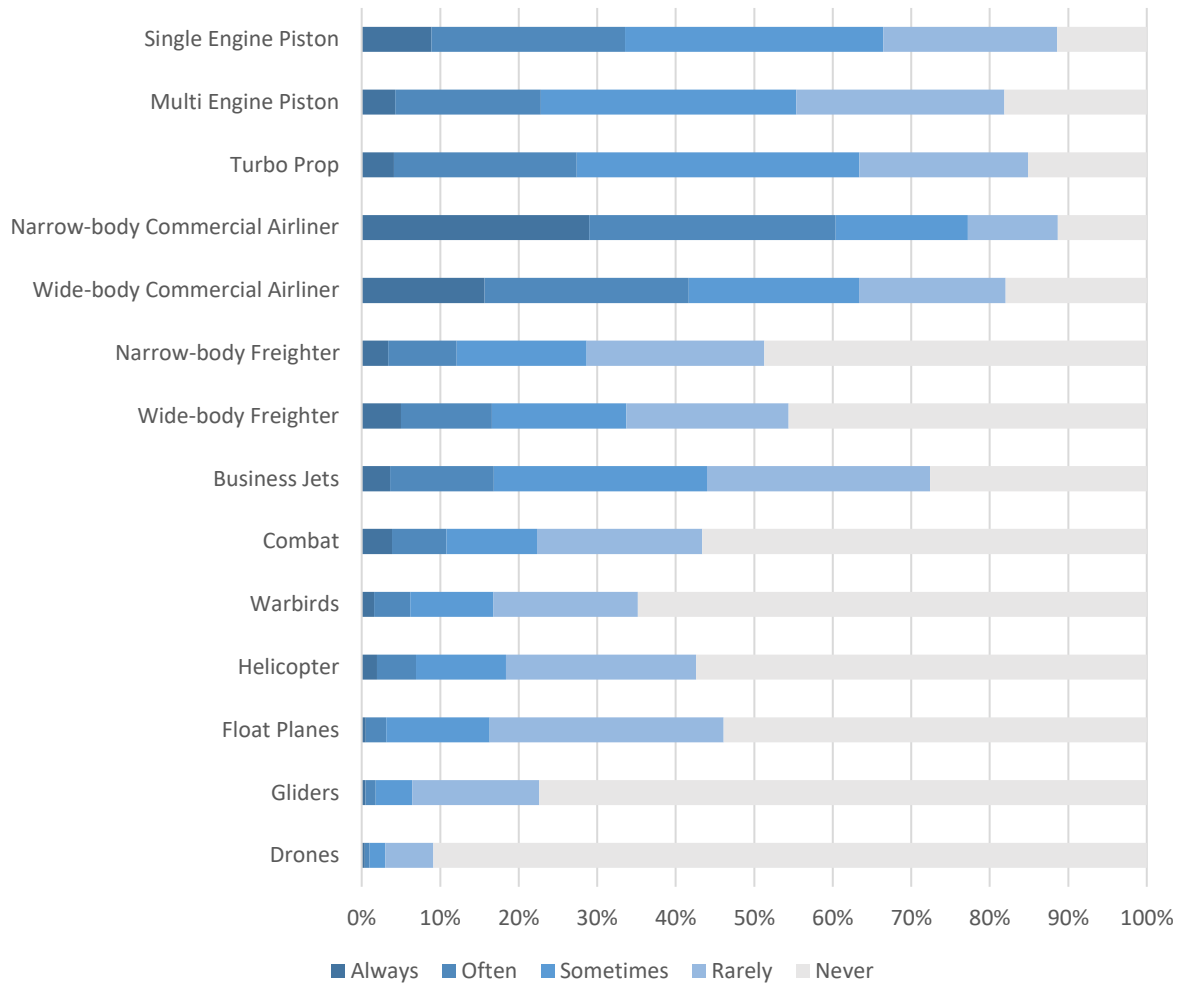
Like last year, Single Engine Piston and Narrow-body Commercial Airliner are the most common aircraft types to fly. Narrow-body Commercial Airliners grew in popularity compared to Single Engine Piston aircraft.

Drones and Gliders are the least popular types to fly, a result that is consistent with last year's survey results.



Last year's result:

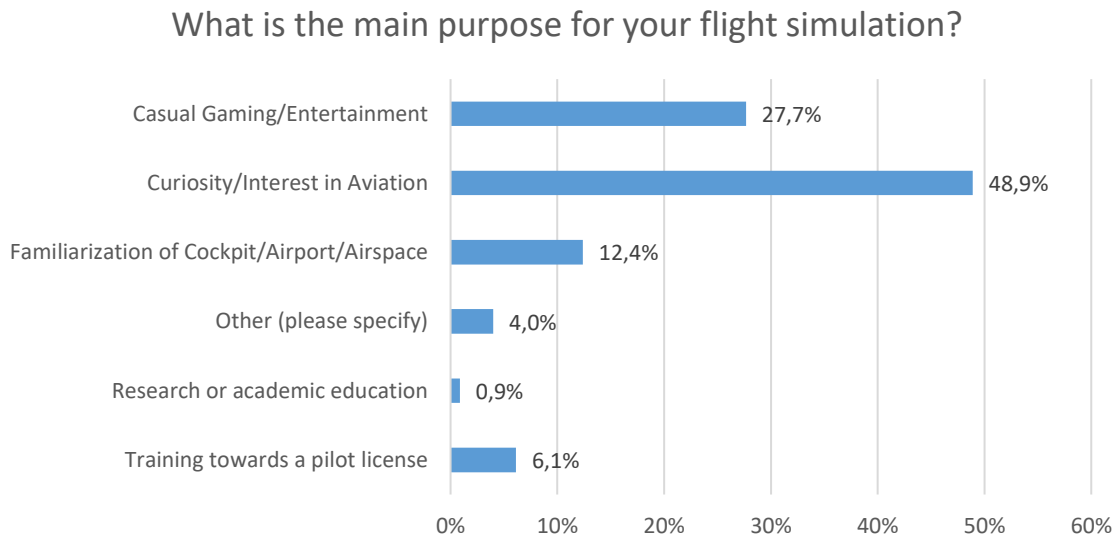
What do you normally fly?



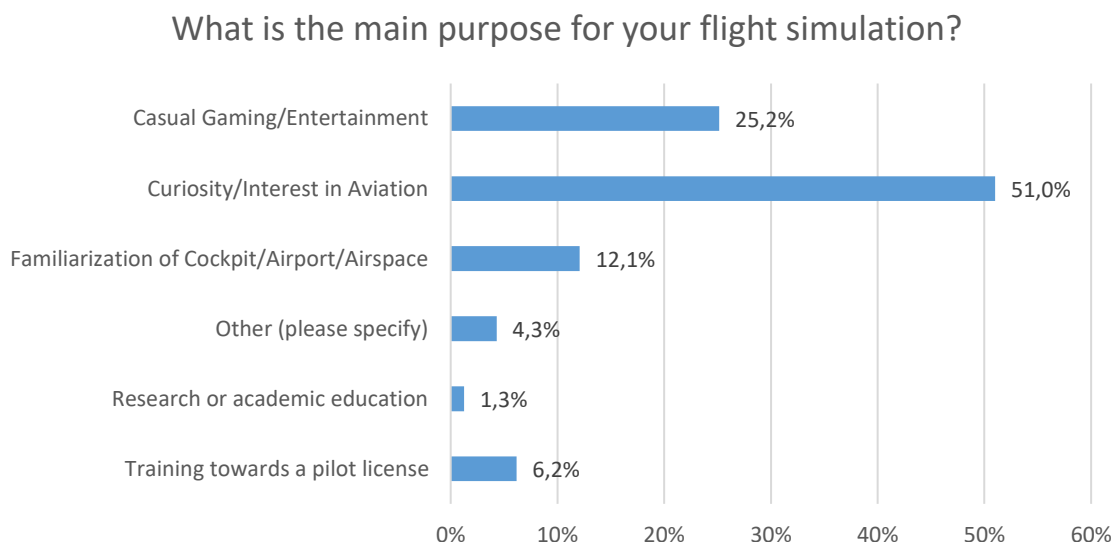
3.5.2. Purpose

This year we got a similar result as last year, more than one fourth (27.7%) fly simulators for casual gaming/entertainment purposes. Curiosity/interest in aviation is still the main purpose for more than every other flight simmer, however, that percentage has dropped from 51.0% to 48.9%.

The rest of the results in this graph are very close to what was presented in the previous year's survey.

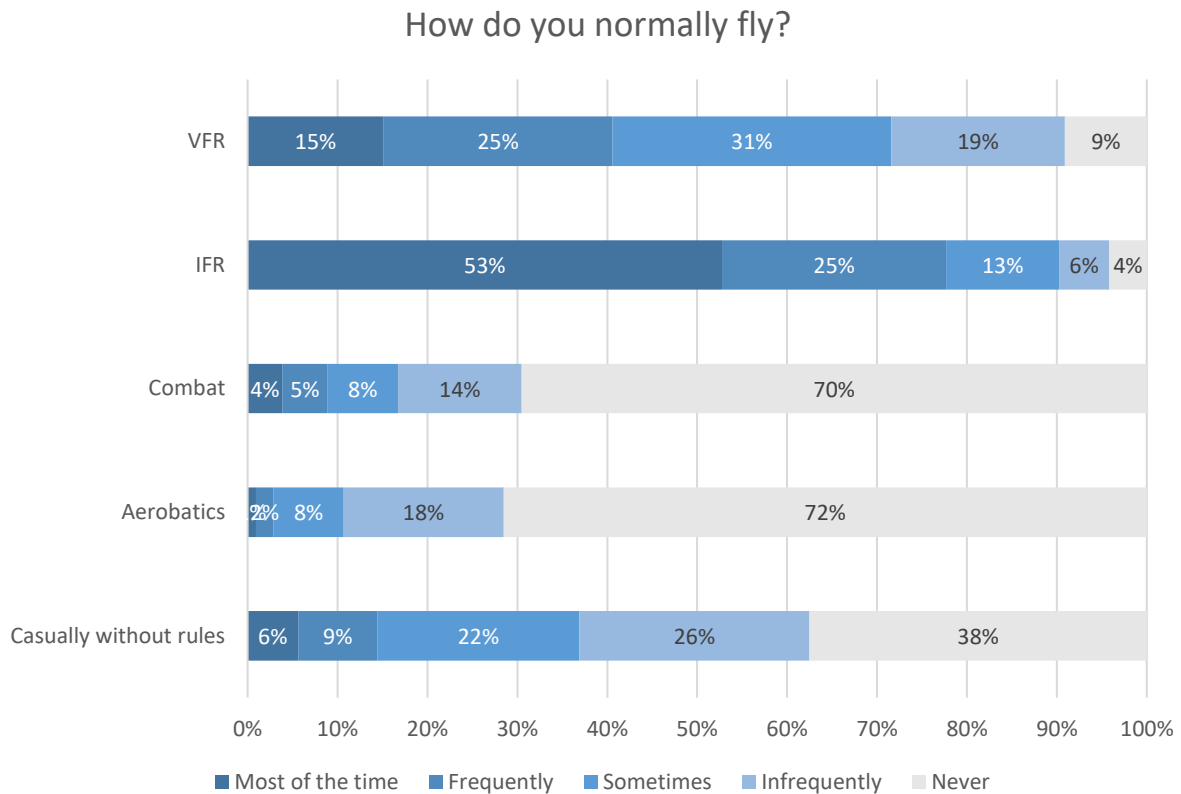


Last year's result:

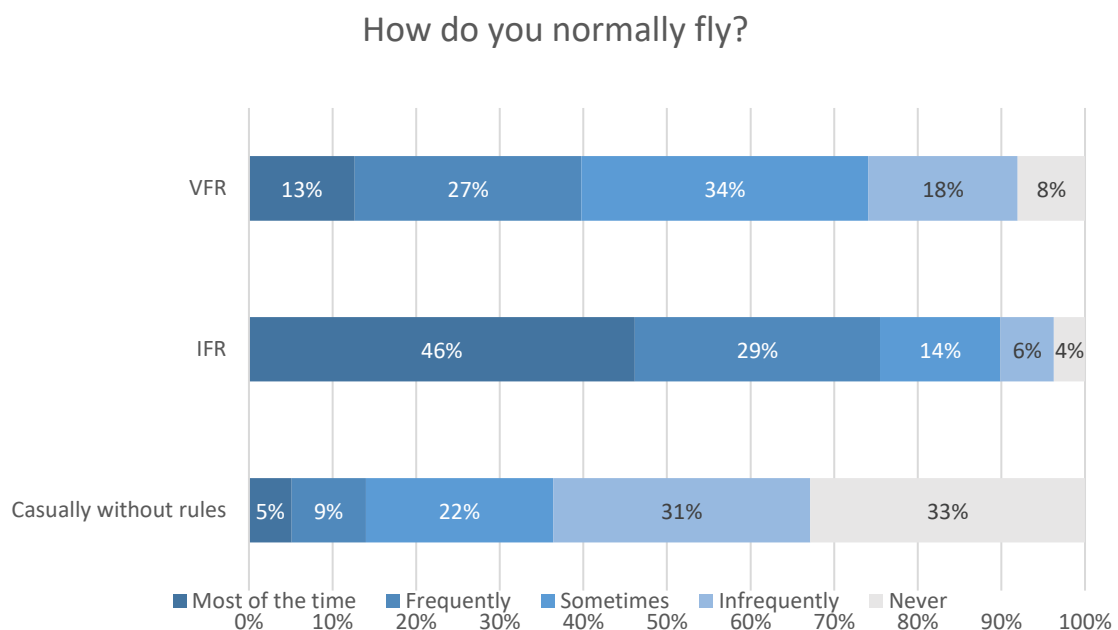


3.5.3. Flight Rules

The results are comparable to last year's survey in terms of flight rules: IFR and VFR are still more popular than the option of flying "casually without rules" which was introduced as an option in the 2019 year's survey. This year we also added two more options, "combat" and "aerobatics", which are the least popular options of flying.



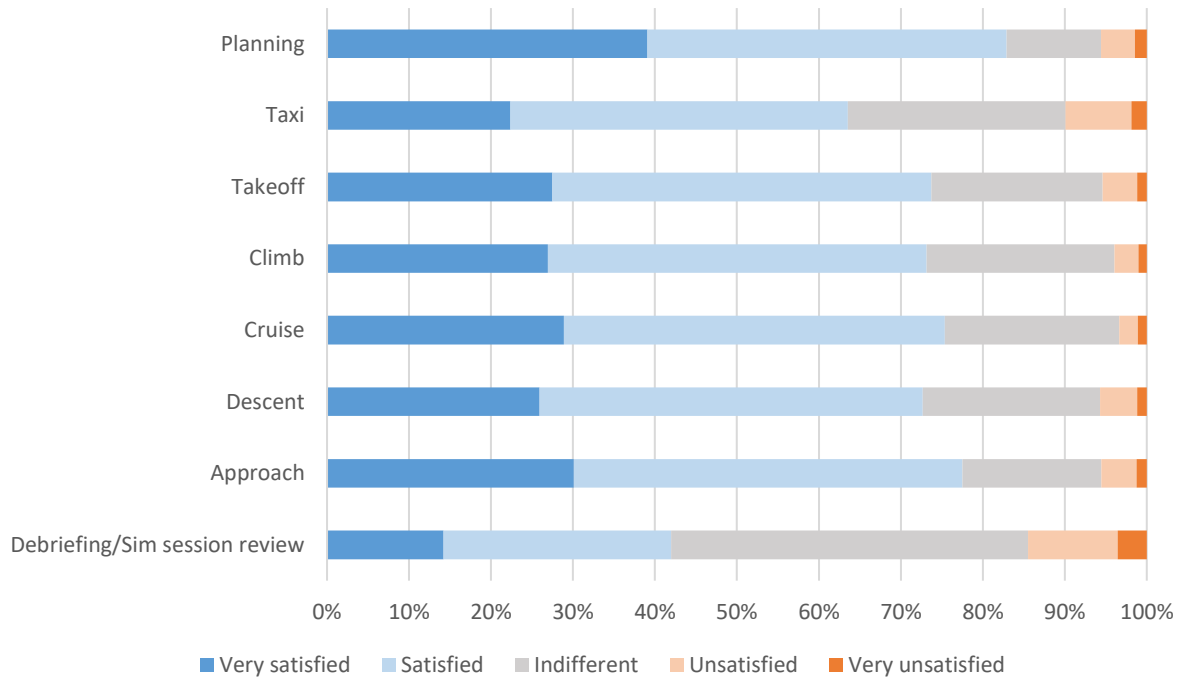
Last year's result:



3.5.4 Flight phases

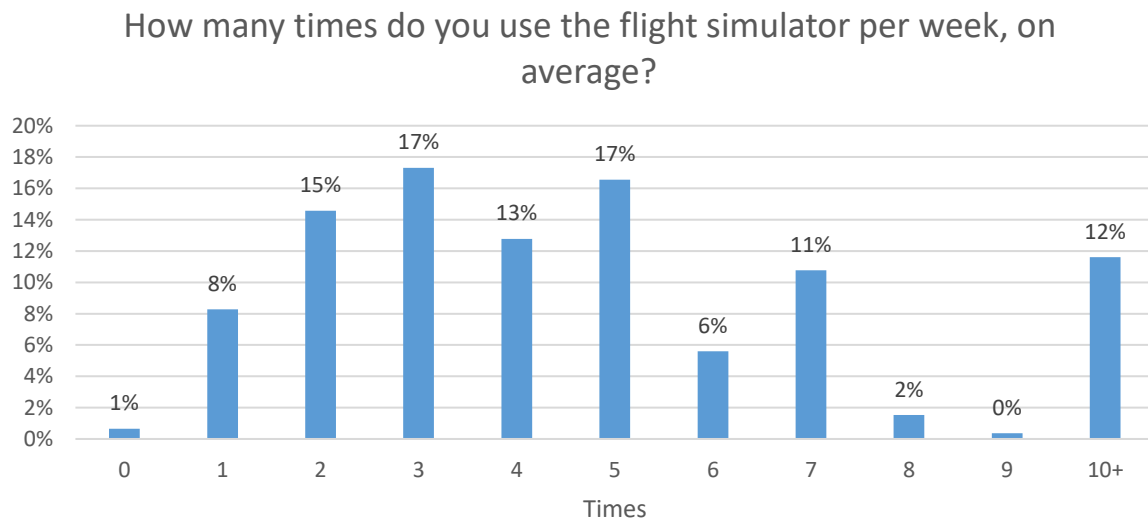
A new question for this year is the following: “How satisfied are you with software solutions available for managing the following flight phases?”. As shown below, most survey participants are very satisfied or satisfied when it comes to the available software solutions for the different phases. The flight phase that could be most improved is Debriefing/Sim session review.

How satisfied are you with software solutions available for managing the following flight phases?

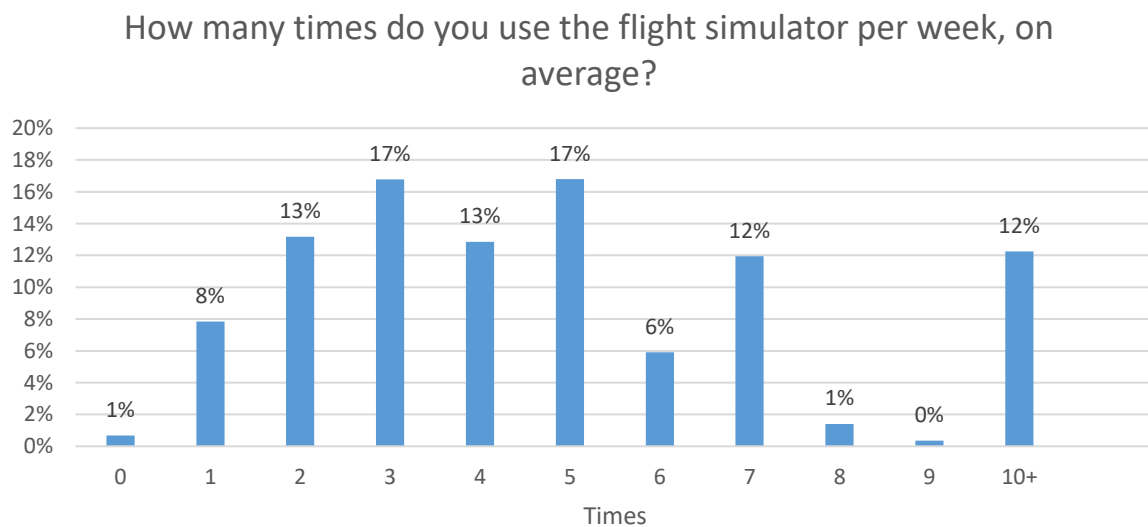


3.5.5. Usage – times per week

All respondents were asked how many times per week they use a flight simulator. We found that most use the flight simulator between 2-5 times a week.

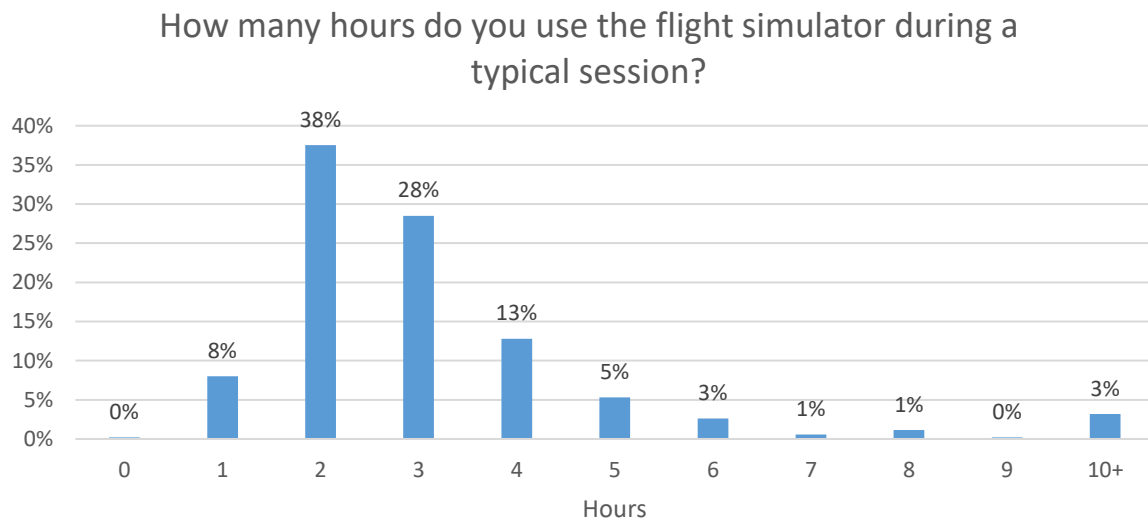


Last year's result:

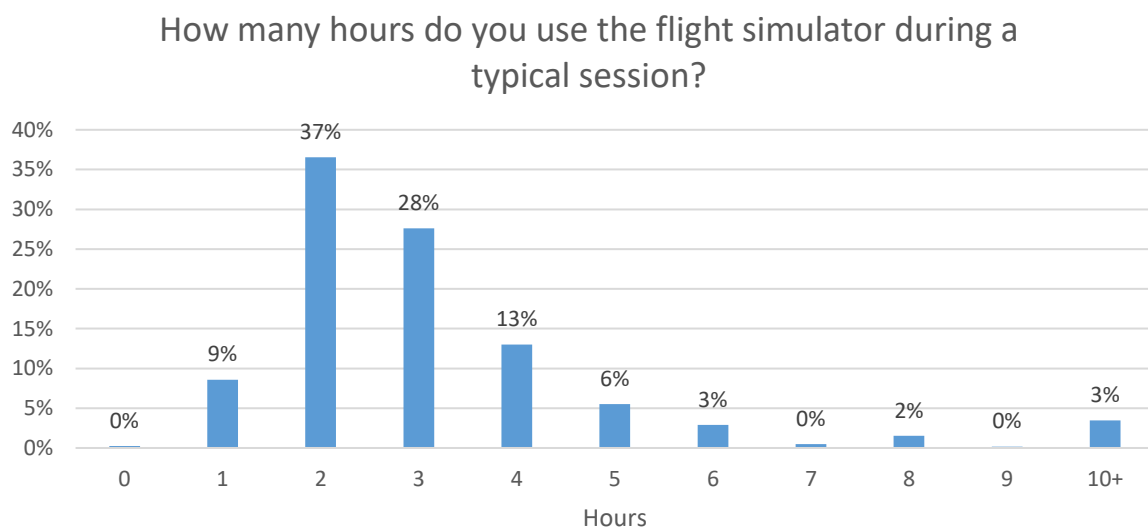


3.5.6. Usage – hours per session

All respondents were also asked how many hours they use the flight simulator during a typical session. We found that most sessions range from 1-4 hours, just like the last year.

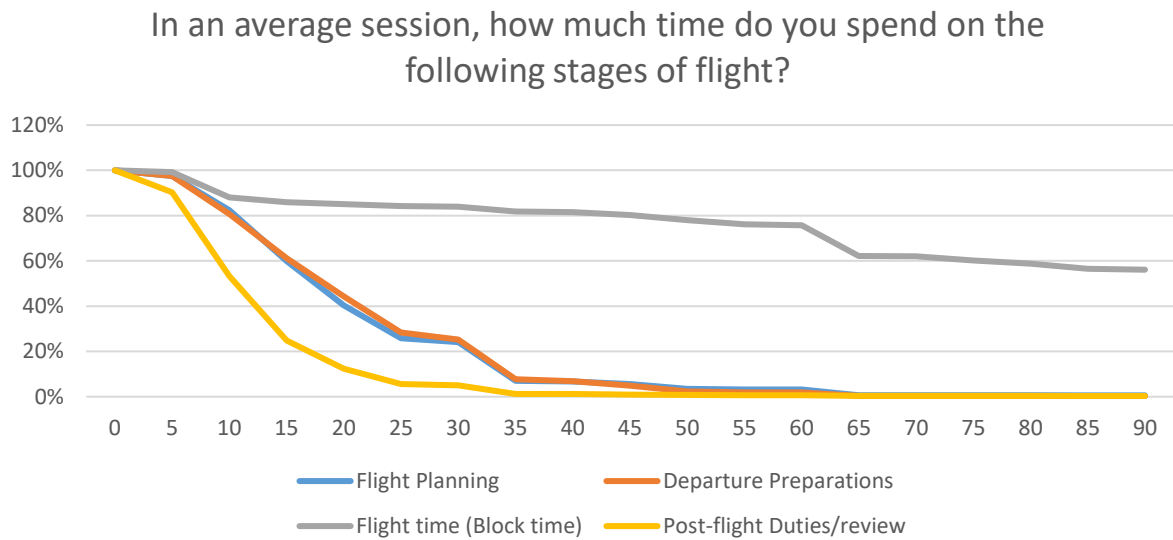


Last year's result:



3.5.7. Average session

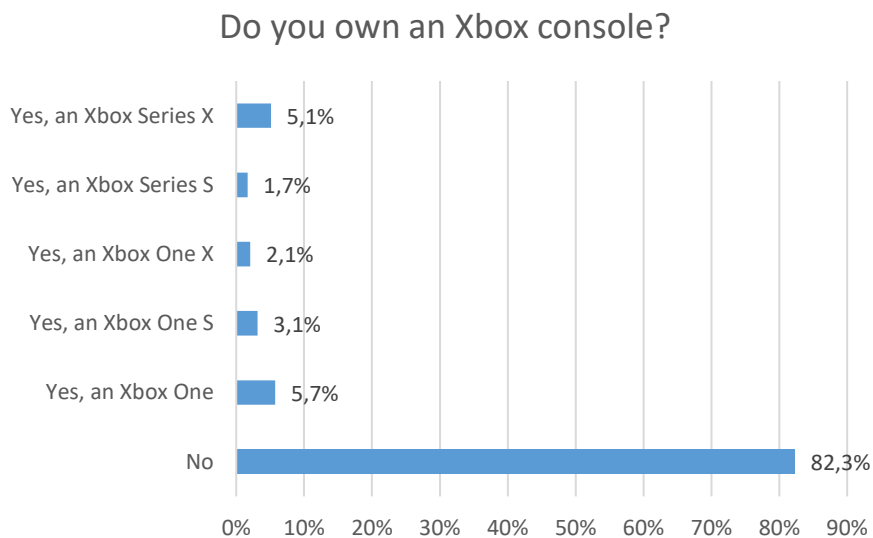
This year, we also wanted to know what an average flight session looks like in terms of time (in minutes) spent on the different flight stages. The results show that least time is spent on the post-flight duties, and equally much time is spent on flight planning and departure preparation. Most time is spent on the actual flight time.



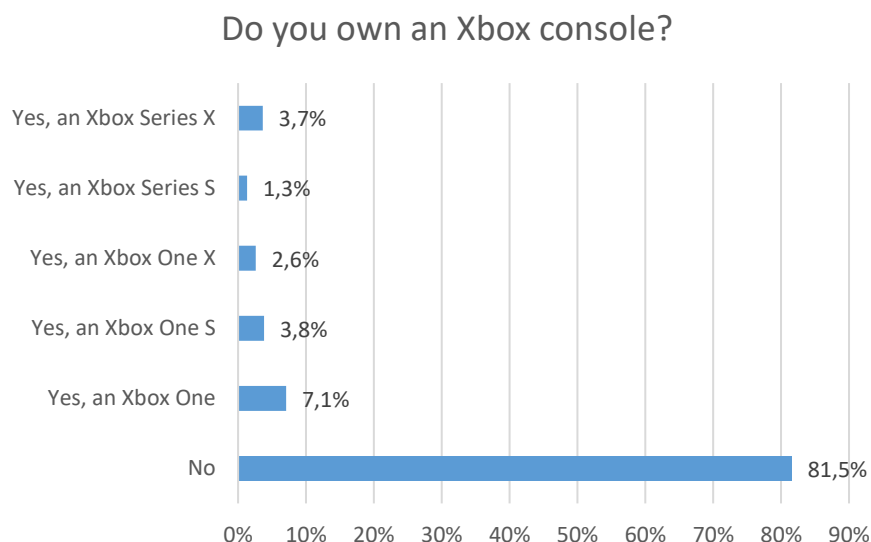
3.6 Simulator Habits - Console

3.6.1. Xbox Consoles

The following question was used to filter out Xbox users for the upcoming question. In last year's survey we added the new Xbox Series X and Xbox Series S as answer alternatives. The percentage of Xbox Series X users increased from 3.7% to 5.1%, and from 1.3% to 1.7% for Xbox Series S users during this year.

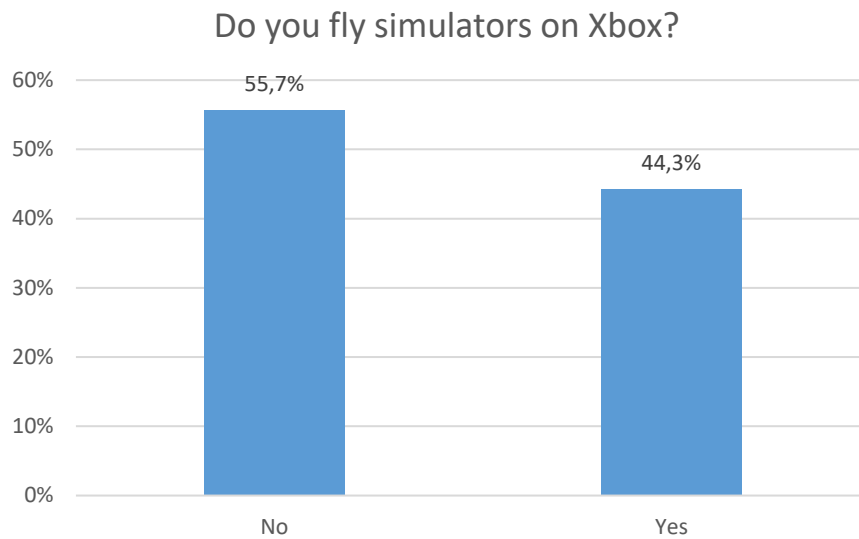


Last year's result:

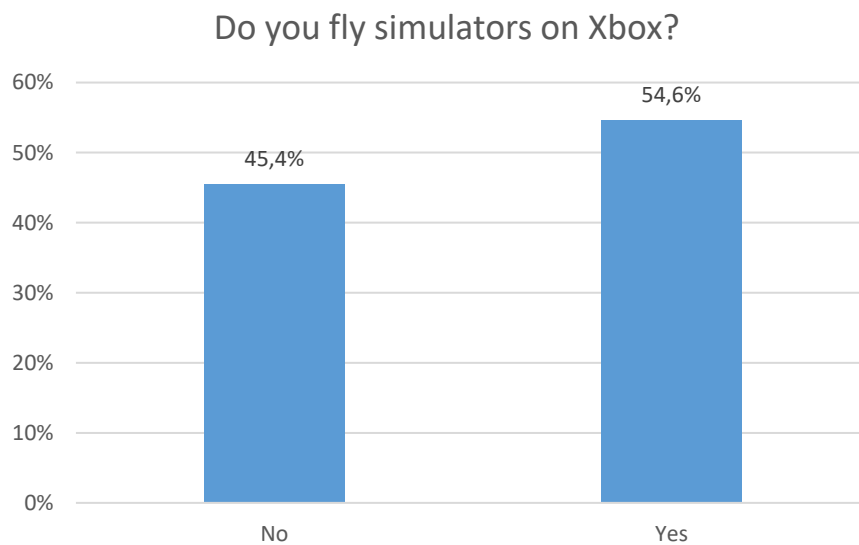


3.6.2. Console Activity

Since only the Xbox series X and S are compatible to simulation, we only asked this question to the respondents owning an Xbox series X or S.



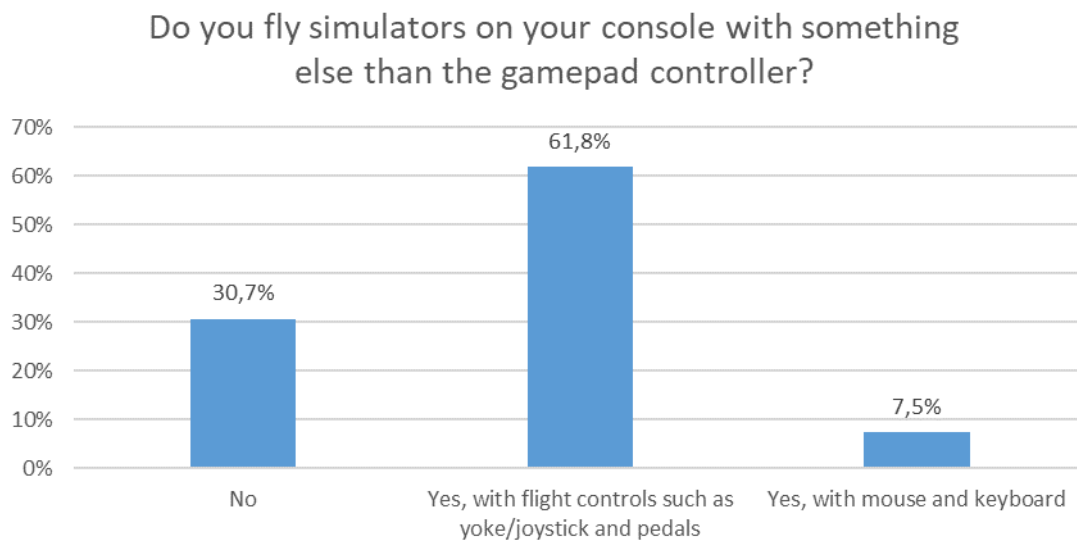
Last year's result:



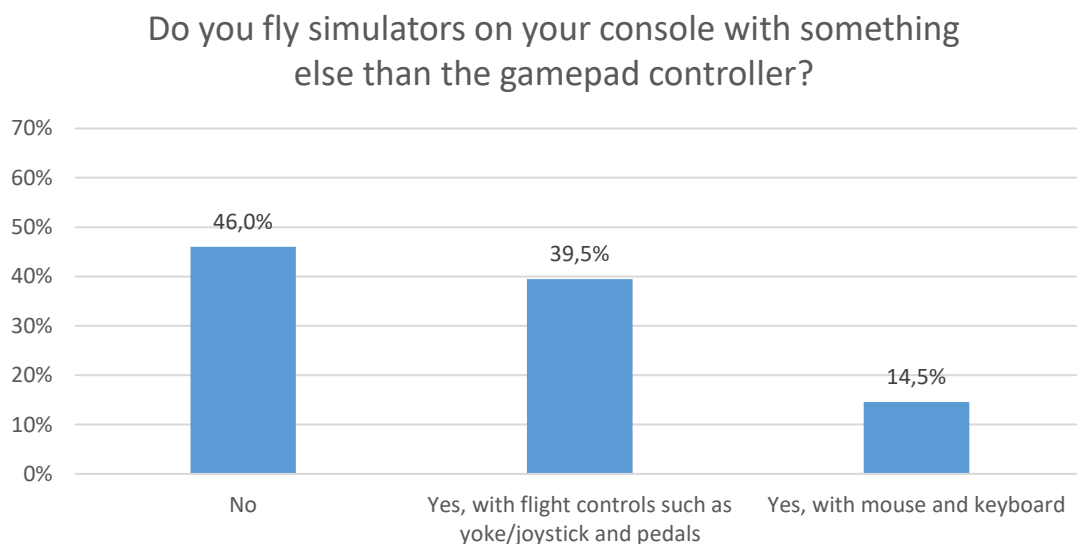
3.6.3. Console Controller

Continuing the topic of consoles, we would like to know if respondents connect any other peripherals aside from gamepad controllers to fly.

Since Microsoft Flight Simulator 2020 was released for Xbox in early 2021, we like last year asked the question “Do you fly simulators on your console with something else than the gamepad controller?”. Since last year’s result we can see that it has been an increase of the usage of yoke and pedals.



Last year’s result:



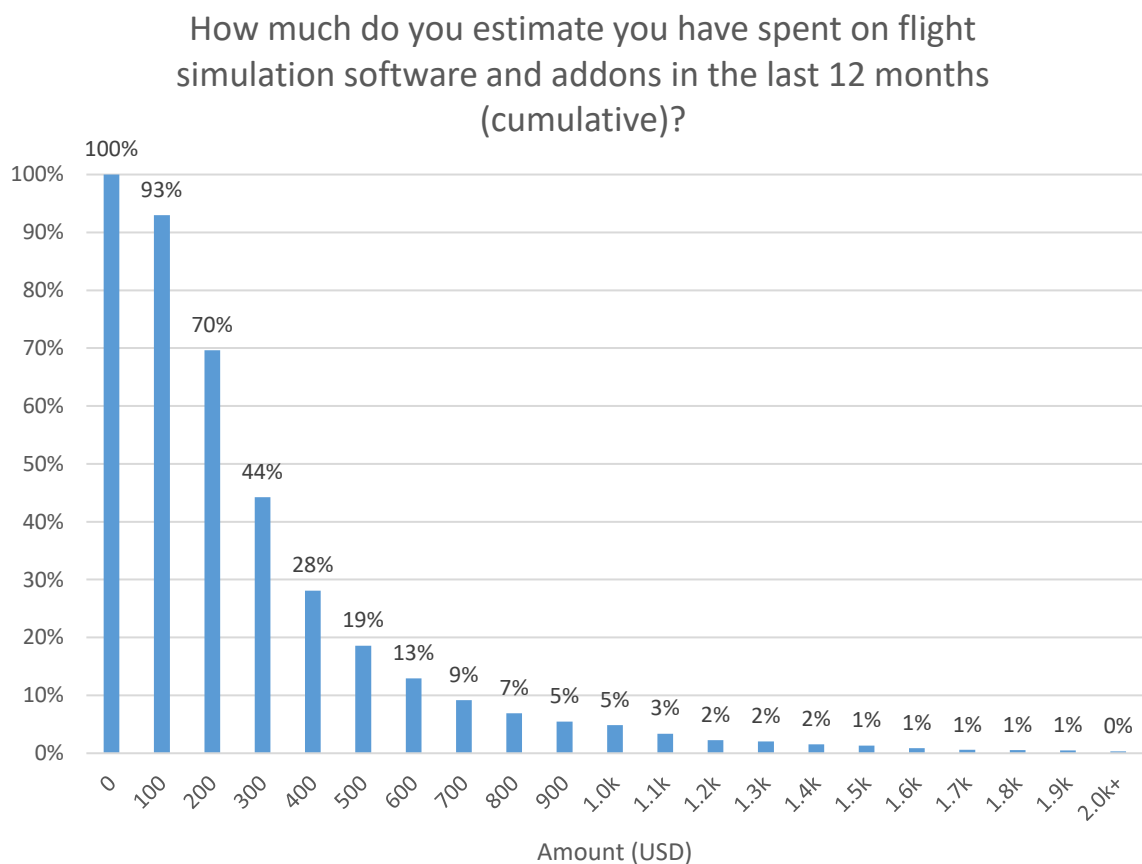
3.7. Consumption Habits

3.7.1. Software Expenses

This question has been a part of the survey since 2018, but since 2019 we only present a cumulative graph. The way to read it is: “44% have spent at least \$300 per year.” Obviously, 100% have spent at least \$0.

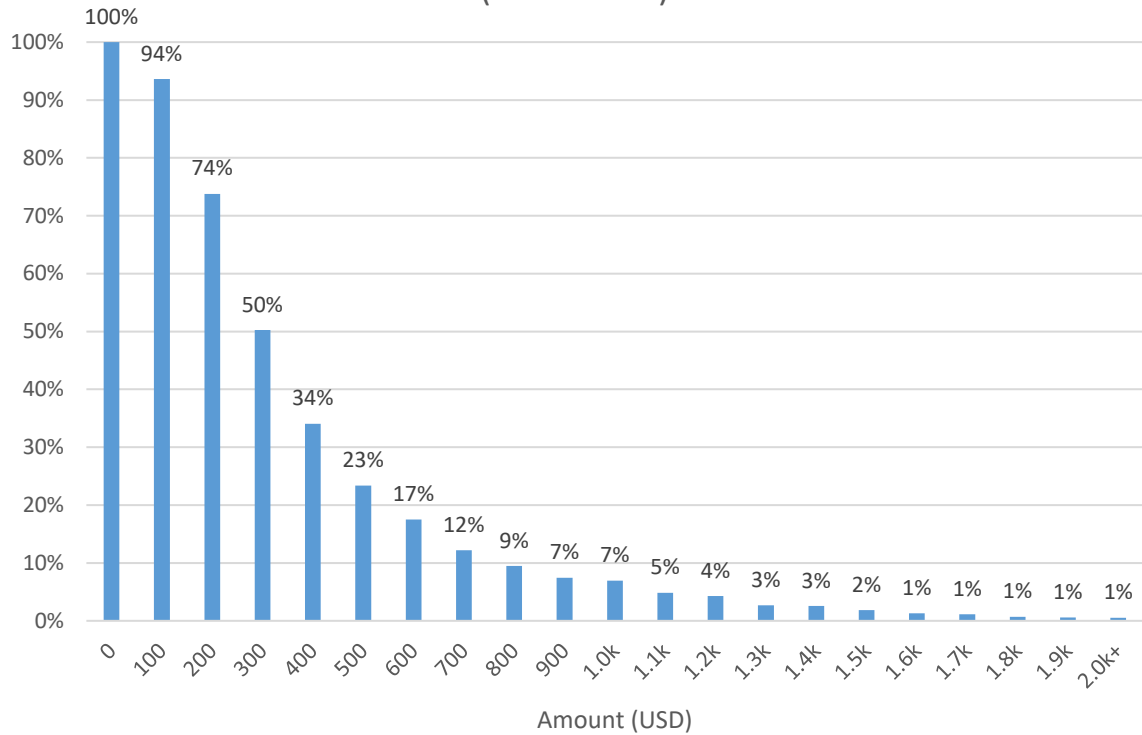
This year 70% have spent at least \$200. Last year 74% spent the same amount. This year 93% have spent at least \$100, 1% decrease since last year’s result.

After removing outliers, the average software spending gives us an average spend of \$705, which is the same as last year. A more reliable measurement is the median, which is the same as the two previous years, \$223. In 2019 the median was \$250, and in 2018 the median was \$245.



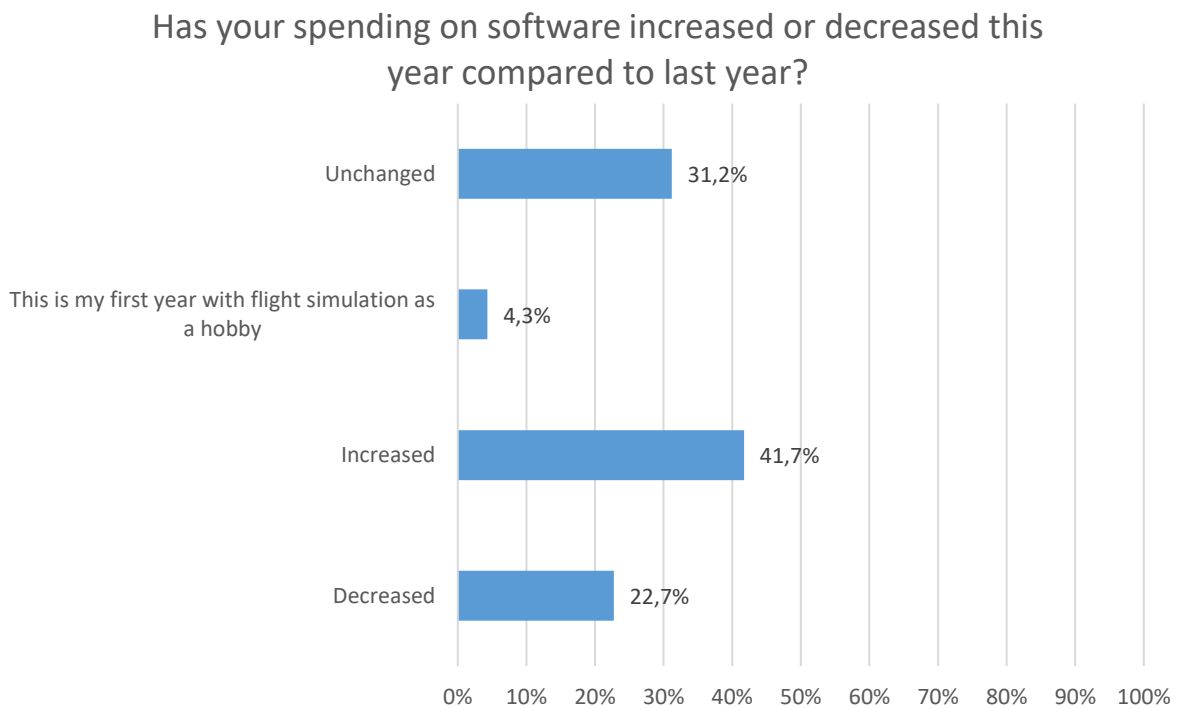
Last year's result:

How much do you estimate you have spent on flight simulation software and addons in the last 12 months (cumulative)?



3.7.2. Software Expense Comparison

This question about spending habits in relation to previous year is new to this year's survey. The result shows that 41.7% has spent more on hardware in 2022 in comparison to 2021. Less than 25% say that they have spent less money this year, and 31.2% say that they have spent the same amount as last year.



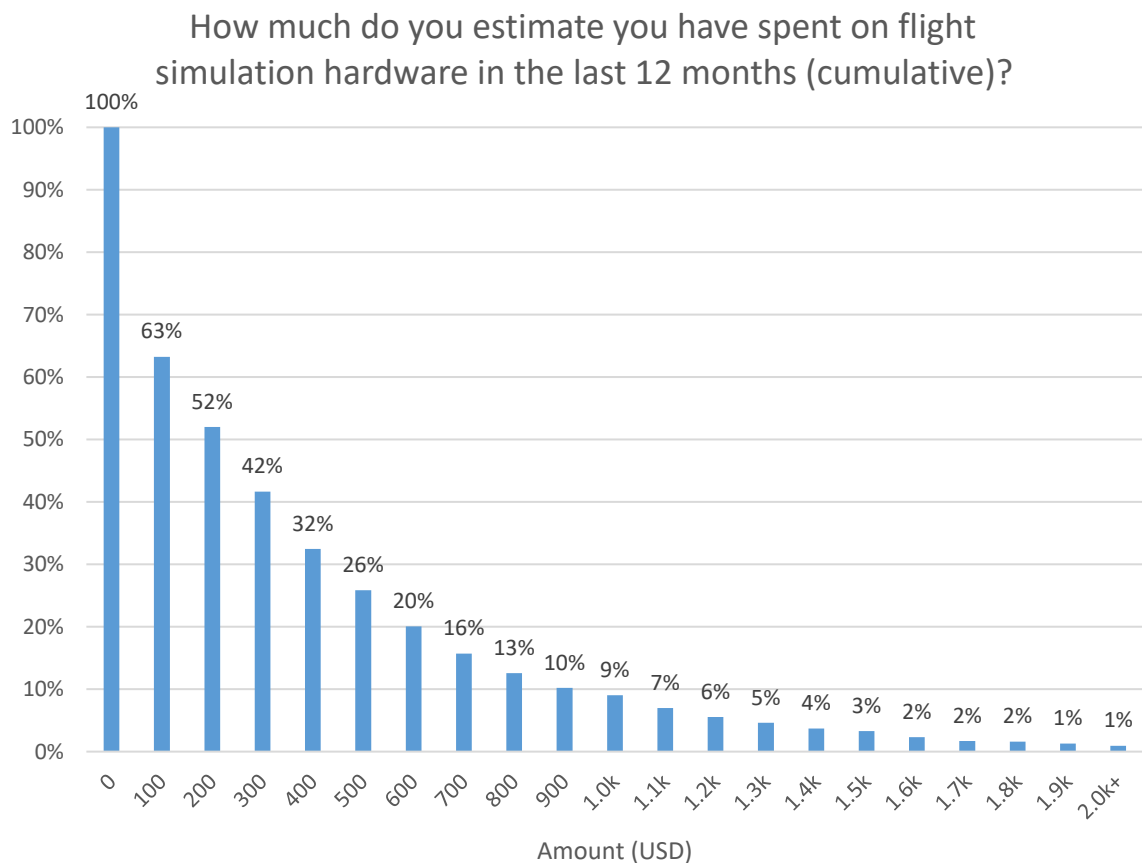
3.7.3. Hardware Expenses

This question has been asked in all previous years of the survey. Just like software expenses, hardware expenses are expressed as a cumulative graph. It should be read like this: 100% of the respondents have spent at least \$0 dollars this year. 32% have spent at least \$400 per year. 20% have spent at least \$600 per year. And so on.

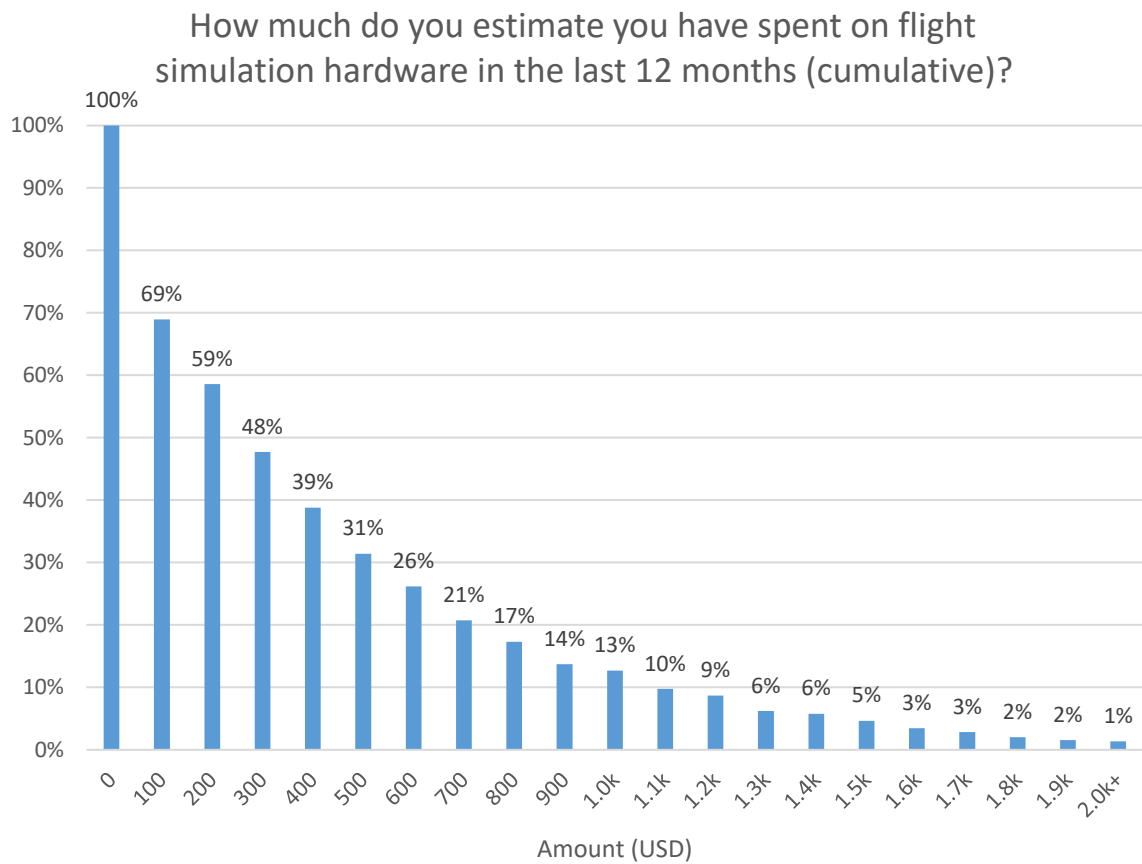
This year 63% have spent at least \$100 in comparison to last year when 69% spent at least \$100. In the year before that in 2020, 63% had spent at least \$100. This year 52% have spent at least \$200. Last year 59% spent at least \$200, and in 2020 51% spent the same amount.

Just like software expenses, the distributions look very similar to the previous year, but looking closer we can determine that the respondents have spent less money this year than last year.

The average hardware spending is \$622, but a more reliable measurement is the median which is \$150. Last year the median was \$245. The year before that it was \$167.

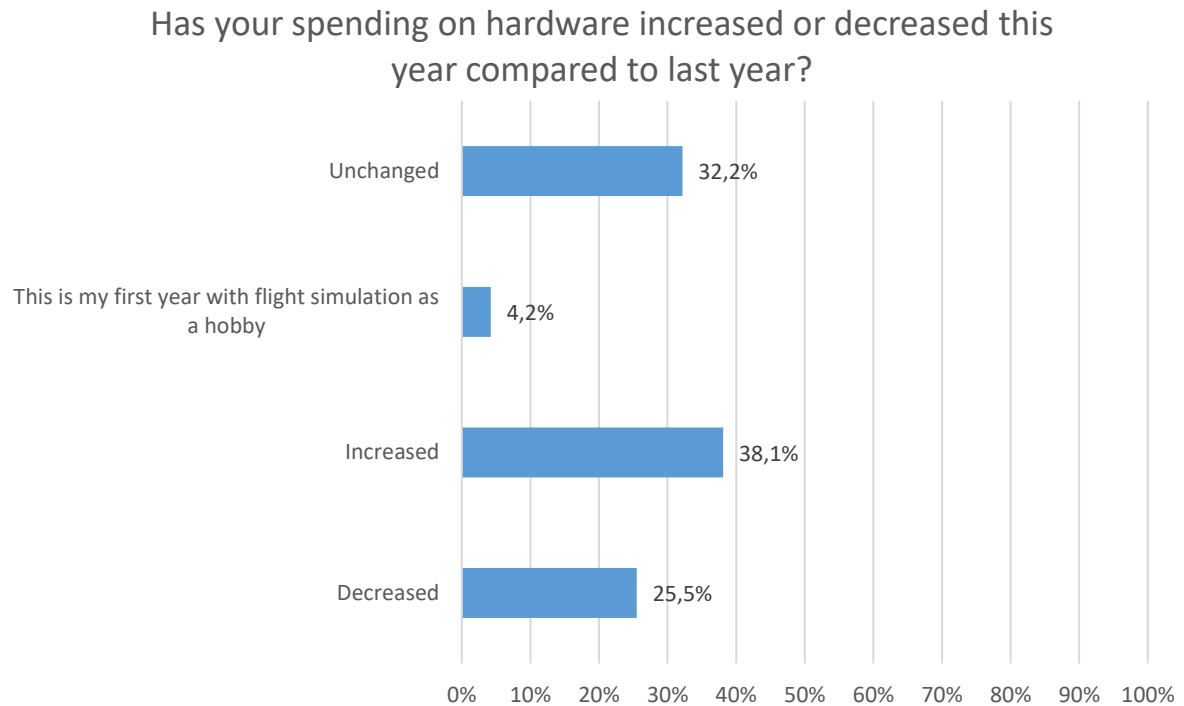


Last year's result:



3.7.4. Hardware Expense Comparison

Like the question on software, we want to know if spending on hardware has changed in comparison to the previous year. The result show that 38.1% has spent more money on hardware and 25.5% has spent less money this year compared to 2021.



3.7.5. Hardware Purchase Anticipation

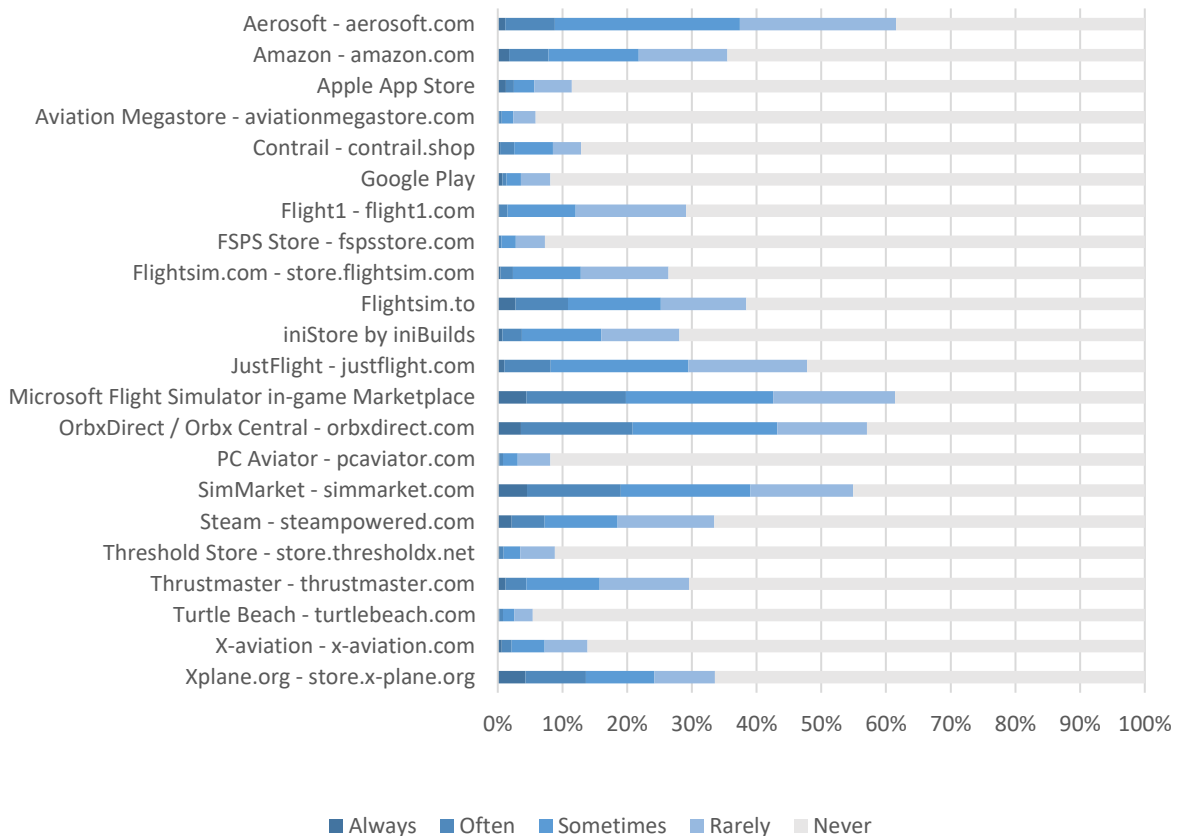
Another new question for this year's survey is "Do you plan to buy flight simulation hardware within the next 12 months?". The result is close to 50/50 on buying vs not buying.



3.7.6. Preferred Online Stores

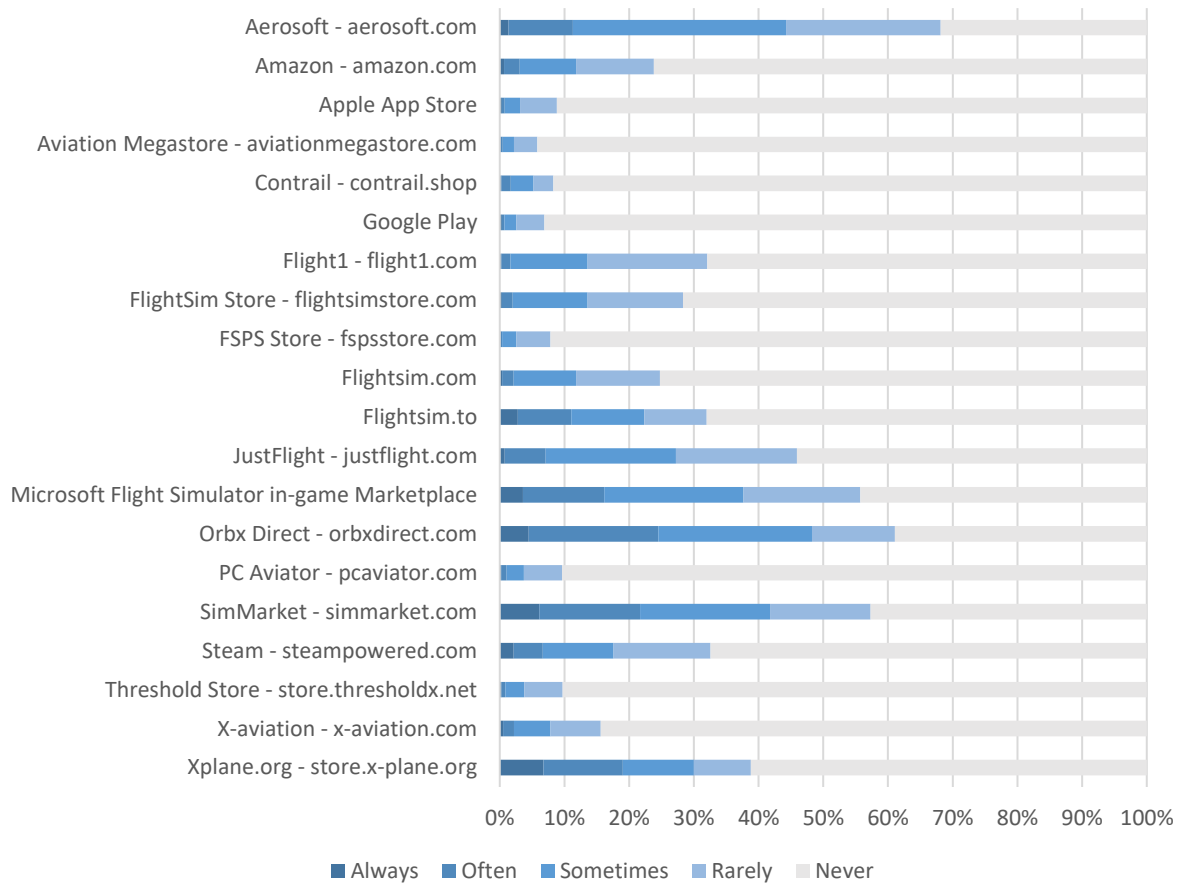
Just like last year we can see that Aerosoft, Microsoft Flight Simulator in-game Marketplace, OrbxDirect, and SimMarket are the most popular online stores. Thrustmaster and Turtle Beach were both added to the list of online stores this year.

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



Last year's result:

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



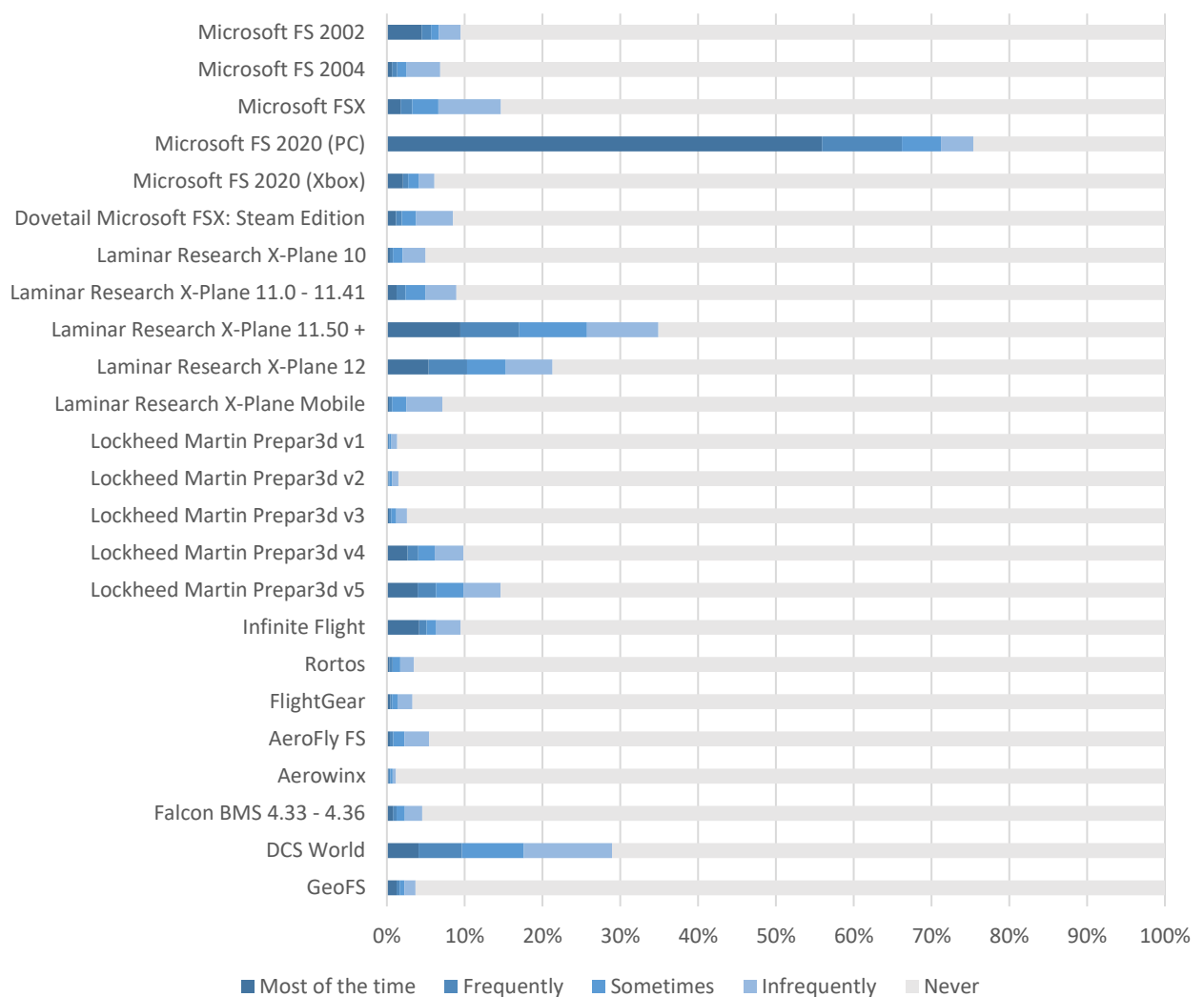
3.8. Simulator Platform

3.8.1. Simulator Software Preference

Microsoft Flight Simulator 2020 is still the most popular choice in this year's survey by the respondents. Respondents stating that they fly this simulator "Most of the time" has increased from 33.1% to 55.9%. This means that every second respondent currently use Microsoft Flight Simulator 2020 as their preferred flight simulator software.

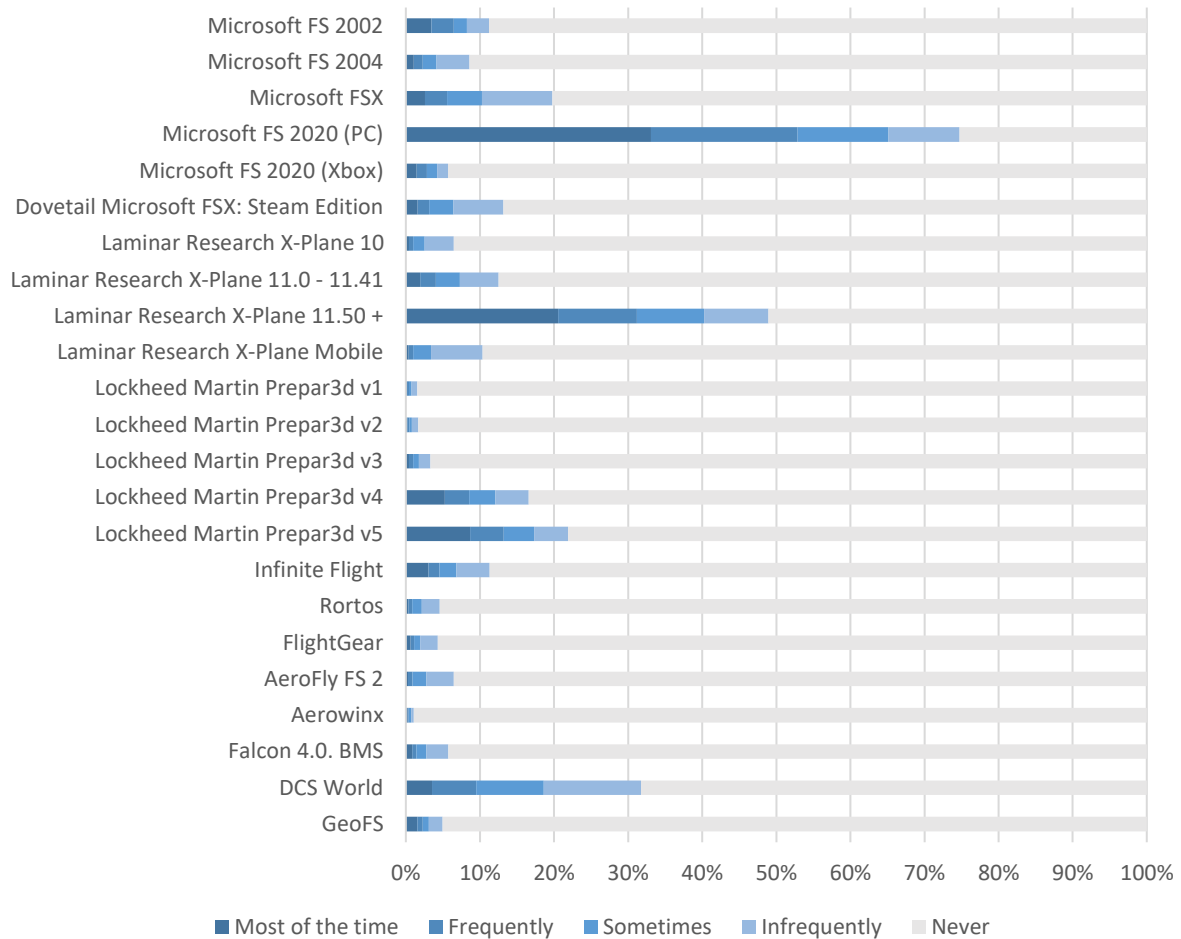
Laminar Research X-Plane 11.50+, X-Plane 12, as well as Prepar3D v4 and v5 are also popular flight simulators.

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



Last year's result:

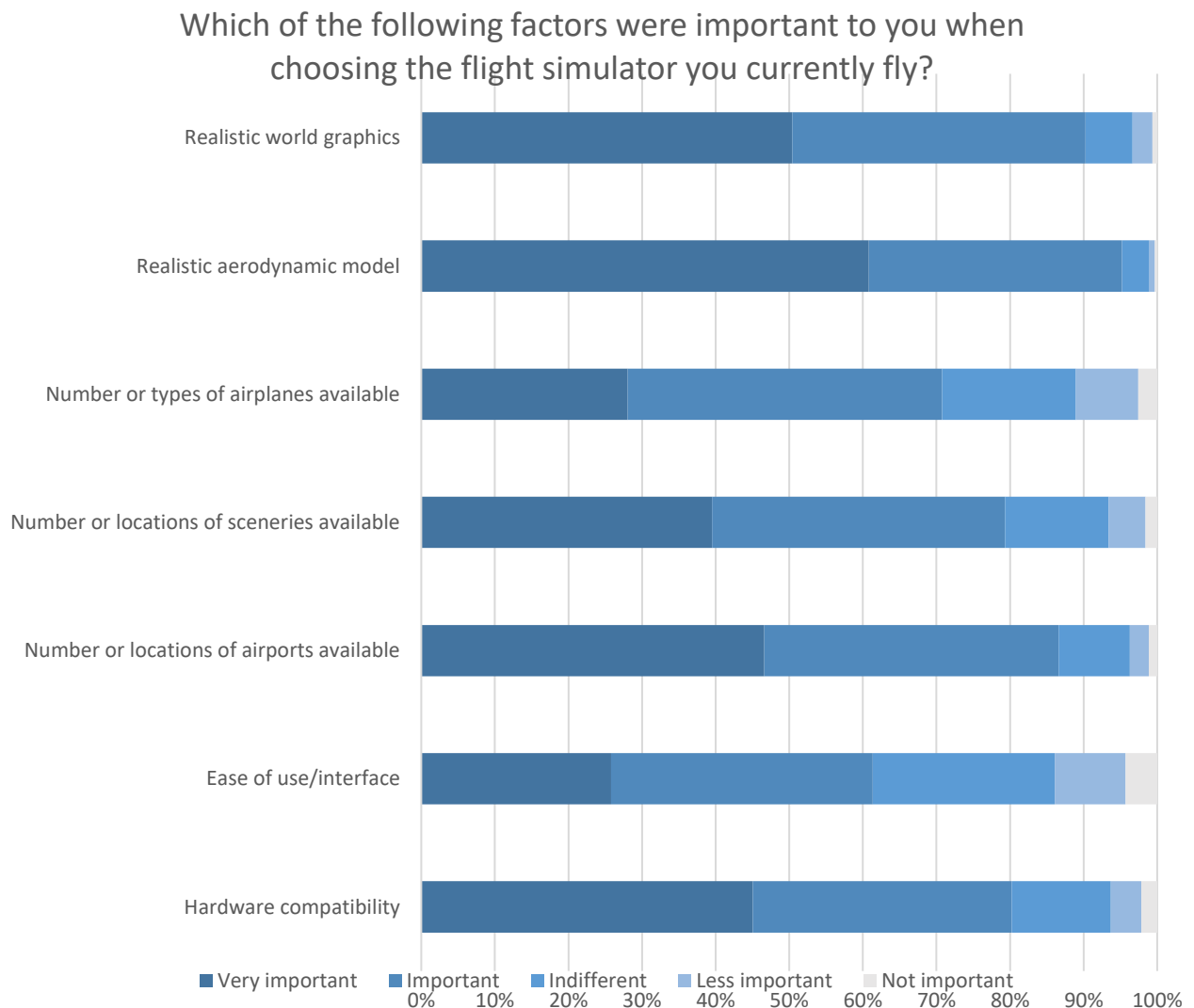
How often do you fly any of the following flight simulator software?



3.8.2 Important Flight Simulator Factors

This question is new for this year's survey. We wanted to know what factors are important to you when choosing the flight simulator you currently fly.

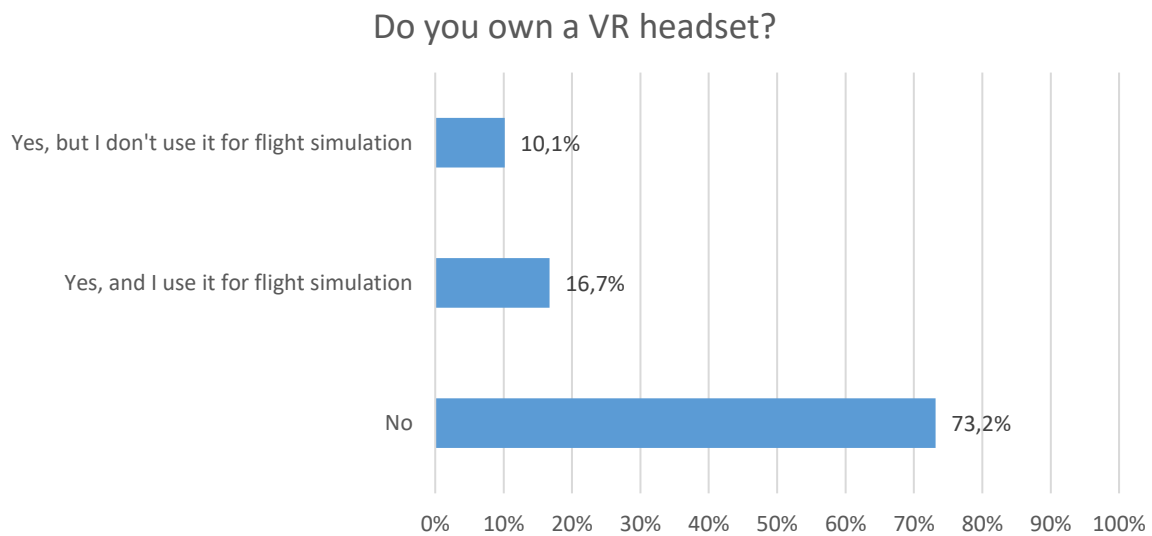
We can see that a realistic aerodynamic model is very important for the respondents. Realistic world graphics and the number or types of airplanes available are also s important factors for the respondents. Ease of use/interface and number or locations of airports available is less important for most respondents.



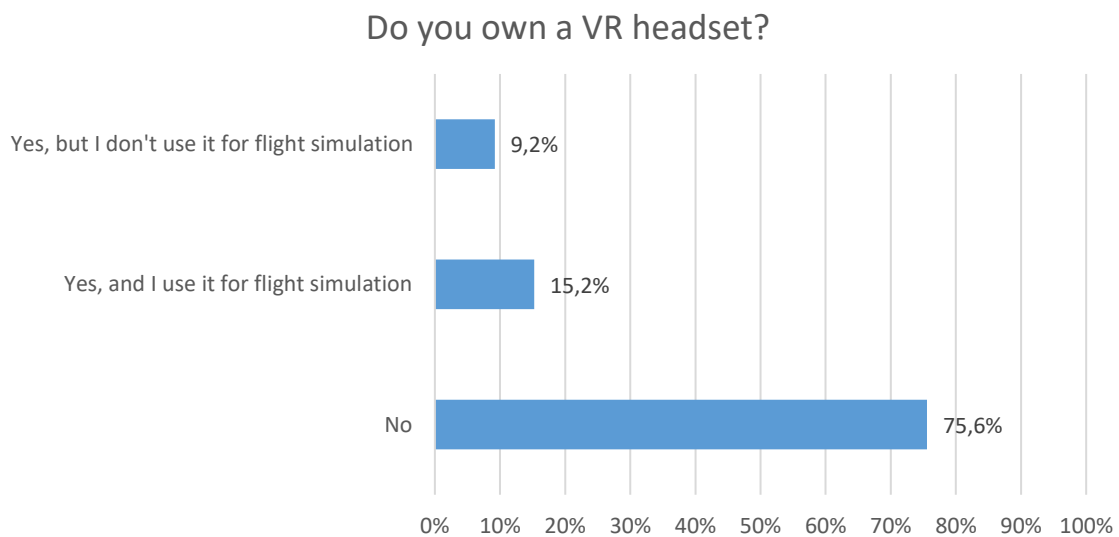
3.9. Virtual Reality

3.9.1. Ownership

The last four years we have asked this question and the total amount of users who own a VR headset has increased the last two years. Last year 24.4% of the respondents owned a VR headset, of which most of them use it for flight simulation. This year we can see that 26.8% of the responders own a VR headset.



Last year's result:

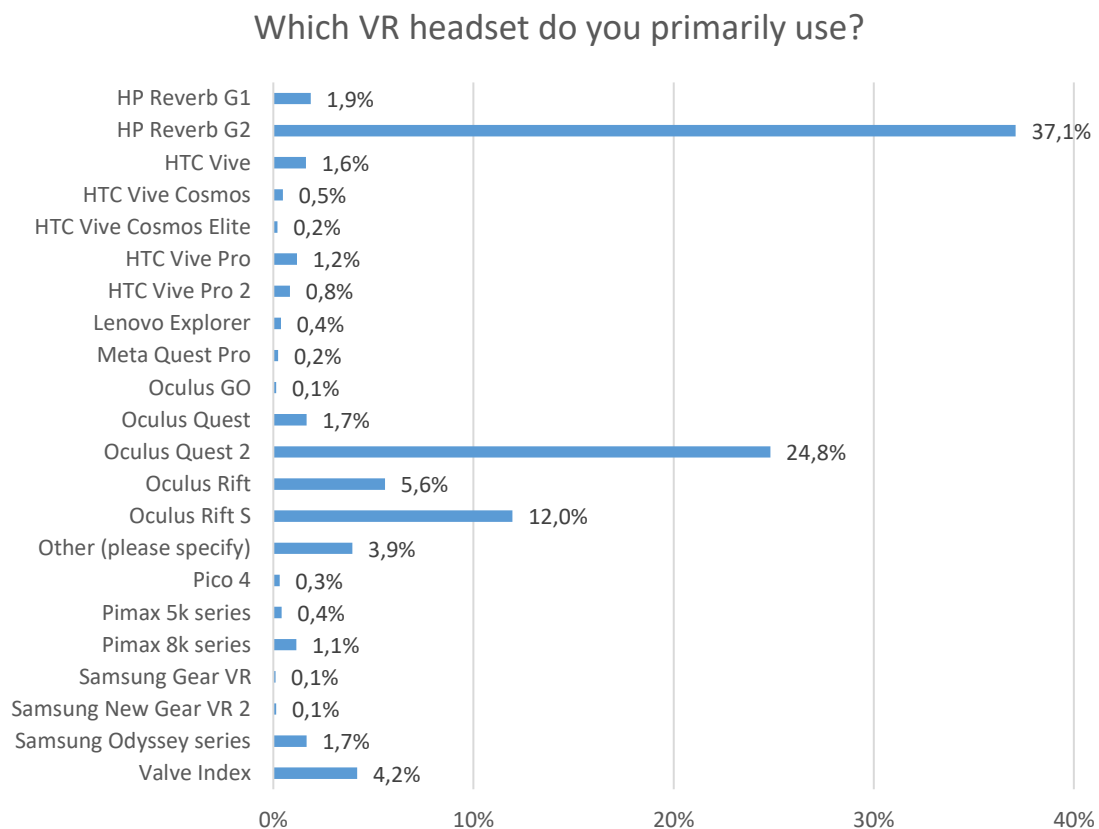


3.9.2. Brand

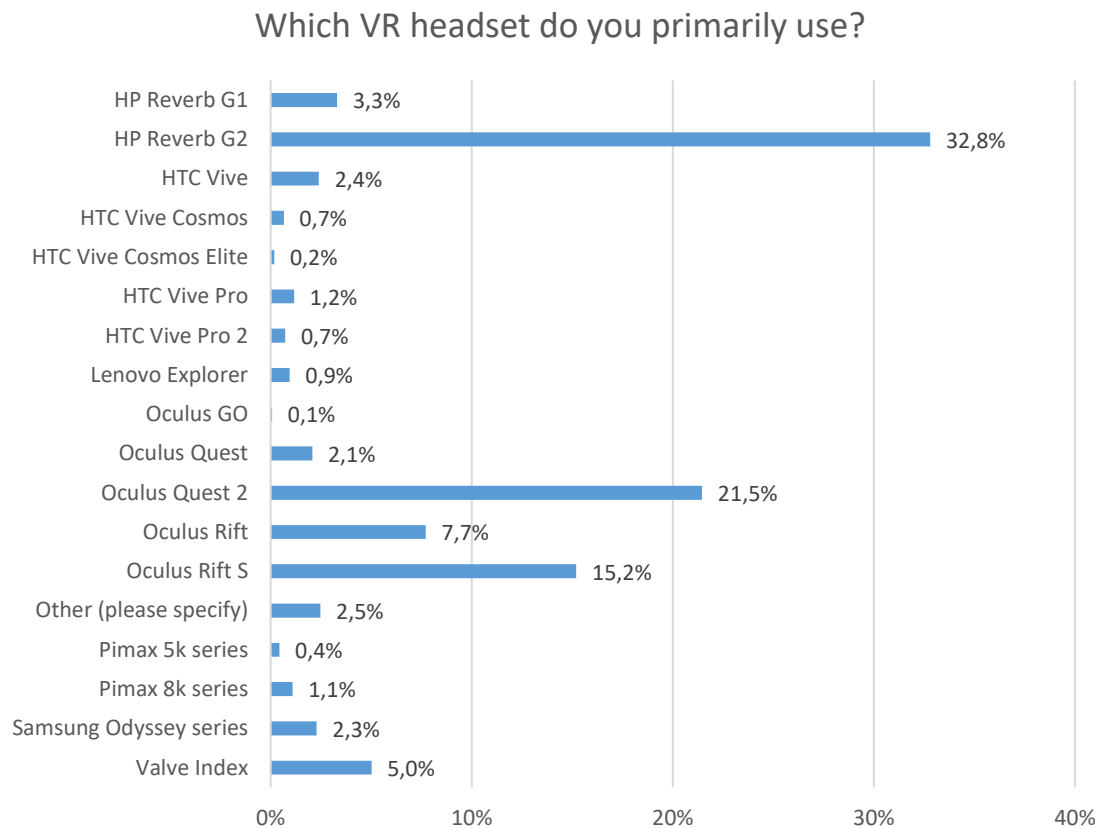
The following questions regarding VR were only asked to respondents who stated they owned a VR headset.

This question was in the survey 2019, 2020 and 2021 with minor updates in the list.

This year's result is very similar to last year's result. The HP Reverb G2 is mostly used, followed by Oculus Quest 2 and Oculus Rift S. However, the Varjo Aero was frequently mentioned in the free text field and thereby became the 7th most popular choice.



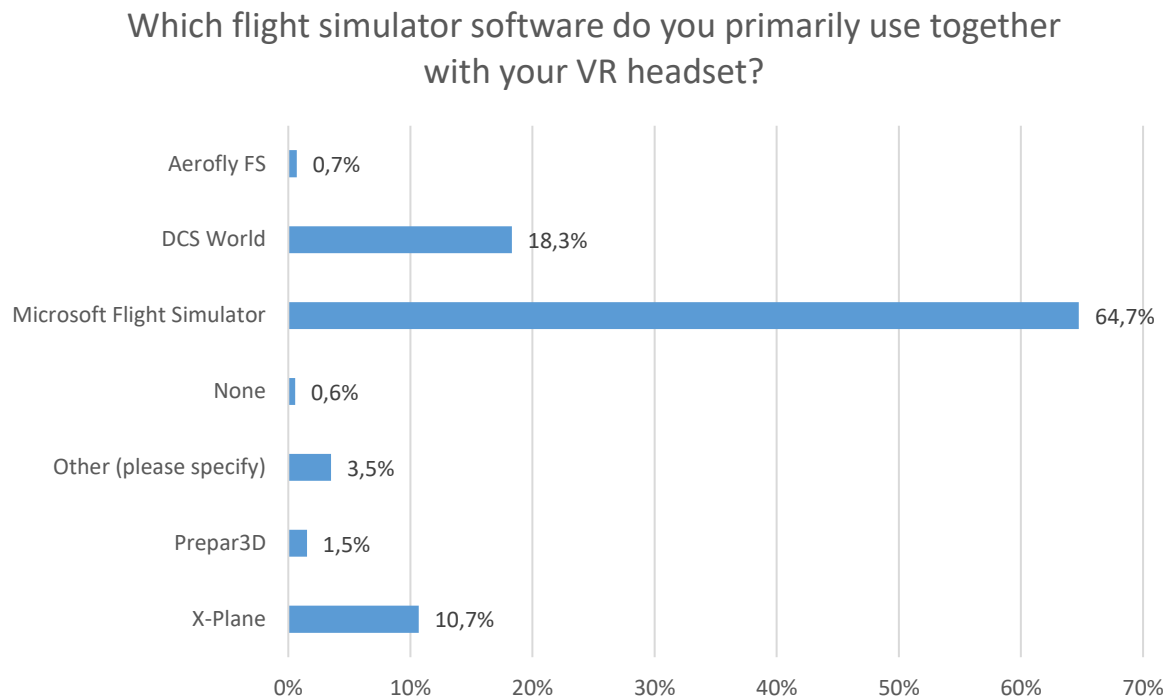
Last year's result:



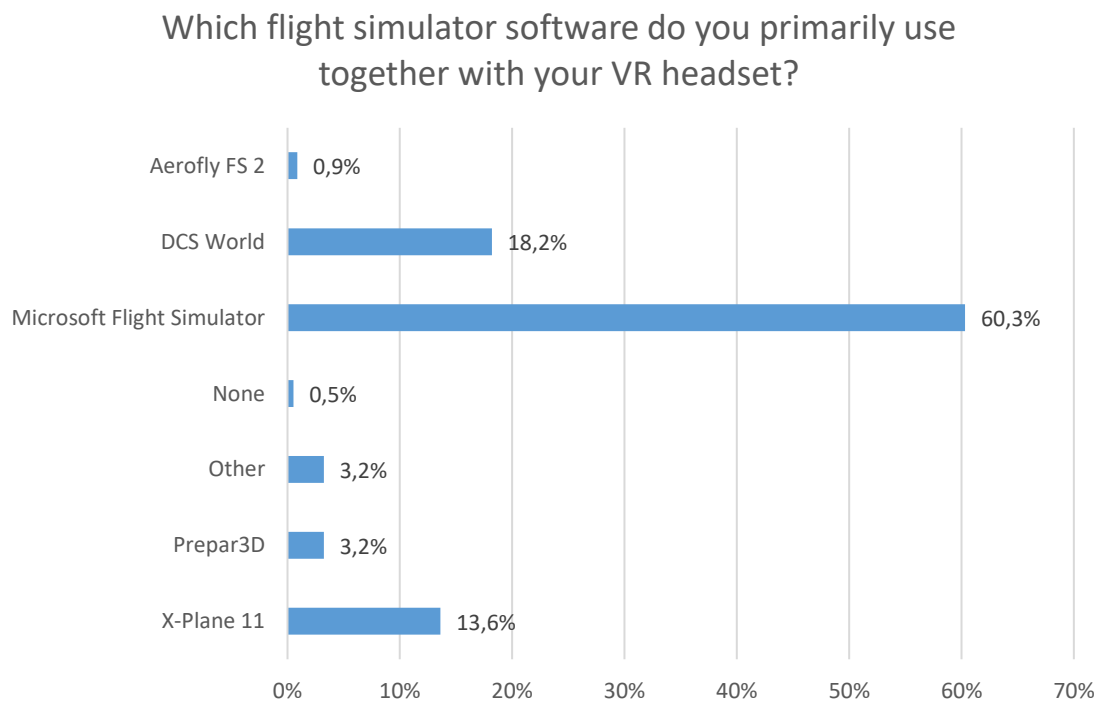
3.9.3. VR Simulator Software

Like last year we can see that Microsoft Flight Simulator is increasing and is still used by most. 64.7% of the responders use it compared to last year's result 60.3%.

X-Plane and DCS continues to be a popular flight simulator software option for VR.



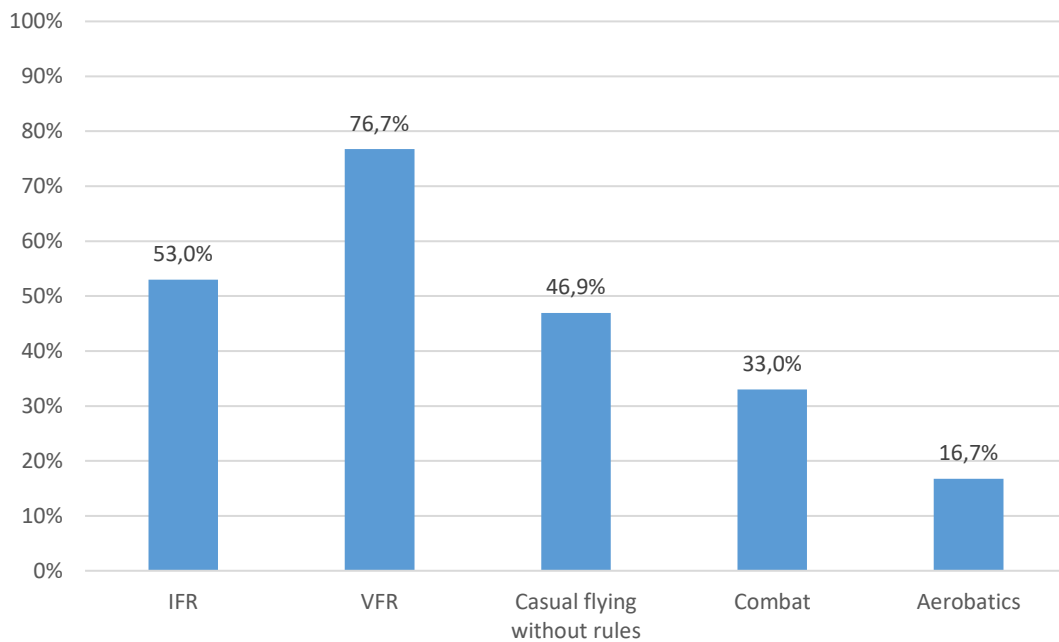
Last year's result:



3.9.4. VR Flight Types

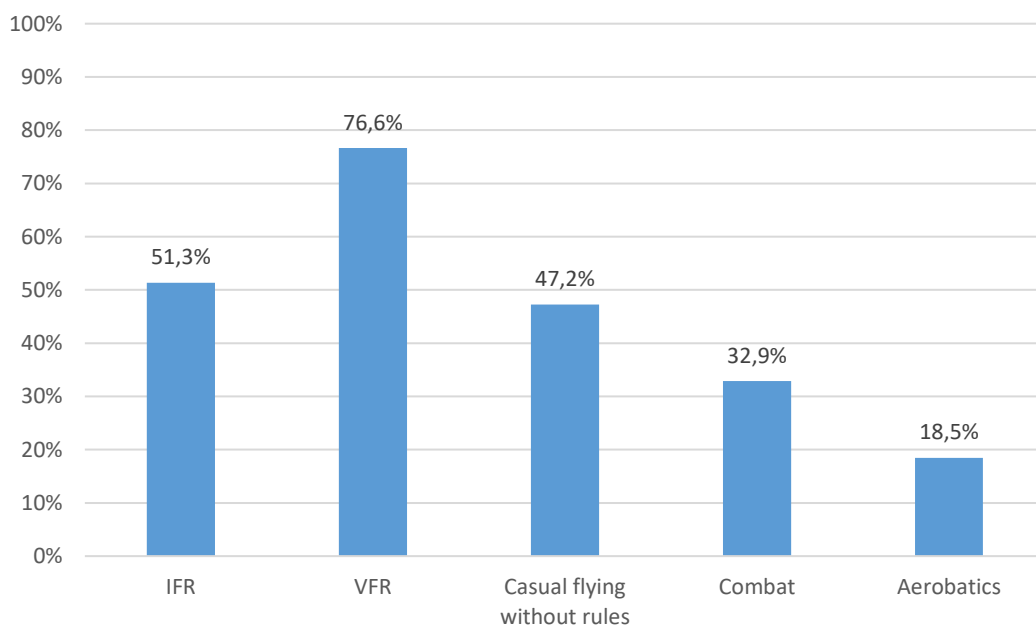
The most common type of flying is VFR, which is same as last year. In second place we find IFR which increased by 1.7 percentage points compared to the previous year. In third place we see “Casual flying without rules”.

What type of flying do you use VR for?



Last year's result:

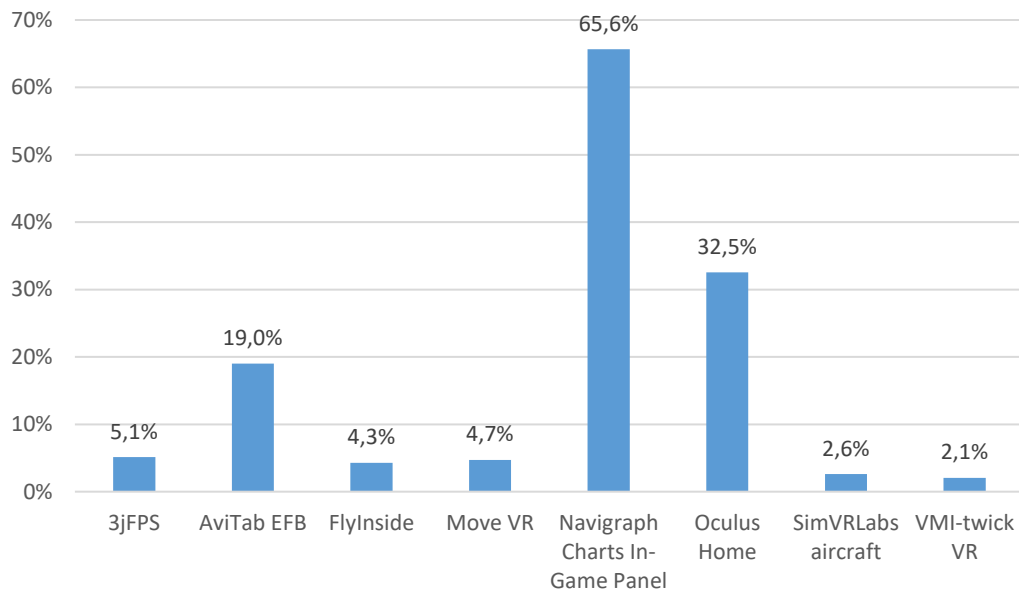
What type of flying do you use VR for?



3.9.5. VR Plugins/Mods

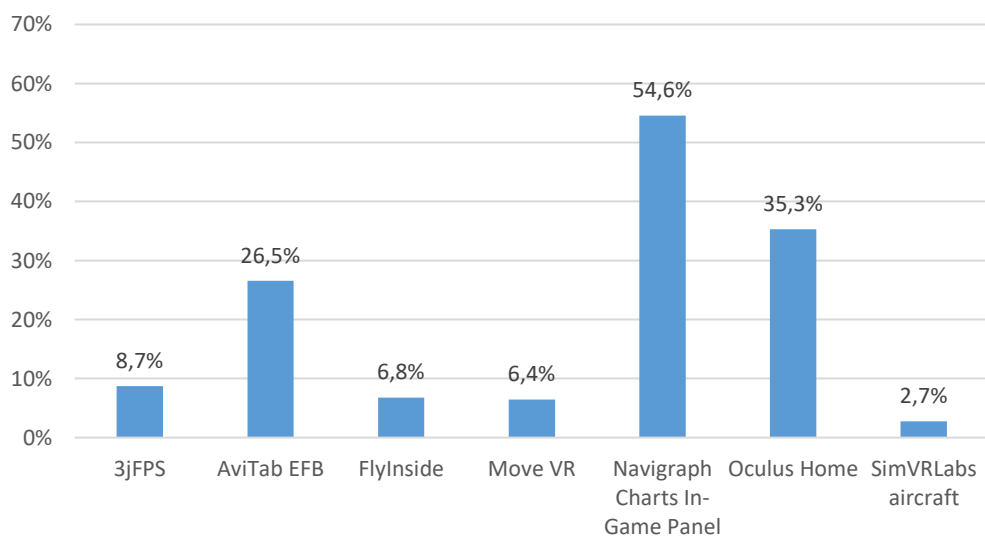
This year VMI-twick VR was added as an option. The Navigraph Charts In-Game Panel is still the most popular VR plugin/mod together with Oculus Home. AviTab EFB is still in third place even though AviTab has decreased from 26.5% to 19.0% since last year.

Which plugins/mods do you use to improve your VR experience in the simulator?



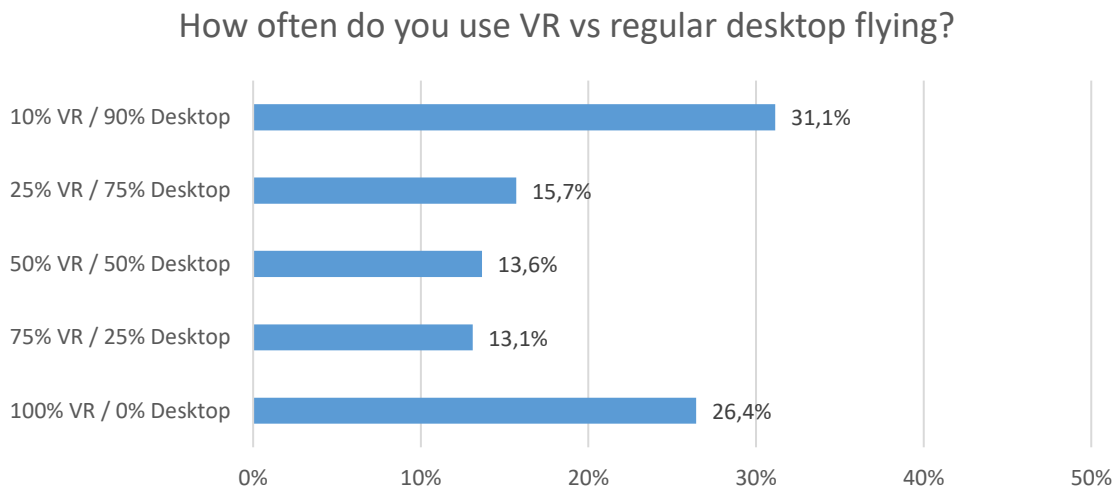
Last year's result:

Which plugins/mods do you use to improve your VR experience in the simulator?

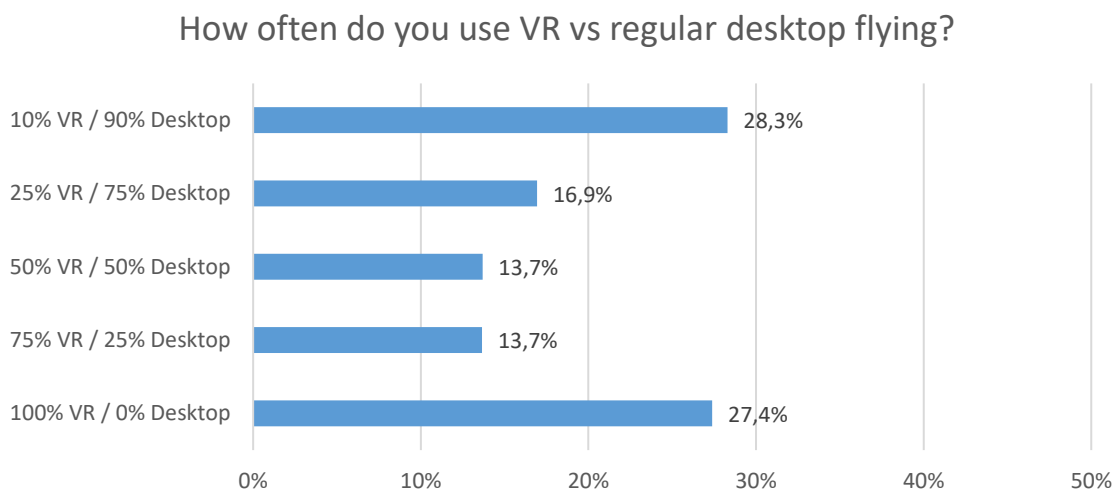


3.9.6. VR vs Desktop Flying

The distribution of VR vs Desktop flying is like last year. 26.4% use their VR headset 100% of the time while flying. The corresponding number for last year was 27.4%. However, the year before, in 2020 (not pictured here), only 16.4% used their VR headset for 100% of the flights.

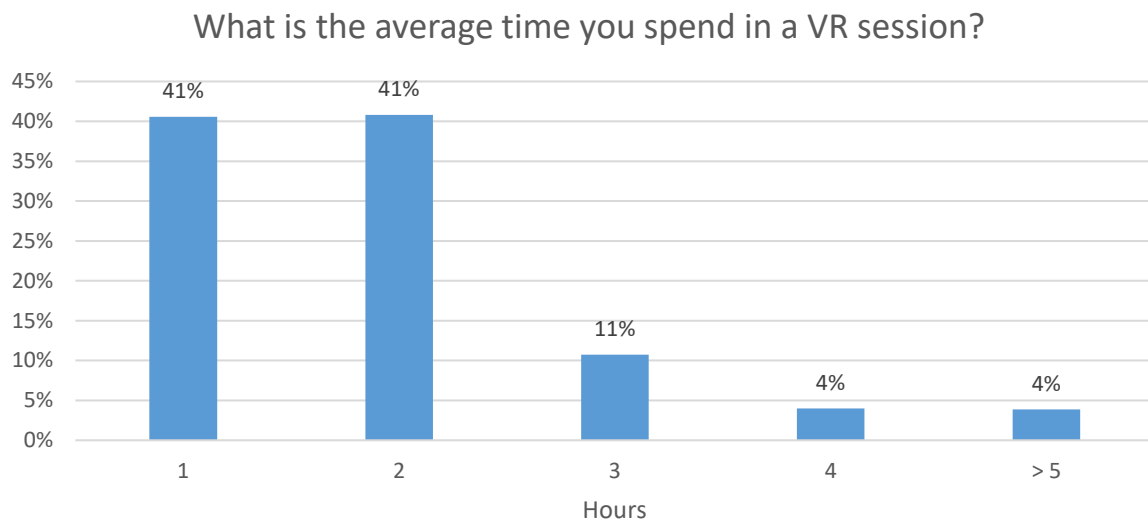


Last year's result:

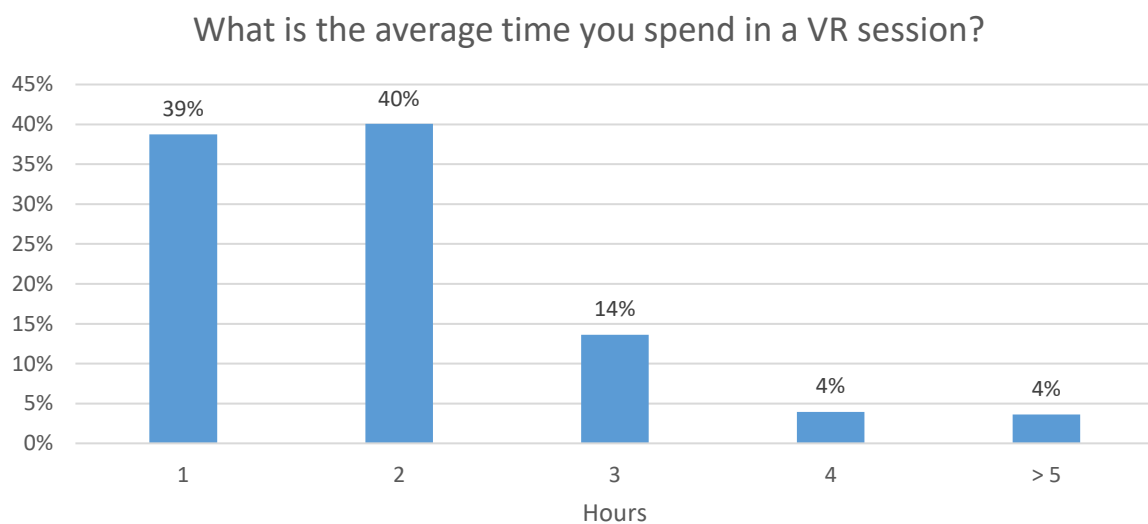


3.9.7. VR Session Duration

In last year's survey, 2h sessions were the most common. In this year's survey, we can see that 1h and 2h sessions share first place at 41% each. We can also see that the 3h session has dropped 3 percentage points since last year from 14% to 11%.



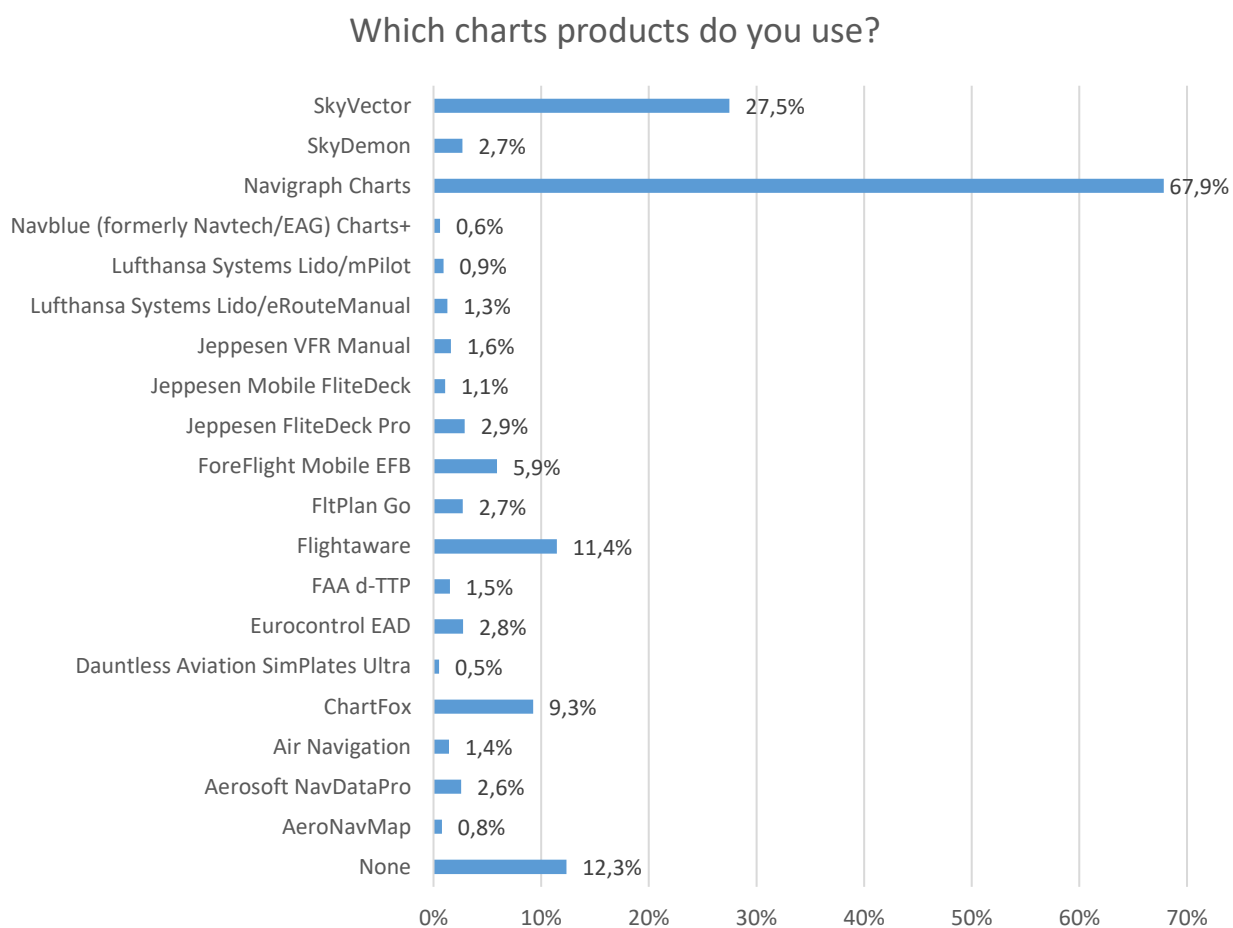
Last year's result:



3.10. Charts Products and Addons

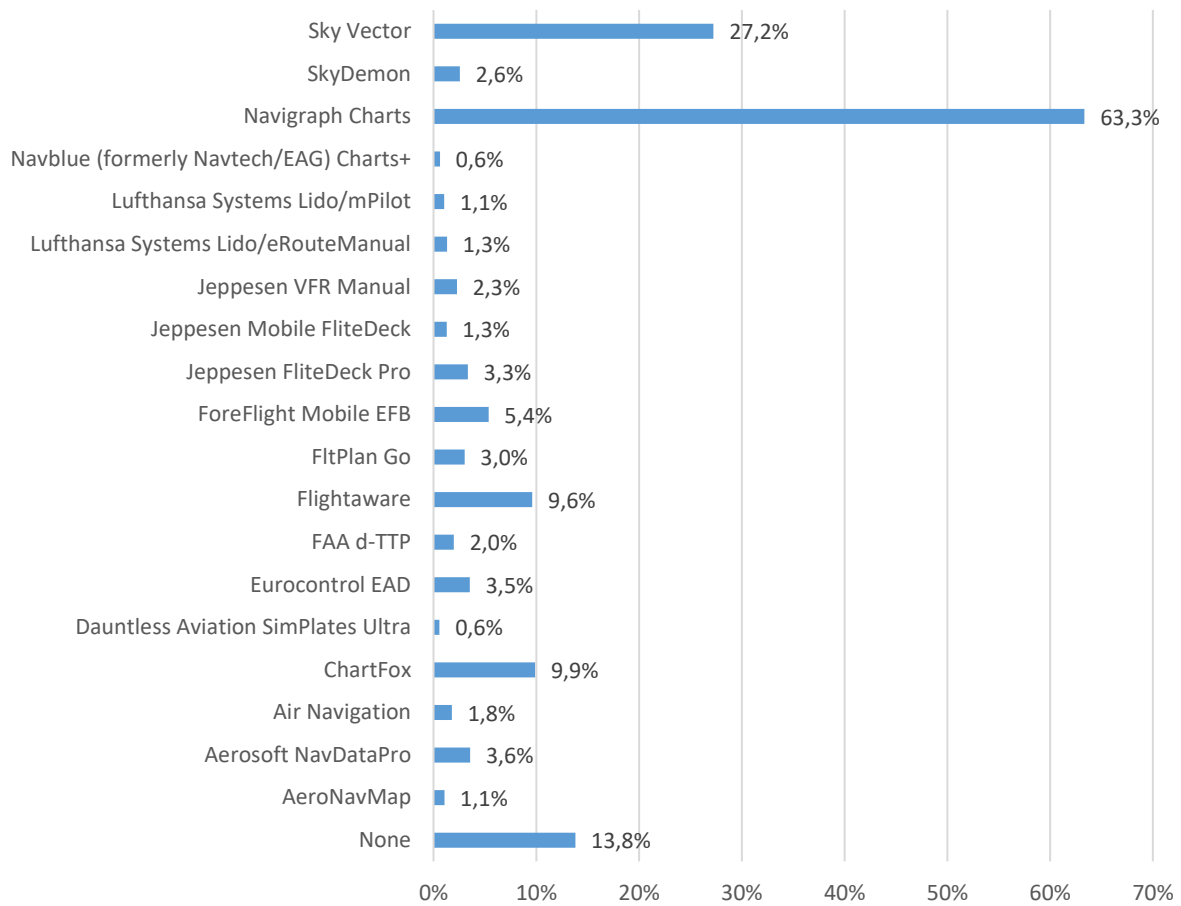
3.10.1. Charts Products Popularity

Navigraph Charts, SkyVector, and FlightAware are the most used charts products. This result is consistent with results from the last two years.



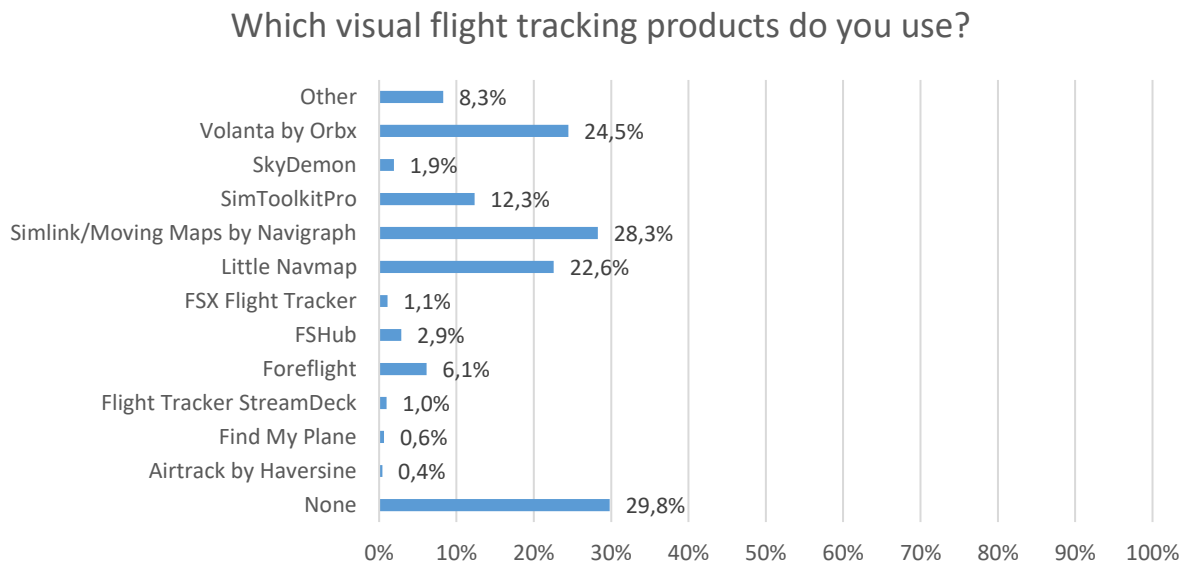
Last year's result:

Which charts products do you use?

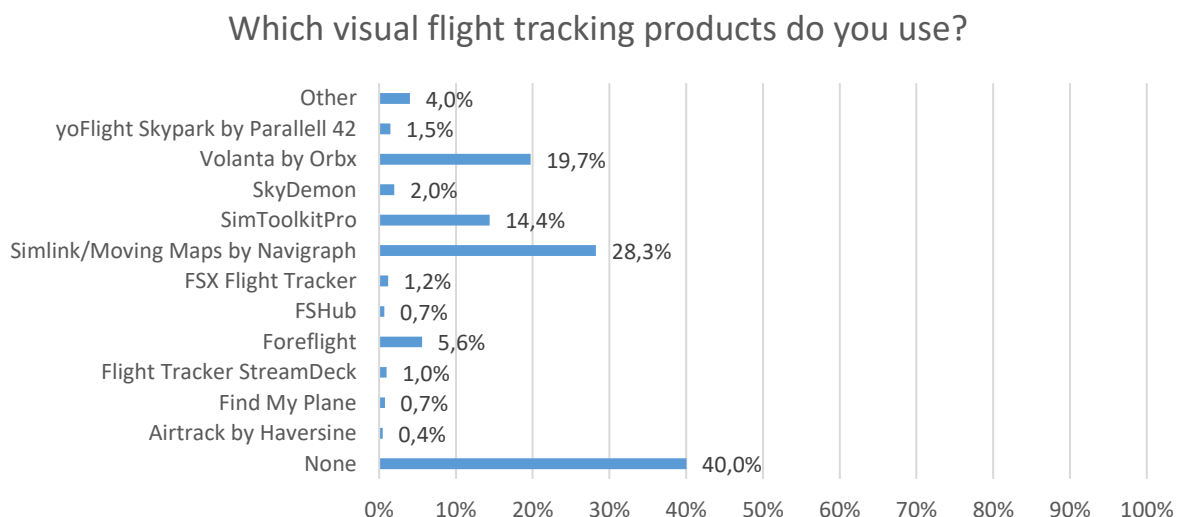


3.10.2. Flight Tracking Products

With this question we wanted to know which products our respondents use for tracking their flights, if any. This year Little Navmap was added as an option, and it is the third most popular choice whilst Simlink/Moving Maps by Navigraph and Volanta by Orbx is still the two most popular choice by the respondents.



Last year's result:

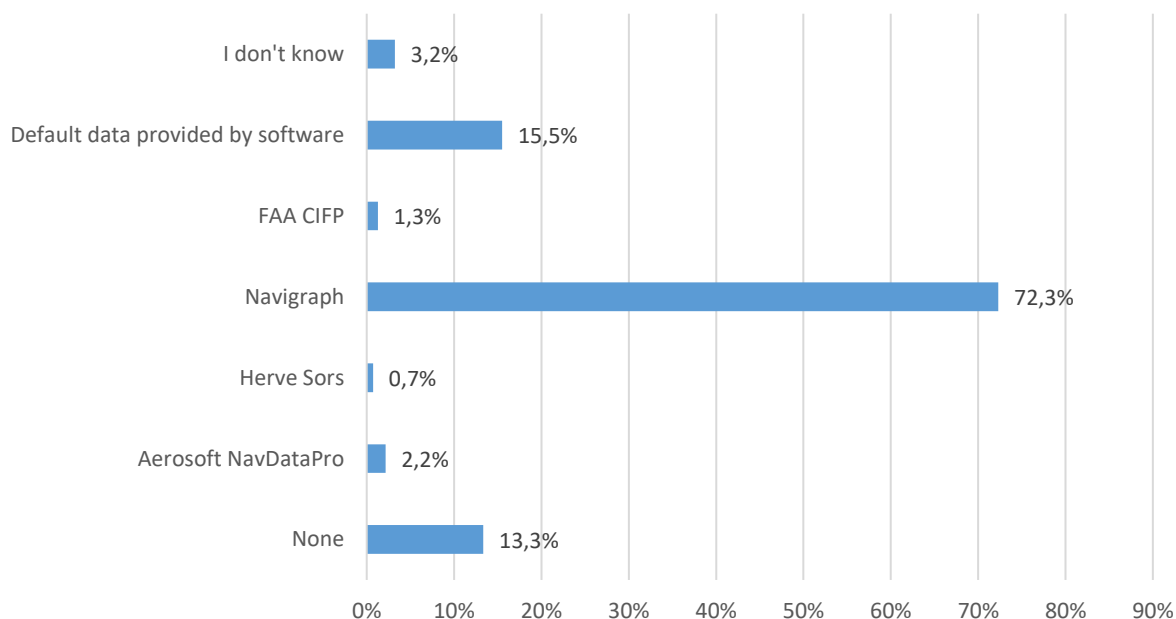


3.11. Navigation Data/FMS Data

3.11.1. Navigation Data/FMS Data Products Popularity

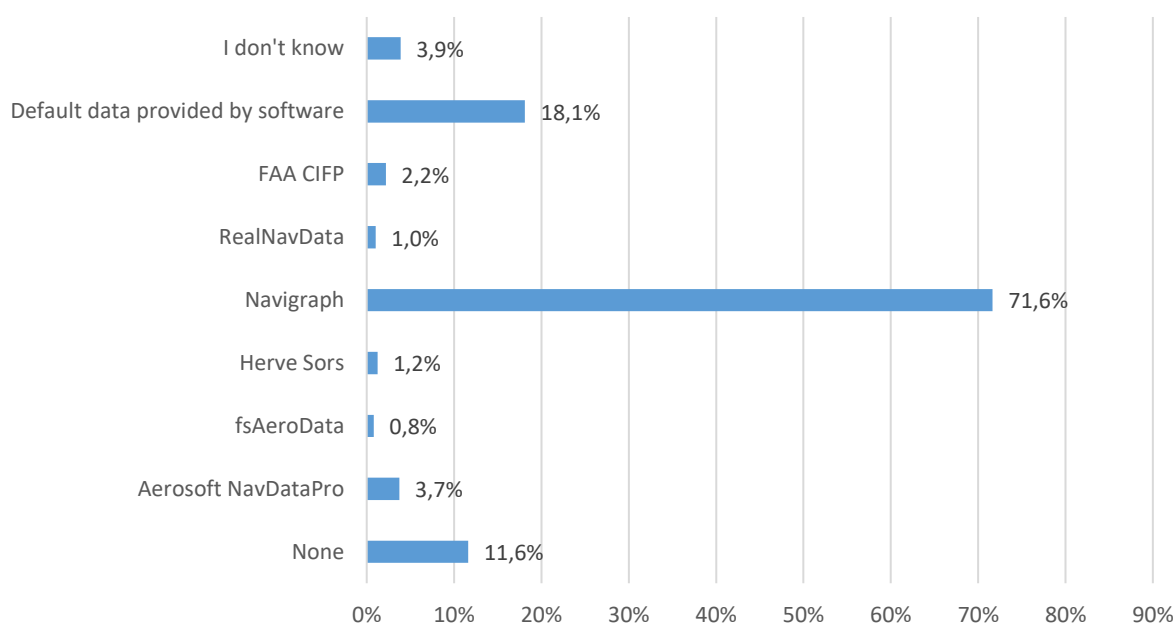
The results of this year's survey are consistent with last year's survey. Navigraph remains the most popular option with 72.3%, followed by default data provided by software at 15.5%.

Which Navigation Data/FMS Data products do you use?



Last year's result:

Which Navigation Data/FMS Data products do you use?

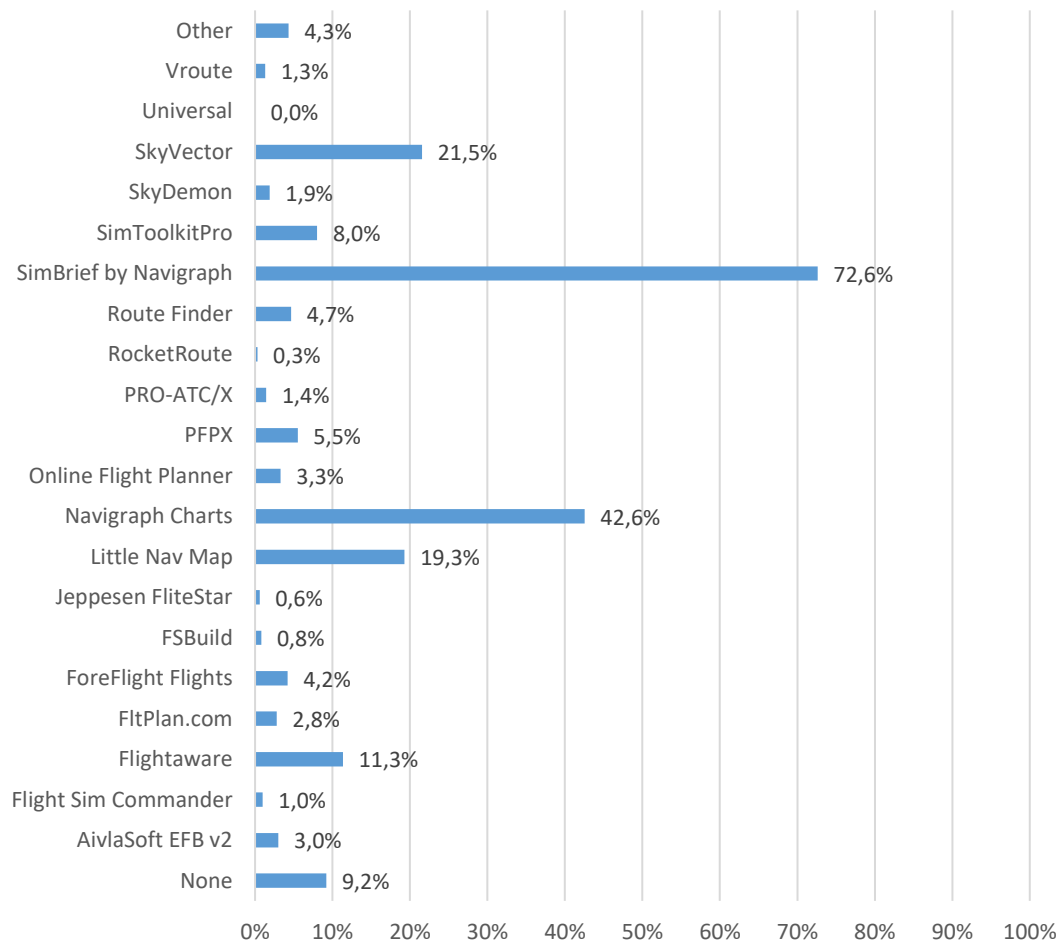


3.12. Flight Planning

3.12.1. Services

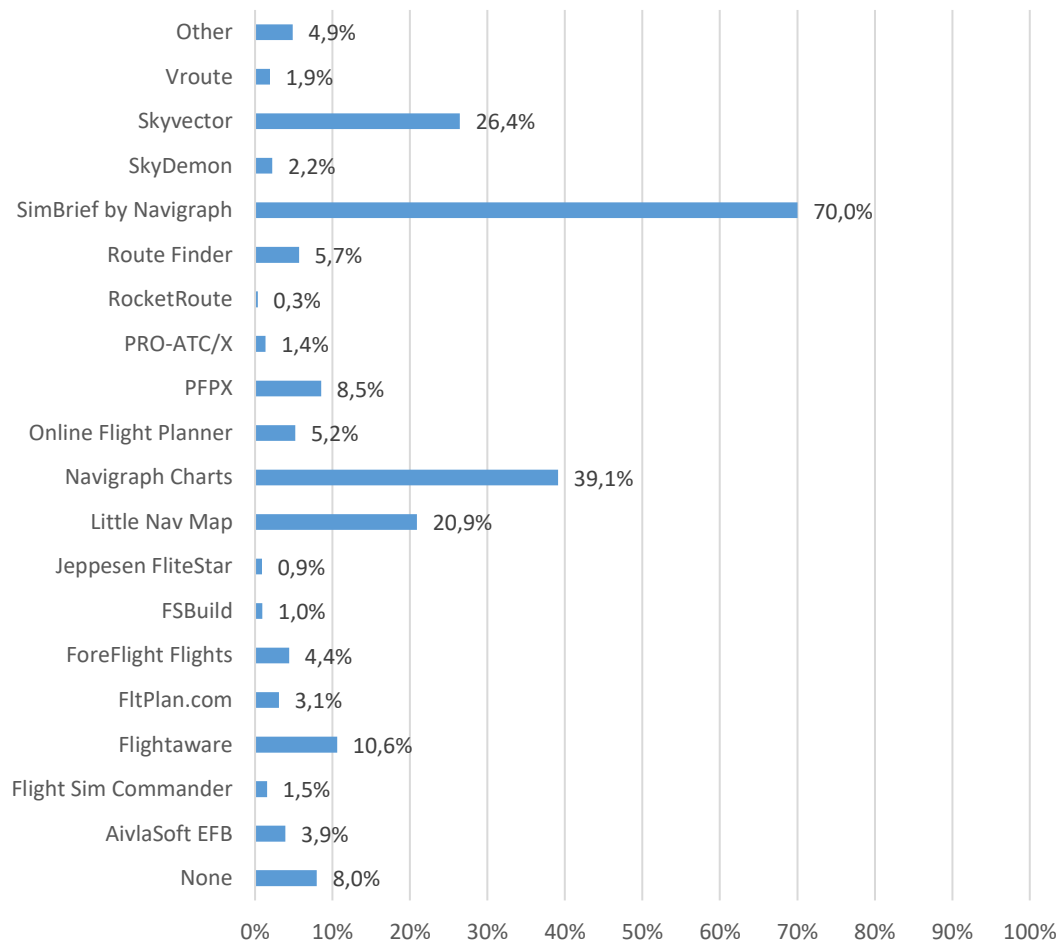
Simbrief by Navigraph continues to be the most preferred flight planning software just like the last four years, having increased from 70% to 72.6% this year. Navigraph Charts has increased from 39.1% to 42.6% whilst SkyVector has decreased from 26.4% to 21.5%.

Which flight planning software or services do you use?



Last year's result:

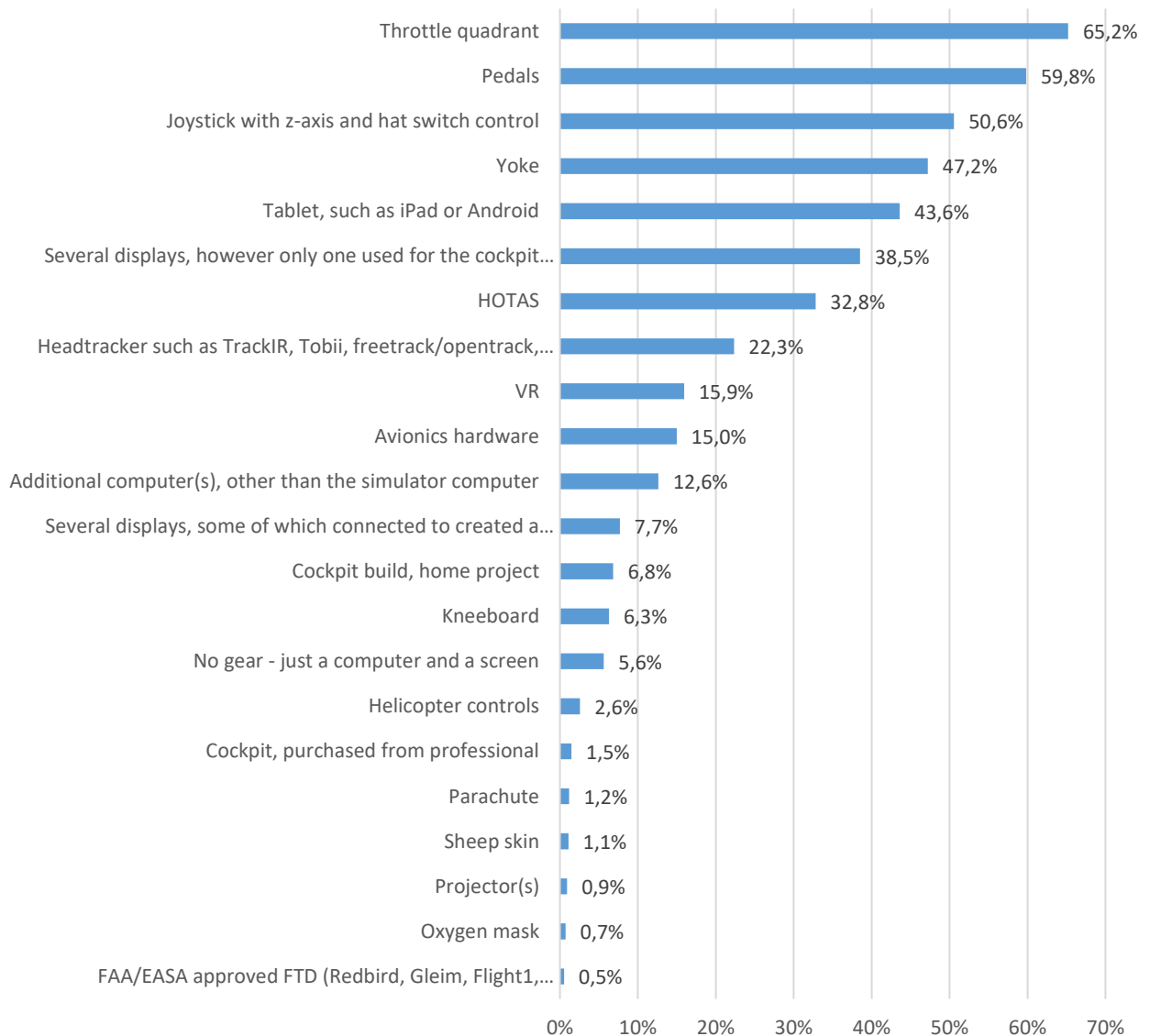
Which flight planning software or services do you use?



3.12.2. Auxiliary Systems

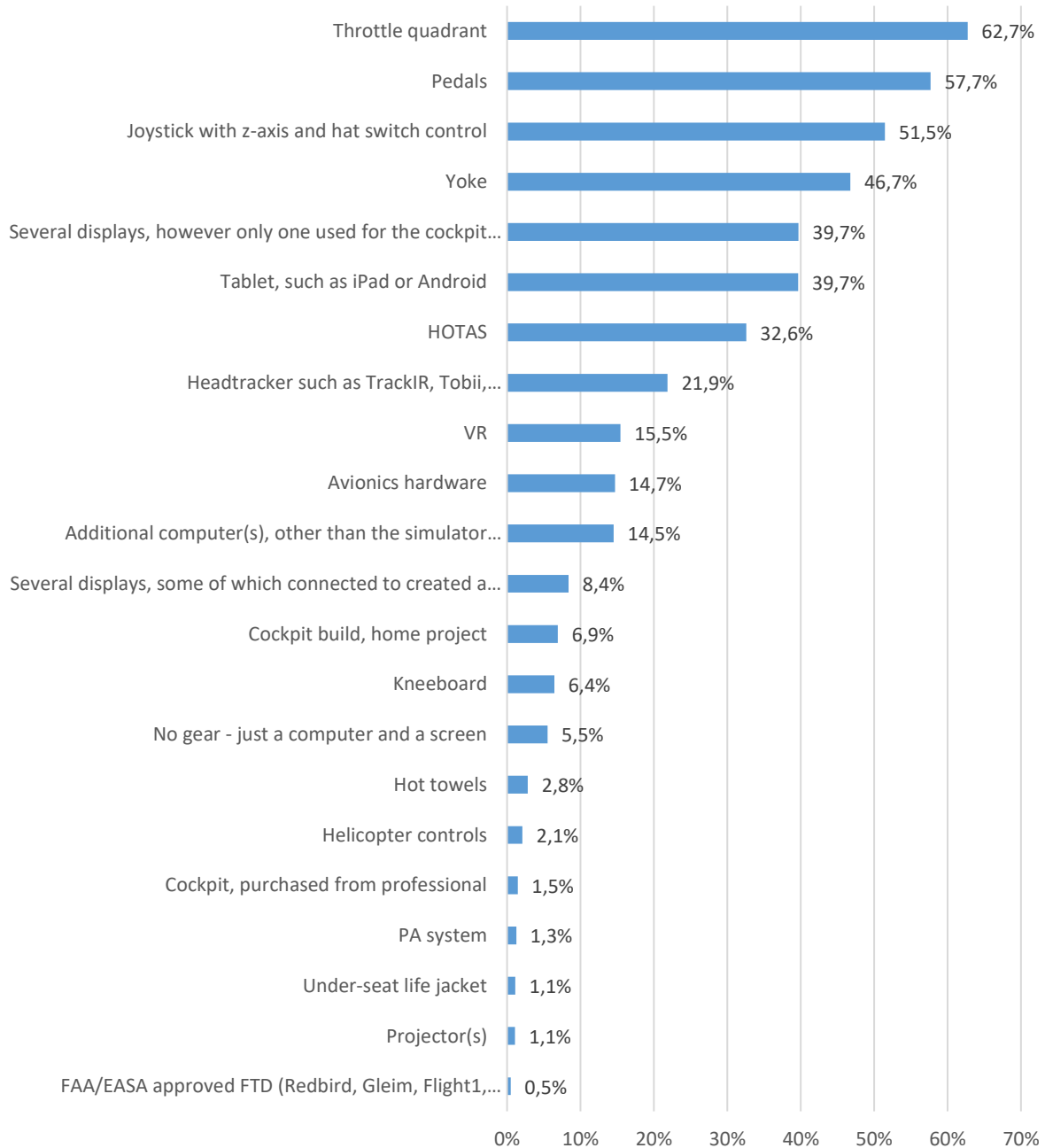
This year's results are comparable to last year's result. Pedal, Throttle, Joystick, and yoke are still the top three, closely followed by tablets and multiple display setups. We note a fair number of parachutes.

What does your simulator setup look like?



Last year's result:

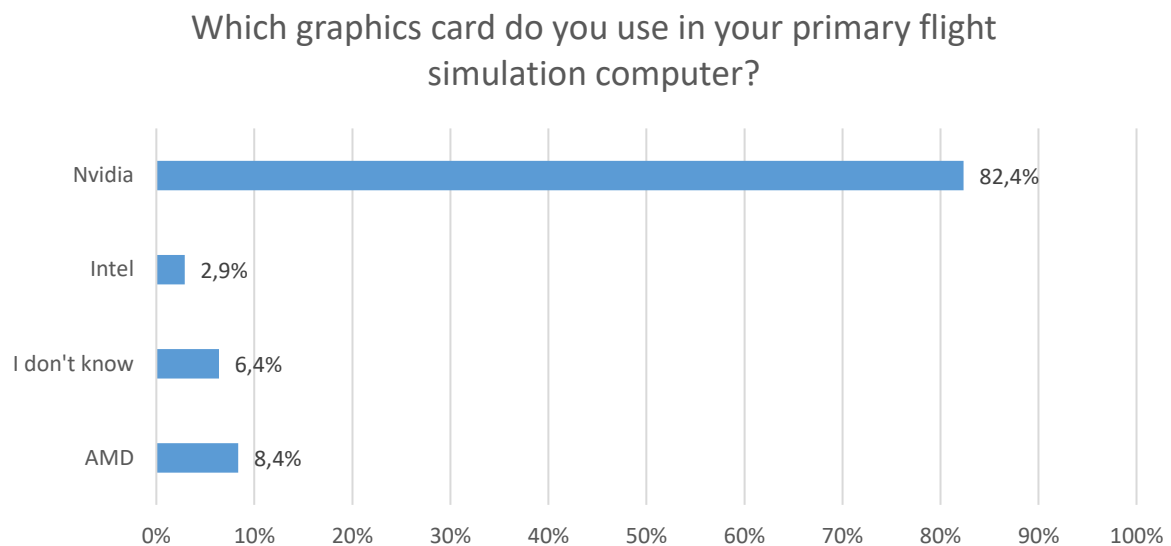
What does your simulator setup look like?



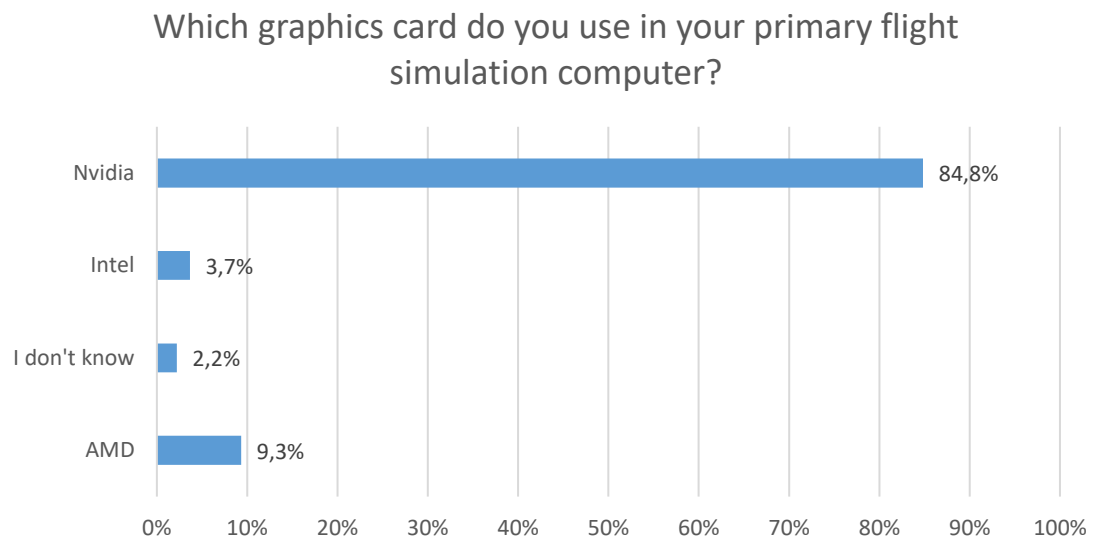
3.12.3. Graphics Card Usage

This question has been a part of the survey for all years except for 2019. The question was asked to all respondents

Just like the previous two years, Nvidia is dominating as the most popular graphic card among the respondents.

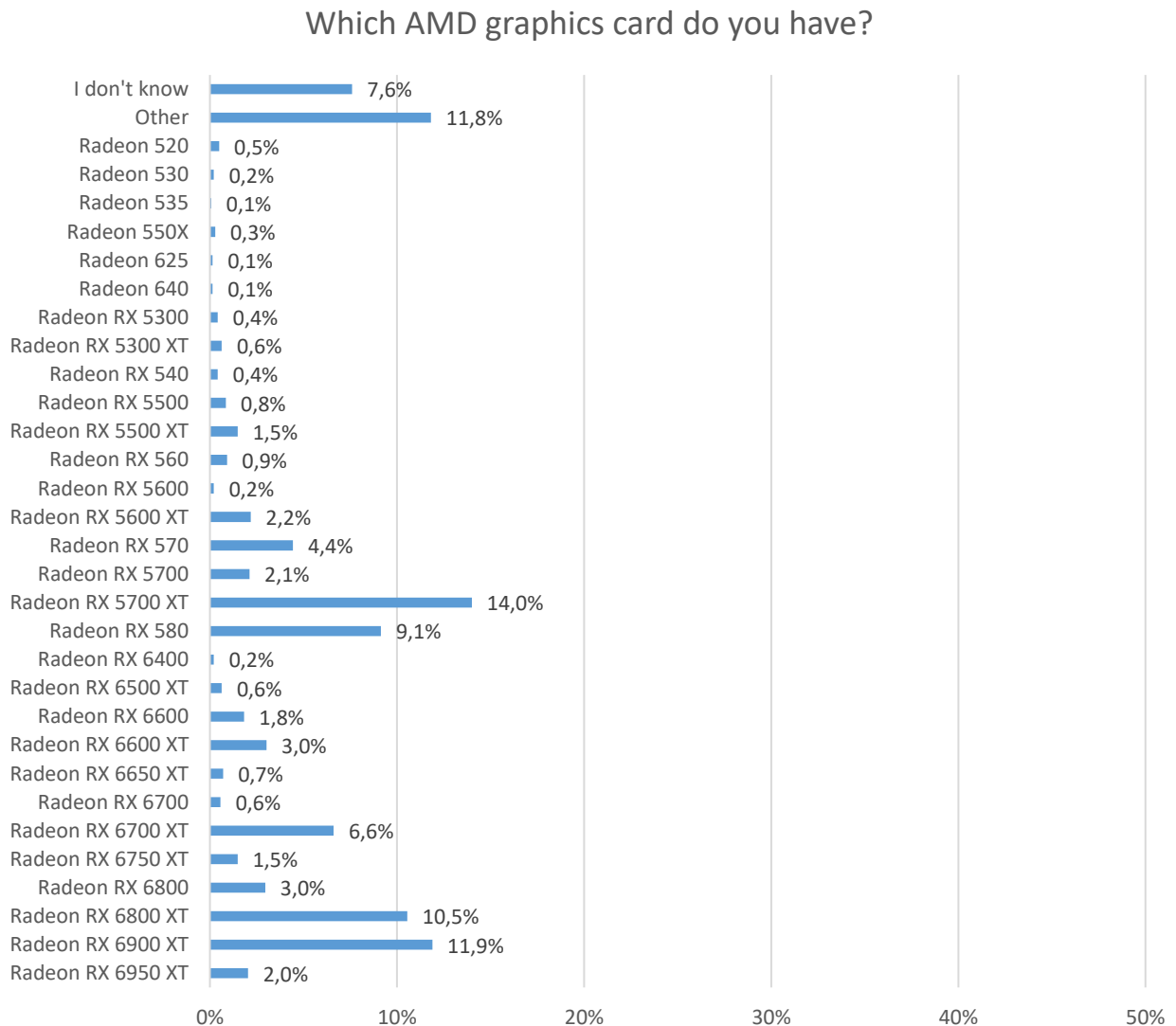


Last year's result:

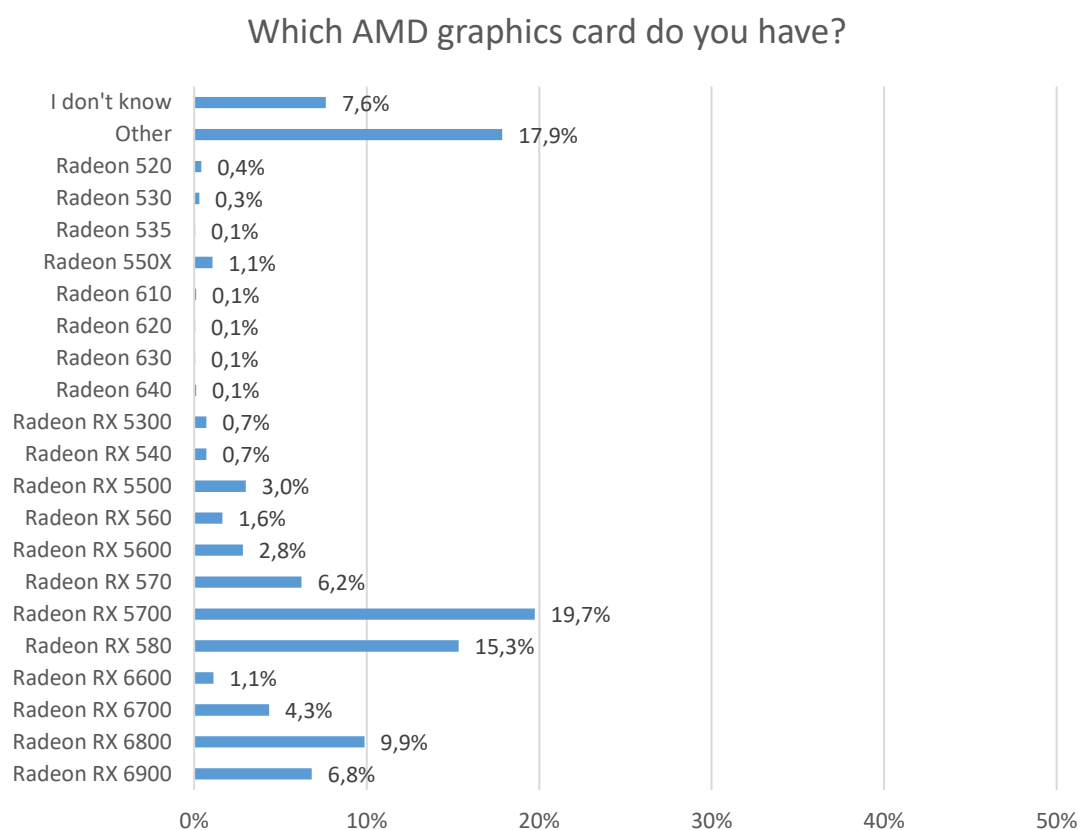


3.12.4. AMD graphics card

The following question was only answered by those who have an AMD graphics card. We can establish that the Radeon RX 5700 XT is still the most used AMD graphics card among the respondents even if it has decreased from 19.7% to 14.0% this year. The Radeon RX 580 that was the second most used graphic card last year has decreased from 15.3 to 9.1%. The second most used this year is the Radeon RX 6900 XT, closely followed by the Radeon RX 6800 XT.

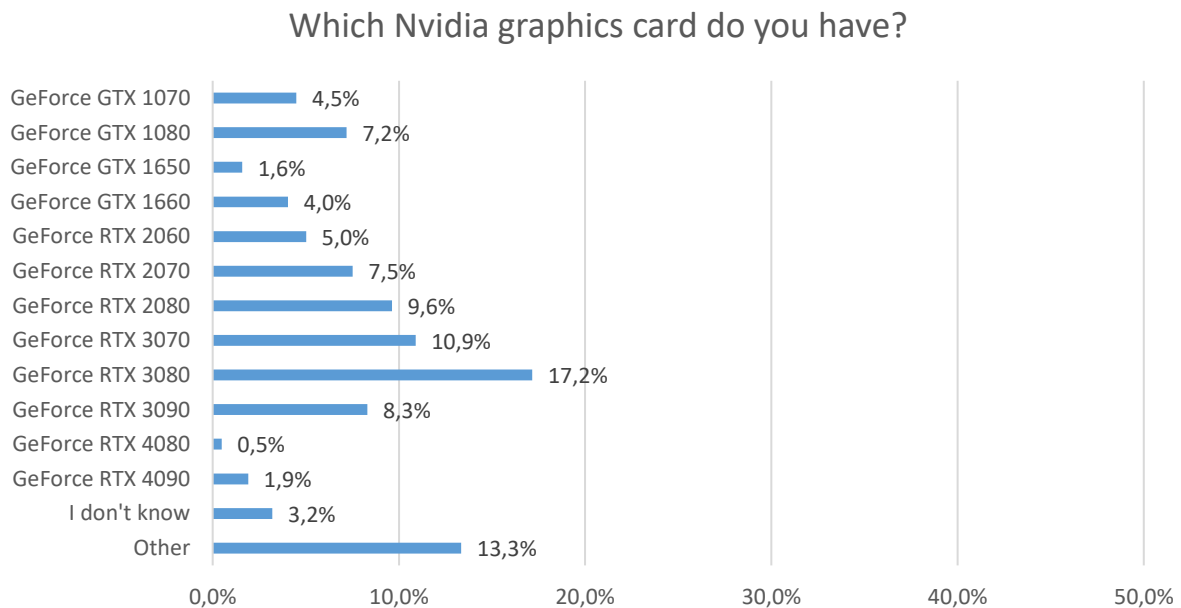


Last year's result:

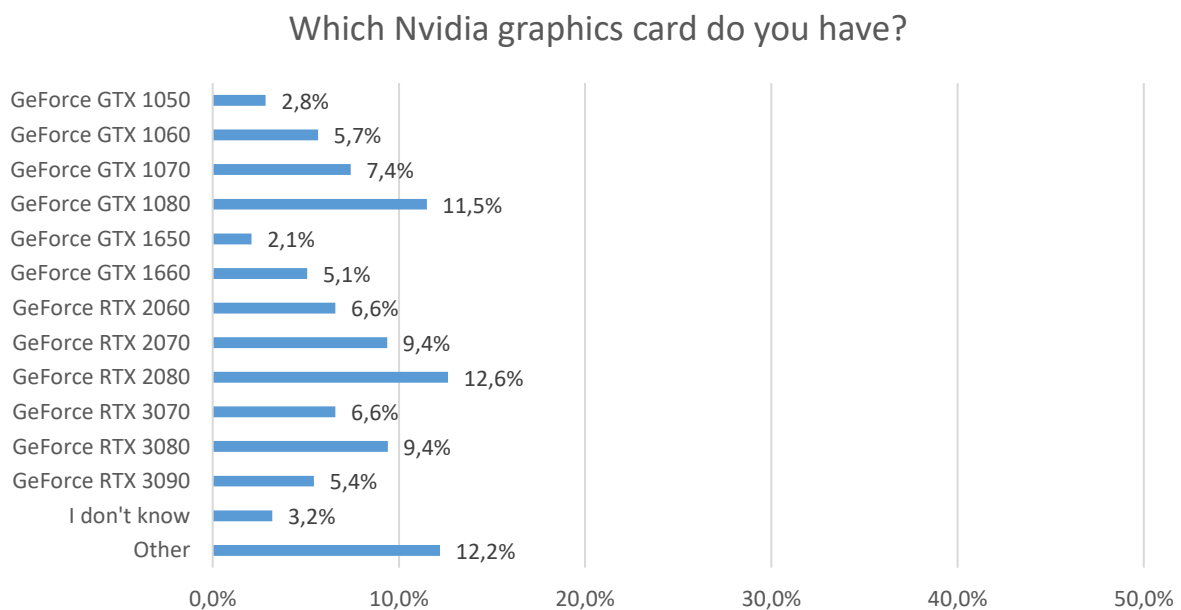


3.12.5. Nvidia graphics card

The following question was conditional and only answered by those who had an Nvidia graphics card. Last year, the GeForce RTX 2080 was the most used graphics card used by 12.6% of the respondents, followed by the GTX 1080 used by 11.5% of the respondents. This year, those graphic cards have dropped in popularity, while the GeForce RTX 3080 is the most used graphic card and has increased from 9.4% to 17.2%.



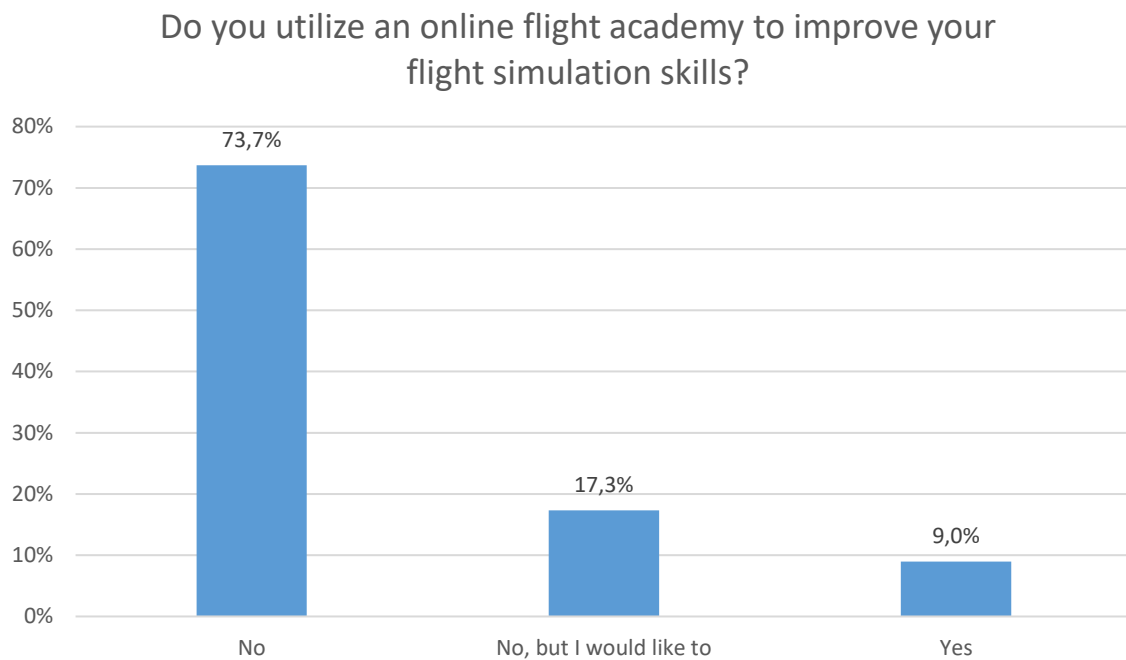
Last year's result:



3.13. Training

3.13.1. Learning

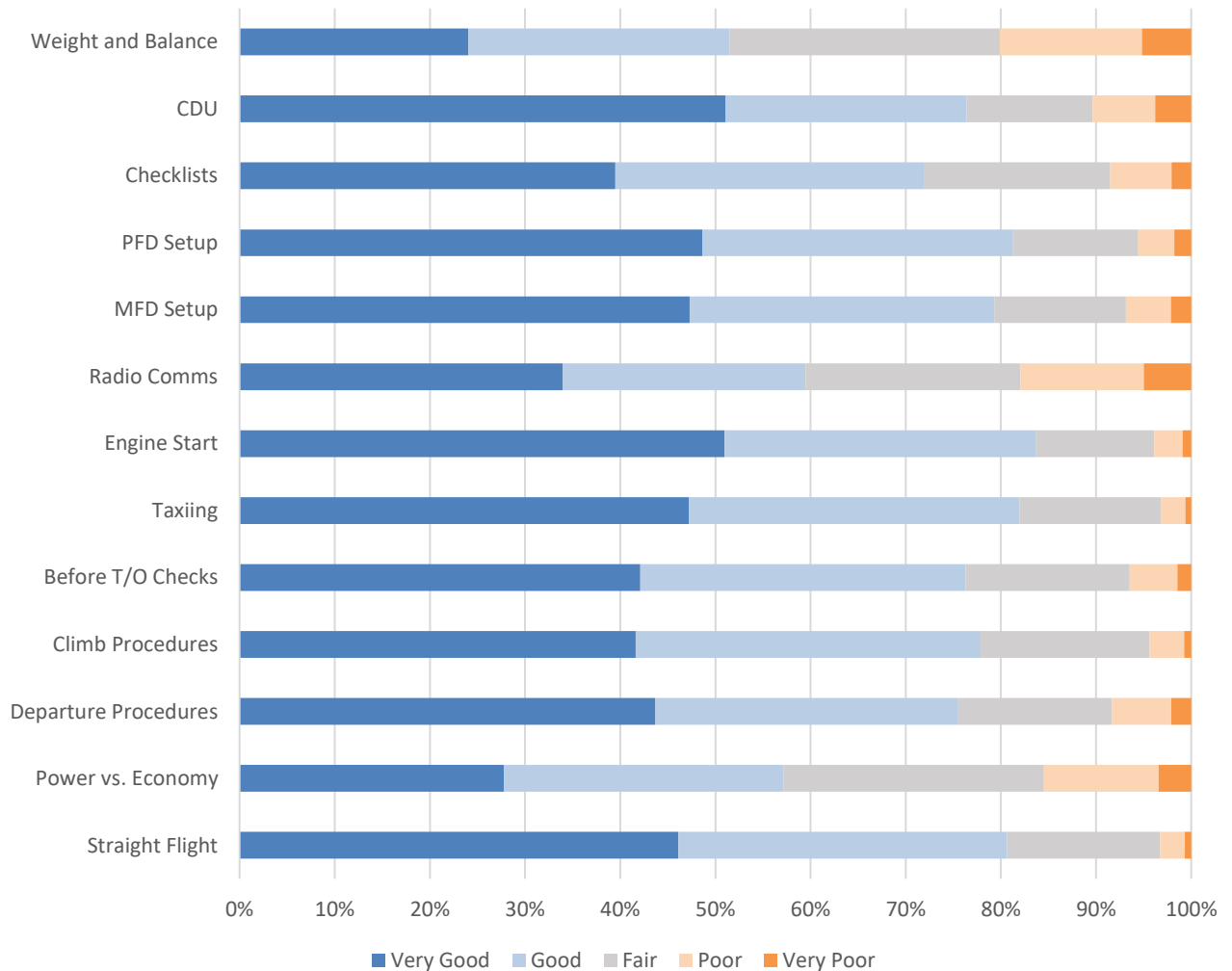
By asking all respondents if they utilize an online flight academy to improve their flight simulation skills, we could establish that this was the case for 9% of our respondents. Over 17% of the respondents don't use an online flight academy now but would like to do so. The question is new for this year's survey.



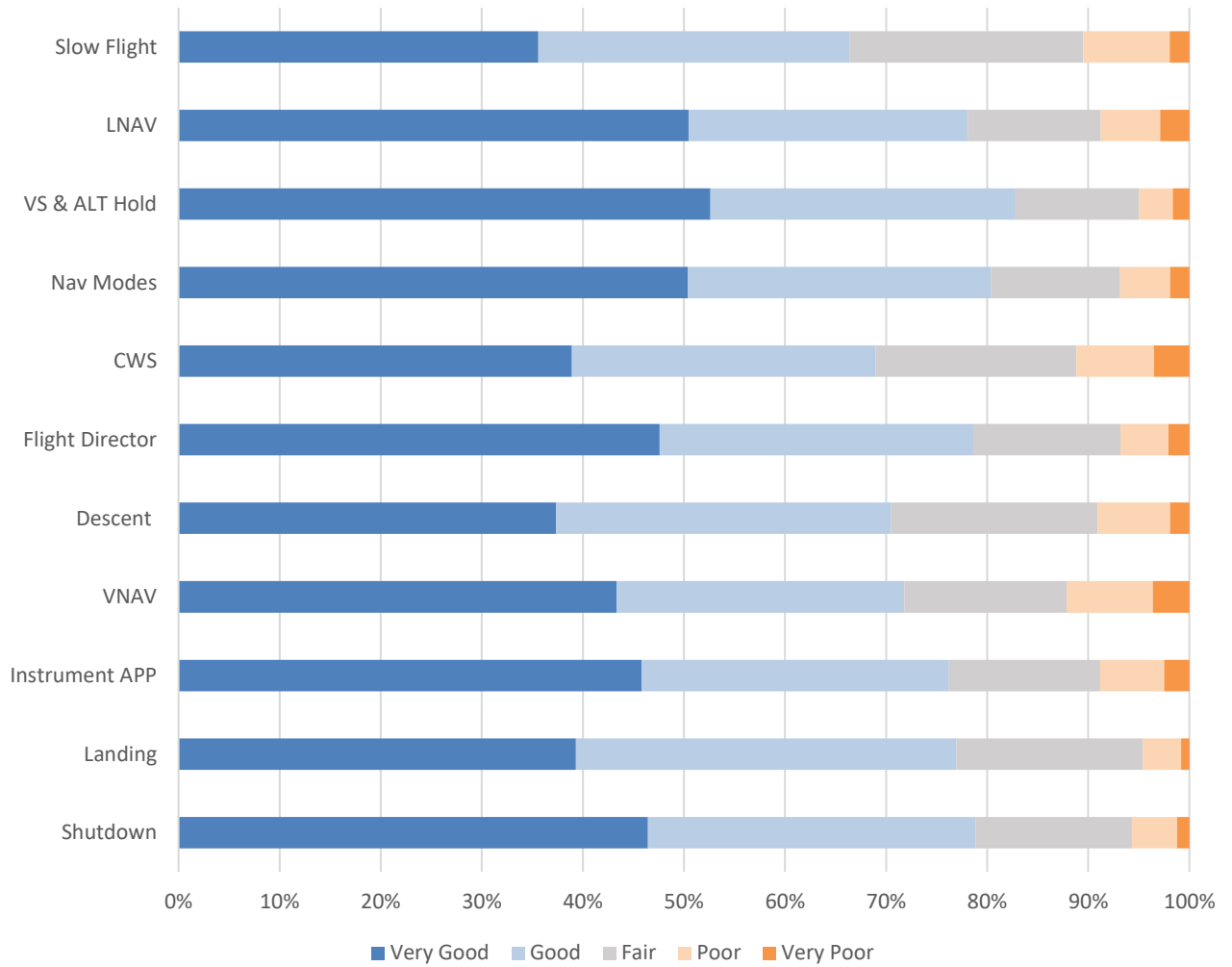
3.13.2. Proficiency Self-Assessment

This year, we decided to bring back a question with regards to training that we haven't seen in a few years. By asking the respondents to rate their proficiency in certain aspects of a flight, we can identify if there are any areas of weakness where education and training may be needed. We also added Radio Communications to the list. We can see that there is room for improvement to some degree in all areas, but particularly when it comes to Power vs. Economy in Cruise, Weight and Balance, Slow Flight, Control Wheel Steering (CWS), Vertical Navigation (VNAV) and Descent Planning.

How do you rate your proficiency in the following areas? (Part 1/2)



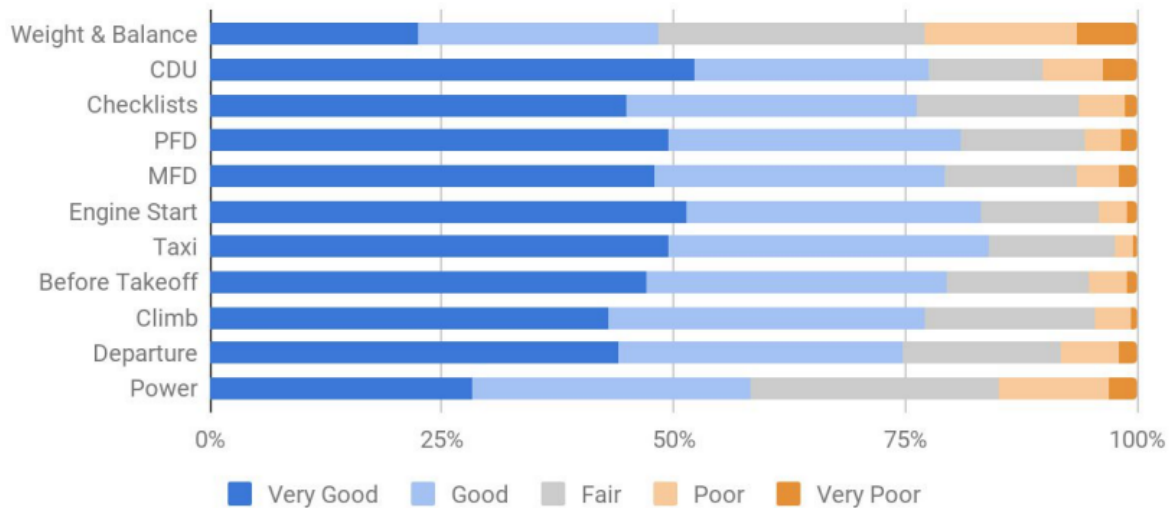
How do you rate your proficiency in the following areas? (Part 2/2)



2018's result:

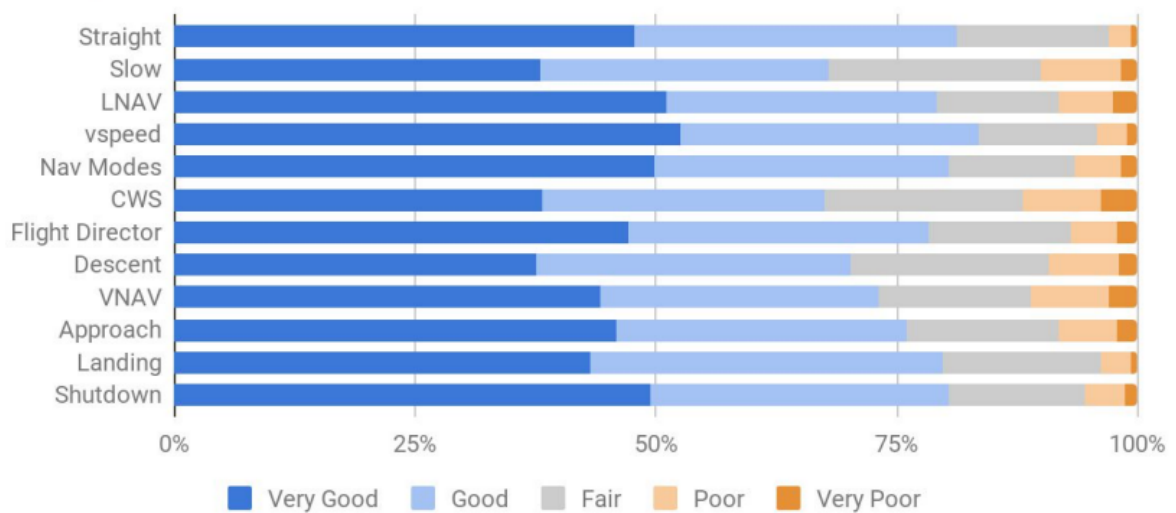
How to you rate your proficiency in the following areas? (Part 1 of 2)

All Respondents



How to you rate your proficiency in the following areas? (Part 2 of 2)

All Respondents

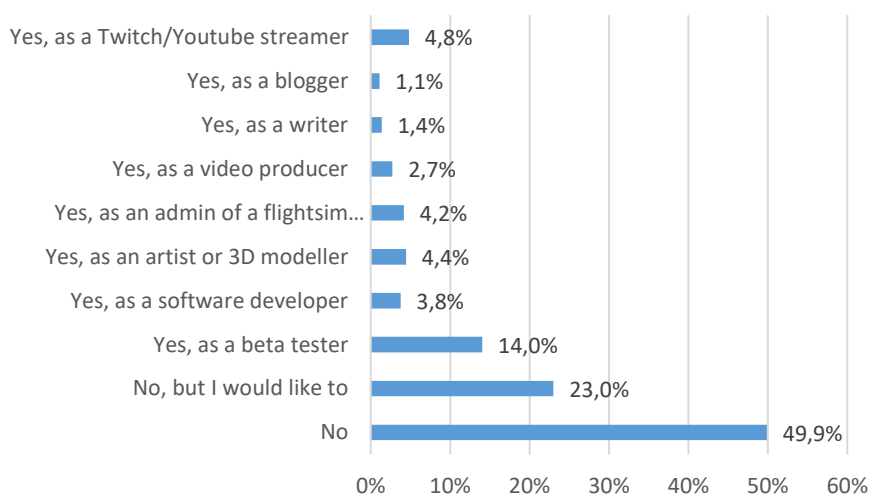


3.14. Community

3.14.1. Contribution

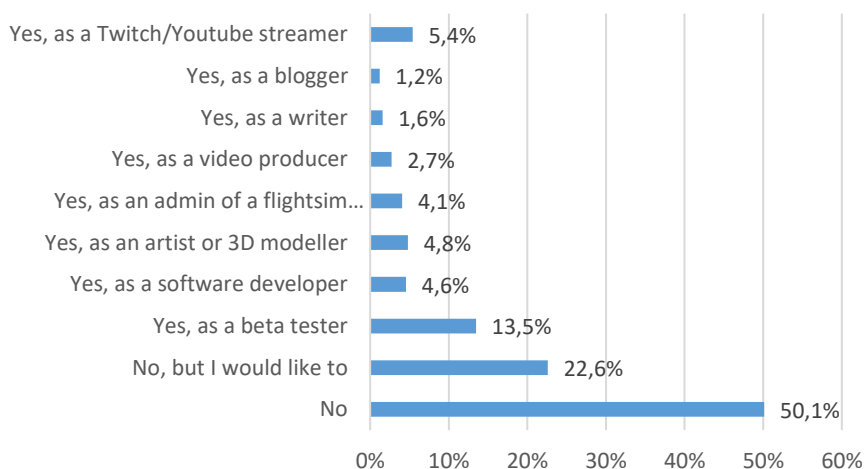
Like last year's results, every other flight simmer contributes or want to contribute in some way. Beta tester continues to be the most common form of contribution, just like in the previous two years of the FlightSim Community Survey.

Do you contribute to the flight simulation community?



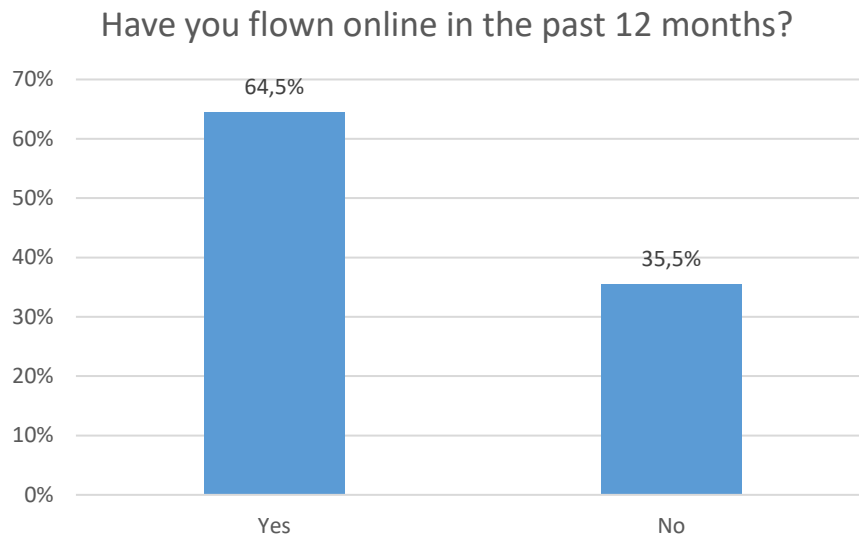
Last year's result:

Do you contribute to the flight simulation community?

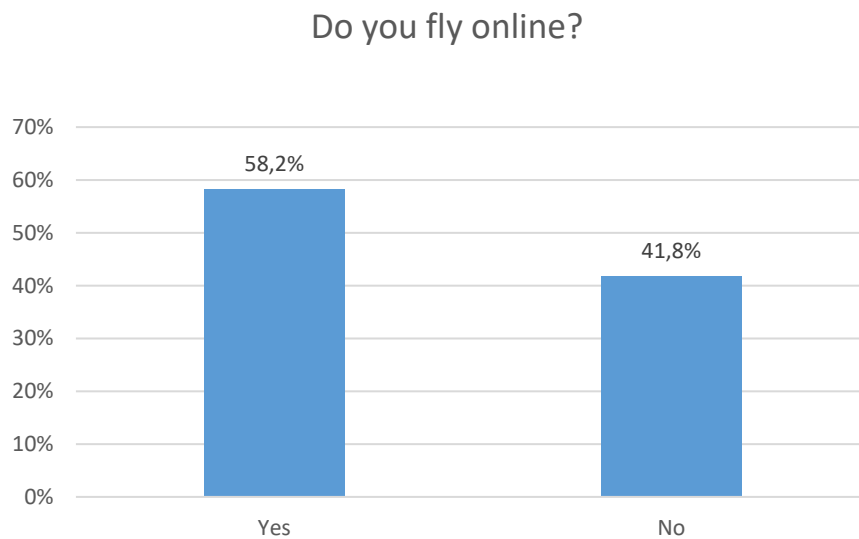


3.14.2. Online Flying

A recurring theme in the FlightSim Community Survey is online flying. Previous years, we've been asking if the respondents fly online. This year, we asked if they have flown online in the last 12 months. The result turned out to be a little bit different compared to last year. The "Yes" column saw an increase from 58.2% to 64.5%.



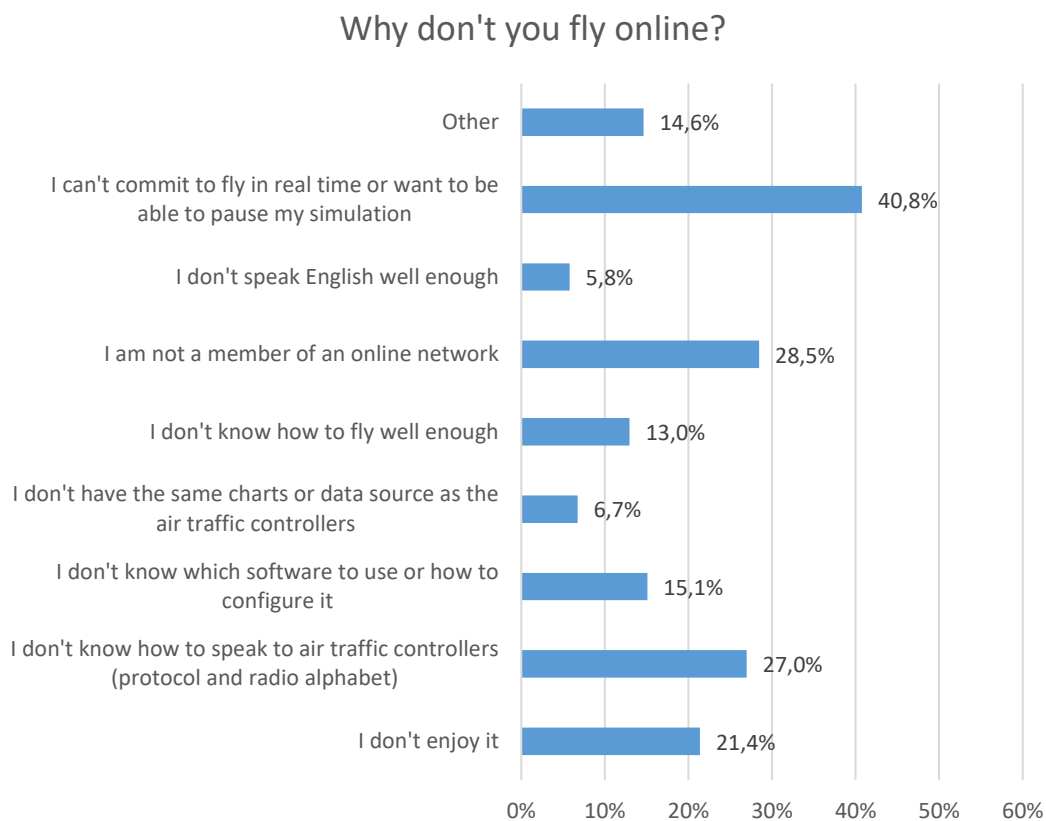
Last year's result:



3.14.3. Online Flying – why not?

We then asked those who responded “No” to the previous question what their reason is for not flying online. This question was also asked in 2020. The most common reason for not flying online in 2020 was the time aspect (I can't commit to fly in real time or want to be able to pause my simulation), just like this year.

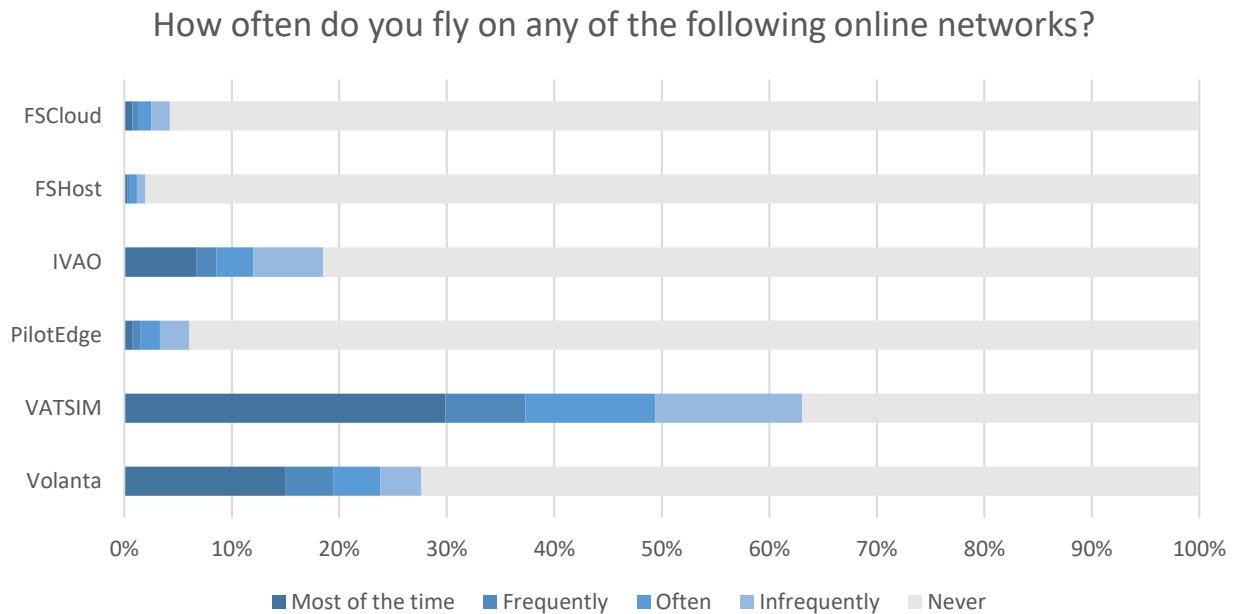
In the “Other” field of the 2022 survey results, we also find “time” as the most recurring word.



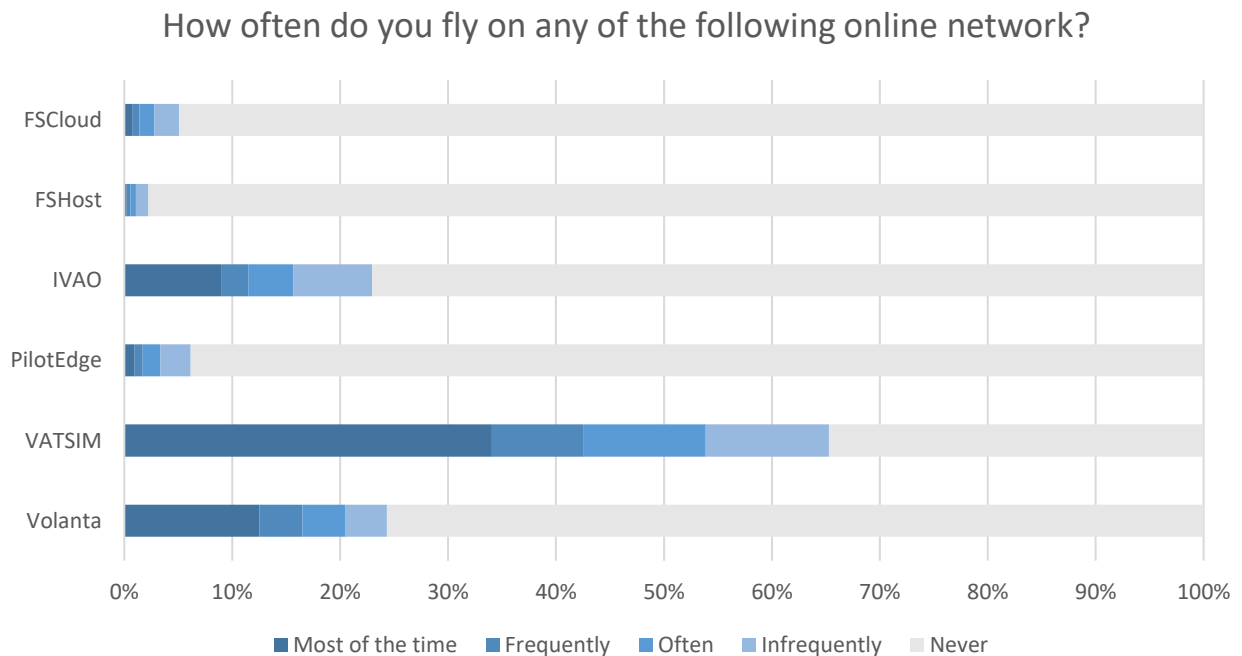
3.14.4. Online Network Preference

The following question regarding network preference was only asked to the respondents who stated that they fly online.

VATSIM continues to be the most popular network among the respondents, followed by Volanta and IVAO.



Last year's result:



3.14.5. Exhibitions & Conferences

By asking the following question, we wanted to know which flight simulation exhibitions or conferences respondents plan to attend during the next 12 months, provided that the conditions permit such an event to take place. In the “Others” field of this question, we find other events such as FSElite Party, UK, and EAA AirVenture Oshkosh, USA.

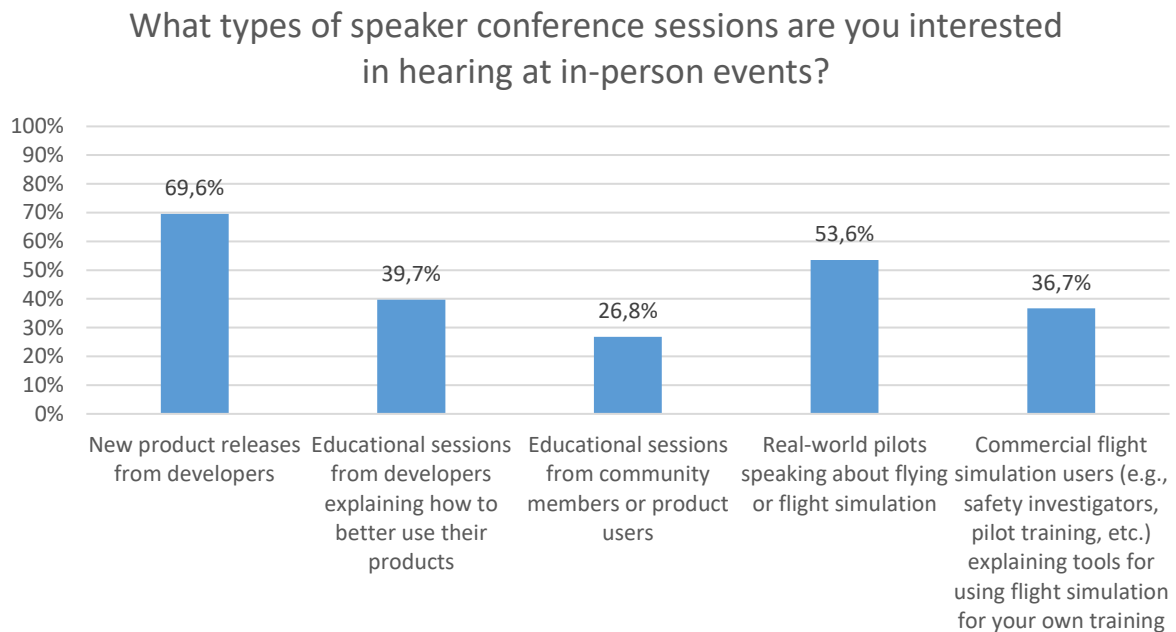


Last year's result:



3.14.6. Exhibitions & Conferences - Speaker

The following question is new for this year. We find that most of the respondents would be interested in listening to developers speaking about new products, but also real-world pilots speaking about flying or flight simulation.

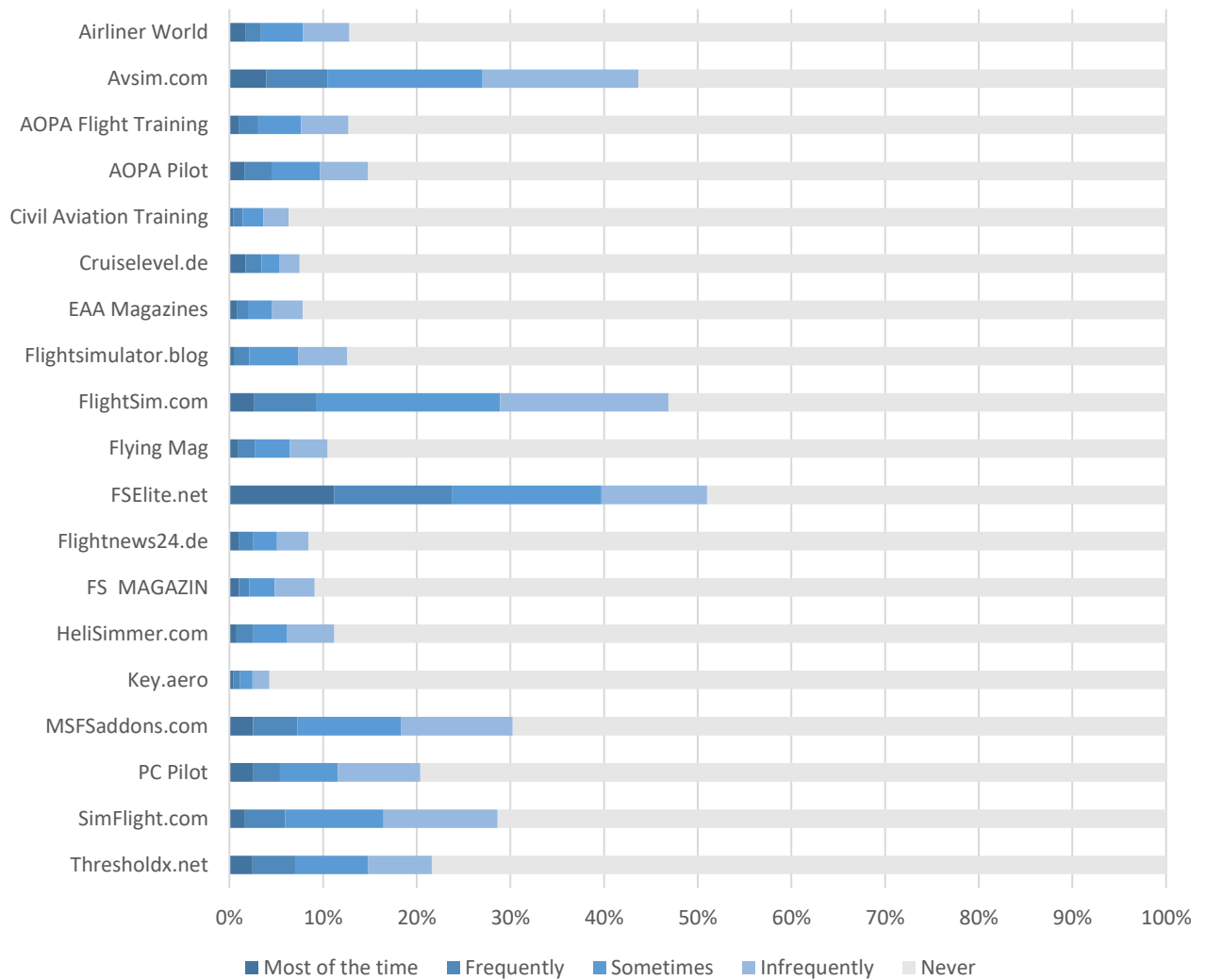


3.15. Media

3.15.1. Media Consumption

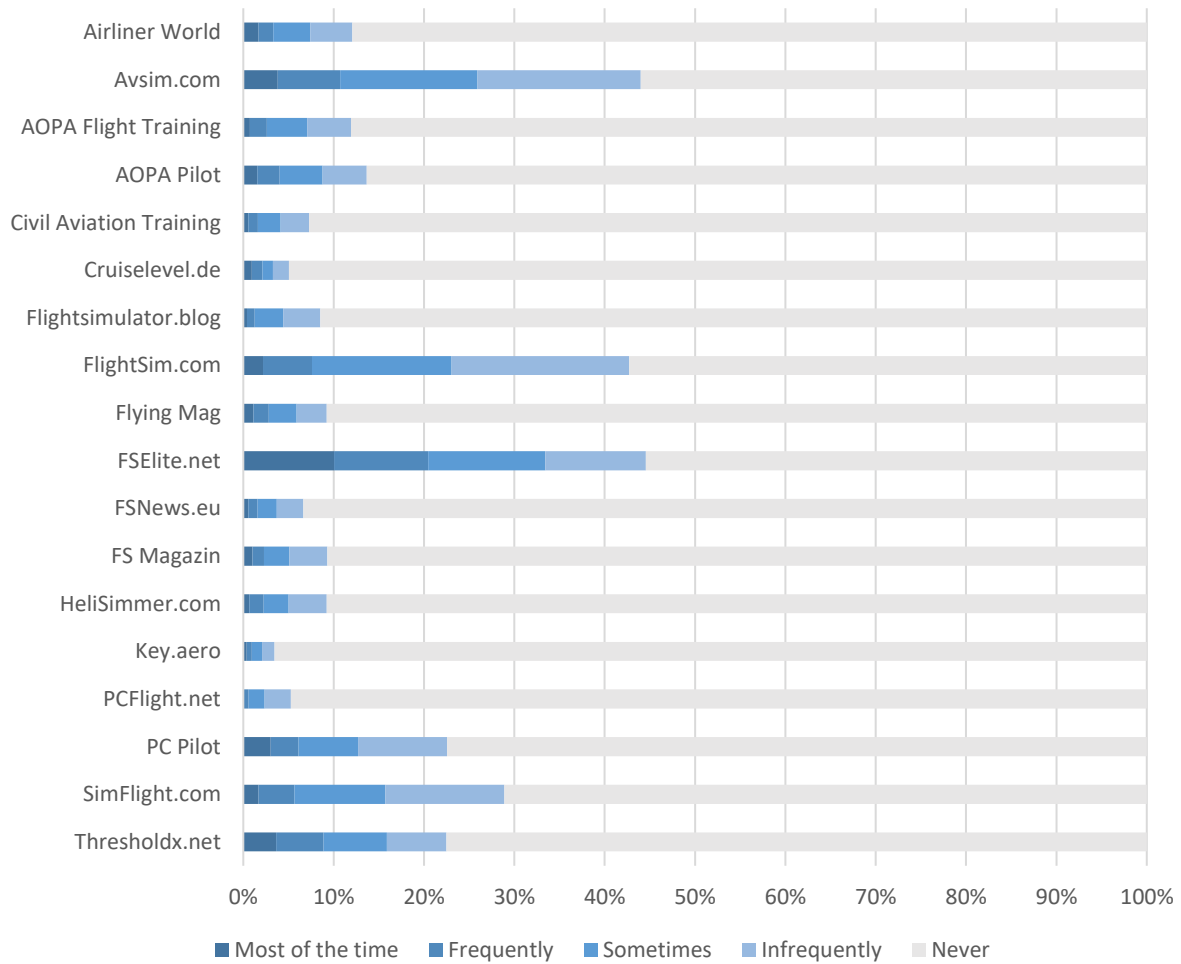
FSElite.net continues to be a popular source for flightsim or aviation related media together with FlightSim.com and Avsim.com. On a 4th place, we find newcomer MSFSaddons.com.

Which flightsim or aviation related media do you consume?



Last year's result:

Which flightsim or aviation related media do you consume?

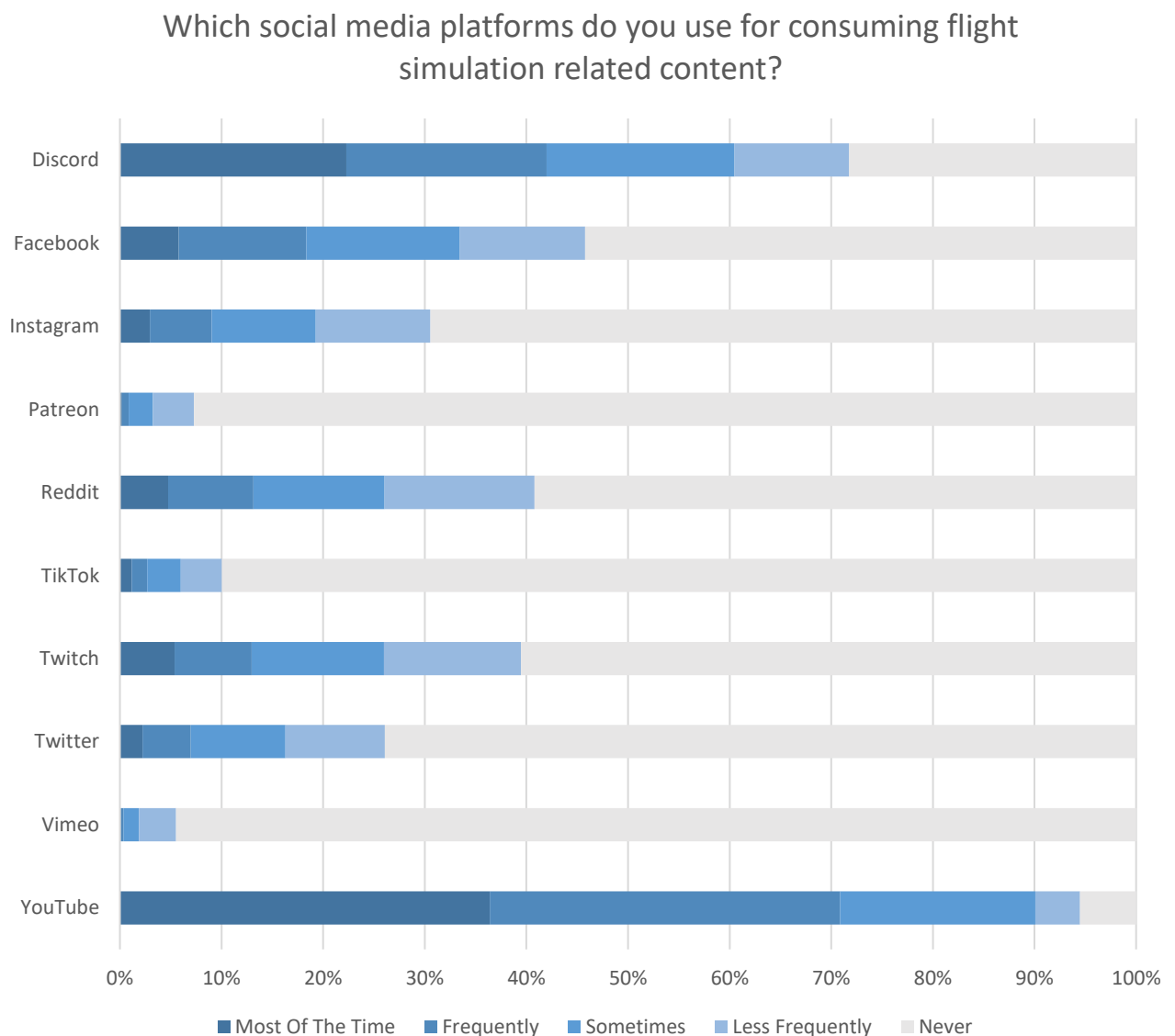


3.16. Social Media

3.16.1. Platform Preference

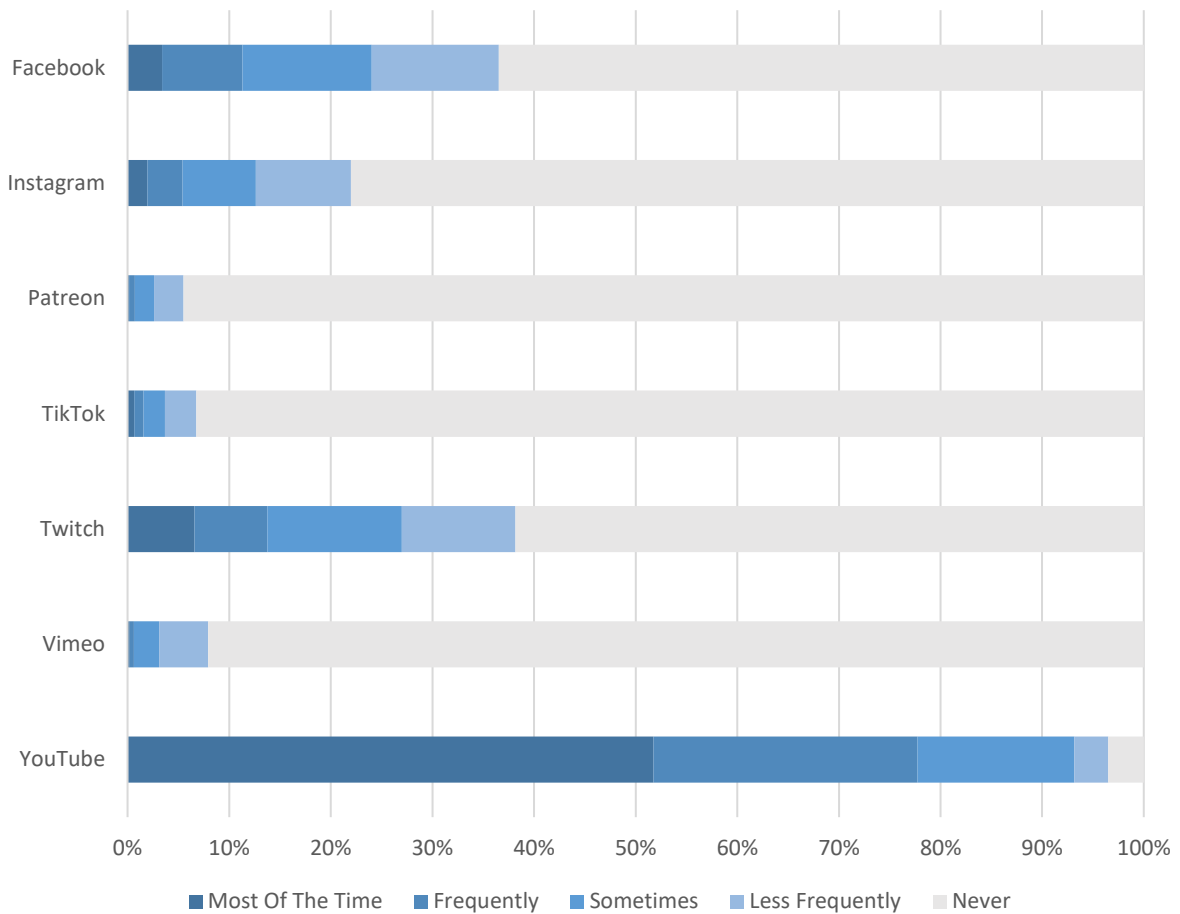
For 4 years, we've been asking our respondents which video platforms they use for consuming flight simulation related content. This year, we broadened this question from video to social media platforms. We find that many platforms are not strictly for consumption of video content, and given this adjustment, we could also welcome Discord, Reddit, and Twitter onto the list of platforms to see how they fare compared to the others.

Despite the change, YouTube remains the most popular platform. Newcomer Discord takes a clear second place, followed by Facebook, Reddit and Twitch.



Last year's result:

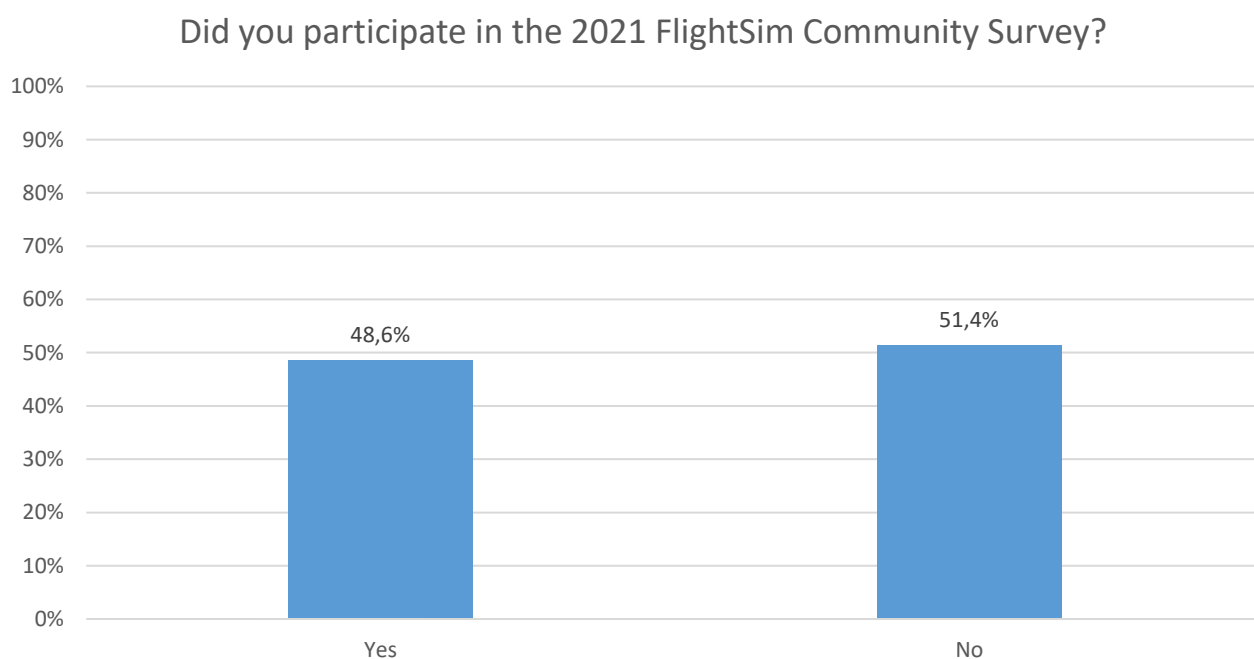
Which video platforms do you use for consuming flight simulation related content?



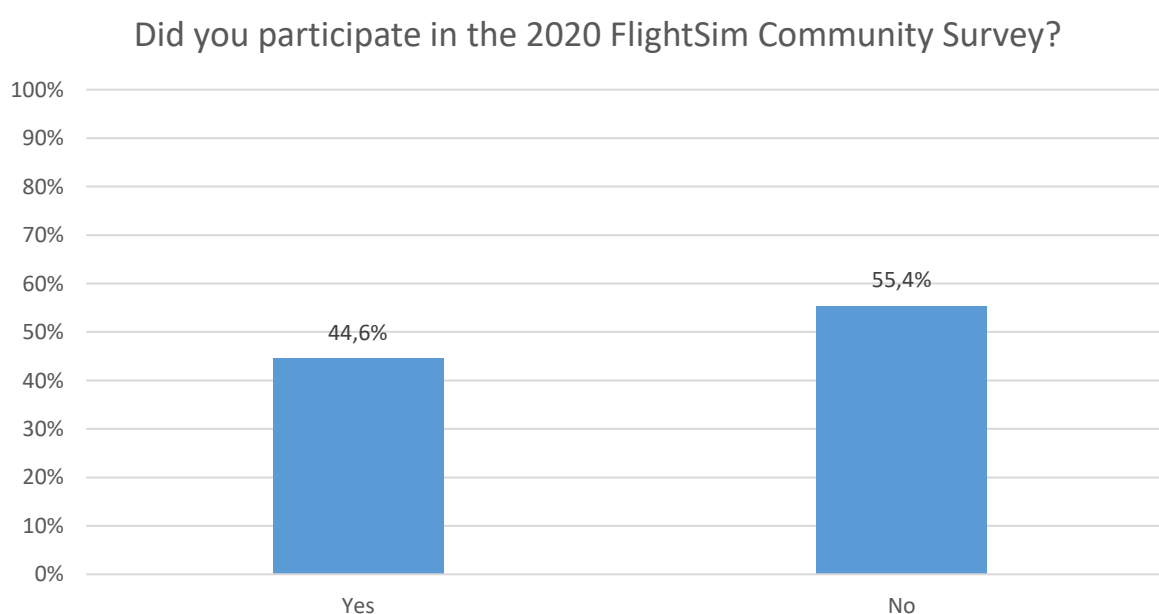
3.17. Survey Meta Analysis

3.17.1. Participation

In the last year's survey, 44.6% of the respondents had participated in the 2020 FlightSim Community Survey and 55.4% had not. This is comparable to this year where 48.6% participated in the 2021 FlightSim Community Survey, and 51.4% had not.



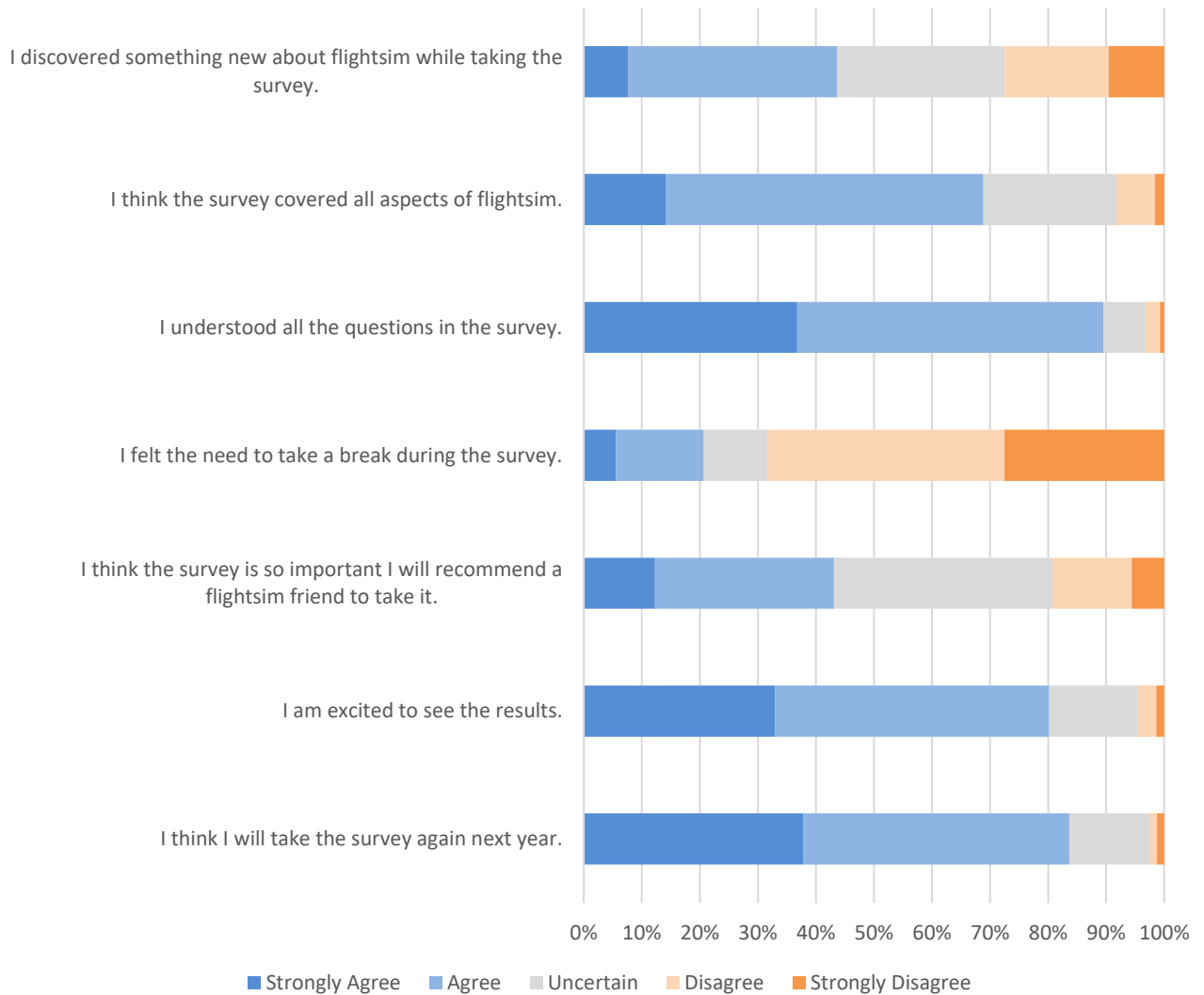
Last year's result:



3.17.2. Survey Experience

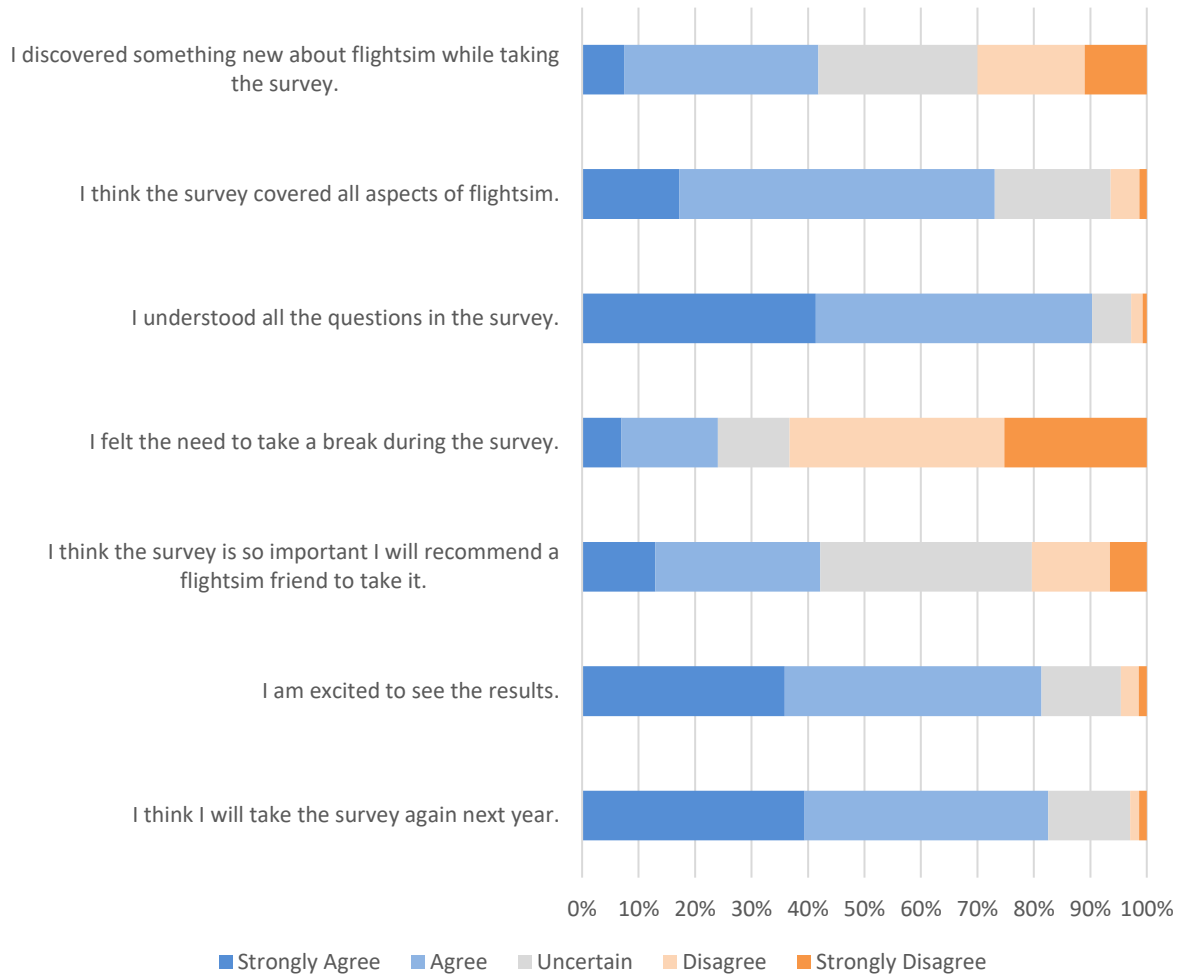
This question was introduced in the 2019 FlightSim Community Survey to investigate how the respondents experienced the survey.

Please rate the following statements about the current survey.



Last year's result:

Please rate the following statements about the current survey.



4. Results

4.1. First 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. 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 25,427 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 25,427 respondents that decided to participate in the survey did indeed respond this way.

Thirdly, we can track trends and make relative comparisons between years. 51.4% 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 between years – especially when each year has approximately 50% new respondents. If the variance between 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 unquestionably certain. With these words of caution let's consider the data that was collected.

4.2. Brief Summary

Even though every other respondent did not take the survey last year, most of the results are very similar to the 2021 survey. Where we can, we have provided data from previous years next to the diagrams.

Here is a brief non-exhaustive summary of the results:

- Age ranges from 15-85 years, with a notable peak around 20.
- Most of the respondents come from the US, the UK and Germany.
- The majority have a high-school or bachelor's degree.
- 27.3% have some sort of pilot license.
 - 8.8% have a PPL.
- 8.5% are currently enrolled in flight school.
 - 25.2% of those who are not enrolled in flight school consider taking lessons in the coming year.
- Most of the respondents were between 5 and 25 years old when they got interested in flight simulation, with a notable peak around 15.
- The most popular aircraft type is Single Engine Piston and Narrow-body Commercial Airliner.
- The main flight simulation purposes are Curiosity/Interest in Aviation and Casual Gaming/Entertainment.
- IFR is a little more popular than VFR, but pilots like to fly casually without rules too.
- Almost every other respondent is satisfied with software for the climb, cruise, planning, descent and approach phase. They are the least happy with software for Taxi and Debriefing/Session review.
- Pilots tend to fly 2-5 times a week, 2-3 hours per session, sometimes longer.
- Respondents typically spend 10-30 minutes on Flight Planning. The same goes for Departure preparation. Post-flight duties/review usually takes about 5 to 20 minutes.
- 6.8% of the respondents own an Xbox Series S or X.
 - 55.7% of the Xbox series X and S users fly simulators on Xbox.
- The median software spending per year is \$223, which is the same as last year.
- The median hardware spending per year is \$150. In 2021 it was \$245, and in 2020 it was \$167.
- Aerosoft, Microsoft Flight Simulator in-game Marketplace, OrbxDirect and SimMarket are popular online stores.
- Microsoft FS2020 is the most popular simulation platform.
- Realistic aerodynamic modeling and world graphics are important factors when choosing a flight simulator. Ease of use and number or locations of airports available are less important.
- 26.8% own a VR headset, and 62.3% of them use it for flight simulation.
 - HP Reverb G2 is the most popular VR headset.
- Navigraph Charts is the most used charts product, followed by SkyVector and FlightAware.
- Simlink/Moving Maps by Navigraph is the most popular visual flight tracking product, followed by Volanta by Orbx.
- Simbrief is the most preferred flight planning software/service.
- 82.4% of the respondents use graphics cards from Nvidia. AMD has a share of 8.4%.
 - The Radeon RX 5700 XT is the most popular AMD graphics card
 - The GeForce RTX 3080 is the most popular Nvidia graphics card

- 9% of the respondents utilize an online flight academy, and 17.3% don't but would like to.
- Areas of weaknesses among the respondents can be found in Power vs. Economy in Cruise, Weight and Balance, Slow Flight, CWS, VNAV, Radio Communications and Descent Planning.
- Every other respondent contributes or wants to contribute to the community in some way. Beta tester continues to be the most common form of contribution.
- 64.5% have flown online in the past 12 months.
 - The most common reason for not doing so is due to not being able to commit to flying in real-time.
 - VATSIM is the most popular online network.
- Avsim.com, FlightSim.com and FSElite.net are popular media outlets.
- YouTube is the most popular social media platform.
- 48.6% of the respondents took the survey last year.
- Most of the respondents understood all the questions in the survey; are excited to see the results; and will take the survey again next year.

4.3. Discussion

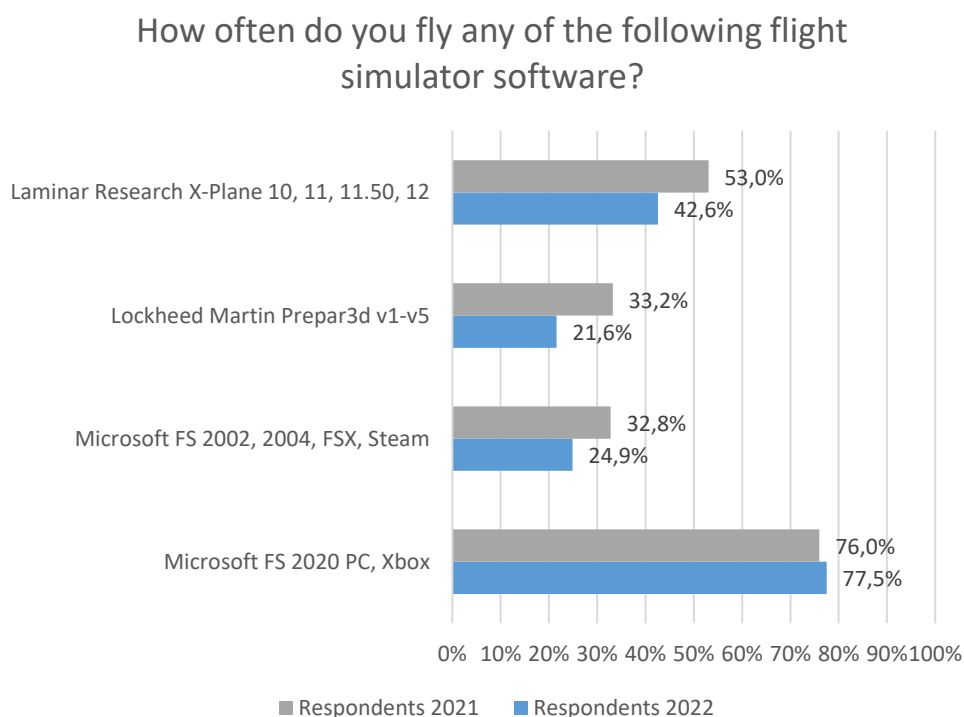
4.3.1. Simulation Platform Popularity

One of the most anticipated questions in the survey is “How often do you fly any of the following flight simulator software?”.

Looking at the diagram in 3.8.1. Simulator Software Preference, Microsoft Flight Simulator 2020 is the most popular flight simulator among the survey respondents this year. Compared to last year, more of its users claim to fly the simulator not just “Frequently”, but “Most of the time”. Last year 33.1% said they flew the simulator “Most of the time”. This year it’s 55.9%.

In second place we find Laminar Research X-Plane 11.50+. In third place we find DCS World. In fourth place is the newly released Laminar Research X-Plane 12. Fifth comes Lockheed Martin Prepar3D v5.

Just like last year, we have also grouped the simulators by manufacturer, counting the positive use responses (see diagram below). In the diagram below we see that the FS2020 popularity is on par with last year while both X-Plane and Prepar3D have dropped in popularity. In fact, more survey respondents fly DCS compared to any version of Prepar3D.



4.3.2. When did it start?

Everybody has a story of how it all started – how you got involved with flight simulation. We wanted to ask more questions to capture those stories, but unfortunately open-ended essay-like questions do not lend themselves very well to quantitative analysis. Therefore, we settled for asking only one new question on this topic: “At what age did you first get interested in flight simulation?” presented in 3.4.1 First Encounter.

The majority was around 10-20 years old, with a peak at 15. Only a few discovered flight simulation after the age of 40.

It may be worthwhile to keep this age skew in mind when considering a target audience for introductory material like flightsim tutorials and online courses.

It is also interesting to compare the introduction age distribution to the general age distribution which should suggest that there is a fair number of beginners in the community (see 3.2.1. Age). The software and hardware expense comparison question (also newly introduced this year, see 3.7.4. Hardware Expense Comparison) suggests that 4.3% of the respondents picked up this hobby within the last year. It is good to see this influx of new members in the flight simulation community.

4.3.3. Spending

There is an interesting discrepancy between the amount respondents estimate spending on software and hardware (see 3.7.1. Software Expenses and 3.7.3. Hardware Expenses), and whether that amount is perceived to be less or more than the year before (see 3.7.2. Software Expense Comparison and 3.7.4. Hardware Expense Comparison).

The median software expense was \$223, both this year and the year before. However, in the newly introduced question “Has your spending on software increased or decreased this year compared to last year?” 41.7% said they spent more on software compared to last year, 22.7% thought they had spent less, and 31.2% thought they spent about the same.

The median hardware expense was \$150 this year, which is less than last year’s \$245. However, 38.1% stated that they had spent more this year compared to the year before. 25.5% thought they had spent less, and 32.2% thought they had spent about the same. Worth mentioning is that the counter-intuitive interaction between the median value and the rated spending is partially due to the stronger dollar for non-US respondents.

For both software and hardware, most respondents thought they had spent more compared to last year, but the median did not go up. In the case of hardware, it went down quite a bit.

Regarding hardware, we also looked into the future with a new question (see 3.7.5. Hardware Purchase Anticipation). There is about a 50/50 probability a respondent will buy new hardware in the year to come, according to the newly introduced question “Do you plan to buy flight simulation hardware within the next 12 months?”.

4.4. Survey Meta Analysis

This year we continued the trend and made the survey even shorter. In 2020 it had 119 questions. Last year it consisted of 93 questions. This year it was only 67 questions long. The shortening resulted in five minutes faster completion time, but the completion rate fell seven percent from 70% to 63%.

The main reason why there were fewer questions this year is because we decided to skip some questions which have had consistent results for the past few years. We will reintroduce those questions when we think there is a reason to study a possible change.

Even though this is a rather long and comprehensive survey, the questions on survey experience tell us that our respondents are doing well, are happy to participate, and are looking forward to the results. The majority will also take the survey again next year.

5. Future Work

Like last year, we are publishing the raw survey data for anyone who wishes to do a continued analysis of responses. The data is anonymous, and we have removed all free text as we currently have no way of ensuring that this data does not contain personally identifiable information.

Our ideas for continued analysis are mainly within correlation studies. Can something be said about the results concerning certain flight simulator preferences or demographics?

If you decide to download the data and want to share any of your analyses, please post them on social media using [#flightsimsurveyanalysis](#) and we will be happy to repost them.

6. Thank You to All Contributing Partners

We want to thank all contributing partners that helped spread the survey and to all the respondents that took the time to answer the survey.

