

July 15, 2022

2022 WEATHER SURVEY

Aircraft Owners & Pilots Association



Tom George
Alaska Regional Manager

Jim McClay
Director Airspace, Air Traffic
and Security

Har Dhanak
Business Analyst

Amanda Comi
Survey Analyst



TABLE OF CONTENTS

Page 3	—	About the Survey
Page 4	—	Key Findings
Page 5	—	Demographics
Page 6	—	Sources Used (CONUS)
Page 8	—	Relationships Between Weather Sources Selected (CONUS)
Page 10	—	Sources Used (Alaska)
Page 12	—	Relationships Between Weather Sources Selected (Alaska)
Page 14	—	Reasons for Choosing a Weather Source
Page 16	—	Long Cross-Country Cruise Weather Source
Page 18	—	Frequency of Conducting Pre-flight Self-briefings Prior to Calling Flight Service
Page 19	—	FAA's Advisory Circular (AC) 91-92
Page 21	—	Communications With Flight Service
Page 24	—	Electronic Flight Bag (EFB), Flight Information System Broadcast Weather (FIS-B), and Sirius XM Weather
Page 27	—	Pilot Reports (PIREPs)
Page 31	—	FAA Weather Cameras
Page 34	—	Graphical Forecasts for Aviation (GFA)
Page 36	—	Alaska Aviation Weather Unit (AAWU)
Page 39	—	ASOS/AWOS Phone Access
Page 41	—	NOAA Cloud Cross-section
Page 43	—	Your Contacts at AOPA
Page 44	—	Appendix

ABOUT THE SURVEY

For the past six years, the Aircraft Owners and Pilots Association (AOPA) has conducted an annual Weather Survey¹ to investigate how pilots access and use weather information. The results of the 2022 Weather Survey build on knowledge obtained from previous years of research, focusing on technologies used by pilots, FIS-B, PIREPs, the Graphical Forecasts for Aviation (GFA), and FAA Weather Camera websites, and more. When appropriate, these results are trended over time and segmented by demographics such as age, pilot certificate, location, etc.

The Weather Survey data is primarily used to inform our advocacy, but is also shared with government and industry stakeholders to allow them additional insight into how the products and services they provide are being utilized. We hope these efforts will improve the collection, distribution and use of weather information to increase safety and access for those utilizing general aviation.

Survey Parameters

- The 2022 Weather Survey was created in Qualtrics, an online survey tool.
- The survey contained 43 questions, including subsets specific to pilots from different regions of the US.
- It was sent via email to a random sample of 30,000 from the continental United States (CONUS), and to total of 3,687 members from Alaska, 482 from Hawaii, 999 from Puerto Rico, and 72 from Guam.
- A total of 2,447 survey responses were collected over a six-week period from April to May 2022.
- The margins of error at a 95% confidence level were 2% for CONUS pilots, 9.3% for Alaskan pilots, and overall margin of error of 1.9%.

¹ Duke, R. & George, T. (Aug. 4, 2017). [AOPA 2017 Weather Survey](#)
Duke, R., George, T., Davis, K., & Bell, E. (July 6, 2018). [AOPA 2018 Weather Survey](#)
Duke, R., George, T., Davis, K., & Bell, E. (June 12, 2019). [AOPA 2019 Weather Survey](#)
Duke, R., George, T., Davis, K., & Bell, E. (May 22, 2020). [AOPA 2020 Weather Survey](#)
McClay, J., George, T., & Bell, E. (August 2021). [AOPA 2021 Weather Survey](#)

KEY FINDINGS



Awareness of FAA's Advisory Circular 91-92, regarding preflight self-briefing procedures for pilots, continues to linger at roughly one-third of our survey respondents. The FAA and industry should continue outreach efforts to increase awareness of the AC's guidance and resources.



While the popularity of Flight Service, as a pre-flight resource, continues to wane, many pilots continue to value it as a consultative resource, while a significant number of pilots would utilize the service if it offered newer, digital communication technologies, such as texting and screen-sharing. Flight Service should explore the use of digital technology and research ways to leverage their unique services.



The submission rate for unsolicited PIREPs has largely remained unchanged from previous years. However, there appears to be a direct correlation between increased submission rates and PIREP instruction during primary pilot training. FAA and industry should continue to pursue additional methods of submitting PIREPs, but should also emphasize instruction to new pilots on PIREP submission.



The FAA Weather Camera Program is widely used by pilots in Alaska, with approximately three-quarters of the pilots using it as an initial weather briefing source. Pilots cited the ability to see current weather conditions in multiple directions, as well as trends from time lapse images, as key features. Respondents called for additional camera locations inside and outside of Alaska and also called for fewer camera outages. FAA should continue to expand the program, both in Alaska and the CONUS, and should fund research to make it a 24-hour source of information, rather than daylight-only.



Roughly two-thirds of respondents utilize the dial-in option to access ASOS/AWOS, often due to a lack of internet connectivity or for convenience while driving to the airport. FAA should maintain the dial-in option for ASOS/AWOS.



New experimental weather products, such as the Cloud Cross-section Product and Experimental GFA, show promise for providing weather data in improved visual formats. More outreach and evaluation of these products is needed to provide feedback regarding further refinements as these products continue to develop.

DEMOGRAPHICS

Note that all survey responses are self-reported and are not corroborated. Throughout the survey, our discussion of the results is based on the provided responses.

The Weather Survey characteristics have remained relatively constant overtime. Figures 1 through 4 illustrate the survey demographics.

Figure 1 shows how the survey respondents compare to the FAA pilot population database. About three-quarters of the pilots reported holding private or commercial certificates. ATP and student pilots are underrepresented.

About two-thirds are instrument rated. 64% of respondents are instrument rated, of which 44% are current.

Single-engine piston aircraft are operated by the majority of those who participated in the survey, although the full spectrum of aircraft types is represented.

Figure 1: 2022 Weather Survey Results vs. FAA's Pilot Population Certification Levels

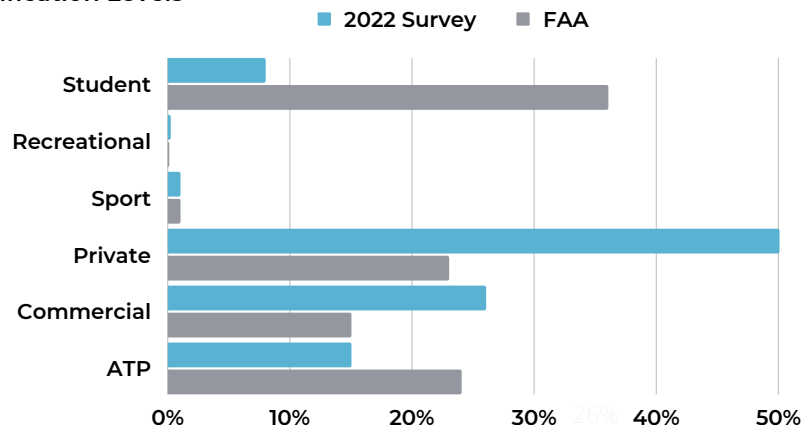


Figure 2: Do you currently hold an instrument rating?

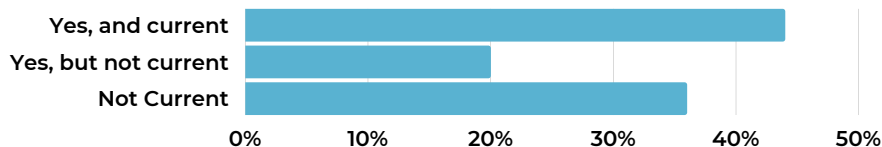


Figure 3: How old are you?

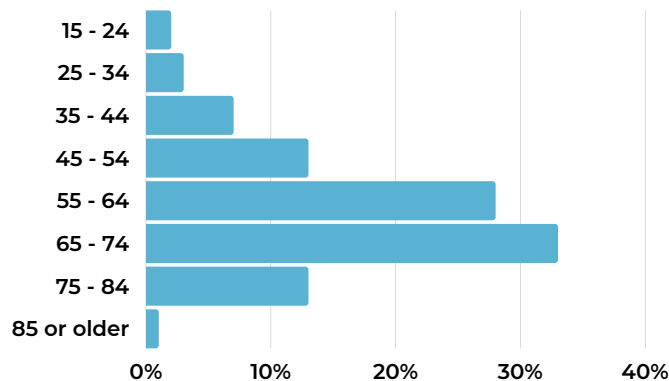
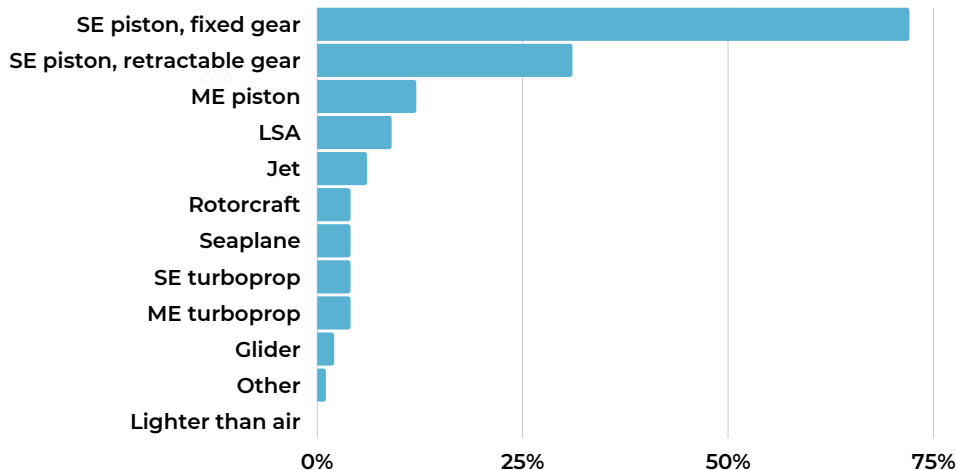


Figure 4: Which kind(s) of aircraft do you currently fly? (Select all).



SOURCES USED FOR INITIAL WEATHER BRIEFING IN CONTINENTAL UNITED STATES (CONUS)

A major goal of the survey is to better understand what sources of weather information pilots draw upon for preflight planning. As in previous surveys, AOPA asked where pilots were obtaining their pre-flight weather information, both during their initial briefing, and immediately prior to flight under challenging conditions. We continued those questions this year to evaluate trends. Figures 5 & 6 show those results.

In CONUS, since 2017, "Aviation application", "Aviation Weather Center online", and "Flight Service specialist" have remained the top sources for initial weather briefings among CONUS pilots.

While "Aviation application", "Windy", and "Flight Service Web Portal" have grown in popularity over time, there has been a corresponding decrease in the use of Flight Service specialists. In 2022, 30% of CONUS pilots consulted Flight Service, a drop of 25 percentage points from 2017.

Breaking it down further by certification, survey results show that Airline Transport rated pilots have a higher utilization of aviation applications (70%) and a slightly lower utilization of Flight Service (20%) in 2022 (Appendix Table 1).

Student pilots relied on Flight Service in previous years, but that has slowly decreased over the years as well — from 58% in 2018 to 34% in 2022 (Appendix Table 1).

The "other sources" were a wide range of flight application and web sources, available for free or on a subscription bases. These will be described in more detail later in the report.

Figure 5: What weather source(s) do you use for your initial weather briefing during pre-flight planning? (Select all that apply).

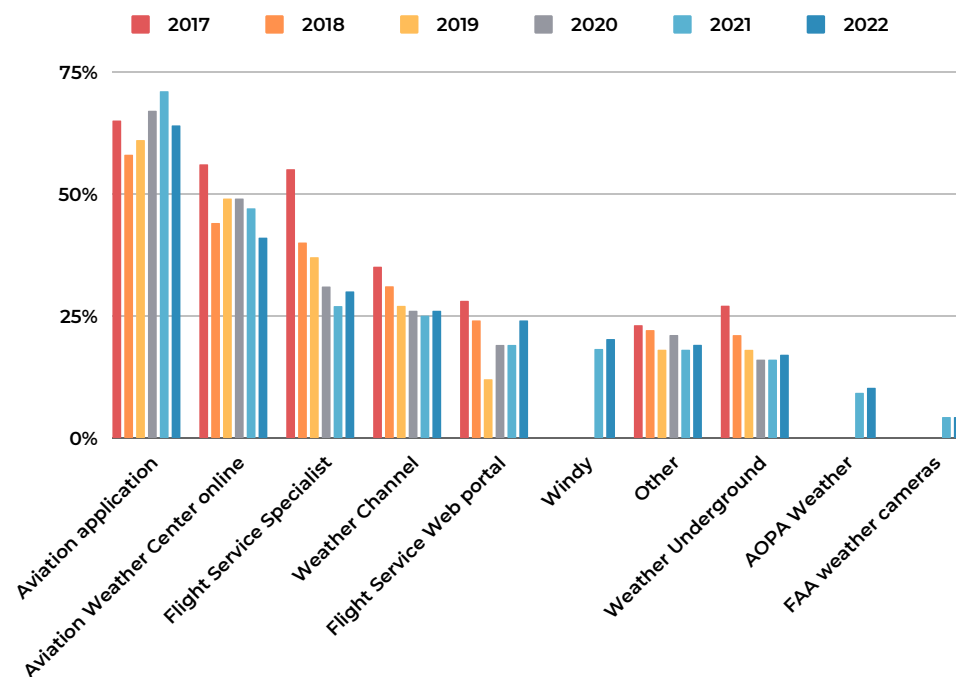
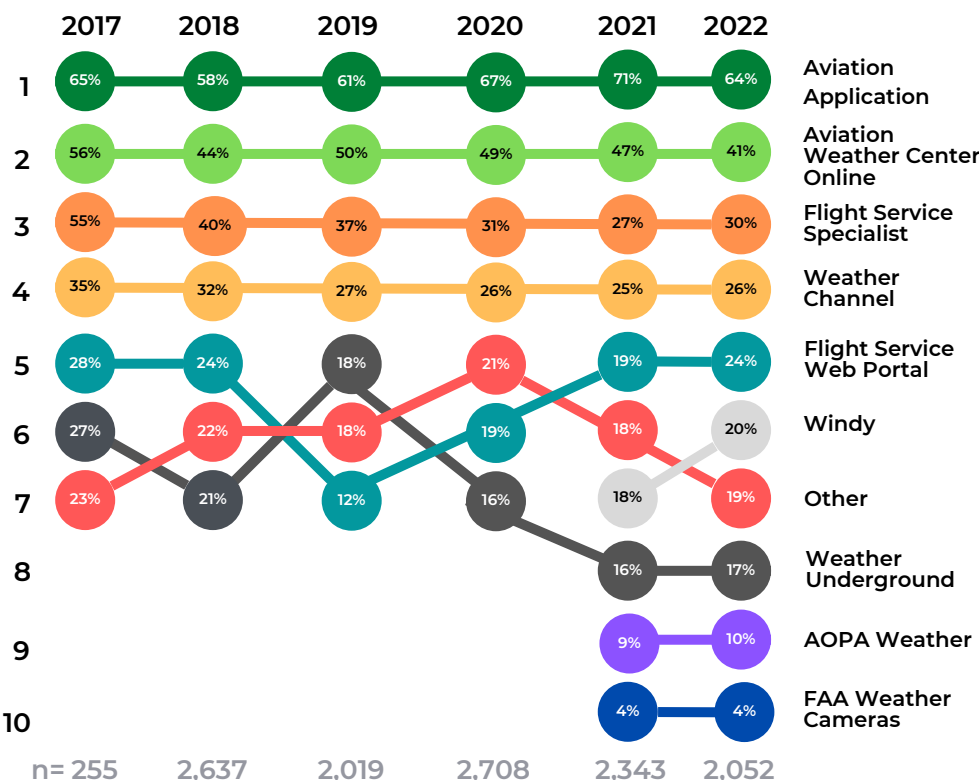


Figure 6: What weather source(s) do you use for your initial weather briefing during pre-flight planning? (Select all that apply).



Rank Chart, sources are ranked from 1-10 for each year and are annotated with the percentage of respondents that selected that source. Aviation application has been ranked 1st since 2017 and the percentage represents the distribution in that specific year.

SOURCES USED IMMEDIATELY PRIOR TO FLIGHT IN CONTINENTAL UNITED STATES (CONUS)

Top 3 Sources Used Immediately Prior to Flight in CONUS

- 1 Aviation Application
- 2 Flight Service Specialist
- 3 Aviation Weather Center online

Results for weather sources pilots used just prior to flight are presented in Figures 7 & 8. Similar to the initial sources, the top *immediately prior to flight* sources have remained constant. "Aviation Application", "Flight Service Specialist", and "Aviation Weather Center Online" have continued to be the top sources among CONUS pilots in terms of relative ranking of sources.

The trends for individual sources are shown in Figure 4a. While the use of "Aviation Applications" has remained relatively steady, utilization of "Flight Service Specialists" has steadily decreased since 2017. Although "Flight Service Specialist" has decreased, Figure 4b shows that it is still consistently ranked as the second most popular information source.

In 2022, 76% of respondents who are instrument rated and current reported using "Aviation Applications" compared to 59% of those who are not instrument rated. Conversely, 30% of respondents who are instrument rated used Flight Service compared to 41% of respondents who are not (Appendix Table 2).

Figure 7: What weather source(s) do you use while on the ground immediately prior to flight under challenging conditions? (Select all that apply).

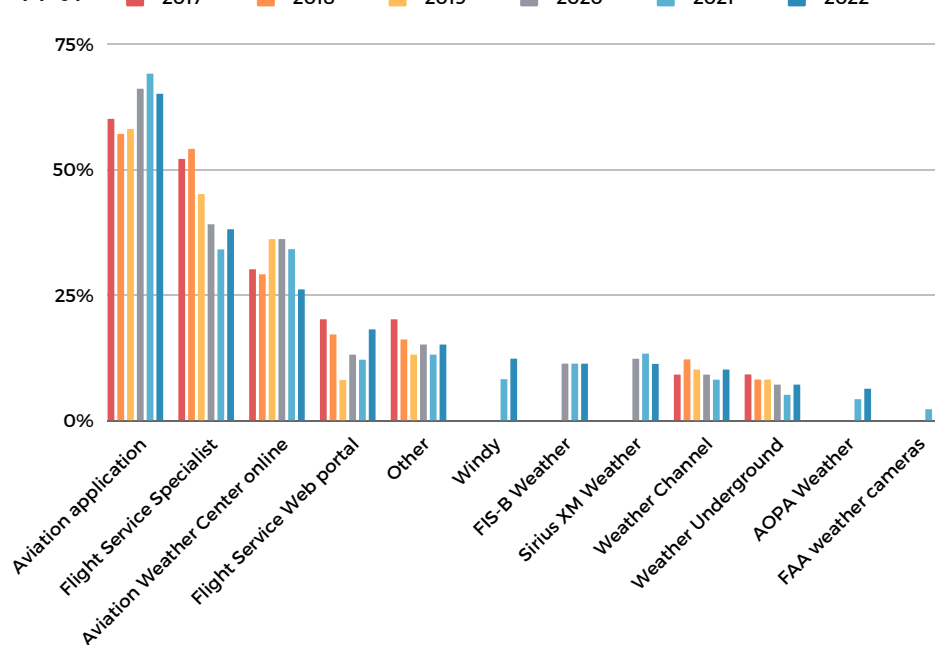
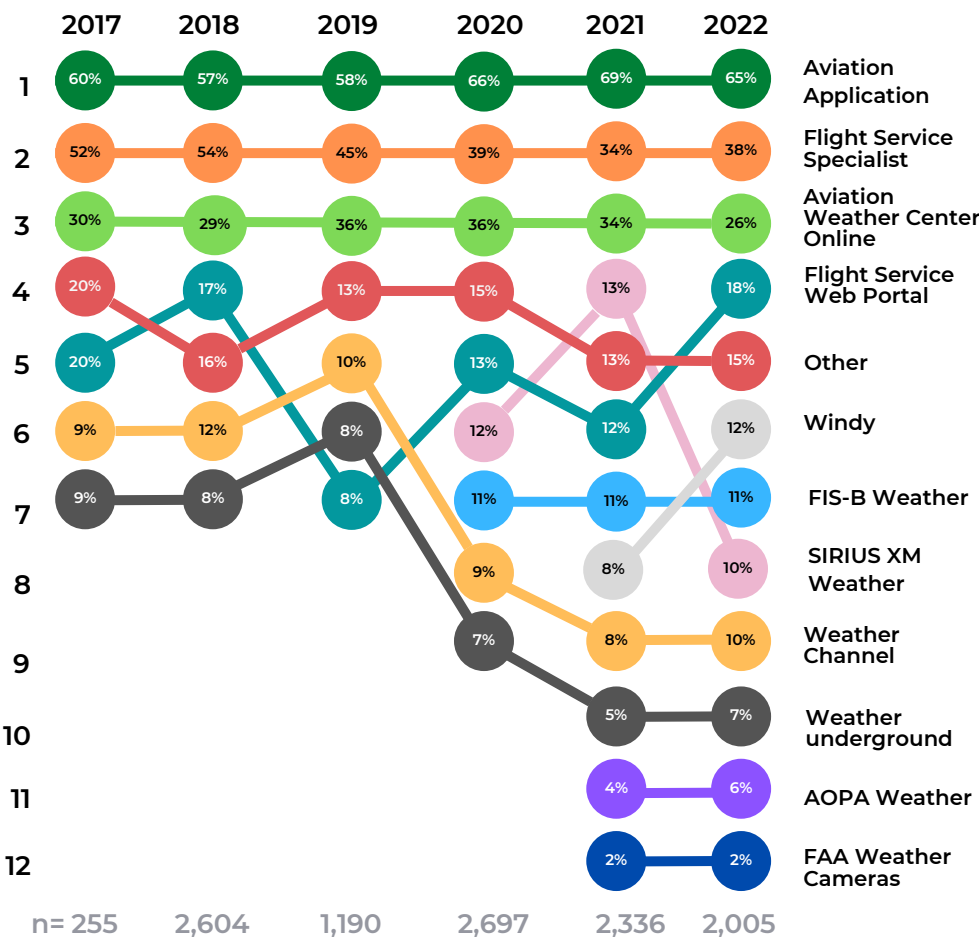


Figure 8: Ranked chart of weather source(s) used immediately prior to flight in CONUS.



RELATIONSHIPS BETWEEN WEATHER SOURCES SELECTED IN CONTINENTAL UNITED STATES (CONUS)

To better understand if pilots changed sources after conducting their initial briefing, but prior to departure, we cross-referenced *initial* and *immediately prior* usage by source, shown in Figure 9.

Each year, "Aviation Application" and "Flight Service Specialist" tend to be among the most popular weather resources.

In addition to asking pilots to identify the sources they used, a follow-on question asked them to identify which of the sources they considered to be their primary sources as shown in Table 1.

In 2022, 65% of CONUS pilots consulted aviation applications immediately prior to flight and, of those, 70% relied on those applications as their primary source of weather information. 38% of CONUS pilots consulted Flight Service specialists immediately prior to flight and, of those, about half (49%) selected it as their primary source.

In 2022, 79% of those using aviation applications used them for both their initial and immediately prior to departure weather checks.

While almost half (46%) of pilots used Flight Service specialists for both their initial and immediately prior to departure weather checks, about a third of pilots (35%) used Flight Service only immediately prior to departure. This means that a third of pilots used a different source in their initial weather briefing.

Figure 9: Selection of Weather Sources in CONUS.

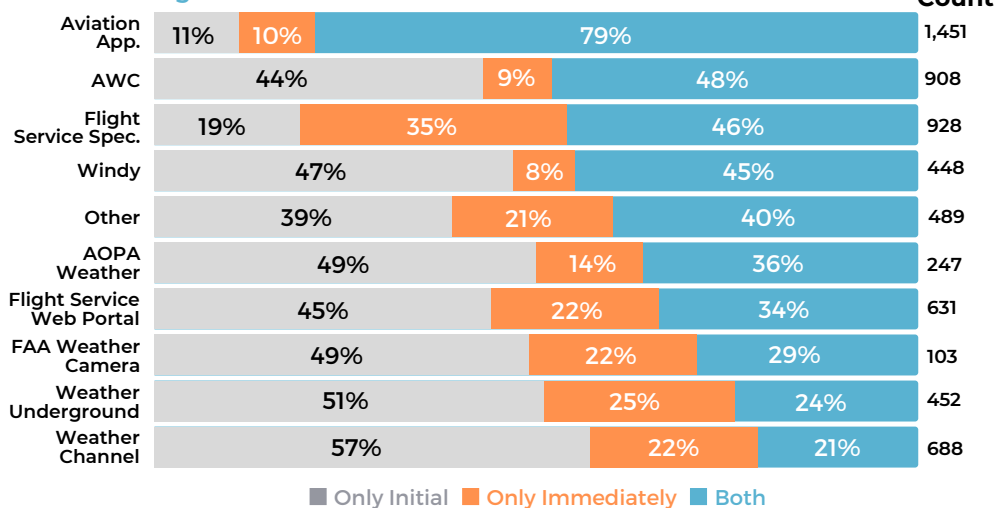


Table 1: Primary weather source immediately prior to departure in comparison to all sources used (CONUS).

Source	Selected as one of the Sources Used While Immediately on the Ground	How Many Selected it as Their Primary Source Immediately Prior to Flight	Selected Aviation Application as their Primary Source	Selected Flight Service Specialist as their Primary Source
Aviation Application	65% (1,260)	70%	70%	12%
Flight Service Specialist	38% (723)	49%	28%	49%
Aviation Weather Center	26% (498)	24%	41%	17%
Flight Service Web portal	18% (336)	24%	32%	24%
Other	15% (279)	35%	29%	13%
Sirius XM Weather	11% (201)	21%	52%	15%
AOPA Weather	6% (119)	15%	20%	34%
Weather Underground	7% (129)	12%	48%	14%
FAA weather cameras	3% (45)	11%	48%	20%
Windy	12% (226)	10%	53%	13%
Weather Channel	10% (185)	9%	49%	14%
FIS-B Weather	11% (210)	8%	55%	13%

Respondents had the ability to select multiple options when asked what weather sources they used immediately prior to departure, shown in column two. In a follow up question, respondents identified their primary weather source, shown in column three. Columns four and five show how many respondents selected either Aviation Application or Flight Service.

Looking at FIS-B Weather as an example, 11% (210) of respondents selected it as one of the sources they used immediately prior to departure and, of those, 8% selected it as their primary source. Looking at the last two columns, of those who selected FIS-B Weather, 55% selected Aviation Application as their primary and 13% selected Flight Service Specialist.

Those who selected "Other" were invited to list the sources they used. The results are visually depicted here in the form of word clouds for initial briefings (Figure 10), and for sources used immediately prior to departure, (Figure 11).

There is overlap between these responses and the choices provided in the survey. For example ForeFlight is an aviation application, which was one of the choices provided in the question — so, it should not have been entered as a response in the "Other" category.

We opted to show the results as reported in the survey, since these figures give an idea of the diversity of sources used by pilots and the differences between the sources used initially and immediately prior to flight.

Figure 10: Word Cloud of pilots who selected "Other" for Weather Sources for "initial" weather check.

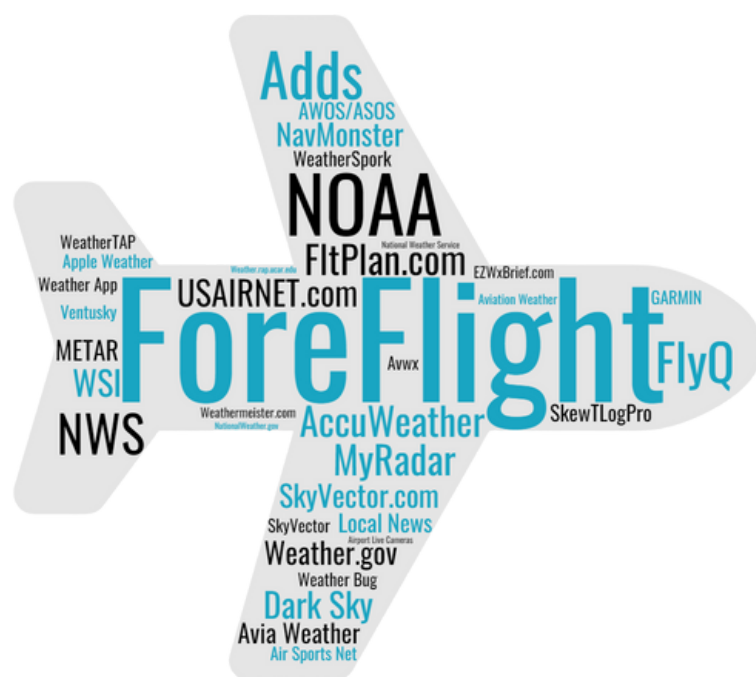
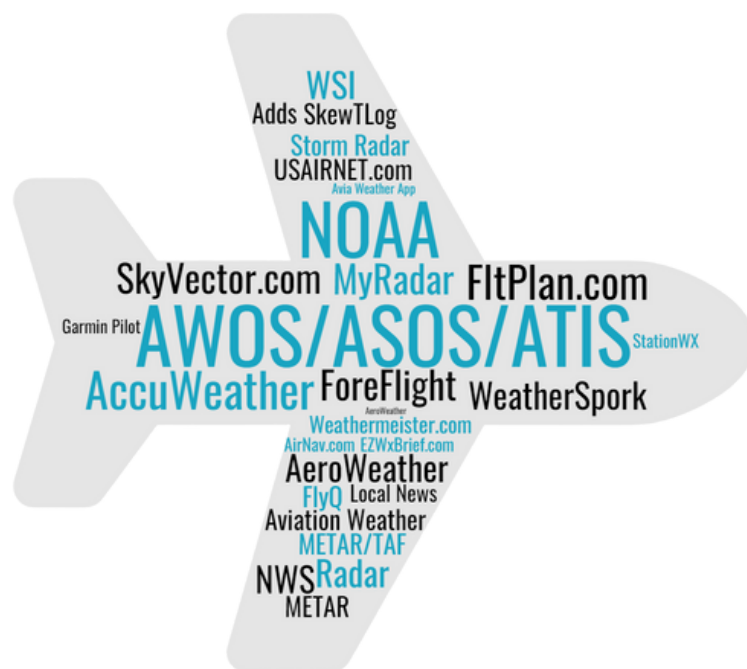


Figure 11: Word Cloud of pilots who selected "Other" for Weather Sources used "immediately prior to flight".



The word clouds include sources that were listed as categories in the survey question, making these figures an imperfect mixture of responses.

SOURCES USED FOR INITIAL WEATHER BRIEFING IN ALASKA

Top 3 Initial Sources in Alaska

- 1 FAA weather camera
- 2 Alaska Aviation Weather Unit
- 3 Windy & Flight Service Specialist

Alaska differs significantly from the CONUS in terms of infrastructure and services provided. Consequently, the Alaskan results are summarized separately to explore those trends.

While the top sources in CONUS for pilots' initial weather briefings were "Aviation Applications" and "Flight Service Specialist", the case is a little different for Alaska, as seen in Figures 12 and 13. Since 2017, "FAA Weather Cameras" and "Alaska Aviation Weather Unit website" have remained the most popular sources for initial weather briefings among Alaskan pilots.

Compared to the CONUS, Alaskan pilots' utilization of FAA weather cameras was much higher. This is likely because the Weather Camera program was pioneered in Alaska and most cameras are located there.

Alaska pilots use of "Flight Service Specialists" and "Aviation Application" has continued to be the next two most popular information sources, with the "Windy" website joining the mix in the last two years.

Figure 12: What weather source(s) do you use for your initial weather briefing during pre-flight planning? (Select all that apply).

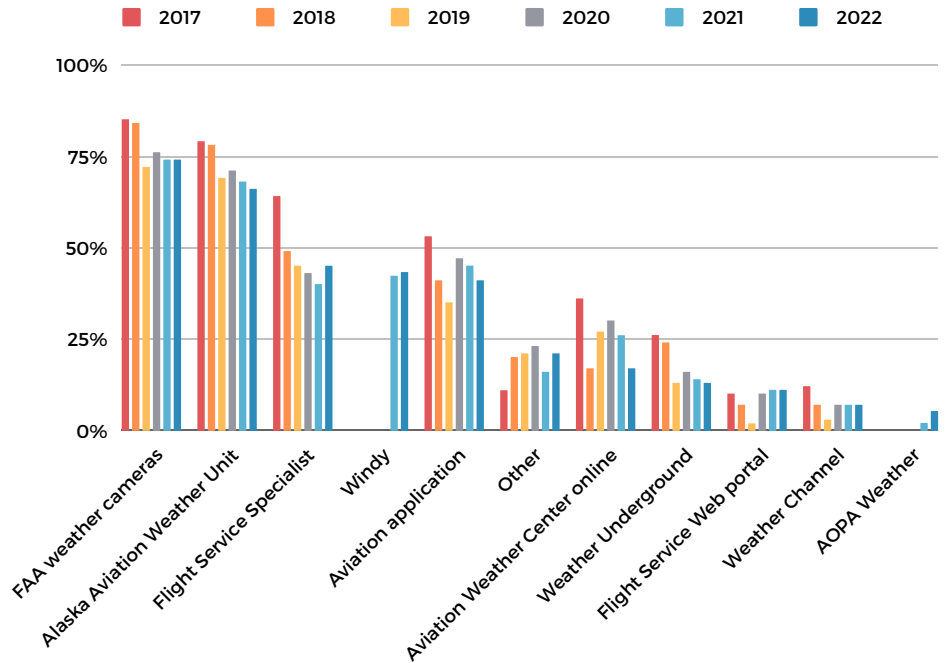
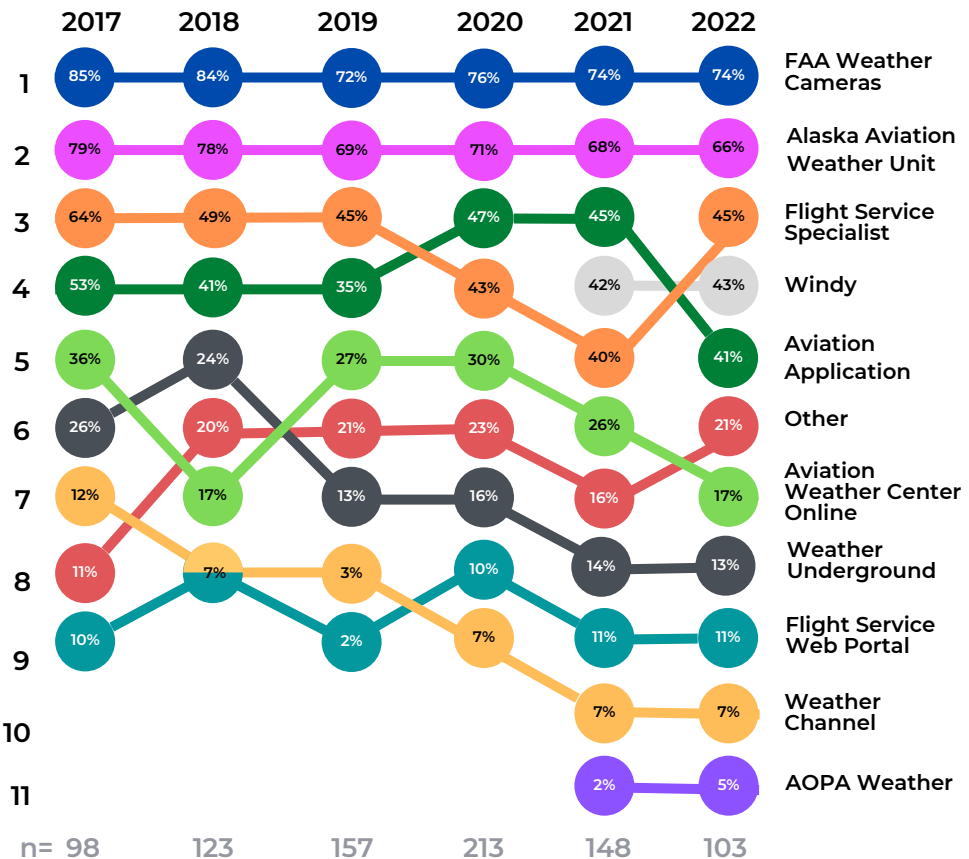


Figure 13: What weather source(s) do you use for your initial weather briefing during pre-flight planning? (Select all that apply).



SOURCES USED IMMEDIATELY PRIOR TO FLIGHT IN ALASKA

Top 3 Sources Used Immediately Prior in Alaska

- 1 FAA weather camera
- 2 Flight Service Specialist
- 3 Alaska Aviation Weather Unit

Figures 14 and 15 show the trends in usage of weather sources used immediately prior to flight by pilots who fly in Alaska.

Similar to the initial weather briefing, top sources used immediately prior to flight in Alaska have remained consistent. "FAA weather cameras", "Flight Service Specialist", and "Alaska Aviation Unit" have remained the top sources for Alaskan pilots.

Where Flight Service usage in the CONUS has decreased, this source remains relatively constant for Alaska pilots.

Aviation applications, while fourth in the relative ranking, are a solid source of information in this region of the country.

Figure 14: What weather source(s) do you use while on the ground immediately prior to flight under challenging conditions? (Select all that apply).

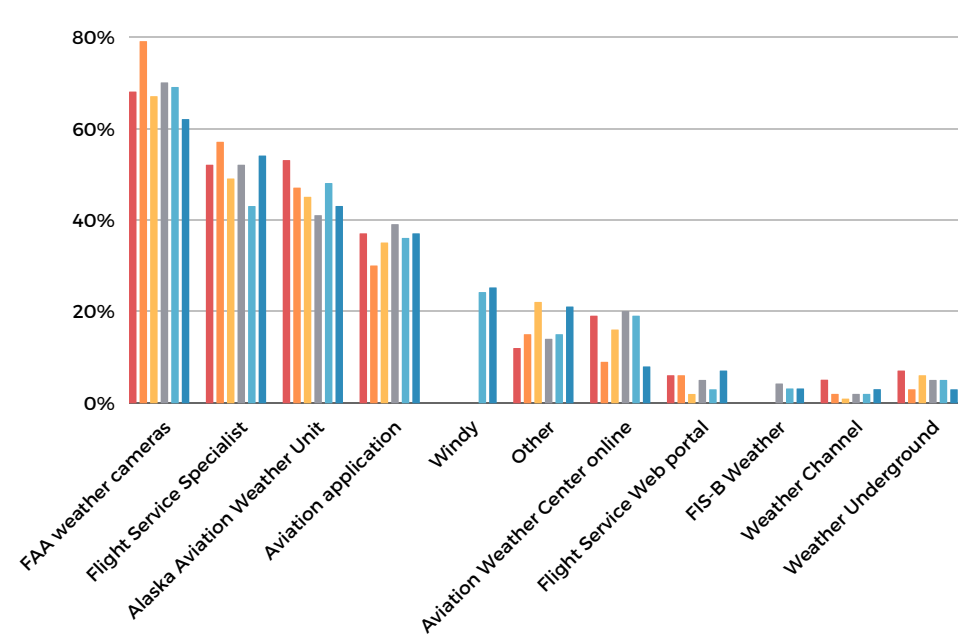
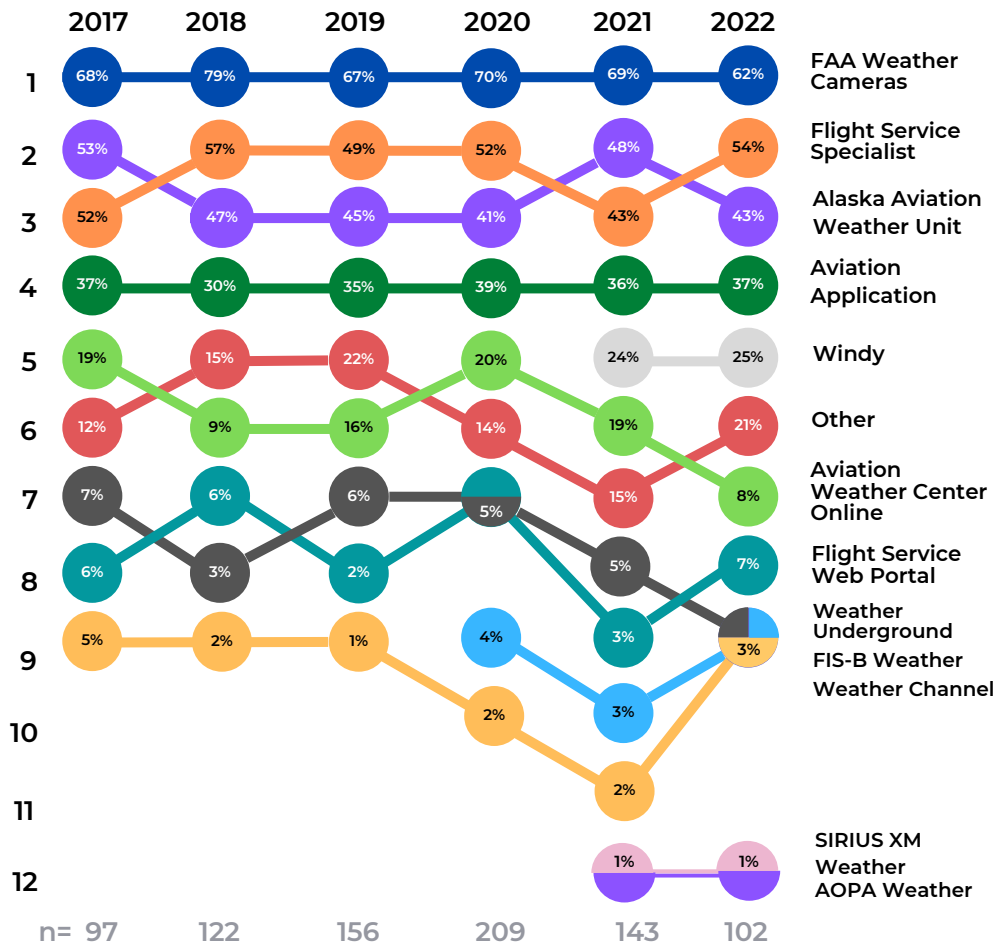


Figure 15: Ranked chart of weather source(s) used immediately prior to flight in Alaska.



RELATIONSHIPS BETWEEN WEATHER SOURCES SELECTED IN ALASKA

A comparison of weather sources was made between *initial* and *immediately prior* for Alaska users, shown in Figure 16. The results show that Alaskan pilots typically use FAA weather cameras and Flight Service specialists most often. They do use aviation applications, but not as much as CONUS pilots.

In 2022, 62% of Alaskan pilots consulted FAA weather cameras immediately prior to departure and, of those, 41% relied on them as their primary source of weather information (Table 2). 56% consulted Flight Service specialists immediately prior to flight and, of those, a little over half (56%) selected it as their primary source.

Very similar to CONUS pilots, aviation application users were more likely to use them to check the weather during their initial weather checks and immediately prior to departure. 78% of those using aviation applications used them for both their initial checks and immediately prior to departure. FAA weather cameras also followed the same trend, with 67% of FAA weather camera users using them for both.

Again, similar to CONUS pilots, 30% of Flight Service Specialist users in Alaska used a different resource in their initial weather check.

Figure 16: Selection of Weather Sources in Alaska

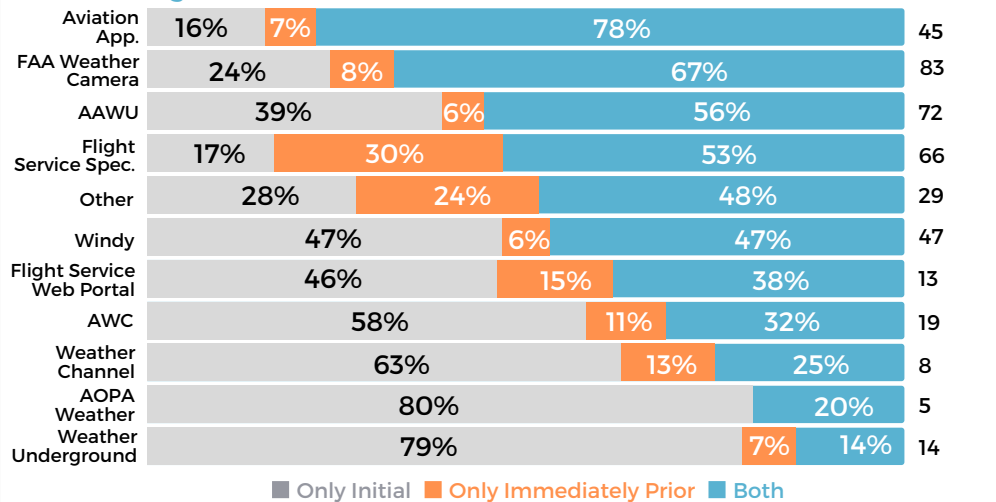


Table 2: Primary weather source immediately prior to departure in comparison to all sources used (Alaska).

Source	Selected as one of the Sources Used While Immediately on the Ground	How Many Selected it as Their Primary Source Immediately Prior to Flight	Selected Aviation Application as their Primary Source	Selected Flight Service as Their Primary Source	Selected FAA Camera as their Primary Source
FAA weather cameras	62% (63)	41%	14%	24%	41%
Flight Service Specialist	54% (54)	56%	9%	56%	24%
AAWU	43% (44)	14%	11%	20%	39%
Aviation application	37% (38)	32%	32%	18%	37%
Windy	25% (25)	8%	20%	16%	40%
Other	21% (21)	52%	10%	5%	24%
Flight Service web portal	7% (7)	29%	14%	29%	0%
Aviation Weather Center	8% (8)	25%	13%	25%	0%

Respondents had the ability to select multiple options when asked what weather sources they used immediately prior to departure, shown in column two. In a follow up question, respondents identified their primary weather source, shown in column three. Columns four, five, and six show how many respondents selected *Aviation Applications*, *Flight Service* or *FAA Cameras*.

Looking at *FAA weather cameras* as an example, 62% of respondents selected it as one of the sources they used immediately prior to departure and, of those, 41% selected it as their primary source. Looking at the last two columns, of those who selected *FAA weather cameras*, 14% selected *Aviation Application* as their primary and 24% selected *Flight Service Specialist*.

Those who selected "Other" weather sources were given the opportunity to enter their own responses — Figures 17 and 18 illustrate the variety of these write-ins.

As described in the CONUS section above, these responses are a mixture of truly "other" sources (such as "marine weather") and restatements of choices that were provided in the question (such as several aviation apps) seen in both figures.

Again, we chose to show these results as reported, in order to give an idea of the diversity of sources used and to show the differences between those used initially and those used immediately prior to flight.

Figure 17: Word Cloud of pilots who selected "Other" for Weather Sources for "initial" weather check.

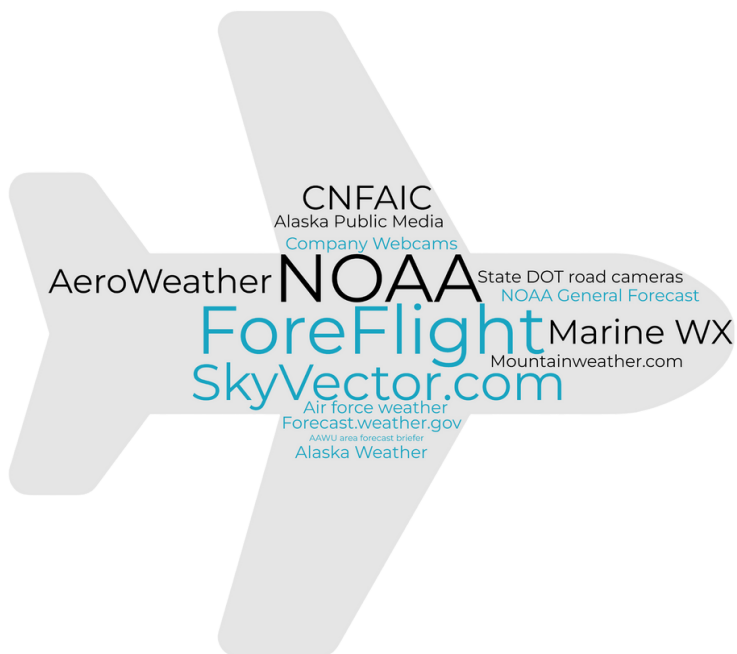


Figure 18: Word Cloud of pilots who selected "Other" for Weather Sources used "immediately prior to flight".



The word clouds include sources that were listed as categories in the survey question, making these figures an imperfect mixture of responses.

REASONS FOR CHOOSING A WEATHER SOURCE IN ALL LOCATIONS

As in previous years, AOPA asked respondents to identify the qualities they valued in their preferred weather sources. While impractical to discuss each source, we have endeavored to highlight significant differences between what pilots identified as key qualities of their preferred weather source.

In Figure 19, pilots primarily called Flight Service specialists to ask questions and receive a professional opinion, while many others did so because they see Flight Service as "legal" or recorded, reliable, and providing plain-English interpretations.

Conversely, pilots who used aviation applications and the AWC Online cared more about the graphics and comprehensive features. AWC Online scored highly for reliability, while aviation applications did so for portability.

Windy, Sirius XM Weather, and FAA weather cameras (Figure 20) have higher ratings for graphics/visual weather information. Those who chose Windy also liked its user-friendly interface and comprehensive features. Those who chose Sirius XM also favored its reliability and coverage area.

Most pilots who chose FAA weather cameras as their primary source also selected it because of the coverage area and its unique weather features not available elsewhere. Respondents also liked the cameras' user-friendly interface.

This set of Figures 19-22 depict the qualities pilots valued for their preferred weather sources and were able to select up to three from the choices displayed. The closer a colored line reaches toward the edge of the chart, the higher the percentage of respondents who chose the corresponding quality for that particular weather source. There were a total of 13 qualities available for each weather source.

Figure 19: Qualities of preferred weather source: Aviation Apps, FSS Specialist and AWC Online.

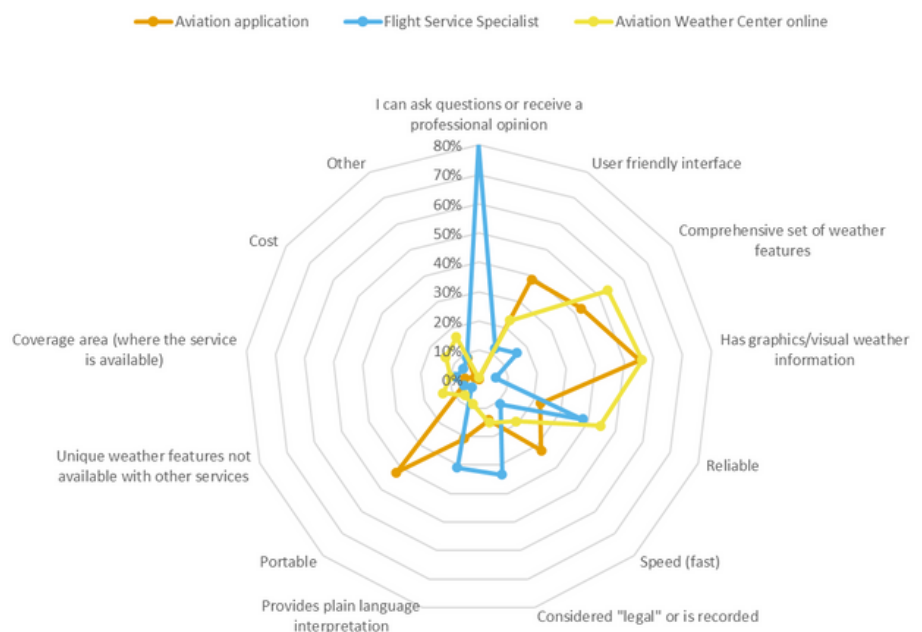
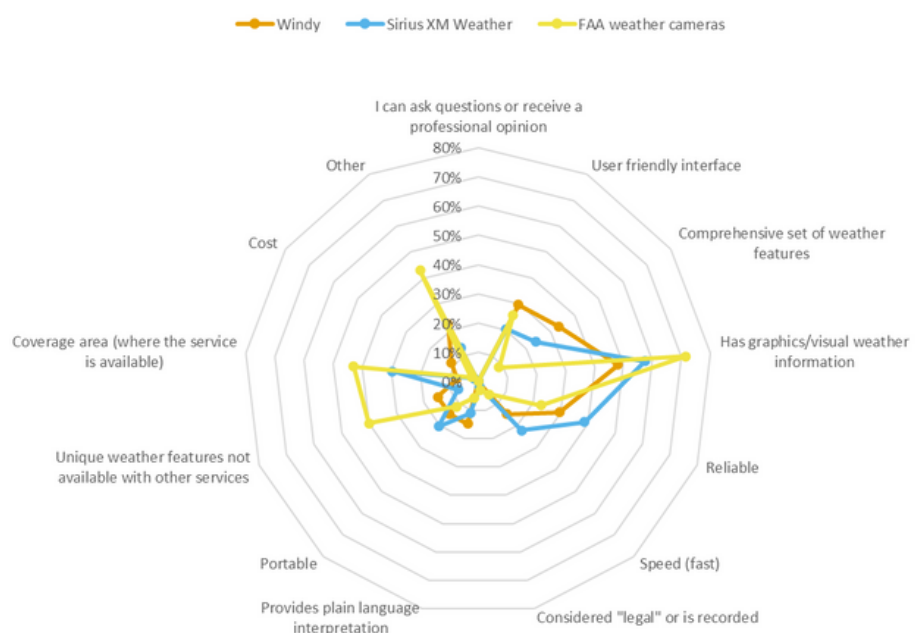


Figure 20: Qualities of preferred weather source: Windy, Sirius XM and FAA weather cams



As depicted in Figure 21, most pilots who chose the Flight Service web portal as their primary source also selected it because they considered it "legal" or recorded. Many also liked it for its comprehensive features and reliability.

AOPA Weather and the Weather Channel paralleled each other in their high marks for a user-friendly interface and graphics/visual weather information, though AOPA Weather scored significantly higher for comprehensive weather features.

Of the sources shown in Figure 22, those who selected FIS-B were most pleased with its portability, while speed and graphics/visual weather information were also seen as assets.

Weather Underground was chosen mostly because of its graphics/visual weather information, while it also scored highly for speed and comprehensive weather features.

The Alaska Aviation Weather Unit stood out for its comprehensive weather features, as well as for its coverage area, reliability, and graphics/visual weather information.

Figure 21: Qualities of preferred weather source: FSS web portal, AOPA Weather and Weather Channel

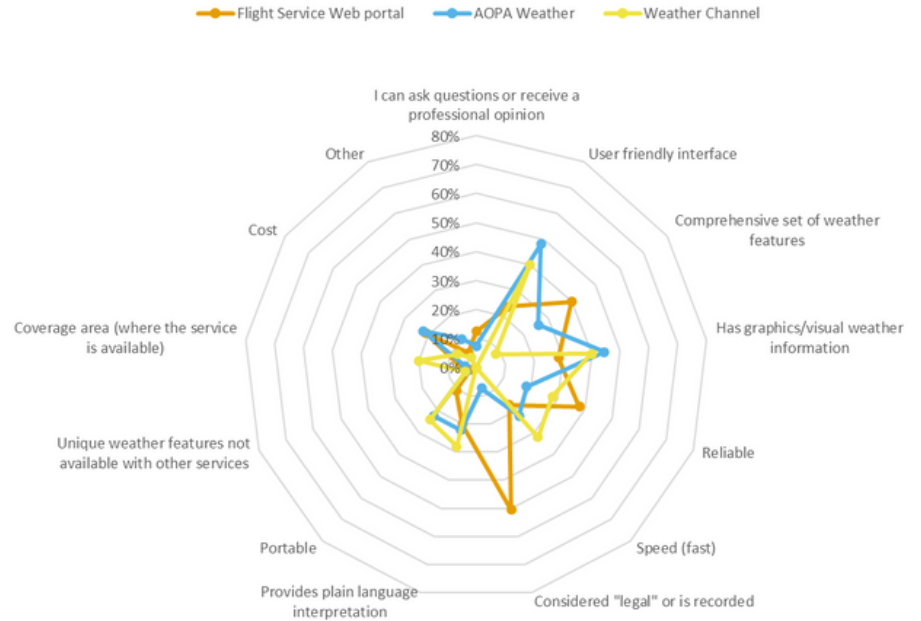
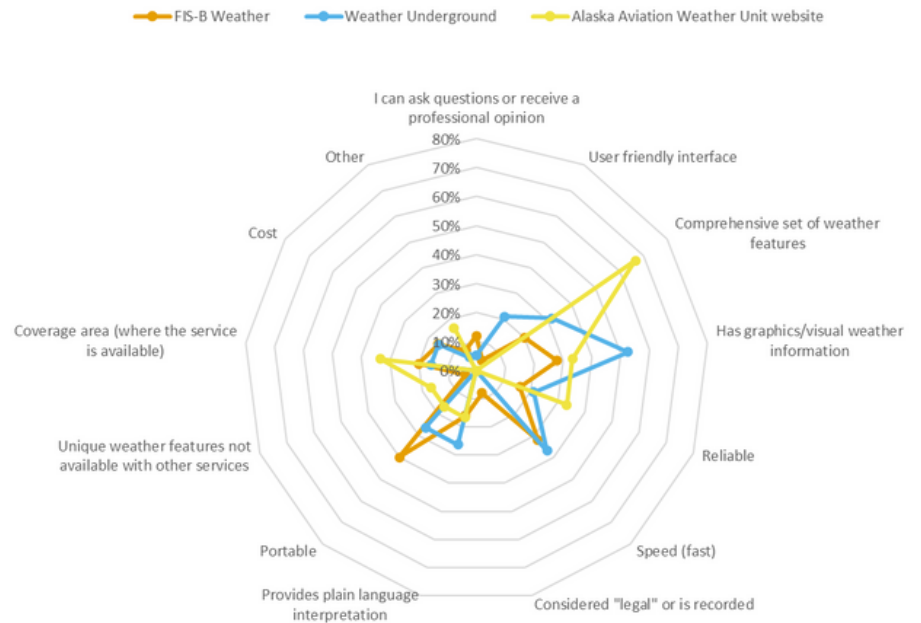


Figure 22: Qualities of preferred weather source: FIS-B, Weather Underground and AAWU



LONG CROSS-COUNTRY CRUISE WEATHER SOURCES IN ALL LOCATIONS

The weather information needed, as well as the available communication channels, change once pilots are airborne. To assess those needs, AOPA asked pilots how they accessed weather information during the cruise phase of a long cross-country flight, represented by Figures 23 and 24.

Listening to AWOS, ASOS, and ATIS on the radio remained the most common source of weather information during this flight phase in both Alaska and CONUS.

FIS-B and Sirius XM Weather are not as popular in Alaska as they are in the CONUS, likely due to the lack of coverage for both products in Alaska. As a result, this may be why Alaska pilots have a higher utilization of Flight Service via the radio compared to CONUS pilots.

Those who selected "Other" were invited to list the sources they used. The results are visually depicted here in the form of a word cloud.

Figure 25: Word Cloud of pilots who selected "Other" for "how do you get in-flight weather information during the cruise phase of flight?"



The word cloud includes sources that were listed as categories in the survey question, making these figures an imperfect mixture of responses.

Figure 23: When on a long cross-country flight, how do you get in-flight weather information during the cruise phase of flight? (Select all that apply). In CONUS

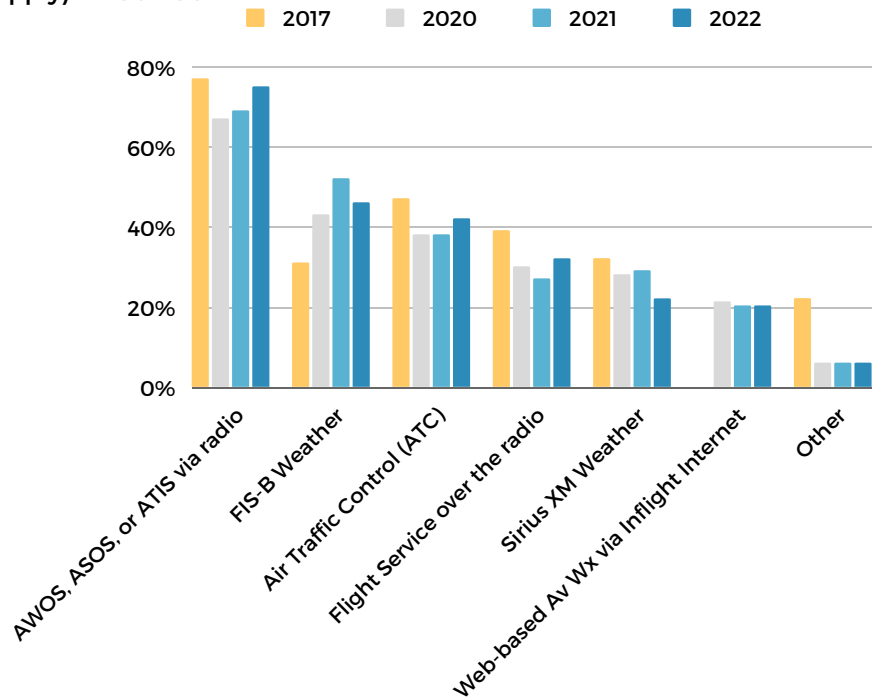
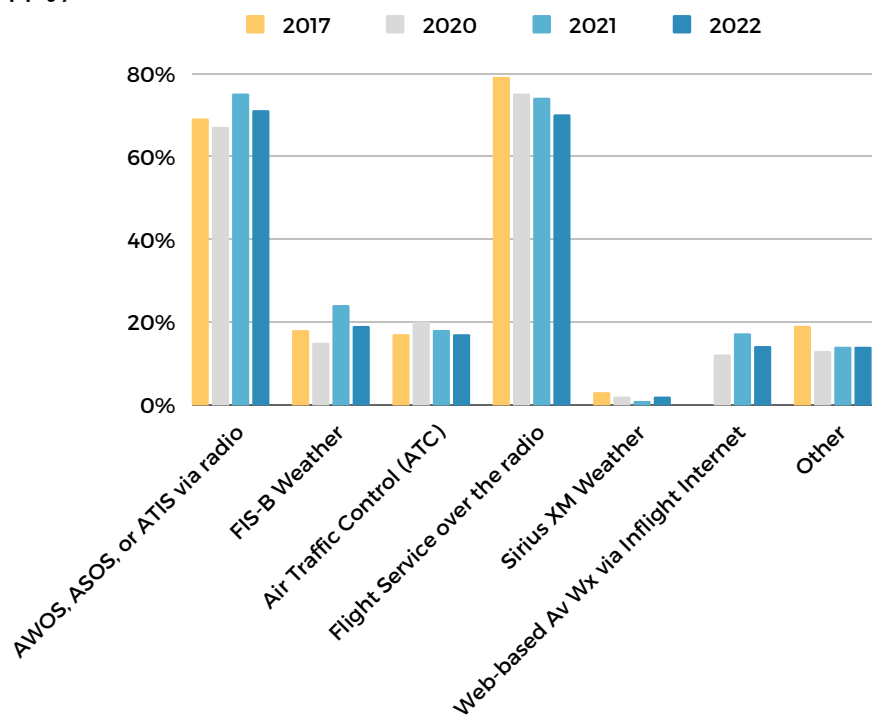


Figure 24: When on a long cross-country flight, how do you get in-flight weather information during the cruise phase of flight? (Select all that apply). In Alaska



WEATHER SOURCES USED AND REASONS THEY ARE CHOSEN BY PILOTS

Pilots draw from a wide variety of sources for weather data, ranging from dedicated aviation sources to more generalized weather websites or apps. While new sources have been added over the years this survey has been conducted, those most heavily used have remained fairly constant.

For pilots primarily flying in the CONUS, we do not observe significant changes in the selection of weather sources. Aviation apps have been the most heavily used source since the 2017 survey, for both initial briefings and immediately prior to departure. Flight Service usage has dropped about 20 percentage points over the last five years, yet it remains an important resource for pilots. (Later in the report, Flight Service is discussed in more detail.)

We find it interesting, however, that sources not designed specifically for aviation, such as the Windy.com website, show such high usage. We can only speculate that the emphasis on weather visualization and design is driving this trend, as supported by Figures 20-22. This might be worth consideration for aviation app and website developers, as they look at ways to make their products more appealing to pilots.

For pilots in Alaska, weather cameras have remained the most popular source for both *initial* briefings and *immediately prior to departure*, albeit by a smaller margin than in 2021.

Figures 9 and 16 also show the strong usage of aviation apps for both *initial* and *immediately prior* to flight weather data. While Flight Service specialist usage is lower overall, they still are heavily used immediately prior to flight.

Figures 19 through 22 provide some insight into the properties that users value from the different weather sources. Here too the live interactivity and ability to interpret provided by Flight Service is differentiated from the more visually oriented nature of the flight apps and other online sources.

The role of Flight Service, and its importance to pilots, is also shown in Figures 9 and 16, where roughly a third of respondents identified it as their primary weather source used immediately prior to departure — this is, by far, the strongest response of any of the reported sources.

FREQUENCY OF CONDUCTING PRE-FLIGHT SELF-BRIEFINGS PRIOR TO CALLING FLIGHT SERVICE

In 2022, AOPA again asked a set of questions to explore current self-briefing practices, as AC 91-92 describes (and as is discussed in the next section). Figure 26 summarizes those results for each year the question has been asked.

The number of respondents that indicated they do not call Flight Service for pre-flight briefings has steadily increased over the last several years. In 2022, 22% of CONUS respondents did not call Flight Service, an increase of 8 percentage points from 2018. In Alaska, 13% of respondents indicated they did not use Flight Service for preflight briefings, though this does not reflect a large change from previous years.

While Flight Service usage has decreased, the number of respondents who *always* or *frequently* conduct self-briefings prior to calling Flight Service has remained constant at between 75%-80% over the last five years, both in the CONUS and Alaska.

Figure 27 shows that instrument-rated pilots were less likely to contact Flight Service. In 2022, 29% of instrument-rated and current pilots stated they *never* called Flight Service, compared with 19% of non-instrument-rated pilots — this is an increase over previous years.

Figure 28 shows that age also appears to be a factor. While the percentage of pilots not calling Flight Service is increasing for both age groups, in 2022, respondents under 44 reported they do not call Flight Service 34% of the time (an 18 percentage point increase from 2018), compared with those over 45 calling 21% of the time (an 8 percentage point increase from 2018).

75%

of pilots *always* or *frequently* conducted self-briefings prior to calling Flight Service.

22%

of CONUS pilots *don't call* Flight Service for a pre-flight briefing.

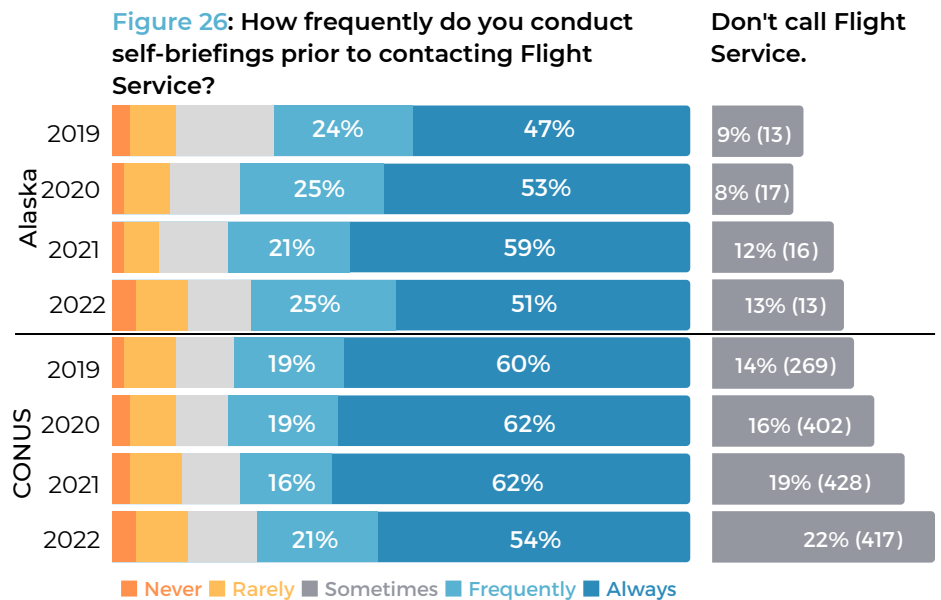


Figure 27: Don't call Flight Service: instrument-rated vs. not instrument-rated in 2019 vs. 2022.

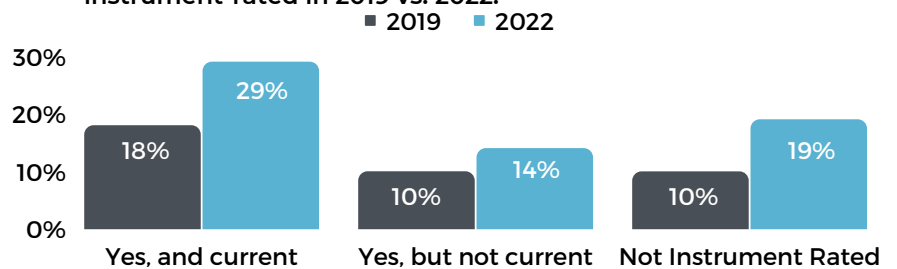
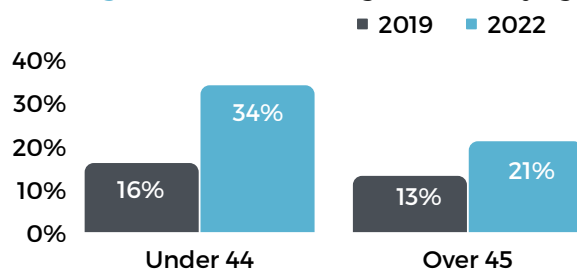


Figure 28: Don't call Flight Service by age in 2019 vs. 2022.



FAA'S ADVISORY CIRCULAR (AC) 91-92: PILOT'S GUIDE TO SELF-BRIEFINGS

As the use of online weather resources continues to increase, more and more pilots are conducting their own preflight self-briefings.

As a result, in 2021, the FAA released AC 91-92 to provide guidance for pilots on proper self-briefing procedures and to provide references to numerous online sources of government-provided weather, NOTAMs, and airspace status.

One year later, 40% of pilots are still not familiar with AC 91-92 at all (Figure 29). However, in 2022, 32% of respondents reported they were *somewhat or much more likely* to conduct self-briefings as a result of reading the guidance, an increase of 9 percentage points from 2021 (Figure 30).

Respondents possessing higher pilot certifications, including those who are instrument current, tend to be more familiar with the guidance (Figure 31).

68%

of pilots are *not familiar at all* or *only slightly familiar* with AC 91-92.

32%

of pilots are *somewhat* or *very likely* to conduct self-briefings after getting familiar with AC 91-92.

Figure 29: How familiar are you with the AC 91-92?

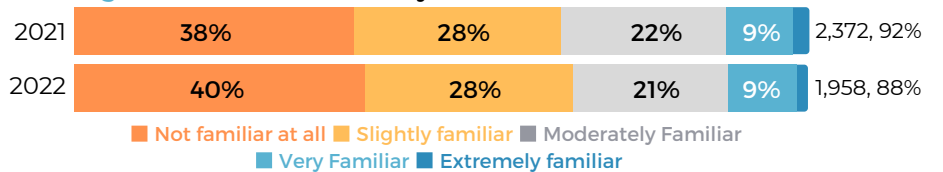


Figure 30: How has reading AC 91-92 impacted your likelihood of conducting a self-briefing?

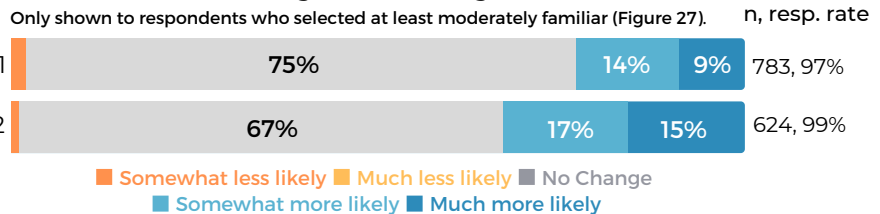
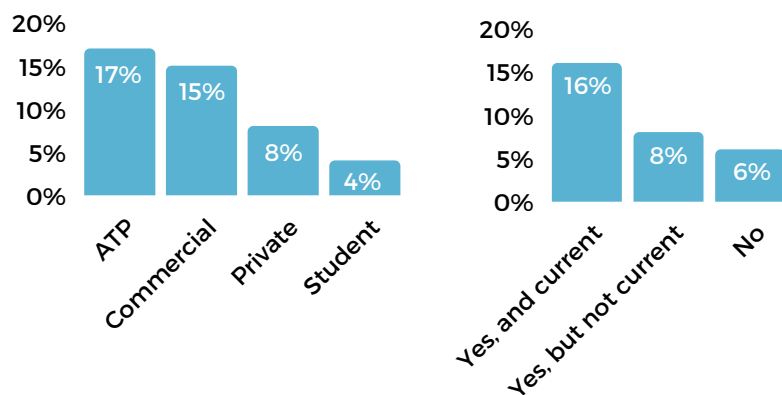


Figure 31: Respondents who reported being Very familiar or Extremely familiar with AC 91-92 broken out by Certification level and instrument rating in 2022.



AC 91-92

The results from the 2022 survey indicate very little change in awareness or behavior related to AC 92-92 since last year's survey. Over two-thirds of respondents are not familiar at all, or only slightly familiar with, the AC.

The continued decrease in the number of respondents calling Flight Service makes it imperative that more outreach be done to increase pilot awareness of the AC. In addition, the guidance should be added to future primary training to ensure that new pilots become comfortable with performing self-briefings.

Recommendation

The FAA and industry should continue their outreach efforts for AC 91-92 to ensure that more pilots are aware of its guidance and outlined resources.

COMMUNICATIONS WITH FLIGHT SERVICE ASSISTANCE INTERPRETING WEATHER

While we previously discussed the use of Flight Service as a pre-flight weather source, AOPA went further in 2022 by asking if pilots would consider contacting Flight Service when they needed assistance interpreting the weather. In response, 61% of pilots in both Alaska and the CONUS reported they were *likely* or *very likely* to do so (Figure 32).

Looking at the respondents who stated they do not otherwise call Flight Service for pre-flight weather, 31% of those were *likely* or *very likely* to do so if they required assistance interpreting the weather as part of their self-briefings.

About 60% of Commercial, Private and Student-certificated pilots were likely to call for assistance, compared 52% of ATPs if they needed assistance interpreting the weather (Figure 33).

There was no significant difference in responses between CONUS and Alaskan pilots, between different age groups, or between those with and without an instrument rating.

61%

CONUS and Alaska pilots are *likely* or *very likely* to call Flight Service if needing assistance interpreting weather.

31%

of pilots who report not otherwise calling Flight Service indicate they are *likely* or *very likely* to call if needing assistance interpreting weather.

Figure 32: When you are conducting a self-briefing, and need assistance interpreting the weather, how likely are you to contact Flight Service for assistance?

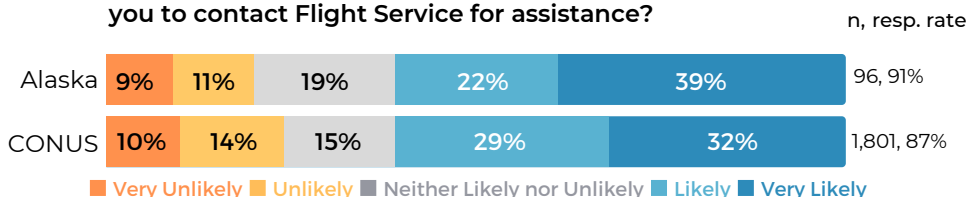
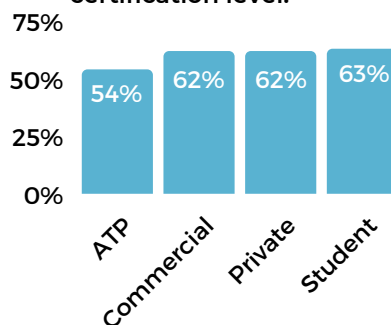


Figure 33: When you are conducting a self-briefing, and need assistance interpreting the weather, how likely are you to contact Flight Service for assistance? By certification level.



COMMUNICATIONS WITH FLIGHT SERVICE

TWO-WAY DIGITAL COMMUNICATIONS

Flight Service is considering adding options for digital communications with pilots via chat, two-way text, or screen sharing. To obtain feedback on the user interest in these additional forms of communication, a question was posed concerning two-way digital communication.

As shown in Figure 34, 54% of CONUS respondents were *likely* or *very likely* to contact Flight Service via two-way text, 52% via chat, and 41% via screen sharing. Corresponding numbers for Alaskan respondents were 53% for two-way text, 40% for chat, and 32% for screen sharing.

CONUS pilots responded more favorably with *likely* or *very likely* for chat (+12 percentage points) and screen sharing (+9 percentage points) than Alaskan pilots.

For respondents who reported not otherwise calling Flight Service for pre-flight weather, 47% were *likely* or *very likely* to contact Flight Service via two-way text and 44% via chat. Of those who do regularly call Flight Service, 52% were likely or very likely to use chat and 55% to use two-way text (Figure 35).

In other words, almost half of respondents, who may not choose to call Flight Service as part of their typical weather briefings, would consider interacting via digital communications if offered.

By age, those who are under 44 are slightly more likely to communicate with Flight Service digitally.

By certification level, student pilots are significantly more likely to utilize a form of digital communication with Flight Service if it were offered.

Roughly half

of pilots who report not calling Flight Service are *likely* or *very likely* to use either digital two-way text or chat.

Figure 34: How likely or unlikely are you to contact Flight Service, either pre or post-flight, if they offered two-way digital communication?

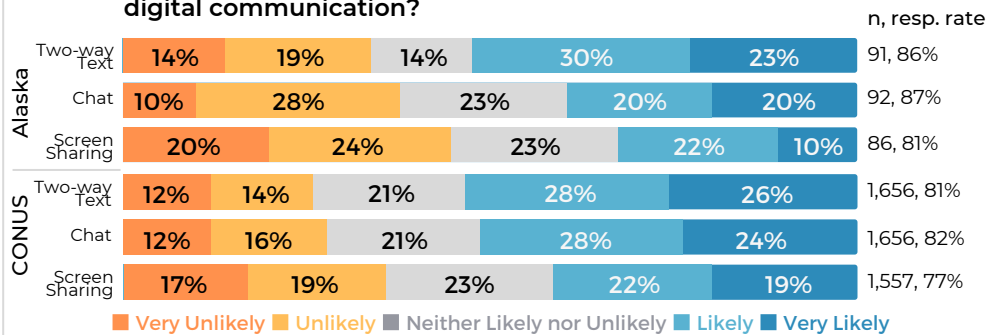


Figure 35: Break out of respondents who selected *likely* or *very likely* by those who call Flight Service vs. those who do not.

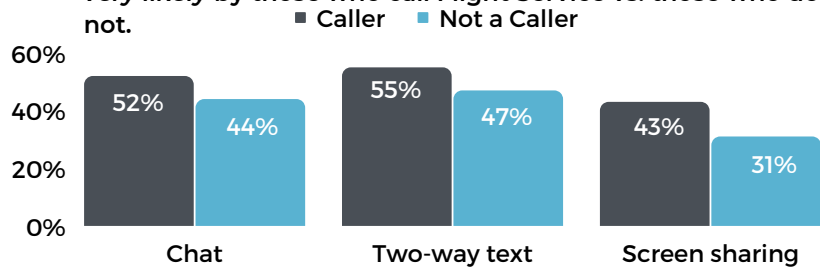


Figure 36: Break out of respondents who selected *likely* or *very likely* by Age.

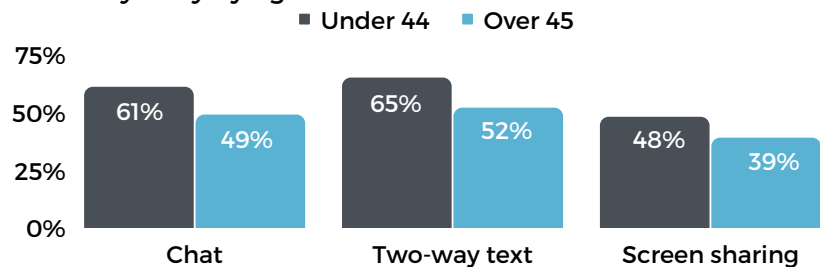
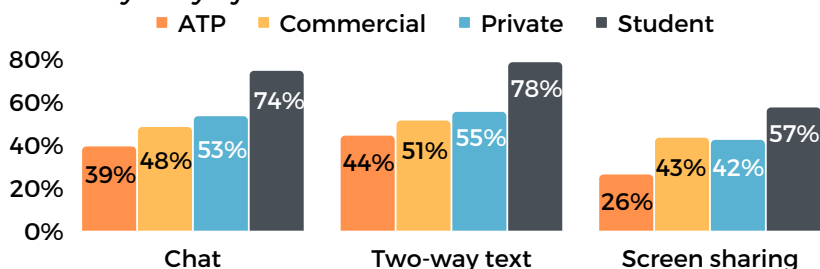


Figure 37: Break out of respondents who selected *likely* or *very likely* by certification level.



FLIGHT SERVICE

Flight Service is an important resource for pilots, utilized during multiple phases of flight. The 2022 survey contained several questions that touched on Flight Service — as a pre-flight weather information source, its use for weather interpretation, and exploring new types of communication.

Looking at these collectively, while usage of Flight Service specialists for weather briefings has generally diminished, their unique ability to function as an interactive information source remains important to pilots. Notably, a third of those *who do not normally utilize Flight Service* for pre-flight weather briefings, indicate that they would call if they needed assistance interpreting the weather. This further highlights the role and value of Flight Service in the pre-flight regime.

It also appears that the use of newer two-way communication technologies would prompt more pilots to interact with Flight Service, particularly those who are younger and more receptive to new technologies. Almost half of those who do not regularly call Flight Service indicate they would be likely to utilize chat or two-way texting, with almost a third are likely to use screen sharing.

Screen sharing is a particularly intriguing possibility that could offer the potential for Flight Service specialists to engage in interactive briefings, something that AOPA has long advocated. It would also provide further opportunity for specialists to serve as consultants, helping pilots understand weather and other flight-related details, rather than functioning primarily as conveyors of raw data.

Recommendation

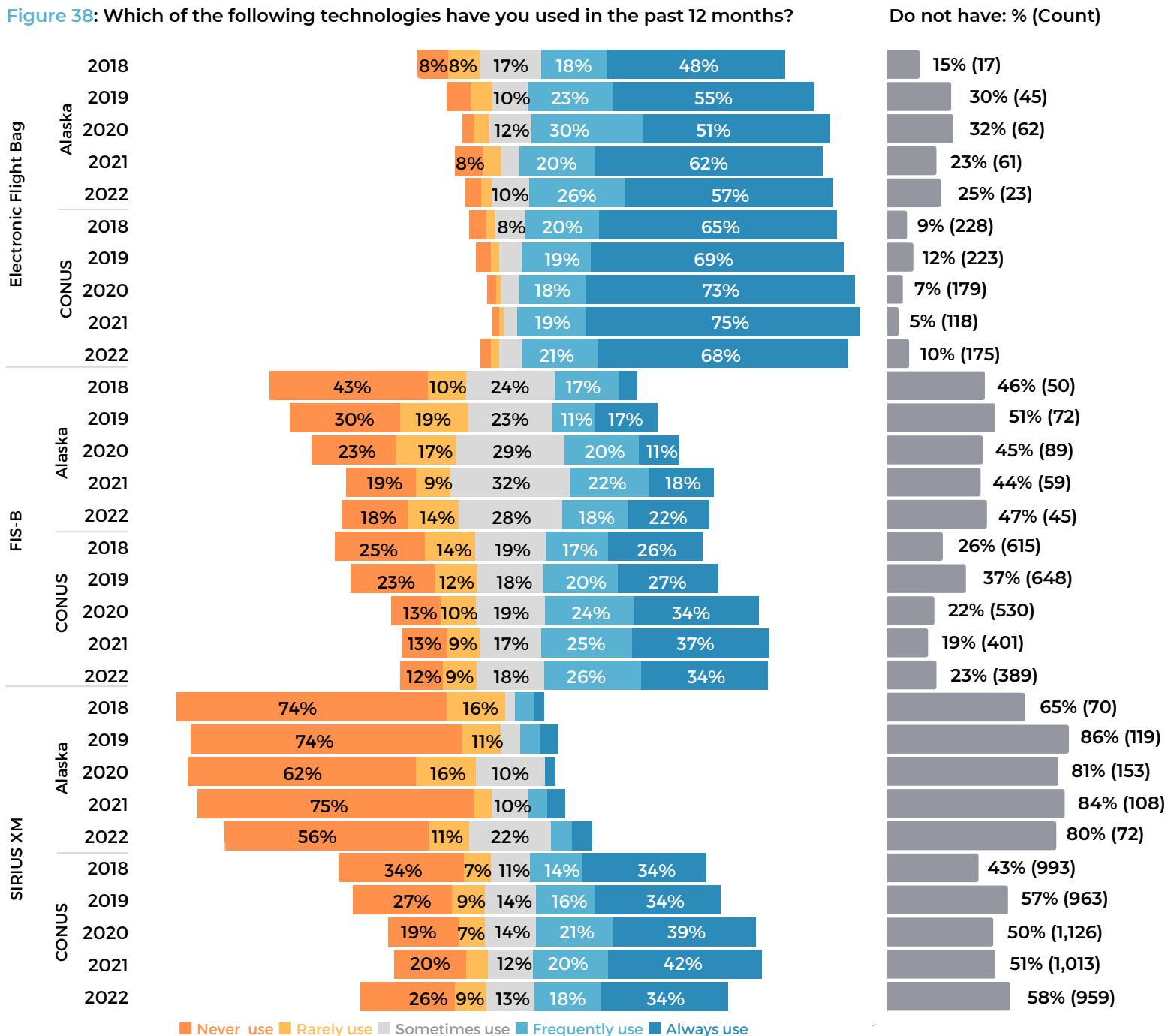
- Flight Service should explore the adoption of technologies such as two-way texting, chat, and screen sharing to allow pilots additional avenues to interact with specialists.
- Flight Service should also reinforce the unique ability that their specialists have to function as consultants for pilots.

ELECTRONIC FLIGHT BAG (EFB), FLIGHT INFORMATION SYSTEM BROADCAST WEATHER (FIS-B) AND SIRIUS XM WEATHER USAGE IN THE PAST 12 MONTHS

AOPA continues to try and understand the different tools pilots are using to obtain weather information, both on the ground and in the air.

In general, pilots in all locations showed high usage of EFBs, FIS-B, and Sirius XM. Pilots in the CONUS used each of these sources more often than pilots in Alaska did. While EFBs are popular in both regions, the difference in FIS-B and Sirius XM weather usage, between the CONUS and Alaska, is significant.

Figure 38: Which of the following technologies have you used in the past 12 months?



Follow-up questions were posed to those who, either *frequently* or *always*, reported using FIS-B before flights. CONUS pilots tended to be more satisfied with FIS-B than Alaskan pilots.

In 2022, 56% of Alaskan respondents said they were *satisfied* or *extremely satisfied* with FIS-B compared to 78% of CONUS respondents. The majority of respondents were *satisfied* as opposed to *extremely satisfied*. These numbers have remained consistent since 2018.

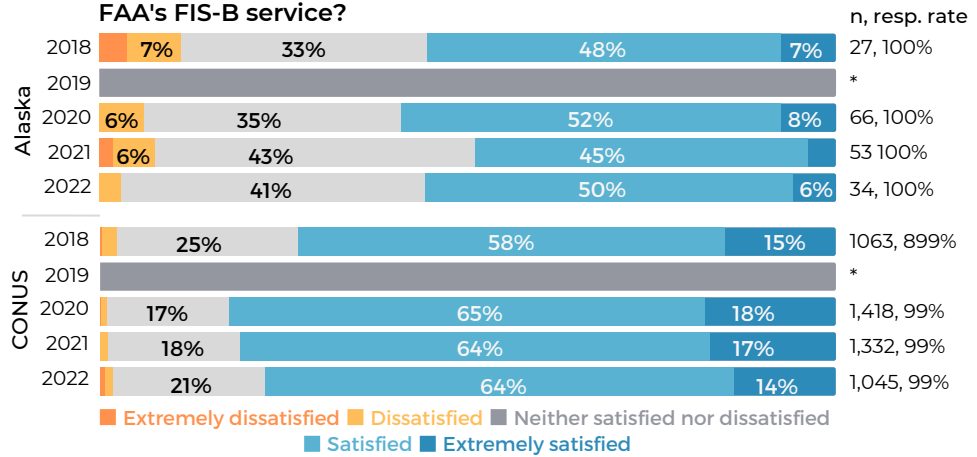
86%

of all pilots *frequently* or *always* use EFBs.

78%

of CONUS pilots are *satisfied* or *extremely satisfied* with FIS-B.

Figure 39: How satisfied or dissatisfied are you with the FAA's FIS-B service?



*In 2019, there was incomplete data.

EFB, FIS-B AND SIRIUS XM

Use of EFBs has remained high for the period of time we have tracked it. Alaskan usage is behind, but generally appears to be increasing. It is clear that these devices are major tools in the general aviation world.

FIS-B usage appears to be gaining ground, most strongly in the CONUS. While its usage in Alaska is trailing, the trend is in a positive direction. The lack of ADS-B coverage in Alaska, at altitudes typically used by general aviation aircraft, leaves as much as 40% of the state without coverage. That, and the lack of airspace mandating ADS-B out equipage, are probably the reasons for the lower usage levels. Up to eleven additional ADS-B ground stations are planned for Alaska, which should help. However, there will still be significant gaps in coverage which need to be addressed. We would expect that as coverage in Alaska increases, FIS-B usage will continue to increase.

Sirius XM weather usage in the CONUS is generally high, although the survey results show a small decline between 2021 and 2022. Users who said they used the service *frequently* or *always* dropped from 62% to 52% in that time interval. Alaskan use of this product is much lower, although trending in a positive direction. This lower usage is most likely due to service availability, with the system only covering a small portion of the state.

PILOT REPORTS (PIREPs) PROVIDING UNSOLICITED PIREPs

Expanding the number of PIREPs filed continues to be a focus for the FAA and industry groups.

The percentage of respondents providing unsolicited PIREPs *frequently or always* has not changed significantly over time in either Alaska (mainly between 63% and 69%) or in the CONUS (between 42% and 47%). However, Alaskan pilots are consistently more likely to provide PIREPs than CONUS pilots.

ATP, commercial, and current instrument-rated pilots were all more likely to provide unsolicited PIREPs than other groups.

While the question was not asked this year, the 2021 Weather Survey results revealed pilots' reasons for not filing PIREPs. These included pilots being "busy on flight following and other comms" and being "focused on other aspects of the flight." In many cases, pilots described a lack of confidence in filing PIREPs, saying they were not sure of giving correct information" or that the information "might not be accurate."

Only about half

of all pilots indicated they provide unsolicited PIREPs *at least sometimes*.

Figure 40: On average, how often do you provide an unsolicited PIREP?

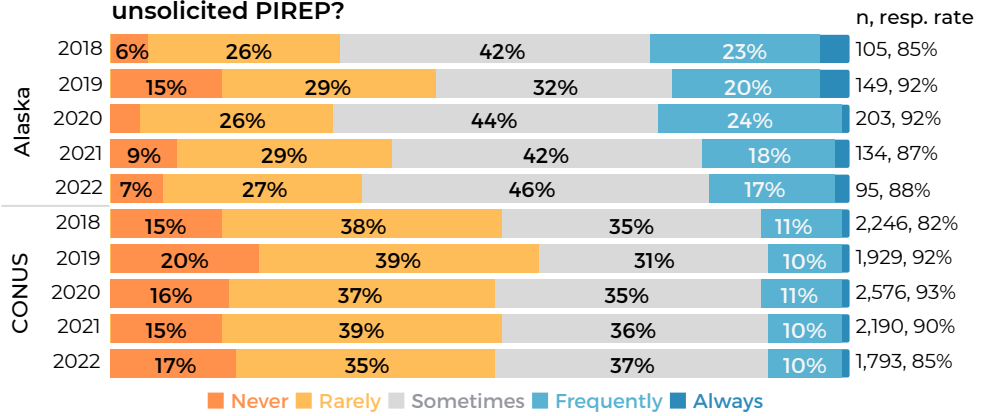
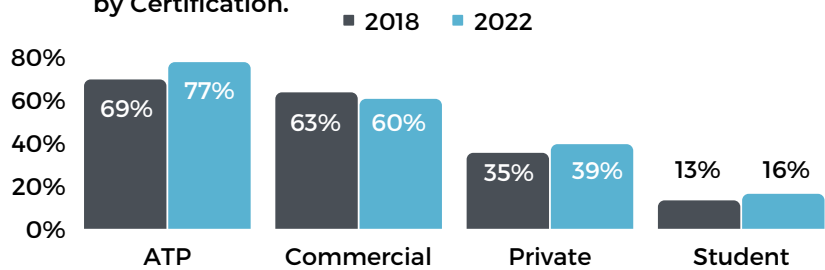


Figure 41: Respondents who selected at least sometimes by Certification.



PILOT REPORTS (PIREPs) PLATFORMS

One issue contributing to the lack of unsolicited PIREPs, noted in the 2021 AOPA Weather Survey, was difficulty in submitting them. As a result, we asked a set of questions this year pertaining to the submission platforms used.

Most pilots continue to be unfamiliar with AWC's web-based PIREP submission portal, similar to results from previous years. As shown in Figure 41, in 2022, 85% of both CONUS and Alaskan respondents said they were *not familiar at all* or only *slightly familiar* with the portal, a 10 percentage point increase from 2021. There was a slight increase in familiarity in 2019 and 2020, but the numbers are slowly decreasing again.

Figure 43 shows that CONUS pilots provide more unsolicited PIREPs through Air Traffic Control, while Alaskans tend to file with Flight Service.

We see that 69% of CONUS pilots provide unsolicited PIREPs through Air Traffic Control *sometimes* or more frequently compared to 38% of Alaskan pilots.

These percentages almost completely flip for the use of Flight Service, with 65% of Alaskan pilots providing unsolicited PIREPs through Flight Service *sometimes* or more often, compared to 31% of CONUS pilots .

85%

were *not familiar at all* or were *slightly familiar* with AWC's Web-based PIREP submission portal.

Figure 42: How familiar are you with the Aviation Weather Center's web-based PIREP Submission portal?

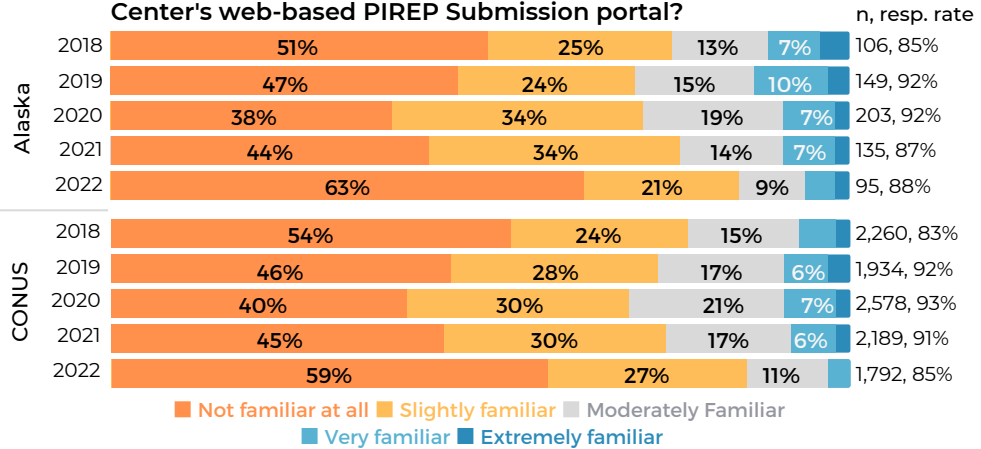
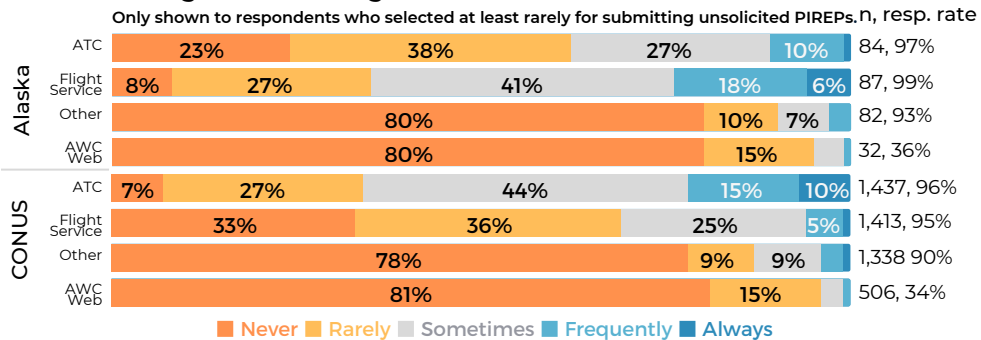


Figure 43: How often do you provide an unsolicited PIREP through the following?



PILOT REPORTS (PIREPs) INSTRUCTION DURING PRIMARY TRAINING

In an effort to increase the number of PIREPs submitted, the 2021 Weather Survey included a recommendation that student pilots be taught about the importance of submitting PIREPs.

In the 2022 survey, we asked if respondents had received instruction on submitting PIREPs during their primary flight training. 66% of respondents stated that they did receive such training (Figure 44).

In a follow-up question, respondents were asked if they were able to submit a PIREP during their training. Just under half (43%) of respondents indicated they had. (Figure 45).

Looking at the impact of that training on pilot behavior today, Figure 46 shows that, of those who submitted a PIREP during primary training, 64% provided unsolicited PIREPs *sometimes, frequently, or always*.

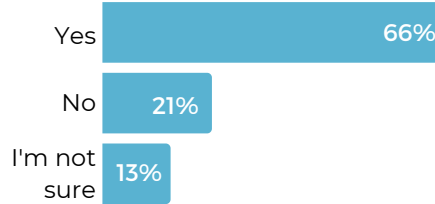
In contrast, for those that didn't benefit from this experience during primary training, only 33% reported submitting unsolicited PIREPs *sometimes, frequently or always*.

One caveat to this question is that, for some pilots, their primary training occurred many years prior — they may not recall accurately whether or not they received training on submitting PIREPs or not.

55%

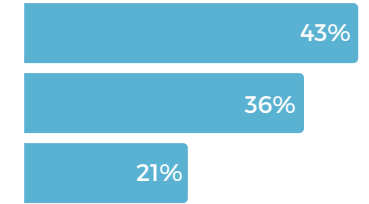
who received instruction on submitting PIREPs indicated that they *frequently* or *always* submit unsolicited PIREPs, compared to 35% of those who did not receive instruction.

Figure 44: Did your primary flight training include instruction on submitting PIREPs?



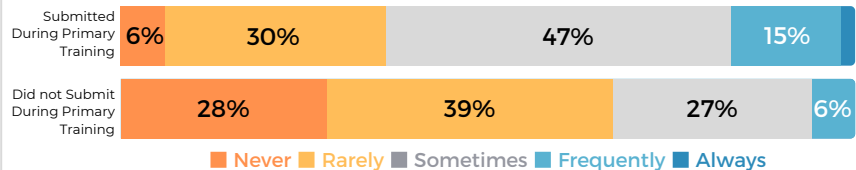
n = 1,871,
resp. rate = 83%

Figure 45: Were you able to actually submit a PIREP during your primary training?



n = 1,866,
resp. rate = 83%

Figure 46: "Were you able to actually submit a PIREP during your primary training" broken out by "how often do you provide an unsolicited PIREP."



Legend: Never (orange), Rarely (yellow), Sometimes (grey), Frequently (blue), Always (dark blue)

PIREPS

Despite ongoing efforts, the number of pilots submitting unsolicited PIREPs shows very little change from previous years. Pilots in Alaska continue to do so at a significantly higher rate than those in the CONUS. This is likely due to the sparse network of surface weather reporting stations, forcing pilots to rely more heavily on PIREPs as an information source.

It was also noted that CONUS pilots file PIREPs more often with ATC, while Alaskan pilots file more often with Flight Service. The general lack of ATC radar in Alaska greatly reduces the number of locations where flight following service is available to VFR pilots. Consequently, they are more likely to be communicating with Flight Service, which has a more robust network of Remote Communications Outlets (RCOs) for inflight information. Thus, it is not surprising that Flight Service collects the larger share of PIREPs.

From the comparison of PIREP instruction during primary flight training with pilots that today file unsolicited reports, (Figure 45), it seems clear that receiving instruction, and actually having the experience of filing a PIREP during primary training, is a positive factor in increasing the rate of unsolicited PIREP submission. This training should not only include the mechanics of how to file, but should cover why they are so important to the wide range of users of the PIREP system. An investment in PIREP training and practice with submission, at the beginning of a pilot's career, will yield dividends in the future.

Recommendations

- FAA and industry should continue to aggressively pursue additional means of submitting PIREPs. This should include the creation of apps, either dedicated to PIREPs or integrated into EFBs, as well as prototyping new autonomous means to file over dedicated VHF radio frequencies.
- FAA and industry should increase the emphasis on PIREPs during primary flight training. This should include not only the mechanics of how to file, but the multiple roles PIREPs play for pilots, air traffic controllers and weather forecasters. It should also stress the need to file PIREPs for all weather conditions. Special emphasis should be placed on CFI's demonstrating, and students actually filing, PIREPs during primary flight training.

FAA WEATHER CAMERAS

While the FAA Weather Camera Program started in Alaska, cameras are now being deployed in Hawaii and portions of the western US. To obtain feedback on the program, pilots who indicated they used the weather cameras were asked to identify features of the system they found most and least useful, as well as those they would most want to see added. Many of the 134 responses received addressed issues broader than just the features of the system and are summarized in Figures 47-49.

Aspects found *most useful*

Survey respondents indicated overwhelmingly that the most useful aspect of the FAA weather cameras is the ability to visualize the weather in near real-time. Some of the other features that respondents found useful were the cameras' ability to fill in the gaps in conventional weather reporting stations (ASOS/AWOS), the ability to visually observe the weather, and the ability to confirm METARs where they are available.

On the website specifically, pilots utilized image loops, both to evaluate weather trends and to look at multiple directions, and liked the ability to compare current conditions with a "clear day" reference image (containing visibility markers). The integration of METARs and TAFs, where available, was also identified as a highly useful feature.

Aspects found *least useful*

Almost a quarter of FAA weather camera users stated that there were no drawbacks to the system. Users did mention that there were simply not enough weather cameras and that more were needed, both in Alaska and in the CONUS. They also indicated that cameras are often down for maintenance and take a long time to restore. One user stated that "they are often out of service for extended periods of time so you just have to fly out and see if the weather is good enough to go."

Users also noted that the cameras were not usable on a 24-hour basis, due to daylight limitations, particularly in the winter. One user reported that, "In the winter, the camera system doesn't come on line until daylight, which can be as late as 10:00 AM, so it cannot be used for flight planning..." Users also mentioned the lack of co-located weather observations, noting that "Many sites are just the current pictures, with no other information (wind, ceiling, etc.)." Other comments referenced difficulties using the system on a mobile device.

Figure 47: Based on your experience using FAA weather cameras, what feature(s) about the system do you find **most** useful?

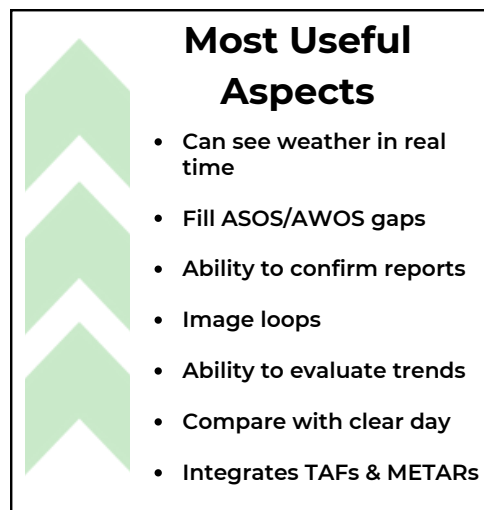
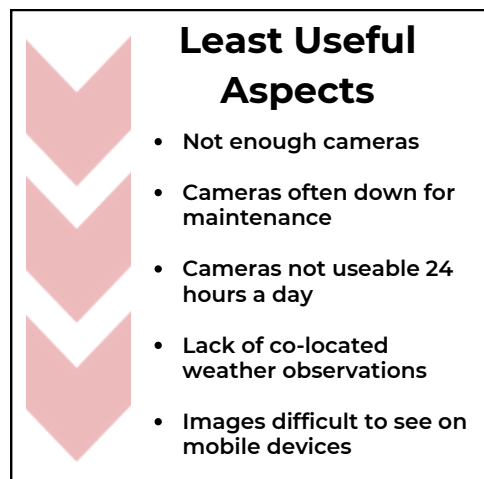


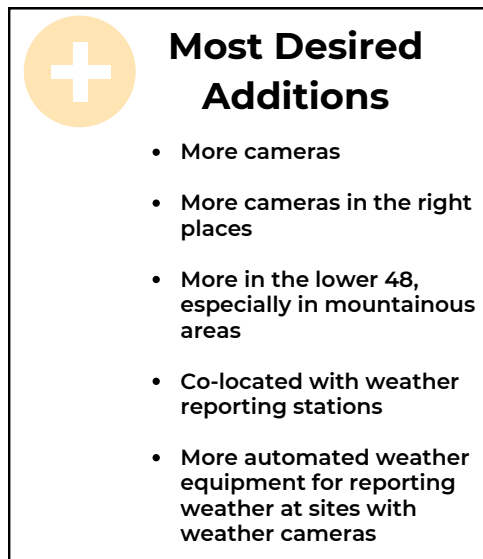
Figure 48: Based on your experience using FAA weather cameras, what feature(s) about the system do you find **least** useful?



Aspects desired

Respondents' most frequent request was for more cameras to be added to the system, asking for “more cameras in the right places” and “more in the lower 48, especially in mountainous areas.” They also expressed the desire to have cameras co-located with weather reporting stations and “More automated weather equipment for reporting weather at sites with weather cameras.”

Figure 49: What would you like to see added to the FAA weather camera system?



FAA WEATHER CAMERAS DISCUSSION

The FAA Weather Camera Program received very positive responses in this survey and the camera data was reported as a significant source of pre-flight weather information. The ability of the camera data to fill gaps in areas lacking conventional weather reporting, to confirm METAR readings, where they are co-located with cameras, and to evaluate weather trends with time series of images were all cited as positive attributes of the system.

The biggest limitations listed included the need for cameras at more locations and the ability to make the system functional on a twenty-four hour basis, rather than daylight only. It was also noted that the combination of a camera observation and a conventional ASOS or AWOS is very powerful, combining the numerical observations from the automated sensors with ability to view actual conditions with the camera imagery.

Numerous comments were also received complaining about cameras being out of service, with user noting "They are often out of service for an extended period of time of time..." and "They are often not operational. Remote cameras are unreliable and often go extended periods without operating." As pilots come to depend on this system, it is critical that FAA both monitor and minimize camera downtime.

Recommendations

- The FAA should continue to expand the Weather Camera Program into areas that lack conventional surface observations and in areas that are along heavily used VFR routes, particularly in mountainous terrain.
- The FAA should investigate camera sources that would make the system usable on a twenty-four hour basis, as opposed to daylight only.
- The FAA should track the duration of maintenance outages and strive to improve the availability of the system.

GRAPHICAL FORECASTS FOR AVIATION (GFA)

The Graphical Forecasts for Aviation (GFA) is produced by the Aviation Weather Center and has been available in the CONUS since 2017. It was only populated with Alaska data, on an experimental basis, starting in December of 2020.

The GFA web page is intended to provide sufficient aviation weather information to give users a complete picture of the weather that may impact their flight. This product represents a change, from the conventional text-based area forecast, to a graphical, and now grid-based, product.

The 2022 results showed that 35% of CONUS respondents were very familiar or extremely familiar with the GFA, compared with 18% in Alaska (Figure 50). These have remained similar to previous years.

Figure 51 shows that 60% of CONUS respondents and 41% in Alaska use the GFA before a flight at least sometimes. Both of these numbers reflect a decrease from 2021.

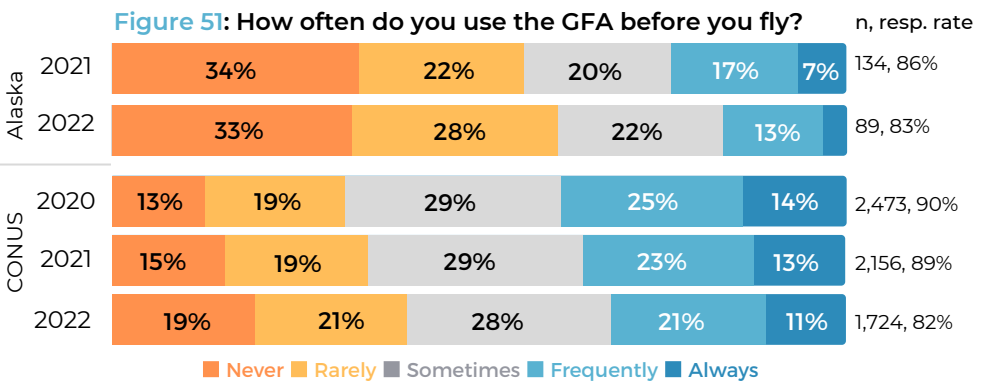
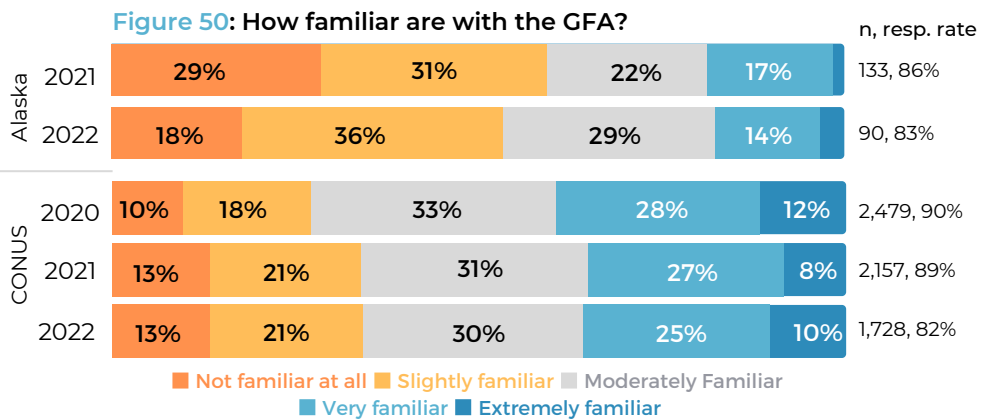
Along with CONUS respondents, current instrument-rated were also more familiar with and more frequent users of the GFA (Appendix Tables 3 & 4).

35%

of CONUS respondents were *very familiar* or *extremely familiar* with the GFA compared to 17% of Alaskan respondents.

60%

of CONUS respondents use the GFA at least *sometimes* compared to 41% of Alaskan respondents.



GRAPHICAL FORECASTS FOR AVIATION (GFA)

Familiarity with the GFA has remained consistent since 2020 in both the CONUS and Alaska. The actual usage of the product has remained flat, even showing a decrease this year in both the CONUS and Alaska. The GFA was only populated with Alaska data in December of 2020 and released as an operational product there on March 1, 2022 — however, we would have expected to see an uptick in usage within that region.

AOPA has published web stories over the past few years to help promote the experimental and operational versions of this tool. The lack of increased usage, reflected in this survey, suggests that more work is needed to increase awareness, and ultimately, use of this tool.

The AWC is currently fielding an experimental version of the GFA that implements a number of improvements, including incorporation of features from the Helicopter Emergency Medical Services (HEMS) tool. When the new operational version of the website is launched, an additional outreach effort by FAA and other aviation community stakeholders might help increase the use of this valuable tool.

Recommendation

The FAA, AWC, and aviation stakeholders should significantly increase their outreach to the pilot community to promote the features and benefits that the GFA provides.

ALASKA

ALASKA AVIATION WEATHER UNIT (AAWU)

The National Weather Service (NWS) operates the AAWU, the official Meteorological Watch Office for Alaskan aviators, located in Anchorage, Alaska. The AAWU website provides PIREPs, weather forecasts, and surface observations, along with weather radar and satellite imagery.

Respondents who *always* or *frequently* consulted the AAWU website before a flight has declined over time, from 79% in 2018 to 61% in 2022 (Figure 52).

When asked about the metrological hazard encountered most often, that's not accurately forecasted on AAWU's website, 36% responded with "Ceiling/visibility Flight Category". (Figure 54).

61%

of Alaskan respondents *frequently* or *always* use AAWU before they fly, a drop of 18 percentage points from 2021.

53%

of Alaskan respondents use the AAWU's text-based Area Forecast at least *frequently* or *always*.

Figure 52: How often do you use the Alaska Aviation Weather Unit (AAWU) website before you fly?

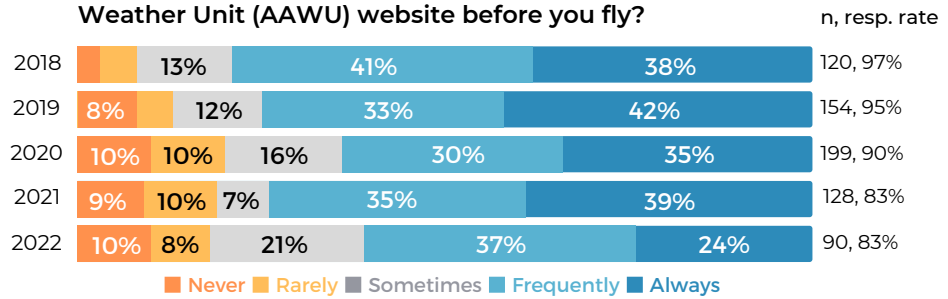
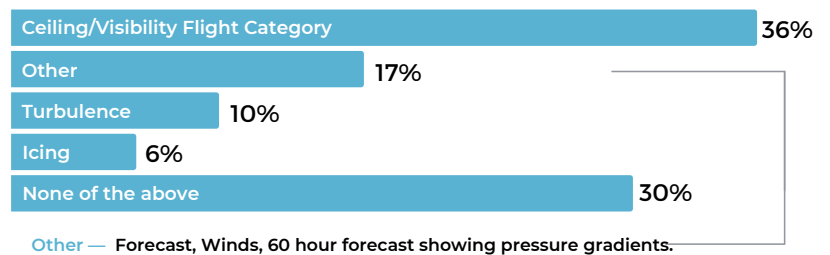


Figure 53: How often do you reference AAWU's text-based Area Forecast (FA) as a pre-flight planning tool?



Figure 54: Which meteorological hazard on AAWU's website do you most frequently encounter in flight that is not accurately forecasted?



When asked about what AAWU products pilots primarily used, 47% of respondents selected the Area Forecast in 2022, making it the top choice. Graphical Forecasts and SigWx Charts declined from 2021 to 2022, though this may be due to the inclusion of the Area Forecast as an additional choice in 2022. (Figure 55).

We asked respondents what they would like to see added to the AAWU website and the comments ranged widely (Figure 56).

A number of respondents said they were not familiar with the site, and others indicated they liked the status quo--"I like this website page as it is. Please don't change it for the better."

Figure 55: When you access the AAWU website, what weather products do you primarily use? Select the top 3.

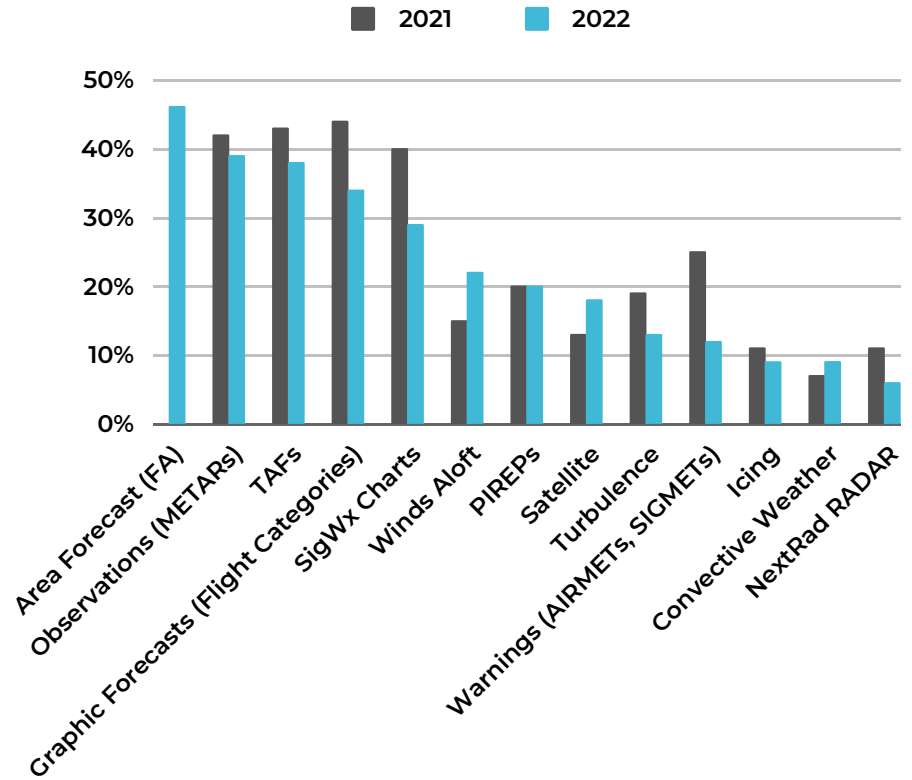



Figure 56: What would you like to see added to the Alaska Aviation Weather Unit (AAWU) website in the future?



Most Desired Additions

- Keep it simple
- Better display winds aloft
- Include more frequent updates to forecasts
- Plain language information
- More graphics
- Local time (as opposed to Zulu)
- Flight route planning
- Better accuracy
- 12-hour prognostic charts
- Integration with GFA, FAA weather cameras, and NOTAMs

ALASKA AVIATION WEATHER UNIT (AAWU)

While the reported use of the AAWU website has decreased over the five years we have posed the question, having 61% of respondents indicate that they *frequently* or *always* using the site suggests a large following.

As shown in Figures 13 and 15, Alaska pilots indicated this website is the second most popular source of initial pre-flight weather and tied with Flight Service in popularity for weather immediately prior to departure in challenging conditions. We suspect that some of the decrease in use may correlate with the increased popularity of EFB's, which also provide weather data. One pilot said, "I should look. I get my info graphically in Foreflight on my iPad."

In spite of its longevity, a number of respondents indicated they weren't familiar with the site and planned to "check it out." Comments like these suggest that a larger outreach campaign may be in order.

Recommendation

The FAA, NWS and aviation stakeholders should conduct additional outreach among Alaskan pilots to increase usage of the AAWU website.

ASOS/AWOS PHONE ACCESS

In this year's survey, AOPA asked respondents how often they called ASOS/AWOS weather stations to obtain current METARs information as shown in Figure 57.

The results show that 39% of CONUS pilots, and 32% of Alaskan pilots, *frequently* or *always* call ASOS/AWOS to obtain the current METARs.

If respondents selected at least *rarely* for calling ASOS/AWOS, they were asked a follow-up question about the circumstances when they might utilize a phone number to obtain ASOS/AWOS weather observation, as opposed to obtaining it in a different manner.

Many respondents stated that they would call on their way to the airport, when the weather had rapidly changing conditions, when they wanted real-time weather, or minute by minute updates.

They also stated that they called when they didn't have internet access, were without their EFB or computer, when their weather source had not been updated, or their radios were out of range. A few stated that they always checked "before leaving the house" or that they always "call [their] destination ASOS/AWOS prior to launch" or prior to cross-country flights.

39%

of CONUS and 32% of Alaskan respondents *frequently* or *always* use call ASOS/AWOS.

Figure 57: How often do you use this method to obtain an ASOS/AWOS weather observation?

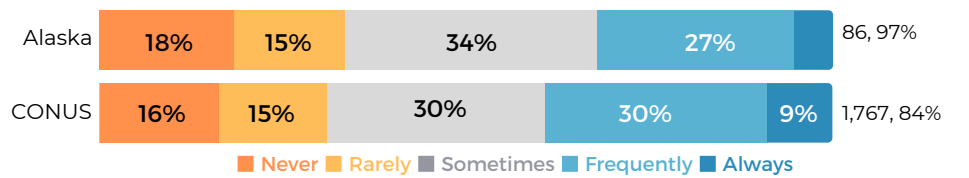
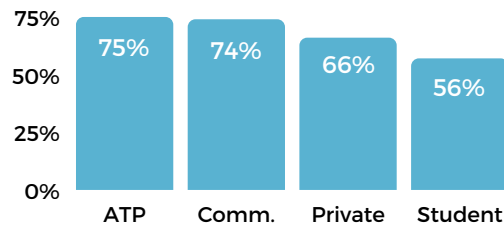


Figure 58: Count of at least Sometimes broken out by certification level.



“ While driving to the airport or on the ground before I start preflight. ”

“ 1. If I wanted current conditions as opposed to last hour's. This would be more likely if the weather had any challenging elements such as likelihood of high winds.

2. If I didn't have access to the web for ForeFlight or other online access.

3. To make a quick check of conditions on the way to the airport or when deciding if I want to go. ”

“ It's a back up to forecast, to verify wind, sky conditions, etc ”

ASOS/AWOS PHONE ACCESS

The ASOS/AWOS question was included in the 2022 survey as a result of some discussions questioning the value of the dial-in access option to these facilities.

With the data showing that roughly a third of overall pilots dial into ASOS/AWOS stations frequently or always, and with another third doing so sometimes, we would conclude that this is a capability that should be maintained.

It is notable that the number of CONUS pilots calling ASOS/AWOS is higher than it is in Alaska. The reasons for that are unclear, but would seem to support the notion that phone access to ASOS/AWOS stations is important even when other weather products are widely available.

The responses to the follow-up question, pertaining to the circumstances when pilots would use this capability, are also informative. They seem to indicate that having access to weather information, not reliant on internet connectivity, is valuable to many pilots.

Recommendation

The FAA should maintain the capability for direct dial-in access to ASOS/AWOS stations.

NOAA CLOUD CROSS-SECTION

The National Oceanic and Atmospheric Administration (NOAA) continues to develop a new weather product that uses satellite data to estimate cloud and icing conditions across Alaska and the CONUS. The cloud cross-section product is currently experimental.

In 2022, most pilots (79%) were *not familiar at all* with this product. This result is very close to what was seen last year. Most of those who were at least *slightly familiar* with the product were *neither satisfied nor dissatisfied* with it (79%).

Those who were at least *slightly familiar* with the product had the opportunity to submit comments about it.

Most respondents either didn't know enough about the product to provide substantive comments, or indicated they were still learning about the product.

Others indicated that, because they only fly VFR, they didn't think the product was important to them. Pilots also wanted more education on the product because, as one said, the "output data is sometimes difficult to understand and not readily available with other weather products."

Most Pilots

- were *not familiar at all* with NOAA cross-section product.
- were *neither satisfied nor dissatisfied* with NOAA cross-section product.

Figure 59: How familiar are you with the cloud cross-section product?

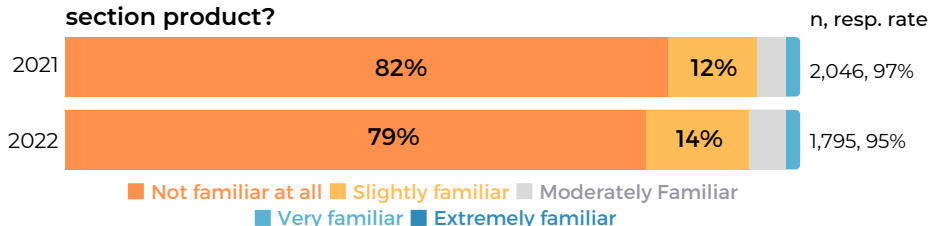
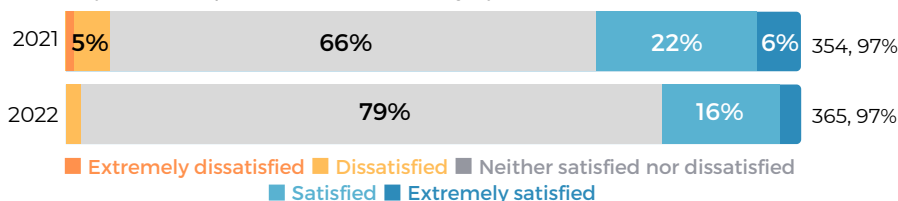


Figure 60: Are you satisfied or dissatisfied with cloud cross-section product?

Only shown to respondents who are at least Slightly familiar.



“ Finally something that can give pilots awareness of icing conditions ”

“ Don't trust it enough to use it ”

“ I need to learn more about the cloud cross-section product ”

“ Would use more if on Foreflight ”

NOAA CLOUD CROSS-SECTION

This product is still in development and is not widely known across the aviation community, as indicated by many of the responses to this question.

It is also a different style of product, featuring a cross-section view along a route, in contrast to more traditional maps showing the aerial extent of a forecast condition. The product also requires users to have a greater understanding of its design and source data in order to accurately interpret it.

The most frequent response to the question of familiarity with the product was that pilots were not familiar with, and were "still learning", about it. This is not surprising, given how different the product is and that it may be customized to the user's individual routes of flight.

Additional outreach and pilot education will be required, as will refinements to its interface, as the product matures.

Recommendation

NOAA should continue to conduct pilot outreach and training on the Cloud Cross-section product, while at the same time continuing to solicit pilot feedback to aid in the continued development of this dynamic new weather tool.

YOUR CONTACTS AT AOPA



Jim McClay

Director, Airspace, Air Traffic, and Security
Aircraft Owners and Pilots Association
james.mcclay@aopa.org
202-509-9515



Tom George

Alaska Regional Manager
Aircraft Owners and Pilots Association
tom.george@aopa.org
301-695-2092



The Aircraft Owners and Pilots Association (AOPA) is a not-for-profit individual membership organization of general aviation pilots and aircraft owners. AOPA's mission is to effectively serve the interests of its members and establish, maintain, and articulate positions of leadership to promote the economy, safety, utility, and popularity of flight in general aviation aircraft. AOPA is the largest civil aviation organization in the world.

APPENDIX

Appendix Table 1: Initial weather sources broken out by Certification level in CONUS.

Source	Certification	2017	2018	2019	2020	2021	2022
Aviation Application	ATP	66%	58%	60%	69%	71%	70%
	Commercial	60%	57%	63%	66%	74%	65%
	Private	67%	60%	62%	68%	70%	65%
	Student	67%	50%	55%	45%	68%	54%
Flight Service Specialist	ATP	43%	26%	25%	20%	18%	20%
	Commercial	54%	41%	41%	31%	27%	30%
	Private	56%	42%	39%	33%	30%	31%
	Student	78%	58%	45%	41%	30%	34%

Appendix Table 2: Immediately prior to flight weather sources broken out by Instrument Rating in CONUS.

Source	Instrument Rating	2017	2018	2019	2020	2021	2022
Aviation Application	Yes, and current	66%	65%	66%	73%	77%	76%
	Yes, but not current	58%	50%	53%	58%	56%	54%
	No	52%	50%	54%	62%	66%	60%
Flight Service Specialist	Yes, and current	50%	45%	38%	34%	28%	30%
	Yes, but not current	60%	64%	54%	39%	43%	49%
	No	52%	63%	52%	47%	42%	39%

Appendix Table 3: GFA Usage before flight broken out by instrument rating.

		Never	Rarely	Sometimes	Frequently	Always
Yes, and I am instrument current	2020	17%	17%	30%	24%	12%
	2021	19%	21%	30%	20%	9%
	2022	23%	25%	27%	19%	6%
Yes, but I am not instrument current	2020	10%	18%	28%	27%	16%
	2021	14%	18%	30%	25%	14%
	2022	16%	20%	28%	24%	12%
No	2020	14%	21%	31%	21%	13%
	2021	21%	21%	26%	22%	11%
	2022	22%	21%	28%	18%	11%

Appendix Table 4: GFA Familiarity before flight broken out by instrument rating.

		Not familiar at all	Slightly familiar	Moderately familiar	Very familiar	Extremely familiar
Yes, and I am instrument current	2020	7%	15%	32%	30%	16%
	2021	11%	18%	30%	31%	10%
	2022	10%	18%	28%	29%	15%
Yes, but I am not instrument current	2020	12%	19%	37%	24%	8%
	2021	18%	24%	31%	21%	7%
	2022	18%	26%	31%	20%	5%
No	2020	13%	21%	33%	26%	7%
	2021	18%	25%	29%	23%	4%
	2022	14%	25%	32%	22%	7%