



# 2018 Weather Survey Appendices

Appendix A: Tables and Figures

Appendix B: Comments on Open-Ended Questions

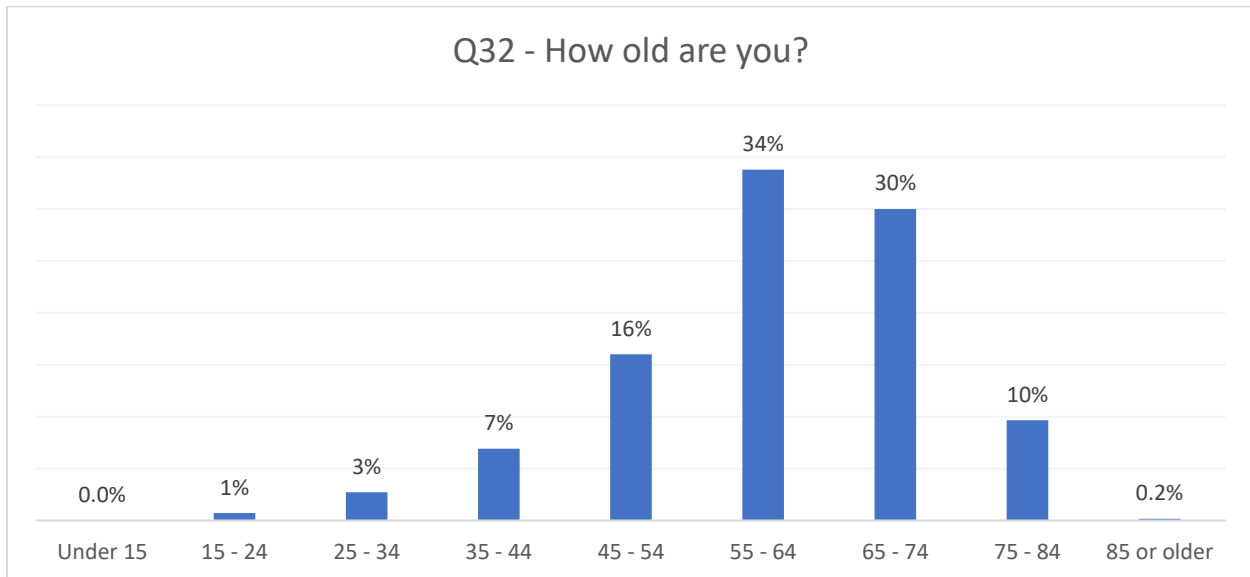
## Appendix A: Tables and Figures

Table 1.

*Highest level of pilot certificate held.*

Certificate	AOPA 2018 Survey		AOPA 2017 Survey		FAA	
	Count	Percentage	Count	Percentage	Count	Percentage
<b>Student</b>	71	2%	17	4%	149,121	24%
<b>Sport</b>	19	1%	0	0%	6,097	1%
<b>Recreational</b>	4	0.1%	0	0%	153	0.03%
<b>Private</b>	1,530	54%	191	50%	162,455	27%
<b>Commercial</b>	767	27%	107	28%	98,161	16%
<b>ATP</b>	458	16%	63	17%	159,825	26%
<b>No pilot certificate</b>	0	0%	2	1%	-	-
<b>Total</b>	2,849	100%	380	100%	609,306	100%

*Note.* This table compares responses to AOPA’s 2018 WX Survey to AOPA’s 2017 WX Survey, in addition to the current FAA numbers. FAA estimated active airmen certificates accurate as of the last update (12/31/17; source: [FAA U.S. Civil Airmen Statistics](#)).



*Figure 1.* Subject age, as measured by responses to Q32, “How old are you?”

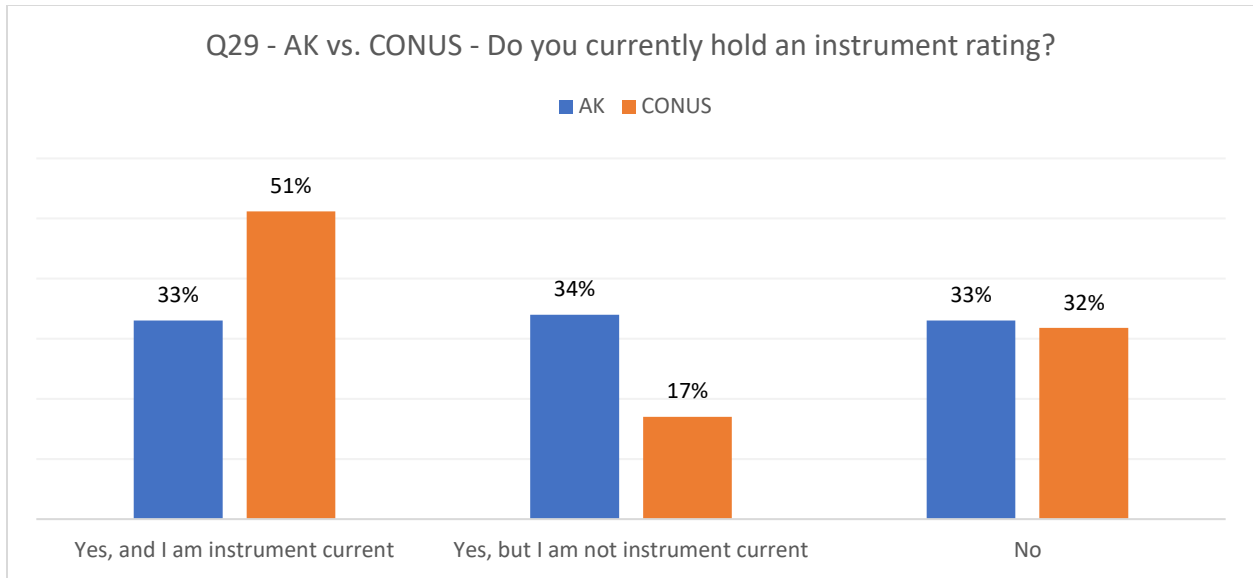


Figure 2. Number of pilots in current sample who were instrument rated (measured by responses to Q29, “Do you currently hold an instrument rating?”). Note, the FAA reports 306,652 (50% of total pilot number) instrument rated pilots, as of 12/31/17 (Source: [FAA U.S. Civil Airmen Statistics](#)).

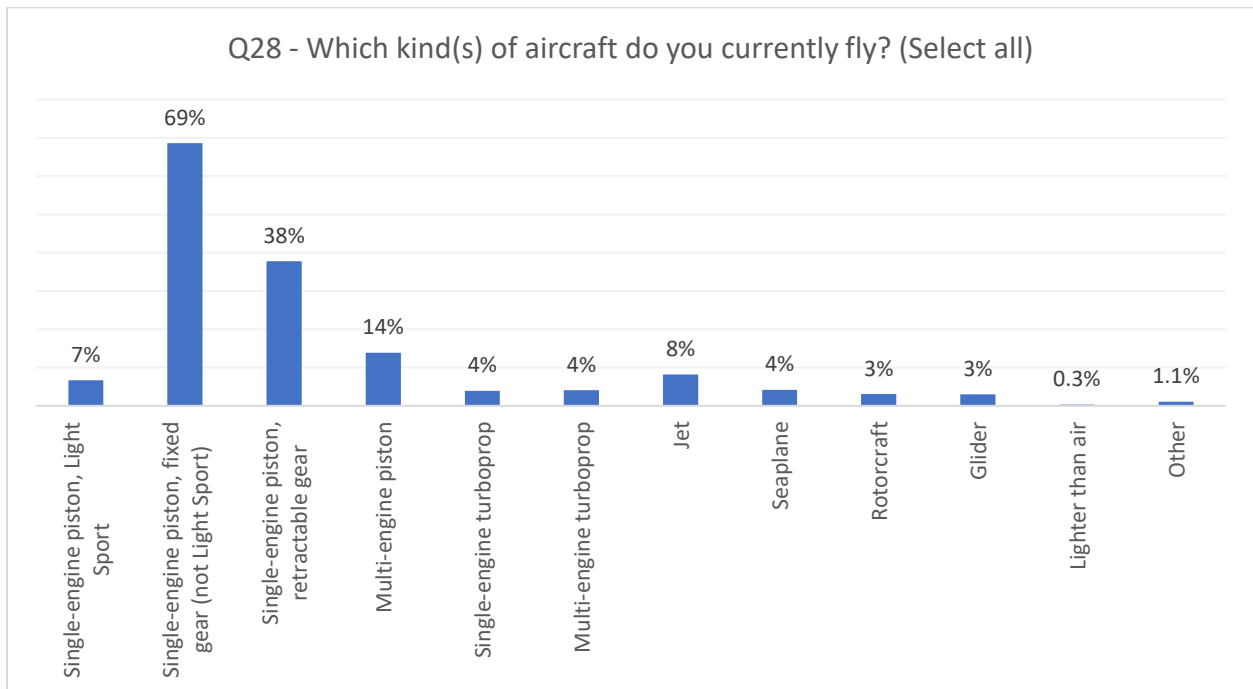


Figure 3. Responses to Q28, “Which kind(s) of aircraft do you currently fly? (Check all that apply).” Percentages reflect the number of people who selected that response out of the total number of subjects who answered the question (n = 2849).

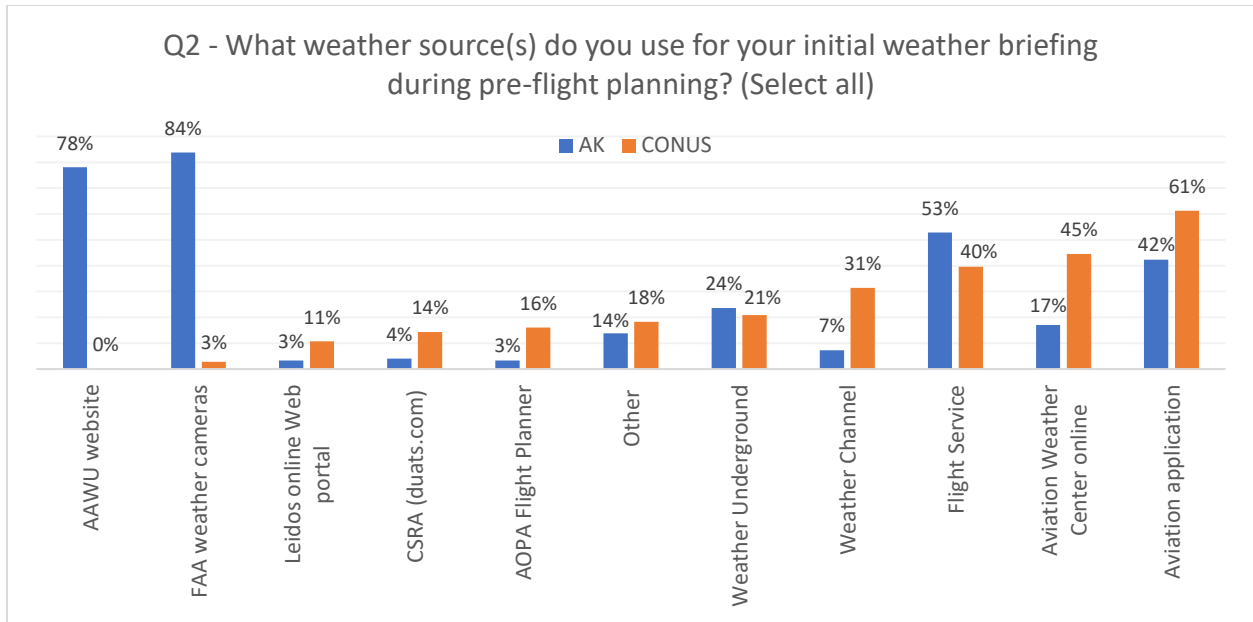


Figure 4. “What weather source(s) do you use for your initial weather briefing during pre-flight planning? (Select all that apply).” Percentages reflect the number of people who selected that response, out of the total number of people who answered the question, for each given location. Common fill-in responses for the “other” category included fltplan.com (11% of “other” comments), and Weathermeister (6% of “other” comments).

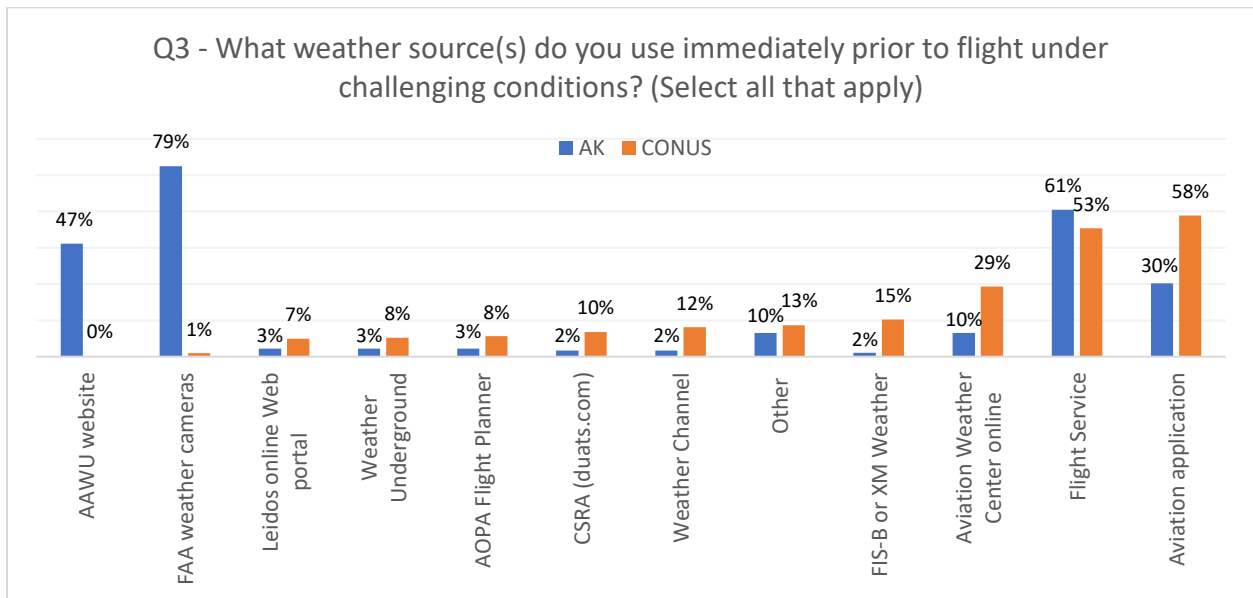


Figure 5. “What weather source(s) do you use immediately prior to flight under challenging conditions? (Select all that apply).” Percentages reflect the number of people who selected each option, out of the total number of subjects for that given location. Common fill-in responses for the “other” category included: fltplan.com (37 out of 408 comments); ATIS, AWOS, or ASOS (24 comments); MyRadar (24 comments); N/A, would not fly (24 comments); Skyvector (19 comments); and Aeroweather (18 comments).

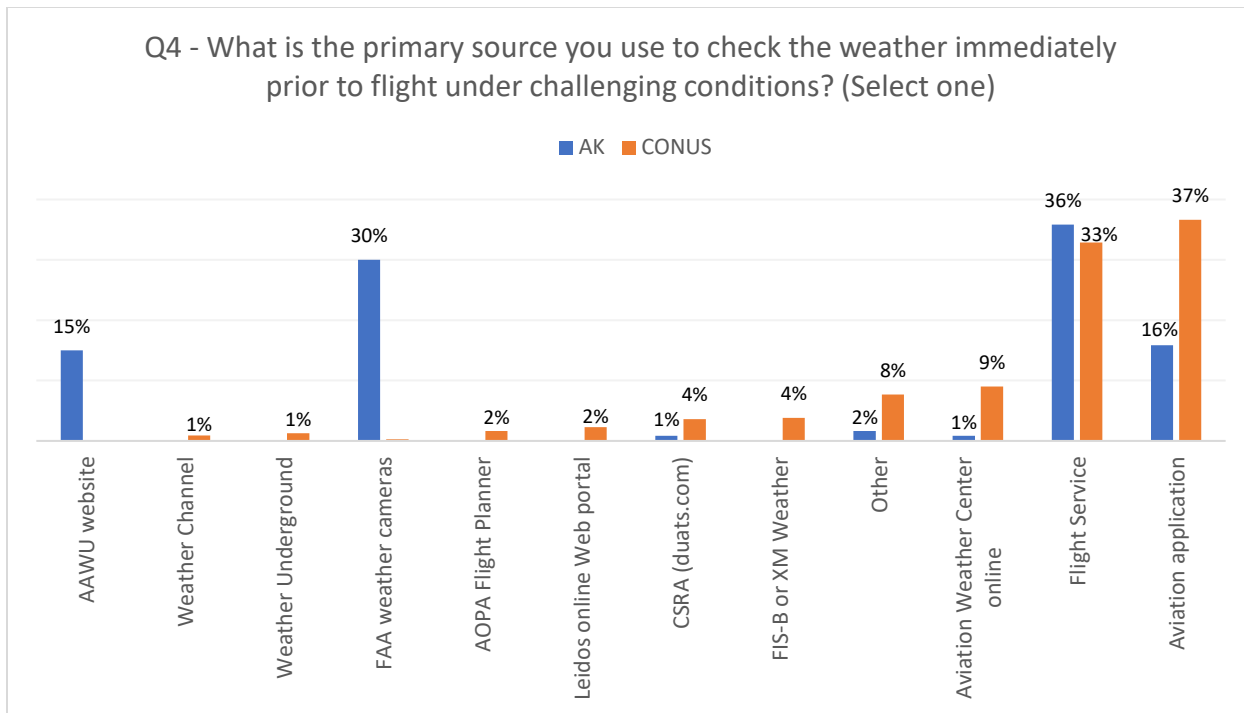


Figure 6. Responses to Q4 in 2018, “What is the primary source you use to check the weather immediately prior to flight under challenging conditions? (Select one).” Common “other” comments included: fltplan.com (27 comments); N/A, would not fly (23 comments); MyRadar (13 comments); Weathermeister (11 comments); myself (6 comments).

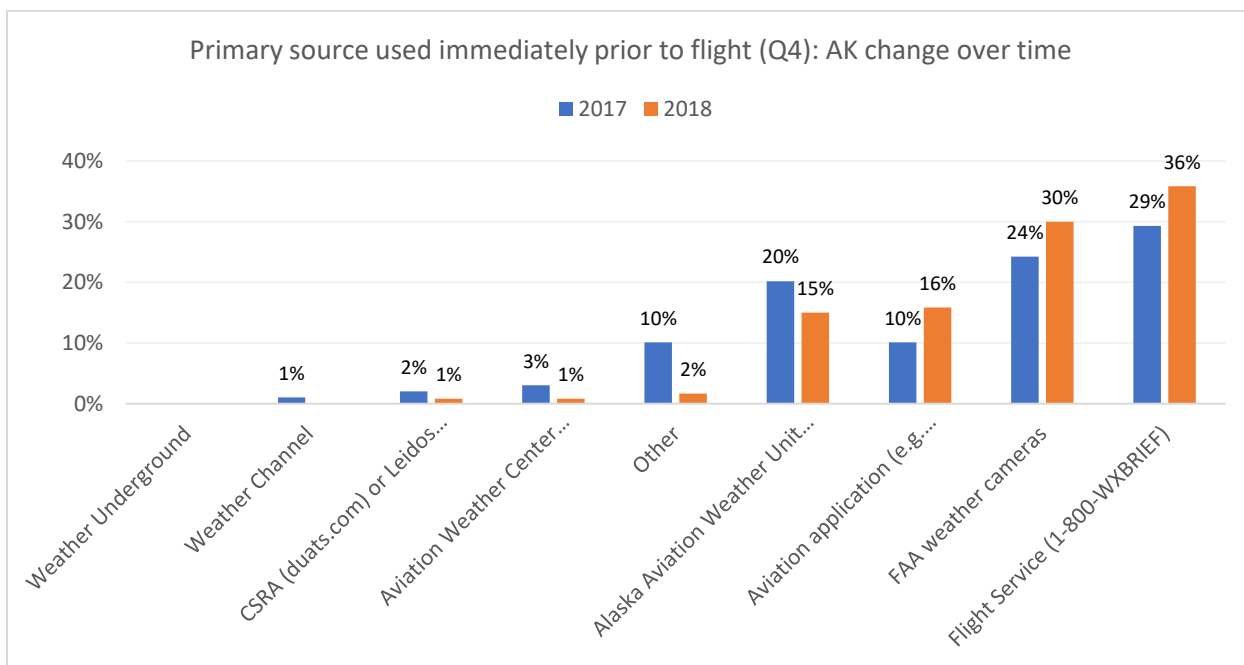


Figure 7. Change over time for the primary source used to check weather information in Alaska. Figure depicts responses to the question, “What is the primary source you use to check the weather immediately prior to flight under challenging conditions? (Select one)” in 2017 and 2018 for Alaskan pilots.

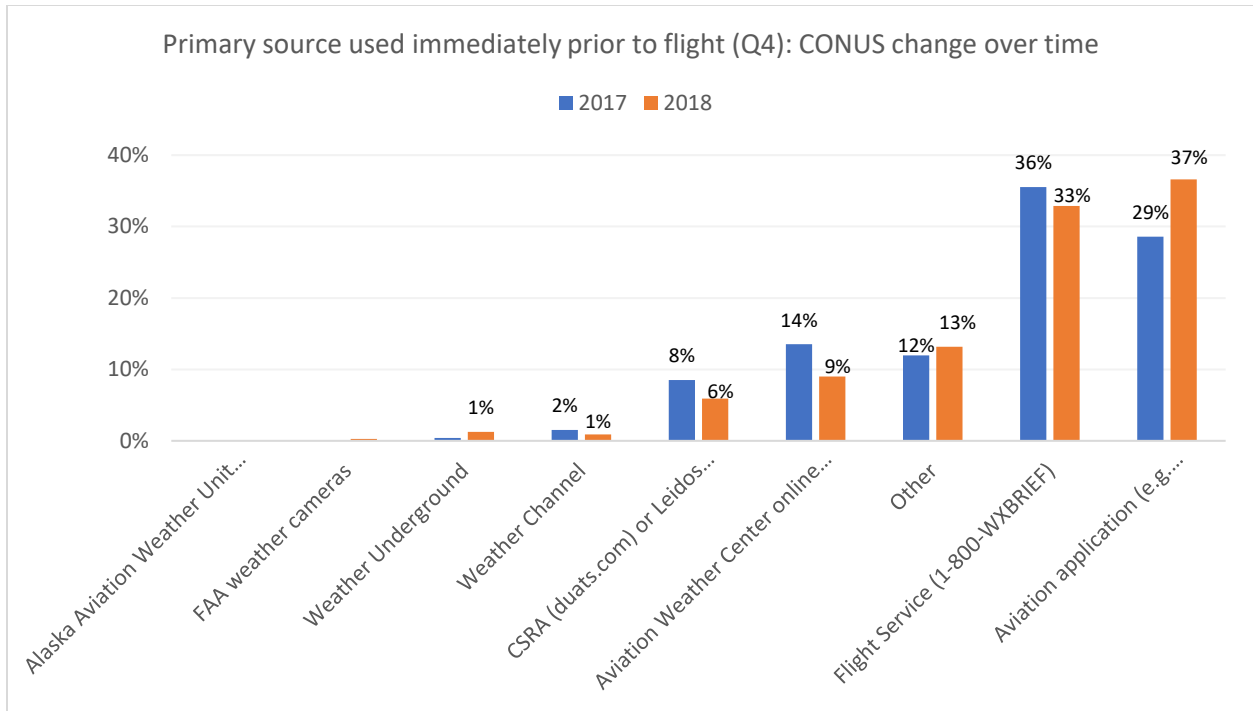


Figure 8. Change over time for the primary source used to check weather information in the continental US. Figure depicts responses to the question, “What is the primary source you use to check the weather immediately prior to flight under challenging conditions? (Select one)” in 2017 and 2018, for pilots from the continental US.

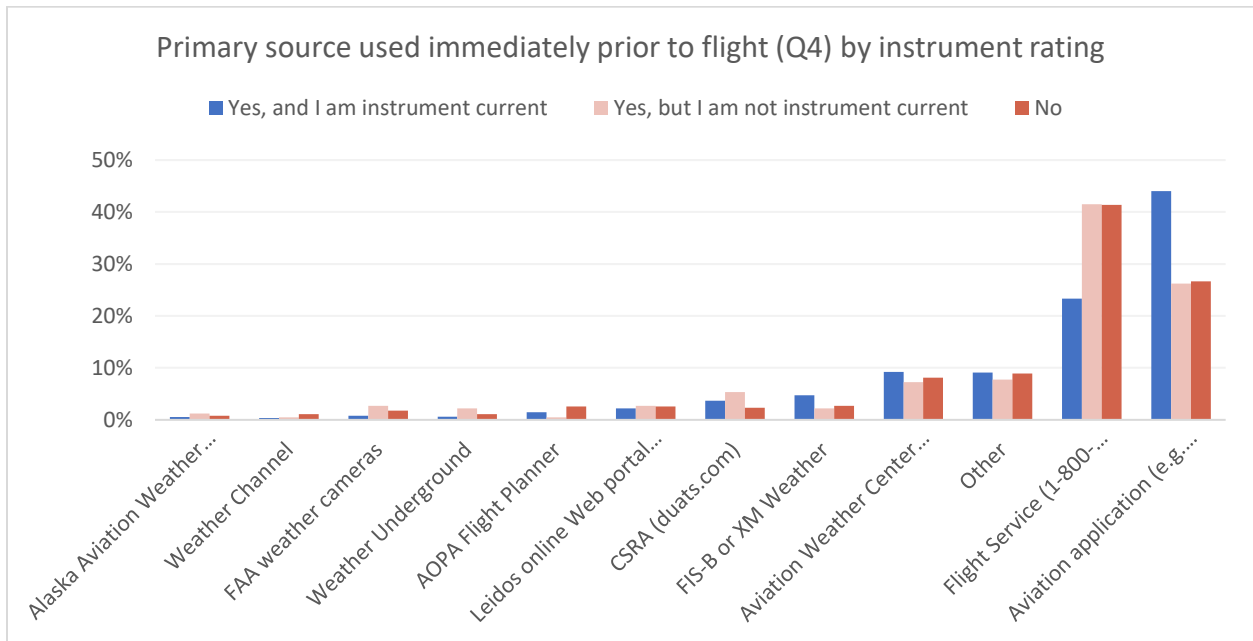
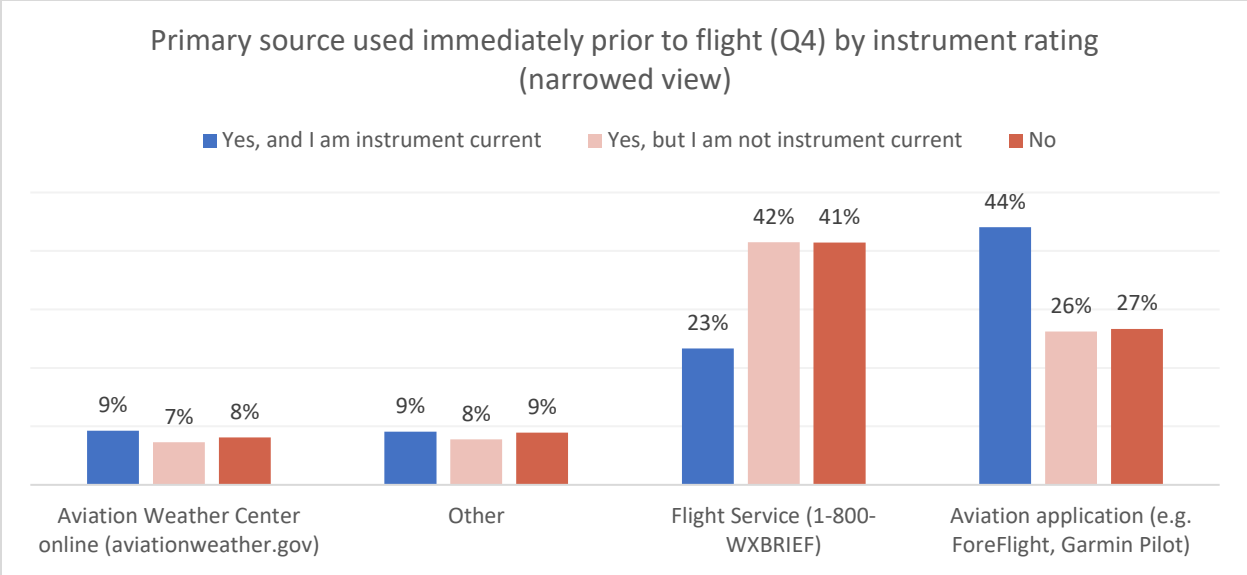
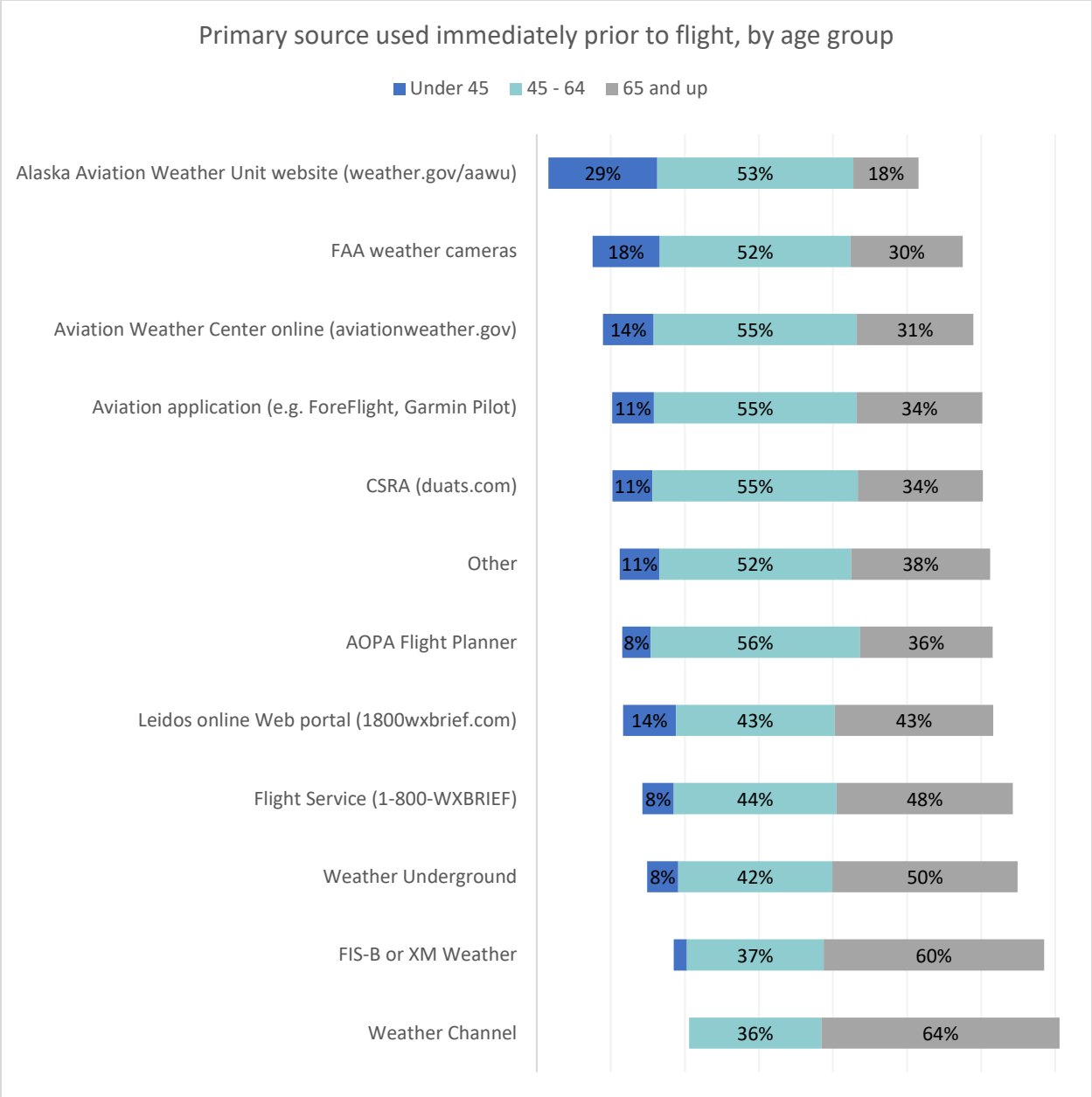


Figure 9. Preferred source to check weather information immediately prior to flight (Q4), by instrument rating and currency (n = 2726).

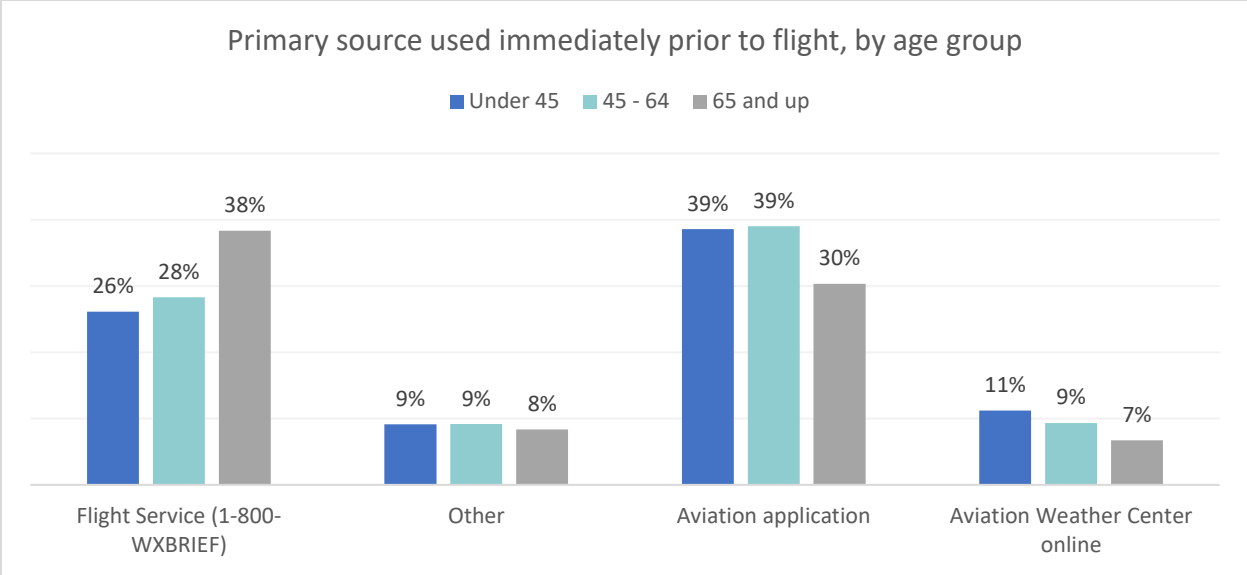


*Figure 9b.* Top 4 most commonly selected primary sources used to check weather information immediately prior to flight, by instrument rating/currency.



*Figure 10.* Preferred source to check weather information, by age group. Percentages reflect the number of people in a given age group who selected a given source as their primary source, out of the total number of people who selected that source as their primary source. (n = 2320)





*Figure 10b.* Top 4 most commonly selected primary sources used to check weather information immediately prior to flight, by age group. The top 3 most commonly selected sources were: an aviation application (n = 932), Flight Service (n = 896), “other” (n = 247), and Aviation Weather Center online (n = 236). Percentages reflect the number of people from each age group who selected each source, out of the total number of people in that age group.

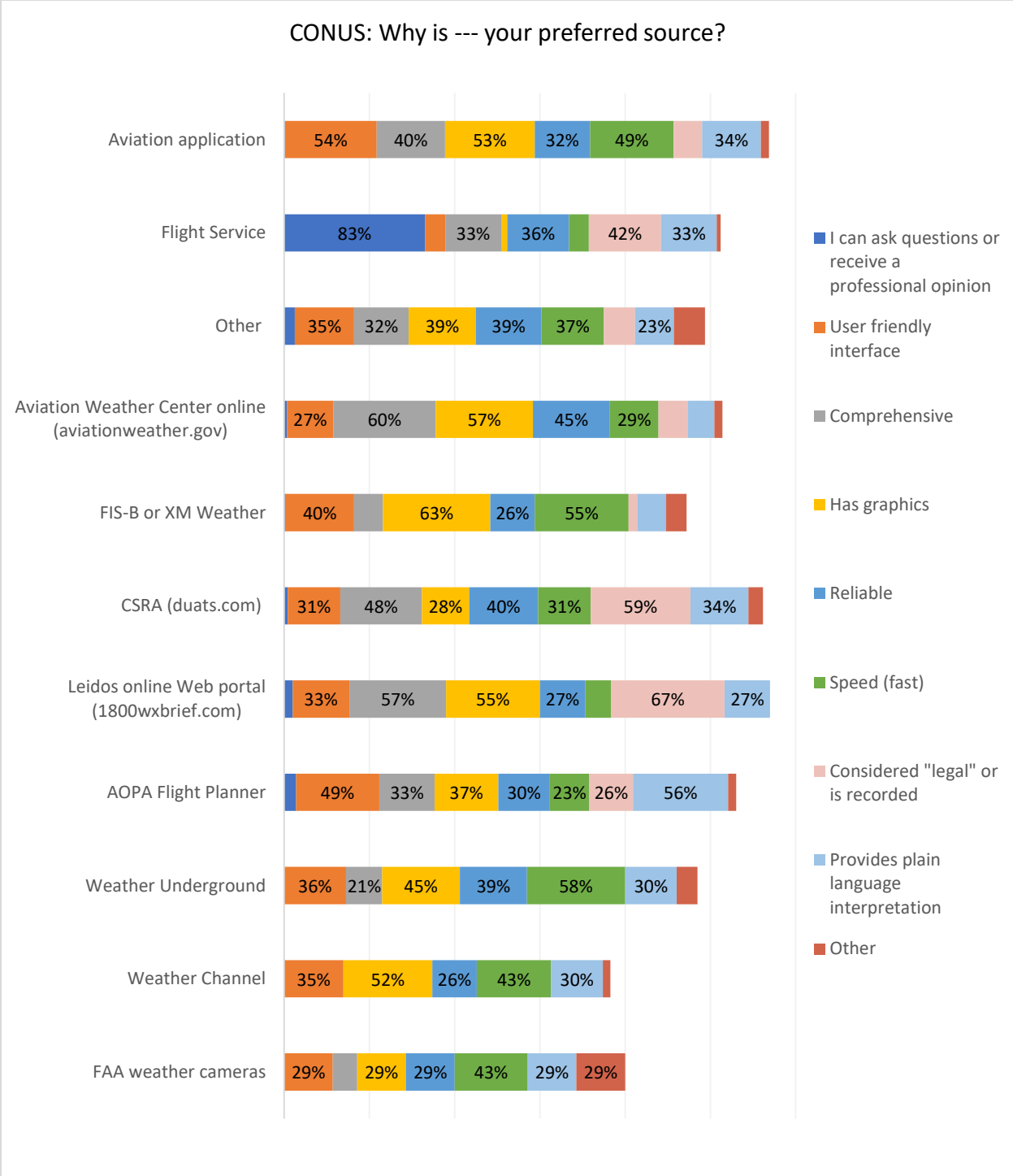


Figure 11. Reasons for choosing given preferred source, CONUS. Percentages reflect the number of people who chose each given reason, out of the total number of people who selected that source as their primary source. Subjects could select up to 3 reasons for their preference, so summed percentages can exceed 100 percent.

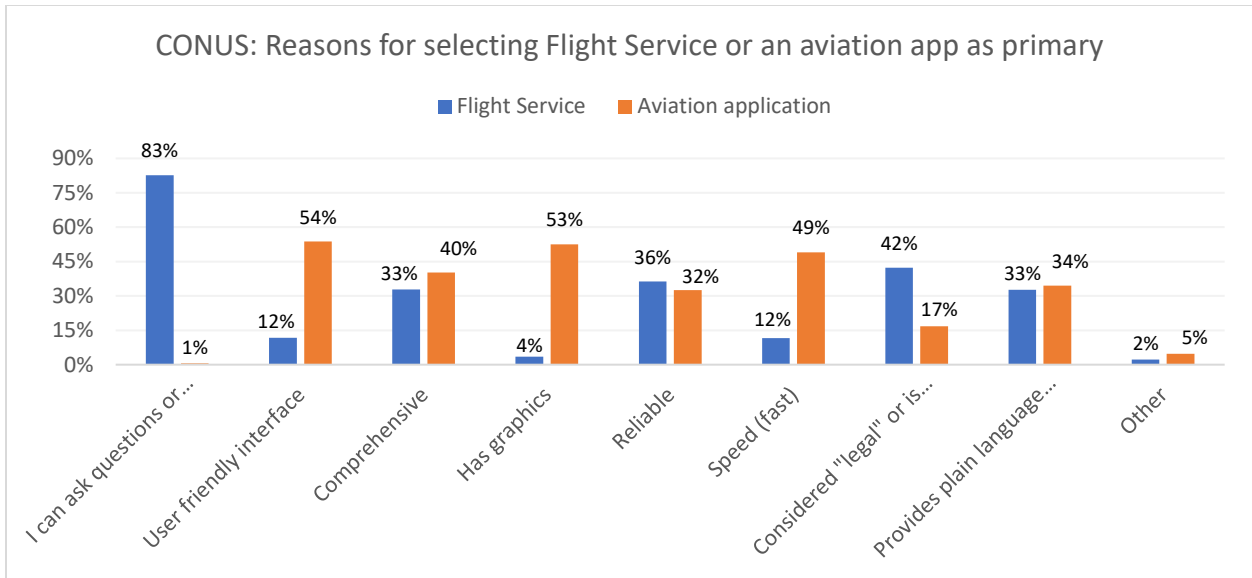


Figure 11b. Close-up look at CONUS subjects' reasons for selecting Flight Service (n = 914) or an aviation application (n = 856) as their primary source.

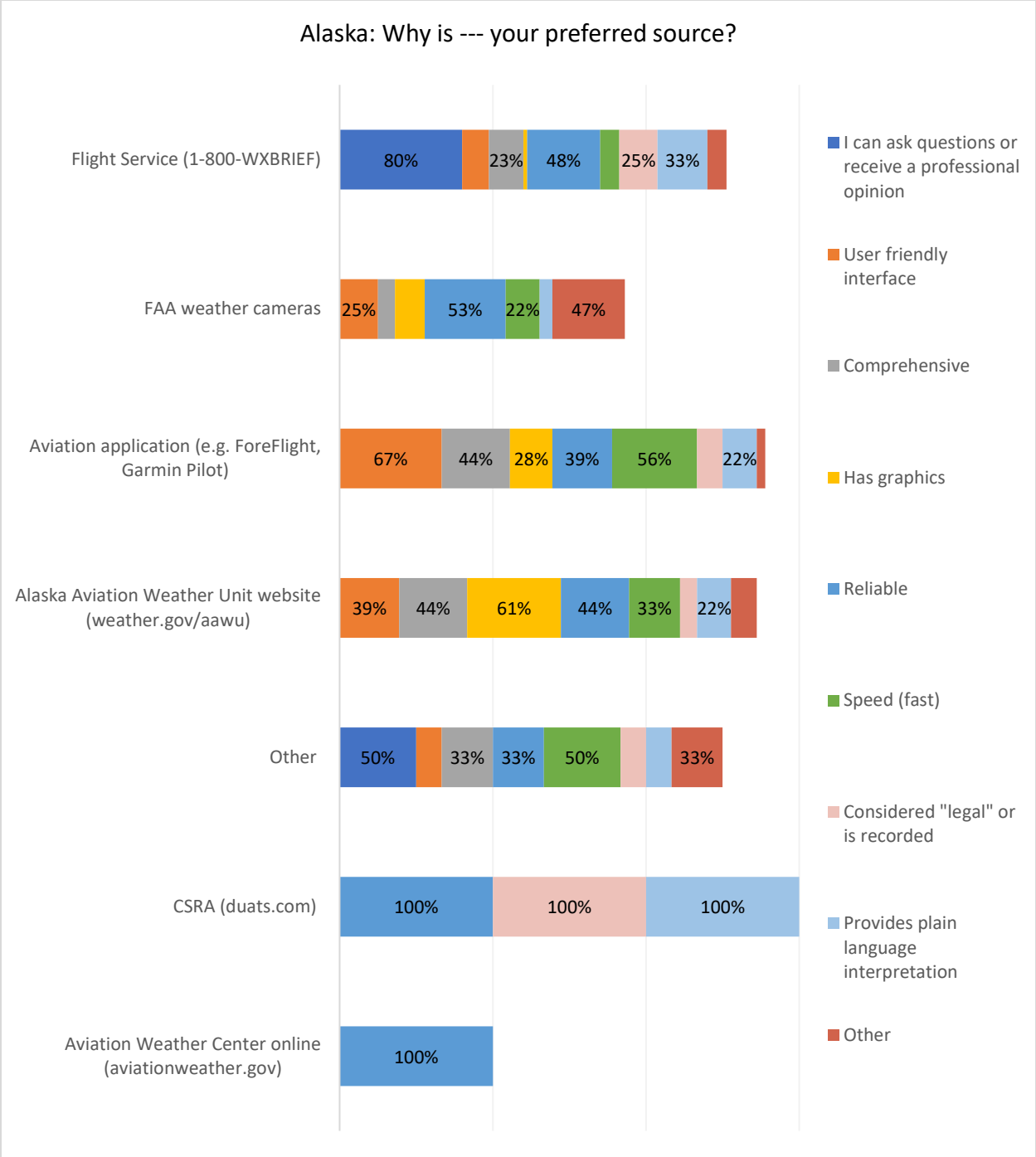


Figure 12. Reasons for choosing preferred source, AK. No subjects from Alaska selected FIS-B or XM Weather, Leidos online, Weather Channel, Weather Underground, or AOPA Flight Planner as their primary source. Subjects could select up to 3 reasons for their preference, so summed percentages may exceed 100 percent.

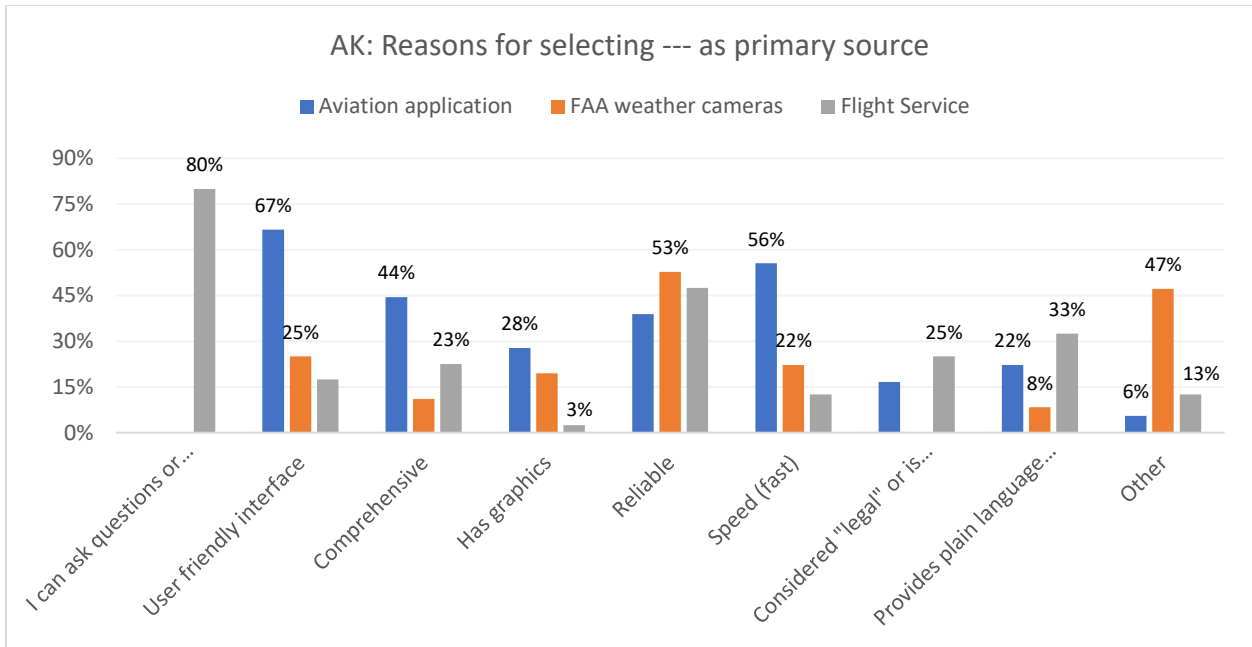


Figure 12b. Close-up look at AK subjects’ reasons for selecting Flight Service (n = 40), FAA weather cameras (n = 36), or an aviation application (n = 18) as their primary source.

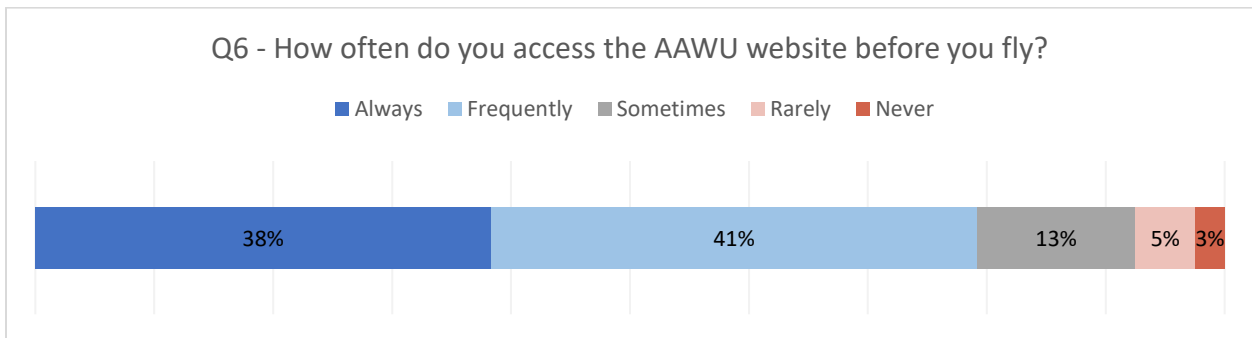


Figure 13. Q6, “How often do you access the AAWU website before you fly?” Question was directed only towards AK subjects (n = 120)

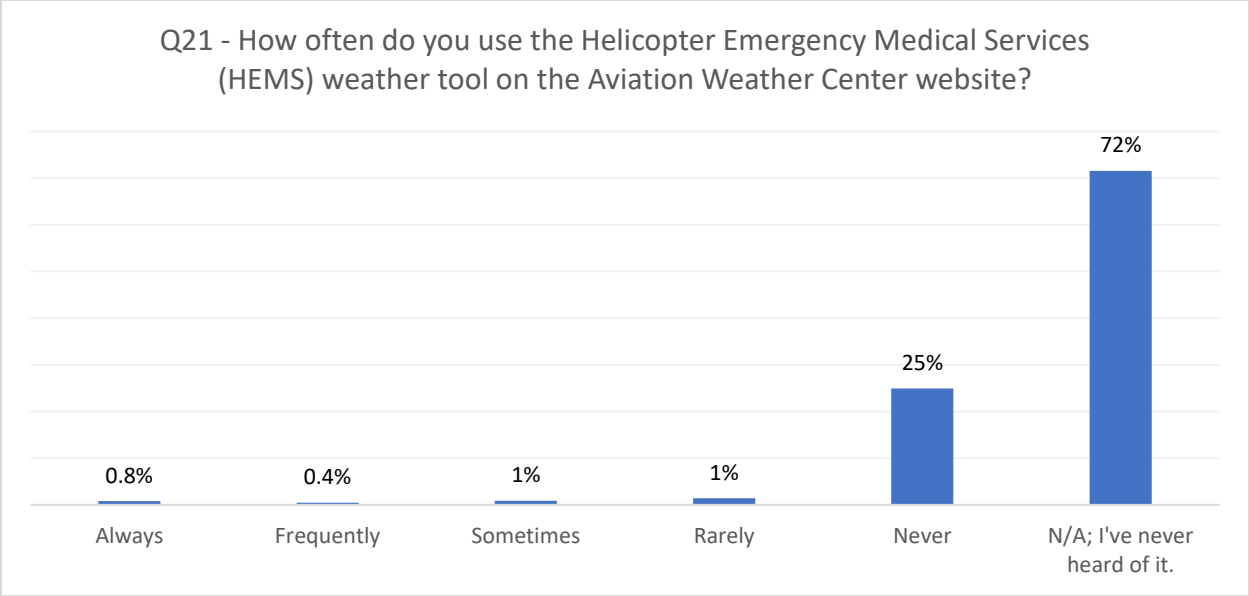


Figure 14. Q21, “How often do you use the Helicopter Emergency Medical Services (HEMS) weather tool on the Aviation Weather Center website?” Question was only provided to subjects from the continental U.S. (n = 2517).

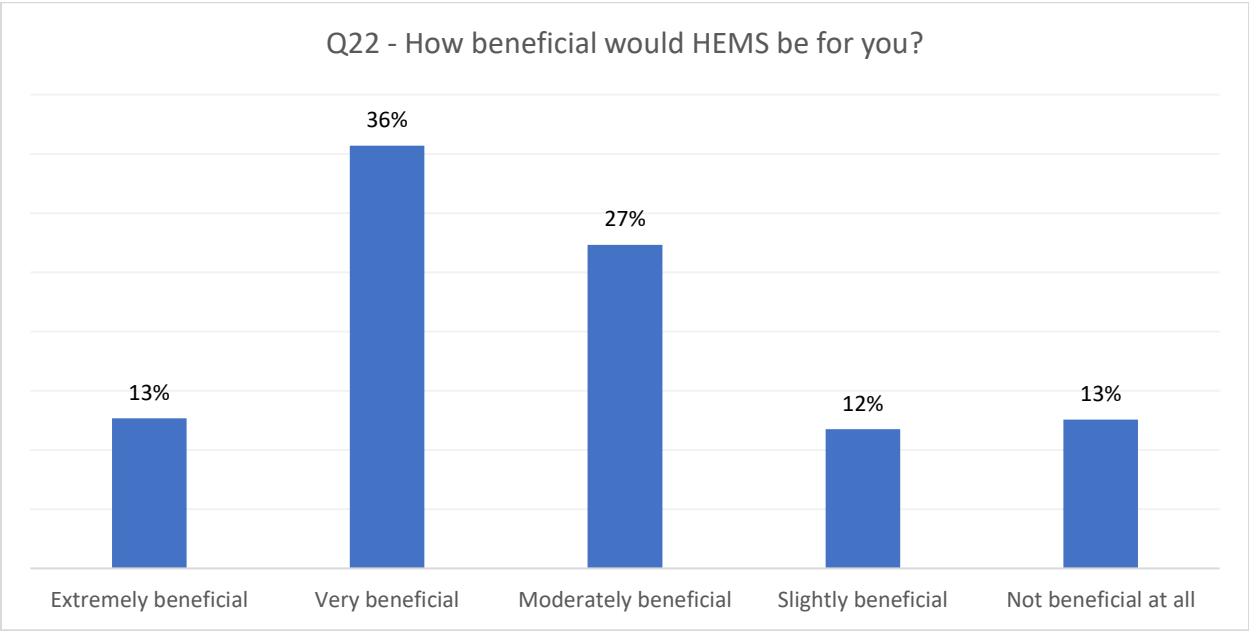


Figure 15. Q22, “The Helicopter Emergency Medical Services (HEMS) weather tool is an interactive weather display that provides low-altitude weather and aviation data on a zoom-able and scrollable map display. The HEMS tool has multiple selectable aviation and weather overlays [...]. How beneficial would this tool be for you?” Question was given only to CONUS subjects who had indicated that they had never heard of or never used the HEMS tool in Q21 (n = 2390).

Q9.c - How frequently have you used each of the following sources to obtain hazardous weather advisories in flight in the last 12 months?

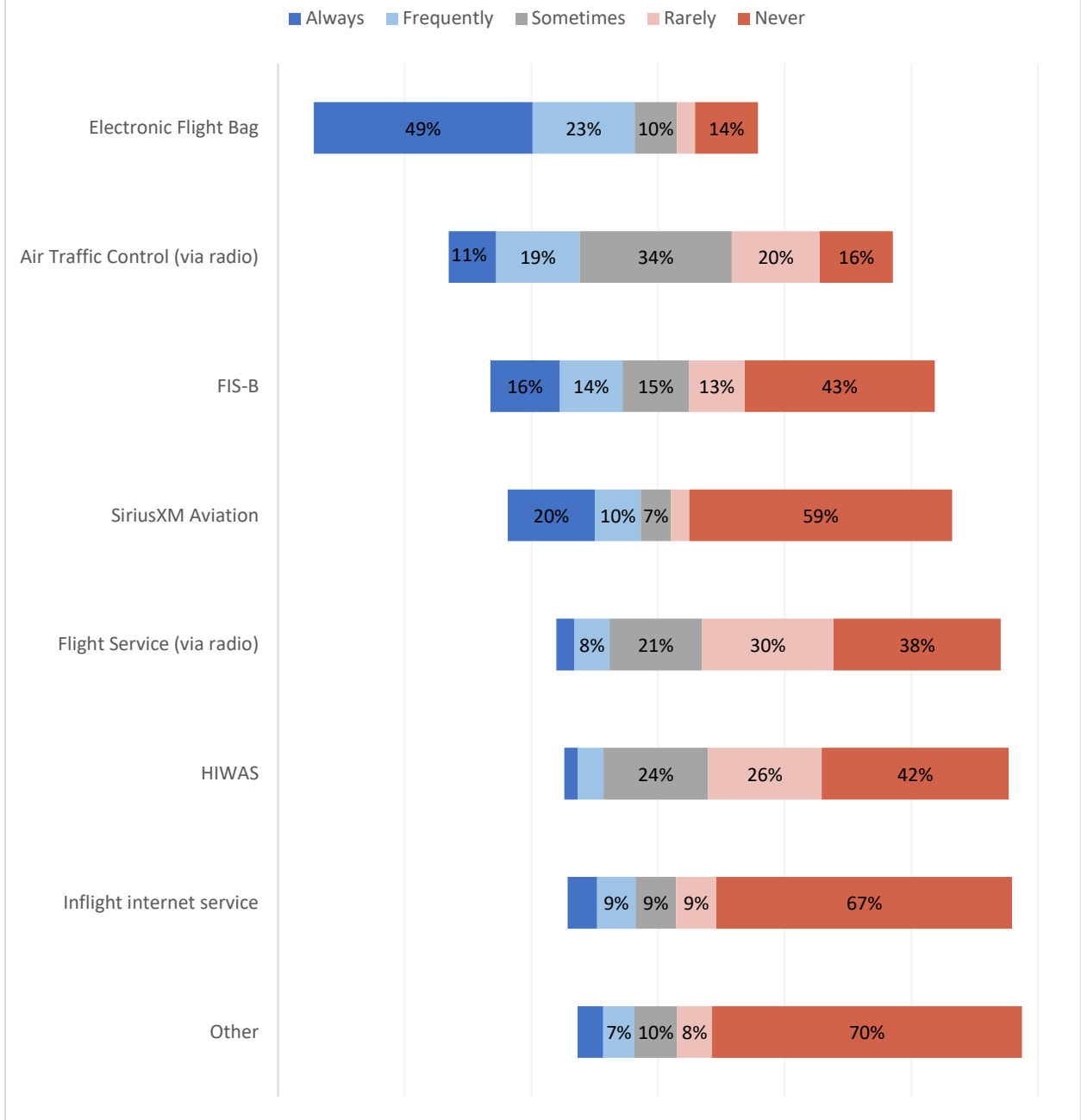


Figure 16. Responses to Q9.c, “How frequently have you used each of the following sources to obtain hazardous weather advisories in the last 12 months?” This question was shown only to CONUS respondents.

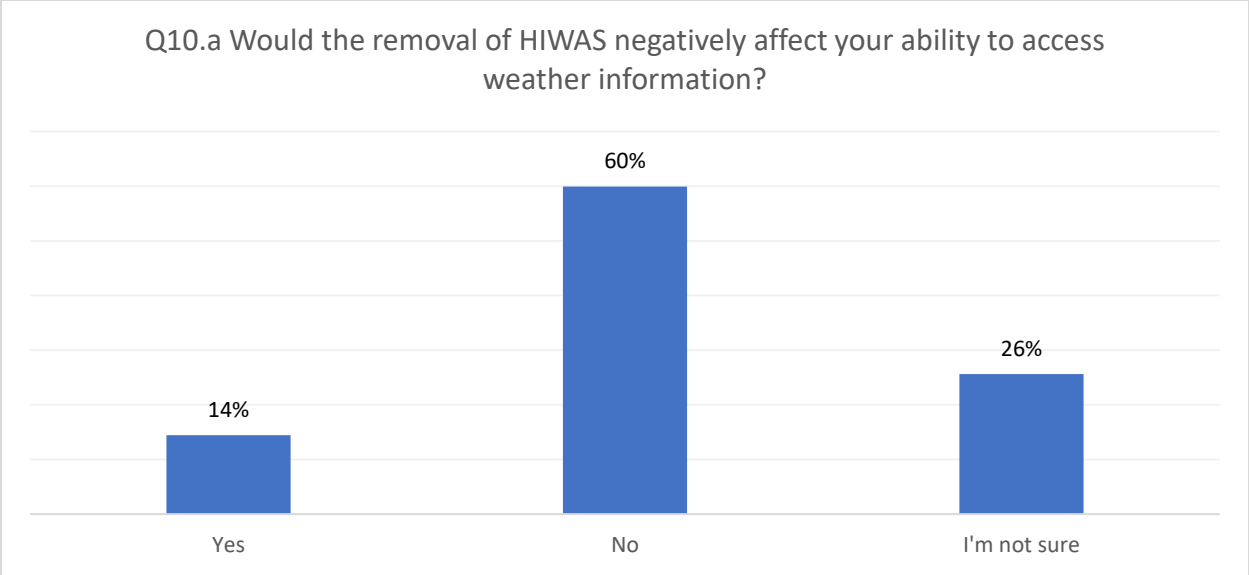


Figure 17. Responses to Q10.a (directed to CONUS subjects), “Would the removal of HIWAS negatively affect your ability to access weather information?”

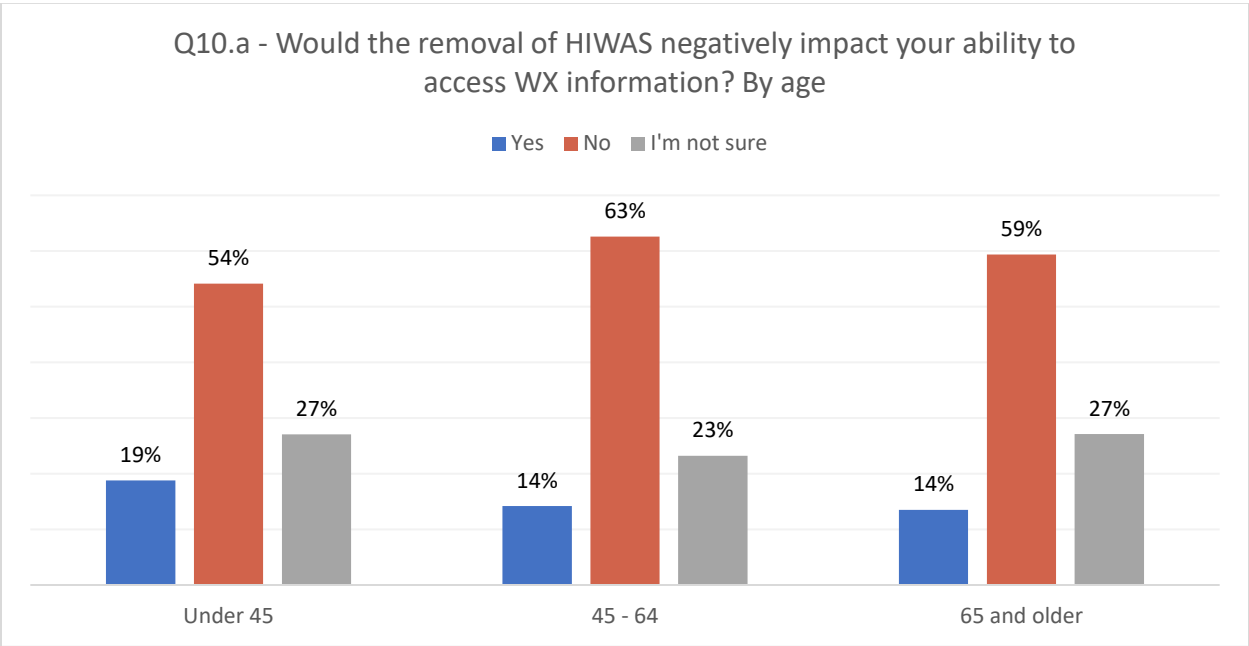


Figure 18. Responses to Q10.a (“Would the removal of HIWAS negatively affect your ability to access weather information?”) grouped by age (n = 2227). Percentages reflect the number of people who selected that answer, out of the total number of people in that age group.



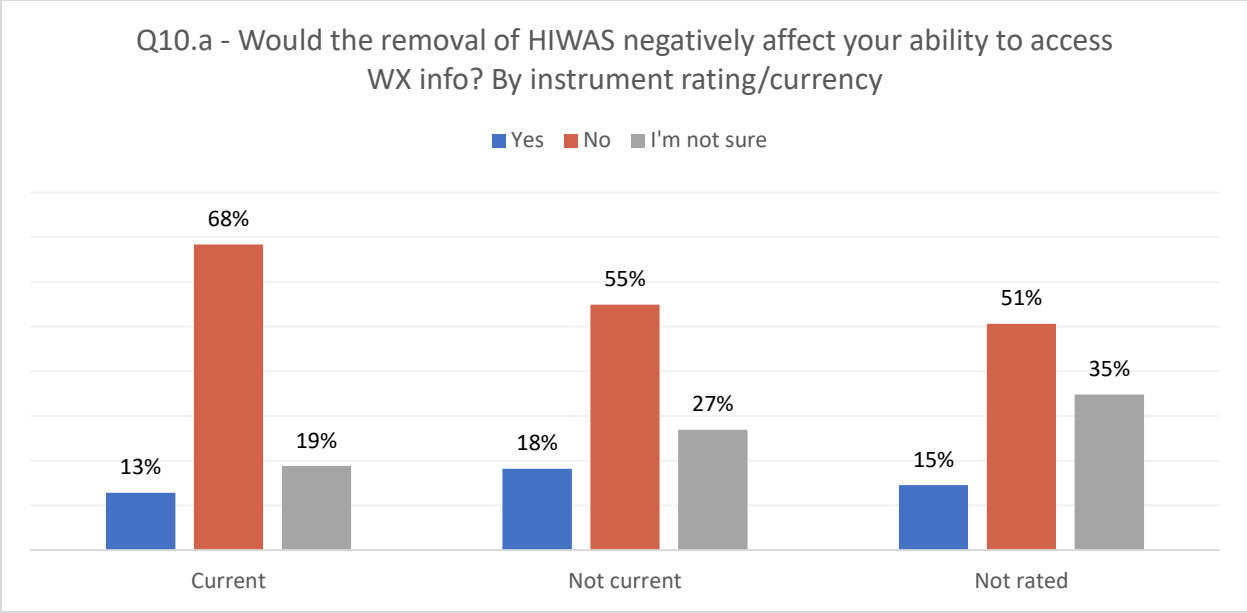


Figure 19. Responses to Q10.a (if the removal of HIWAS would negatively impact ability to access weather information) grouped by instrument rating/currency (n = 2224). Percentages reflect the number of people who selected a given answer, out of the total number of people with a given instrument rating/currency status.

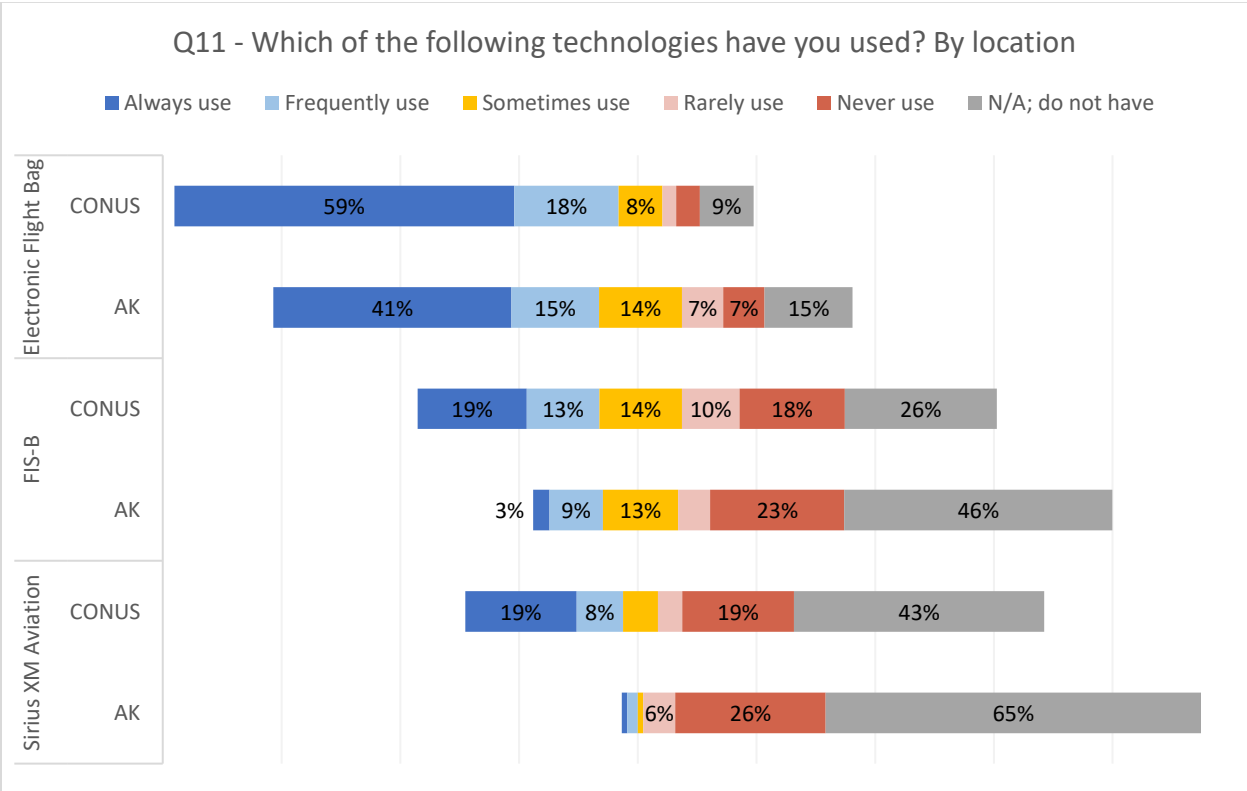


Figure 20. Responses to Q11, “Which of the following technologies have you used in the past 12 months?” by location.

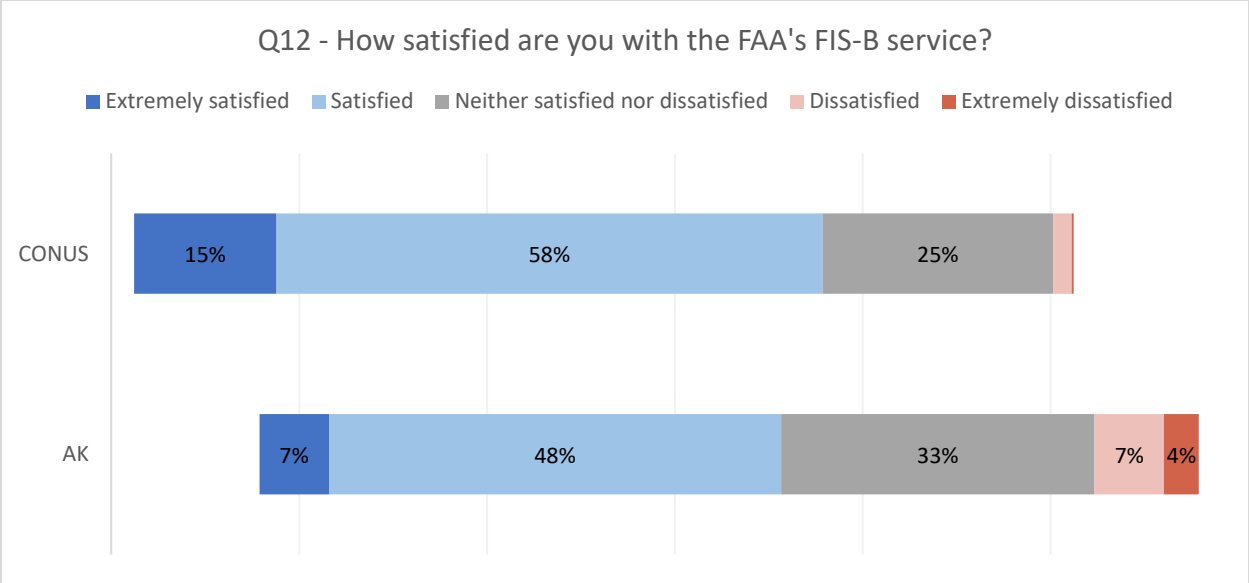


Figure 21. Responses to Q12, “How satisfied are you with the FAA’s FIS-B service?”. Note that Q12 was only asked of subjects who reporting using FIS-B at least “sometimes” in Q11. (n = 27 for Alaska and n = 1063 for CONUS).

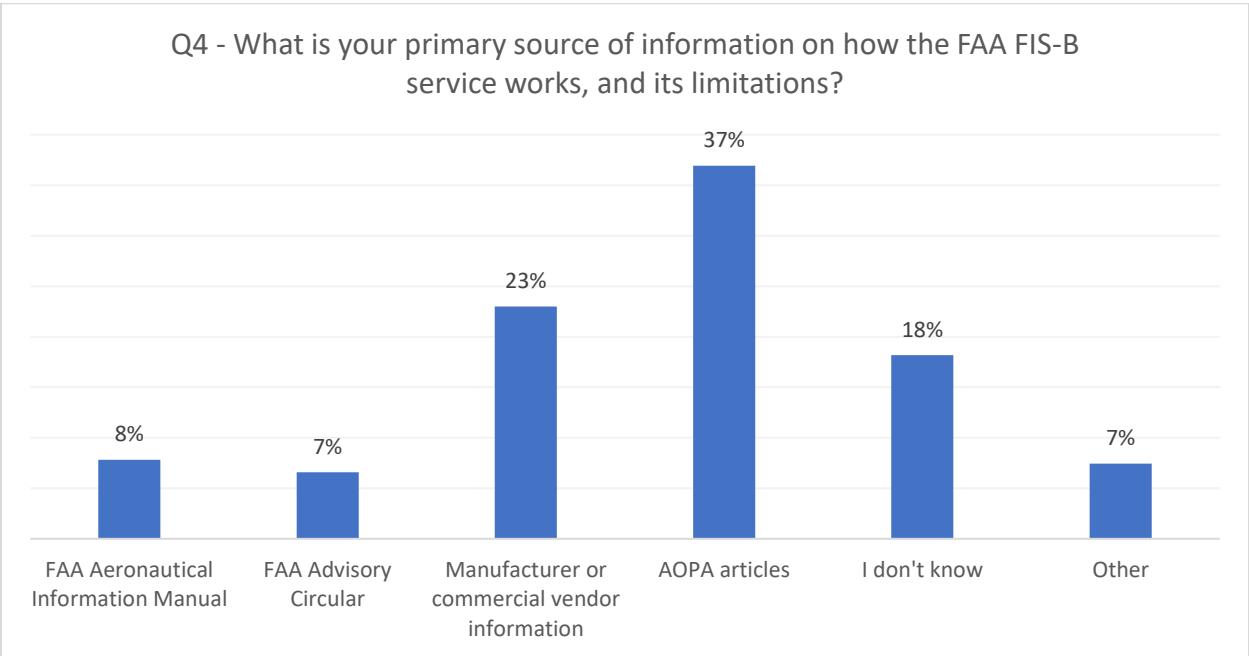
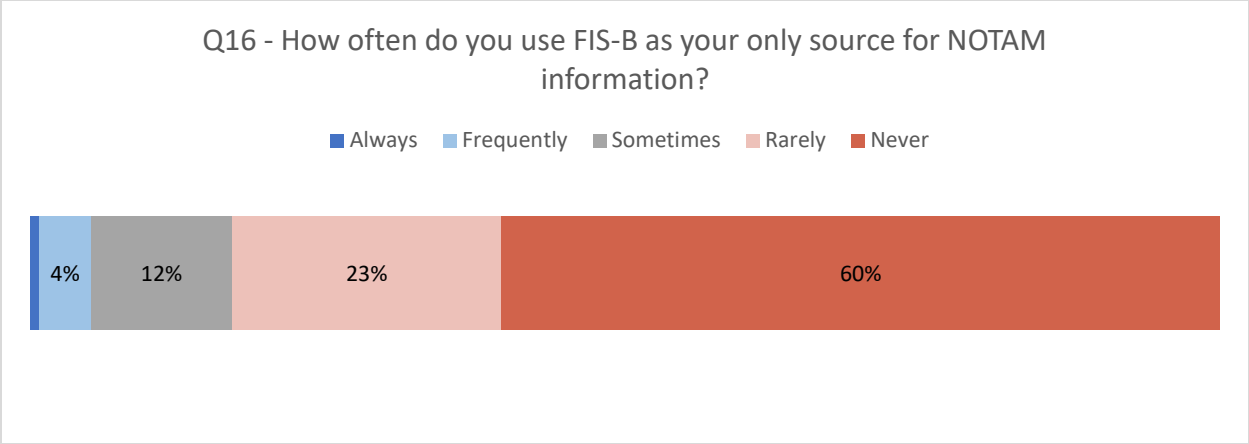
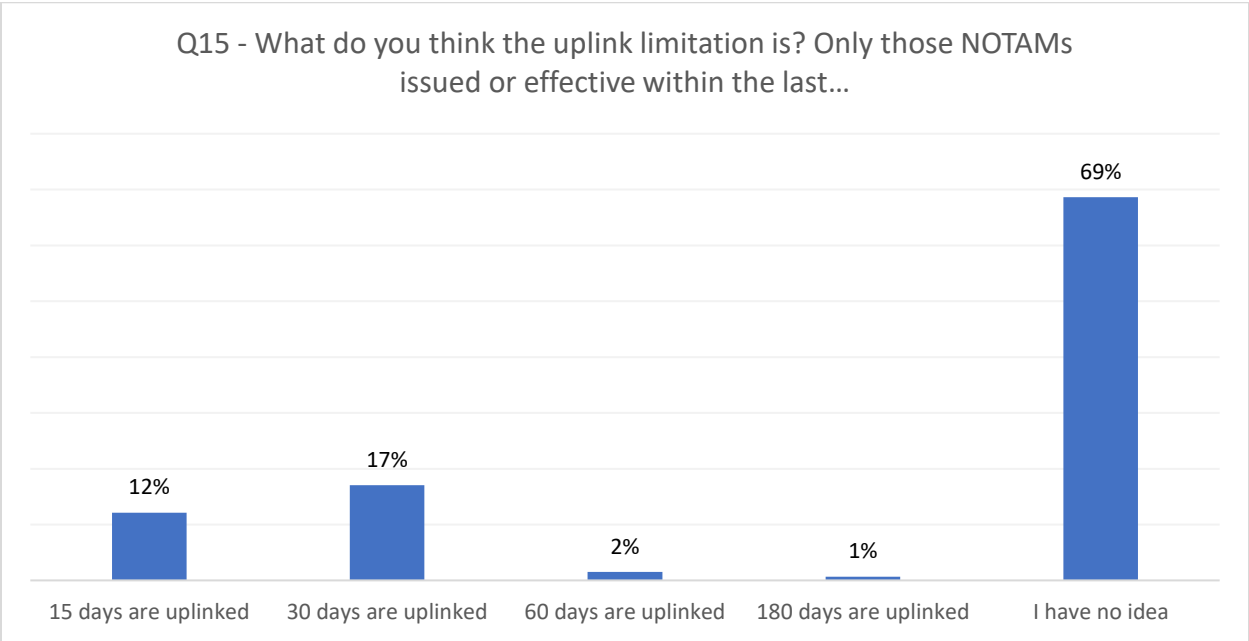


Figure 22. Q14, “What is your primary source of information on how the FAA’s FIS-B service works, and its limitations?” (n = 1061).



*Figure 23.* Responses to Q16, “How often do you use FIS-B as your only source of NOTAM information?” Note, this question was only provided to subjects who used FIS-B at least “sometimes.” (n = 1029)



*Figure 24.* Responses to Q15, “The FAA FIS-B service only uplinks certain NOTAMs. What do you think the limitation is? Only those NOTAMs issued or effective within the last...” Note, this question was also provided to subjects who used FIS-B at least “sometimes.” (n = 1049).

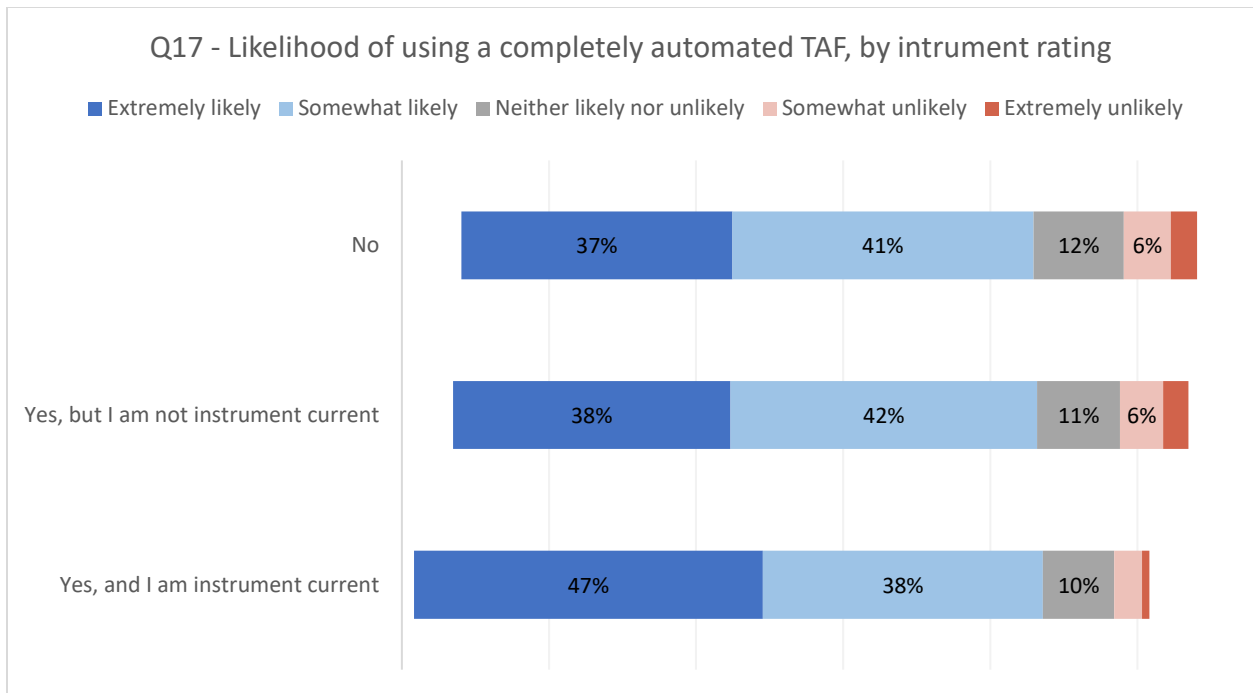


Figure 25. Responses to Q17, “Many General Aviation airports do not have a Terminal Aerodrome Forecast (TAF) due to limited human resources. If available, how likely are you to use a completely automated TAF which has not been reviewed by a human weather forecaster?”, by instrument rating held (n = 2307).

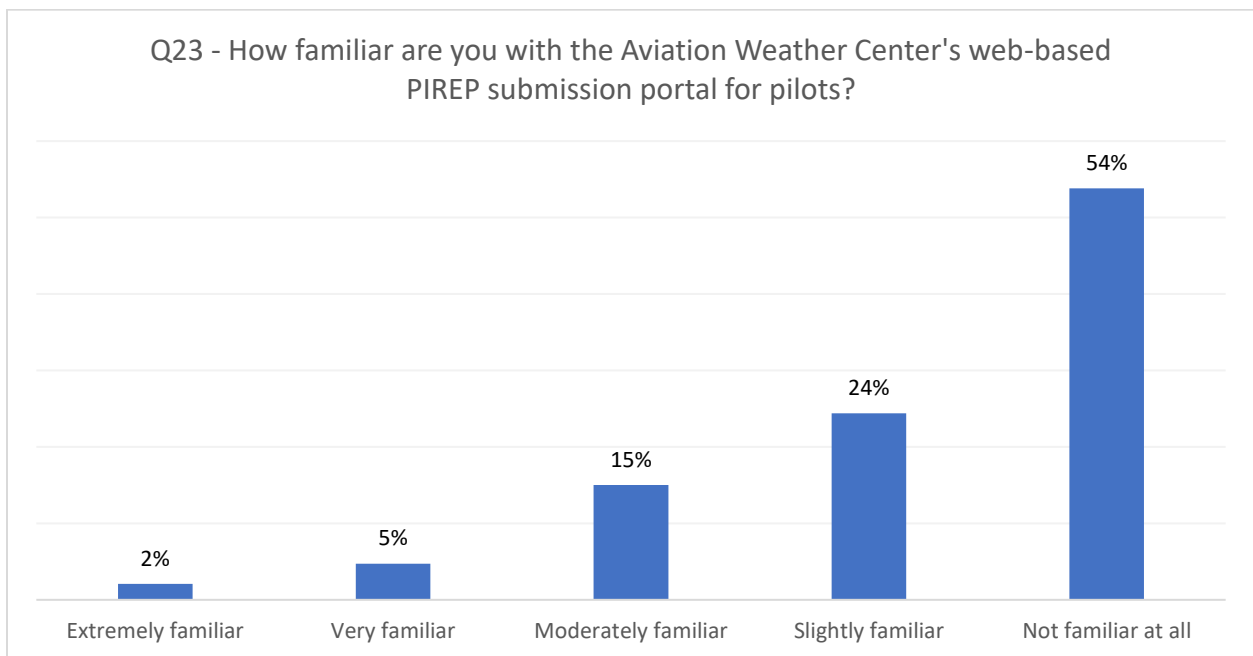


Figure 26. Q23, “How familiar are you with the Aviation Weather Center’s web-based PIREP submission portal for pilots?” (n = 2260)

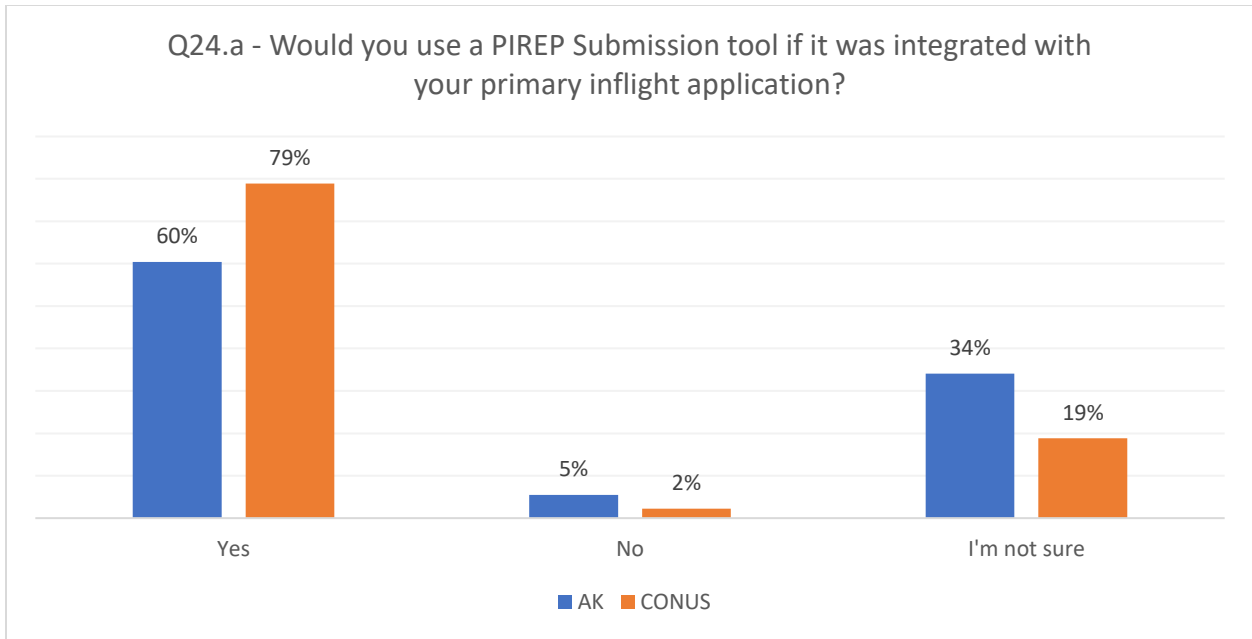


Figure 27. Q24.a, “Would you use a PIREP submission tool if it was integrated with your primary inflight application, such as ForeFlight or Garmin Pilot, on your Electronic Flight Bag (e.g., iPad or tablet)?” Differences shown by location.

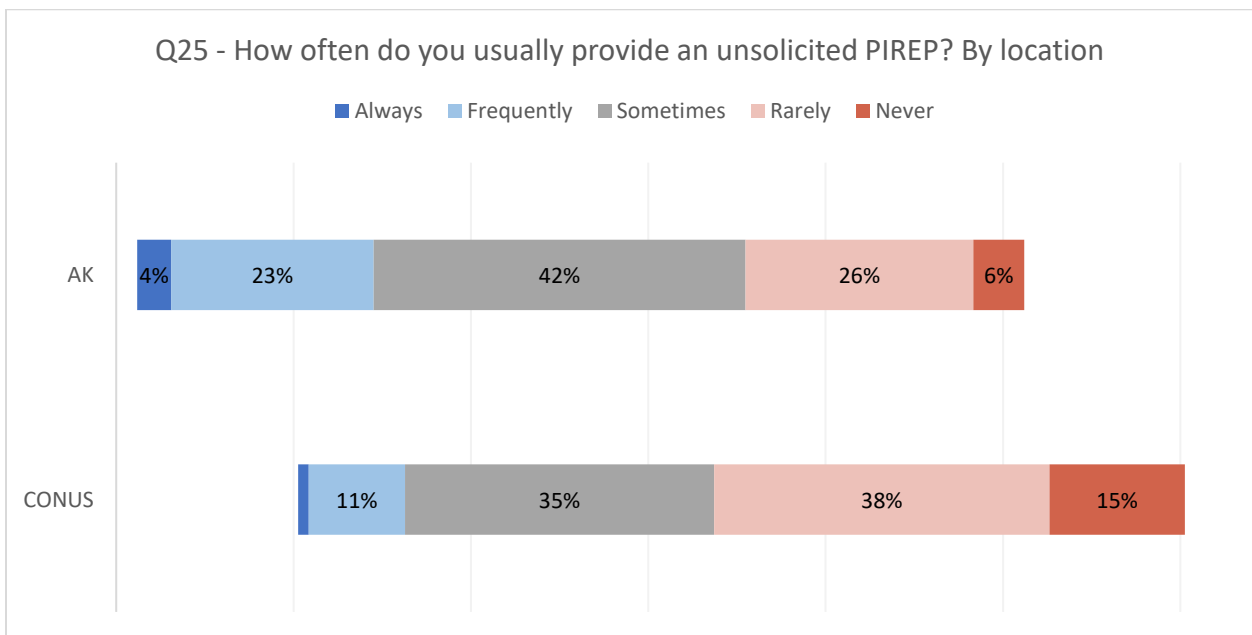


Figure 28. Q25, “How often do you usually provide an unsolicited PIREP?” broken down by location.

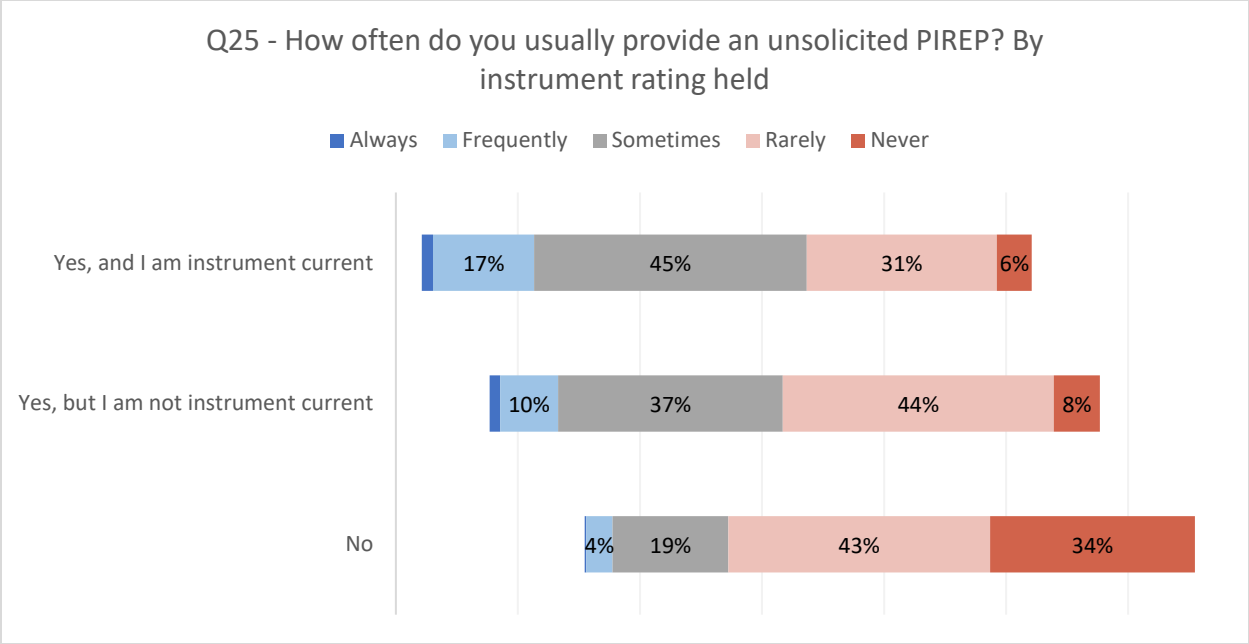


Figure 29. Q25, “How often do you usually provide an unsolicited PIREP?” broken down by instrument rating held.

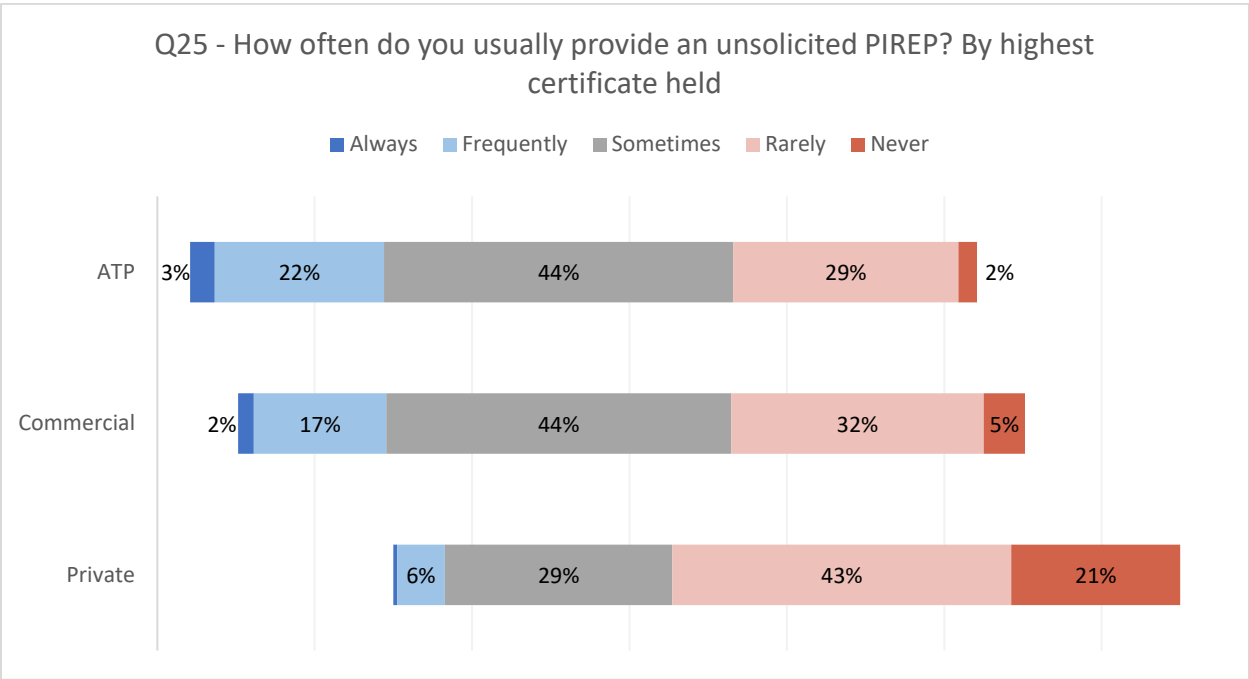


Figure 30. Q25, “How often do you usually provide an unsolicited PIREP?” broken down by highest certificate held.

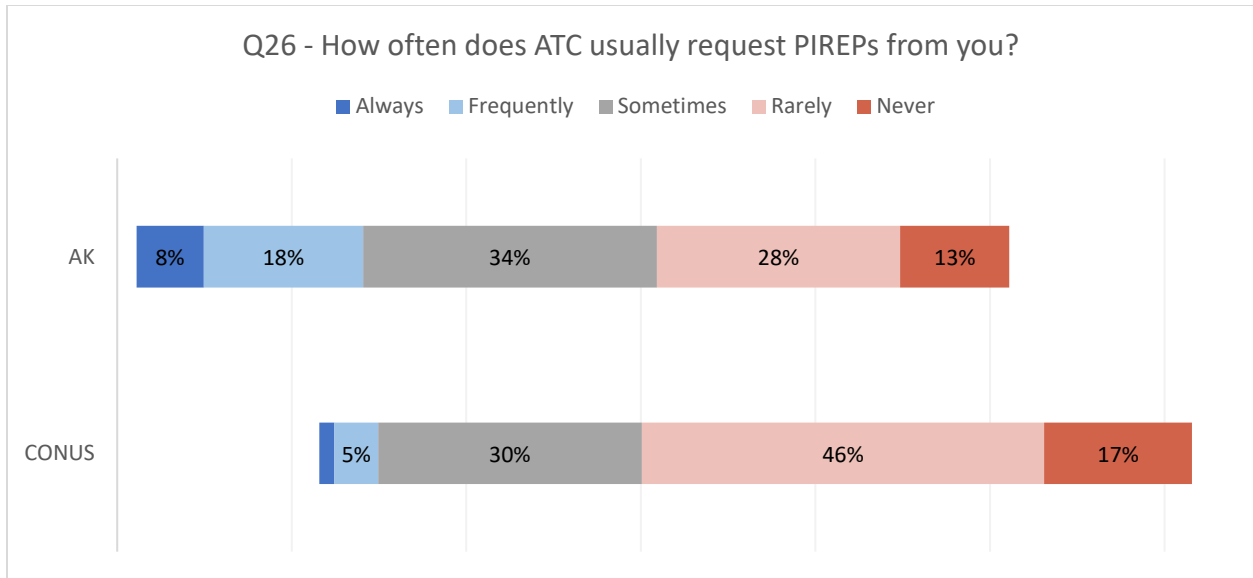


Figure 31. Q26, “How often does ATC usually request PIREPs from you?” broken down by location.

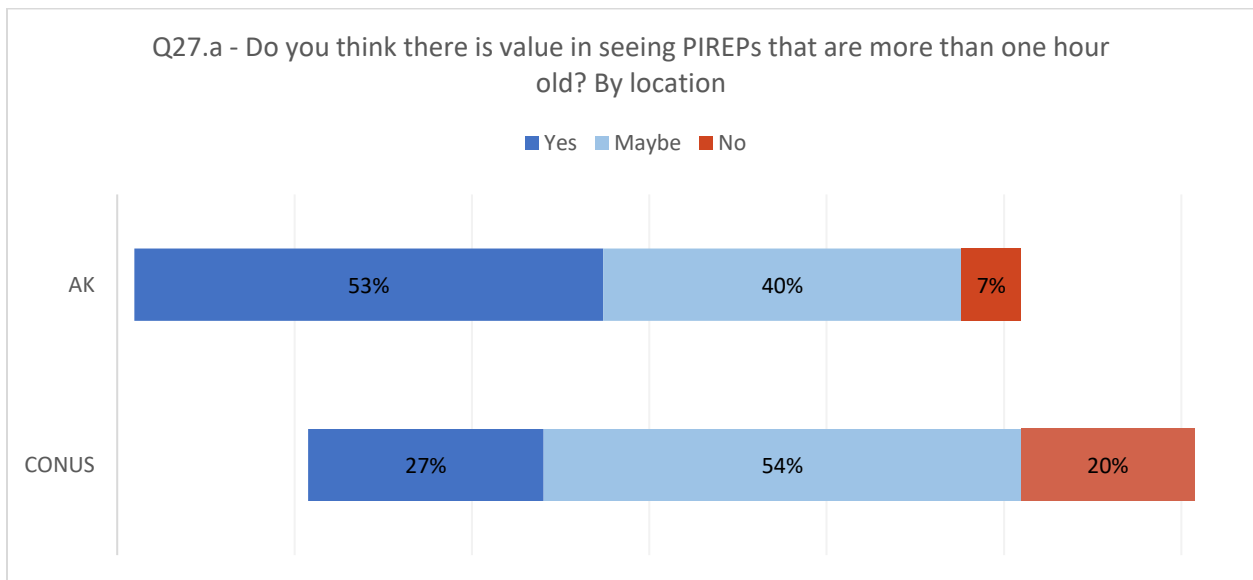


Figure 32. Q27.a, “Do you think there is value in seeing PIREPs that are more than 1 hour old?” broken down by location.

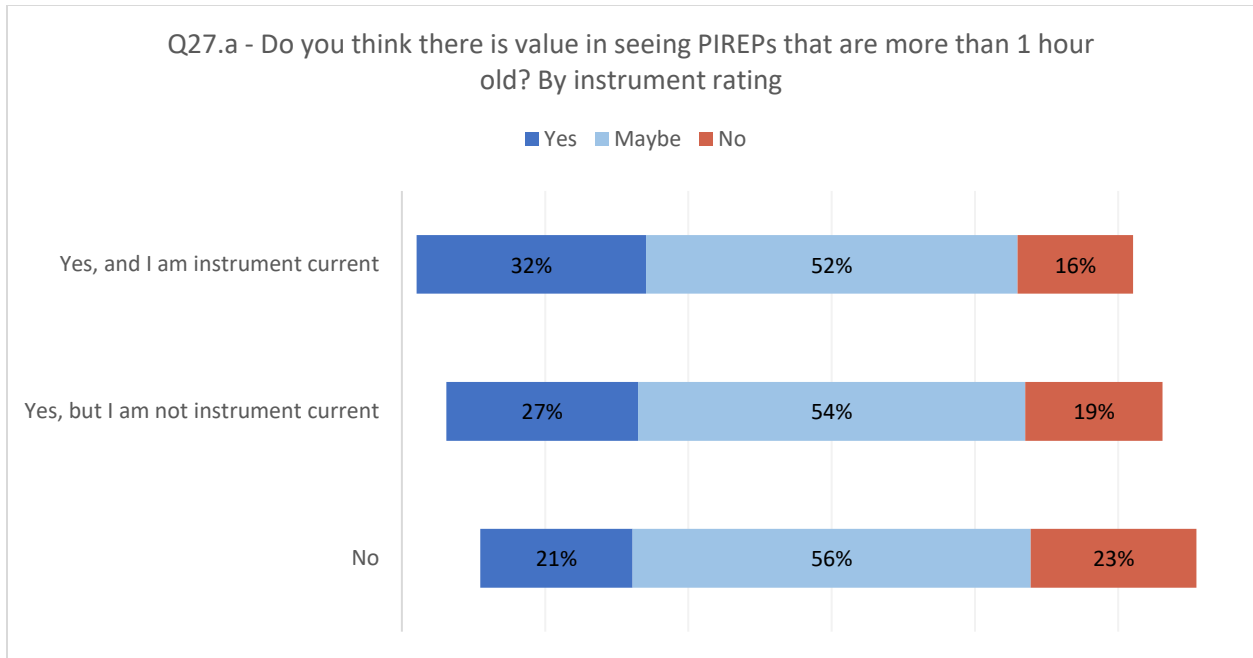


Figure 33. Q27.a, “Do you think there is value in seeing PIREPs that are more than 1 hour old?” broken down by instrument rating.

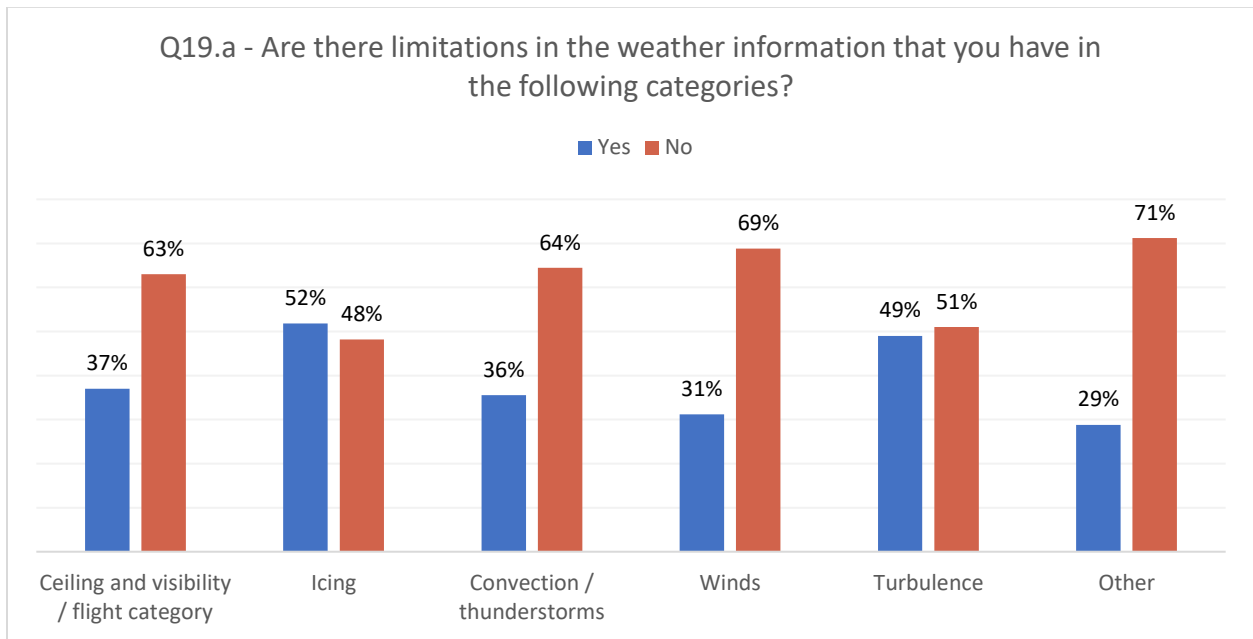
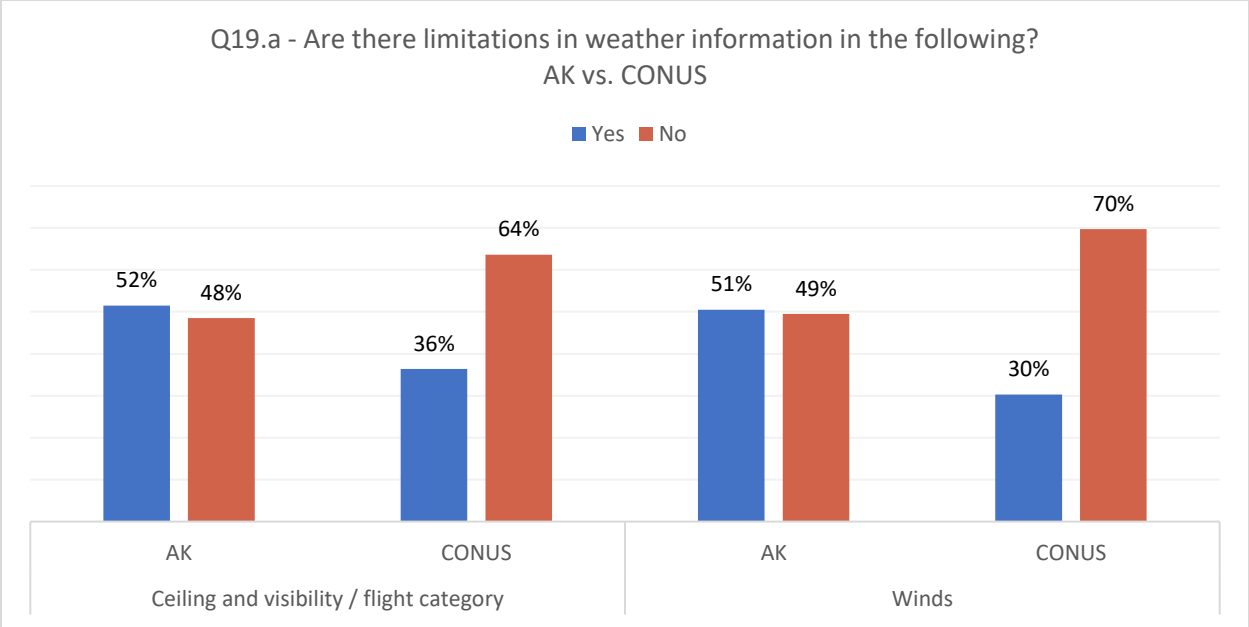
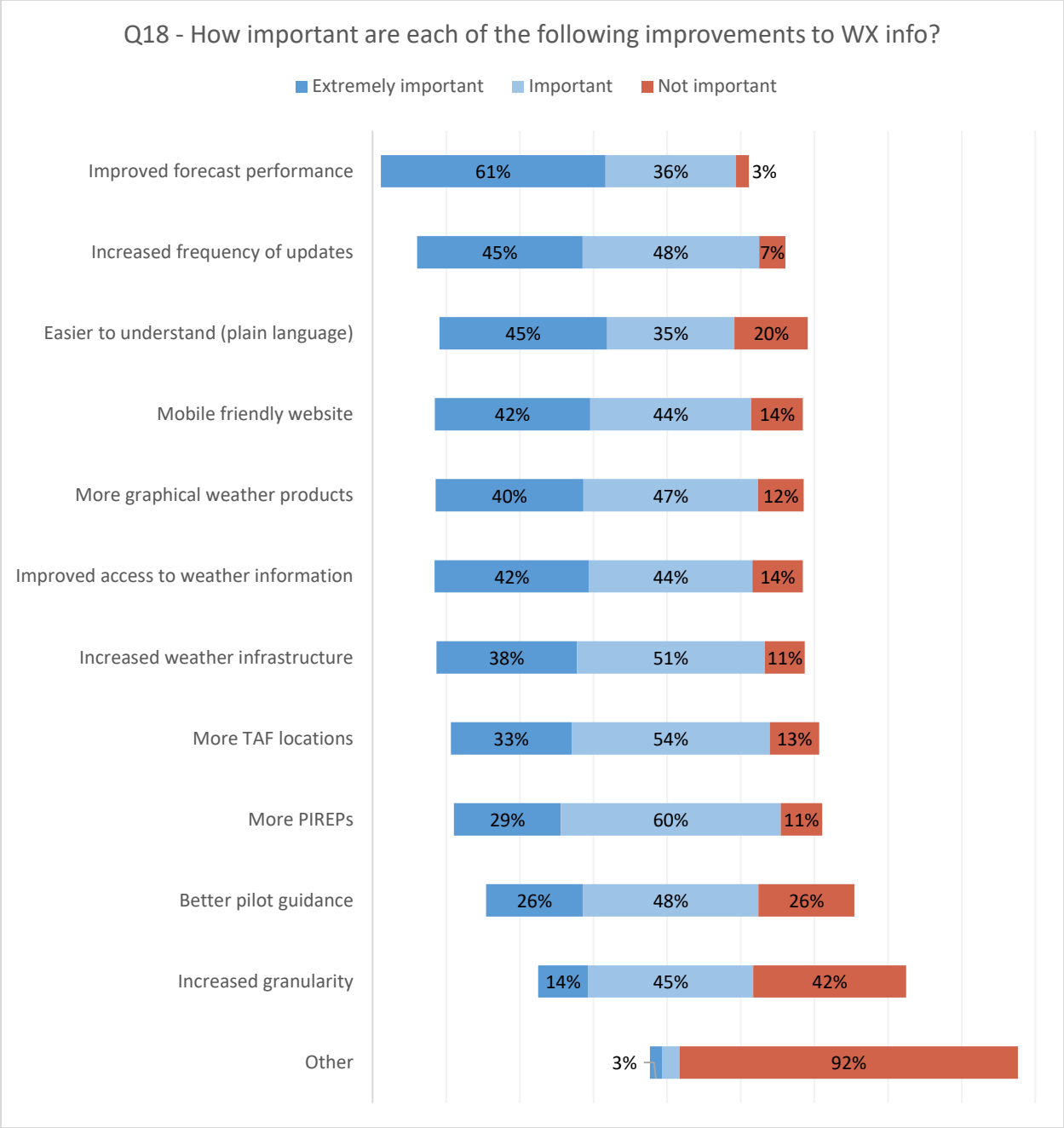


Figure 34. Q19.a, “Are there limitations in the weather information that you have in the following categories?” Responses for both locations included.

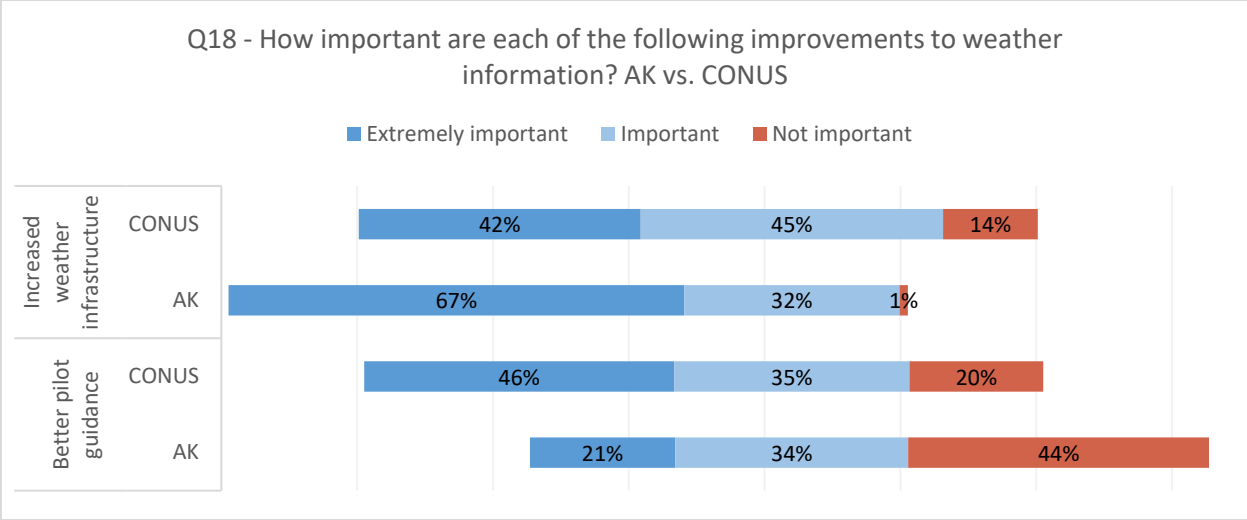




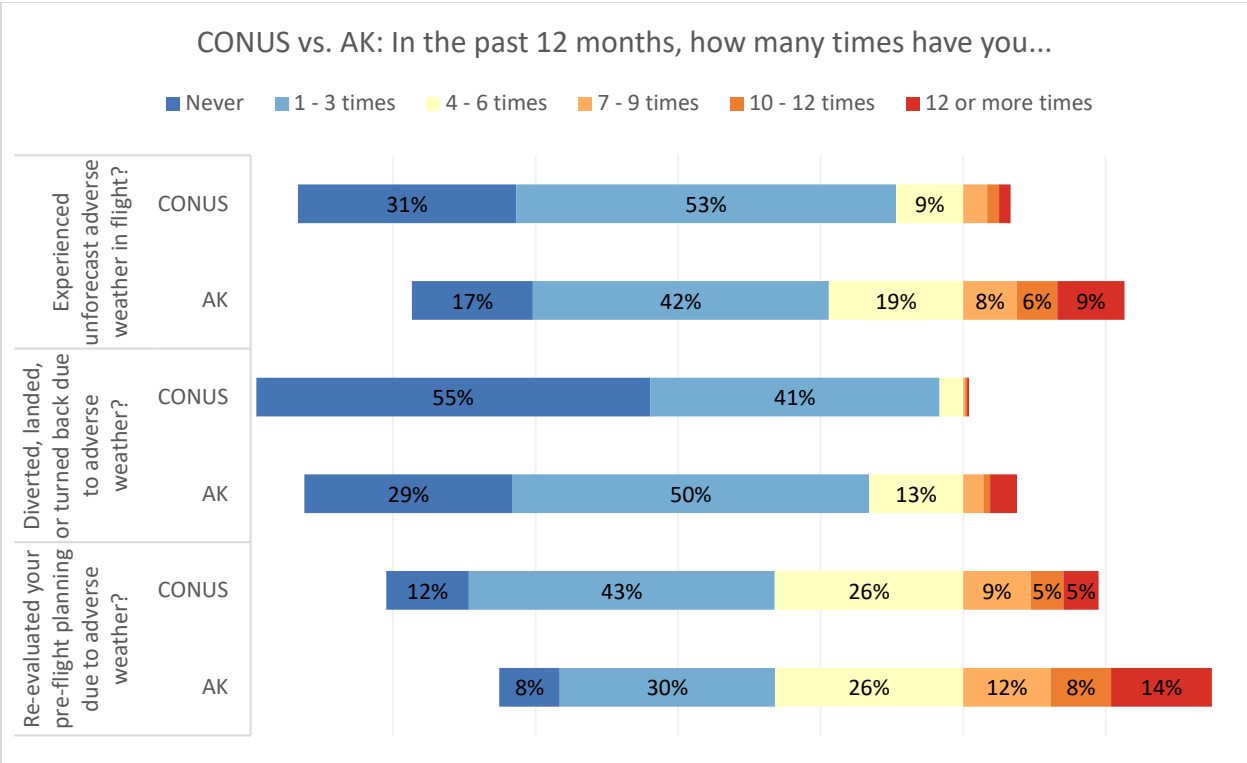
*Figure 35.* Q19.a, “Are there limitations in the weather information that you have in the following categories?”. Only those categories which differed significantly by location are displayed.



*Figure 36.* Responses to Q18, “How important are each of the following improvements to weather information?” Participants ranked improvements as extremely important, important, or not important. Percentages are by attribute (the number of people who classified each given improvement, into each given category, out of the total number of people who chose to classify that attribute).



*Figure 37.* Categories with differences by location for Q18, “How important are each of the following improvements to weather information?” Categories include increased weather infrastructure (more observations; n = 82 for AK and n = 1724 for CONUS) and better pilot guidance (n = 70 for AK and n = 1623 for CONUS). Percentages are by attribute.



*Figure 38.* Q20, “In the past 12 months, how many times have you...” either “experienced unforecast adverse weather in flight” or “diverted, landed, or turned back due to adverse weather” or “re-evaluated your pre-flight planning due to adverse weather?” Responses broken down by location.

## Appendix B: Comments on Open-Ended Questions

### Q13 – What would improve the FIS-B service, and make it more effective for you? (n = 25)

*Provide more ground stations or at least increase the look ahead range for the limited stations we have in Alaska so there are not huge gaps in available data.*

*Closer to Real-Time information, more complete regional coverage, less pixelated display, better cloud/visibility information.*

### Q24.b – Why would you not use a PIREP submission tool if it was integrated with your primary inflight application? (n = 41)

*Too much technology, I'm old and it's getting ahead of me.*

*There is no way to upload it in flight and by the time I landed location would not be accurate and conditions would have likely changed*

*Too much distraction and head down time.*

### Q24.c – Why are you unsure if you would use a PIREP submission tool if it was integrated with your primary inflight application? (n = 296)

*If the submission was too distracting while flying, I wouldn't use it.*

*How would it get disseminated until you land and go somewhere with Internet access?*

*Ease of use for submission is important. Electronic submission can interfere with managing the flight during challenging weather conditions that should be reported.*

### Q27.b – Please explain why you don't think there is any value in seeing PIREPs that are more than one hour old. (n = 353)

*Weather is dynamic, PIREPS are great when they're recent but it doesn't make sense to base a prediction on a report of conditions that have most likely changed and have certainly moved.*

*Weather changes quickly*

*WX PIREPs must current due to rapidly changing conditions that affect aircraft performance and operating restrictions.*

*Weather can change rapidly and PIRPEPs more than an hour old can contribute to bad decision making and/or a false sense of security.*

**Q27.c – Please explain why you think there is value in seeing PIREPs that are more than one hour old. (n = 1,659)**

*May be only information in specific location. Would rather have it dated than not at all.*

*Weather trends are huge and can help a lot with planning a flight or route.*

*It could confirm an apparent trend or it could be used to evaluate accuracy of forecast.*

*some conditions linger without changing much; fog, for instance*

**Q19.b – Please describe the limitations in the weather information that you have in the following categories.**

**Icing (n = 739):**

*The area forecasts are generally pretty good but again due to the sparsity of collection sites they lump together areas that should be separate. (AK)*

*More Pireps would be helpful especially if icing is forecast but not encountered*

*Not enough PIREPs, need better technology to predict the actual existence of ice*

*The forecast should be more specific, with greater granularity, and more specific about the types of low-probability icing.*

**Turbulence (n = 707):**

*Lack of reporting stations (AK)*

*Knowing the \*type\* of turbulence is important to understanding what to expect: shear, mountain wave, convective, terrain friction...*

*Severity categories affected by type of airplane, need more PIREPs, need better forecasting*

*We guess where the turbulence is, but really don't know unless we get a pirep.*

**Convection or thunderstorms (n = 468):**

*MOre accuracy on storm development timing and movement*

*Need better granularity for intensities and boundaries. Need faster refresh rates and updates. Tstorms are often shown worse than actual on most graphics.*

*More frequent updates for changing conditions*

**Ceilings, visibility, or flight category (n = 575):**

*Usually generated by a machine looking up at one spot in space. The ceiling can be very different at another spot on the same runway (AK)*

*This is so vague geographically, it is practically useless. There are ALWAYS mountain obscurations... (AK)*

*In Alaska I fly in many areas that simply don't have a way to observe the weather so usually we just have to go take a look. Weather cameras are a great benefit. (AK)*

*I've encountered very marginal if not, ifr weather conditions between airports (both vmc) within 80 miles of each other. No other reporting stations in between.*

*Like to have better info on cloud ceilings and tops*

**Winds (n = 425):**

*Lack of reporting stations (AK)*

*More granularity; more frequent updates.*

*Wind forecast for direction and speed never seem to be what I've observed*

**Other (n = 70):**

*Cloud tops. What product provides accurate information as to cloud tops? This is vital information if a pilot wants to climb above the cloud layer.*

*Need to give back (or make more widely known) a forecasting tool that shows cloud tops*

**Q7 – What improvements to the AAWU website would enable you to use it more often? (n = 3)**

*Alaska has a ton of micro climates, would help to have more localized information.*

*iPhone / iPad app*

*An iPhone or iPad app.*

**Q8 – The AAWU made significant changes to their website interface last summer. What do you like or dislike most about the new website, based on your use of the site since then?**

**What do you like most (n = 65)?**

*Opening clickable map with customizable displays*

*Easy to navigate; many different weather maps available on one webpage.*

*It's still great. I didn't like having to learn new ways because I knew exactly where to go and in what order on the old website, as strangely organized as the old one was. The new one is better organized for a new user.*

**What do you dislike most (n = 61)?**

*The fact that they no longer give tabular graphical summary of forecasts at each major airport.*

*The new site is not as mobile friendly, difficult to navigate compared to the old web site.*

*It took a while to get the feel of the new site.*

**Q10.b – Please explain why the removal of HIWAS would affect your ability to access weather information (n = 316).**

*It gives a pilot a great in flight situational awareness. The removal of this will be a negative impact on pilots who's aircraft don't have the latest avionics.*

*Removes a valued "back-up" source of weather information (in other words, I may not use it all the time - but the fact that it is there is invaluable. I can always use it if I need to!!!)*

*Although the hazardous weather information can be obtained from other sources, the tools for the safety of flight should be augmented not reduced in number. Using multiple sources ensures an accurate picture of your route of flight current and impending weather.*

**Q10.c – Please explain why the removal of HIWAS would not affect your ability to access weather information (n = 1,391).**

*I have multiple weather sources prior to departure and in-flight that provides access to current weather. I use these anytime there is significant weather.*

*I usually need more specific and localized information.*

*I avoid flying in bad weather. VFR only*

*With proper pre-flight weather planning, there are very rarely any in-route surprises that appear.*

*I don't use it.*