




Impact Report 2022

NATIONAL
ACADEMIES *Sciences
Engineering
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TRB TRANSPORTATION RESEARCH BOARD





The **National Academy of Sciences** was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, nongovernmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to research. Dr. Marcia McNutt is president.

The **National Academy of Engineering** was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. John L. Anderson is president.

The **National Academy of Medicine** [formerly the Institute of Medicine] was established in 1970 under the charter of the National Academy of Sciences to advise the nation on medical and health issues. Members are elected by their peers for distinguished contributions to medicine and health. Dr. Victor J. Dzau is president.

The three Academies work together as the **National Academies of Sciences, Engineering, and Medicine** to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine. Learn more about the National Academies of Sciences, Engineering, and Medicine at www.nationalacademies.org.

The **Transportation Research Board** is one of seven major programs of the National Academies of Sciences, Engineering, and Medicine. The mission of the Transportation Research Board is to provide leadership in transportation improvements and innovation through trusted, timely, impartial, and evidence-based information exchange, research, and advice regarding all modes of transportation. The Board's varied activities annually engage about 8,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. Learn more about the Transportation Research Board at www.TRB.org.




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About Us

Airport Cooperative Research Program

Airports need unbiased and reliable research to solve common problems, learn about new technologies, and assess innovations in service and operations. In 2005, the Airport Cooperative Research Program (ACRP) was founded to meet this need—authorized by Congress, sponsored by the Federal Aviation Administration (FAA), and managed by the Transportation Research Board.

Each year, ACRP receives funding from the FAA. With this budget, ACRP funds research projects and activities to help airports surmount real-world challenges and problems.

Every ACRP research project culminates in a research product categorized into the following types: Research Reports, Syntheses of Practice, Legal Research Digests, Research Results Digests, Web-Only Documents, and WebResources. They are all available for free, along with the corresponding guidelines, tools, databases, and models that are available to address the industry's needs.



Impact Measurement Strategy

ACRP measures impact on the airport industry to ensure products are benefitting practitioners. Initially, ACRP focused on the number of downloads or views a product receives as a key indicator of program effectiveness, similar to a for-profit company's bottom line. Download numbers are an important indicator that our products are consumed across the airport industry. In 2021, ACRP decided to enhance understanding of how the program was benefitting end users by surveying ACRP's audience directly. In 2021, we gathered data from many National Plan of Airport Systems (NPIAS) airports, learning which airports were aware of ACRP, which were using the products, and what benefits they garnered from them, including time and money saved. These results are in the 2021 Impact Report on the ACRP website. In 2022, ACRP assessed two new audience segments: consultants and airport-related academic programs. Survey response rates were not as high as the airport survey and therefore are not highlighted to the same extent in this report. We will continue to gather more insight into how these audiences use ACRP products in the future. Also surveyed were those who downloaded an ACRP product 3 years ago to allow time for practitioners to begin to see potential benefits from implementing ACRP research. Each project's panel members were also contacted to gather implementation leads. Interviews of airport practitioners were conducted to gain deeper insight into how ACRP products are being used.

Overall, survey respondents overwhelmingly agree that ACRP provides value to the industry and is well-known among large and medium hub airports, as well as larger general aviation airports. Many airport managers provided feedback that ACRP products saved them money as they did not have to hire consultants or extra staff to address their challenges. ACRP will continue to measure impact regularly to maintain program relevance, remain connected with the airport community, and track industry trends.



A wide-angle photograph of an airport tarmac during a vibrant sunset. The sky is filled with large, white and orange-tinted clouds. In the center-left, a red airplane is being serviced by ground crew and vehicles. To the right, a large airport terminal with a glass facade is visible. In the foreground, several yellow taxis and a white van are parked near the terminal. People are walking on the tarmac, and a small white vehicle is in the lower foreground. A large, semi-transparent white circle is overlaid in the center of the image, containing the text "ACRP RESEARCH PRODUCTS".

ACRP RESEARCH PRODUCTS

RESEARCH REPORTS

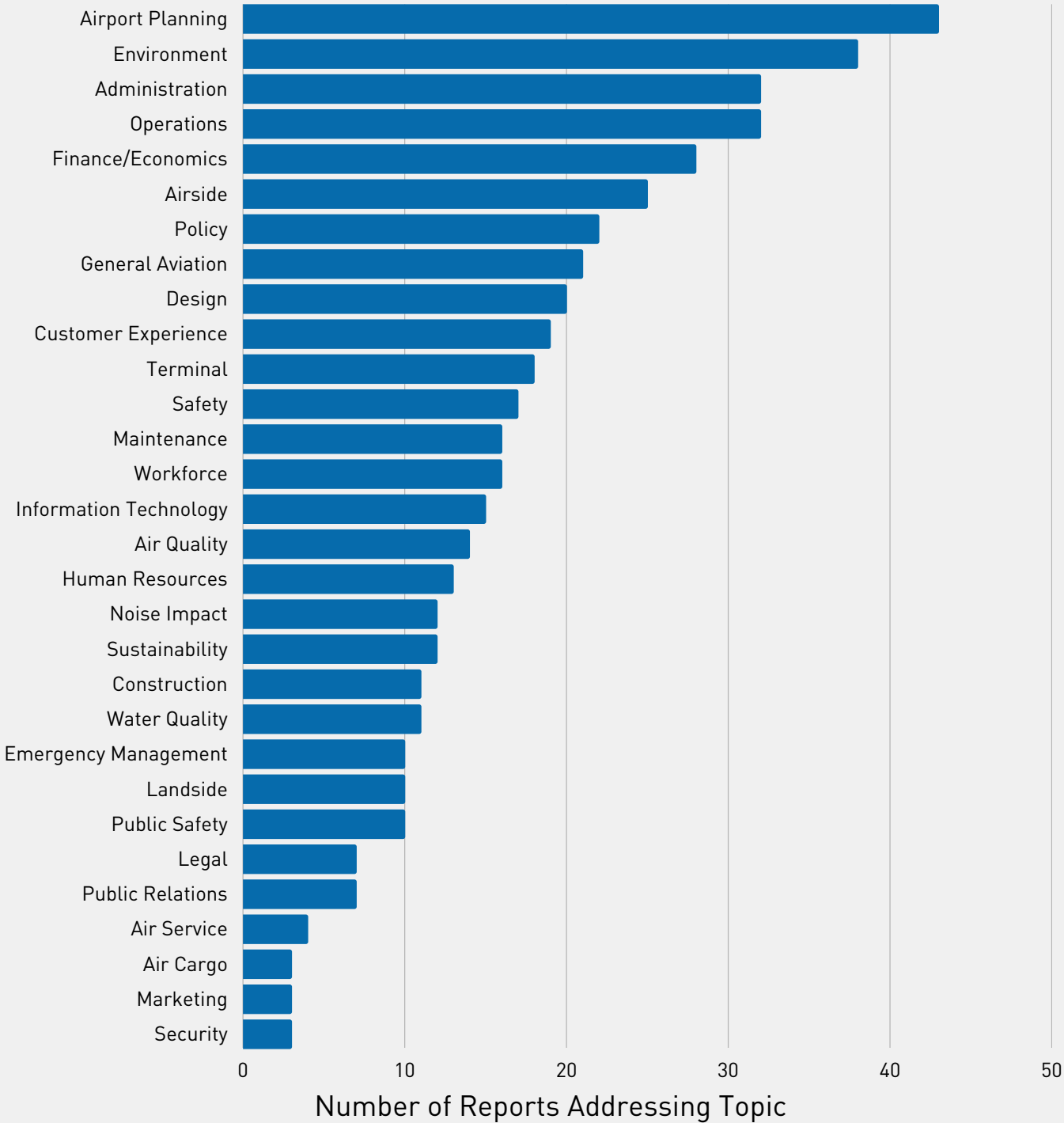
Research Reports are often written as guides or manuals directly applicable to problems airports face today. They are often accompanied by tools, models, and databases.

260

Total Research Reports published to date

16

Average number of Research Reports published annually



Most Common Research Report Topics

ACRP assigns topic areas to every Research Report, allowing for easy searchability on the website. Each report is tagged with up to 5 topic areas. Reports relating to Airport Planning, the Environment, and Administration are in highest abundance, while Air Cargo, Marketing, and Security are the lowest.

SYNTHESES OF PRACTICE

Syntheses of Practice highlight the state of practice based on literature reviews and practitioner surveys of recent activities in challenging topics. Syntheses also inform airport managers about innovations being used by others to solve problems.

119

Total Syntheses published to date

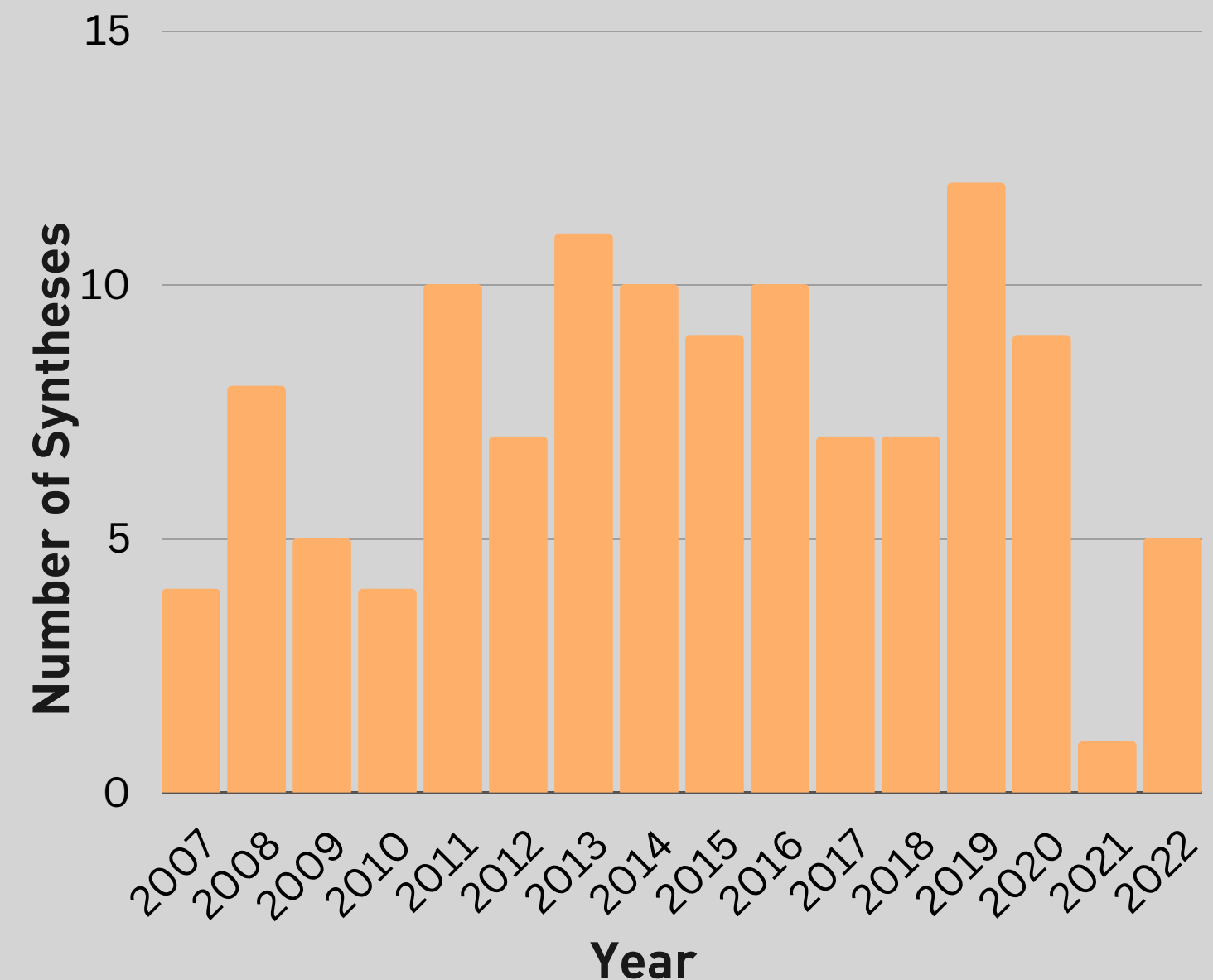
7

Average number of Syntheses published annually

5

Syntheses published in 2022

Yearly Output of Syntheses



LEGAL RESEARCH DIGESTS

LRDs report on timely legal issues, compile case law, or recommend solutions to specific legal and regulatory issues.



Top-Viewed LRDs 2007-2022
1) LRD 29: Impact of Firearms Laws on Airports
2) LRD 30: Contract Risk Management for Airport Agreements
3) LRD 26: Regulations Affecting the Exercise of First Amendment Activities at Airports
4) LRD 32: Evolving Law on Airport Implications by Unmanned Aerial Systems
5) LRD 7: Airport Governance and Ownership

RESEARCH RESULTS DIGESTS

RRDs are used to promote early awareness of project results in order to encourage implementation. RRDs also summarize specific findings that emphasize how the research may be used.



Top-Viewed RRDs 2007-2022
1) RRD 21: Best Practices for General Aviation Aircraft Fuel-Tank Sampling
2) RRD 9: Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics
3) RRD 1: Synthesis of Information Related to Airport Practices
4) RRD 11: Helping Airports Understand the Payment Card Industry Data Security Standard (PCI DSS)
5) RRD 25: Graduate Research Award Program on Public-Sector Aviation Issues: 2008-2017

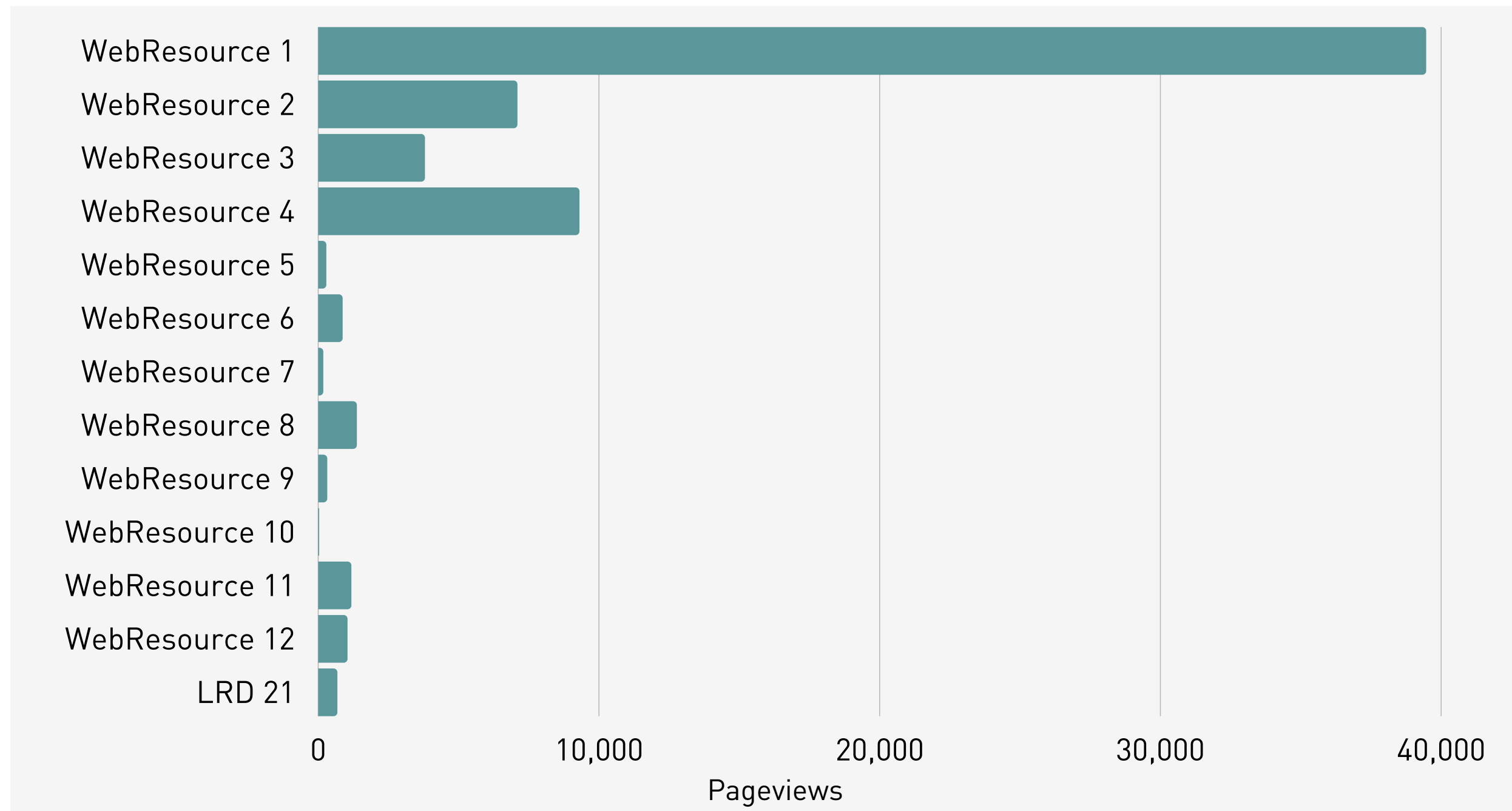
WEBRESOURCES

Pageviews in 2022

WebResources are an online product line that includes electronic resources, topical libraries, training videos, and alternative format research reports.

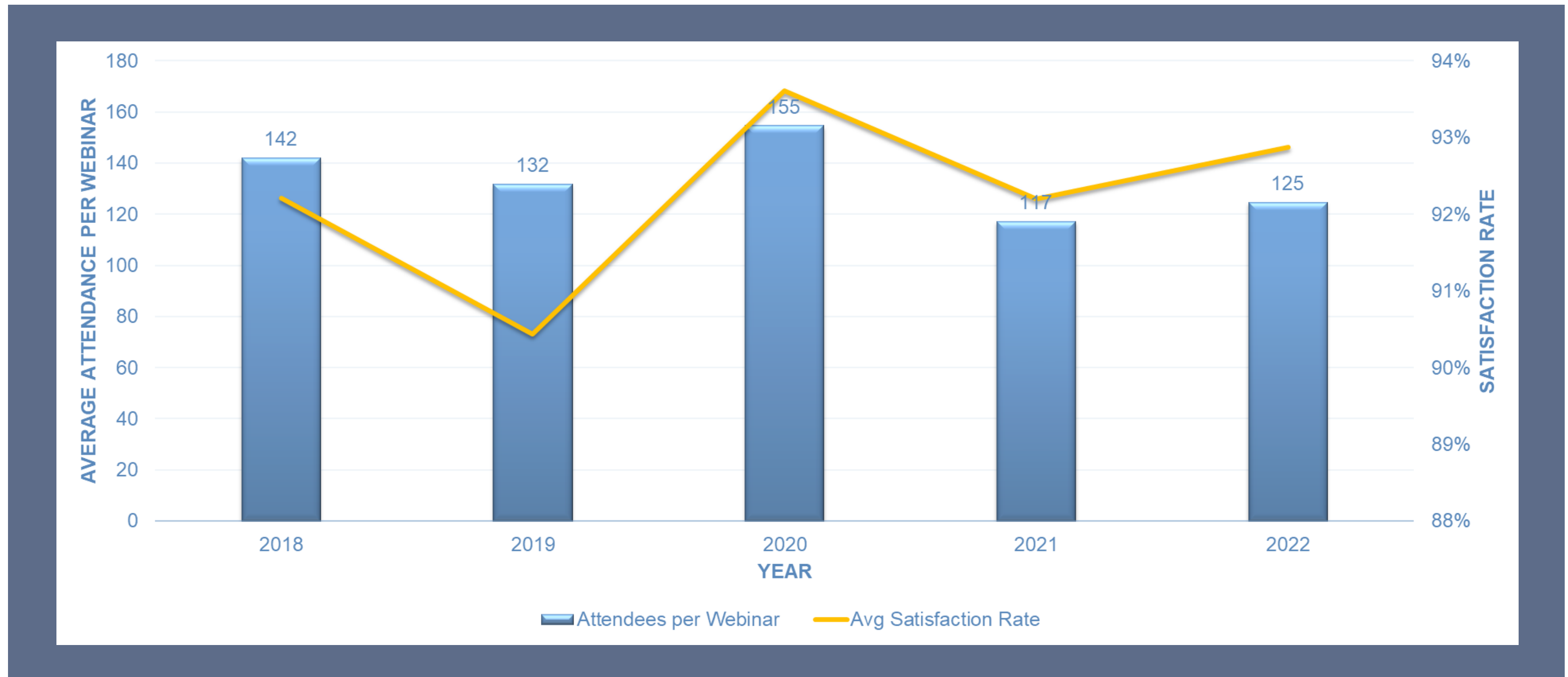
In 2022, *ACRP WebResource 1: Aligning Community Expectations with Airport Roles* received 39,450 views, the most of any WebResource.

ACRP WebResource 1 is a website that allows airports to connect with the community and its leaders on common issues, helping the reader to determine an airport's role in the national airspace context as well as the transportation industry.



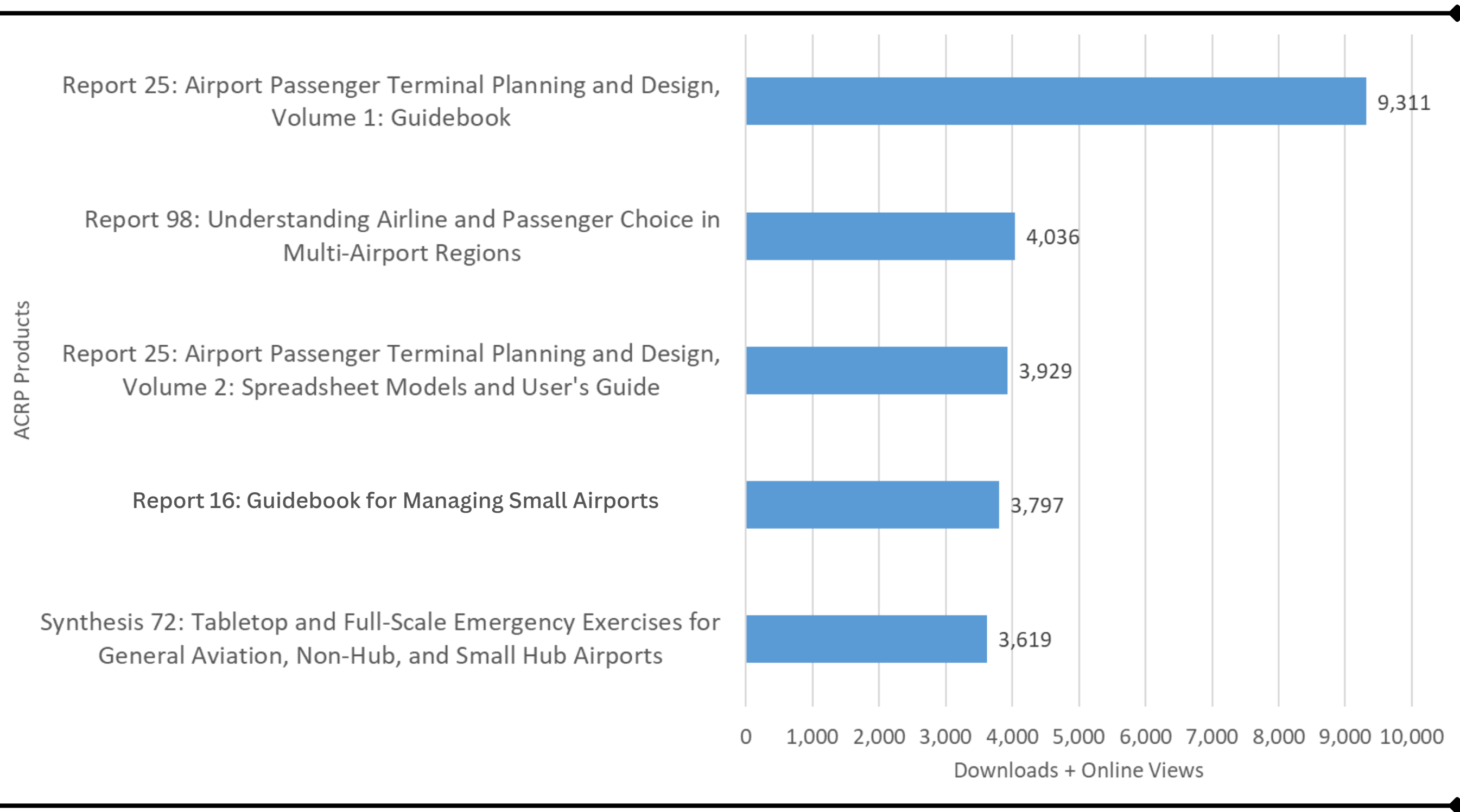
WEBINARS

ACRP Webinars highlight ACRP products and how to apply them practically. They are consistently well-attended with high satisfaction rates. The chart below shows the average number of attendees over all webinars annually over the last 5 years. The yellow line shows the average satisfaction rating for that year. Satisfaction ratings have continued to exceed 90 percent.



TOP 5 ACRP PRODUCTS OF 2022

By access (downloads + online views), these are the top 5 products of 2022. *Report 25, Volume 1* is consistently the most-accessed product.

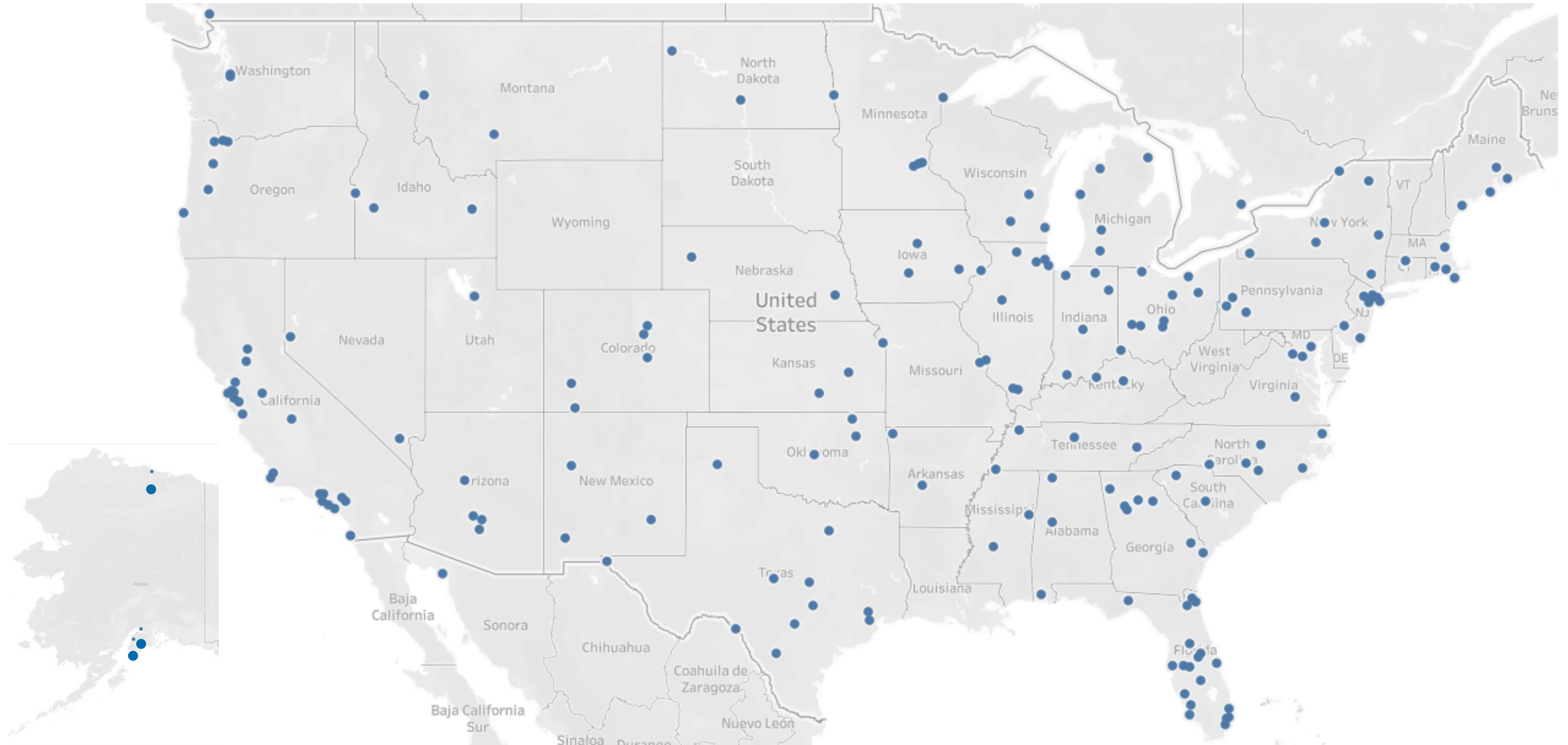


A wide-angle photograph of an airport tarmac during a vibrant sunset. The sky is filled with large, white and orange-tinted clouds. In the center-left, a red airplane is being serviced by ground crew and small white utility vehicles. To the right, a large airport terminal with a glass facade and a curved roof is visible. Several yellow taxis and a white van are parked near the terminal. People are walking on the tarmac, and a baggage cart is in the foreground. A large, semi-transparent white circle is overlaid in the center of the image, containing the text "ACRP Practitioners".

ACRP Practitioners

Which Airports Have Used ACRP Products?

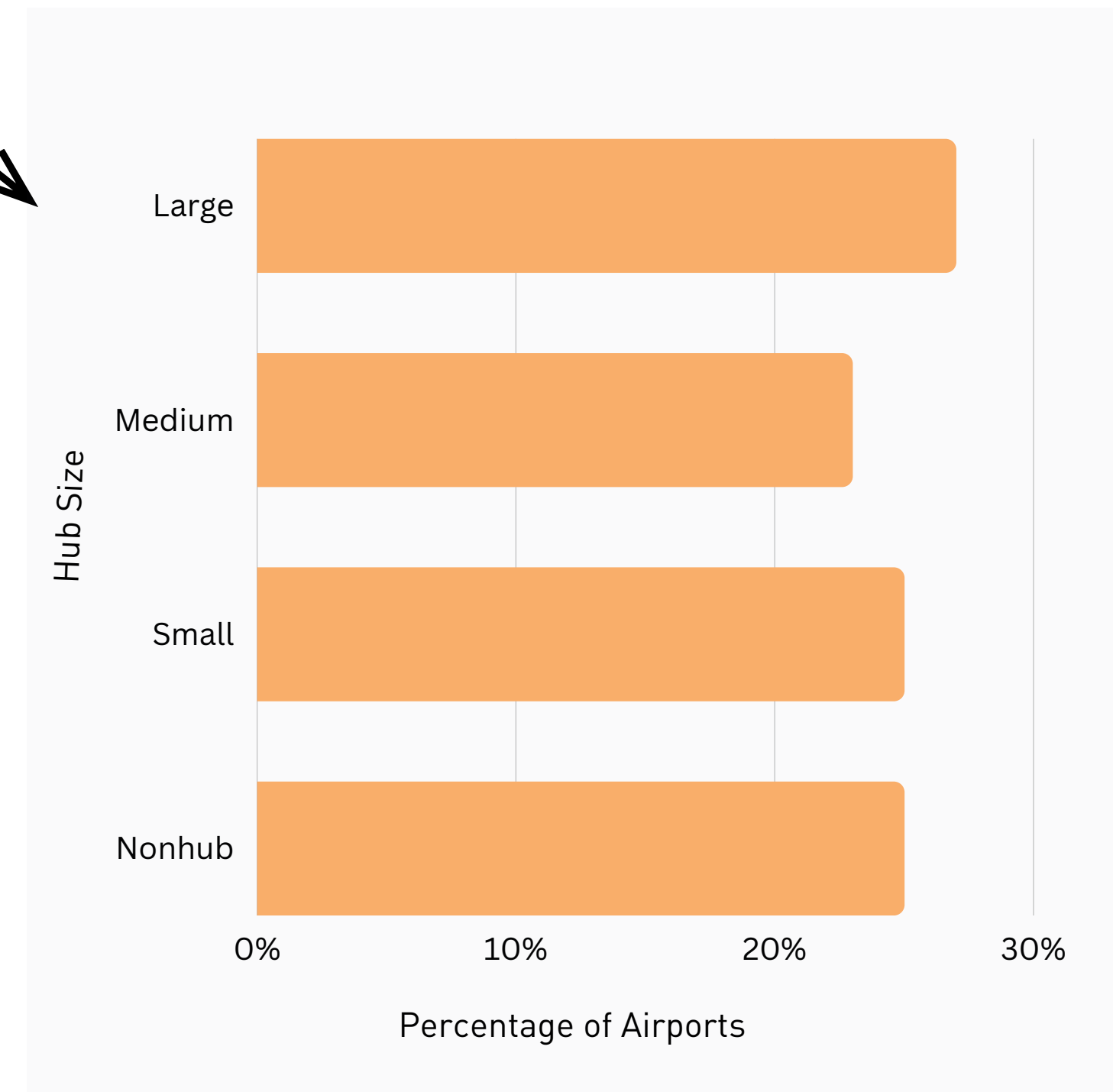
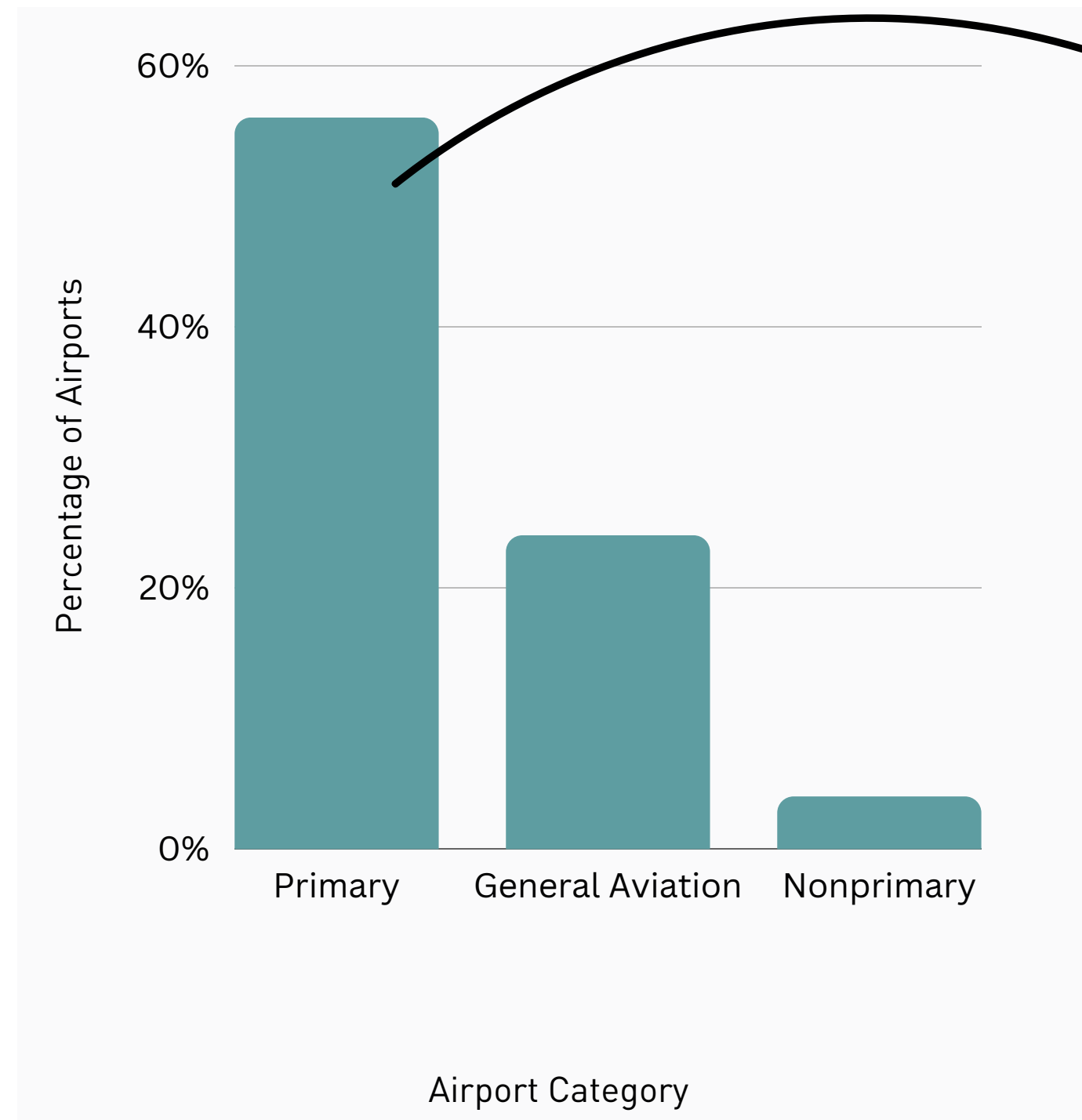
ACRP continues to document which airports are using our products to address the challenges they face. To date, nearly 300 have been identified. They are shown as blue dots on the map below.



*There were no airports in Hawaii identified.

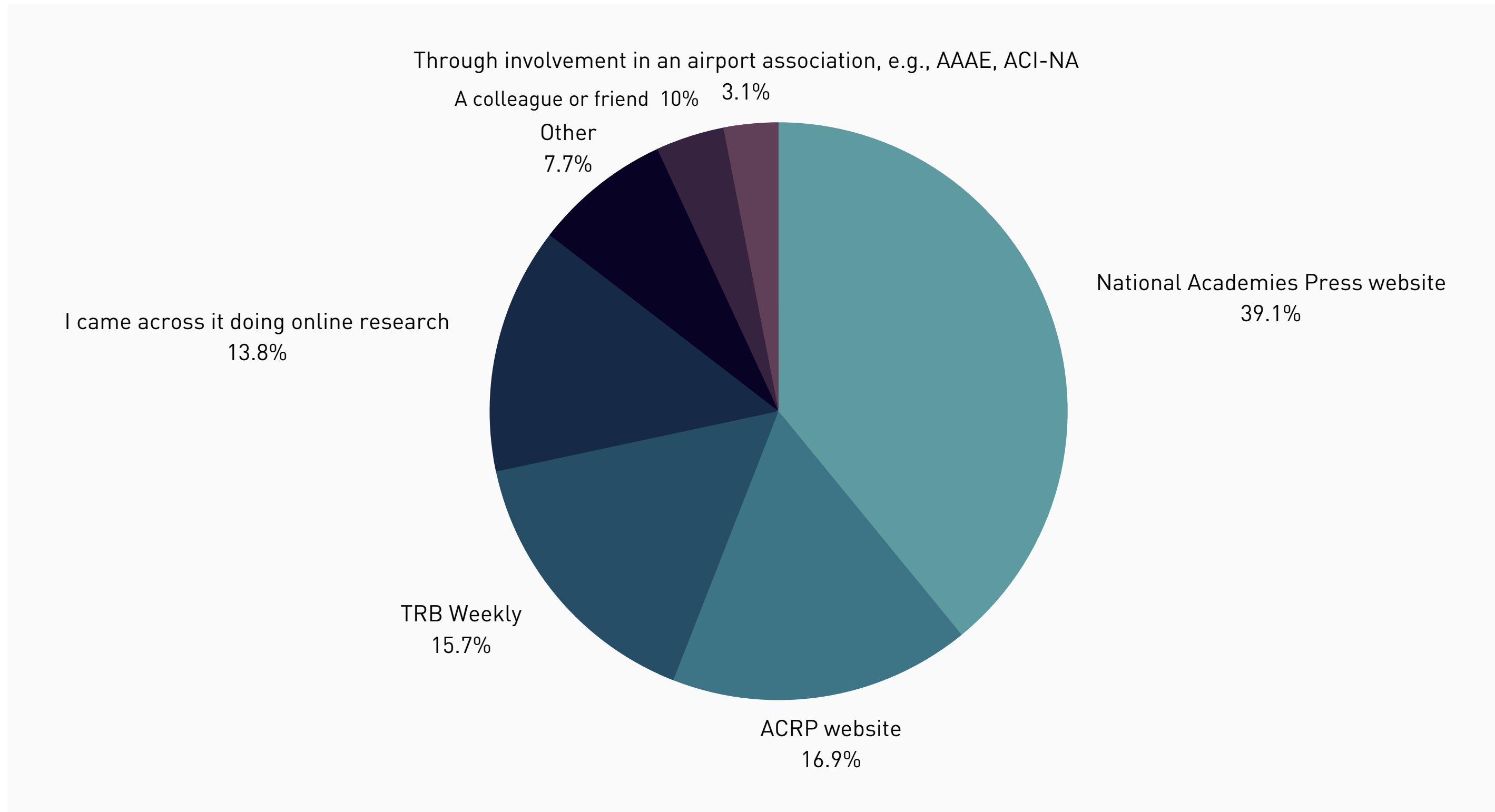
Airport Categories Using ACRP

Of the airports that reported using ACRP products, 56% are primary, commercial service airports. Included under the primary airport umbrella are hub sizes large, medium, small, and nonhub. Of the commercial service airports, large hub airports are documented as making up the largest portion of the user base (27%).



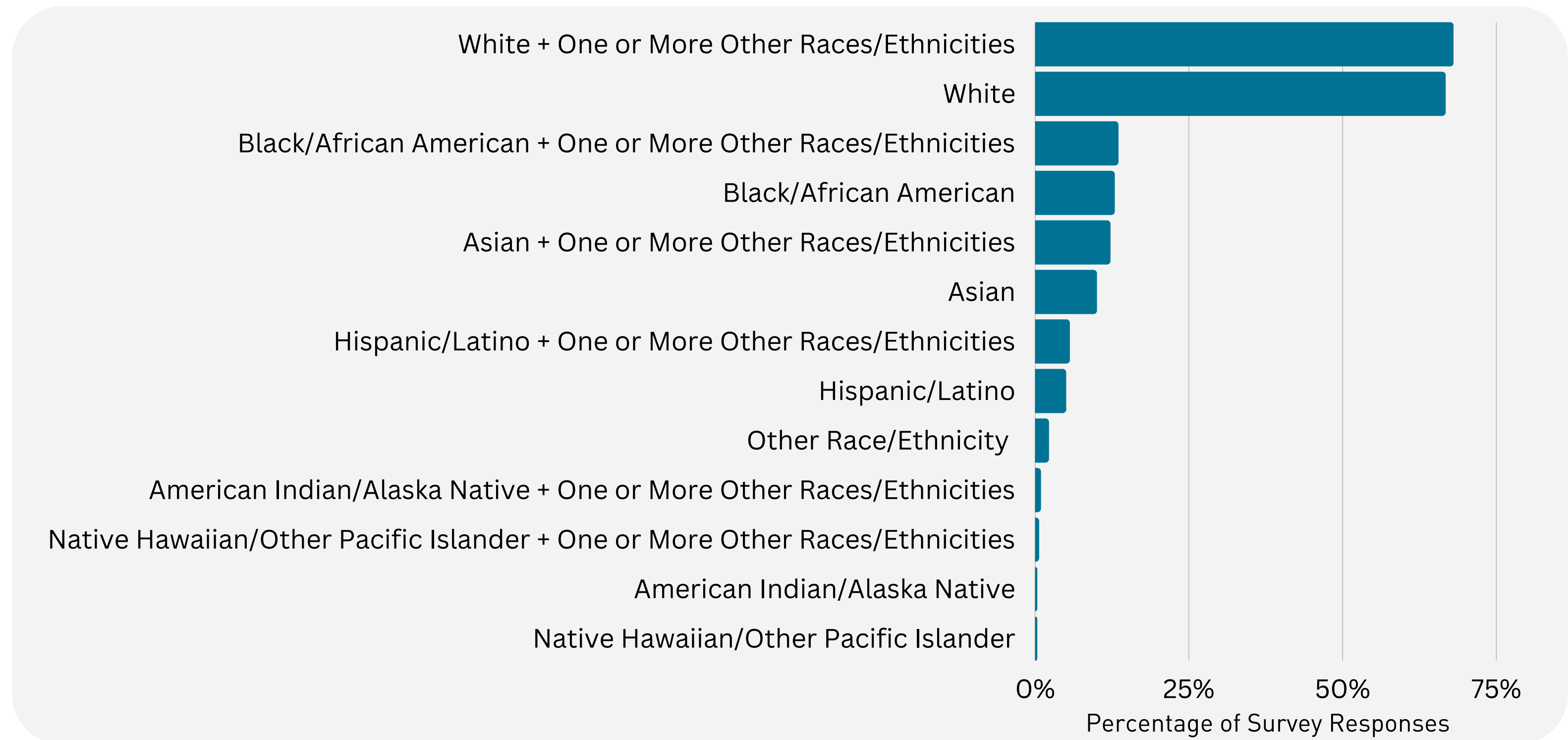
How Do Practitioners Find ACRP Products?

Respondents who downloaded ACRP products most frequently cited finding them through the National Academies Press website, followed by the ACRP website and *TRB Weekly*.



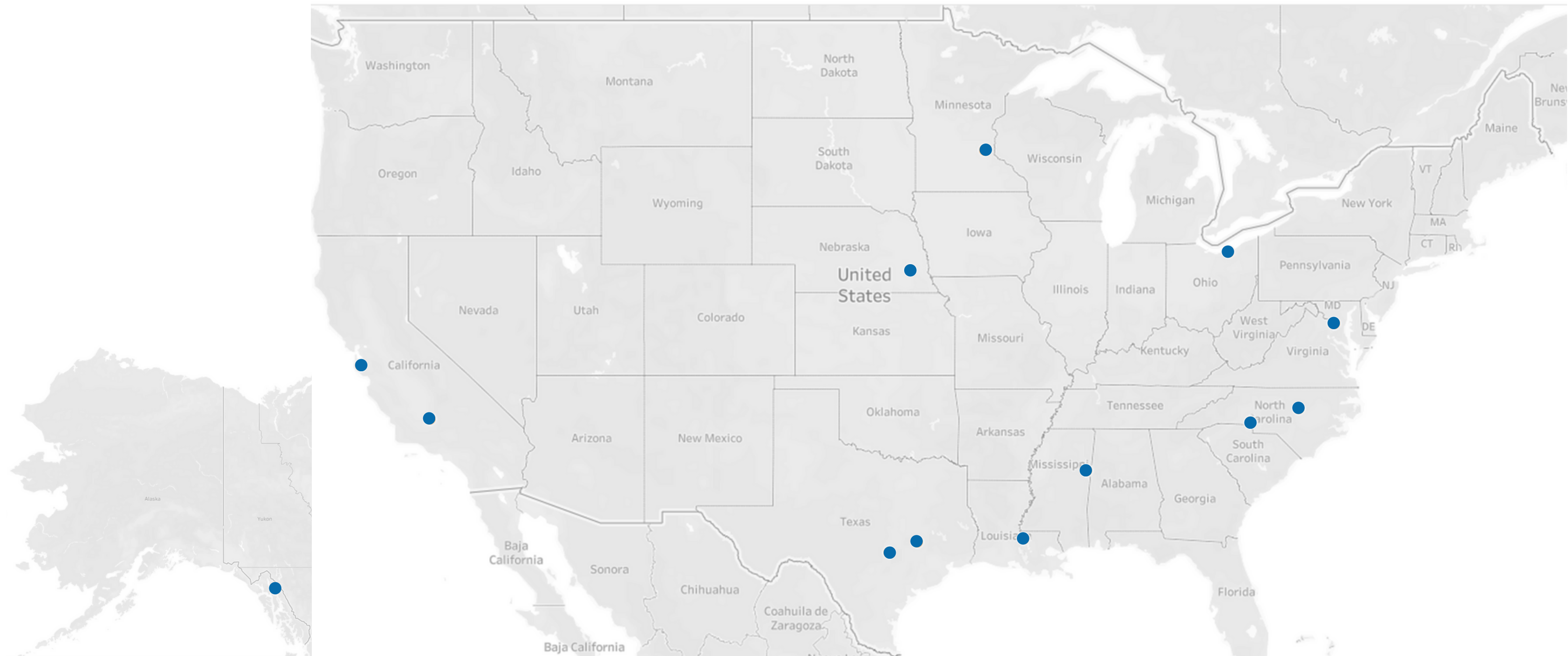
ACRP Panel Member Demographics

ACRP strives to ensure that our expert panels are as diverse as possible in terms of race, gender, geographic location, career stage, and industry. In 2022, a majority of panelists identified as either white or white plus one or more other races. ACRP continues to strengthen its diversity and inclusion program and pride itself on having many perspectives at the table.



ACRP Ambassadors Represent a Wide Geographic Range

ACRP Ambassadors are airport industry practitioners who voluntarily serve as ACRP's representatives, directly engaging with fellow airport practitioners and other stakeholders at industry conferences and events. ACRP strives to have Ambassadors in each of the 9 FAA regions of the country to help airport practitioners learn about ACRP products. Ambassador locations are represented on the map.



*There were no ambassadors in Hawaii.

A wide-angle photograph of an airport tarmac during a vibrant sunset. A large red airplane is the central focus, with ground crew members and service vehicles positioned around it. In the background, the airport terminal's glass facade reflects the golden light of the setting sun. The sky is filled with dramatic, colorful clouds. A semi-transparent white circle is overlaid in the center of the image, containing the text "ACRP Impact".

ACRP Impact

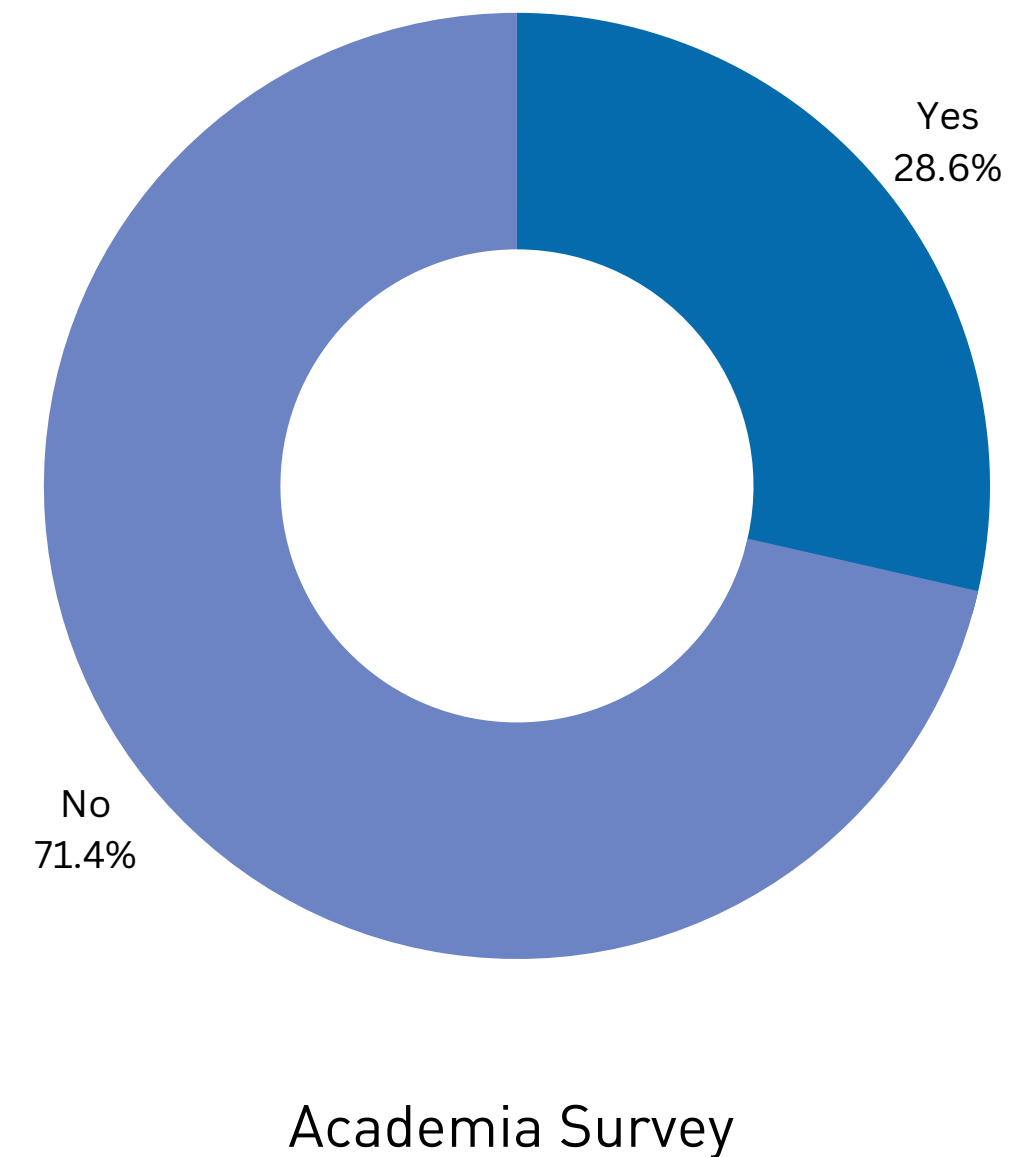
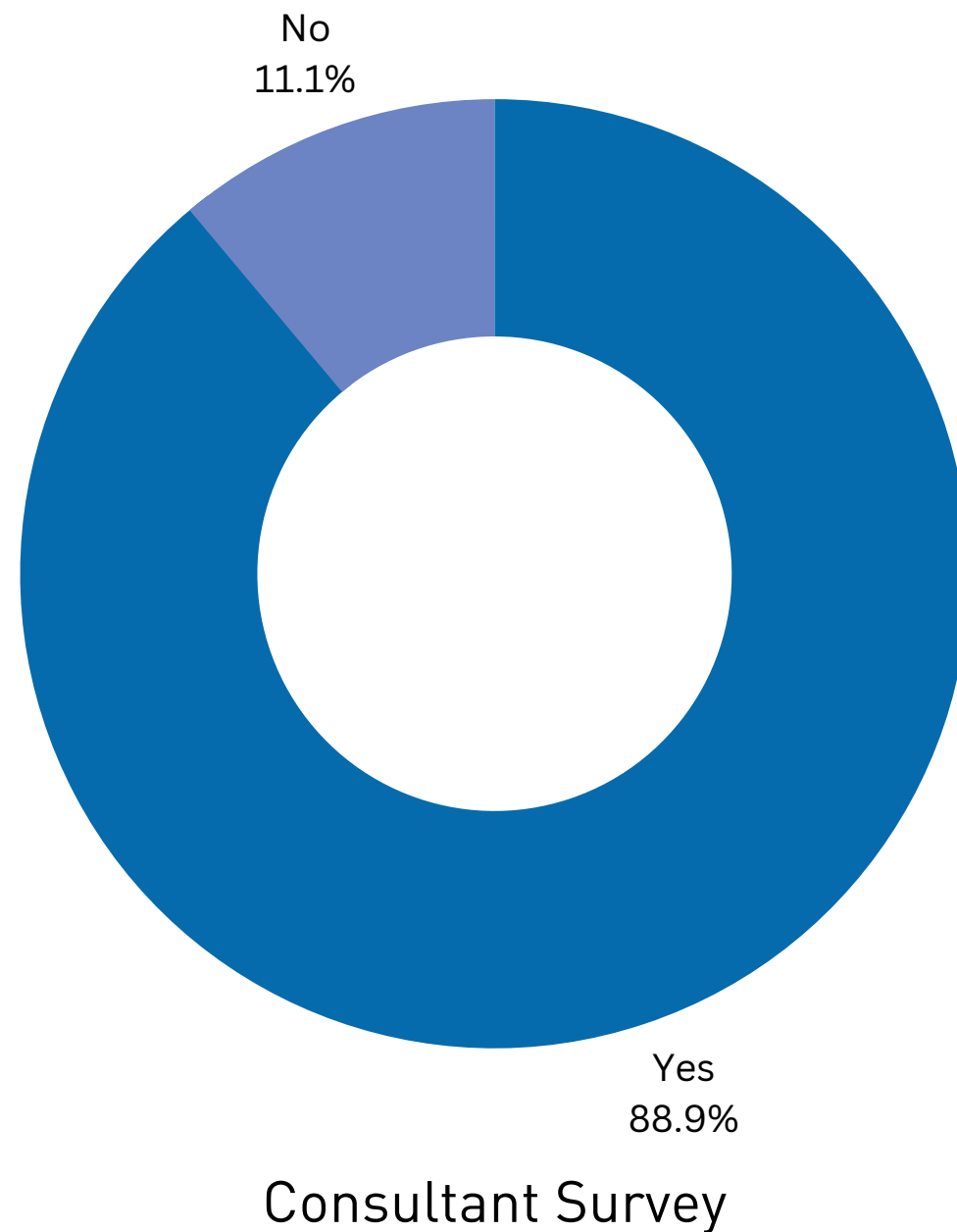
Why Are Practitioners Downloading ACRP Products?

Practitioners who downloaded ACRP products were asked why they do so. Most responses included learning about practices used by other airports, validating what they are already doing, and getting recommendations or making changes to guidance documents.



Awareness of ACRP

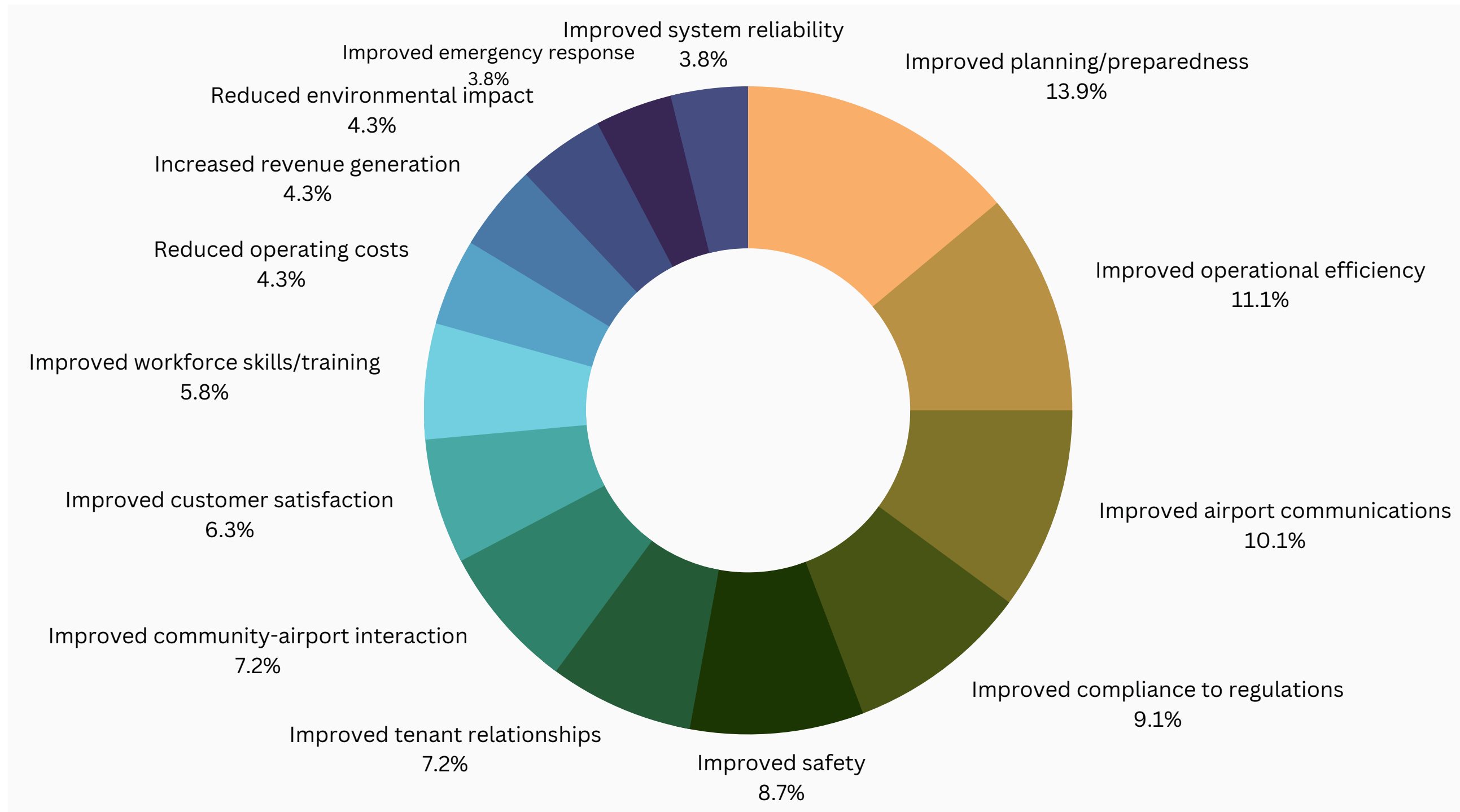
In 2022, ACRP surveyed two populations that use ACRP products: airport-related consultancies and academic programs. Of those that responded,* 89% of consultants were aware of ACRP compared with 29% of academic programs. Many consultants using ACRP products are implementing them at larger commercial airports that have greater funding. ACRP would like to see more academic programs using products and will continue to disseminate to that population.



*Note: Response rates for the consultant survey and academia survey were 3% and .8% , respectively. Because the response rates were low, these results are not representative of the larger populations. ACRP will continue to run these surveys each year in hopes of higher response rates.

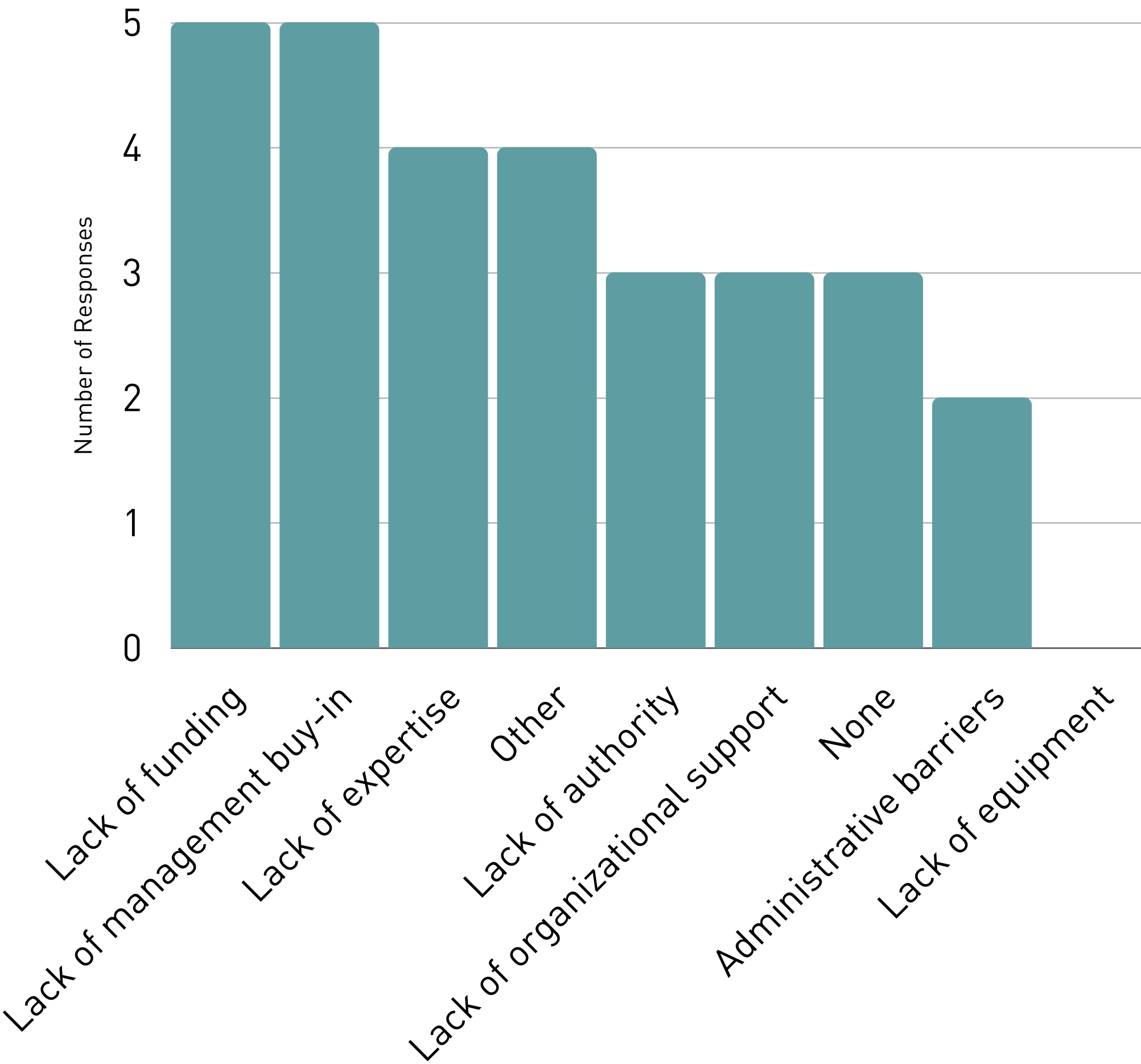
Benefits of ACRP

Practitioners who use ACRP products were asked how implementation had a beneficial impact on the airports in which they were applied. The most selected answers were improvements to airport planning and preparedness, operational efficiency, and airport communications.



Barriers to Applying ACRP Products

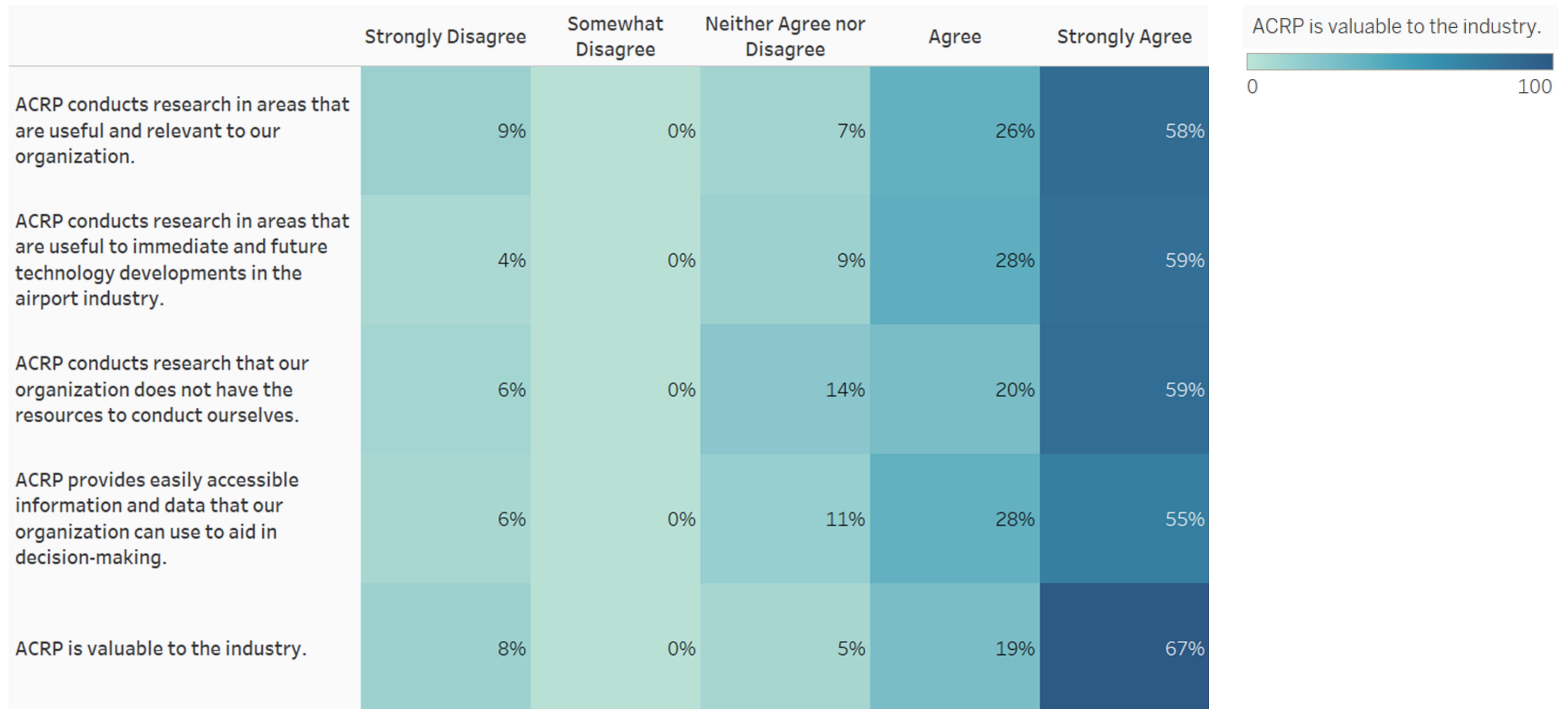
Airport-related consultancies were asked what barriers exist to applying ACRP research at airports. The most frequent responses were lack of funding tied with lack of management buy-in.



Note: Data collected from survey sent to airport-related consultancies.

ACRP Continues to Provide Value

ACRP asked practitioners who downloaded a product whether ACRP provided value to them in a number of areas. Most respondents agreed or strongly agreed that ACRP does provide value.



Note: Numbers were rounded to whole number

A wide-angle photograph of an airport tarmac during a vibrant sunset. A large red airplane is the central focus, with its tail fin and wings visible. Ground crew members in high-visibility vests are working around the aircraft. Several white ground support vehicles are parked nearby. In the background, other planes are visible on the tarmac. To the right, a modern airport terminal with a glass facade and a curved roof is visible. Yellow taxis and a white van are parked near the terminal. People are walking on the tarmac, some carrying luggage. The sky is filled with large, white clouds, and the sun is low on the horizon, creating a warm, golden glow. A large, semi-transparent white circle is overlaid on the center of the image, containing the text "Stories of Impact".

Stories of Impact



MICHAEL THARP
Iowa City Municipal Airport

Michael Tharp is the airport manager at Iowa City Municipal Airport in Iowa City, Iowa, and uses ACRP products regularly. He used *Synthesis 4: "Counting Aircraft Operations at Non-Towered Airports"* for a recent project updating his airport's Master Plan. *Synthesis 4* helped him understand how other jurisdictions and entities are calculating operations at different airports. When his team calculated the traffic count for the Master Plan update, they estimated roughly 36,000 operations per year, though

the FAA 5010 Airport Master Record database counted 19,000 for Iowa City Municipal. When you are looking at your own data sometimes it can get inflated. The airport commission discussed the differing numbers, and they thought about doing a physical traffic count. Tharp turned to ACRP to learn more about best practices for traffic counting, and to get a sense of how other airports are conducting them. He explains, "Of course there is the tried-and-true method, paying people to count traffic physically; there are watch monitors, pneumatic tubes, and recording systems to track engine noise. It just becomes a cost issue-all of those tools take a decent investment. Fortunately, we had a resource like this ACRP Synthesis that gave us methods that other airports have used to collect those counts so that we don't have to reinvent the wheel." Ultimately, Tharp and team decided not to go forward with the mentioned tools because of cost, but the Synthesis saved him from doing a lot of legwork in assessing the available options. He says, "ACRP provided scientifically backed options of what works in the field." Tharp is also using *ACRP Report 113: Guidebook on General Aviation Facility Planning* along with several other helpful ACRP products.



JOHN PASKELL
Salem Municipal Airport

John Paskell is the airport manager at Salem Municipal Airport in Salem, Oregon. He says he finds ACRP products helpful, particularly for an airport like his that is short-staffed. He cannot afford to pay consultants for projects or to learn best practices so he turns to ACRP's rich library of resources that provides valid research on pretty much any challenge or topic that may arise. He says it is great for understanding what other airports are doing. The two products he uses the most are *ACRP Report 47: Guidebook for Developing and Leasing Airport Property* and *ACRP Report 77: Guidebook for Developing General Aviation Airport Business Plans*. He explains more:

"These two products are sitting on my desk and each have two dozen sticky notes from when I was using them for projects, helpful for later reference. These products are important to me because when I got to Salem Airport

we did not have a property leasing program, written lease policy, or template and I had to create them from scratch. Report 47 helped me do that-I read through the entire report, plucked out certain language or concepts that we could institute into our plan, and I was able to reference the valid source it came from in the document. This made it more credible, showing I didn't come up with it on the fly.

"Several years later we were putting together a new strategic business plan and used Report 77. This provided us with a foundation to start upon-it defined strategic business plans for airports, what elements they possess, how they apply to our airport as general aviation airports are different sizes, etc. Understanding that helped me create a framework for how it would be laid out. Then we put the meat on the bones, specific to our airport! Those were my first two deep forays into using ACRP research but since have added many publications to my shelves and have saved them on my computer."

John has been familiar with the program for a long time, he's been working in the airport industry for 25 years, but was never in a place where he had to develop these programs himself. When he began at Salem 11 years ago and was handed his duties, he remembered that ACRP's library of resources was there to help. He stays abreast of industry news with report updates as they come out through email reminders. He also receives recommendations for ACRP products from larger commercial airports that are more familiar with the program than most small GA airports, he says.



SHARLETTE WRIGHT
Mid-Way Regional Airport

Sharlette Wright is the airport manager at Mid-Way Regional Airport in Midlothian, Texas and says it is second nature to search for answers using ACRP research. She said she has used *ACRP Report 16: Guidebook for Managing Small Airports*, *ACRP Report 77: Guidebook for Developing General Aviation Airport Business Plans*, and *ACRP Synthesis 39: Airport Wildlife Population Management*. She says they are very helpful, especially when you are given the airport manager position without much training. She relied on them to learn the ropes. She also says the reports are helpful for marketing and promoting her airport to the community. Wright states, “ACRP provides a library of resources that take away the need to hire consultants or track people down for answers when you can just look them up yourself.”

GENE OLSON

Metropolitan Airport Authority of Peoria

Gene Olson is the director of airports at the Metropolitan Airport Authority of Peoria in Peoria, Illinois. He served on the panel for *ACRP Report 58: Airport Industry Familiarization and Training for Part-Time Airport Policy Makers*. Olson says he has used the report on an ongoing basis throughout his career. He worked as an aviation planner for a planning commission in St. Louis, for a consulting firm in Indianapolis doing airport site selection studies, environmental projects, airport layoff plans, and master plans. He then worked for the state of Indiana in airport planning, focusing on many different issues. At the Aviation Association of Indiana annual conference, he conducted side-bar training sessions for airport board members, with a panel of FAA and state staff, senior airport board members, and consultants. These sessions were to teach airport board members about the job and how funding works. Olson then moved to Peoria with his current role and has a 9-member board with 5-year terms. For training new commissioners, he provided the package of information used at the Aviation Association annual meeting as well as *ACRP Report 58*. He sits down with new board members and provides background on how the board functions then gives them a tour of the airport. The ACRP report is homework to read and allows them to have a good resource if an issue arises in the future.

Jaime Giandomenico
Ocean City Municipal Airport

Jaime Giandomenico is the airport manager at Ocean City Municipal Airport in Ocean City, Maryland. He says his team implemented guidance and recommendations in day-to-day management of wildlife activity from *ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports*. He states, “Runway 32 RSA is adjacent to Assawoman Bay, so seabirds are something we constantly have to handle. Not only do concentrations of them in flight pose a hazard, but the feeding habits of the seabirds can leave runways and taxiways littered with shells and organic debris. We have found the ACRP suggestions on using decoys (coyotes in this case) and effigies very effective. It has substantially reduced our need to elevate to lethal reinforcement.”

Thank you for your interest in ACRP's impact!

If you are interested in engaging with ACRP or contributing to our ongoing impact analysis, please contact ACRP Program Manager Marci Greenberger.
mgreenberger@nas.edu

Written by ACRP Impact Analyst
Sarah Kosling.
skosling@nas.edu

