The FAA's Center of Excellence for UAS Research

ASSURE

Alliance for System Safety of UAS through Research Excellence

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Final Report
ASSURE A28: Disaster Preparedness and Response Using UAS
Appendix A: Questionnaires, Surveys, and Results

June 1, 2022

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1 APPENDIX A - QUESTIONNAIRES, SURVEYS AND RESULTS

1.1 Questionnaire

The following includes the survey flow, questions, question structure and branching logic within the survey. Note that each "**Page Break**" indicates a new screen in the web browser for the respondent.

Survey Flow

Block 1 (Introduction Block): Agency use of UAS? (8 Questions)

Branch result of question 1.8:

Yes Branch: If "Does your organization have a UAS program?" → Yes Is Selected

Block 2: Yes-drones are used (8 Questions)

Block 3: Operations (3 Questions)

Block 4: Organizational Barriers (3 Questions)

Block 5: Data, Equity and Privacy (3 Questions)

Block 6: Training and Certification (5 Questions)

Block 7: Human Factors (5 Questions)

Block 8: Contact Information for Branch 1 (3 Questions)

End Survey

No Branch: If "Does your organization have a UAS program?" → Not sure Is Selected

Or "Does your organization have a UAS program?" → No Is Selected

Block 9: Why you don't use UAS (3 Questions)

Block 10: Contact Info for Branch 2 (2 Questions)

End Survey

Start of Block: Agency use of UAS?

Block 1, Question 1: Survey introduction, Question type is “Text/Graphic”. Within the survey, “Research Information Sheet” is a hyperlink that takes the respondent to the document in a new browser window.

The Federal Aviation Administration’s (FAA’s) Center for Excellence for Unmanned Aircraft System (UAS) Research is conducting this survey to determine the extent of the use of aircraft (manned and unmanned) in disaster response. Your responses will help inform best practices, policies, procedures, and coordination. Thank you for your help with this effort.

For more information on the study, including risks regarding personal information as a participant, click: Research Information Sheet.

Click "Next" to begin.

Page Break

Block 1, Question 2: Question type is “Multiple choice” in list format with one answer allowed. Response is forced. Selecting “Other” enables text entry in a text box.

What type of agency do you work for?

1. Federal/National Government

2. State agency

3. Local agency

4. Private sector

5. Academic

6. Non-profit

7. Other (Please specify in the box below)

_____

Page Break

Block 1, Question 3: Question type is “Multiple choice” in a dropdown list format with one answer allowed. The 50 states are listed in alphabetical order. Response is forced.

Q1.3 What State is your office located in?

▼ Alabama ... Wyoming

Page Break

Block 1, Question 4: Question type is “Form field”. Respondent is allowed to leave blank.

Q1.4 Please provide your name and position title if you're willing to do so. Otherwise, click next.

Name _____

Position/Title _____

Page Break

Block 1, Question 5: *Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced.*

Q1.5 In the last 5 years, how often, if ever, has your organization responded to disasters using occupied/manned aircraft?

1. Never
2. Less than once per year
3. Once per year
4. Multiple times per year
5. Not Sure

Page Break

Block 1, Question 6: Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced.

Q1.6 How often does your organization participate in multi-agency disaster response training exercises that involve airspace coordination?

1. Never
2. Less than once per year
3. Once per year
4. Multiple times per year
5. Not Sure

Page Break

Block 1, Question 7: Question type is "Matrix table", 5-point Likert scale with an additional "Not Sure" option.

Q1.7 How do you see your organization's use of the following platforms for disaster response changing over the next five years?

	Considerably Decrease	Somewhat Decrease	No Change	Somewhat Increase	Considerably Increase	Not Sure
Occupied/manned aircraft	○	○	○	○	○	○
Satellite	○	○	○	○	○	○
Unmanned Aircraft Systems (UAS)	○	○	○	○	○	○

Page Break

Block 1, Question 8: Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced. This question directs the respondent to the appropriate branch.

Q1.8
Does your organization have a UAS program?
** Having a UAS Program means that your agency has dedicated staff whose role is, at least partially, to monitor and develop the use of UAS for agency purposes.*

1. Yes

2. Not sure

3. No

End of Block: Agency use of UAS?

Yes Branch - Start of Block: Yes-drones are used

Block 2, Question 1: Question type is "Multiple choice" in list format. Multiple answers are allowed except for the choice "Not Sure", which is an exclusive answer. Response is forced.

Q2.1 What does your UAS program consist of? Select all that apply.

1. Have Certified UAS pilots

2. Have UAS data managers/analysts

3. Own UAS platforms and sensors

4. Have UAS policies and procedures

5. Not Sure

Page Break

Block 2, Question 2: Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced.

Q2.2 What implementation stage is your organization at with using UAS specifically for disaster response?

1. No action

2. Discussing (Support/funding not yet secured)

3. Planning (Support/funding secured, no purchases made, or pilots trained)

4. Implementing (Some pilots or aircraft acquired, not yet responded to a disaster)

5. Operating (HAVE PREVIOUSLY responded to a disaster with UAS)

6. Not sure

Page Break

Block 2, Question 3: Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced.

Q2.3 In the last 5 years, how often has your organization responded to disasters using UAS?

1. Never

2. Less than once per year

3. Once per year

4. Multiple times per year

5. Our UAS program is not used for disaster response

6. Not Sure

Page Break

Block 2, Question 4: Question type is "Multiple choice", in list format. Multiple answers are allowed except for the choice "Not Sure", which is an exclusive answer. Response is forced.

Q2.4 Which platforms does your organization currently use for disasters? Select all that apply.

1. Occupied/manned aircraft

2. Satellite

3. UAS

4. Not Sure

Page Break

Block 2, Question 5: Question type is "Multiple choice", in list format. Multiple answers are allowed except for the choice "Not Sure", which is an exclusive answer. Response is forced.

Q2.5 What organizations have you coordinated with during a disaster? Select all that apply.

1. Federal/National Government

2. State Government

3. Local Government

4. Private Sector

5. Non-profit

6. Academic

7. Not Sure

Page Break

Block 2, Question 6: Question type is "Multiple choice" in list format. One answer is allowed, and the response is forced.

Q2.6 What types of emergency preparedness program (EPP) or emergency response plan (ERP) does your agency have that utilizes UAS?

1. No procedures in place

2. Informal procedures in place with minimal documentation

3. Procedures in place with documentation, but need more development

4. Detailed procedures in place with documentation

5. Detailed procedures in place with documentation and training

6. Not Sure

Page Break

Display this question if any of the following are selected from Q2.6: What types of emergency preparedness program (EPP) or emergency response plan (ERP) does your agency have that utilizes UAS?

If 2. Informal procedures in place with minimal documentation

Or 3. Procedures in place with documentation, but need more development

Or 4. Detailed procedures in place with documentation

Or 5. Detailed procedures in place with documentation and training

Block 2, Question 7: Question type is "Multiple choice" in list format. One answer is allowed and the response is forced.

Q2.7 Is your agency willing and able to share your EPP/ERP procedures with this project?

1. Yes

2. No

3. Not Sure

Page Break

Display this question if the following is selected from Q2.7: Is your agency willing and able to share your EPP/ERP procedures with this project?

If 1. Yes

Block 2, Question 8: Question type is "File upload". Even if displayed, this question is not forced. The respondent can upload documentation pertinent to the study if they choose.

Q2.8 Please upload any written documentation your organization has and is willing to share (including plans, EPP/ERP procedures, incident reports).
* Click next if you don't have access on your device.

End of Block: Yes-drones are used

Start of Block: Operations

Block 3, Question 1: Question type is "Multiple choice", in list format. Multiple answers are allowed except for the choice "Don't know", which is an exclusive answer. Response is forced.

Q3.1 Under which FAA regulations does your organization operate UAS?

1. Part 91 Certificate of Waiver and Authorization (COA)

2. Part 107 Remote Pilot Certificates

3. Other (Please describe in the box below)

4. Don't know

Page Break

Block 3, Question 2: Question type is “Multiple choice” in list format. One answer is allowed, and the response is forced.

Q3.2 Will Remote ID enable your organization to operate UAS more safely in the national airspace during a disaster?

1. Yes

2. Maybe

3. No

4. Not familiar with Remote ID

5. Don't know

Page Break

Block 3, Question 3: Question type is “Multiple choice” in list format. One answer is allowed, and the response is forced.

Q3.3 Does your organization have a person responsible for coordinating the airspace during a disaster?

1. Yes

2. No

3. Unsure

End of Block: Operations

Start of Block: Organizational Barriers

Block 4, Question 1: Question type is “Matrix table” with a 1-5 Likert scale and 8 statements. A comment box is provided under “Other” to allow for any additional input.

Q4.1 Rank the level at which the following barriers ***within your organization*** hinder the employment of UAS for disaster response on a scale of 1 (none to minimal) to 5 (significant). Please use the comment box to provide additional information.

	1	2	3	4	5
Buy-in from leadership	○	○	○	○	○
Understanding of value of	○	○	○	○	○

UAS within organization					
Funding and cost	○	○	○	○	○
Dedicated staffing	○	○	○	○	○
Training and licensing	○	○	○	○	○
Safety concerns	○	○	○	○	○
Internal data collection and sharing standards	○	○	○	○	○
Other (specify in the box below)	○	○	○	○	○

Page Break

Block 4, Question 2: Question type is "Matrix table" with a 1-5 Likert scale and 10 statements. A comment box is provided under "Other" to allow for any additional input.

Q4.2 Rank the level which the following barriers ***outside your organization*** hinder the employment of UAS for disaster response on a scale of 1 (none to minimal) to 5 (significant). Please use the comment box to provide additional information.

	1	2	3	4	5
Federal regulations	○	○	○	○	○
State or local regulations	○	○	○	○	○
Restrictions on country-of-origin drone purchases	○	○	○	○	○
Understanding of value of UAS outside the organization	○	○	○	○	○
Risk of UAS-related crashes	○	○	○	○	○
Airspace coordination	○	○	○	○	○

Competency of other organizations to operate in the airspace	○	○	○	○	○
Data collection and sharing standards	○	○	○	○	○
No current defined need or application	○	○	○	○	○
Other (specify in the box below)	○	○	○	○	○

Page Break

Block 4, Question 3: Question type is "Text entry" with essay text box. Response is requested if left blank, but not forced.

Q4.3 What could the federal government do to help your organization more rapidly integrate UAS into disaster response?

_____

_____

End of Block: Organizational Barriers

Start of Block: Data, Equity and Privacy

Block 5, Question 1: Question type is "Text entry" with essay text box. Response is requested if left blank, but not forced.

Q5.1 During a disaster how do you prioritize areas for UAS data acquisition?

_____

_____

Page Break

Block 5, Question 2: Question type is "Multiple choice", in list format. Multiple answers are allowed. Response is forced.

Q5.2 Which of the follow are considered sensitive portions of your UAS data that would impact data sharing?

1. Faces
2. Location signs like store names
3. Location numbers like house numbers
4. Object numbers like license plates
5. Personal items like clothing and furniture debris
6. Culturally significant sites
7. Other (specify in the box below) _____

Page Break

Block 5, Question 3: Question type is “Matrix table” with a 1-5 Likert scale and 4 statements.

Q5.3
Rank the following from 1 (strongly disagree) to 5 (strongly agree).
My organization has...

	1	2	3	4	5
Robust communications capabilities enabling live streaming of UAS field data.	○	○	○	○	○
Robust data storage capabilities for UAS data (e.g., imagery and derived products).	○	○	○	○	○
Robust data dissemination capabilities that enable UAS data sharing throughout the organization.	○	○	○	○	○
The ability to maintain all flight logs.	○	○	○	○	○

End of Block: Data, Equity and Privacy

Start of Block: Training and Certification

Block 6, Question 1: Question type is “Multiple choice”, in list format but using a Likert scale. Response is forced.

Q6.1 How well do you feel your organization understands the current regulatory framework for UAS operation (1 to 5, poor to very well)?
1

2

3

4

5

Page Break

Block 6, Question 2: Question type is “Rank order” with radio buttons. There are 7 choices to rank 1 through 7.

Q6.2 Rank the types of training that would help your organization better respond to disasters using UAS technology. Rank in order of 1 as most important to 7 as least important.
** You can leave "other" unanswered if you don't enter any text.*

_____ Flight operations

_____ Pilot proficiency

_____ Data processing

_____ Data analytics

_____ Advanced sensors - LiDAR, thermal, multispectral

_____ Specific mission profiles (e.g. search and rescue)

_____ Other:

Page Break

Block 6, Question 3: Question type is “Multiple choice”, in list format. Multiple answers are allowed.

Q6.3 Which certifications would allow your organization to trust that another organization could operate UAS during a disaster safely and effectively?

1. Flight operations

2. Pilot proficiency

3. Data processing

4. Data analytics

5. Advanced sensors - LiDAR, thermal, multispectral

6. Specific mission profiles (e.g. search and rescue)

7. Other (specify in the box below)

_____

Page Break

Block 6, Question 4: Question type is “Multiple choice”, in list format. One answer is allowed. Response is forced.

Q6.4 Would your organization find it valuable to participate in a disaster response exercise that incorporates UAS?

1. Yes

2. No

3. Unsure

Page Break

Block 6, Question 5: Question type is “Multiple choice”, in list format. One answer is allowed. Response is forced.

Q6.5 Is finding funding to participate in a disaster response exercise that incorporates UAS a concern for your organization?

1. Yes, most of the time

2. Sometimes

3. No, usually not

4. No, haven't been asked to participate

5. Unsure

End of Block: Training and Certification

Start of Block: Human Factors

Block 7, Question 1: Question type is "Multiple choice", in list format. One answer is allowed. Response is forced.

Q7.1 Has operator fatigue or lack of sleep ever impacted UAS flight operations for you?

1. Yes

2. No

3. Unsure/Do not know

Page Break

Display this question if the following is selected from Q7.1: Has operator fatigue or lack of sleep ever impacted UAS flight operations for you?

If 1. Yes

Block 7, Question 2: Question type is "Text entry" with essay text box.

Q7.2 Please provide additional information around the circumstances for operator fatigue/lack of sleep impacting UAS flight operations.

_____

_____

Page Break

Block 7, Question 3: Question type is "Multiple choice" using a Likert scale and in list format. One answer is allowed. Response is forced.

Q7.3 What is your agency's comfort level with allowing artificial intelligence, such as the ability to track moving objects, to identify damage, or automatically collect more information of the damaged area, or to replace the human carrying out the operational objectives, from 1 (not at all comfortable) to 5 (very comfortable)?

1

2

3

4

5

Page Break

Block 7, Question 4: Question type is “Text entry” with essay text box.

Q7.4 What, if any, concerns or opportunities does your organization see with respect to incorporating Artificial Intelligence or autonomy into UAS operations?

_____

_____

Page Break

Block 7, Question 5: Question type is “Multiple choice” in list format. Multiple answers are allowed.

Q7.5 What sources are helpful to keep your organization to up-to-date on UAS regulations?

1. FAA website
2. FAA communications/e-mails
3. Social media
4. UAS rep within my organization
5. Conferences
6. Coordinating bodies
7. Professional organization or society
8. Word of mouth
9. Other (specify) _____

End of Block: Human Factors

Start of Block: Contact Information for Branch 1

Block 8, Question 1: Question type is “Multiple choice” in list format. Multiple answers are allowed except for the choice “No”, which is an exclusive answer. Response is requested.

Q8.1 Would you be willing to provide contact information, for yourself or someone else at your agency, so that we can follow up with questions about your agency's intended use of aircraft?
** You can select both yes statements.*

1. Yes - Myself
2. Yes - Another contact
3. No

Page Break

Display question if the following is selected from Q8.1: Would you be willing to provide contact information, for yourself or someone else at your agency?

1. Yes - Myself

Block 8, Question 2: Question type is “Form field”. For both the email field and phone field, field validation is implemented to ensure valid email and United States phone numbers are entered. The respondent can still leave the field blank, but response is requested.

Q8.2 Please provide your personal contact information.

Email _____

Phone _____

Page Break

Display question if the following is selected from Q8.1: Would you be willing to provide contact information, for yourself or someone else at your agency?

1. Yes - Another contact

Block 8, Question 3: Question type is “Form field”. For the email field and phone field, field validation is implemented to ensure valid email and United States phone numbers are entered. “Name” and “Position/Title” do not have validation. The respondent can still leave any fields blank, but response is requested.

Q8.3 Please provide contact information for another contact.

Name _____

Position/Title _____

Email _____

Phone _____

End of Block: Contact Information for Branch 1

No Branch - Start of Block: Why you don't use UAS

Block 9, Question 1: Question type is “Multiple choice” in list format. Multiple answers are allowed except for the choice “Unsure”, which is an exclusive answer. Response is forced.

Q9.1 What organizations have you coordinated with during a disaster?

1. Federal/National Government

2. State Government

3. Local Government

4. Private Sector

5. Non-profit

6. Academic

7. Unsure

Page Break

Block 9, Question 2: Question type is “Multiple choice” in list format. Multiple answers are allowed except for the choice “Unsure”, which is an exclusive answer. Response is forced.

Q9.2 Why doesn't your organization use UAS? Select all that apply.

1. Regulatory Burdens

2. Staffing

3. Training Requirements

4. Expense

5. No current defined need or application

6. Other (Please answer below)

_____

Page Break

Block 9, Question 3: Question type is “Multiple choice” in list format. One answer is allowed. Response is forced.

Q9.3 How often does your agency use UAS data collected from other entities?

1. Always

2. Most of the time

3. About half the time

4. Sometimes

5. Never

End of Block: Why you don't use UAS

Start of Block: Contact Info for Branch 2

Block 10, Question 1: Question type is “Multiple choice” in list format. One answer is allowed. Response is forced.

Q10.1 Would you be willing to provide contact information for someone at your agency or a partner agency better suited to answer questions about UAS?
**If no, please share survey link with appropriate contact/s*
1. Yes

2. No

Page Break

Display question if the following is selected from Q10.1: Would you be willing to provide contact information for someone at your agency or a partner agency better suited to answer questions about UAS?

1.Yes

Block 10, Question 2: Question type is “Form field”. For the email field and phone field, field validation is implemented to ensure valid email and United States phone numbers are entered.

“Name” does not have validation. The respondent can still leave any fields blank, but response is requested.

Q10.2 Please provide contact information for this individual.

Name _____

Email _____

Phone _____

End of Block: Contact Info for Branch 2

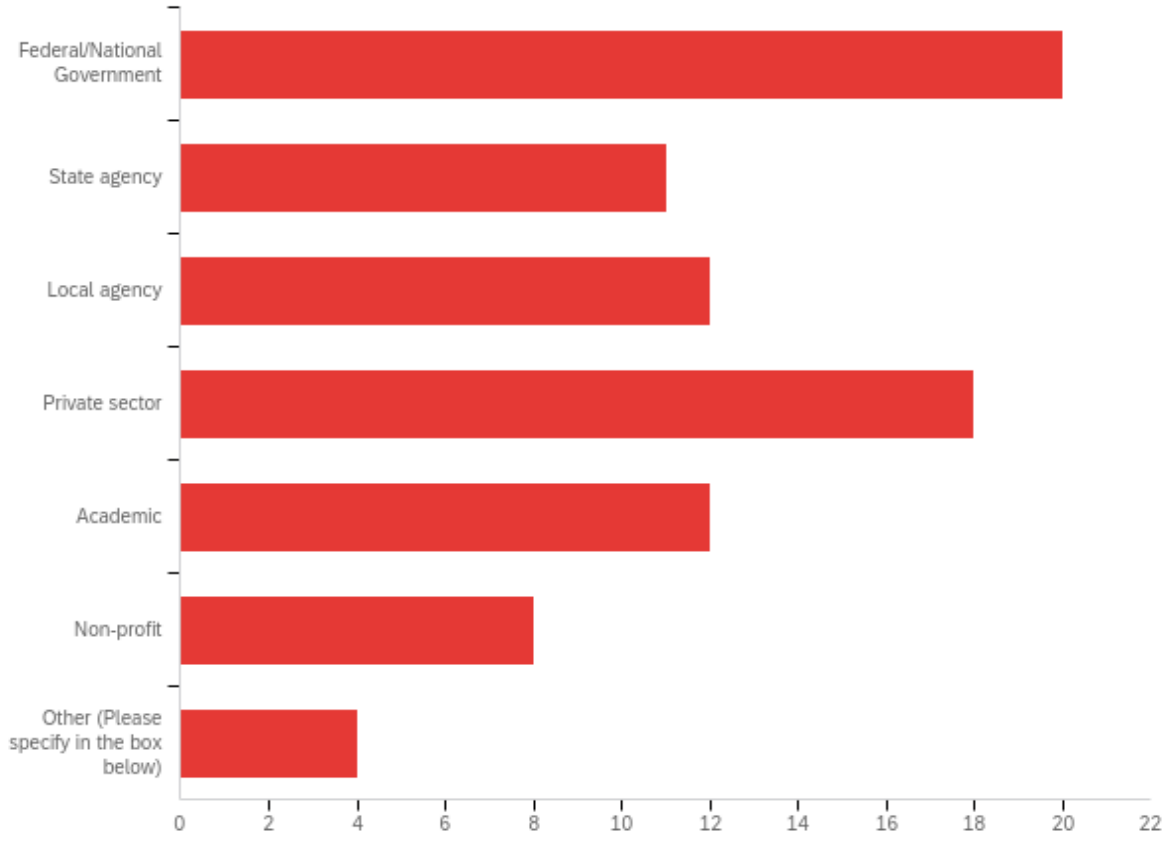
1.2 Survey

The online survey was developed in Qualtrics through an iterative process with input from an expert advisory committee. It targeted both users and non-users of UAS across six professional sectors. The survey consisted of 43 total questions and 2 primary branches; respondents were directed to the appropriate branch based on their response to question 1.8, "Does your organization have a UAS program?" in the Introduction question block. The "yes" branch has a maximum of 38 potential questions. The "no" branch has a maximum of 13 potential questions. The number of questions displayed to a respondent within each branch was determined by question responses and subsequent display logic.

Online Survey Results Report
Q1.1 – Survey Acknowledgement

[This question provides information on the survey. Participants acknowledge their participation.]

Q1.2 - What type of agency do you work for?



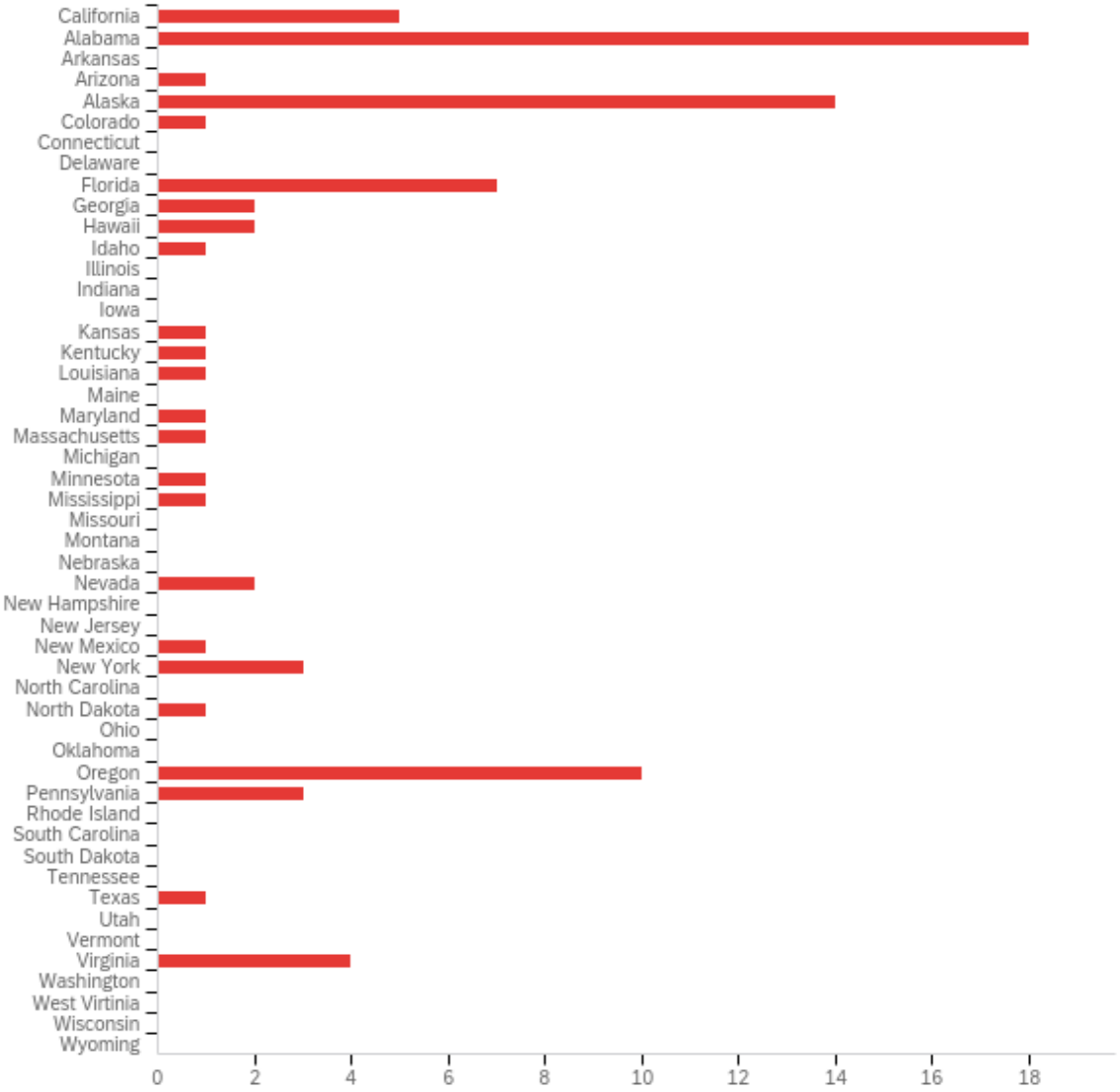
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What type of agency do you work for? - Selected Choice	1.00	8.00	3.65	2.19	4.82	85

#	Answer	%	Count
1	Federal/National Government	23.53%	20
2	State agency	12.94%	11
3	Local agency	14.12%	12
4	Private sector	21.18%	18
6	Academic	14.12%	12
7	Non-profit	9.41%	8
8	Other (Please specify in the box below)	4.71%	4
	Total	100%	85

Q1.2 Other (Please specify in the box below)

Other (Please specify in the box below) - Text
aviation insurance agency
Utility
Retired UAV industry advocate/business development
Title 10 and Title 36

Q1.3 - What State is your office located in?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What State is your office located in?	9.00	97.00	56.71	27.50	755.99	83

#	Answer	%	Count
9	California	6.02%	5
20	Alabama	21.69%	18
29	Arkansas	0.00%	0

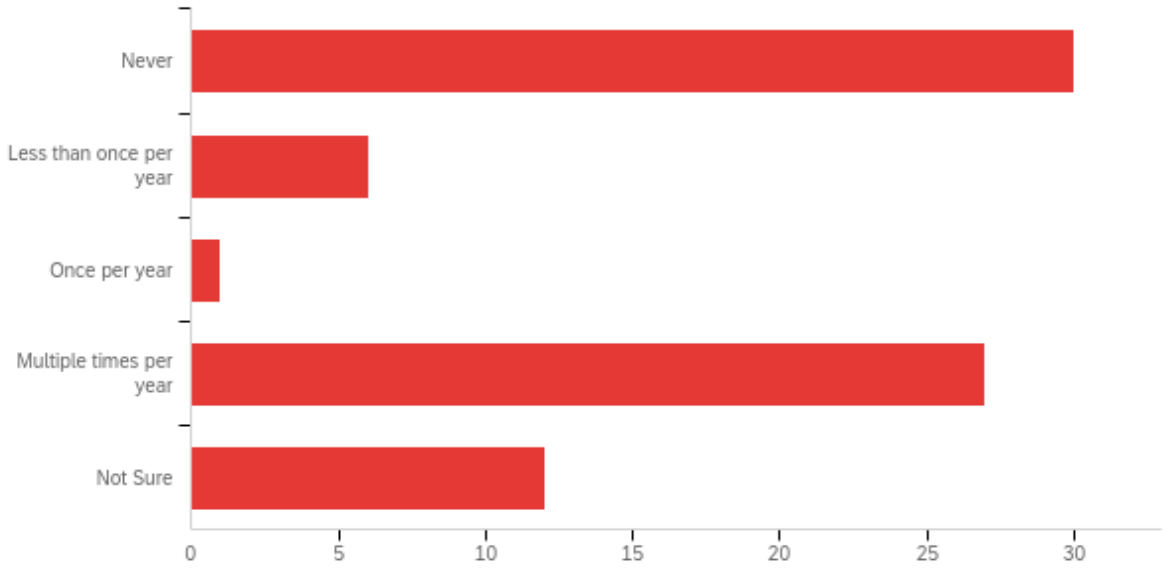
47	Arizona	1.20%	1
55	Alaska	16.87%	14
57	Colorado	1.20%	1
58	Connecticut	0.00%	0
59	Delaware	0.00%	0
60	Florida	8.43%	7
61	Georgia	2.41%	2
62	Hawaii	2.41%	2
63	Idaho	1.20%	1
64	Illinois	0.00%	0
65	Indiana	0.00%	0
66	Iowa	0.00%	0
67	Kansas	1.20%	1
68	Kentucky	1.20%	1
69	Louisiana	1.20%	1
70	Maine	0.00%	0
71	Maryland	1.20%	1
72	Massachusetts	1.20%	1
73	Michigan	0.00%	0
74	Minnesota	1.20%	1
75	Mississippi	1.20%	1
76	Missouri	0.00%	0
77	Montana	0.00%	0
78	Nebraska	0.00%	0
79	Nevada	2.41%	2
80	New Hampshire	0.00%	0
81	New Jersey	0.00%	0
82	New Mexico	1.20%	1
83	New York	3.61%	3

84	North Carolina	0.00%	0
85	North Dakota	1.20%	1
86	Ohio	0.00%	0
87	Oklahoma	0.00%	0
88	Oregon	12.05%	10
89	Pennsylvania	3.61%	3
90	Rhode Island	0.00%	0
91	South Carolina	0.00%	0
92	South Dakota	0.00%	0
93	Tennessee	0.00%	0
94	Texas	1.20%	1
95	Utah	0.00%	0
96	Vermont	0.00%	0
97	Virginia	4.82%	4
98	Washington	0.00%	0
99	West Virtinia	0.00%	0
100	Wisconsin	0.00%	0
101	Wyoming	0.00%	0
	Total	100%	83

Q1.4 - Please provide your name and position title if you're willing to do so. Otherwise, click next.

[Results have been redacted for privacy reasons]

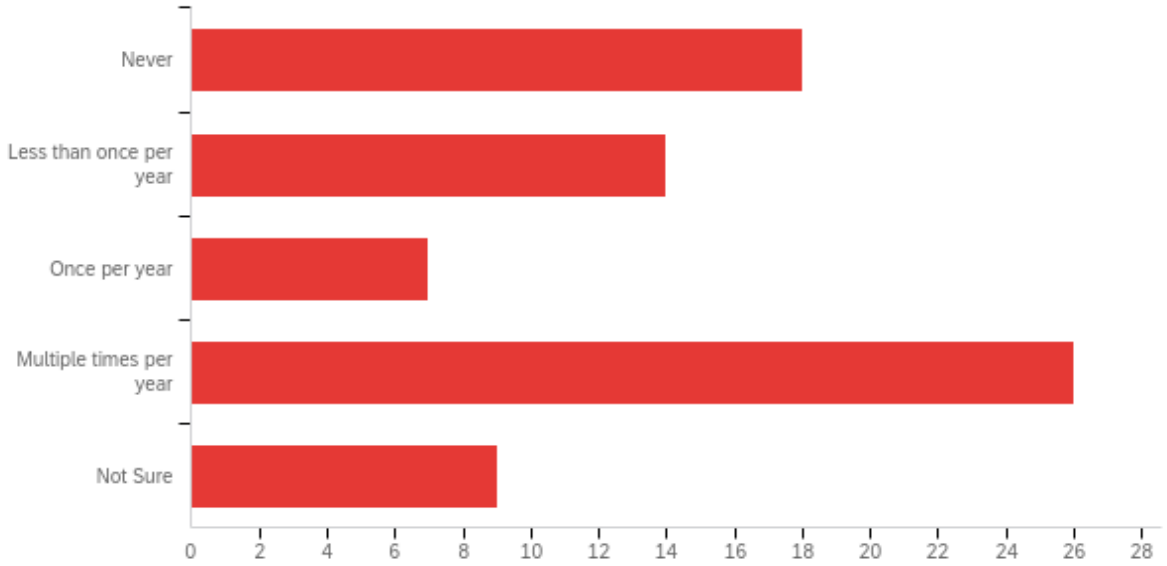
Q1.5 - In the last 5 years, how often, if ever, has your organization responded to disasters using occupied/manned aircraft?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	In the last 5 years, how often, if ever, has your organization responded to disasters using occupied/manned aircraft?	1.00	5.00	2.80	1.61	2.61	76

#	Answer	%	Count
1	Never	39.47%	30
2	Less than once per year	7.89%	6
3	Once per year	1.32%	1
4	Multiple times per year	35.53%	27
5	Not Sure	15.79%	12
	Total	100%	76

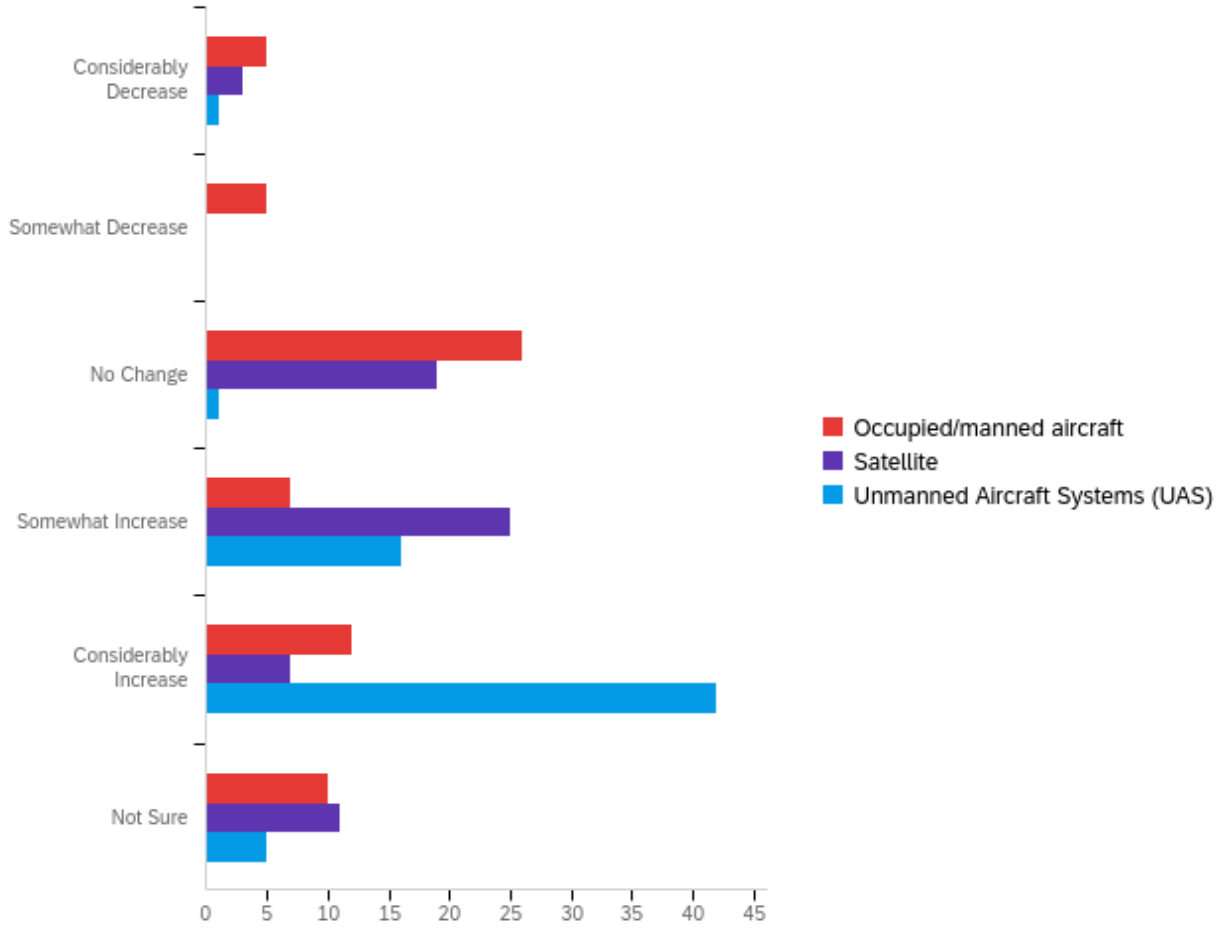
Q1.6 - How often does your organization participate in multi-agency disaster response training exercises that involve airspace coordination?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How often does your organization participate in multi-agency disaster response training exercises that involve airspace coordination?	1.00	5.00	2.92	1.41	1.99	74

#	Answer	%	Count
1	Never	24.32%	18
2	Less than once per year	18.92%	14
3	Once per year	9.46%	7
4	Multiple times per year	35.14%	26
5	Not Sure	12.16%	9
	Total	100%	74

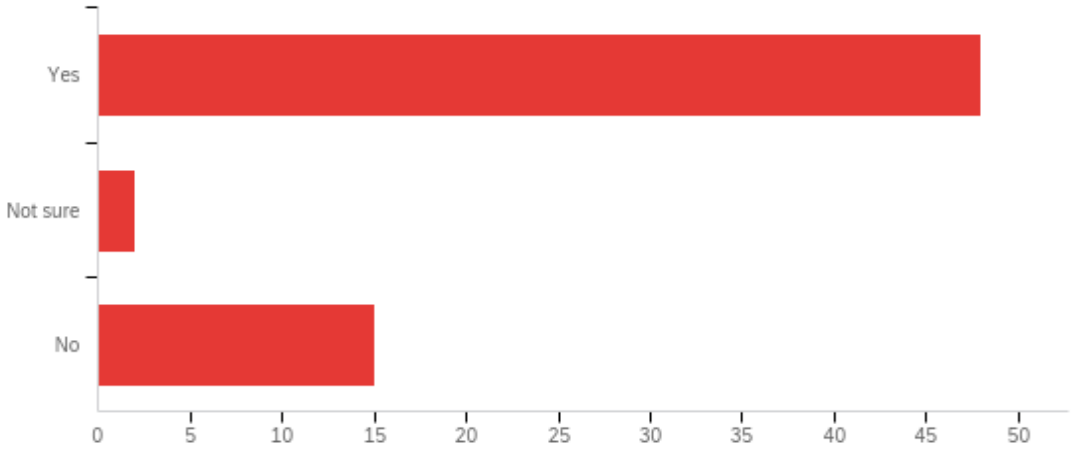
Q1.7 - How do you see your organization's use of the following platforms for disaster response changing over the next five years?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Occupied/manned aircraft	1.00	6.00	3.71	1.45	2.11	65
2	Satellite	1.00	6.00	4.02	1.22	1.49	65
3	Unmanned Aircraft Systems (UAS)	1.00	6.00	4.74	0.75	0.56	65

#	Question	Considerably Decrease		Somewhat Decrease		No Change		Somewhat Increase		Considerably Increase		Not Sure		Total
1	Occupied/ manned aircraft	7.69%	5	7.69%	5	40.00%	26	10.77%	7	18.46%	12	15.38%	10	65
2	Satellite	4.62%	3	0.00%	0	29.23%	19	38.46%	25	10.77%	7	16.92%	11	65
3	Unmanned Aircraft Systems (UAS)	1.54%	1	0.00%	0	1.54%	1	24.62%	16	64.62%	42	7.69%	5	65

Q1.8 - Does your organization have a UAS program? * Having a UAS Program means that your agency has dedicated staff whose role is, at least partially, to monitor and develop the use of UAS for agency purposes.

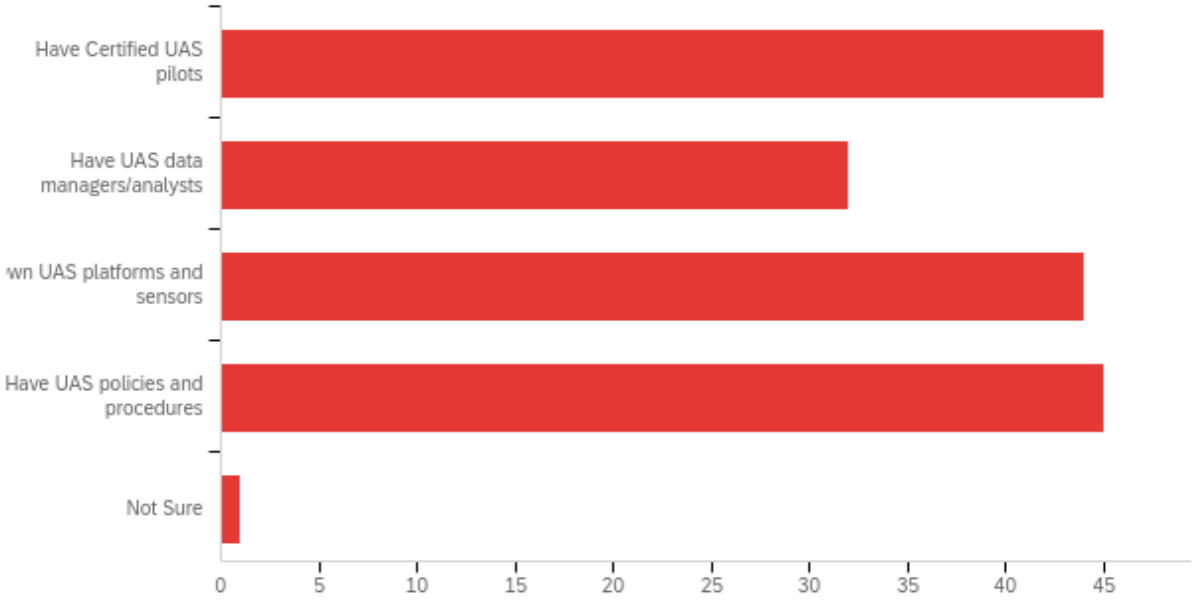


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Does your organization have a UAS program?* Having a UAS Program means that your agency has dedicated staff whose role is, at least partially, to monitor and develop the	3.00	5.00	3.49	0.84	0.71	65

	use of UAS for agency purposes.						

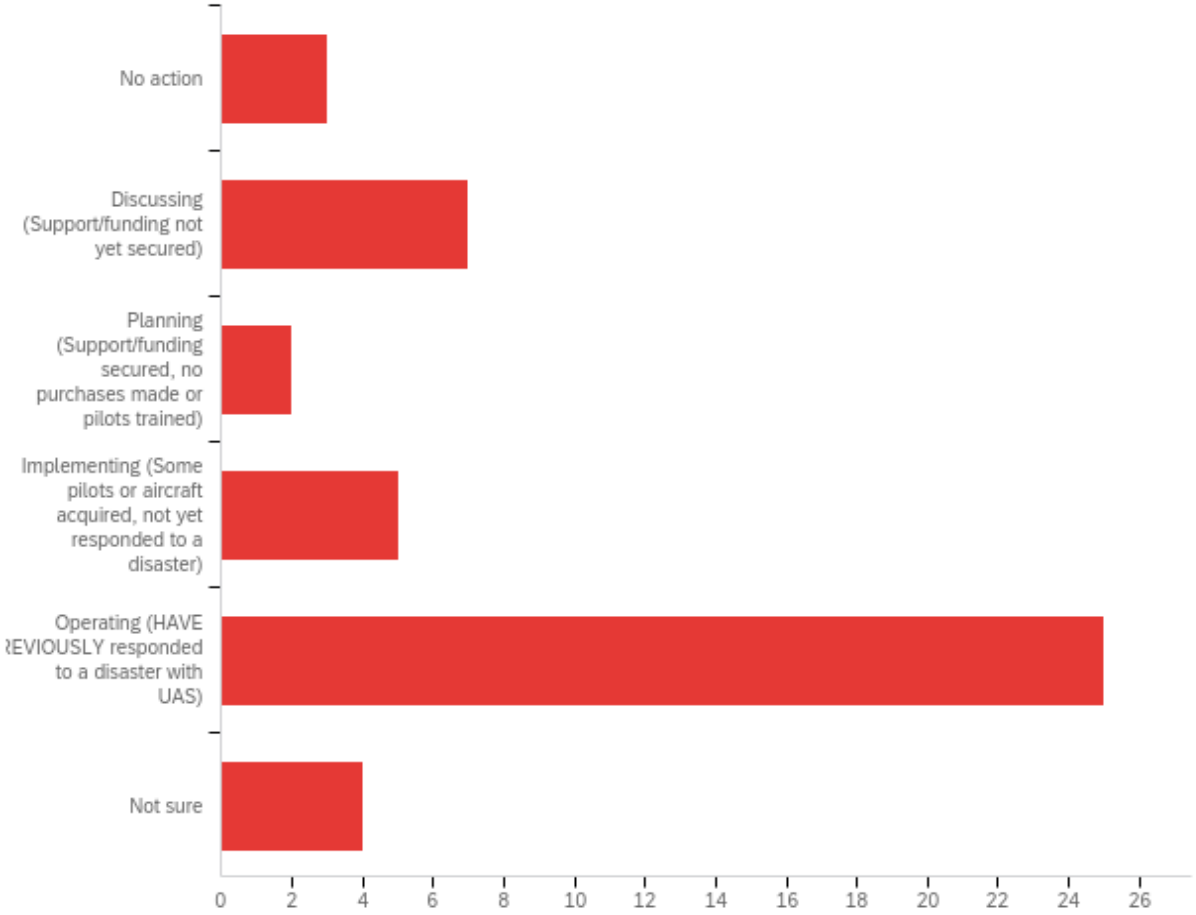
#	Answer	%	Count
3	Yes	73.85%	48
4	Not sure	3.08%	2
5	No	23.08%	15
	Total	100%	65

Q2.1 - What does your UAS program consist of? Select all that apply.



#	Answer	%	Count
1	Have Certified UAS pilots	26.95%	45
2	Have UAS data managers/analysts	19.16%	32
3	Own UAS platforms and sensors	26.35%	44
4	Have UAS policies and procedures	26.95%	45
6	Not Sure	0.60%	1
	Total	100%	167

Q2.2 - What implementation stage is your organization at with using UAS specifically for disaster response?

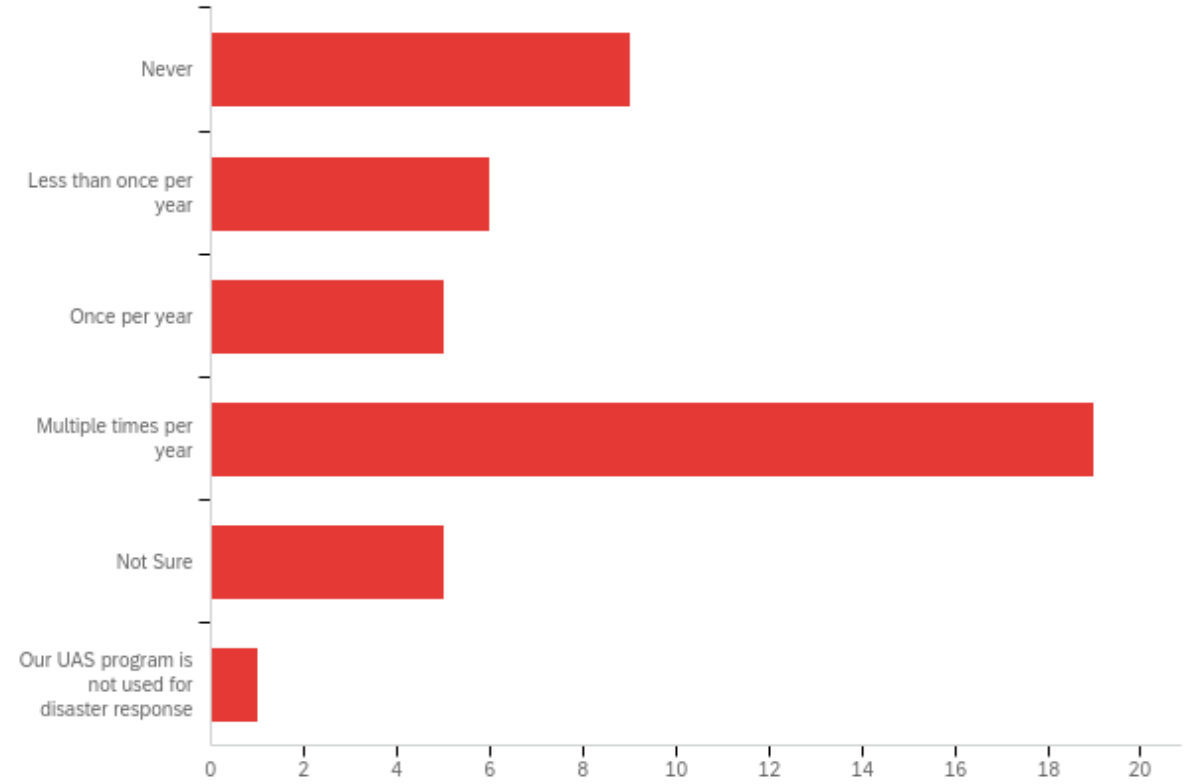


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What implementation stage is your organization at with using UAS specifically for disaster response?	1.00	14.00	11.65	3.05	9.31	46

#	Answer	%	Count
1	No action	6.52%	3
10	Discussing (Support/funding not yet secured)	15.22%	7
11	Planning (Support/funding secured, no purchases made or pilots trained)	4.35%	2

12	Implementing (Some pilots or aircraft acquired, not yet responded to a disaster)	10.87%	5
13	Operating (HAVE PREVIOUSLY responded to a disaster with UAS)	54.35%	25
14	Not sure	8.70%	4
	Total	100%	46

Q2.3 - In the last 5 years, how often has your organization responded to disasters using UAS?

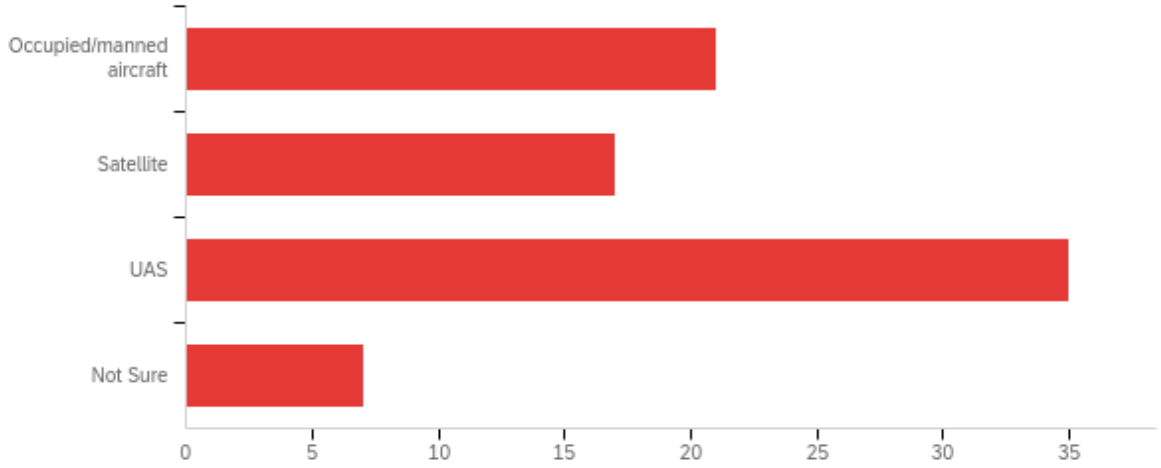


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	In the last 5 years, how often has your organization responded to disasters using UAS?	1.00	6.00	3.18	1.40	1.97	45

#	Answer	%	Count
1	Never	20.00%	9

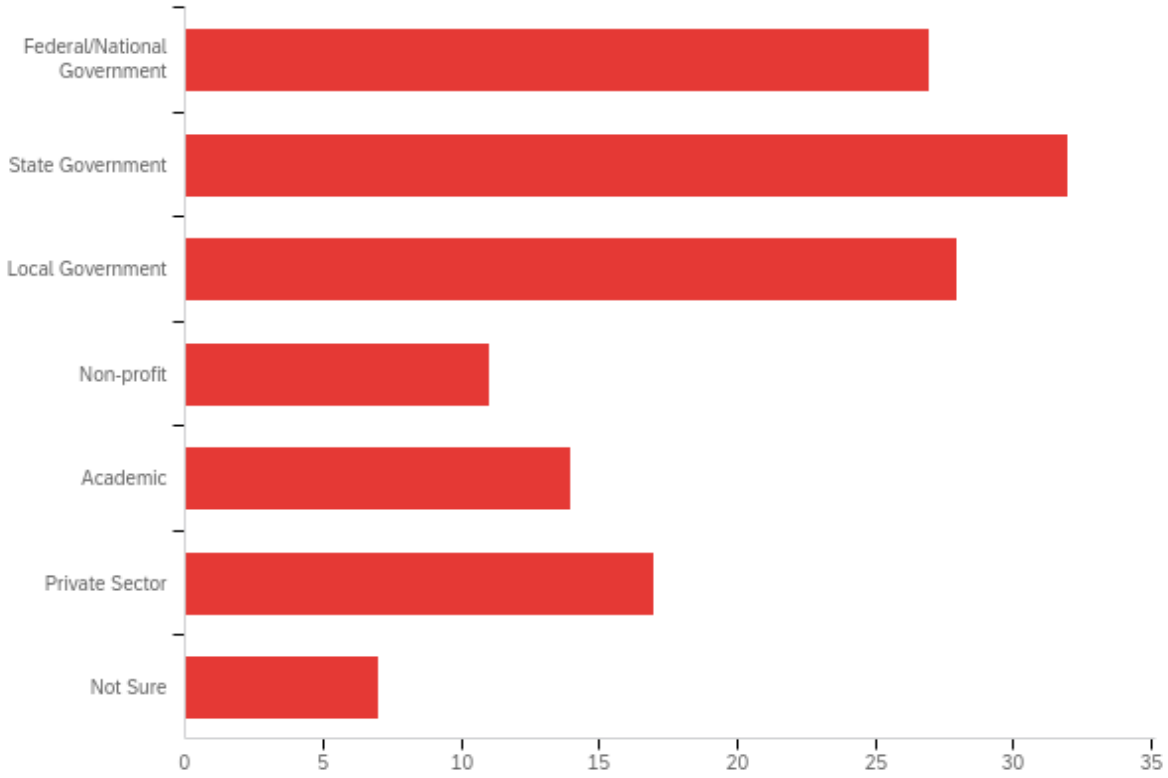
2	Less than once per year	13.33%	6
3	Once per year	11.11%	5
4	Multiple times per year	42.22%	19
5	Not Sure	11.11%	5
6	Our UAS program is not used for disaster response	2.22%	1
	Total	100%	45

Q2.4 - Which platforms does your organization currently use for disasters? Select all that apply.



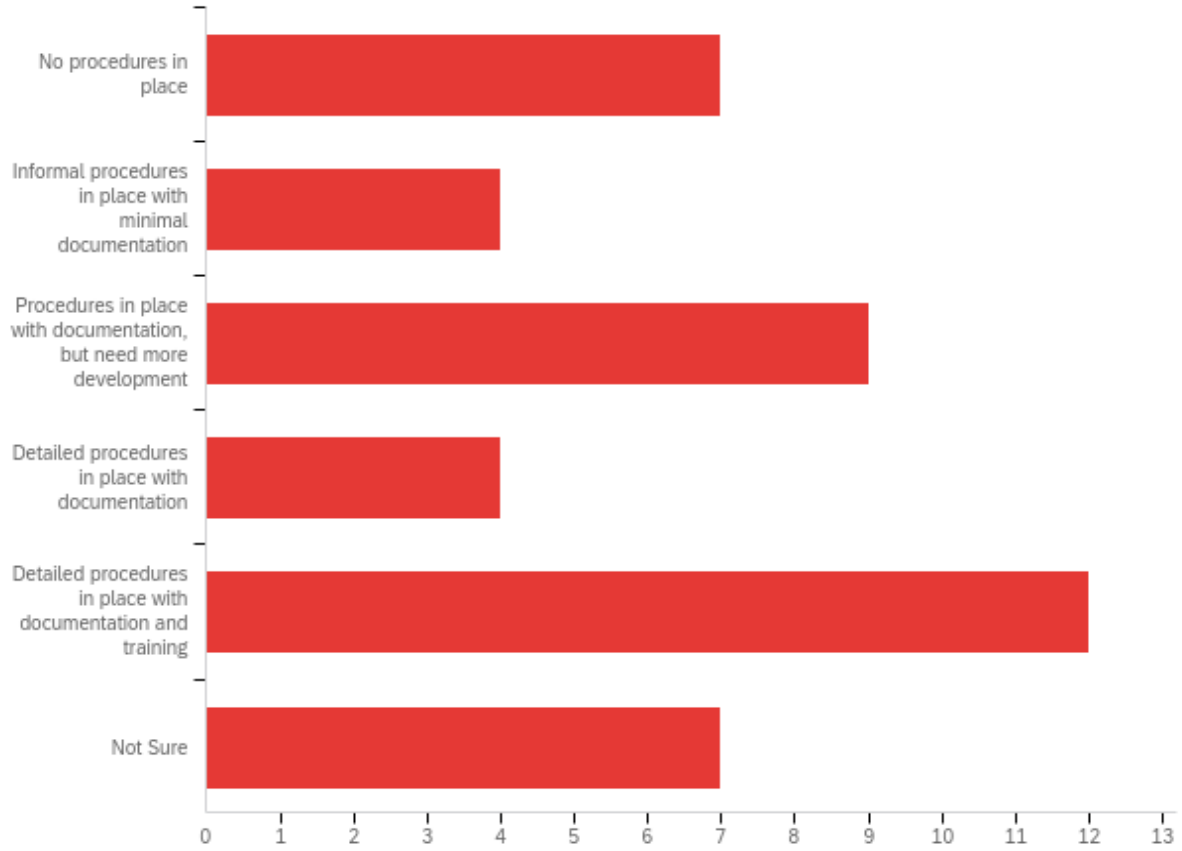
#	Answer	%	Count
1	Occupied/manned aircraft	26.25%	21
2	Satellite	21.25%	17
3	UAS	43.75%	35
6	Not Sure	8.75%	7
	Total	100%	80

Q2.5 - What organizations have you coordinated with during a disaster? Select all that apply.



#	Answer	%	Count
1	Federal/National Government	19.85%	27
2	State Government	23.53%	32
3	Local Government	20.59%	28
4	Non-profit	8.09%	11
5	Academic	10.29%	14
6	Private Sector	12.50%	17
7	Not Sure	5.15%	7
	Total	100%	136

Q2.6 - What types of emergency preparedness program (EPP) or emergency response plan (ERP) does your agency have that utilizes UAS?

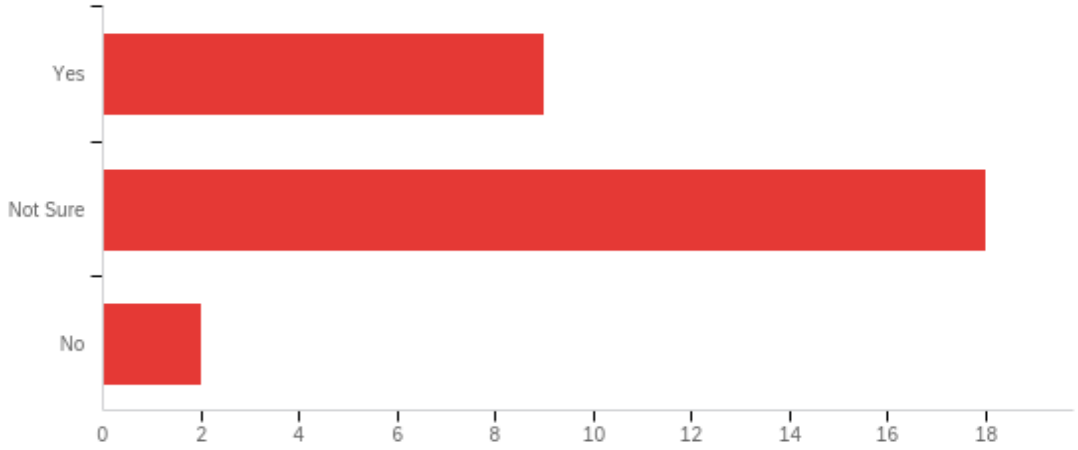


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What types of emergency preparedness program (EPP) or emergency response plan (ERP) does your agency have that utilizes UAS?	1.00	6.00	3.72	1.70	2.90	43

#	Answer	%	Count
1	No procedures in place	16.28%	7
2	Informal procedures in place with minimal documentation	9.30%	4
3	Procedures in place with documentation, but need more development	20.93%	9

4	Detailed procedures in place with documentation	9.30%	4
5	Detailed procedures in place with documentation and training	27.91%	12
6	Not Sure	16.28%	7
	Total	100%	43

Q2.7 - Is your agency willing and able to share your EPP/ERP procedures with this project?

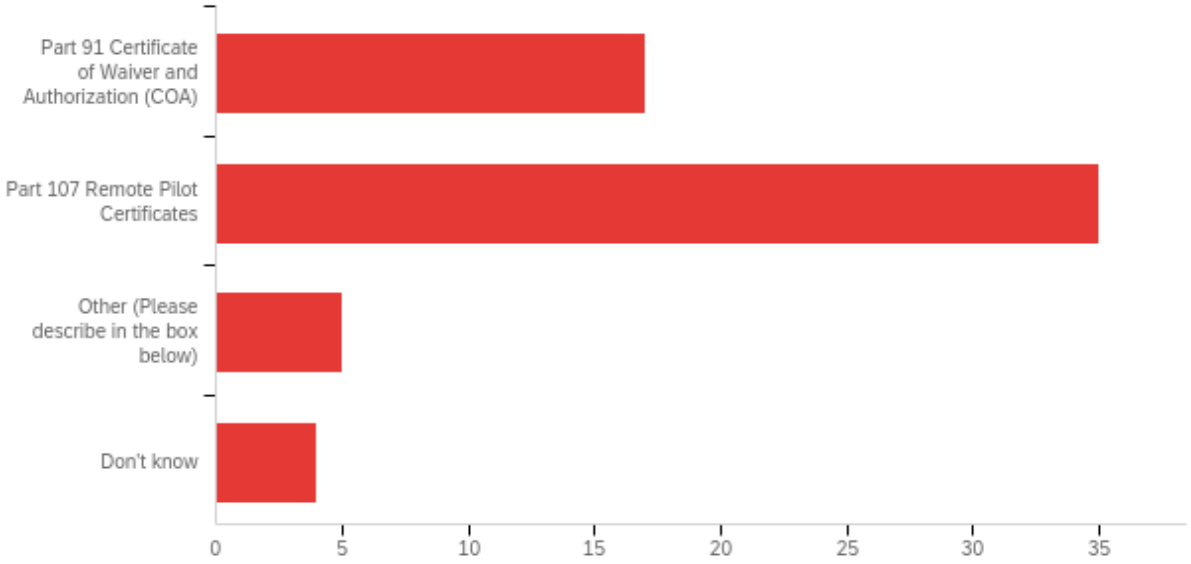


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Is your agency willing and able to share your EPP/ERP procedures with this project?	3.00	5.00	3.76	0.57	0.32	29

#	Answer	%	Count
3	Yes	31.03%	9
4	Not Sure	62.07%	18
5	No	6.90%	2
	Total	100%	29

Q2.8 - Please upload any written documentation your organization has and is willing to share (including plans, EPP/ERP procedures, incident reports). * Click next if you don't have access on your device.

Q3.1 - Under which FAA regulations does your organization operate UAS?



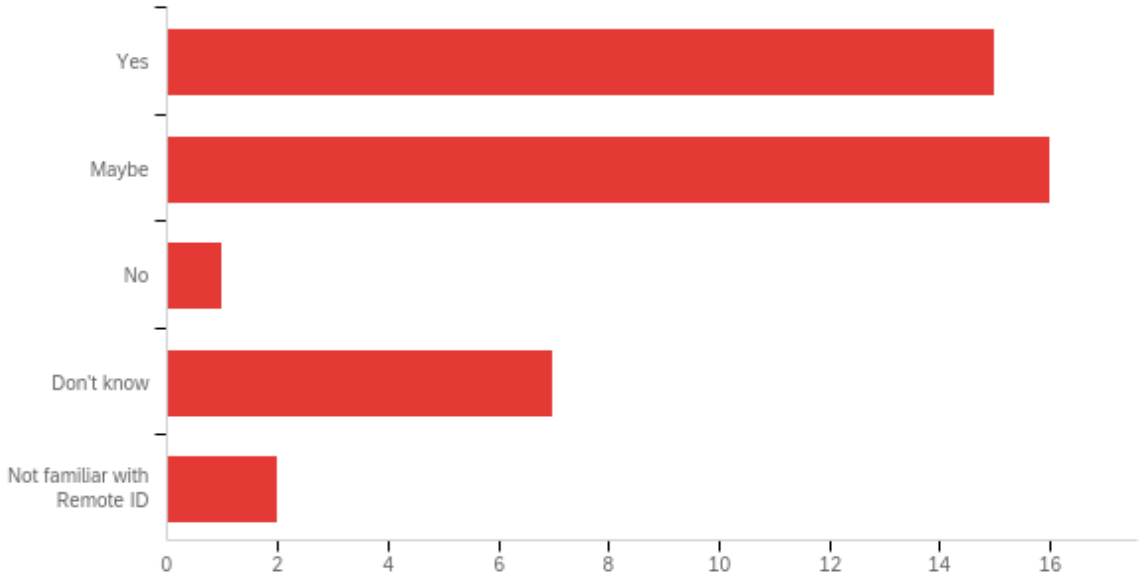
#	Answer	%	Count
1	Part 91 Certificate of Waiver and Authorization (COA)	27.87%	17
2	Part 107 Remote Pilot Certificates	57.38%	35
3	Other (Please describe in the box below)	8.20%	5
4	Don't know	6.56%	4
	Total	100%	61

Q3.1Other (Please describe in the box below)

Other (Please describe in the box below) - Text
Being developed
Special Government Interest (SGI) Waiver/Emergency COA (eCOA)
Special FAA approval for Global Hawk operations
UAS test site

Military Operations using our IFC 3 from US Navy.

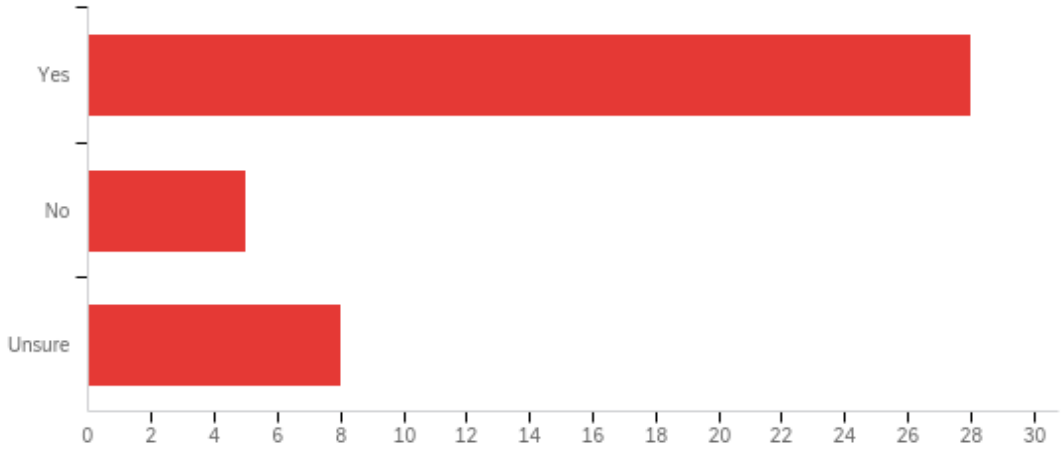
Q3.2 - Will Remote ID enable your organization to operate UAS more safely in the national airspace during a disaster?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Will Remote ID enable your organization to operate UAS more safely in the national airspace during a disaster?	1.00	5.00	2.15	1.22	1.49	41

#	Answer	%	Count
1	Yes	36.59%	15
2	Maybe	39.02%	16
3	No	2.44%	1
4	Don't know	17.07%	7
5	Not familiar with Remote ID	4.88%	2
	Total	100%	41

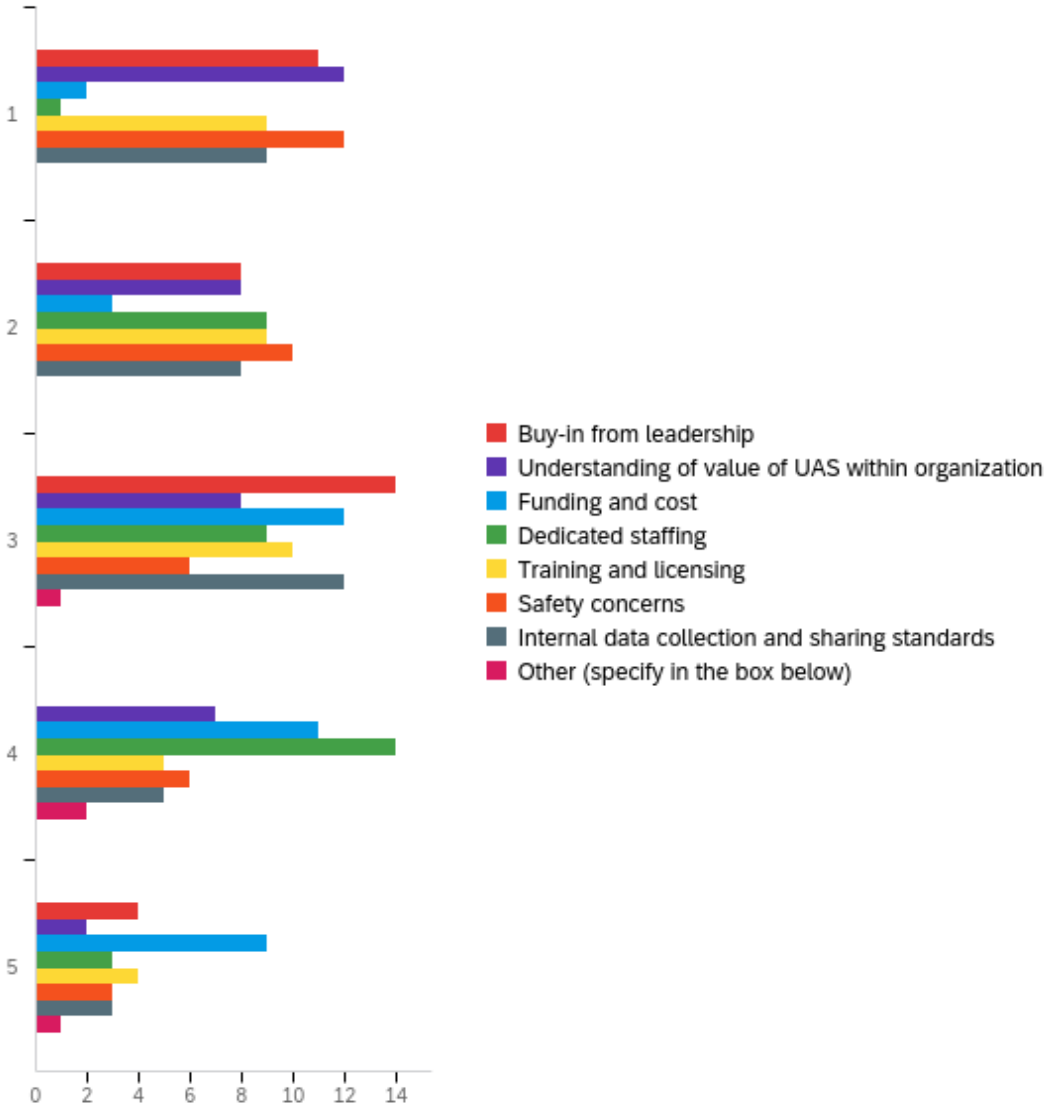
Q3.3 - Does your organization have a person responsible for coordinating the airspace during a disaster?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Does your organization have a person responsible for coordinating the airspace during a disaster?	1.00	5.00	1.90	1.56	2.43	41

#	Answer	%	Count
1	Yes	68.29%	28
2	No	12.20%	5
5	Unsure	19.51%	8
	Total	100%	41

Q4.1 - Rank the level at which the following barriers within your organization hinder the employment of UAS for disaster response on a scale of 1 (none to minimal) to 5 (significant). Please use the comment box to provide additional information.



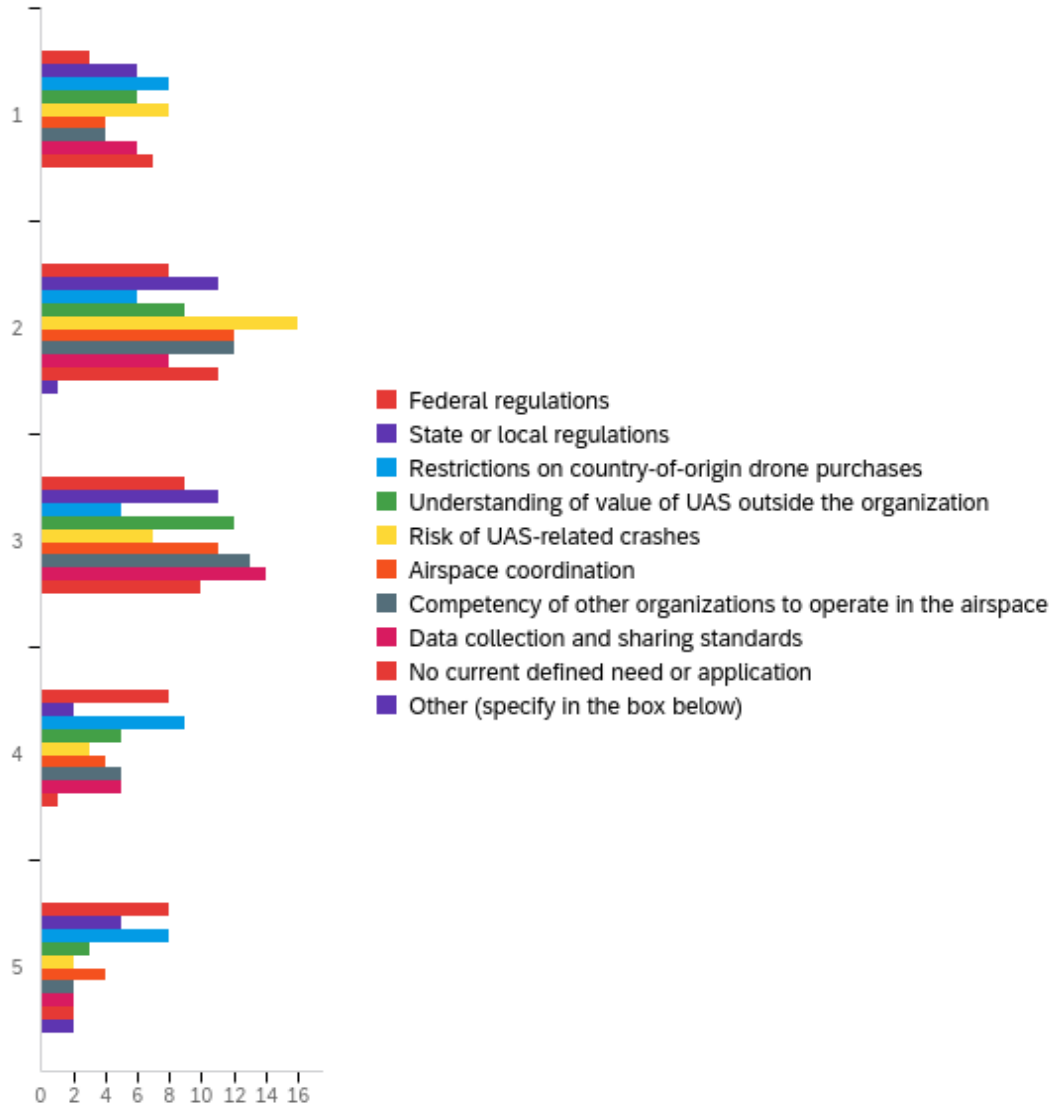
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Buy-in from leadership	1.00	5.00	2.41	1.22	1.48	37
2	Understanding of value of UAS within organization	1.00	5.00	2.43	1.26	1.60	37
3	Funding and cost	1.00	5.00	3.59	1.10	1.21	37

4	Dedicated staffing	1.00	5.00	3.25	1.01	1.02	36
5	Training and licensing	1.00	5.00	2.62	1.28	1.64	37
6	Safety concerns	1.00	5.00	2.41	1.30	1.70	37
7	Internal data collection and sharing standards	1.00	5.00	2.59	1.22	1.48	37
8	Other (specify in the box below)	3.00	5.00	4.00	0.71	0.50	4

#	Question	1		2		3		4		5		Total
1	Buy-in from leadership	29.73%	11	21.62%	8	37.84%	14	0.00%	0	10.81%	4	37
2	Understanding of value of UAS within organization	32.43%	12	21.62%	8	21.62%	8	18.92%	7	5.41%	2	37
3	Funding and cost	5.41%	2	8.11%	3	32.43%	12	29.73%	11	24.32%	9	37
4	Dedicated staffing	2.78%	1	25.00%	9	25.00%	9	38.89%	14	8.33%	3	36
5	Training and licensing	24.32%	9	24.32%	9	27.03%	10	13.51%	5	10.81%	4	37
6	Safety concerns	32.43%	12	27.03%	10	16.22%	6	16.22%	6	8.11%	3	37
7	Internal data collection and sharing standards	24.32%	9	21.62%	8	32.43%	12	13.51%	5	8.11%	3	37

8	Other (specify in the box below)	0.00%	0	0.00%	0	25.00 %	1	50.00 %	2	25.00 %	1	4

Q4.2 - Rank the level which the following barriers outside your organization hinder the employment of UAS for disaster response on a scale of 1 (none to minimal) to 5 (significant). Please use the comment box to provide additional information.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Federal regulations	1.00	5.00	3.28	1.26	1.59	36

2	State or local regulations	1.00	5.00	2.69	1.24	1.53	35
3	Restrictions on country-of-origin drone purchases	1.00	5.00	3.08	1.48	2.19	36
4	Understanding of value of UAS outside the organization	1.00	5.00	2.71	1.16	1.35	35
5	Risk of UAS-related crashes	1.00	5.00	2.31	1.08	1.16	36
6	Airspace coordination	1.00	5.00	2.77	1.15	1.32	35
7	Competency of other organizations to operate in the airspace	1.00	5.00	2.69	1.02	1.05	36
8	Data collection and sharing standards	1.00	5.00	2.69	1.09	1.19	35
9	No current defined need or application	1.00	5.00	2.35	1.06	1.13	31
10	Other (specify in the box below)	2.00	5.00	4.00	1.41	2.00	3

#	Question	1		2		3		4		5		Total
1	Federal regulations	8.33%	3	22.22%	8	25.00%	9	22.22%	8	22.22%	8	36
2	State or local regulations	17.14%	6	31.43%	11	31.43%	11	5.71%	2	14.29%	5	35

3	Restrictions on country-of-origin drone purchases	22.22%	8	16.67%	6	13.89%	5	25.00%	9	22.22%	8	36
4	Understanding of value of UAS outside the organization	17.14%	6	25.71%	9	34.29%	12	14.29%	5	8.57%	3	35
5	Risk of UAS-related crashes	22.22%	8	44.44%	16	19.44%	7	8.33%	3	5.56%	2	36
6	Airspace coordination	11.43%	4	34.29%	12	31.43%	11	11.43%	4	11.43%	4	35
7	Competency of other organizations to operate in the airspace	11.11%	4	33.33%	12	36.11%	13	13.89%	5	5.56%	2	36
8	Data collection and sharing standards	17.14%	6	22.86%	8	40.00%	14	14.29%	5	5.71%	2	35
9	No current defined need or application	22.58%	7	35.48%	11	32.26%	10	3.23%	1	6.45%	2	31

10	Other (specify in the box below)	0.00%	0	33.33%	1	0.00%	0	0.00%	0	66.67%	2	3

Q4.3 - What could the federal government do to help your organization more rapidly integrate UAS into disaster response?

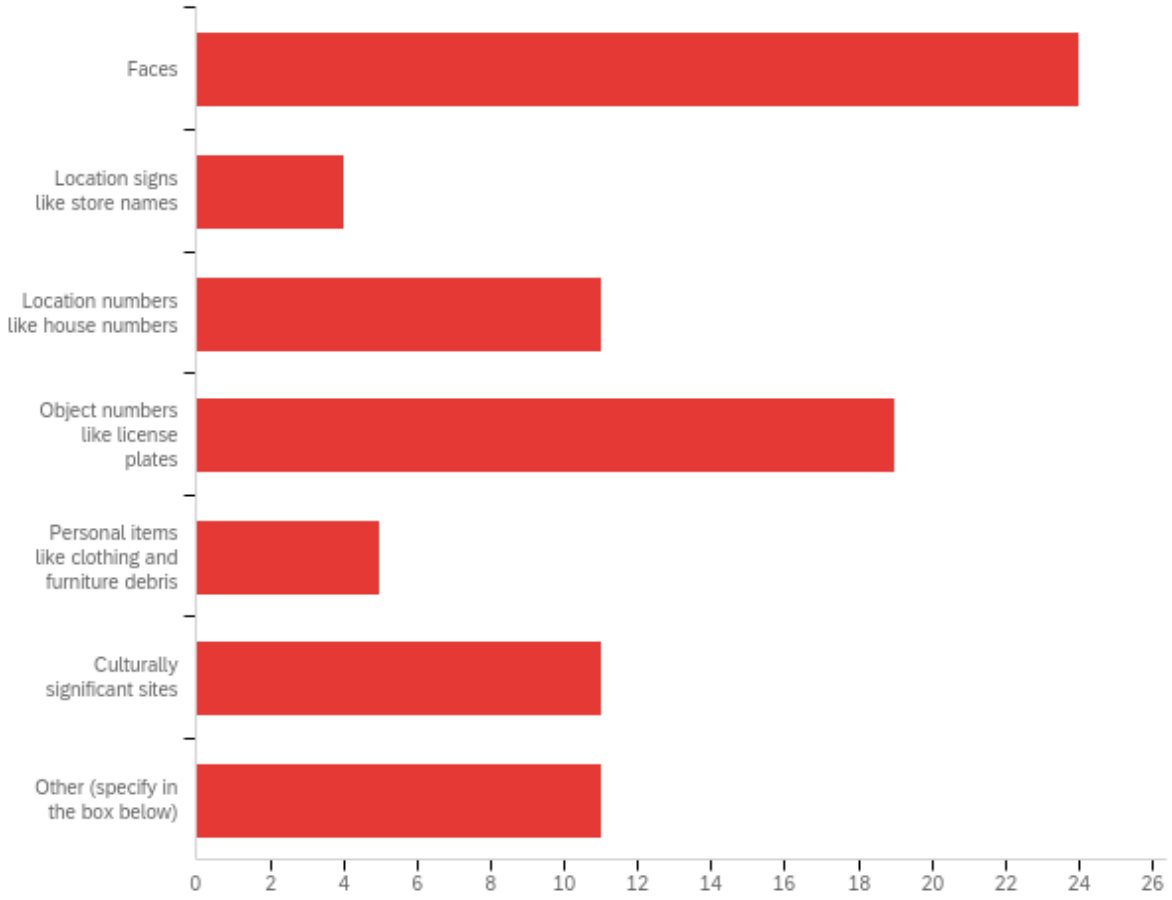
Cut the red tape and exclusivity from the federal government.
Grant/Funding Pilot programs
Create a level playing field between nonfederal agencies (State or Local) and federal wildland fire management agencies (United States Forest Service (USFS) & DOI). That would enable more easily utilized and readily available UAS platforms and pilots.
During a disaster this tool would need to be in the hands of our utility crews with the ability to fly as needed. Most of the time crews figure out what they need prior to getting the flight plan approval and the need to fly is no longer needed.
Complete rules for UAS operations
Continue working with the members of Beyond to create regulations that are more understandable, which will allow UAS operators to fly in the NAS safely.
Aggressively support industry in the development of light weight detect and avoid systems. Use/accept realistic risk mitigation methods opposed to zero risk tolerance for the use of UAS.
Feds should provide a clearing house that enable UAS operators to register and upload needed documentation for pre-approval of Disaster Relief.
Promote more expanded operations with the regulatory authority operate outside the standard rules given certain situations.
Make the Approval process for flights over people and vehicles and Beyond Visual Line of Sight (BVLOS) easier
Allow remote ID to localize UAV, and in conjunction with airspace awareness monitors onboard manned aircraft, wave the requirements for DAA when BVLOS.
Find innovative ways to encourage the development of procedures, training and technology to allow (Beyond line of site) operations. this is the major roadblock that limits the value of UAVs at this time.
Develop data sharing standards and Machine Learning/Artificial Intelligence (ML/AI) standardized software for data management 'at the edge'.
Come up with a more sensible approach to the use of foreign made UAS. The current approach is largely political and not due to failings of the technology (data theft to country of origin).

Encourage States that the standard for use are valid and in place.
Say and finish what your told Congress you where going to do regarding UAS regulation. It's a mess. We are an operator of a platform greater than 55 pounds in weight. The regulation is not clear and consistent.
Accessible funding for expanded support on a federal level
Already working with Federal Govt
Define FAA regulations
Provide a toolbox to State EMAs for seamless coordination with out of state disaster responders to include Geographic Information System (GIS) and data analysis integration.
Provide solicitations to reach out to private/for profit organizations for input
The Special Government Interest (SGI) is the greatest thing I have ever seen from federal government.
Education of Fire Department officers to the rogue use of UAS and the consequences of operating without Standard Operating Procedure(s) (SOPs) within their Department.
More Training
Make acquisition streamlined and simplified with less restrictions.
it's unclear. flexibility to test new operations to gain integration insights would be great
Give a national standard for command structure for type requests and staffing across National Wildfire Coordinating Group (NWCG), FEMA, All Hazards Incident Management Teams (IMT's). Standards in deconfliction and command structure. Equipment typing.
Typing and support in the National Incident Management System/Incident Command System (NIMS/ICS) NWCG structure.

Q5.1 - During a disaster how do you prioritize areas for UAS data acquisition?
First available.
Not applicable.
I try to implement UAS as a means of risk management either to alleviate the need to implement manned aviation flights in high risk areas or mission parameters (low and slow) or transference of risk and exposure of ground based resources. As well the sensor payload can enable a better visual for decision makers in terms of heat and actual fire perimeter.
Depends on situation… data is available through government agencies
UNK
Areas client desire data collection, area accessibility, awareness of other aviation assets in the area of intended operations, ability to communicate directly with other aviation assets, ability to select locations that reduce operations directly over people.
Typically we take direction from the agencies needing the UAS support
Typically through our fusion center.
Customer needs, understand what UAS can and cannot do
Not enough experience
This is completely dependent upon on the nature of the disaster… it depends entirely on the type of data needed. However it will most likely follow a general set of rules 1. Human safety… any data that needs to be collected to ensure the safety of human beings will take priority. This can be anything from using sensors to remotely detect gas leaks to using IR to check the structural integrity and other conditions of structures. 2. Environmental…. Any data required to monitor the spread of oil or chemical spills will be targeted next. Depending on the type of disaster this might be a critical component of step 1… For example if the disaster is environmental in nature and it's elements of the environment itself that must be monitored to ensure safety.
No protocol for this at present.
UAS are lowest priority in fire-controlled space.
What the incident commander requesting from the incident.
Need Federal Funding, authority, and identity a lead procurement office.
Impacts
UAS data collection and operational areas are identified using Bruc ground team targets, aerial imagery, and satellite imagery
Federal/State requirements
By impact

Based on impacts and demands for situation/needs assessment. It really varies with each event depending on scale and magnitude of impacts regionally as well as limitations on available UAS and airborne recon resources.
Have not to date
IMT priorities, flying areas that are not accessible with responders.
Command on the scene will prioritize the effort.
Air Boss
Operational priorities of incident commanders
unsure
It is prioritized by the incident management based on ground knowledge
Remote access or life hazards
Need based on incident commander needs.
Utilize ICS

Q5.2 - Which of the follow are considered sensitive portions of your UAS data that would impact data sharing?

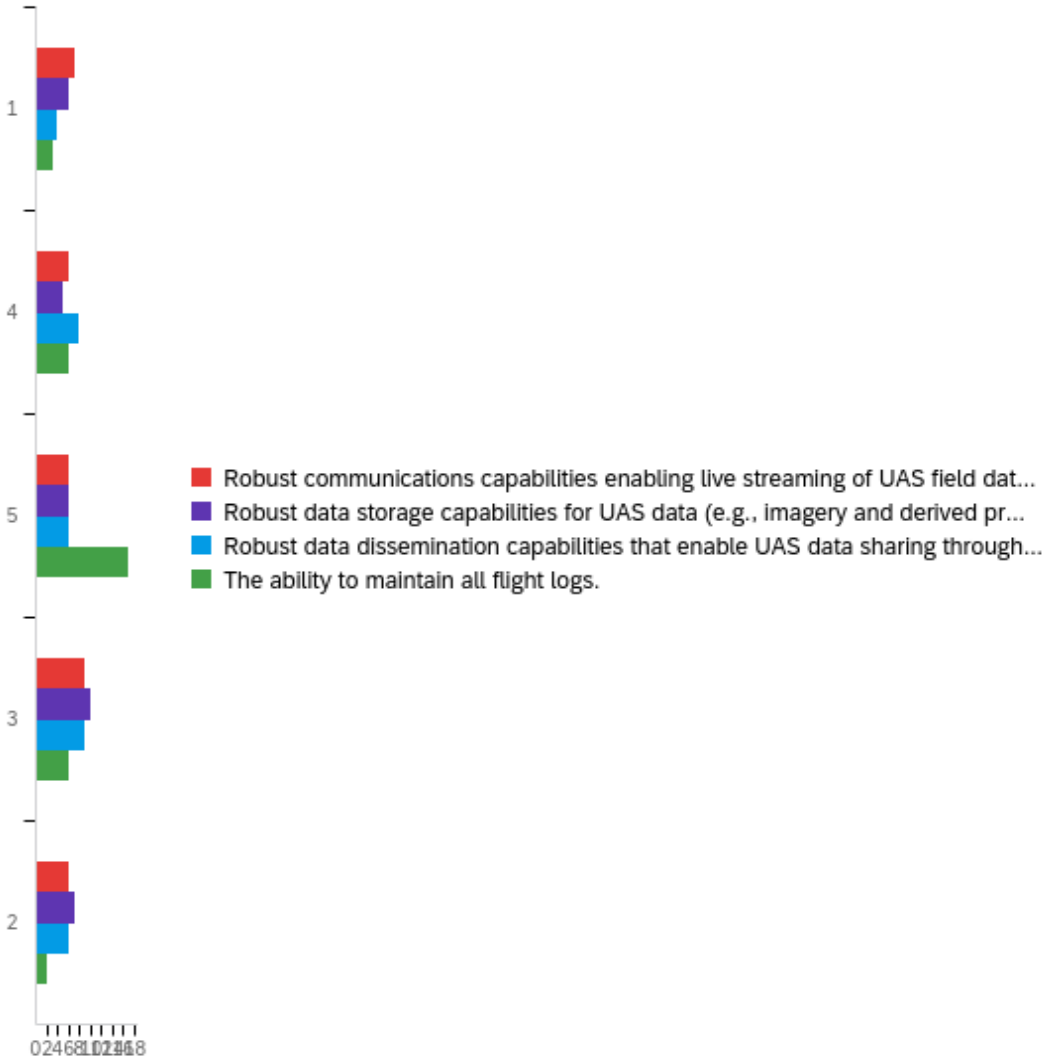


#	Answer	%	Count
1	Faces	28.24%	24
2	Location signs like store names	4.71%	4
3	Location numbers like house numbers	12.94%	11
4	Object numbers like license plates	22.35%	19
5	Personal items like clothing and furniture debris	5.88%	5
6	Culturally significant sites	12.94%	11
7	Other (specify in the box below)	12.94%	11
	Total	100%	85

Q5.2 Other (specify in the box below)

Other (specify in the box below) - Text
Not applicable.
This is a low impact portion for a lot of our current UAS operations.
customer specific data
Unknown
Nothing on this list would have anything to do with disaster response.
No requirements
This is dependent on the nature of the data being collected.. all above scenarios could possibly effect that decision in certain scenarios.
None
Sensitivity in general due to the nature of a disaster.
None, but would only share with other agencies
I’m basing my answers on PII-type information

Q5.3 - Rank the following from 1 (strongly disagree) to 8 (strongly agree). My organization has...

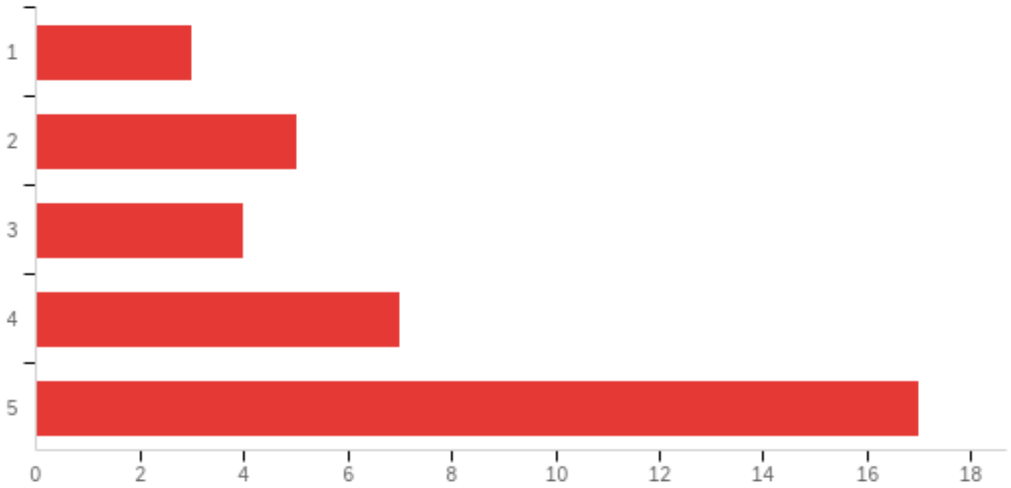


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Robust communications capabilities enabling live streaming of UAS field data.	2.00	8.00	4.91	2.32	5.37	34
2	Robust data storage capabilities for UAS data (e.g., imagery and derived products).	2.00	8.00	5.21	2.31	5.34	34

3	Robust data dissemination capabilities that enable UAS data sharing throughout the organization.	2.00	8.00	5.06	2.23	4.97	33
4	The ability to maintain all flight logs.	2.00	8.00	4.41	1.70	2.89	34

#	Question	1		4		5		3		2		Total
1	Robust communications capabilities enabling live streaming of UAS field data.	20.59%	7	17.65%	6	17.65%	6	26.47%	9	17.65%	6	34
2	Robust data storage capabilities for UAS data (e.g., imagery and derived products).	17.65%	6	14.71%	5	17.65%	6	29.41%	10	20.59%	7	34
3	Robust data dissemination capabilities that enable UAS data sharing throughout the organization.	12.12%	4	24.24%	8	18.18%	6	27.27%	9	18.18%	6	33
4	The ability to maintain all flight logs.	8.82%	3	17.65%	6	50.00%	17	17.65%	6	5.88%	2	34

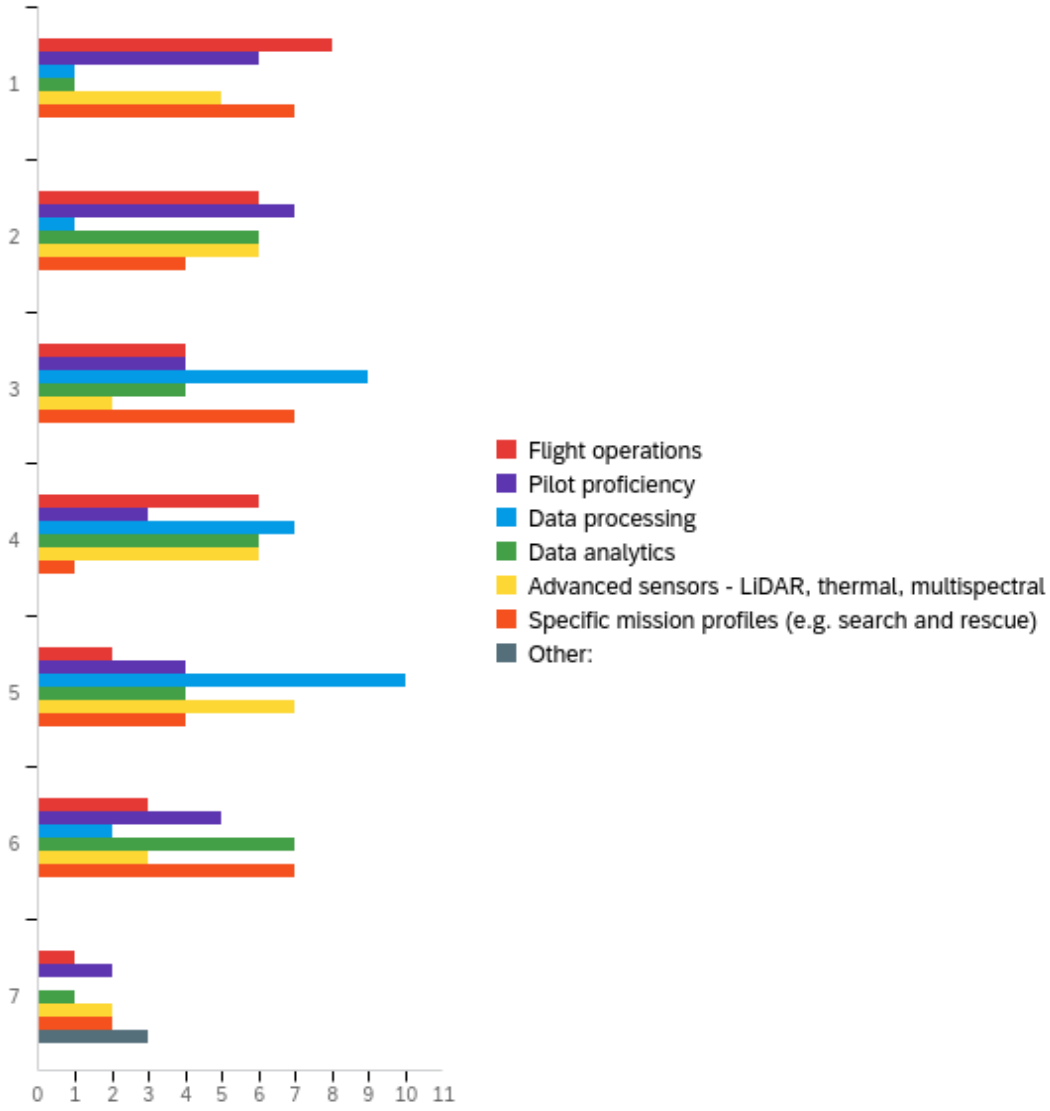
Q6.1 - How well do you feel your organization understands the current regulatory framework for UAS operation (1 to 5, poor to very well)?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How well do you feel your organization understands the current regulatory framework for UAS operation (1 to 5, poor to very well)?	16.00	30.00	28.00	3.77	14.22	36

#	Answer	%	Count
16	1	8.33%	3
27	2	13.89%	5
28	3	11.11%	4
29	4	19.44%	7
30	5	47.22%	17
	Total	100%	36

Q6.2 - Rank the types of training that would help your organization better respond to disasters using UA...

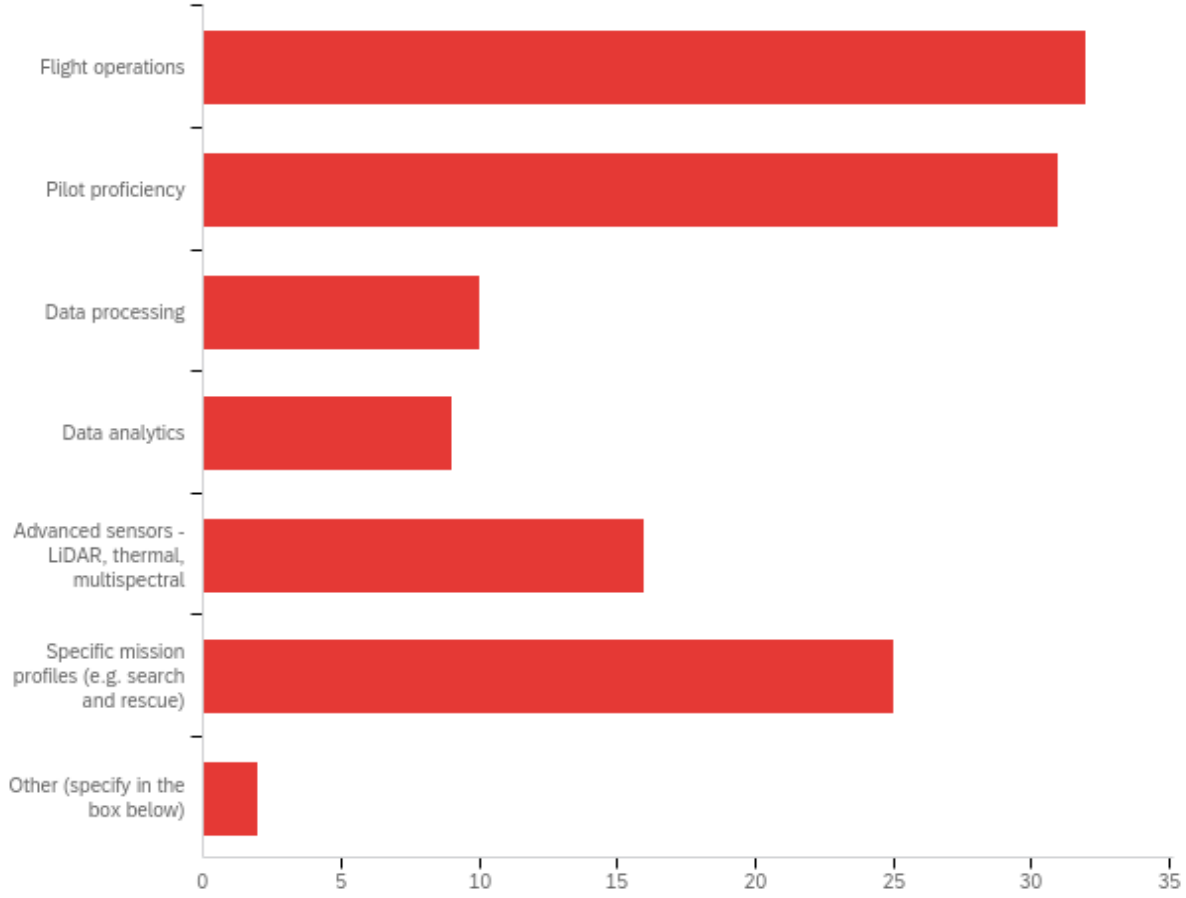


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Flight operations	1.00	7.00	3.03	1.78	3.17	30
2	Pilot proficiency	1.00	7.00	3.48	1.97	3.86	31
3	Data processing	1.00	6.00	4.00	1.15	1.33	30
4	Data analytics	1.00	7.00	4.07	1.64	2.68	29

5	Advanced sensors - LiDAR, thermal, multispectral	1.00	7.00	3.68	1.84	3.38	31
6	Specific mission profiles (e.g., search and rescue)	1.00	7.00	3.63	2.03	4.11	32
7	Other:	7.00	7.00	7.00	0.00	0.00	3

#	Question	1		2		3		4		5		6		7		Total
1	Flight operations	26.67%	8	20.00%	6	13.33%	4	20.00%	6	6.67%	2	10.00%	3	3.33%	1	30
2	Pilot proficiency	19.35%	6	22.58%	7	12.90%	4	9.68%	3	12.90%	4	16.13%	5	6.45%	2	31
3	Data processing	3.33%	1	3.33%	1	30.00%	9	23.33%	7	33.33%	10	6.67%	2	0.00%	0	30
4	Data analytics	3.45%	1	20.69%	6	13.79%	4	20.69%	6	13.79%	4	24.14%	7	3.45%	1	29
5	Advanced sensors - LiDAR, thermal, multispectral	16.13%	5	19.35%	6	6.45%	2	19.35%	6	22.58%	7	9.68%	3	6.45%	2	31
6	Specific mission profiles (e.g. search and rescue)	21.88%	7	12.50%	4	21.88%	7	3.13%	1	12.50%	4	21.88%	7	6.25%	2	32
7	Other:	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	100.00%	3	3

Q6.3 - Which certifications would allow your organization to trust that another organization could operate UAS during a disaster safely and effectively?

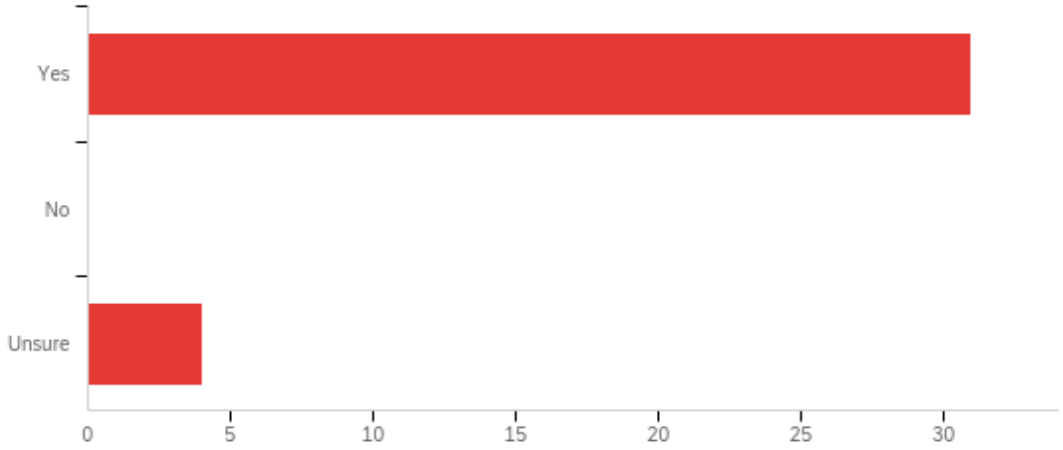


#	Answer	%	Count
1	Flight operations	25.60%	32
2	Pilot proficiency	24.80%	31
3	Data processing	8.00%	10
4	Data analytics	7.20%	9
5	Advanced sensors - LiDAR, thermal, multispectral	12.80%	16
6	Specific mission profiles (e.g. search and rescue)	20.00%	25
7	Other (specify in the box below)	1.60%	2
	Total	100%	125

Q6.3 Other (specify in the box below)

Other (specify in the box below) - Text
Interagency cooperation
An education in developing a culture of respect for other airspace users.

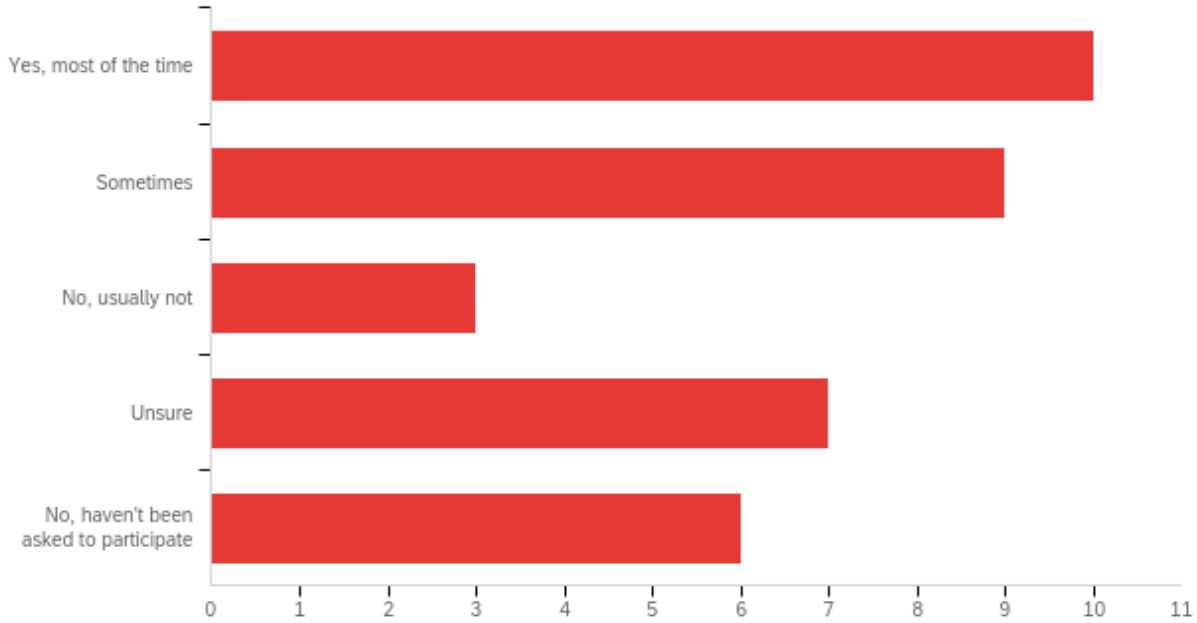
Q6.4 - Would your organization find it valuable to participate in a disaster response exercise that incorporates UAS?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would your organization find it valuable to participate in a disaster response exercise that incorporates UAS?	1.00	3.00	1.23	0.64	0.40	35

#	Answer	%	Count
1	Yes	88.57%	31
2	No	0.00%	0
3	Unsure	11.43%	4
	Total	100%	35

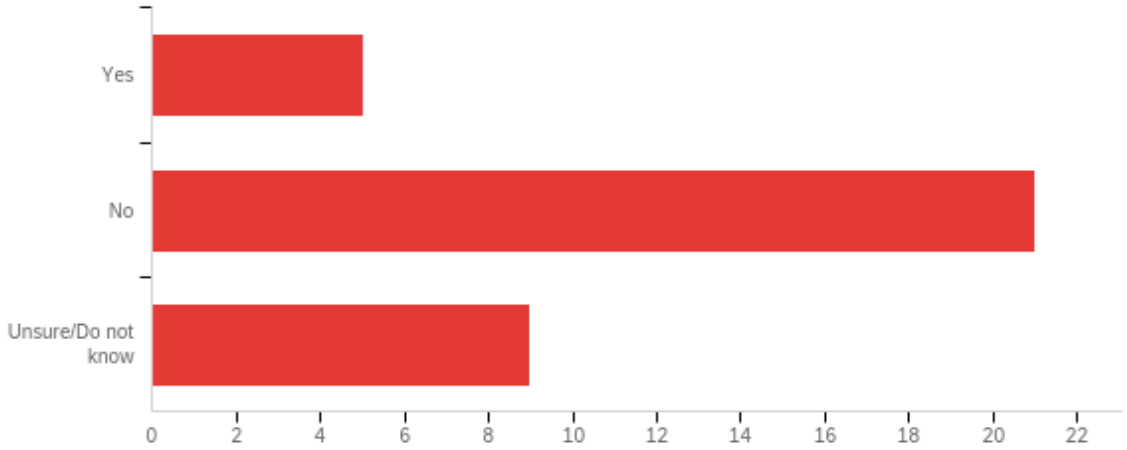
Q6.5 - Is finding funding to participate in a disaster response exercise that incorporates UAS a concern for your organization?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Is finding funding to participate in a disaster response exercise that incorporates UAS a concern for your organization?	1.00	5.00	2.71	1.48	2.20	35

#	Answer	%	Count
1	Yes, most of the time	28.57%	10
2	Sometimes	25.71%	9
3	No, usually not	8.57%	3
4	Unsure	20.00%	7
5	No, haven't been asked to participate	17.14%	6
	Total	100%	35

Q7.1 - Has operator fatigue or lack of sleep ever impacted UAS flight operations for you?



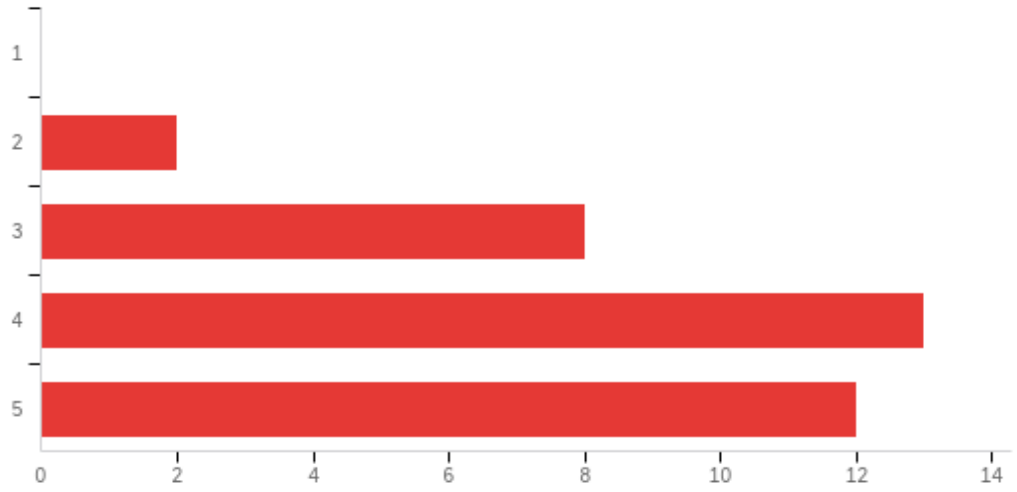
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Has operator fatigue or lack of sleep ever impacted UAS flight operations for you?	1.00	3.00	2.11	0.62	0.39	35

#	Answer	%	Count
1	Yes	14.29%	5
2	No	60.00%	21
3	Unsure/Do not know	25.71%	9
	Total	100%	35

Q7.2 - Please provide additional information around the circumstances for operator fatigue/lack of sleep impacting UAS flight operations.

Just normal scheduling conflicts to keep pilots within safe operating levels of consciousness. Adequate rest between operations.
lack of pilot declaring himself unfit
10 hour plus SAR operations looking for missing kids.
Long term incidents

Q7.3 - What is your agency's comfort level with allowing artificial intelligence, such as the ability to track moving objects, to identify damage, or automatically collect more information of the damaged area, or to replace the human carrying out the operational objectives, from 1 (not at all comfortable) to 5 (very comfortable)?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What is your agency's comfort level with allowing artificial intelligence, such as the ability to track moving objects, to identify damage, or automatically collect more information of the damaged area, or to replace the human carrying out the operational objectives, from 1 (not at all comfortable) to 5 (very comfortable)?	4.00	7.00	6.00	0.89	0.80	35

#	Answer	%	Count
1	1	0.00%	0
4	2	5.71%	2

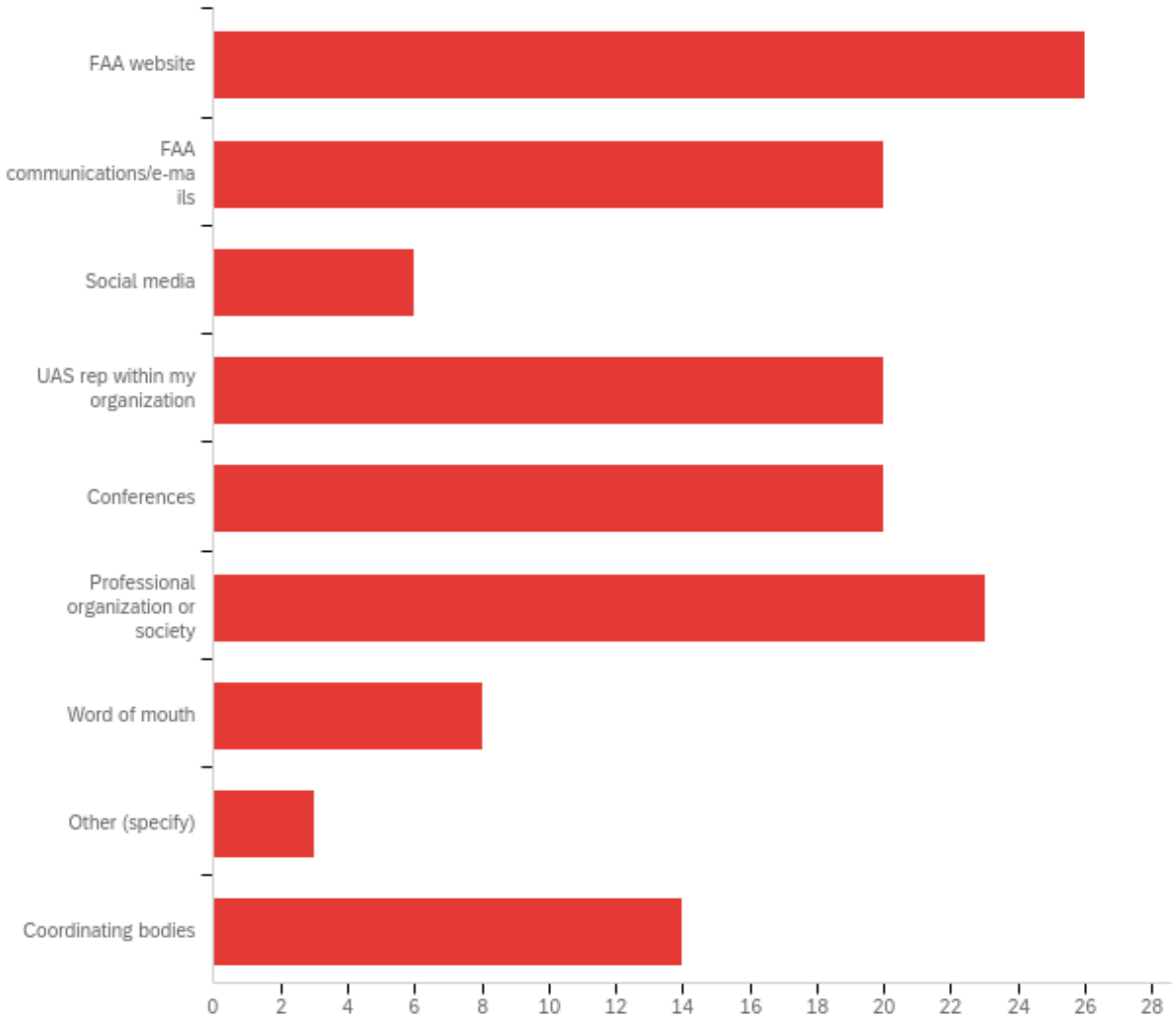
5	3	22.86%	8
6	4	37.14%	13
7	5	34.29%	12
	Total	100%	35

Q7.4 - What, if any, concerns or opportunities does your organization see with respect to incorporating Artificial Intelligence or autonomy into UAS operations?

That there is still some human over-watch to assist in quality control and not assume AI has done "it's job".
Several Scene detection Flight autonomy
Sensitive data handling and security of information
Ability to recognize damage, location and how to access the site.
unk
No concerns with AI collecting and analyzing data. Autonomy use is acceptable provided a person can oversee and interject in autonomy operations for safety of flight.
For mapping we use a flight app that flys the drone with some autonomy. However, our pilots are still on the "sticks" and monitoring the flight progress.
As long as it's vetted through strict security protocols with the overriding ability to stay in control.
Difficulty in documenting method of operation. (Meeting software design standards like DO-178
Safety to personal and the environment are priority. A Risk Assessment must be completed before UAV use. An attempt to identify all possible hazardous variables must be made. For Example it is foolish to operate a non intrinsically safe UAV Over a suspected natural gas leak. Any UAV operation that can obviously add safety by using autonomy will be considered a go, once a risk assessment determines the mission itself does not create an undue hazard.
Essential
We have a dedicated group focused on AI for all applications, including UAS.
None at this time.
Security, hack ability
No concern
None
Damage assessment, team coordination, and operational planning

None
Any function that could damage property of cause serious bodily harm/ death would have to have a human with oversight
None
None
Safety and Control
N/A
lots of opportunities
Command a control link
None.

Q7.5 - What sources are helpful to keep your organization to up-to-date on UAS regulations?

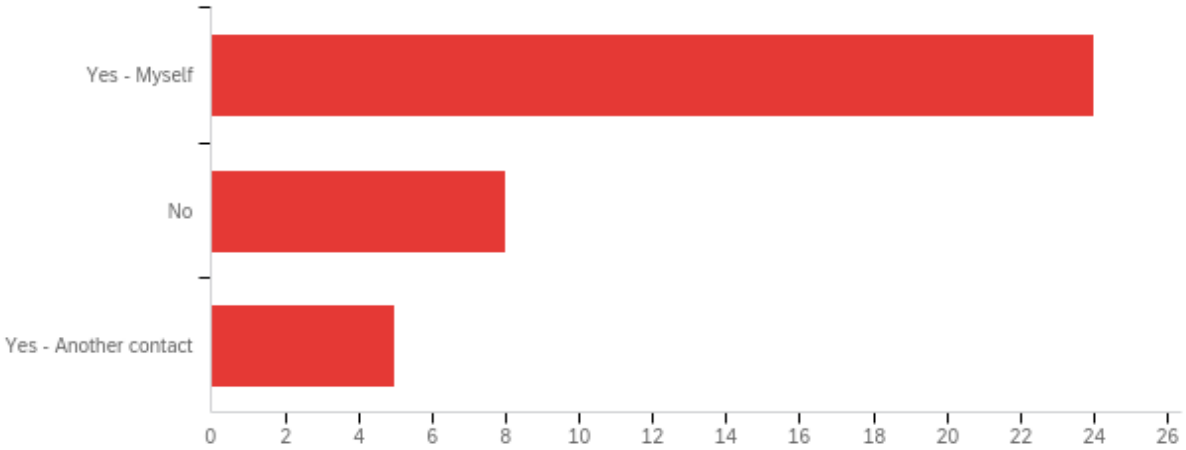


#	Answer	%	Count
1	FAA website	18.57%	26
2	FAA communications/e-mails	14.29%	20
3	Social media	4.29%	6
4	UAS rep within my organization	14.29%	20
5	Conferences	14.29%	20
6	Professional organization or society	16.43%	23
7	Word of mouth	5.71%	8
8	Other (specify)	2.14%	3
9	Coordinating bodies	10.00%	14
	Total	100%	140

Q7.5 Other (specify)

Other (specify) - Text
Private companies that specialize in knowing and training about regulations or making products related to regulations
Drone responders.org
Local Taskforce

Q8.1 - Would you be willing to provide contact information, for yourself or someone else at your agency, so that we can follow up with questions about your agency's intended use of aircraft? * You can select both yes statements.



#	Answer	%	Count
1	Yes - Myself	64.86%	24
2	No	21.62%	8
4	Yes - Another contact	13.51%	5
	Total	100%	37

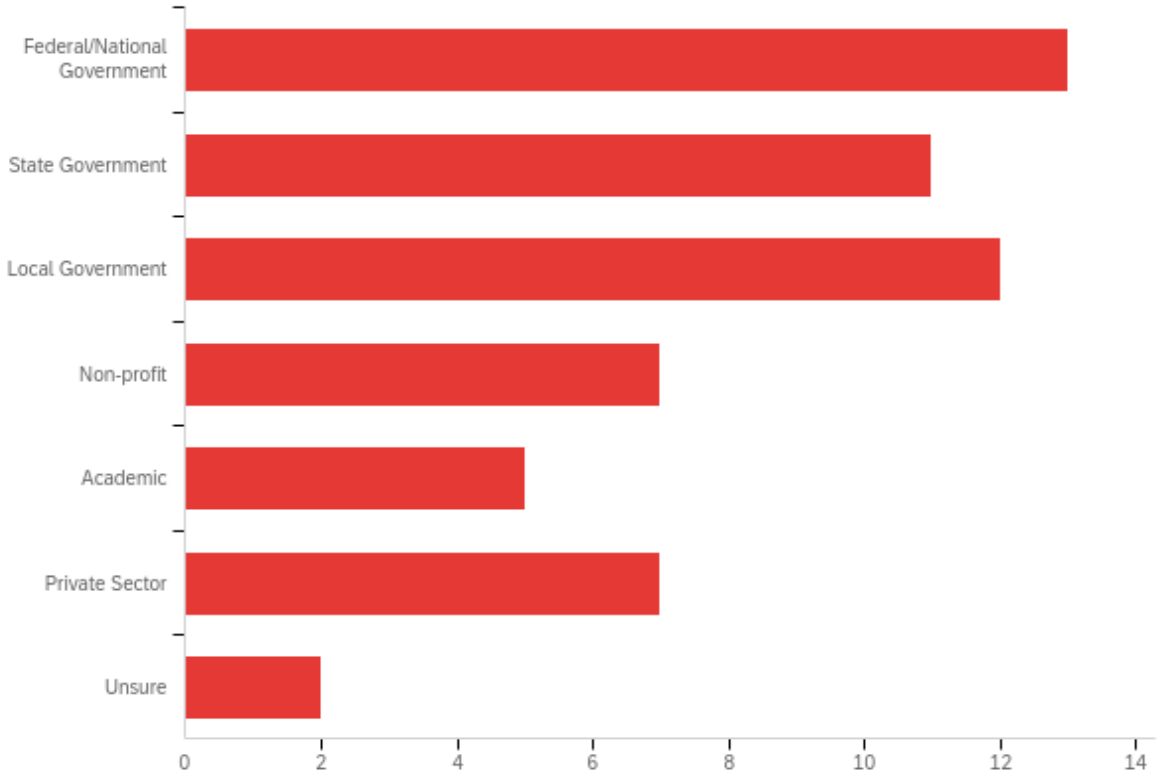
Q8.2 - Please provide your personal contact information.

[Responses have been redacted to preserve privacy]

Q8.3 - Please provide contact information for another contact.

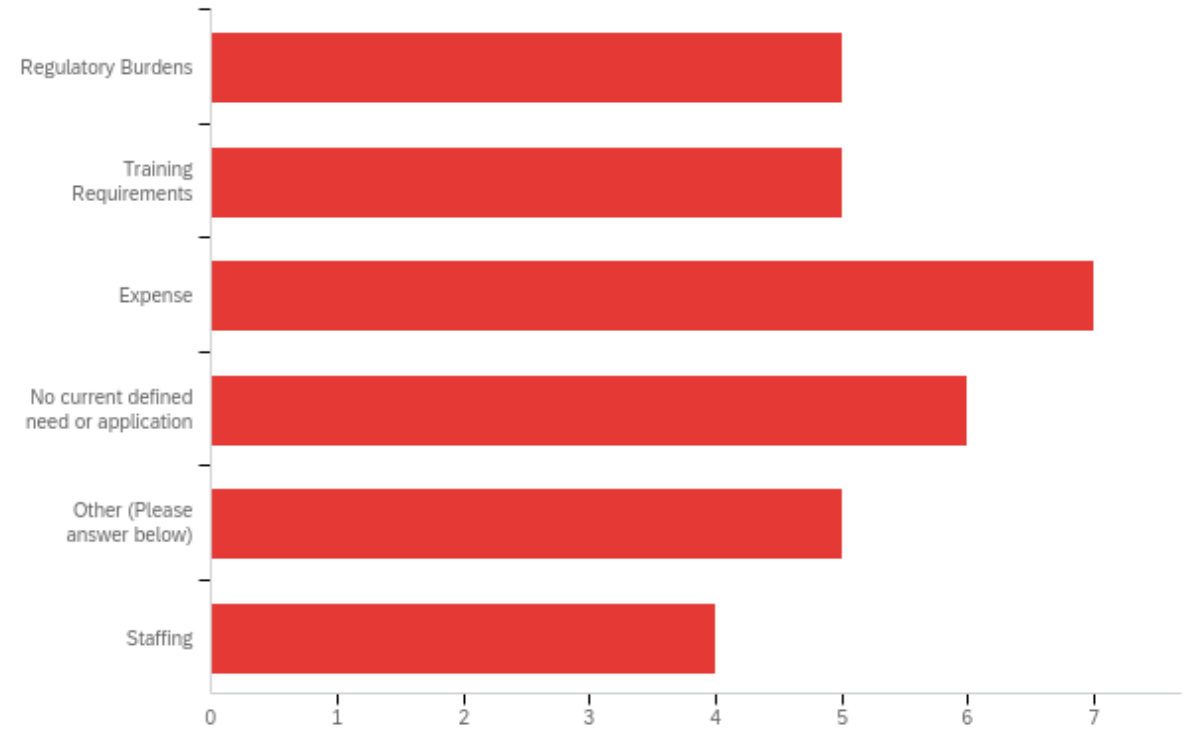
[Responses have been redacted to preserve privacy]

Q9.1 - What organizations have you coordinated with during a disaster?



#	Answer	%	Count
1	Federal/National Government	22.81%	13
2	State Government	19.30%	11
3	Local Government	21.05%	12
4	Non-profit	12.28%	7
5	Academic	8.77%	5
6	Private Sector	12.28%	7
7	Unsure	3.51%	2
	Total	100%	57

Q9.2 - Why doesn't your organization use UAS? Select all that apply.



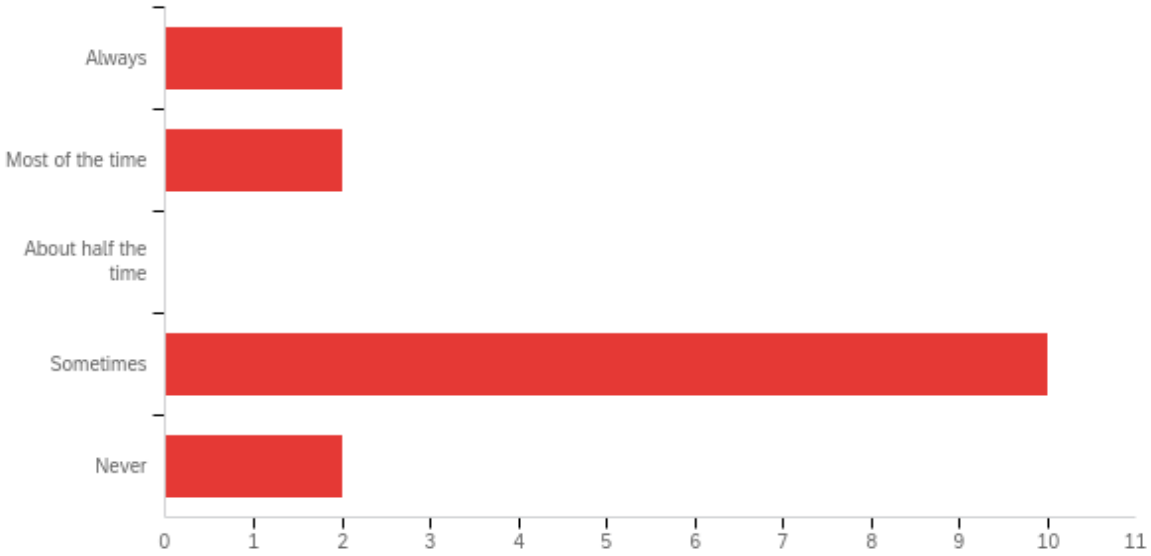
#	Answer	%	Count
1	Regulatory Burdens	15.63%	5
2	Training Requirements	15.63%	5
3	Expense	21.88%	7
4	No current defined need or application	18.75%	6
5	Other (Please answer below)	15.63%	5
6	Staffing	12.50%	4
	Total	100%	32

Q9.2 Other (Please answer below)

AJW does utilize UAS but we have to contract out all UAS operations due to regulatory burdens.
We are a state-level coordinating agency. Other state agencies utilize UAS platforms and they may be mission tasked during a disaster response.

We are actually looking in to using it
We are a training association
We do Consulting to help other agencies determine their needs.

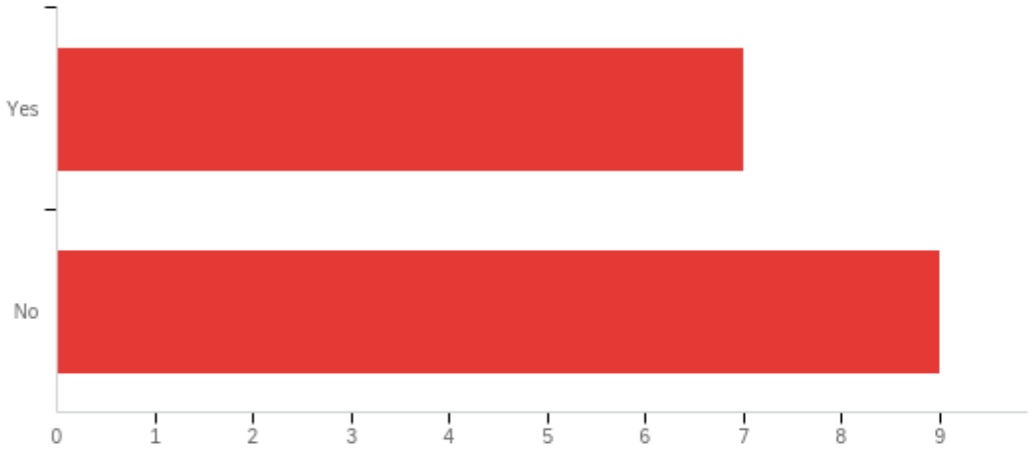
Q9.3 - How often does your agency use UAS data collected from other entities?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How often does your agency use UAS data collected from other entities?	1.00	5.00	3.50	1.22	1.50	16

#	Answer	%	Count
1	Always	12.50%	2
2	Most of the time	12.50%	2
3	About half the time	0.00%	0
4	Sometimes	62.50%	10
5	Never	12.50%	2
	Total	100%	16

Q10.1 - Would you be willing to provide contact information for someone at your agency or a partner agency better suited to answer questions about UAS?*If no, please share survey link with appropriate contact/s



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be willing to provide contact information for someone at your agency or a partner agency better suited to answer questions about UAS?*If no, please share survey link with appropriate contact/s	1.00	2.00	1.56	0.50	0.25	16

#	Answer	%	Count
1	Yes	43.75%	7
2	No	56.25%	9
	Total	100%	16

Q10.2 - Please provide contact information for this individual.

[Responses have been redacted to preserve privacy]

1.3 Survey Details and Results

1.3.1 Regional Symposium – Northeast Forest Fire Protection Compact – 17-19 March 2021

1.3.1.1 Date

The Northeast Forest Fire Protection Compact (NFFPC) regional symposium took place on March 17th and March 19th, 2021.

1.3.1.2 Location

The symposium took place as part of the NFFCP's Introduction to Unmanned Aerial Systems Workshop, hosted in partnership with the NFFPC and the University of Vermont as an online workshop.

1.3.1.3 Participants

A total of 14 participants attended this symposium. Attendees primarily worked for state government (80%) while the remaining attendeesworked for the federal government or at the national level (20%).

1.3.1.4 Questions and Analysis

A series of questions were asked throughout this symposium in order to gain insight into the practices, techniques, and concerns of participants and their organizations regarding the use of Unmanned Aircraft Systems (UAS) for disaster response.

1.3.1.5 Disaster Capabilities

This section of questions focused on the establishment and capabilities of a UAS program within the organization, and how this relates to disaster response.

- 50% of participating organizations indicated that they do not currently have a UAS program. 31% of all respondents have certified UAS pilots and 6% have UAS policies and procedures, own their own UAS and platforms, or have UAS data managers and analysts.
- Most organizations rate their ability to communicate with external organizations during a forest fire response as robust or acceptable. Most organizations indicated that they employ dedicated staff to handle airspace coordination during forest fires. One organization relies on external partners.
- 38% of participants' organizations are in the "discussion" phase of using UAS for forest fire response. 31% are "implementing" and 23% are "operational." The remaining 8% are in the "planning" phase.
- 85% of organizations respond to forest fires at least once per year. 50% of participants claimed their organization is responding to disasters with occupied/manned aircraft one or more times per year, while the rest were split between "infrequently (not annually)" and not at all.
- 50% of participating organizations have used UAS to respond to forest fires. These agencies are from federal or state government.
- 79% of the organizations carry out forest fire response exercises at least once per year, with 7% conducting them infrequently. 14% have never carried out an exercise.
- 50% of organizations have never carried out a forest first response exercises involving occupied/manned aircraft. 29% carry out these of exercises multiple times per year, with 14% indicating they do this once per year.

- 79% of organizations have never carried out a forest first response exercises involving UAS. Just 21% have carried out these of exercises at least once per year.

1.3.1.6 Platforms and Applications

These questions were geared towards platform types and use, as well as potential applications for the organization.

- Almost half of the participants indicated that their organization currently used occupied/manned aircraft for disasters. UAS (25%) and satellite (20%) were utilized by fewer organizations.
- When asked about how platform usage for disaster response might change over the next 5 years, UAS was ranked the highest on average (4.2), indicating that usage for this purpose could increase considerably. Satellite was ranked 3.6 and occupied/manned aircraft was ranked at 3.0, suggesting that usage of these technologies are expected to expand but at lower rates when compared to UAS.
- It was expressed that UAS technology could help organizations respond to disasters by improving hot spot detection in ground fires, providing rapid damage assessment, enhancing post fire investigations, and improving responder safety by increasing situational awareness.

1.3.1.7 Concerns

The goal of this portion of questions was to understand where potential worries and barriers exist that may prevent the use of UAS in disaster response from moving forward.

- The most expressed worries in terms of UAS for fire response were acceptance of new technology, conflicts with occupied/manned aircraft, and safety concerns including equipment failure.
- Primary barriers in deploying UAS were related to training and regulations. Other significant challenges included funding, acceptance from leadership, and policy considerations.
- No information was collected about requirements of trust between external organizations.

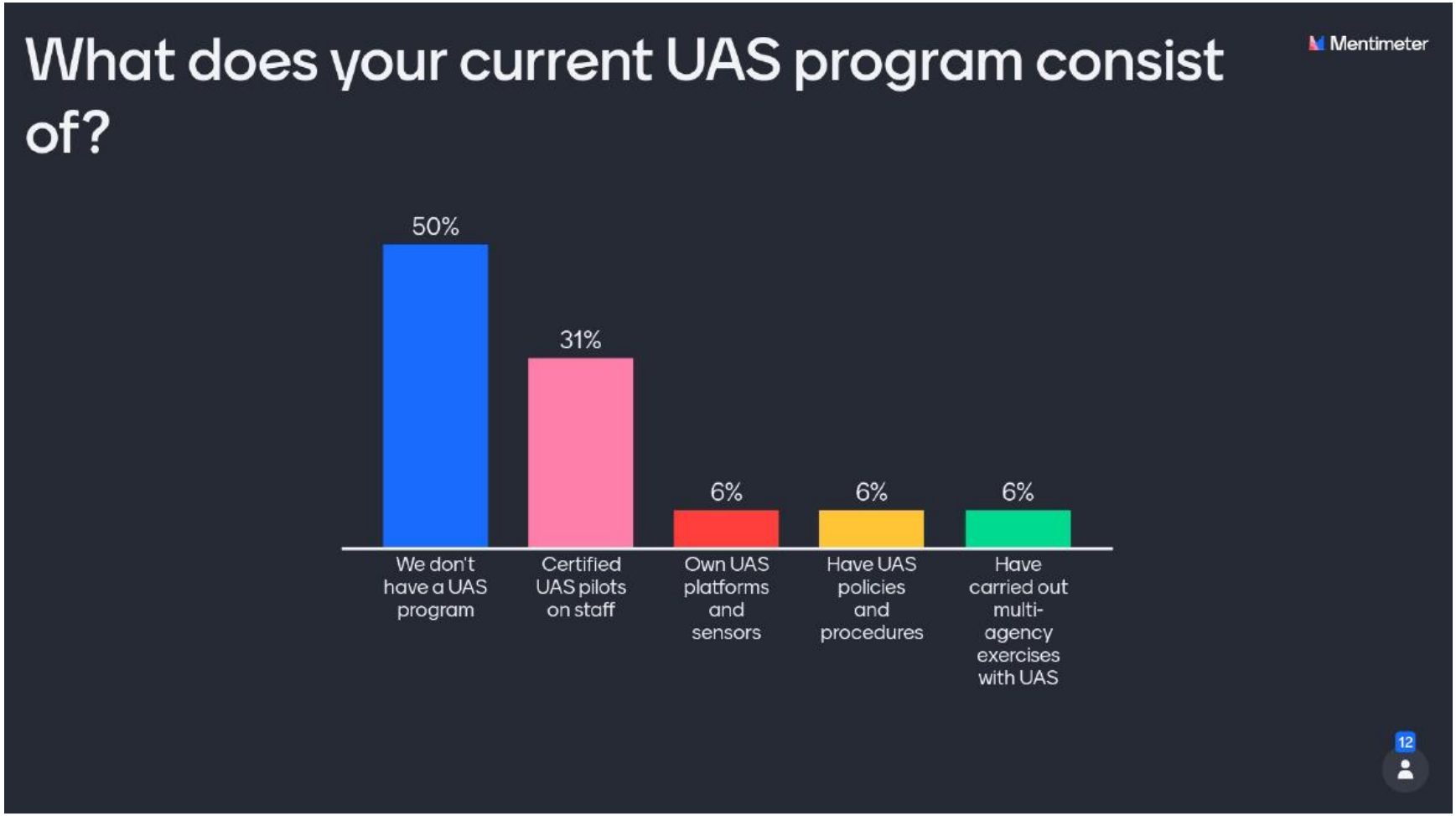
1.3.1.8 Waivers and Needs

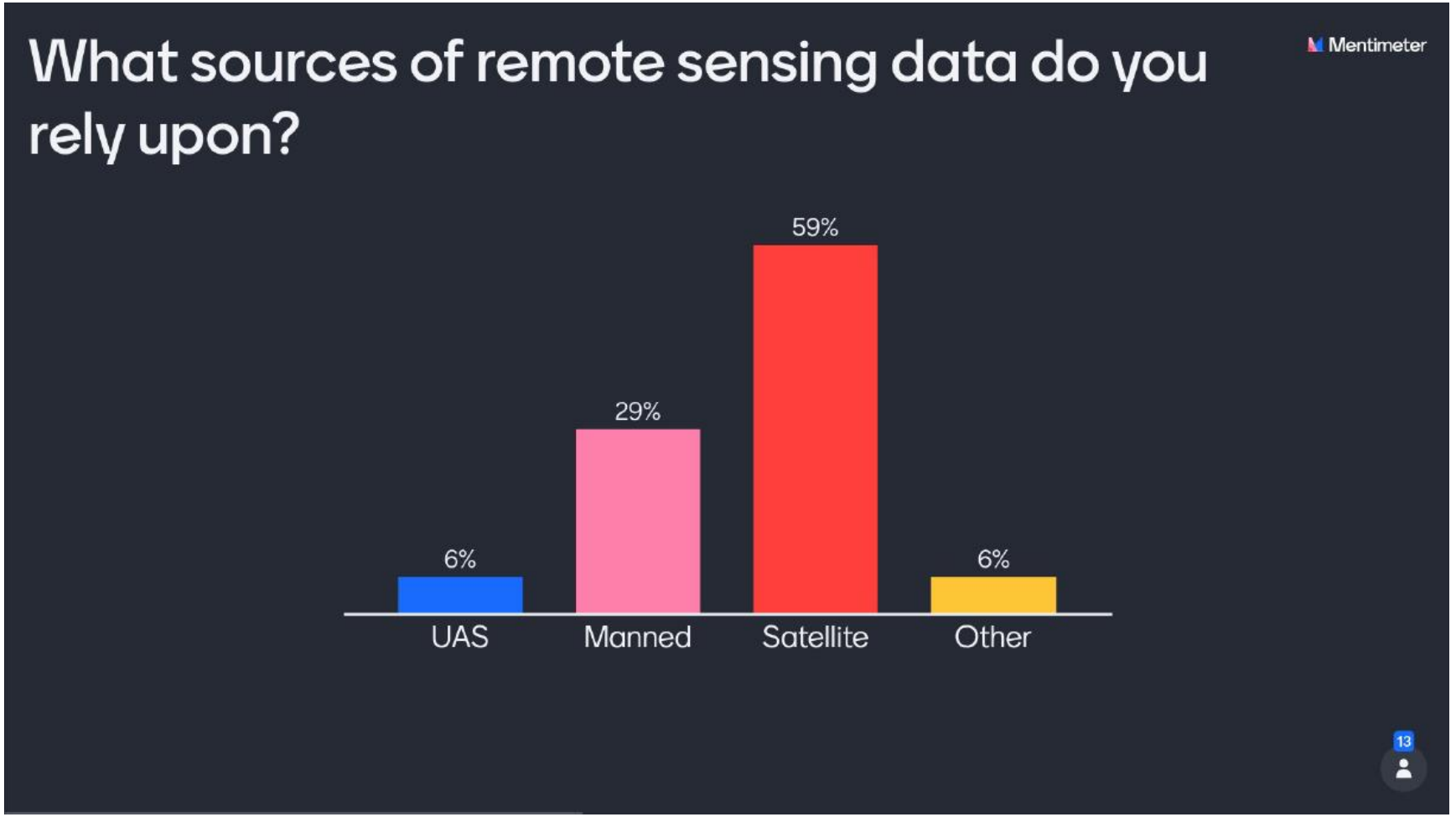
The remaining questions were intended to gauge which certifications and waivers are being utilized among organizations, and what additional elements would be most useful to implement UAS in disaster response.

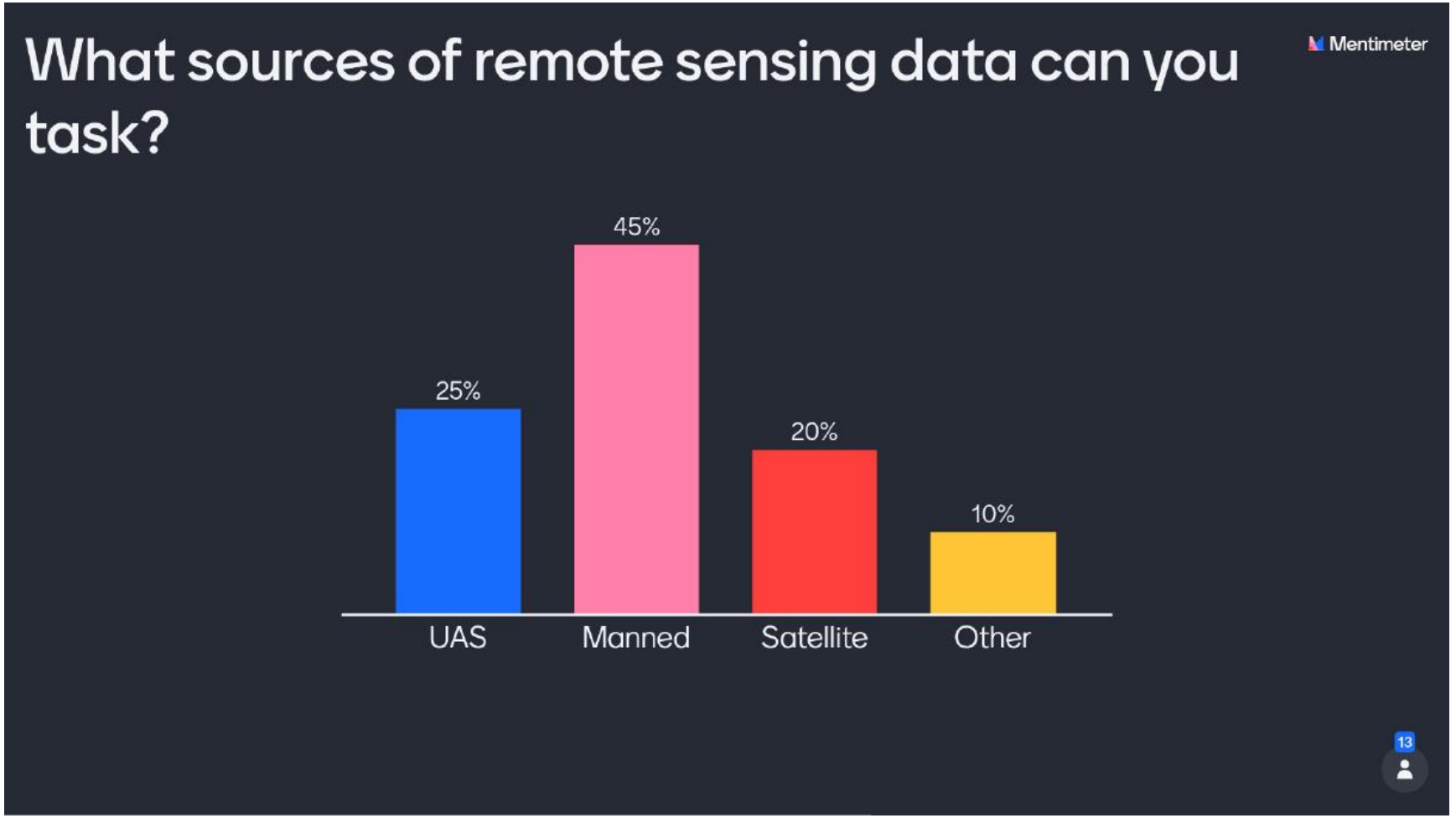
- No information about operating under different regulatory spaces was collected during this symposium.
- No information about existing waivers was collected during this symposium.
- When asked to rank the types of waivers that would be most critical to using UAS for disaster response, Beyond Visual Line of Sight (BVLOS) was ranked the highest. Flights over people and night operations were nearly even in second and third.
- To help organizations improve their use of UAS technology in response to a disaster, training was ranked as the most helpful, followed by exercises. Concepts of Operations (CONOPS) and policies were nearly even for last place.

- For the types of training that would help improve the agency's response to a disaster using UAS, flight operations and mission planning were ranked to be the most helpful, with pilot proficiency ranked as least helpful.
- No information about organizational competency was collected during this symposium.

1.3.1.9 NFFPC UAS Symposium Day 2 Results


What does your current UAS program consist of?
Mentimeter
50%
31%
6%
6%
6%
We don't have a UAS program
Certified UAS pilots on staff
Own UAS platforms and sensors
Have UAS policies and procedures
Have carried out multi-agency exercises with UAS
12


What sources of remote sensing data do you rely upon?
Mentimeter
59%
29%
6%
6%
UAS
Manned
Satellite
Other
13


What sources of remote sensing data can you task?
Mentimeter
45%
25%
20%
10%
UAS
Manned
Satellite
Other
13

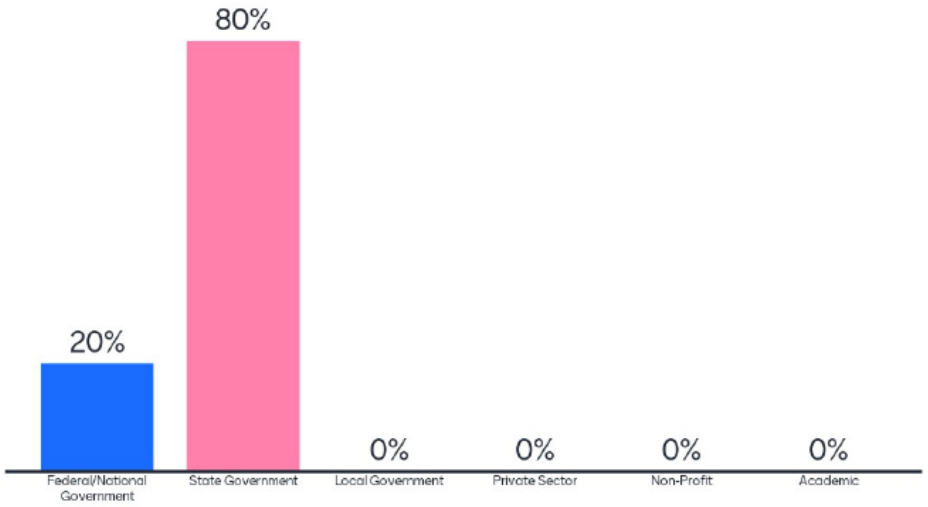

What are the barriers at your organization for employing UAS?
Mentimeter
funding
purchasing
understanding
policy
training
education
budget
unknown
faa fines
leadership
cost
its so new
regulations
executive acceptance
11


Rank your training needs
Mentimeter
Low
High
Certification (Part 107)
3.5
Flight operations
3.7
Platform specific
2.9
Sensor specific
2.8
Exercises
3.6
Data processing & analytics
3.4
13

1.3.1.10 NFFPC UAS Symposium Day 4 Results

What type of agency/organization do you work for?

Mentimeter

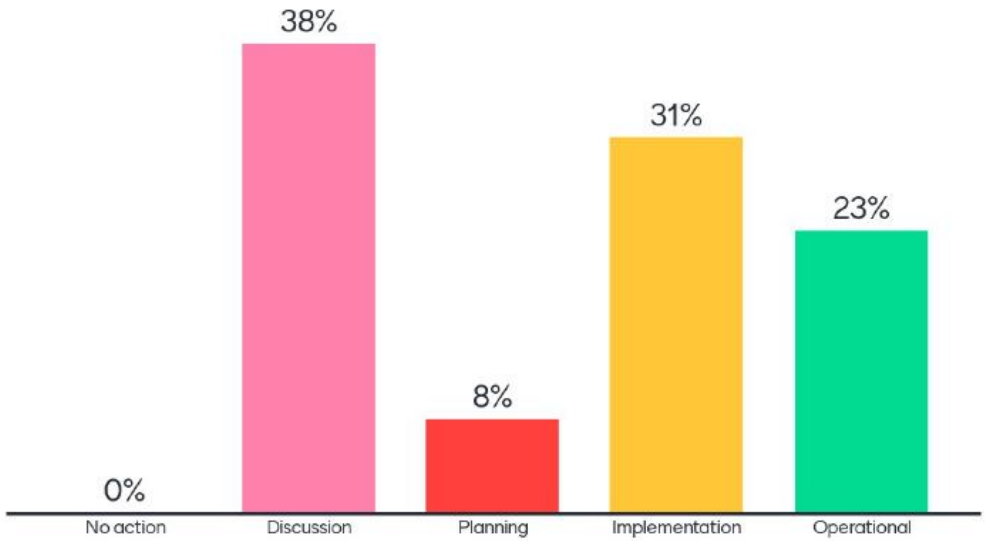


10

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

Where does your agency stand with respect to UAS integration for forest fire response?

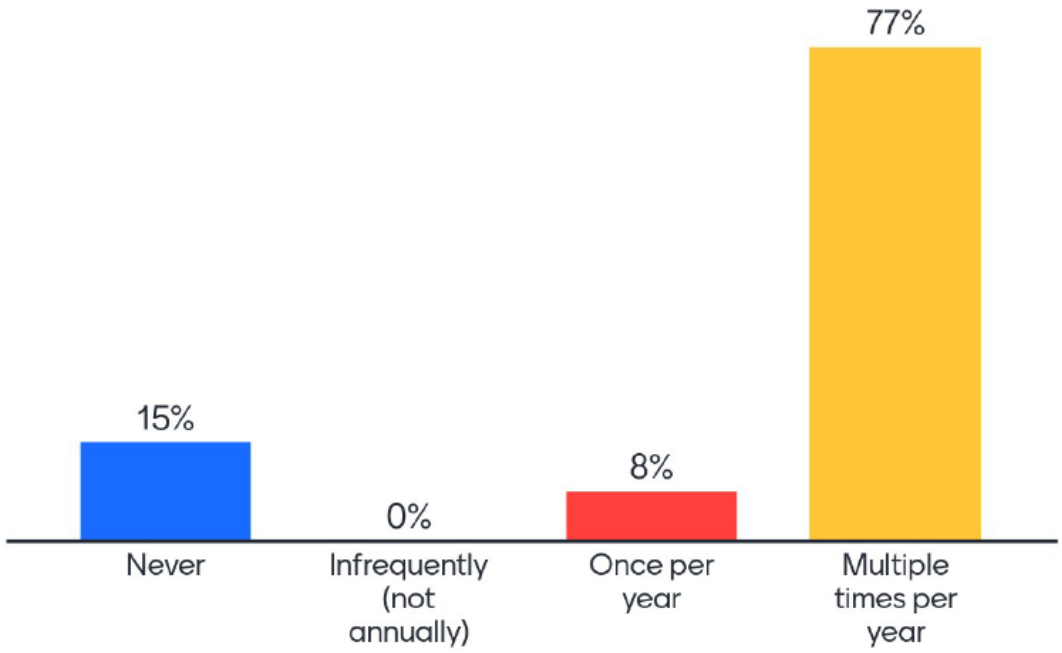
Mentimeter



13

How often do you respond to forest fires?

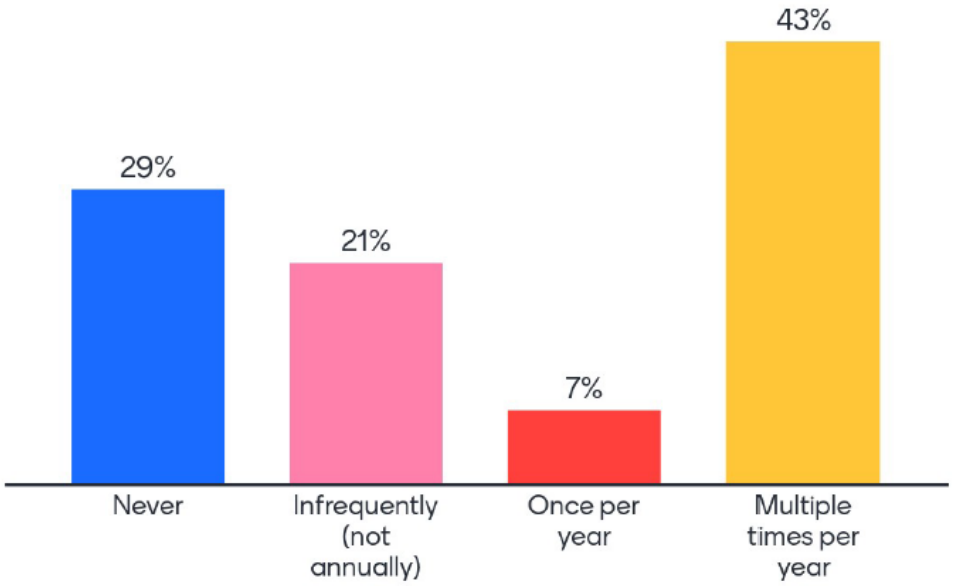
Mentimeter



13

How often do you respond to forest fires using occupied/manned aircraft?

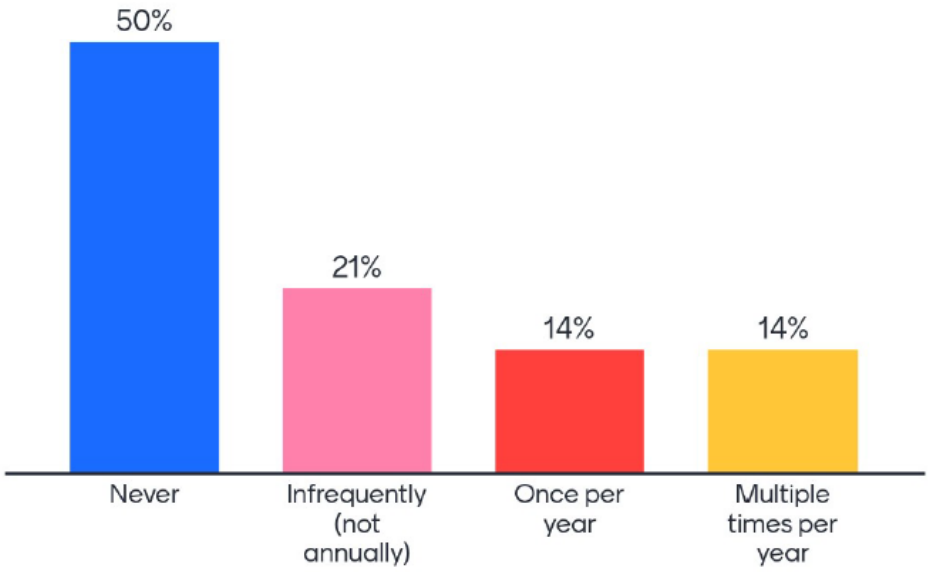
Mentimeter



14

How often do you respond to forest fires using UAS?

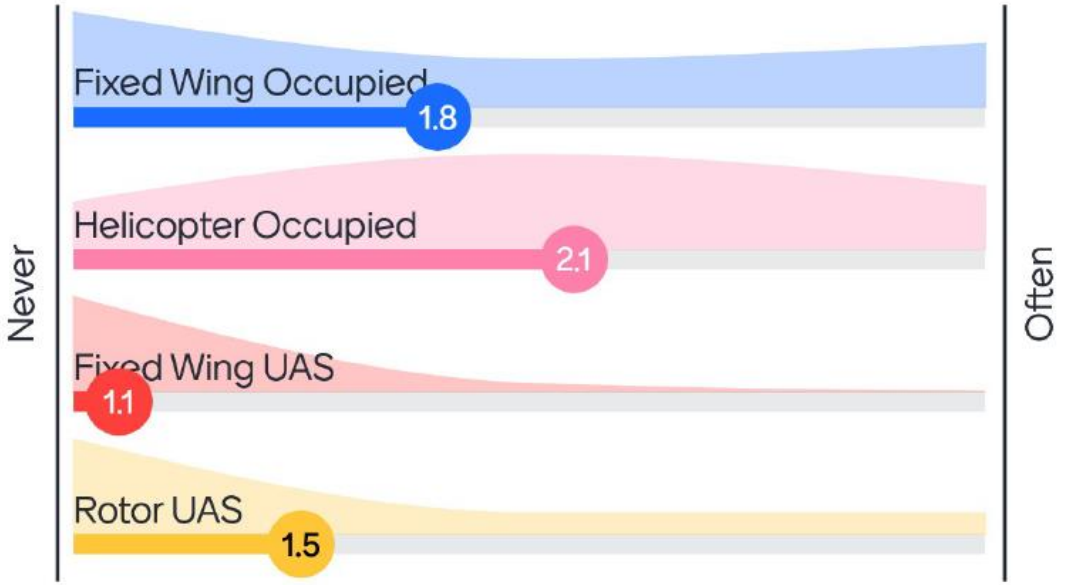
Mentimeter



14

At what frequency do you work with the following aircraft for forest fire response?

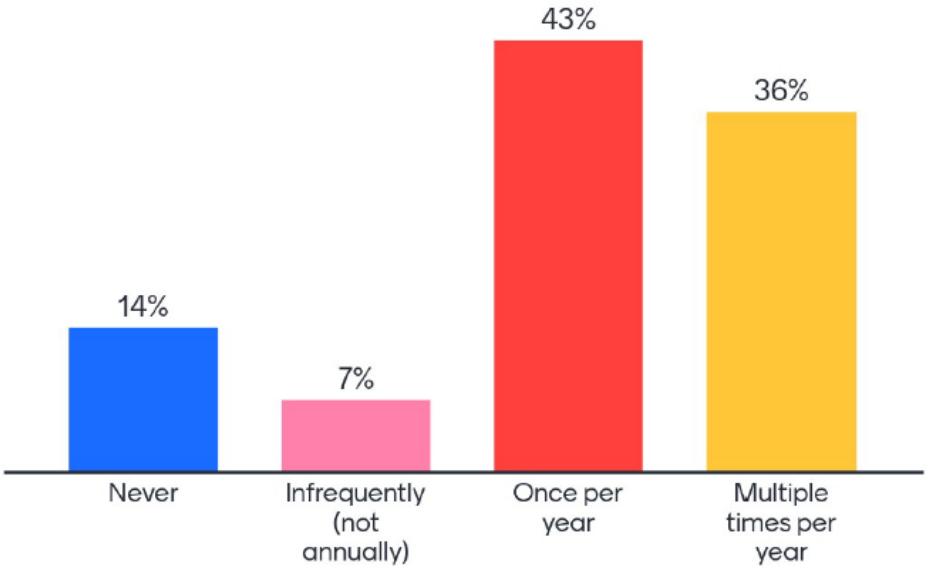
Mentimeter



14

How often do you carry out forest fire response exercises?

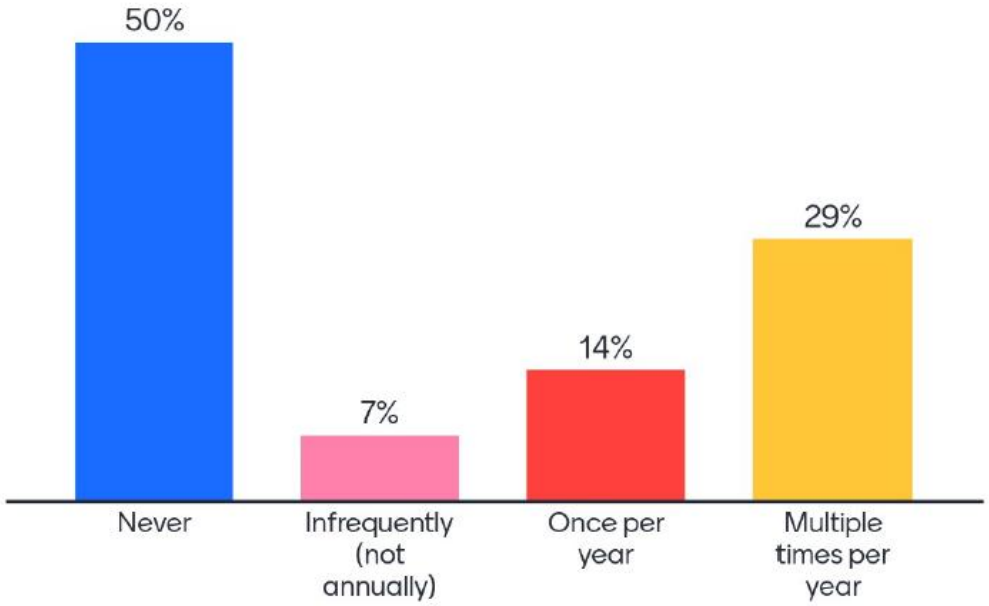
Mentimeter



14

How often do you carry out forest fire response exercises that included occupied/manned aircraft?

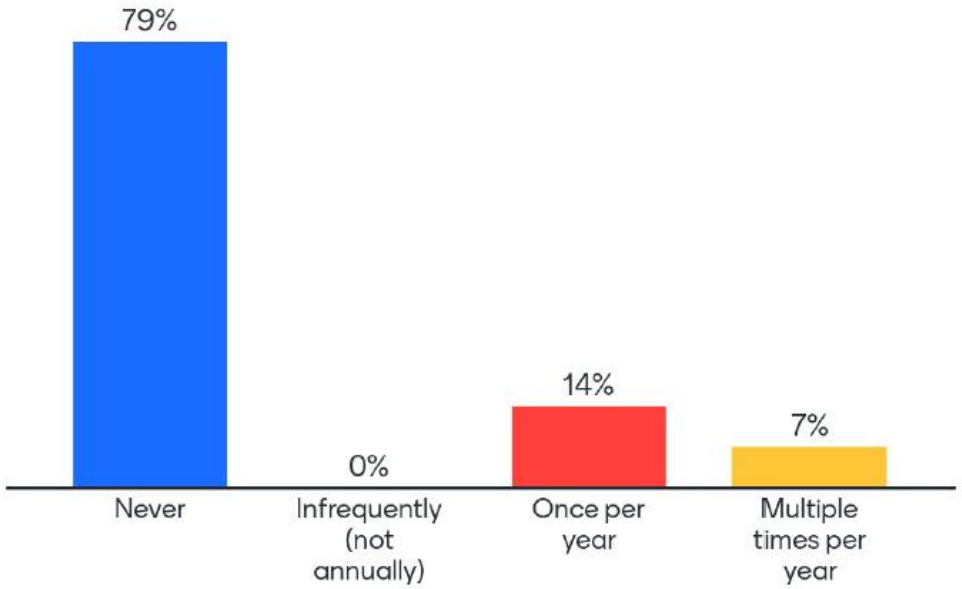
Mentimeter



14

How often do you carry out forest fire response exercises that included UAS?

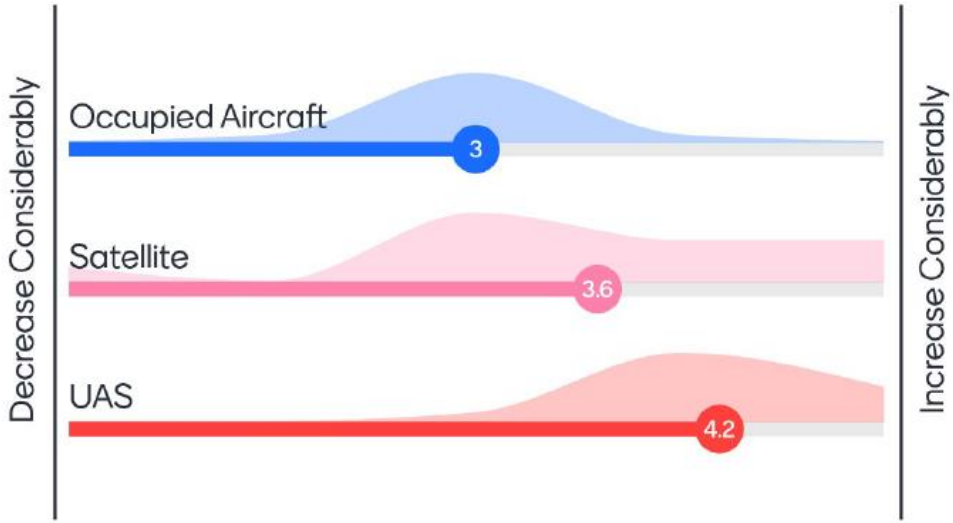
Mentimeter



14

How do you see your organization's use of the following platforms changing over the next five years for forest fire response?

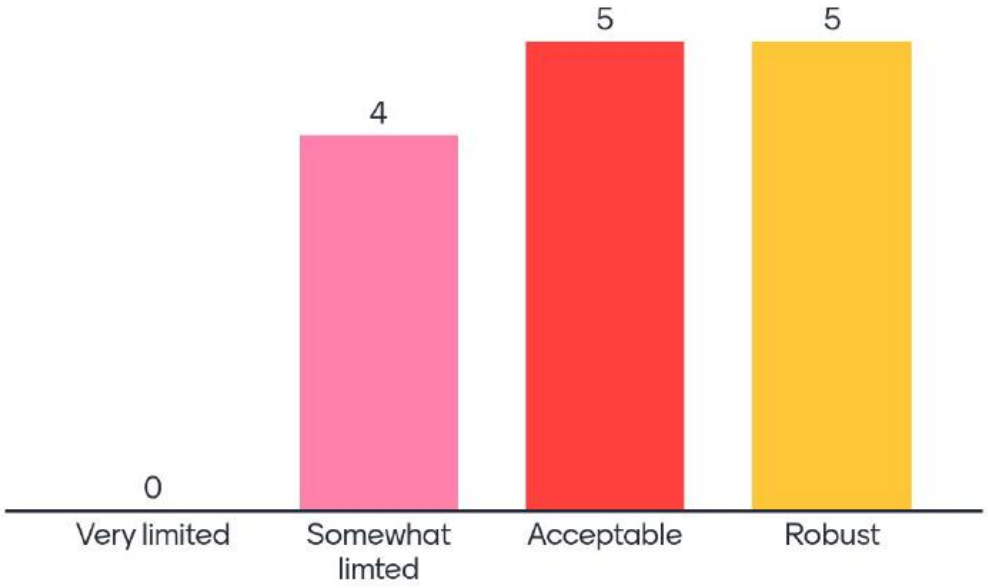
Mentimeter



14

How would you rate your ability to communicate with external organizations during a forest fire response?

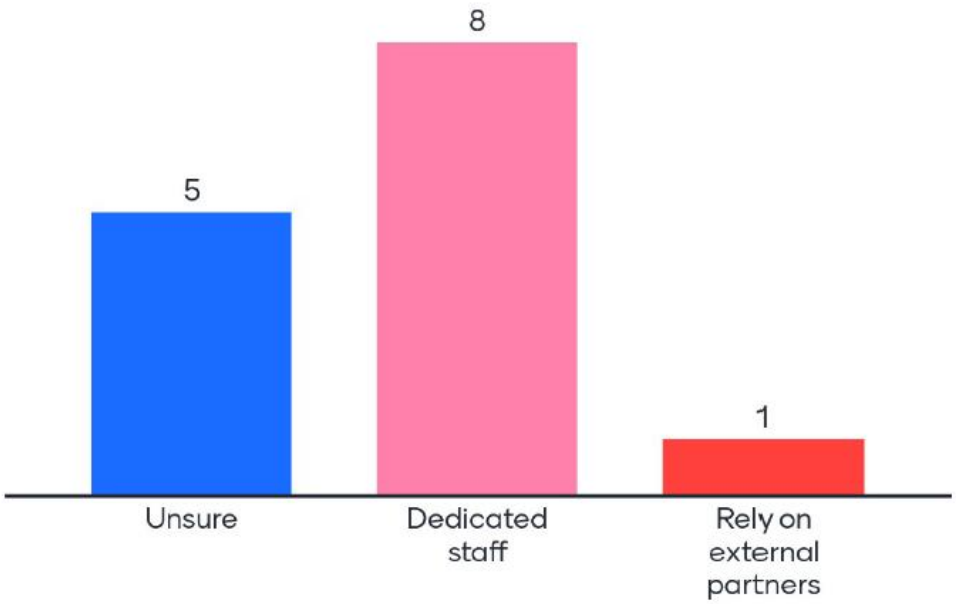
Mentimeter



14

How does your organization handle airspace coordination during a forest fire?

Mentimeter



14

How do you think UAS technology will help your organization respond to forest fires?

Mentimeter

rapid awareness, better sit reports, improved command decisions

We will be able to get a better size up in a more timely manner so that we can respond appropriately.

Safety, less expensive

Investigation, situational awareness, hot spot identification.

hot-spot

Currently being used for mapping and hot spot detection. Cases where it would have helped with locating

-Hot spot recognition in ground fires-potential to use software like Pix4D react to rapidly map a scene-Post fire investigation mapping

More acurate information on the field.

Better maping

15

How do you think UAS technology will help your organization respond to forest fires?

Mentimeter

firefighter security

detection, mapping, safety

Help with planning where fire crews will be deployed and provide information on values at risk

increase awareness for fire and UAS program

It Helps in many ways like quick real time mapping, Sit reps on the spot, helps to see big picture and dictates tactics. Also can measure what the 20ft winds. Also helps to see futures tactics

We uses UAS a lot for AARs and reforested response

15

What are you main concerns with respect to employing UAS for fire response?

Mentimeter

regulation	Conflicting with manned aircraft	We don't have UAS
Safety= firefighters, equipment failure	BVOLS	acceptance of the tech.
we don't have uas	interference with arriving manned aircraft (when UAS becomes more widespread here)	Safety, regulations

15

What are you main concerns with respect to employing UAS for fire response?

Mentimeter

potential for drone failure while operating under a limited budget

I don't know enough to answer this question

We dont have uas

Get more practice with UAS

support from higher ups to embrace tech

Aging technology and directors unwillingness to embrace it

15

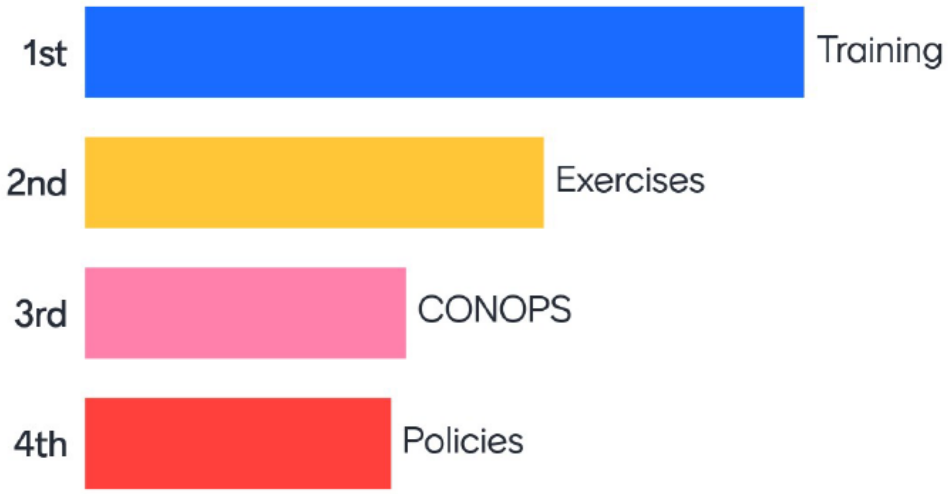
Rank the types of waivers you think would be crucial to using UAS for forest fires response

Mentimeter

12

Rank what would help your organization become operational with UAS technology

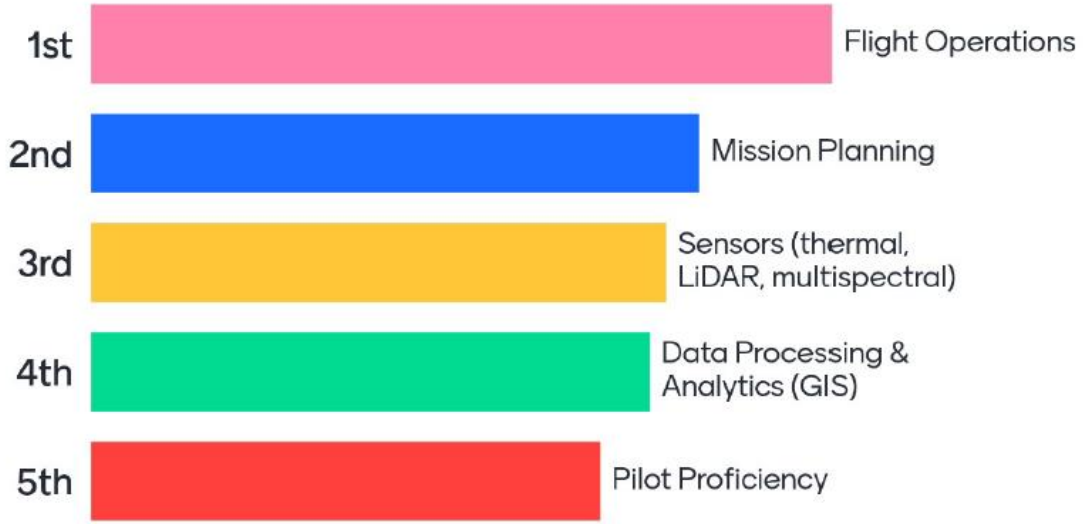
Mentimeter



13

Rank the types of training that would help your organization implement UAS technology?

Mentimeter



13

How interested would you be in attending the following?

Mentimeter

13

1.3.2 Regional Symposium – FEMA Region 1 – 19 May 2021

1.3.2.1 Date

The Federal Emergency Management Agency (FEMA) Region 1 regional symposium took place on May 19th, 2021.

1.3.2.2 Location

The symposium took place as part of the FEMA Region 1 UAS Working Group meeting, hosted by FEMA online via Zoom. FEMA Region 1 oversees management for the Tribal Nations of New England as well as Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

1.3.2.3 Participants

A total of 17 participants attended this symposium. Most attendees worked for a federal organization (33%), while the remaining worked for state (27%), local (20%), academic (13%), and non-profit (7%) sectors. No one attended from the private sector, and two of the participants did not indicate their organization type. Roles of participants within their organizations ranged from emergency management to technician, pilot, analyst, director, security, and research.

1.3.2.4 Questions and Analysis

A series of questions were asked throughout this symposium in order to gain insight into the practices, techniques, and concerns of participants and their organizations regarding the use of UAS for disaster response.

1.3.2.5 Disaster Capabilities

This section of questions focused on the establishment and capabilities of a UAS program within the organization, and how this relates to disaster response.

- 34% of participating organizations indicated that they do not currently have a UAS program. About 20% of all respondents have certified UAS pilots and 20% have UAS policies and procedures, but less than 15% own their own UAS and platforms and only 10% have UAS data managers and analysts.
- Most organizations have not coordinated airspace with other organizations or agencies during a disaster, while a few indicated coordination on the state level.
- 44% of participants' organizations are in the "discussion" phase of using UAS for disaster response, and 25% are in the "planning" phase. A combined 12% are either implementing or operating UAS disaster response, and the remaining 19% have no action regarding the subject.
- Only 25% of participants claimed their organization is responding to disasters with occupied/manned aircraft multiple times per year, while the rest were split between "infrequently (not annually)" and not at all.
- Just 20% of participating organizations have used UAS to respond to disasters. The only organization that indicated using them multiple times a year was from the non-profit sector.

- 75% of the organizations never or infrequently participate in multi-agency disaster response exercises that involve airspace coordination. The remaining 25% is split evenly between once per year or multiple times per year.

1.3.2.6 Platforms and Applications

These questions were geared towards platform types and use, as well as potential applications for the organization.

- Almost half of the participants indicated that their organization currently used occupied/manned aircraft for disasters. Satellite (30%) and UAS (22%) were utilized by fewer organizations.
- When asked about how platform usage for disaster response might change over the next 5 years, UAS was ranked the highest on average (4.2), indicating that usage for this purpose could increase considerably. Satellite was ranked 3.4 and occupied/manned aircraft was ranked at 3.2, suggesting that usage of these technologies are expected to expand but at lower rates when compared to UAS.
- It was expressed that UAS technology could help organizations respond to disasters by providing situational awareness, rapid and non-rapid damage assessment, live imagery and data streams, search and rescue capabilities, and improved cooperation and organization.

1.3.2.7 Concerns

The goal of this portion of questions was to understand where potential worries and barriers existed that may prevent the use of UAS in disaster response from moving forward.

- The primary concern about utilizing UAS during a disaster was related the ability to carry out airspace coordination among non-participating organizations.
- The most expressed worry in terms of UAS and disaster response was data overload. Other worries included licensing and legal challenges, safety concerns, environmental factors, lack of coordination, and other uncertainties.
- Lack of funding was a primary barrier to deploying UAS for disaster response. Other significant challenges included coordination, policy and licensing, flights over people and BVLOS limitations, additional FAA restrictions, liability concerns, and logistical hurdles.
- To trust that another organization could operate their UAS safely during disasters, participants highlighted the need for communication, training and experience, certifications and standards, as well as existing relationships.
- Liability, safety, air space coordination, and unrealistic expectations were a few of the main concerns that participants had with respect to employing UAS for disaster response.

1.3.2.8 Waivers and Needs

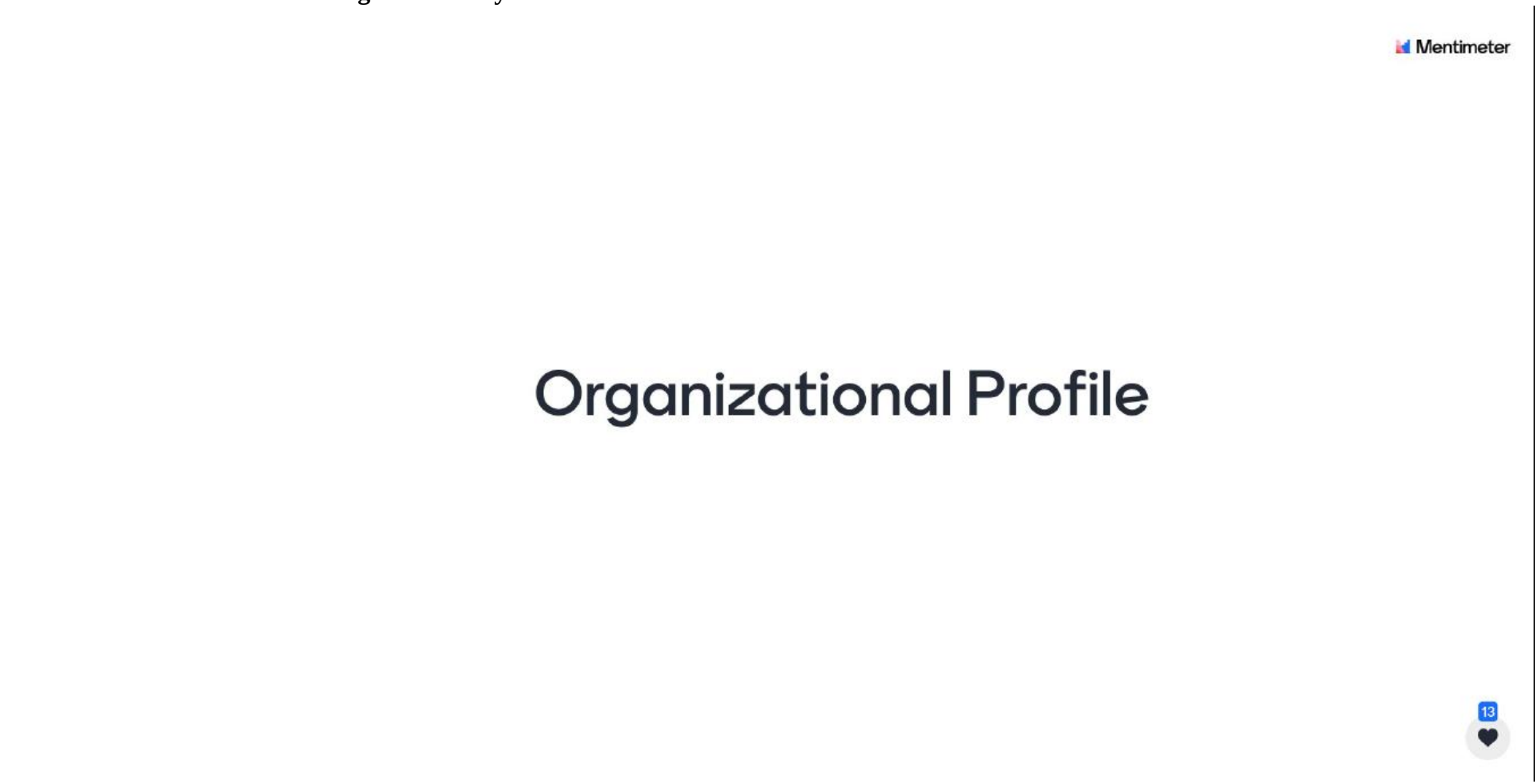
The remaining questions were intended to gauge which certifications and waivers are being utilized among organizations, and what additional elements would be most useful to implement UAS in disaster response.

- More than half of the organizations being represented have personnel who have obtained Part 107 licenses, while 20% of organizations have operated under a Certificate of

Authorization (COA). 20% of organizations also indicated that they have operated via a Special Governmental Interest (SGI) waiver.

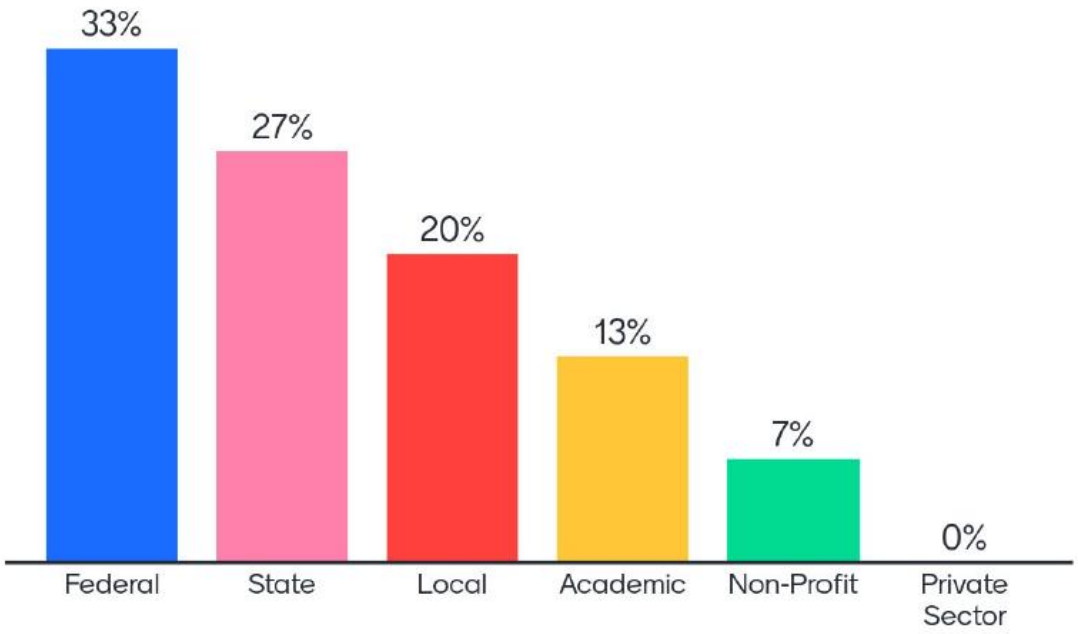
- Most organizations have not obtained any waiver under Part 107. Waivers for altitude, BVLOS, flights over people, night operations, and controlled airspace had each been granted for between 5-15% of the organizations.
- When asked to rank the types of waivers that would be most critical to using UAS for disaster response, flights over people and vehicles were ranked the highest. Night operations and BVLOS came in evenly at second and third, and at the bottom of the list was waivers for weight (over 55lbs).
- To help organizations improve their use of UAS technology in response to a disaster, exercises were ranked as the most helpful, with training, policies and regulations, and CONOPS and TTP's in preceding order.
- For the types of training that would help improve the agency's response to a disaster using UAS, interagency coordination and communication as well as flight operations/pilot proficiency were most valued.
- When ranking organizational UAS competency, geospatial mapping and standard data processing were among the highest; fixed wing operation was the lowest ranked.

1.3.2.9 FEMA Region 1 Survey Results



What type of organization do you work for?

Mentimeter



15

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Alliance for System Safety of UAS through Research Excellence

How would you describe your role within your organization?

Mentimeter

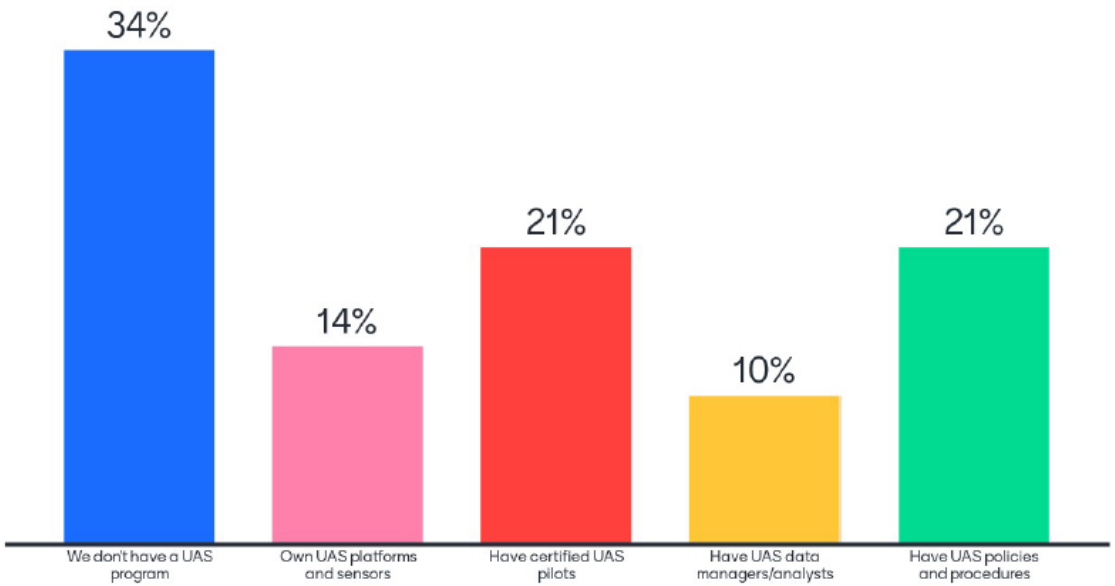
15

Mentimeter

Disaster Capabilities

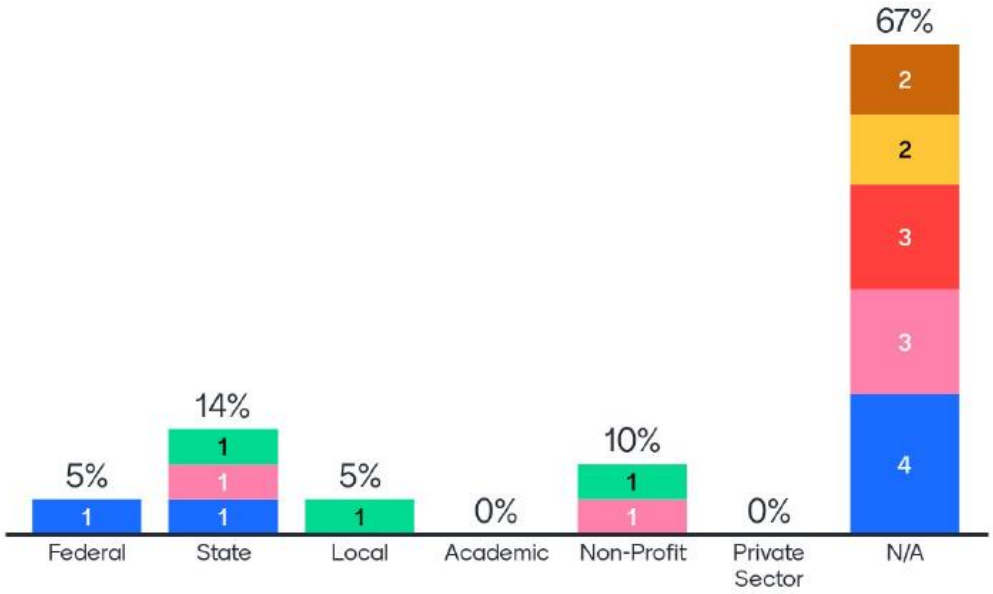
What does your current UAS program consist of? (Check all that apply)

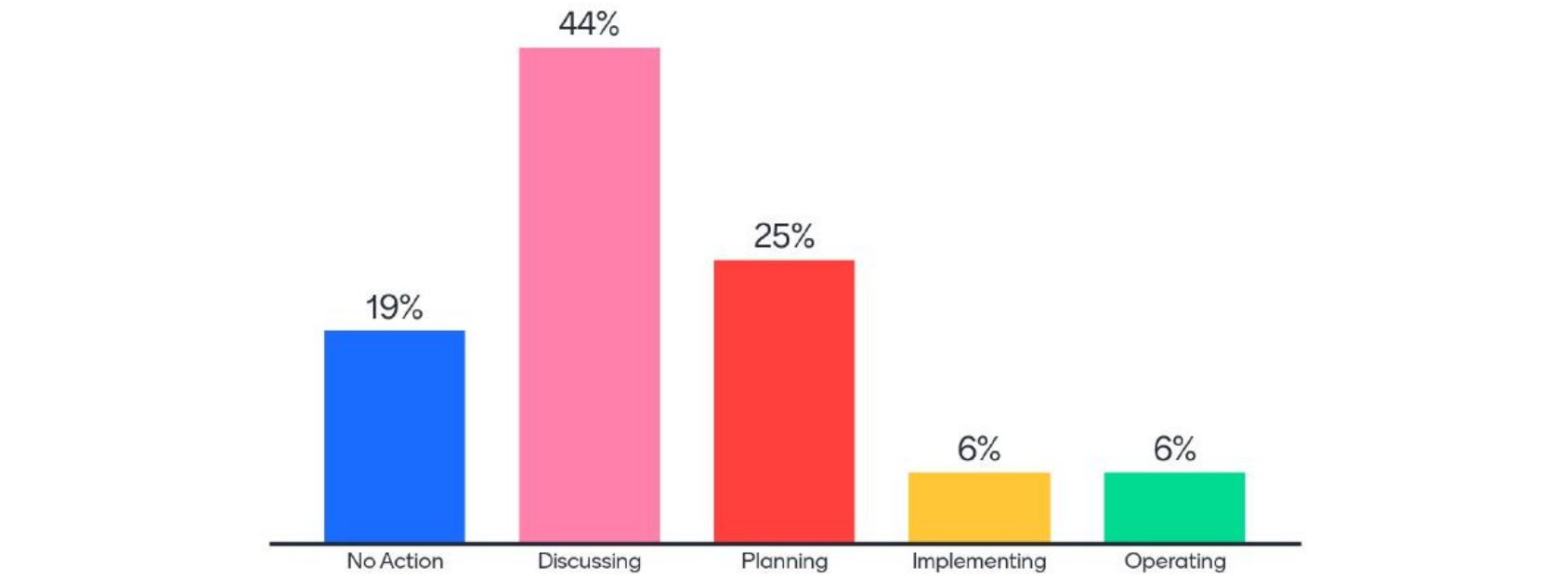
Mentimeter



What organizations/agencies has your organization coordinated airspace with during a disaster?

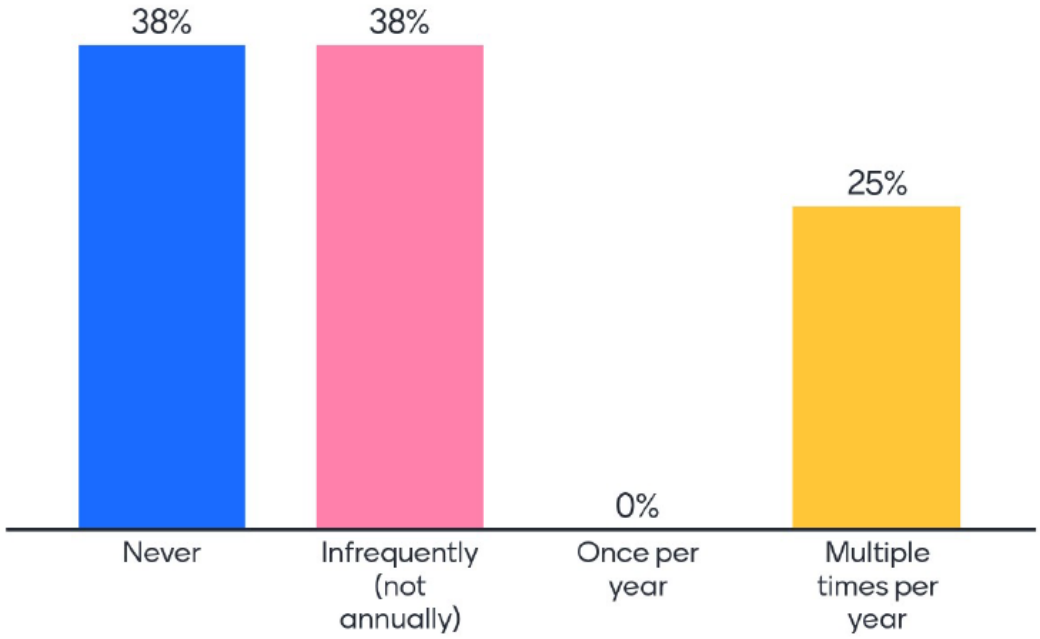
Mentimeter




Where does your organization stand with respect to using UAS for disaster response?
Mentimeter
44%
25%
19%
6%
6%
No Action
Discussing
Planning
Implementing
Operating

How often does your organization respond to disasters using occupied/manned aircraft?

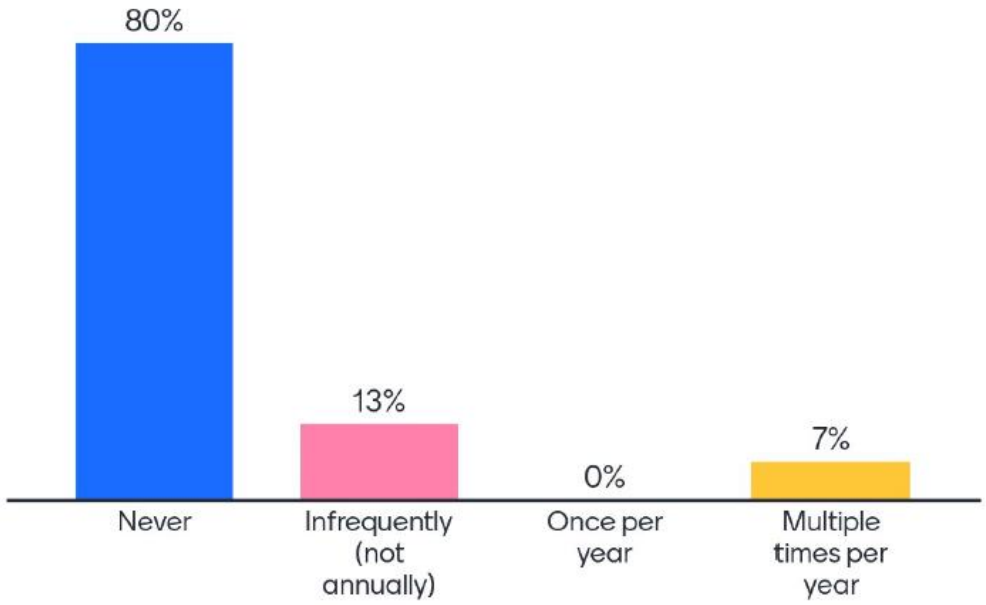
Mentimeter



16

How often does your organization respond to disasters using UAS?

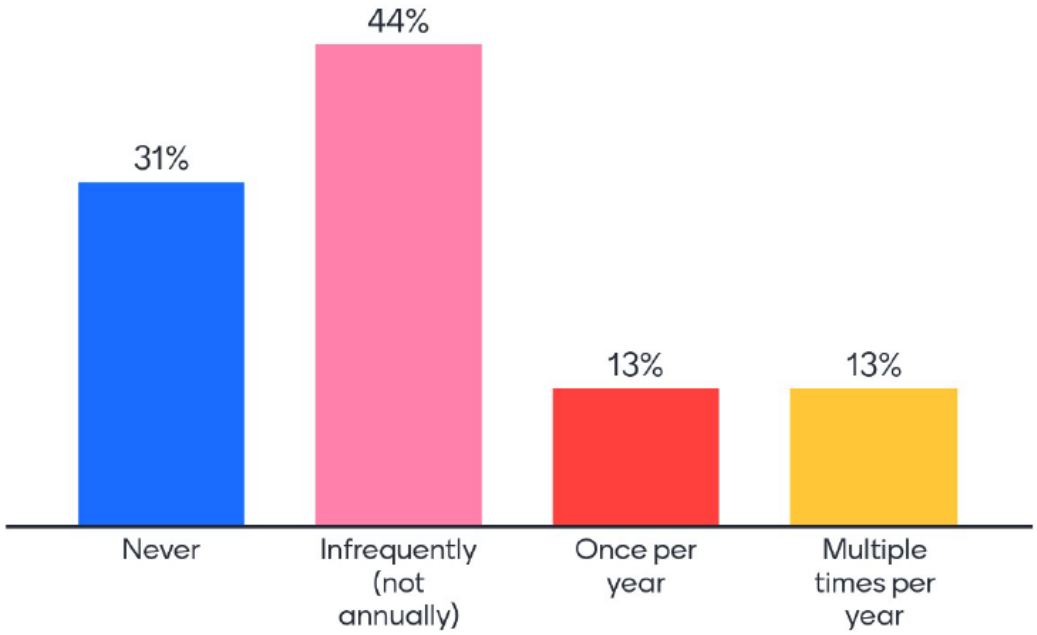
Mentimeter



15

How often does your organization participate in multi-agency disaster response exercises that involves airspace coordination?

Mentimeter



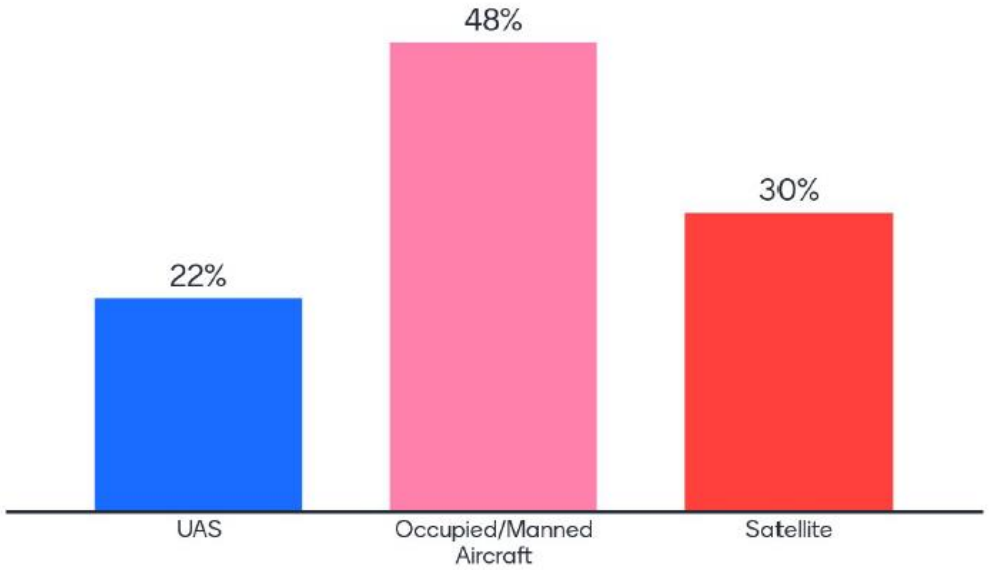
16

Mentimeter

Platforms & Applications

Which platforms does your organization currently use for disasters?

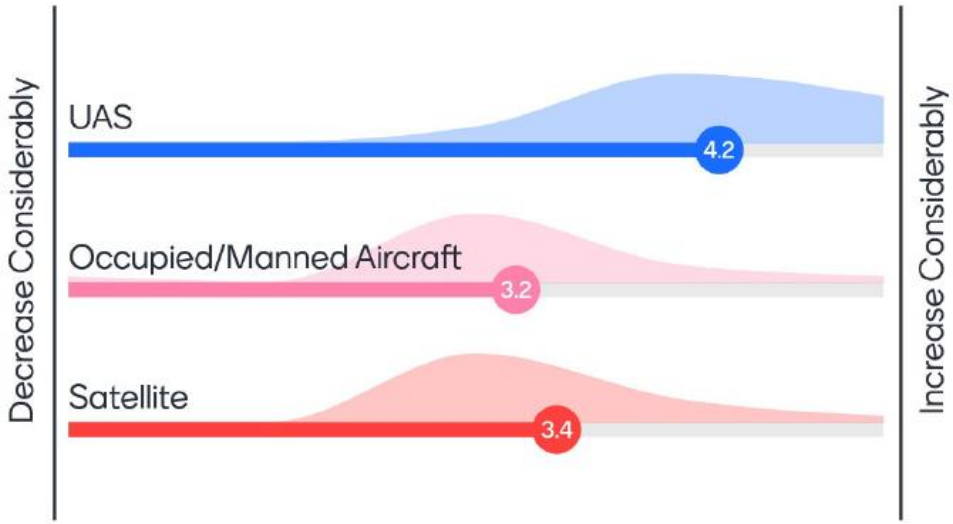
Mentimeter



16

How do you see your organization's use of the following platforms changing over the next five years for disaster response?

Mentimeter



17

How do you think UAS technology will help your organization respond to disasters?

Mentimeter

18

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Alliance for System Safety of UAS through Research Excellence

Mentimeter

Concerns

How concerned are you about the following during a disaster?

Mentimeter

15

What are you most worried about in terms of UAS and disaster response?

Mentimeter

15

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ASSURE
Alliance for System Safety of UAS through Research Excellence

What are the barriers at your organization for employing UAS during a disaster?

Mentimeter

21

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Alliance for System Safety of UAS through Research Excellence

What do you need to trust that another organization can operate their UAS safely during a disaster?

Mentimeter

14

What are your main concerns with respect to employing UAS for disaster response?

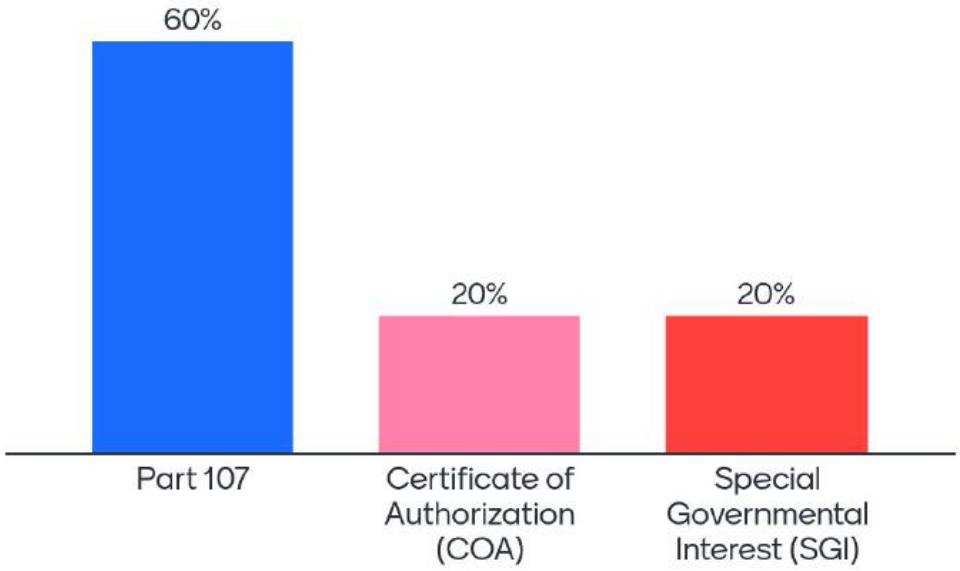
Mentimeter

14

Waivers & Needs

Has your organization obtained any of the following for UAS?

Mentimeter



8

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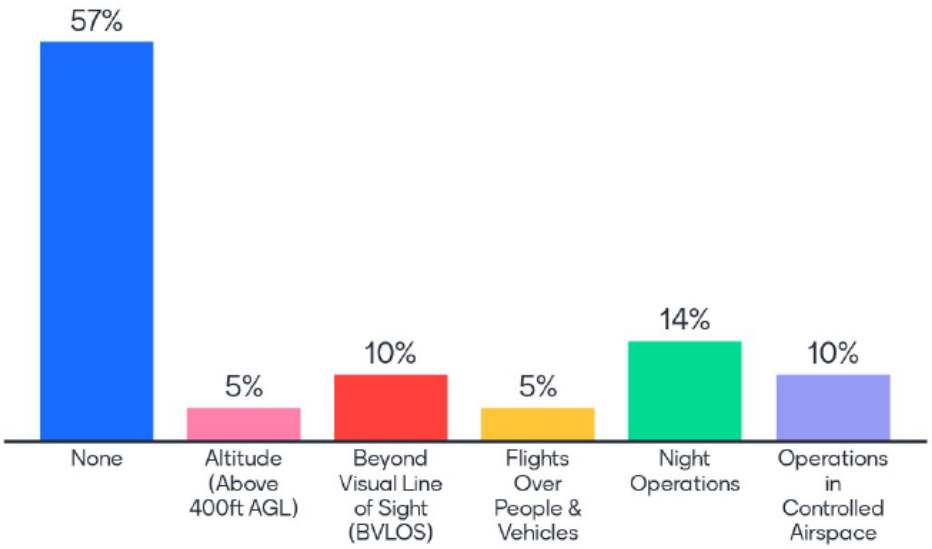
ASSURE
Alliance for System Safety of UAS through Research Excellence

What waivers have you obtained for UAS operations?

Mentimeter



15

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ASSURE
Alliance for System Safety of UAS through Research Excellence

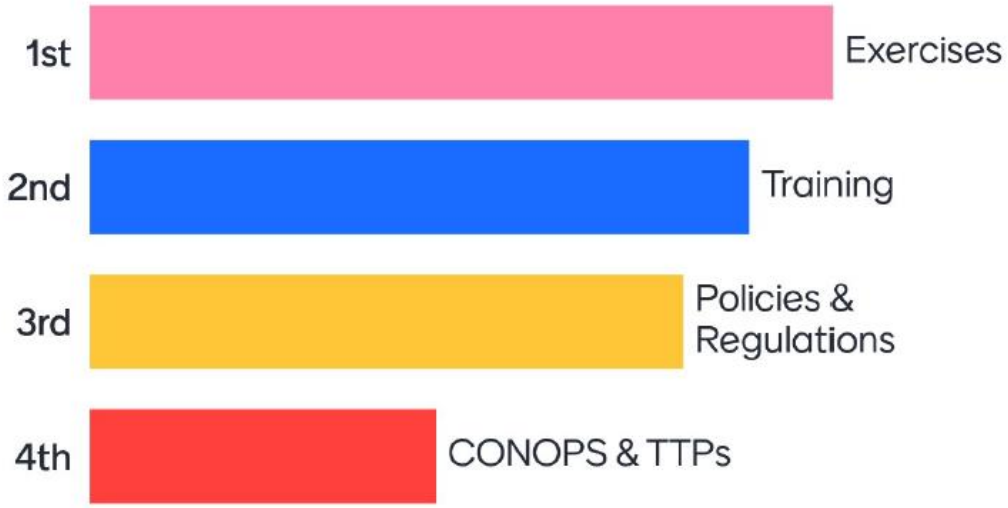
Rank the types of waivers you think would be critical to using UAS for disaster response

Mentimeter

16

Rank what would help your organization improve your use of UAS technology in response to a disaster.

Mentimeter



15

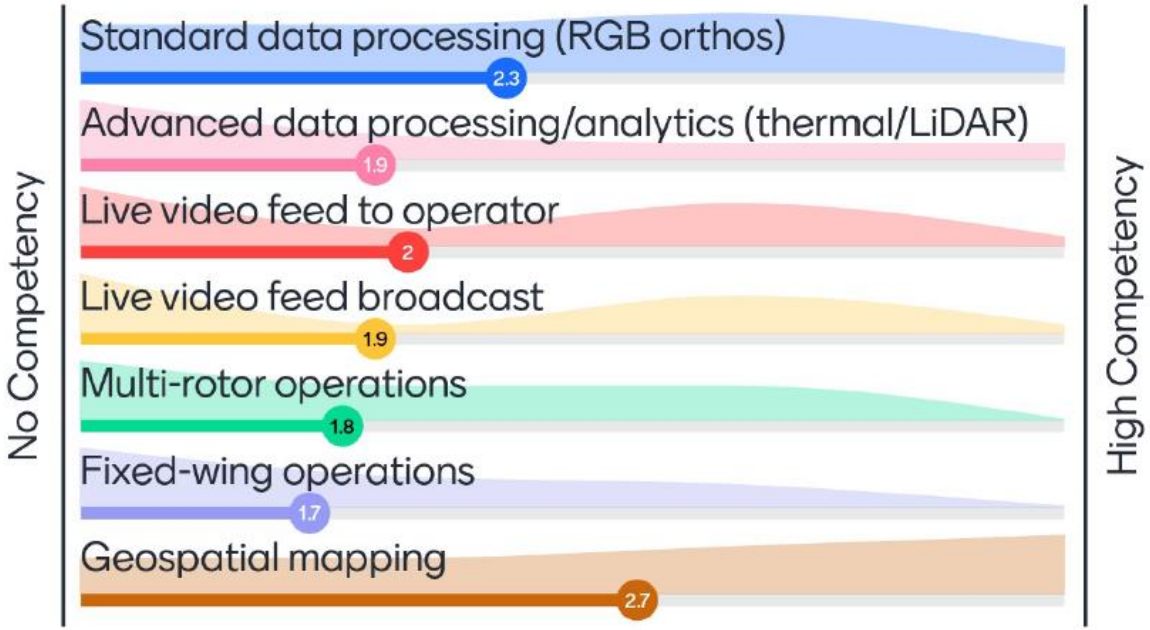
Rank the types of training that would help improve your agency's response to a disaster using UAS.

Mentimeter

16

Rate your organizational UAS competency

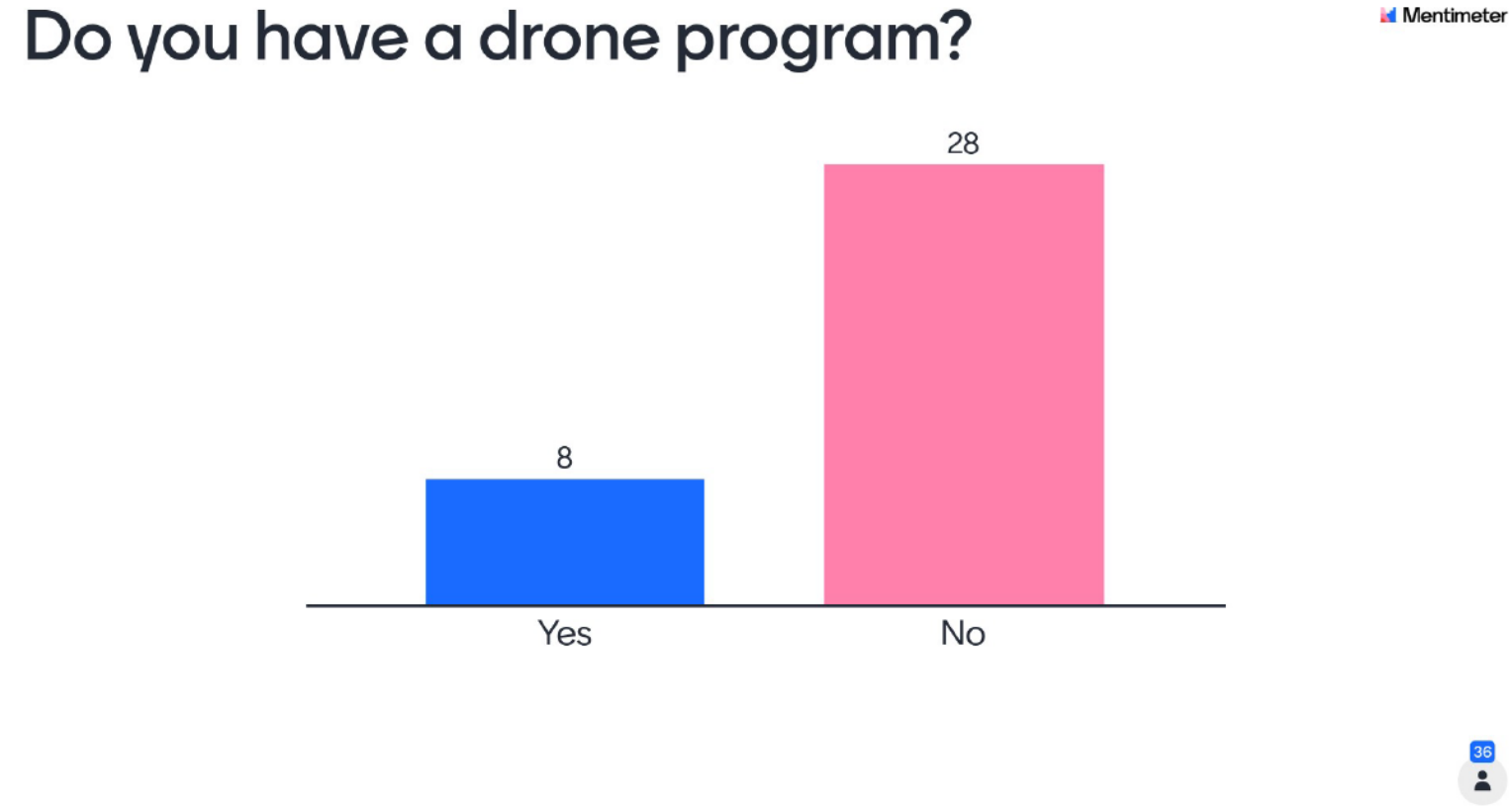
Mentimeter



15

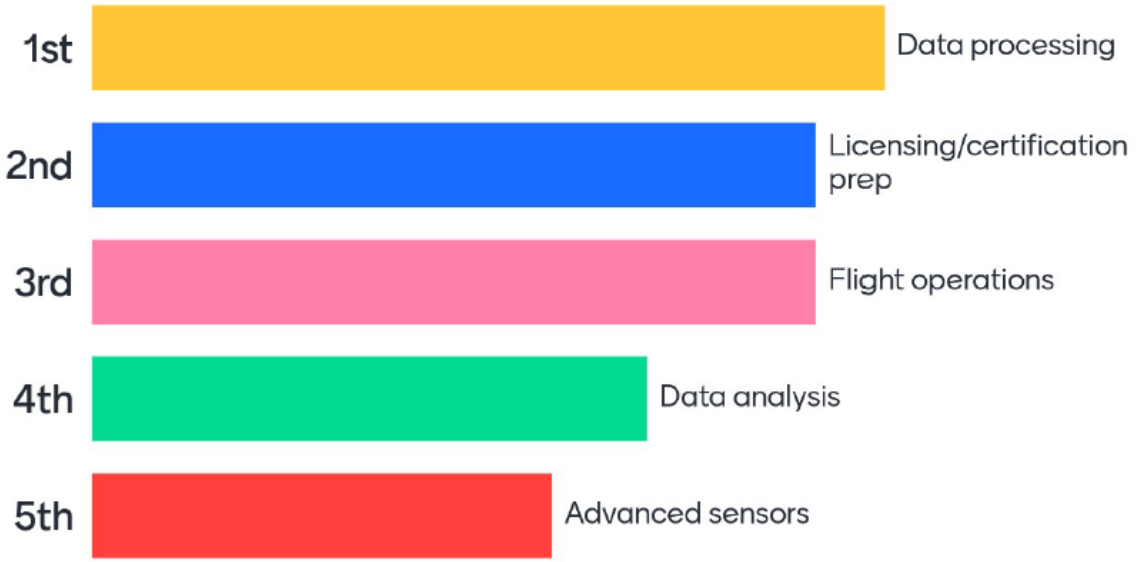
1.3.3 Regional Symposium - South Dakota State GIS Conference – 17 June 2021

South Dakota State GIS Conference Survey Results



Rank your drone training needs

Mentimeter



34

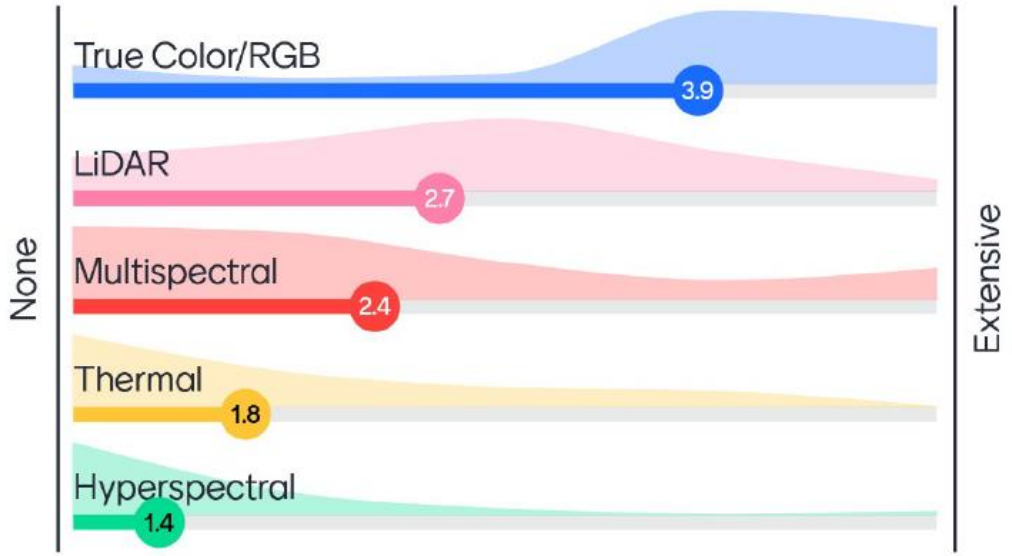
What are the barriers to using drones in your organization?

Mentimeter

29

What is your experience with the following types of data?

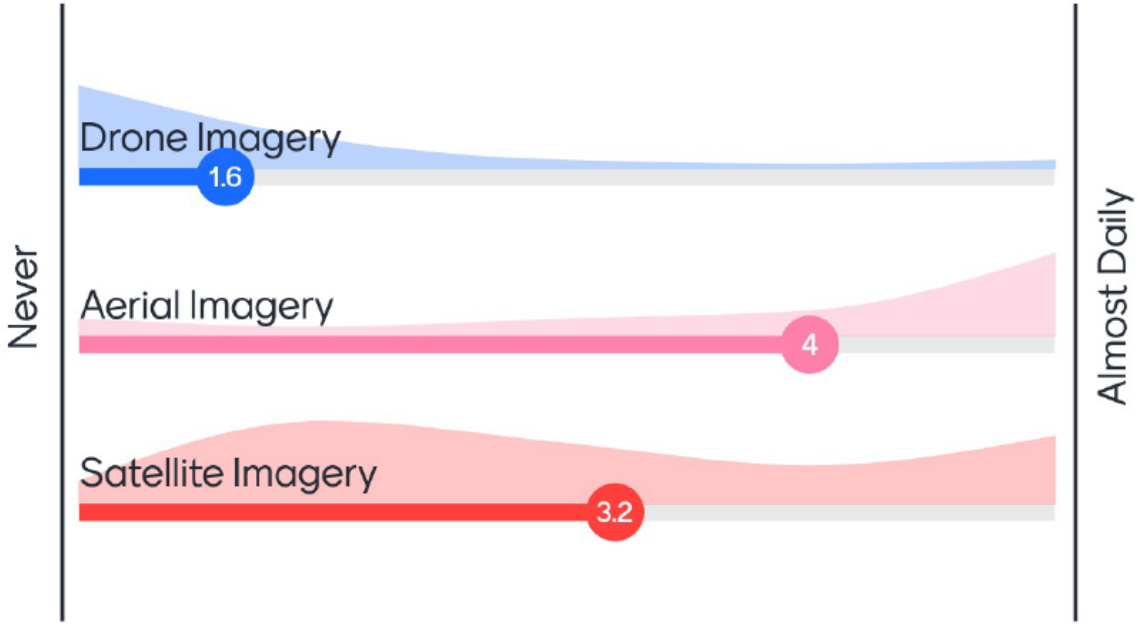
Mentimeter



37

How often do you use the following?

Mentimeter



36

1.3.4 Regional Symposium –UAS Public Safety Conference – 23 June 2021 (MSU)

1.3.4.1 Date

The Mississippi State University regional symposium took place on June 23rd, 2021.

1.3.4.2 Location

The symposium took place as part of the UAS Public Safety 2021 conference, hosted by Unmanned Systems Group in-person.

1.3.4.3 Participants

A total of 42 participants attended this symposium. Attendees worked for a federal organization (0%) while the remaining worked for state (43%), local (52%), academic (5%), non-profit (0%), and private (0%) sectors. Roles of participants within their organizations ranged from emergency management to area coordinator, pilot, program coordinator, supervisor, investigator, and director.

1.3.4.4 Questions and Analysis

The team asked a series of questions throughout this symposium in order to gain insight into the practices, techniques, and concerns of participants and their organizations regarding the use of UAS for disaster response.

1.3.4.5 Disaster Capabilities

This section of questions focused on the establishment and capabilities of a UAS program within the organization, and how this relates to disaster response.

- 10% of participating organizations indicated that they do not currently have a UAS program. About 31% of all respondents have certified UAS pilots and 24% have UAS policies and procedures, but less than 22% own their own UAS and platforms and only 13% have UAS data managers and analysts.
- Most organizations have coordinated airspace with other organizations or agencies during a disaster, while a few indicated coordination on the state, federal, and local level.
- 28% of participants' organizations are in the "discussion" phase of using UAS for disaster response, and 28% are in the "planning" phase. A combined 50% are either implementing or operating UAS disaster response, and the remaining 4% have no action regarding the subject.
- 43% of participants claimed their organization is responding to disasters with occupied/manned aircraft multiple times per year, while 9% operated once per year, and the rest were split between "infrequently (not annually)" and not at all.
- 61% of the organizations never or infrequently participate in multi-agency disaster response exercises that involve airspace coordination. 12% participated once per year, and 27% participated multiple times per year.

1.3.4.6 Concerns

The goal of this portion of questions was to understand where potential worries and barriers existed that might prevent the use of UAS in disaster response from moving forward.

- The primary concern about utilizing UAS during a disaster was related the ability to carry out airspace coordination among non-participating organizations.
- The most expressed worry in terms of UAS and disaster response was safety. Other worries included communication, operation, funding, injury, coordination, and other uncertainties.
- Lack of funding was a primary barrier to deploying UAS for disaster response. Other significant challenges included weather, pilot availability, personnel, licensing, safety, coordination, training, and equipment.

1.3.4.7 Waivers and Needs

The remaining questions were intended to gauge which certifications and waivers are being utilized among organizations, and what additional elements would be most useful to implement UAS in disaster response.

- 62% of the organizations being represented have personnel who have obtained Part 107 licenses, while 33% of organizations have operated under a COA. 6% of organizations also indicated that they have operated via a SGI waiver.
- Most organizations have not obtained any waiver under Part 107. 25% have obtained waivers for night operations, and 22% have obtained waivers for operations in controlled airspace. Waivers for altitude, BVLOS, flights over people, and SGIs had each been granted for between 2-11% of the organizations.
- When asked to rank the types of waivers that would be most critical to using UAS for disaster response, BVLOS was ranked the highest. Operations in controlled airspace and night operations can in evenly at second and third, and at the bottom of the list was waivers for weight (over 55lbs).
- To help organizations improve their use of UAS technology in response to a disaster, training was ranked as the most helpful, with exercises, policies and regulations, and CONOPS and TTP's in preceding order.
- For the types of training that would help improve the agency's response to a disaster using UAS, flight operations/pilot proficiency were most valued, while specific mission profiles, sensor training, interagency coordination and communication, and data processing and analytics came in preceding order.

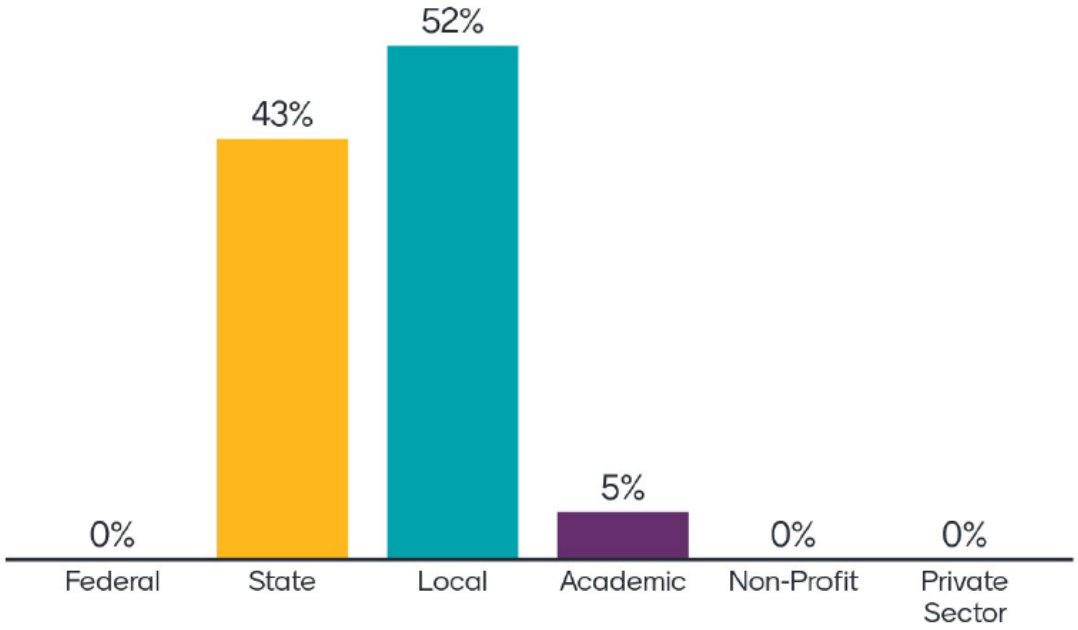
1.3.4.8 A28 Regional Symposium –UAS Public Safety Conference 2021 (MSU) Survey Results

UAS Public Safety 2021 Conference

Survey on UAS Use and Operations During Emergency and Disaster Response

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What type of organization do you work for?

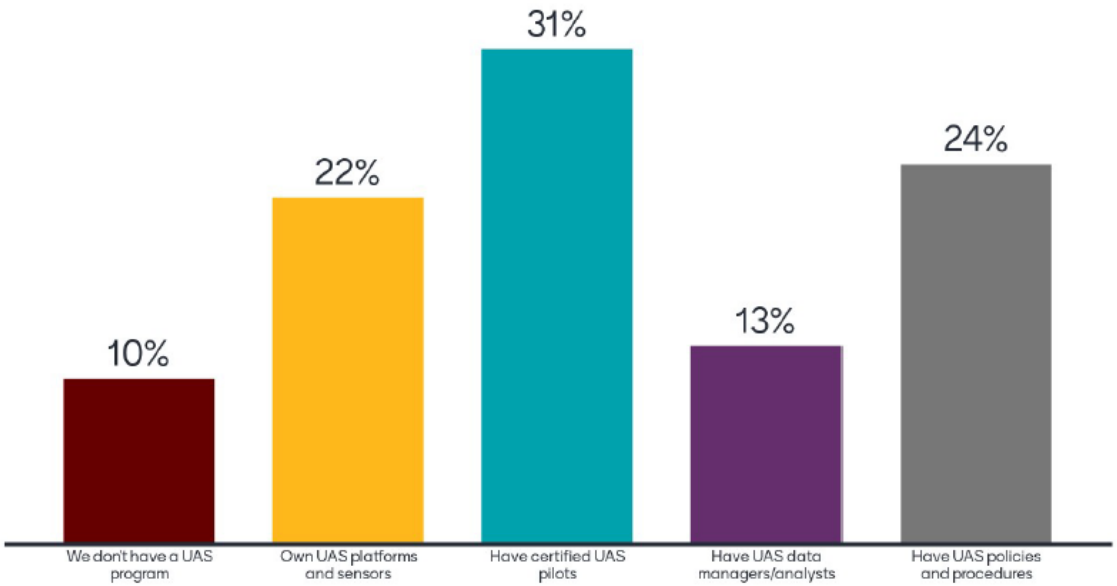


How would you describe your role within your organization?

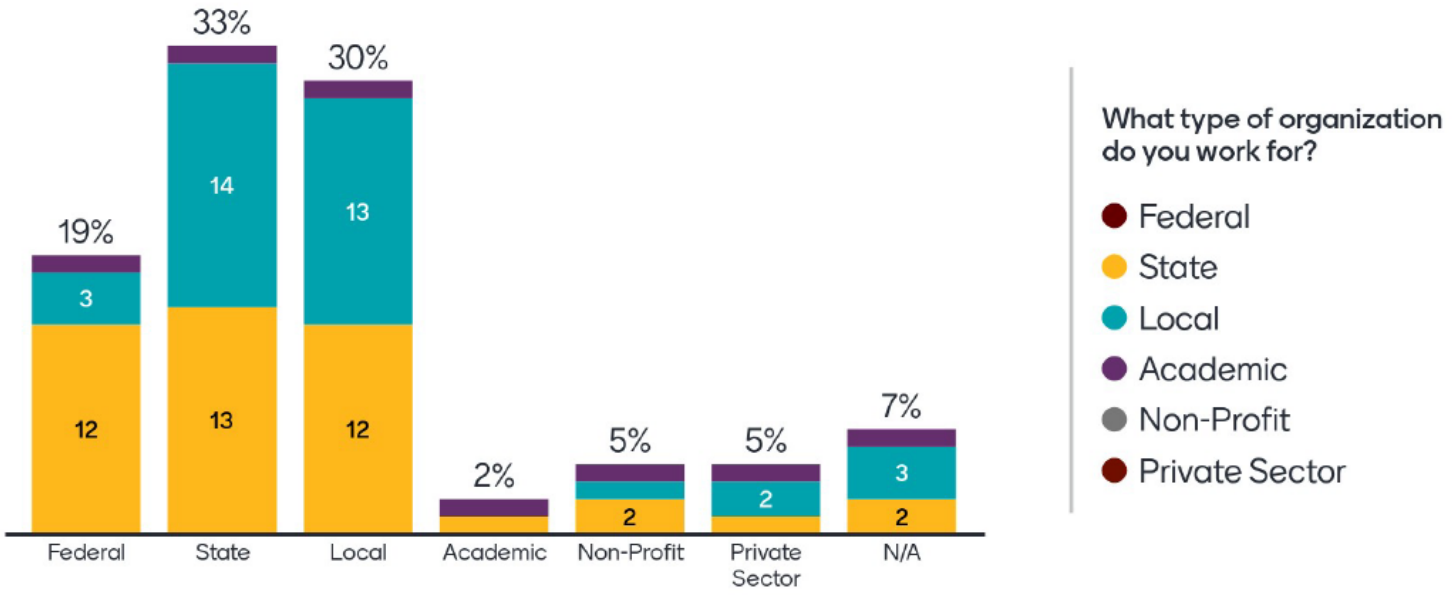
Disaster Capabilities

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

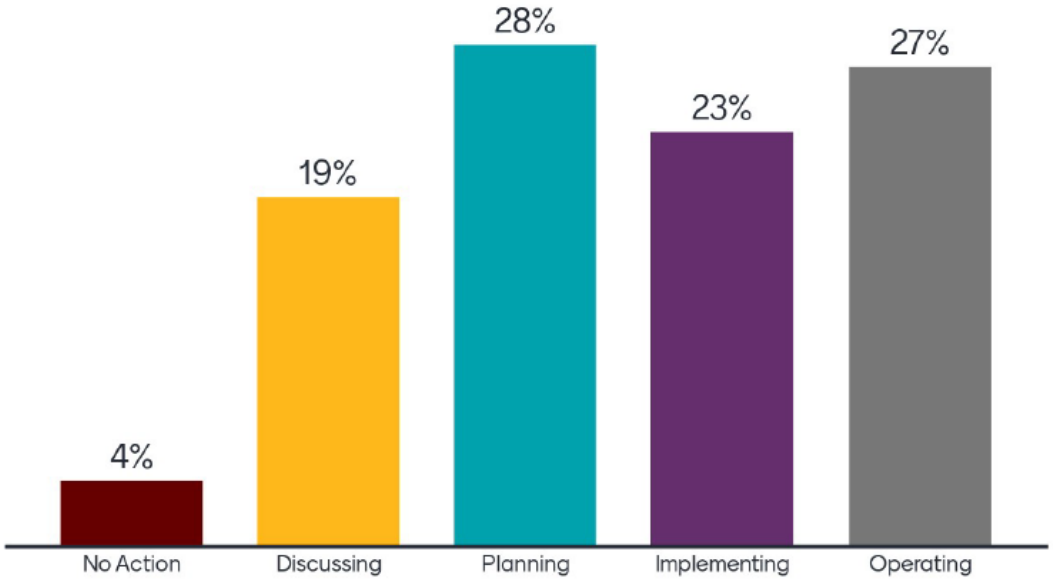
What does your current UAS program consist of? (Check all that apply)



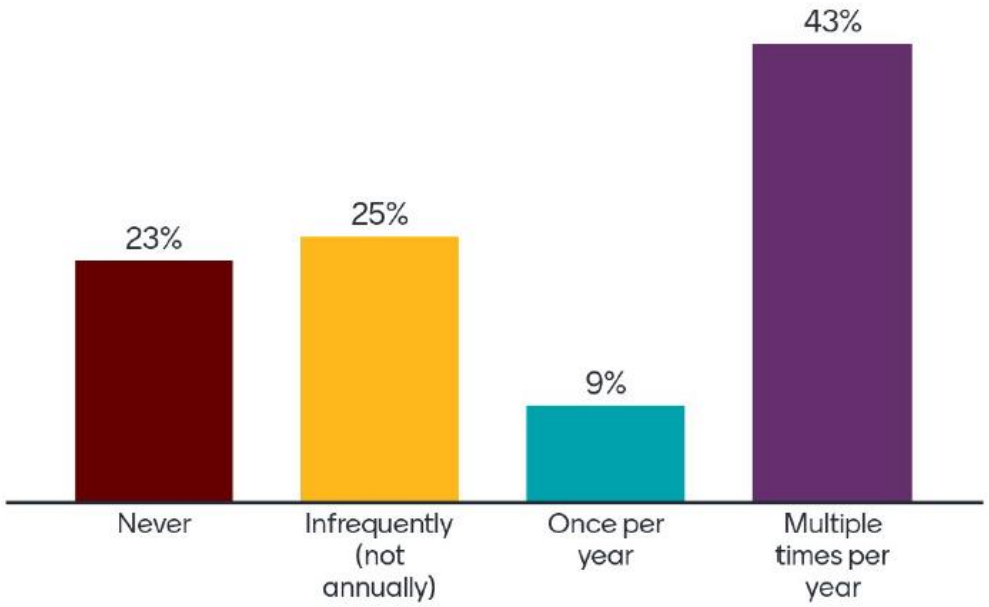
What organizations/agencies has your organization coordinated airspace with during a disaster or emergency response?



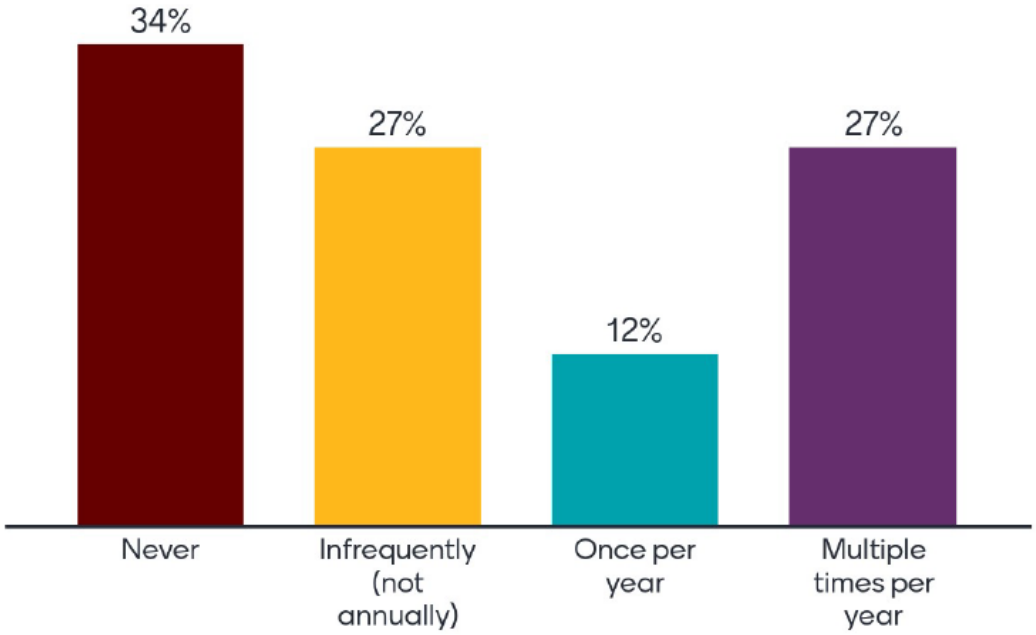
Where does your organization stand with respect to using UAS for disaster and emergency response?



How often does your organization respond to disasters or emergencies using UAS?



How often does your organization participate in multi-agency disaster/emergency response exercises that involves airspace coordination?

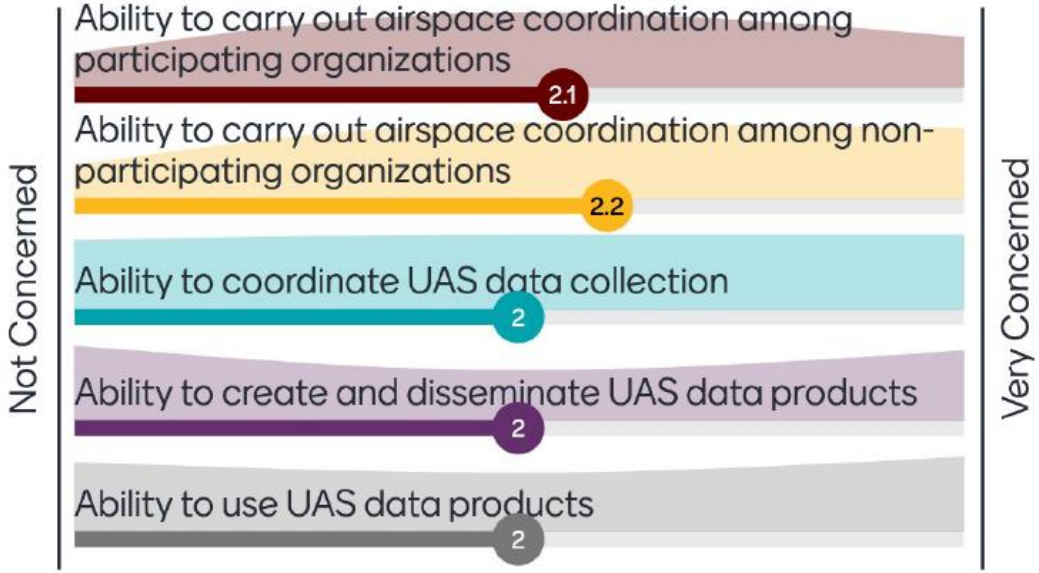


How do you think UAS technology will help your organization respond to disasters or emergencies?

Concerns

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

How concerned are you about the following during a disaster or emergency?



41

What are you most worried about in terms of UAS and disaster or emergency response?

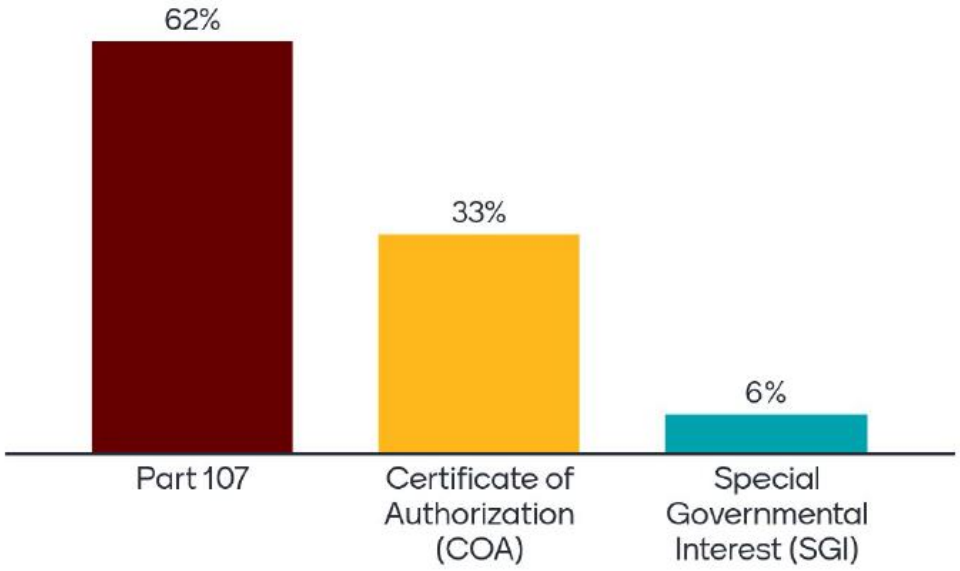
What are the barriers at your organization for employing UAS during a disaster or emergency?

What are your main concerns with respect to employing UAS for disaster or emergency response?

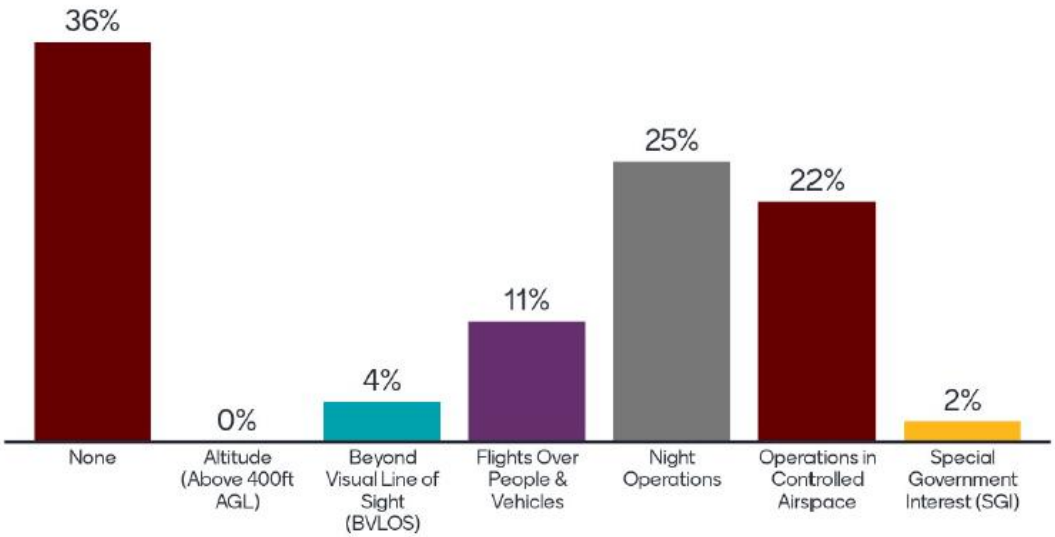
Waivers & Needs

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

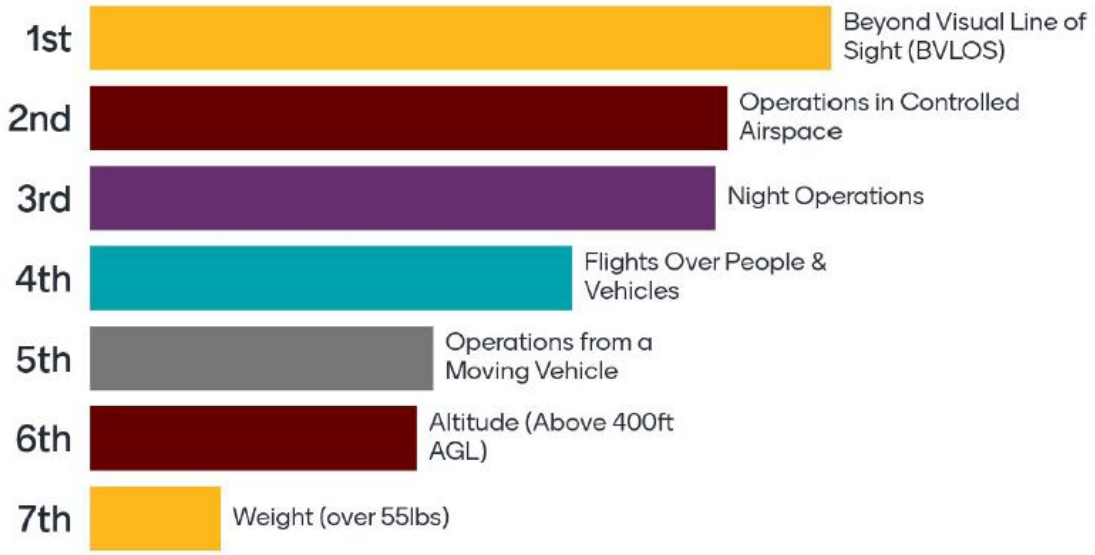
Has your organization obtained any of the following for UAS?



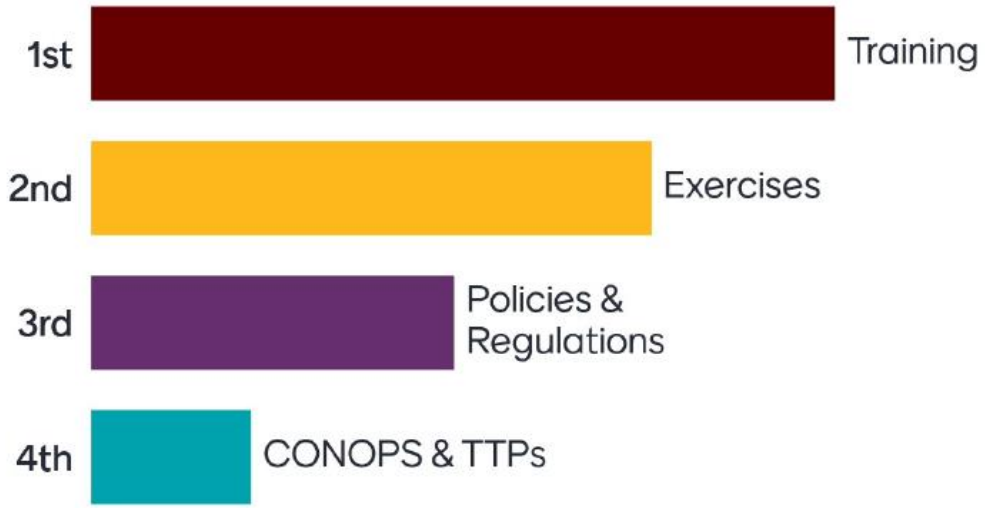
What waivers have you obtained for UAS operations?



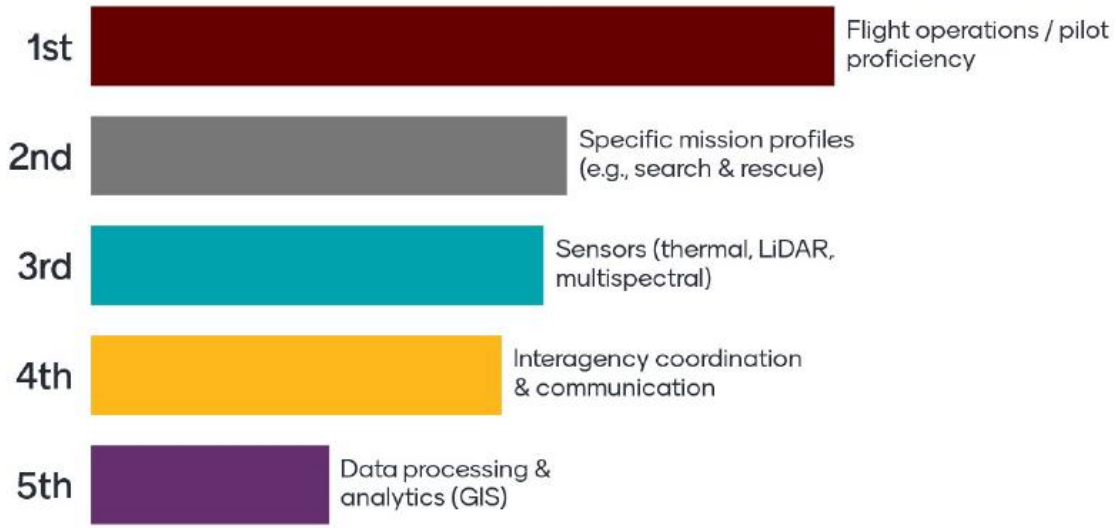
Rank the types of waivers you think would be critical to using UAS for disaster or emergency response



Rank what would help your organization improve your use of UAS technology in response to a disaster or emergency.



Rank the types of training that would help improve your agency's response to a disaster or emergency using UAS.



1.3.5 Regional Symposium - North Carolina– 22 July 2021

1.3.5.1 North Carolina Regional Symposium Survey Results

Mentimeter

Organizational Profile

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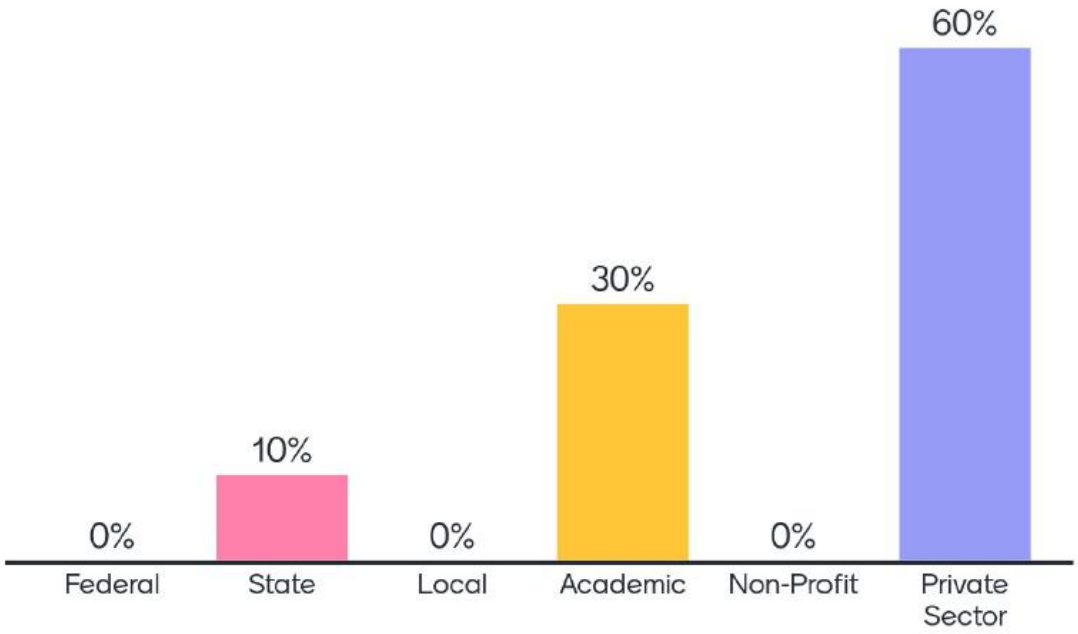
What type of organization do you work for?

Mentimeter



10

The FAA's Center of Excellence for UAS Research
ASSURE
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How would you describe your role within your organization?

Mentimeter

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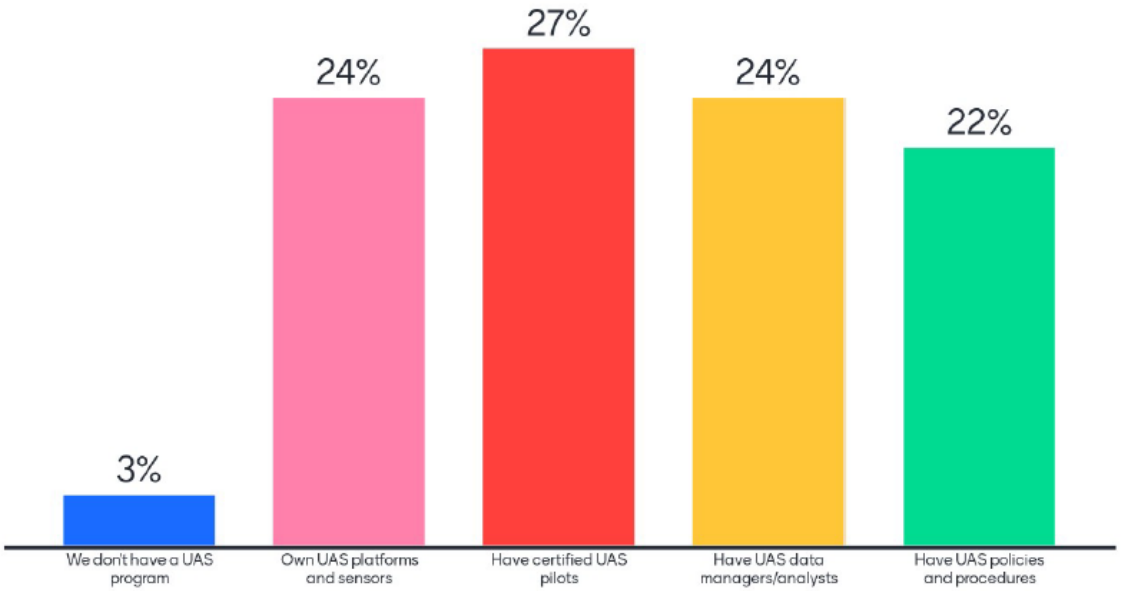
Disaster Capabilities

What does your current UAS program consist of? (Check all that apply)

Mentimeter



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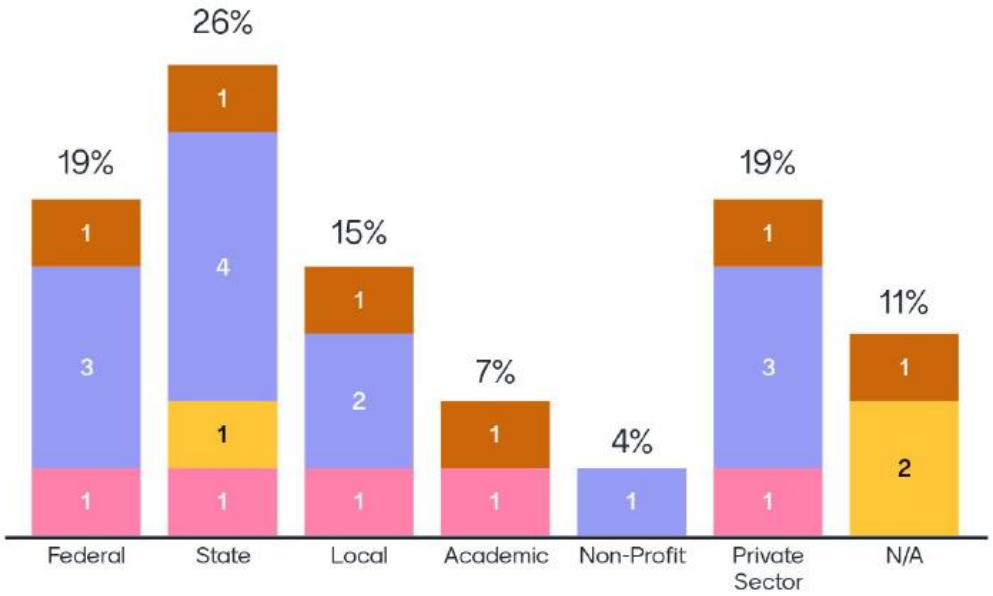
What organizations/agencies has your organization coordinated airspace with during a disaster?

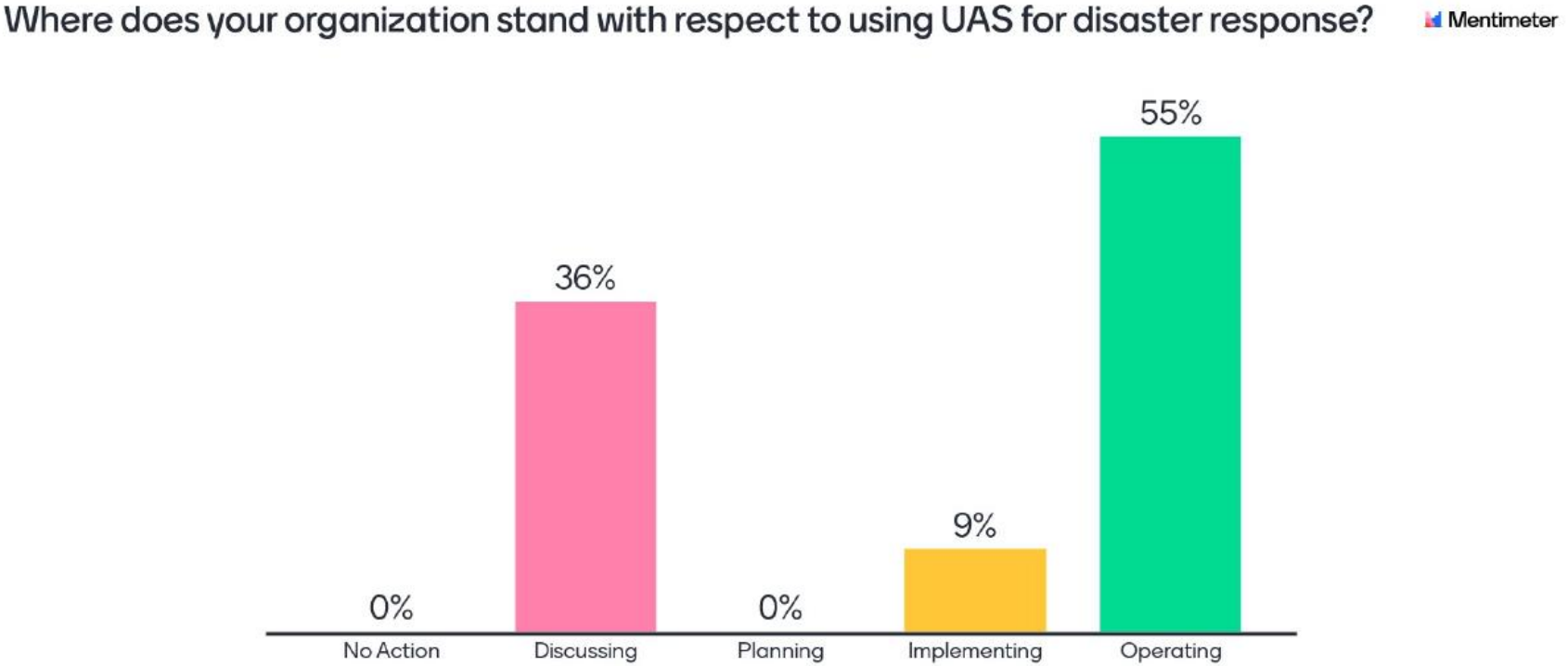
Mentimeter



What type of organization do you work for?

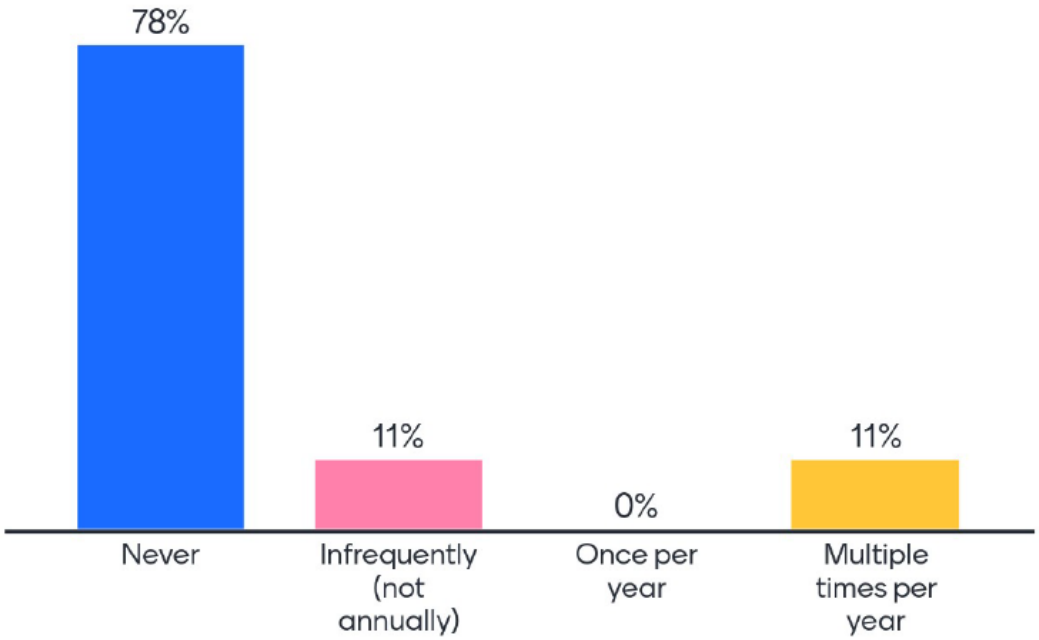
- Federal
- State
- Local
- Academic
- Non-Profit
- Private Sector
- Unknown

27


Where does your organization stand with respect to using UAS for disaster response?
Mentimeter
55%
36%
9%
0%
0%
No Action
Discussing
Planning
Implementing
Operating

How often does your organization respond to disasters using occupied/manned aircraft?

Mentimeter



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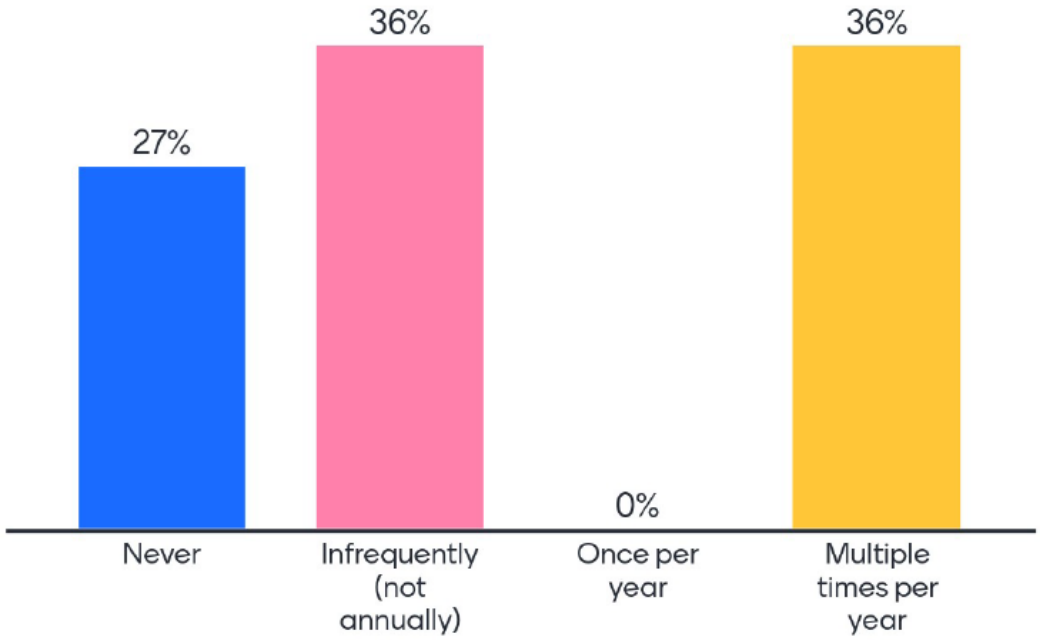
How often does your organization participate in multi-agency disaster response exercises that involves airspace coordination?

Mentimeter



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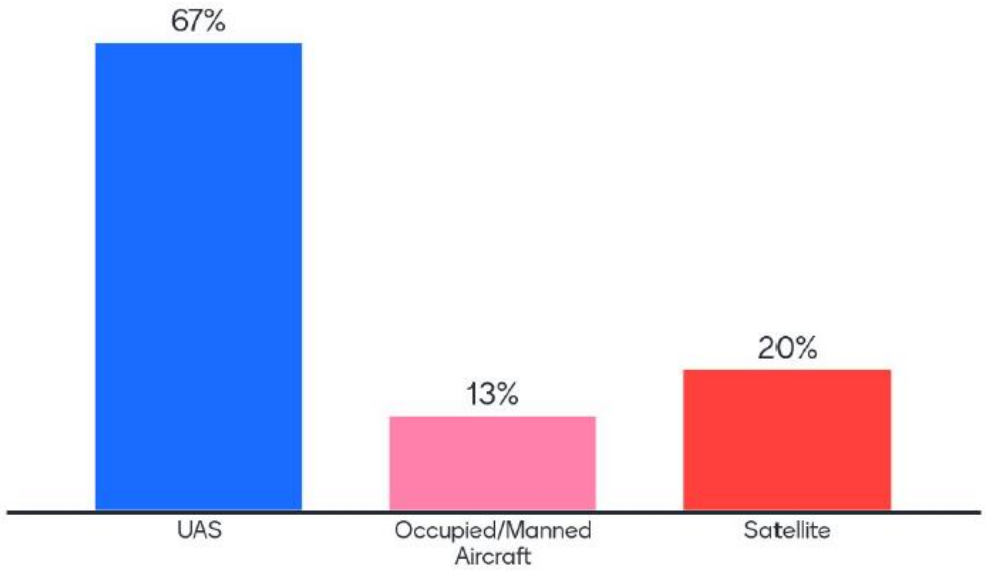
Mentimeter

Platforms & Applications

Which platforms does your organization currently use for disasters?

Mentimeter



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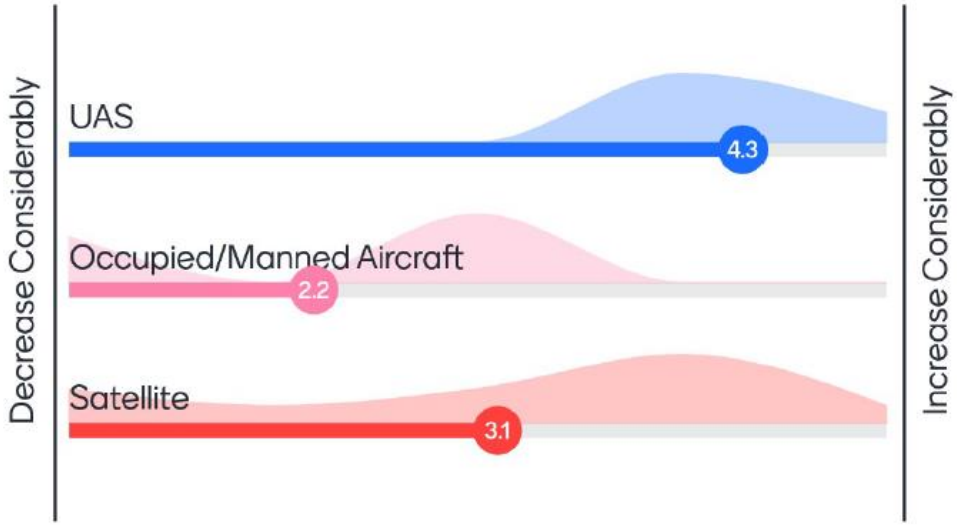
How do you see your organization's use of the following platforms changing over the next five years for disaster response?

Mentimeter



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How do you think UAS technology will help your organization respond to disasters?

Mentimeter

11

Mentimeter

Concerns

How concerned are you about the following during a disaster?

Mentimeter

10

What are you most worried about in terms of UAS and disaster response?

Mentimeter

10

What are the barriers at your organization for employing UAS during a disaster?

Mentimeter

10

What do you need to trust that another organization can operate their UAS safely during a disaster?

Mentimeter

11

What are your main concerns with respect to employing UAS for disaster response?

Mentimeter

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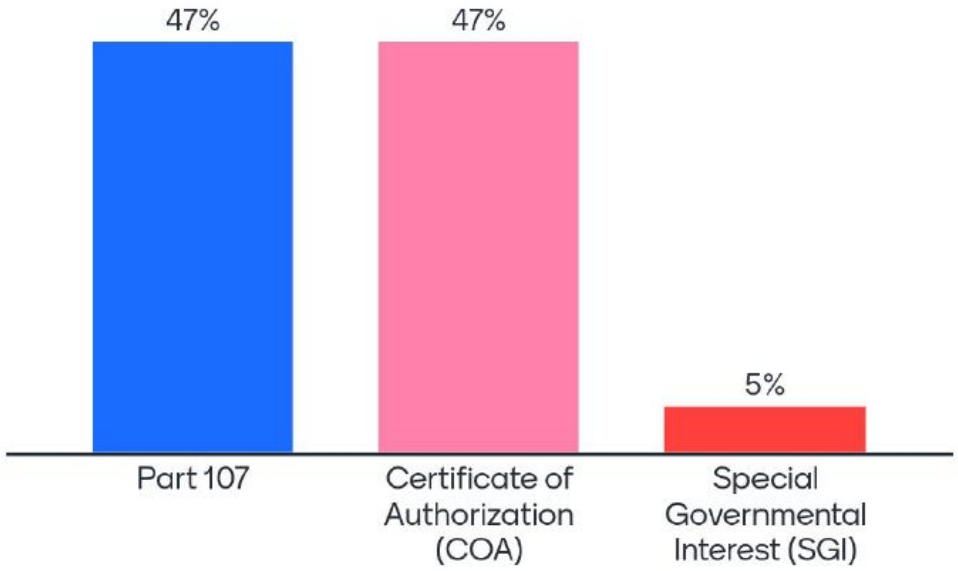
Mentimeter

Waivers & Needs

1

Has your organization obtained any of the following for UAS?

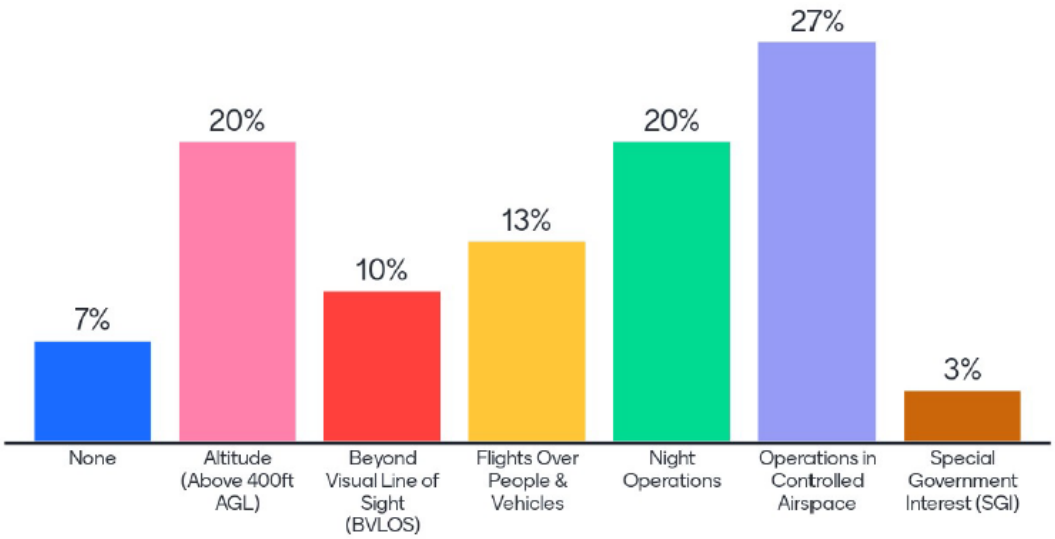
Mentimeter



10

What waivers have you obtained for UAS operations?

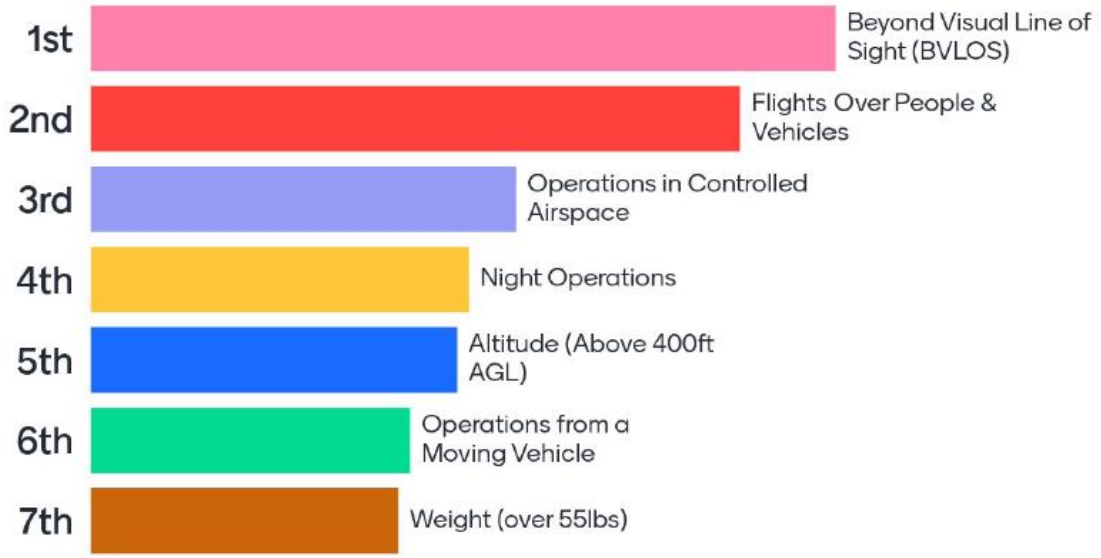
Mentimeter



10

Rank the types of waivers you think would be critical to using UAS for disaster response

Mentimeter



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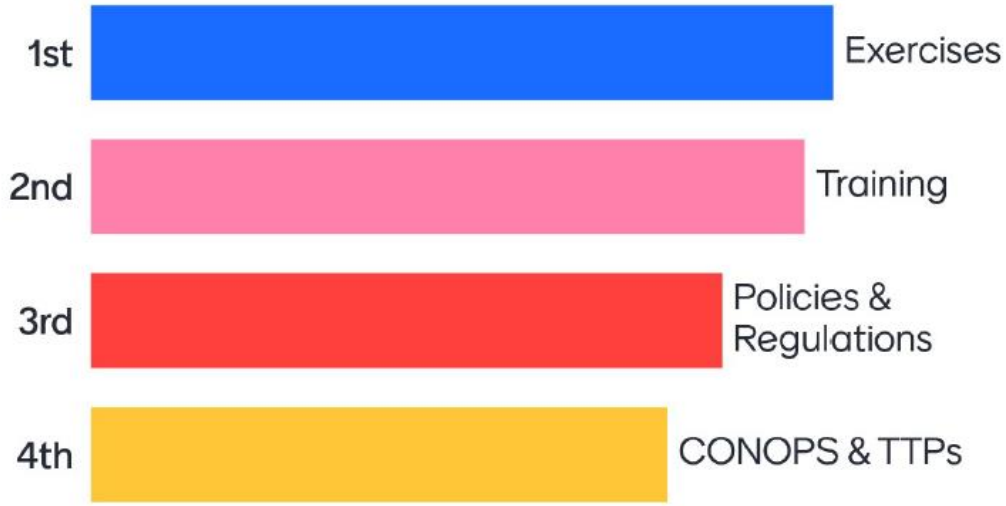
Rank what would help your organization improve your use of UAS technology in response to a disaster.

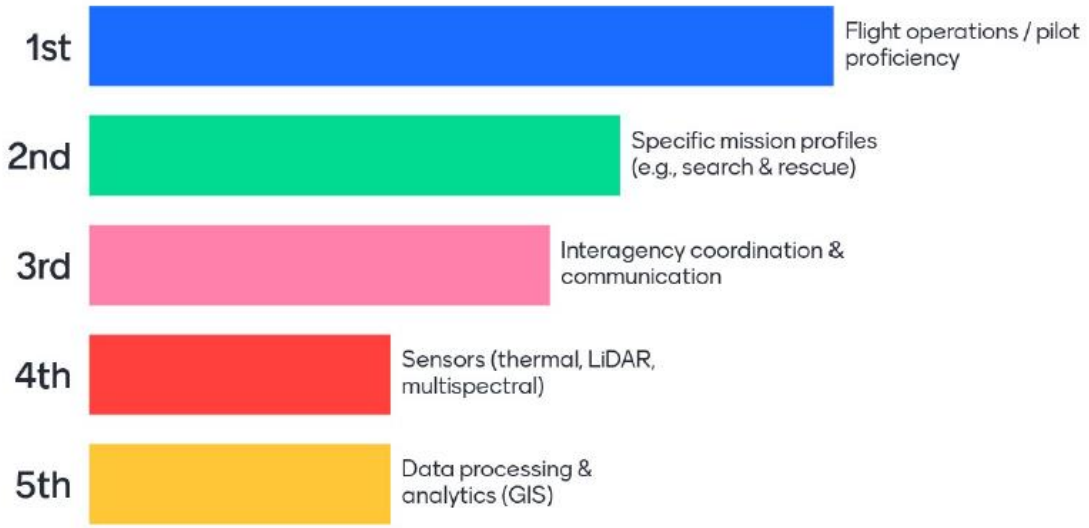
Mentimeter



10

Rank the types of training that would help improve your agency's response to a disaster using UAS.

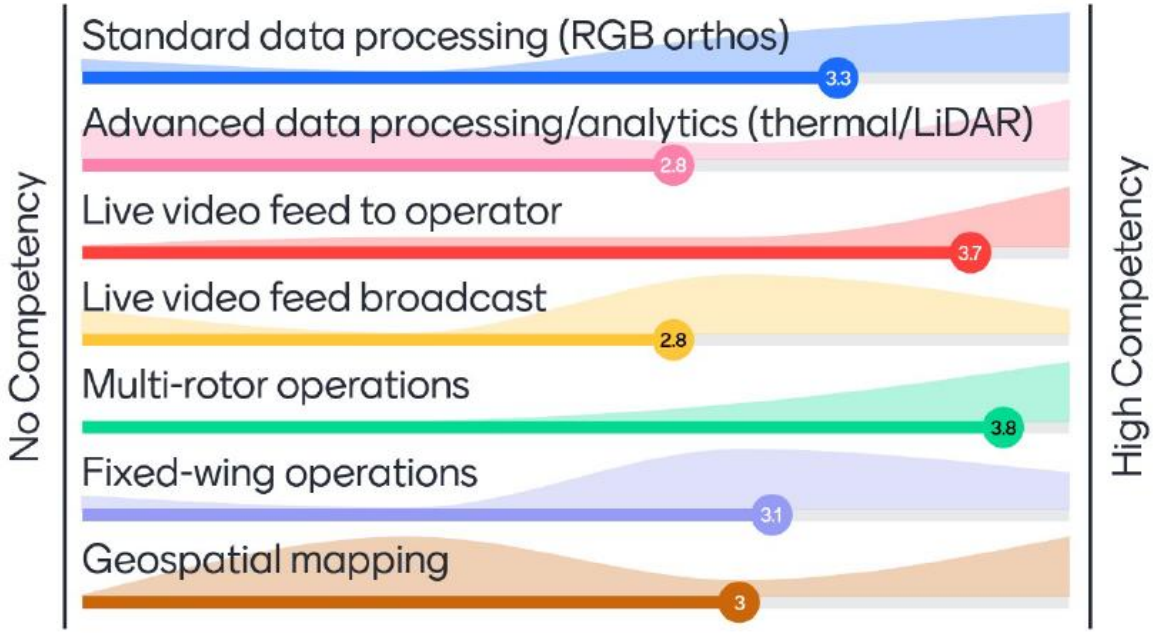
Mentimeter



9

Rate your organizational UAS competency

Mentimeter



9

1.3.6 Regional Symposium – 32nd Annual AUVSI Pathfinder Symposium

1.3.6.1 Date

The AUVSI Pathfinder regional symposium took place on 30 August 2021.

1.3.6.2 Location

The 32nd Annual Association for Unmanned Vehicle Systems International (AUVSI) Pathfinder Symposium, was hosted by AUVSI Pathfinder Chapter in Huntsville, Alabama as a hybrid online and in-person event.

1.3.6.3 Participants

A total of 20 individuals participated in this survey. Most attendees worked for a federal organization (20%) while the remaining worked for state (15%), local (20%), non-profit (5%), and private (5%) sectors. 7 (35%) of the participants did not indicate their organization type.

1.3.6.4 Questions and Analysis

The team asked a series of questions throughout this symposium in order to gain insight into the practices, techniques, and concerns of participants and their organizations regarding the use of UAS for disaster response.

1.3.6.5 Disaster Capabilities

This section of questions focused on the establishment and capabilities of a UAS program within the organization, and how this relates to disaster response.

- 38% of participating organizations indicated that they do not currently have a UAS program. About 40% of all respondents have certified UAS pilots and 35% have UAS policies and procedures. 35% own their own UAS platforms and sensors but 30% of participants indicated that they have UAS data managers and analysts.
- Most (65%) of the participating organizations have coordinated airspace with other organizations or agencies during a disaster. 25% indicated coordination with federal agencies, 35% indicated coordination with state agencies, 40% indicated coordination with local agencies, 40% indicated coordination with the private sector for airspace access during a disaster, while a few indicated coordination with academic (20%) and non-profit (15%) organizations.
- 10% of participants' organizations are in the "discussion" phase of using UAS for disaster response and 10% are in the "planning" phase. 30% of participants indicated that they are currently implementing a UAS program and another 30% indicated have an operational program for UAS in disaster response. The remaining 35% have no action regarding the subject.
- 20% of participants claimed their organization is responding to disasters with occupied/manned aircraft multiple times per year while 15% claimed responding to with occupied/manned aircraft at least once a year. 30% of participants were split between "infrequently (not annually)" and not at all. The remaining 35% of participants did not respond to this question.

- Just 15% of participating organizations have used UAS to respond to disasters multiple times a year. 25% indicated using UAS once a year for disaster response. Another 25% indicated never or "infrequently (not annually)" using UAS for disaster response.
- 30% of the organizations never or infrequently participate in multi-agency disaster response exercises that involve airspace coordination. 20% indicated annual multi-agency disaster response exercises while 15% indicate exercises multiple times a year.

1.3.6.6 Platforms and Applications

These questions were geared towards platform types and use, as well as potential applications for the organization.

- Of all the participants, 55% indicated that their organization currently used UAS for disasters. Satellite (35%) and occupied/manned (45%) were utilized by fewer organizations.
- When asked about how platform usage for disaster response might change over the next 5 years, UAS was ranked the highest on average (4.5), indicating that usage for this purpose could increase considerably. Satellite was ranked 3.5 and occupied/manned aircraft was ranked at 2.9, suggesting that usage of these technologies are expected to expand but at lower rates when compared to UAS.

1.3.6.7 Concerns

The goal of this portion of questions was to understand where potential worries and barriers existed that may prevent the use of UAS in disaster response from moving forward.

- The primary concern about utilizing UAS during a disaster was related the ability to carry out airspace coordination among non-participating organizations. This concern was closely followed by the concern of airspace coordination among other actively participating organizations.
- The most expressed worry in terms of UAS and disaster response was ensuring safe operations, including effective communication and coordination to deconflict during a disaster. Other worries included licensing and legal challenges, safety concerns, environmental factors, lack of coordination, and other uncertainties.
- Lack of funding was a primary barrier to deploying UAS for disaster response, especially the cost to support proper training. Other significant challenges included regulations and policy, foreign made technology, public perception, and data processing.
- To trust that another organization could operate their UAS safely during disasters, participants highlighted the need for communication/coordination, existing CONOPs training and experience, certifications and standards, sharing of information, pre-coordination in joint exercises, planning, understanding of the Incident Command Structure (ICS), certified aircraft, Remote Identification (RID), and effective airspace management.

- Birds, liability, safety, air space coordination, data security, public perception, equipment reliability, cost, and unrealistic expectations were a few of the main concerns that participants had with respect to employing UAS for disaster response.

Waivers and Needs

The remaining questions were intended to gauge which certifications and waivers are being utilized among organizations, and what additional elements would be most useful to implement UAS in disaster response.

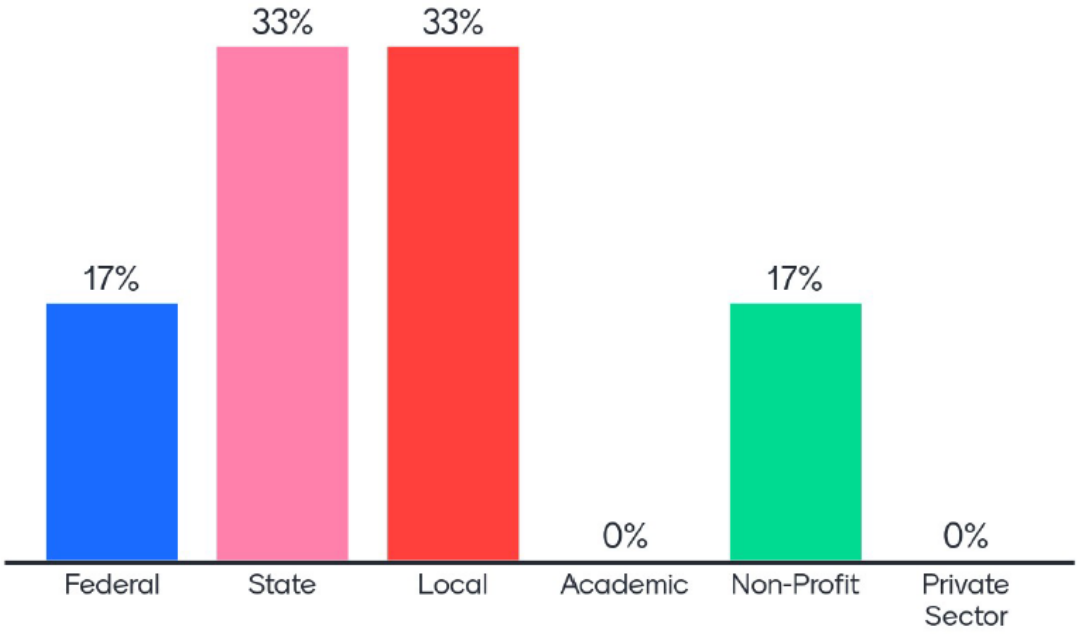
- 20% of the responding organizations have personnel who have obtained Part 107 licenses, while 15% of organizations have operated under a COA. 10% of organizations also indicated that they have operated via a SGI waiver.
- 20% have not obtained any waiver under Part 107. Waivers for altitude (25%), BVLOS (15%), flights over people (20%), night operations (25%), and operations in controlled airspace (20) had each been granted. Additionally, 25% indicated that SGI waivers/authorizations have been granted.
- When asked to rank the types of waivers that would be most critical to using UAS for disaster response, operations from a moving vehicle and aircraft weighing over 55lbs were ranked the highest. Operations in controlled airspace, night operations, and altitude closely ranked together, and at the bottom of the list was waivers for BVLOS and operations over people and vehicles.
- To help organizations improve their use of UAS technology in response to a disaster, data processing and analytics training was ranked as the most helpful followed closely by training in specific mission profiles, such as search and rescue missions. Policy and regulation was ranked the third most important type of training to improve UAS use and closely ranked with training in sensor technologies. While still ranking fairly important to improved UAS operations for disaster response, interagency coordination/communication, CONOPs/TPPs, exercises, general training, and flight operations/pilot proficiency was ranked the lowest in preceding order.
- When ranking organizational UAS competency, live video feed to operator, standard data processing (RGB orthos), geospatial mapping, and multi-rotor operations were among the highest. While advanced data processing/analytics (thermal/LiDAR), live video feed to broadcast, fixed-wing operations, were the lowest ranked.

1.3.6.8 Regional Symposium – 32nd Annual AUVSI Pathfinder Symposium Survey Results

Organizational Profile

What type of organization do you work for?

Mentimeter



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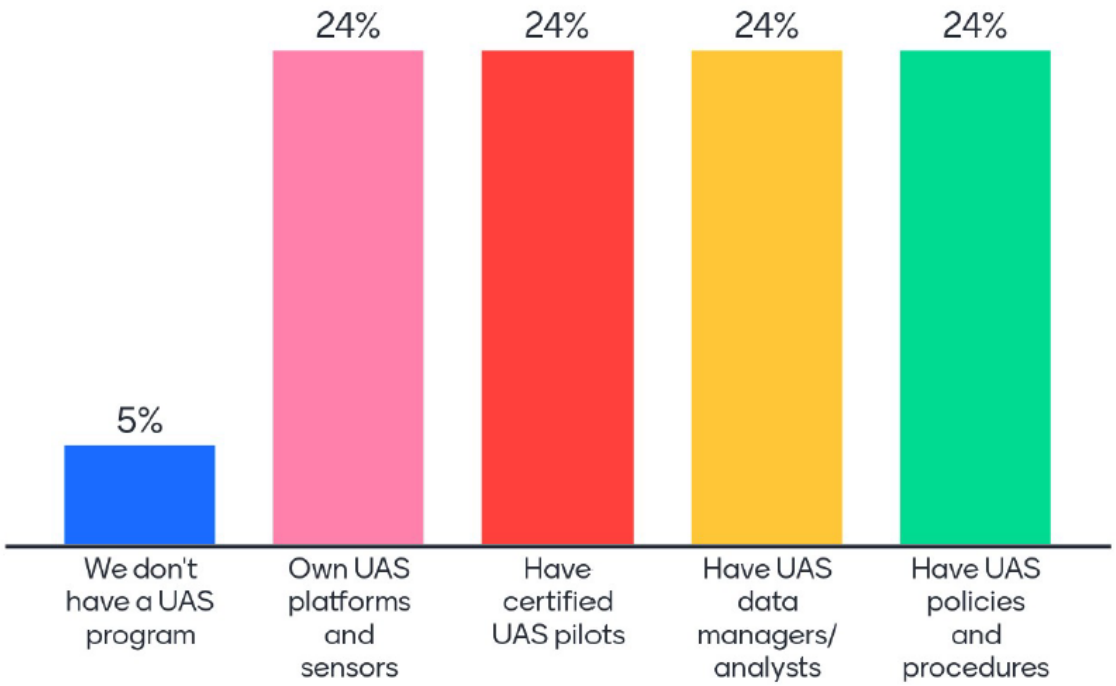
How would you describe your role within your organization?

Mentimeter

Disaster Capabilities

What does your current UAS program consist of? (Check all that apply)

Mentimeter



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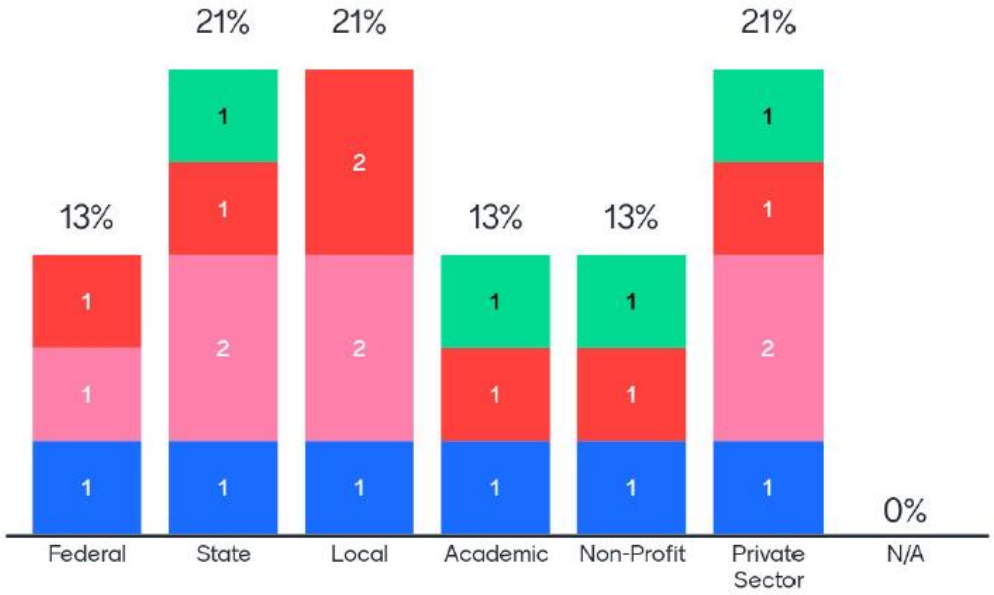
What organizations/agencies has your organization coordinated airspace with during a disaster?

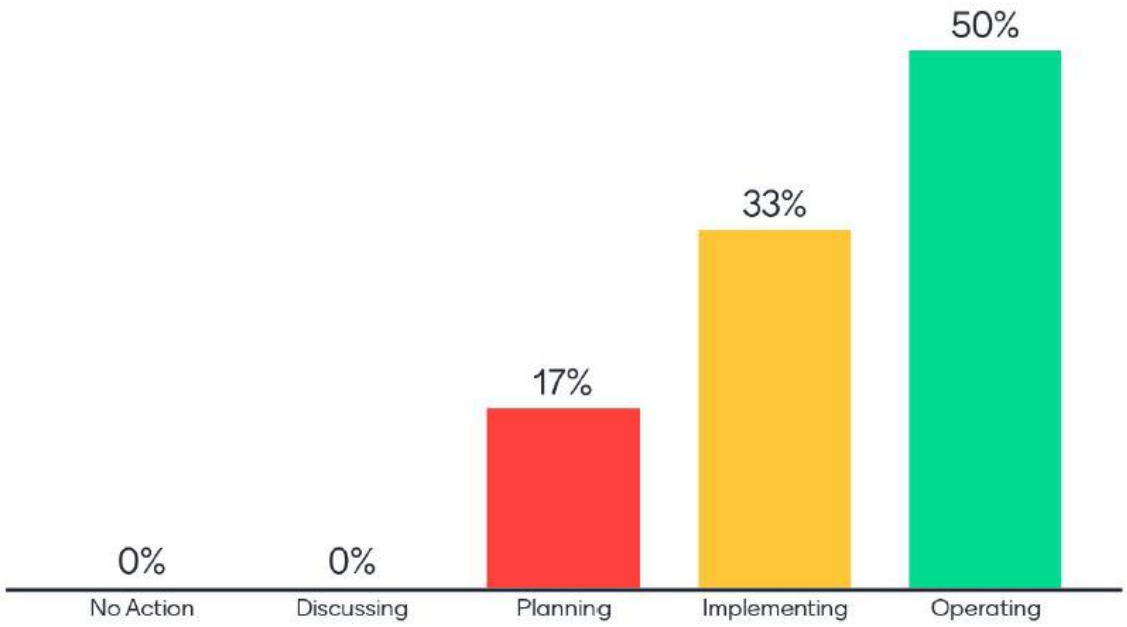
Mentimeter



24

Where does your organization stand with respect to using UAS for disaster response?

Mentimeter



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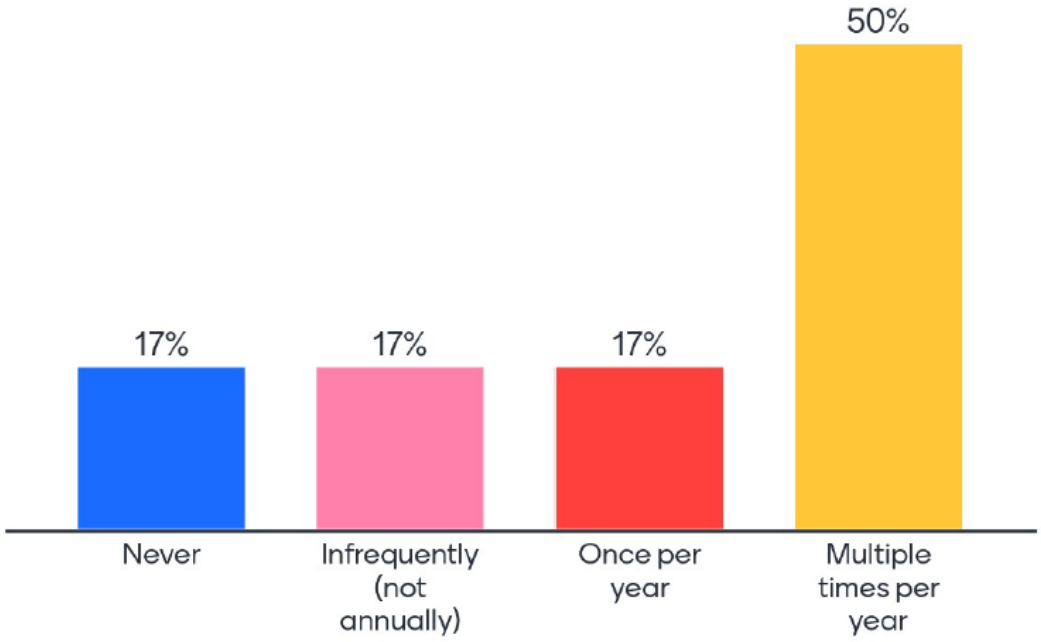
How often does your organization respond to disasters using occupied/manned aircraft?

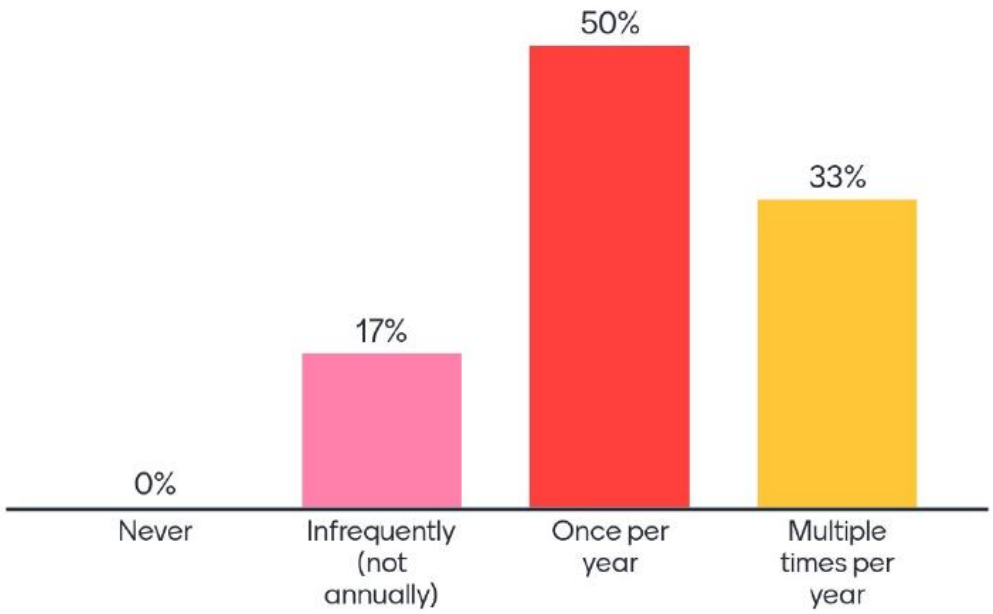
Mentimeter



6

How often does your organization respond to disasters using UAS?

Mentimeter



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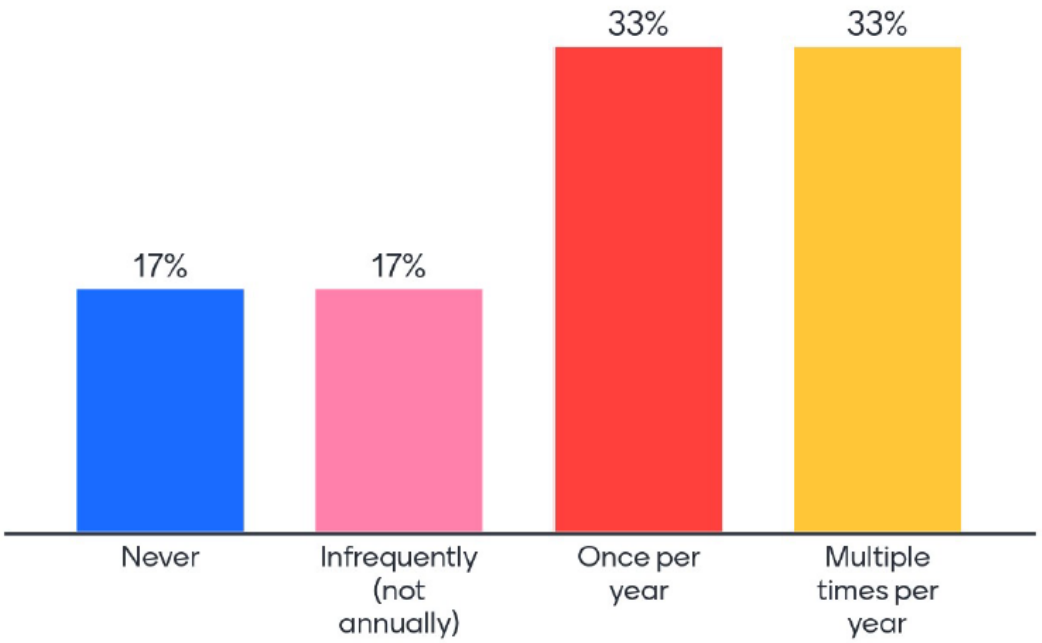
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

How often does your organization participate in multi-agency disaster response exercises that involves airspace coordination?

Mentimeter



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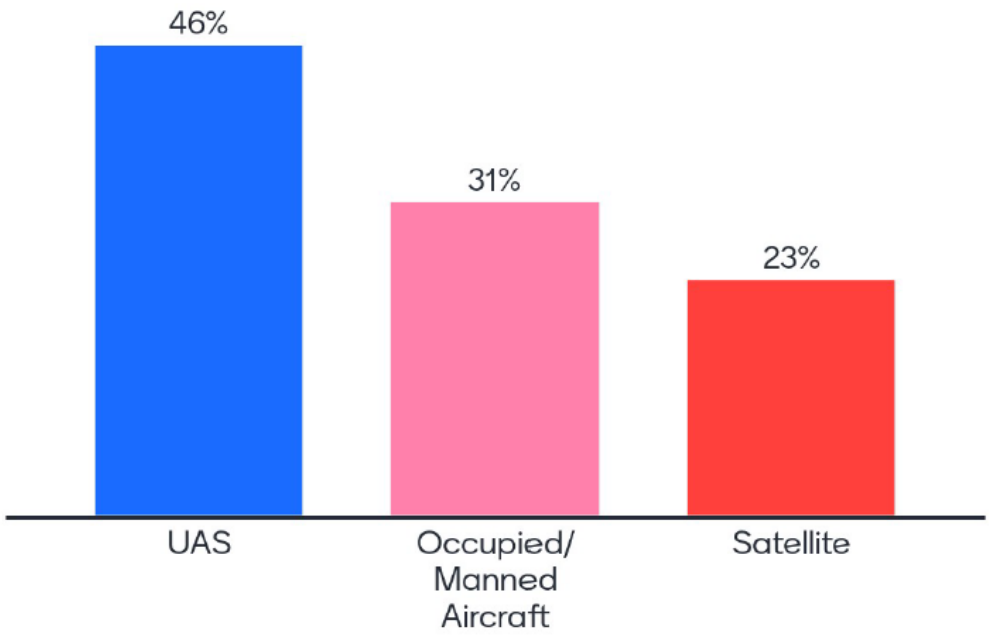
Mentimeter

Platforms & Applications

Which platforms does your organization currently use for disasters?

Mentimeter



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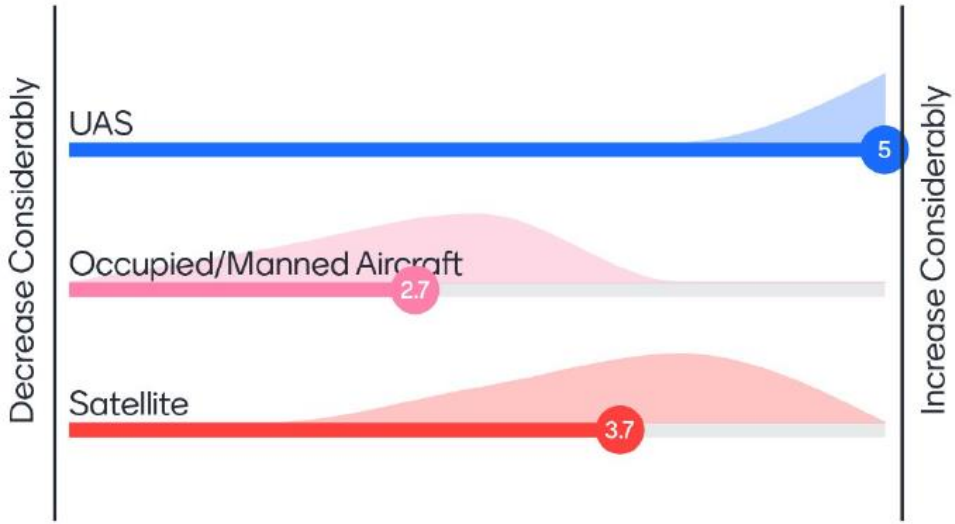
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

How do you see your organization's use of the following platforms changing over the next five years for disaster response?

Mentimeter



6

How do you think UAS technology will help your organization respond to disasters?

Mentimeter

Mentimeter

Concerns

How concerned are you about the following during a disaster?

Mentimeter

6

What are you most worried about in terms of UAS and disaster response?

Mentimeter

6

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What are the barriers at your organization for employing UAS during a disaster?

Mentimeter

6

What do you need to trust that another organization can operate their UAS safely during a disaster?

Mentimeter

5

What are your main concerns with respect to employing UAS for disaster response?

Mentimeter

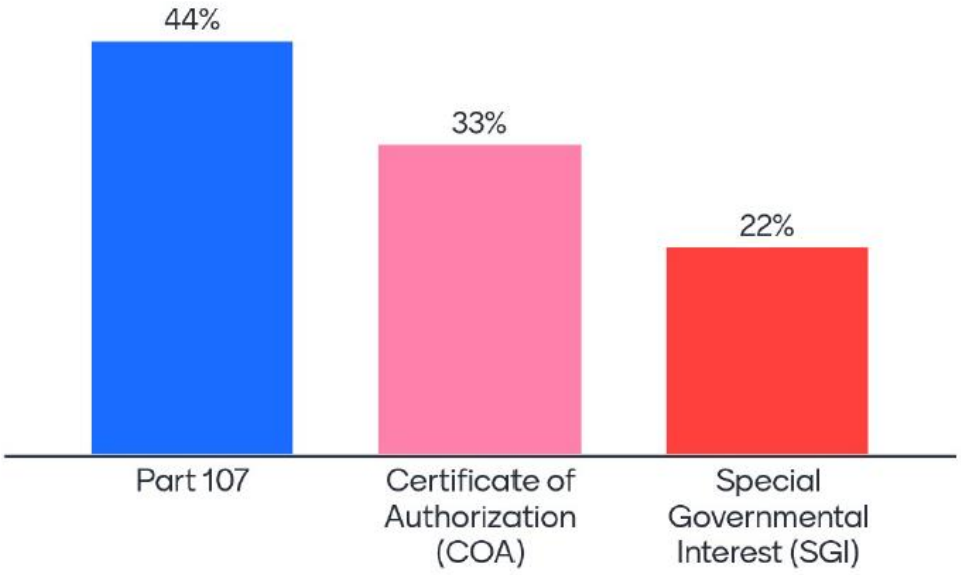
5

Mentimeter

Waivers & Needs

Has your organization obtained any of the following for UAS?

Mentimeter



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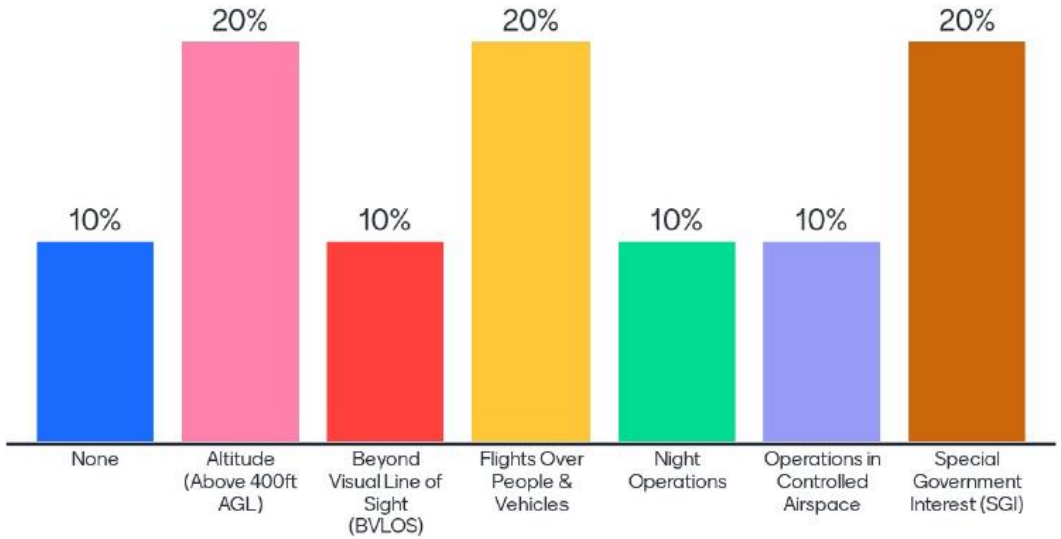
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What waivers have you obtained for UAS operations?

Mentimeter



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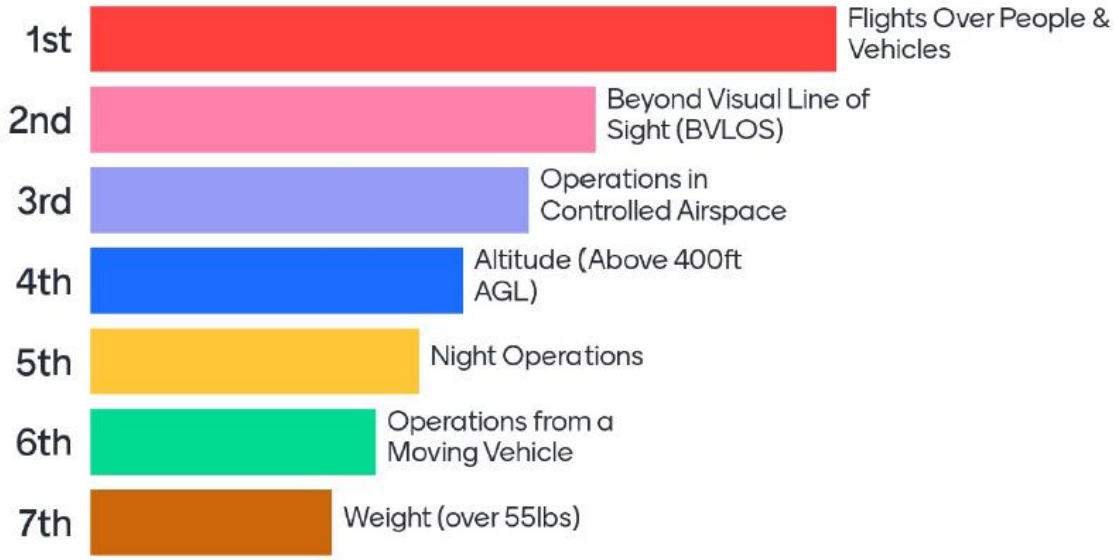
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

Rank the types of waivers you think would be critical to using UAS for disaster response

Mentimeter

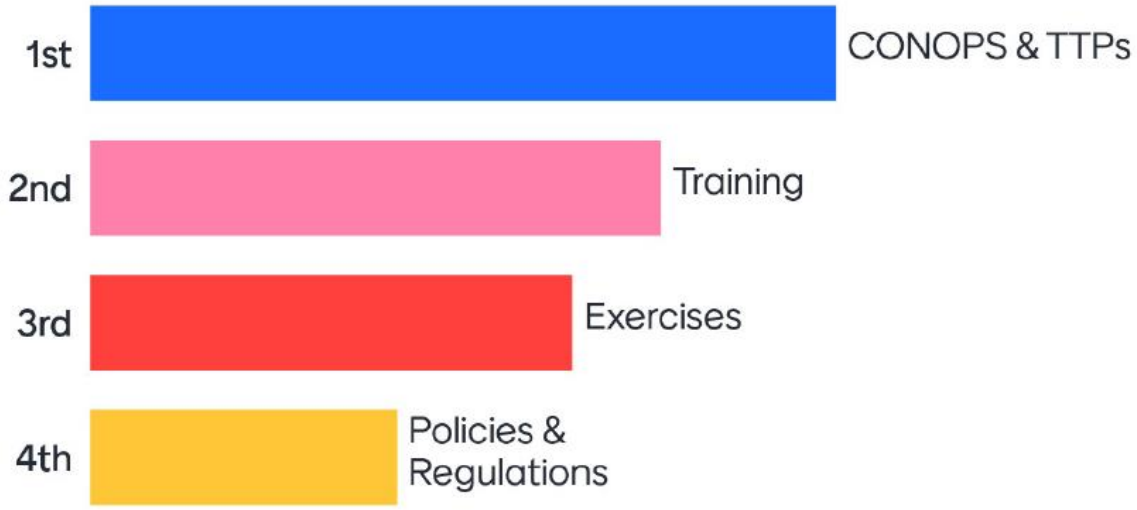


6

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

Rank what would help your organization improve your use of UAS technology in response to a disaster.

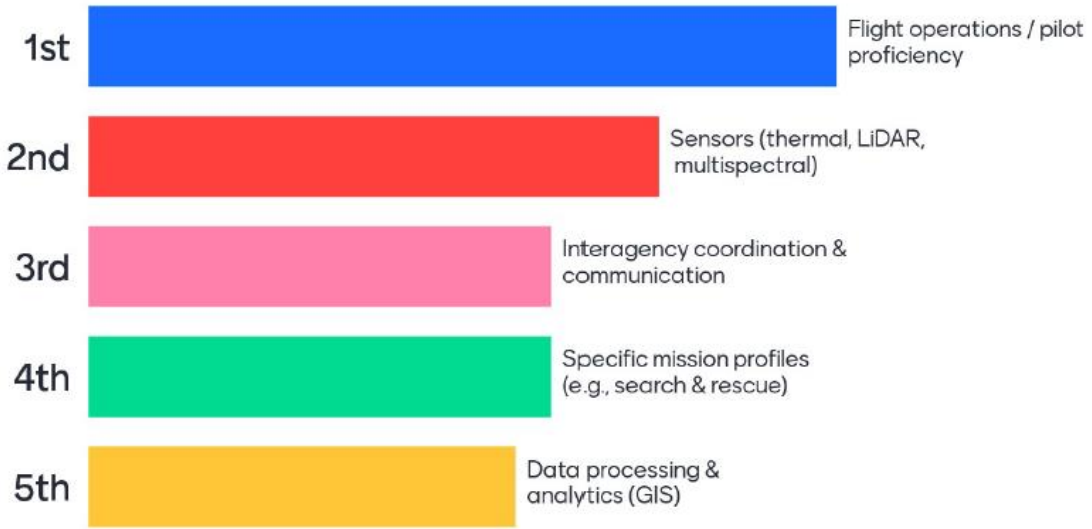
Mentimeter



6

Rank the types of training that would help improve your agency's response to a disaster using UAS.

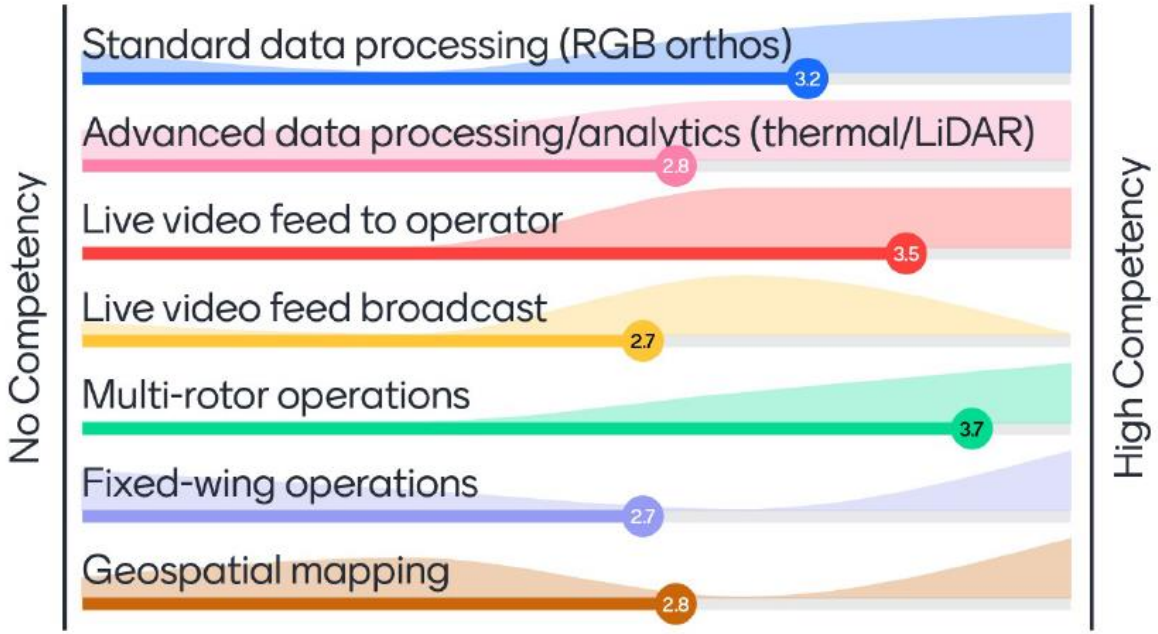
Mentimeter



6

Rate your organizational UAS competency

Mentimeter



6

1.3.7 Regional Symposium University of Alaska Fairbanks - 12 October 2021

1.3.7.1 Regional Symposium University of Alaska Fairbanks Survey Results

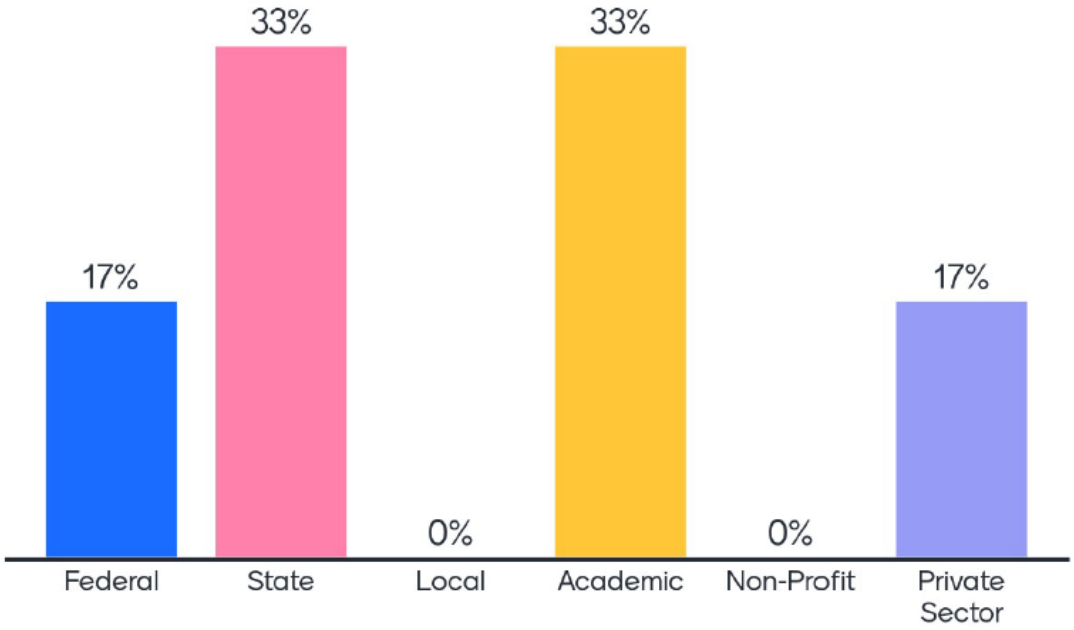
Mentimeter

Organizational Profile

1

What type of organization do you work for?

Mentimeter



6

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

How would you describe your role within your organization?

Mentimeter

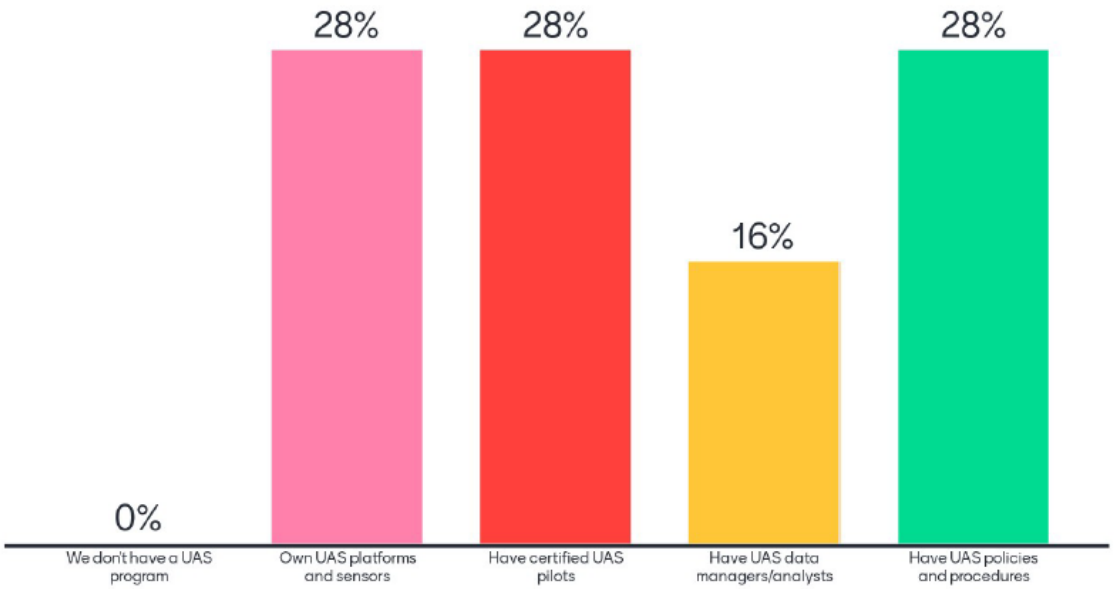
7

Mentimeter

Disaster Capabilities

What does your current UAS program consist of? (Check all that apply)

Mentimeter

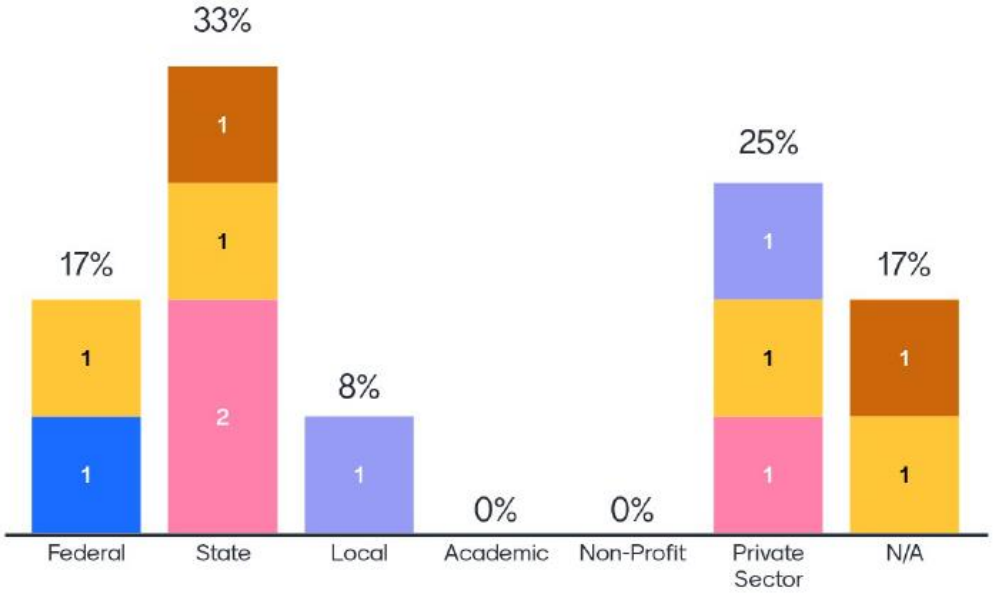


7

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What organizations/agencies has your organization coordinated airspace with during a disaster?

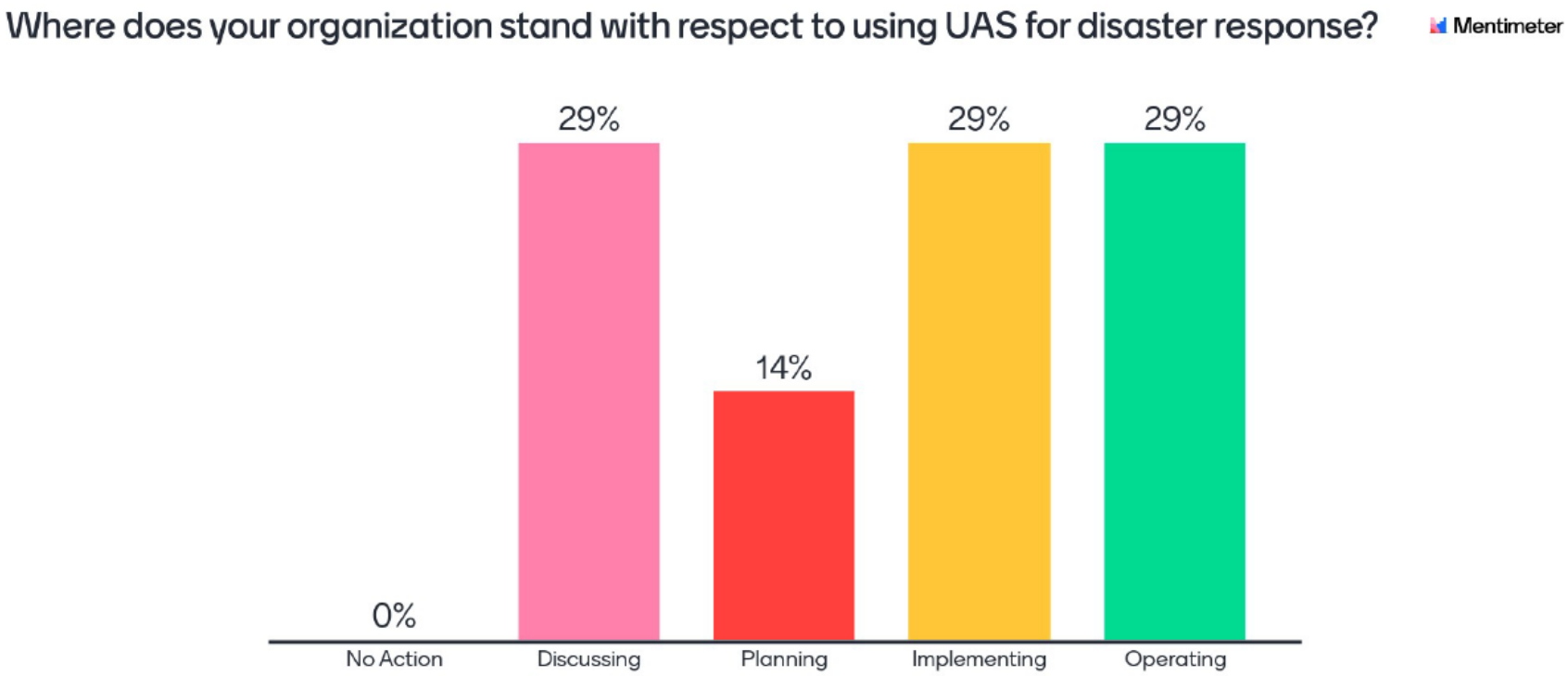
Mentimeter



What type of organization do you work for?

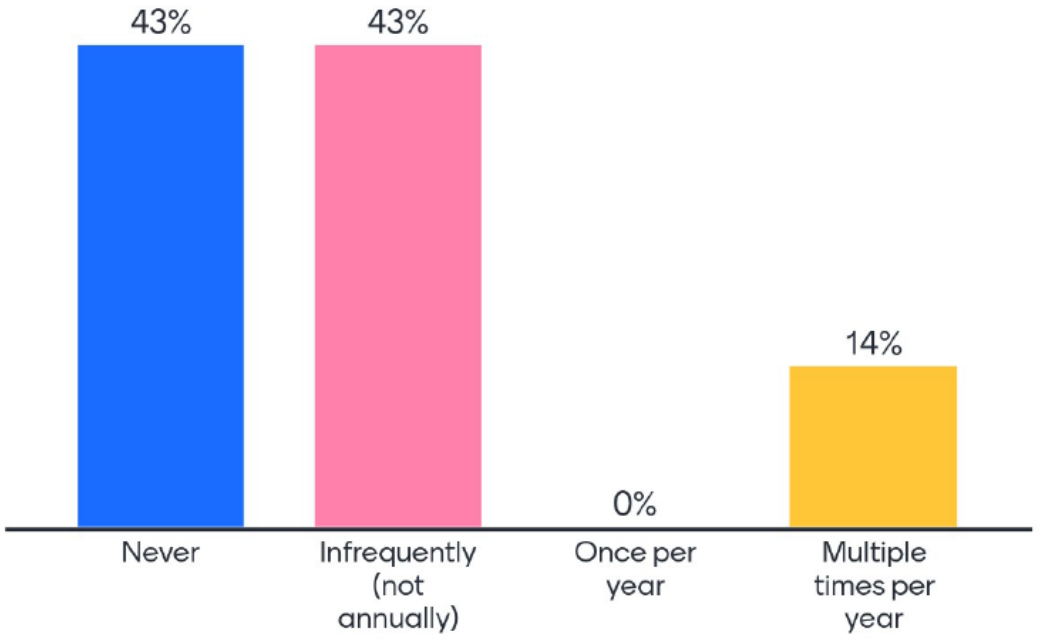
- Federal
- State
- Local
- Academic
- Non-Profit
- Private Sector
- Unknown

12


Where does your organization stand with respect to using UAS for disaster response?
Mentimeter
0%
29%
14%
29%
29%
No Action
Discussing
Planning
Implementing
Operating

How often does your organization respond to disasters using occupied/manned aircraft?

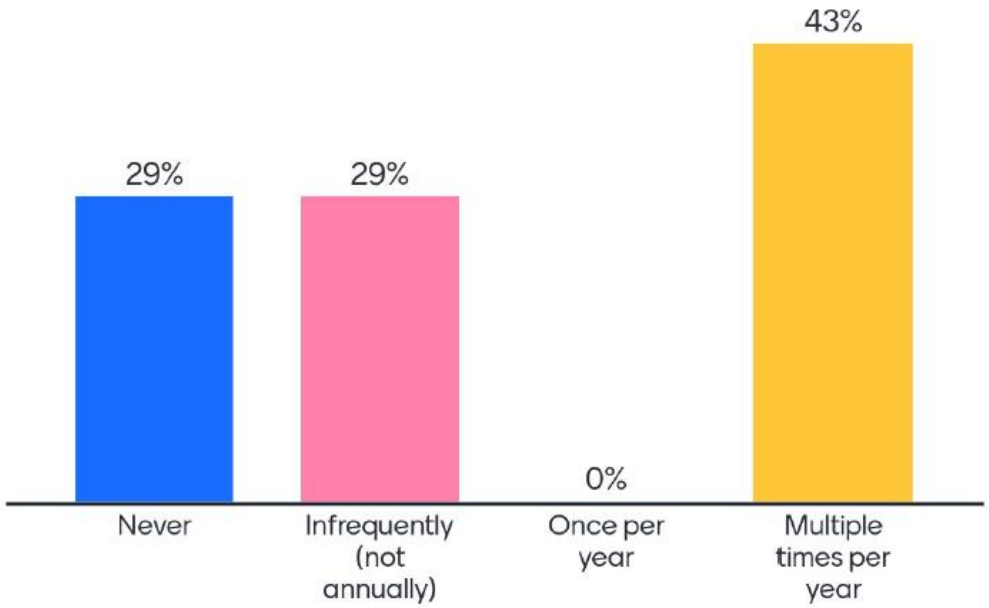
Mentimeter



7

How often does your organization respond to disasters using UAS?

Mentimeter



7

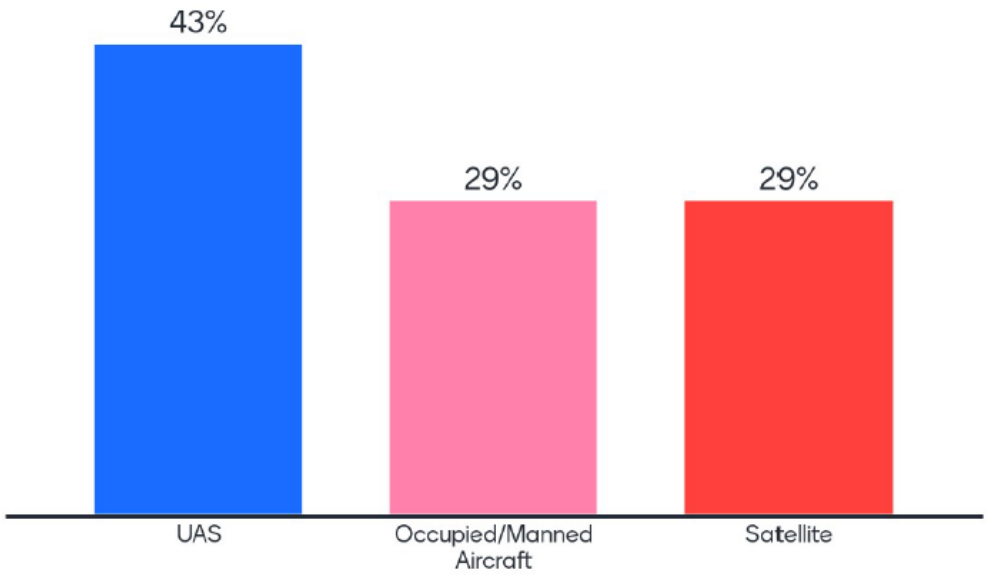
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

Mentimeter

Platforms & Applications

Which platforms does your organization currently use for disasters?

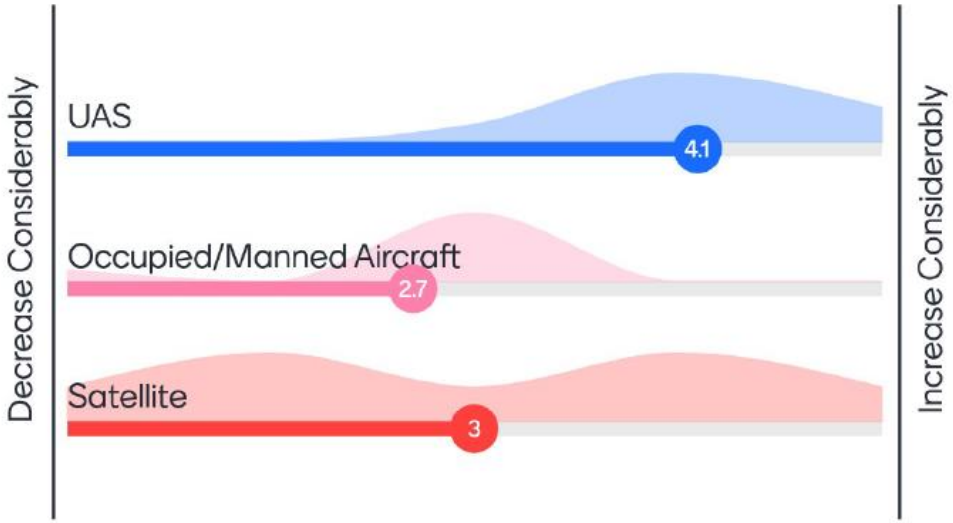
Mentimeter



7

How do you see your organization's use of the following platforms changing over the next five years for disaster response?

Mentimeter



7

How do you think UAS technology will help your organization respond to disasters?

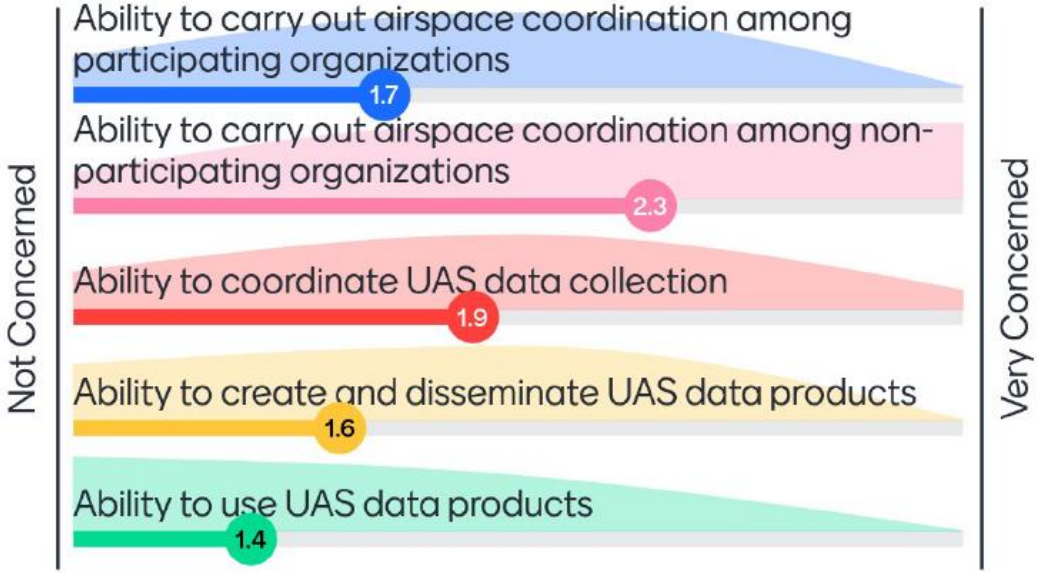
Mentimeter

10

Concerns

How concerned are you about the following during a disaster?

Mentimeter



7

What are you most worried about in terms of UAS and disaster response?

Mentimeter

6

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What do you need to trust that another organization can operate their UAS safely during a disaster?

Mentimeter

5

What are your main concerns with respect to employing UAS for disaster response?

Mentimeter

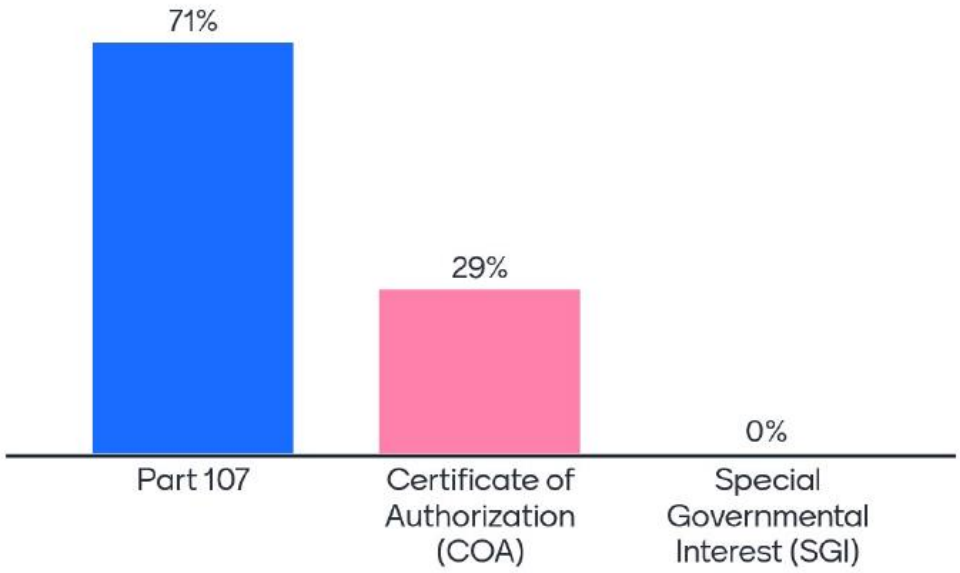
5

Mentimeter

Waivers & Needs

Has your organization obtained any of the following for UAS?

Mentimeter

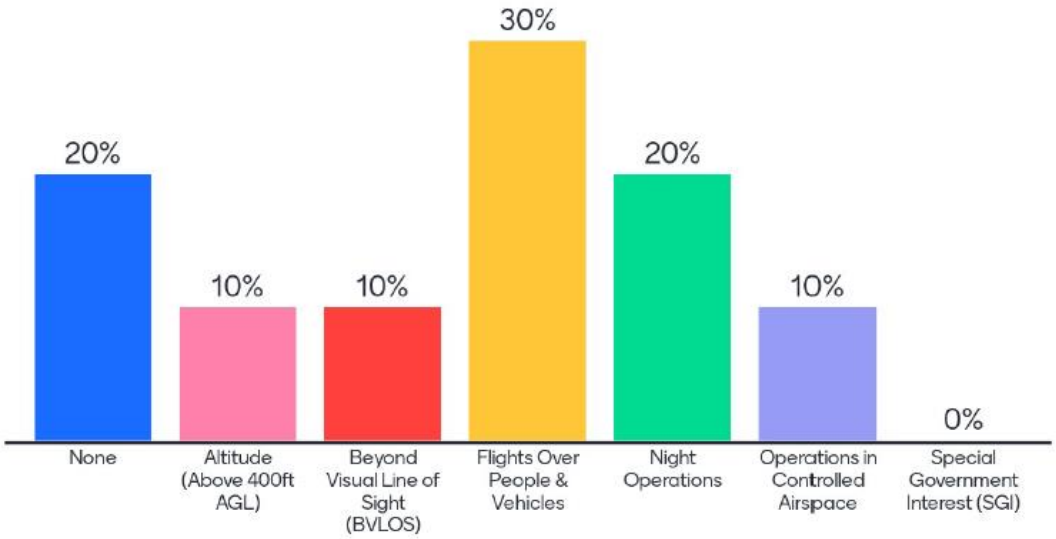


5

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What waivers have you obtained for UAS operations?

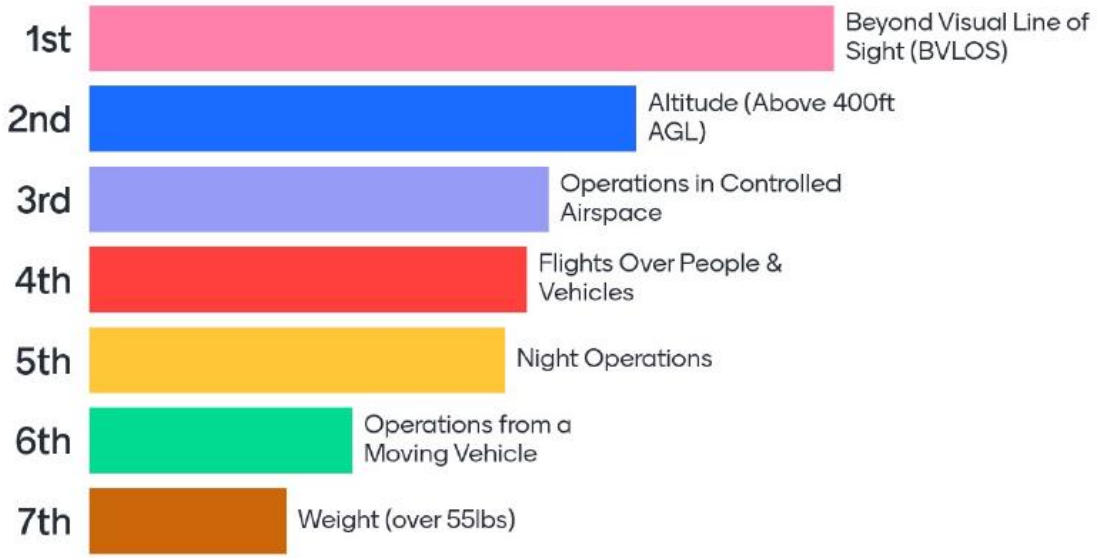
Mentimeter



5

Rank the types of waivers you think would be critical to using UAS for disaster response

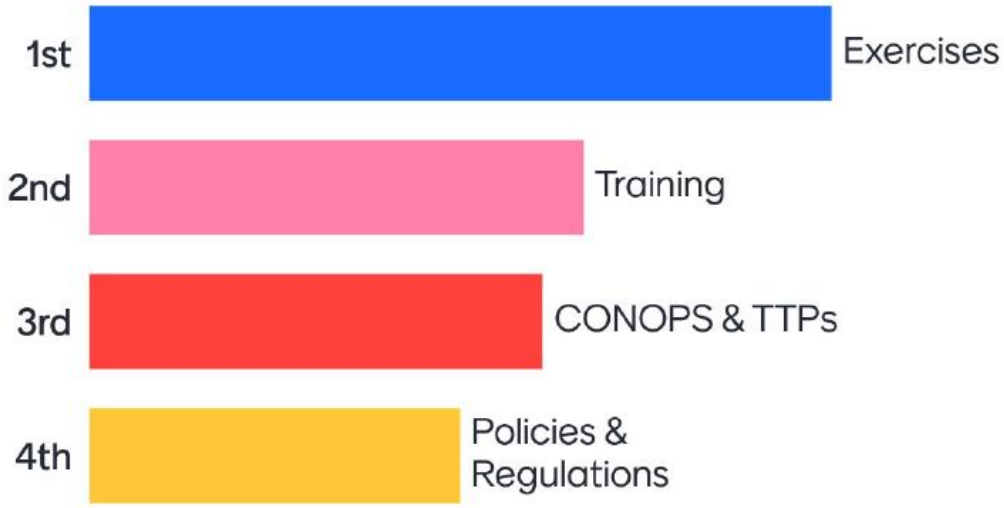
Mentimeter



5

Rank what would help your organization improve your use of UAS technology in response to a disaster.

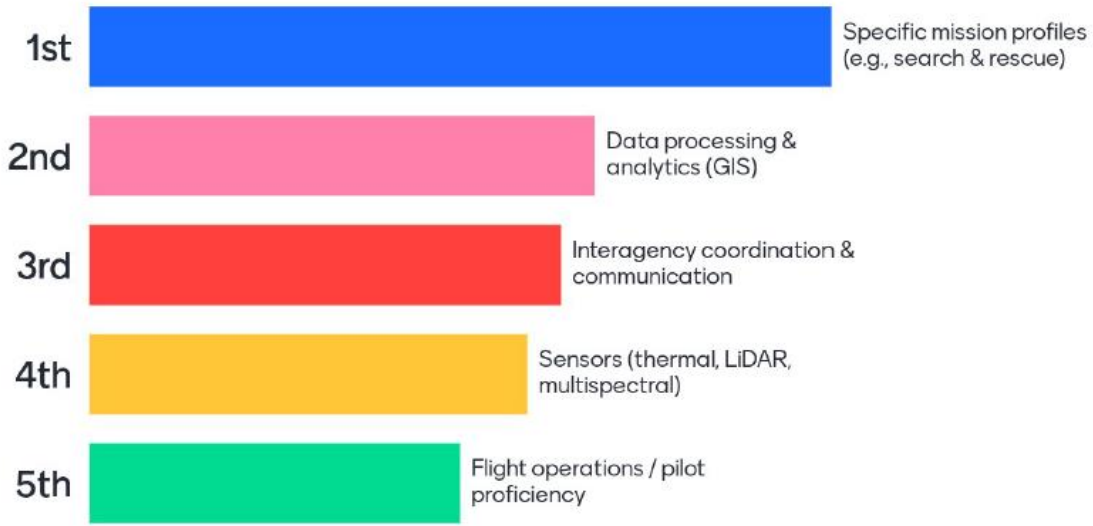
Mentimeter



5

Rank the types of training that would help improve your agency's response to a disaster using UAS.

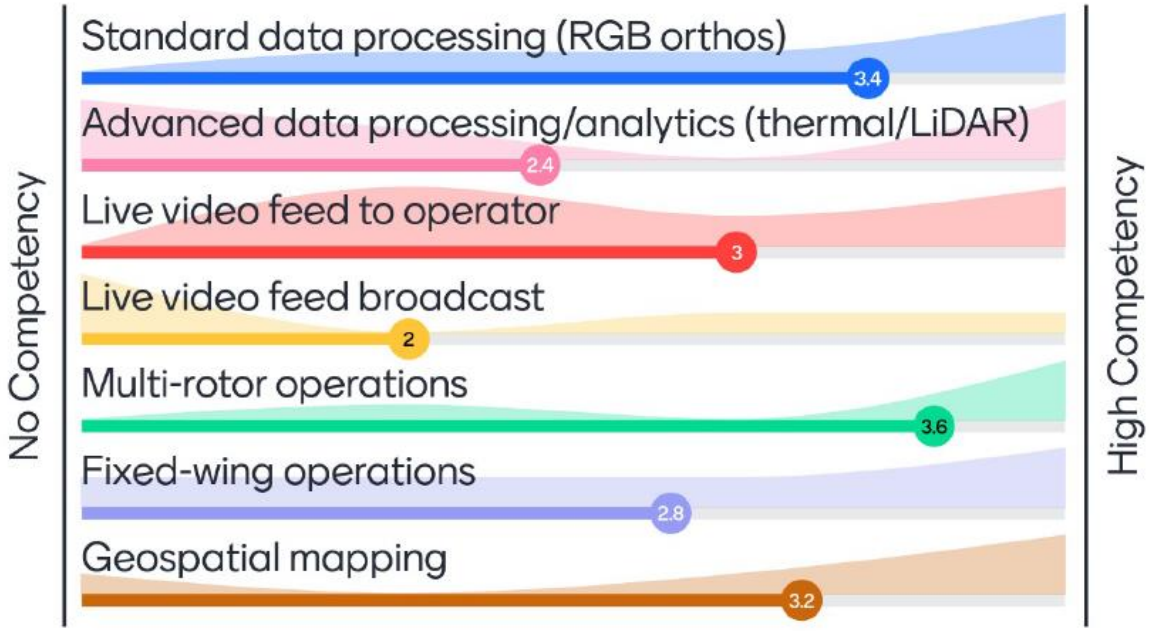
Mentimeter



5

Rate your organizational UAS competency

Mentimeter



5

1.3.8 Regional Symposium - University of Alaska Fairbanks Symposium #2 – 14 October 2021

1.3.8.1 University of Alaska Fairbanks Symposium #2 Survey Results

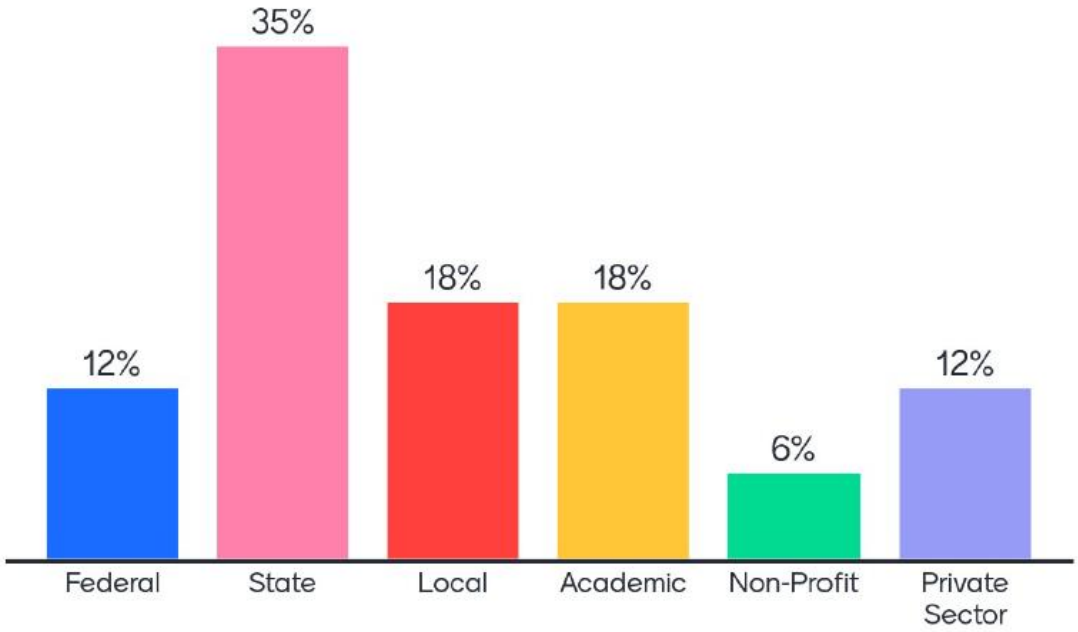
Mentimeter

Organizational Profile

1

What type of organization do you work for?

Mentimeter



17

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

How would you describe your role within your organization?

Mentimeter

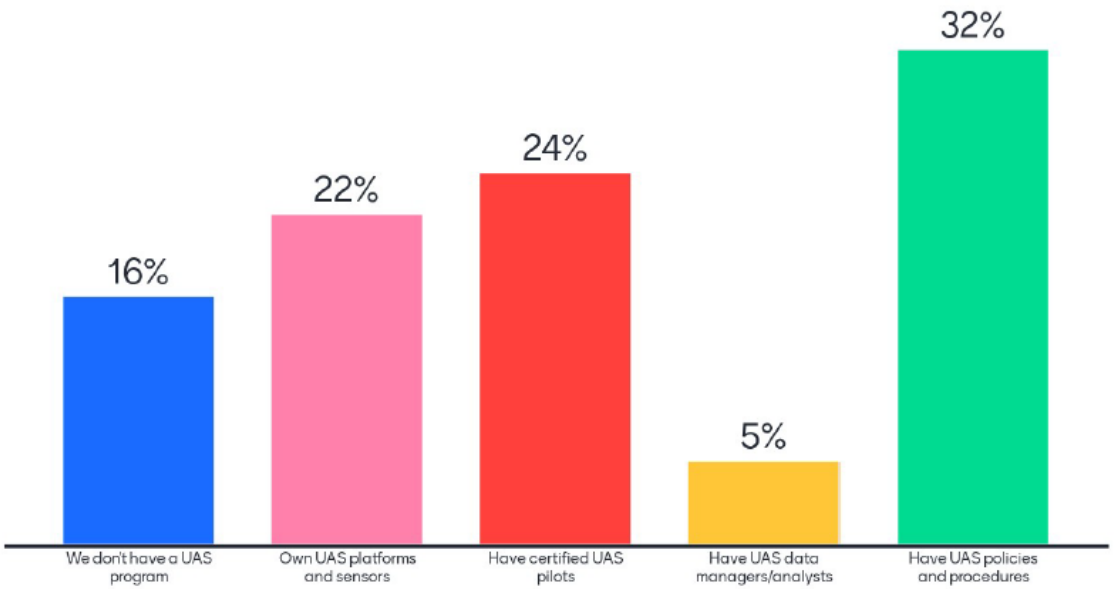
19

Mentimeter

Disaster Capabilities

What does your current UAS program consist of? (Check all that apply)

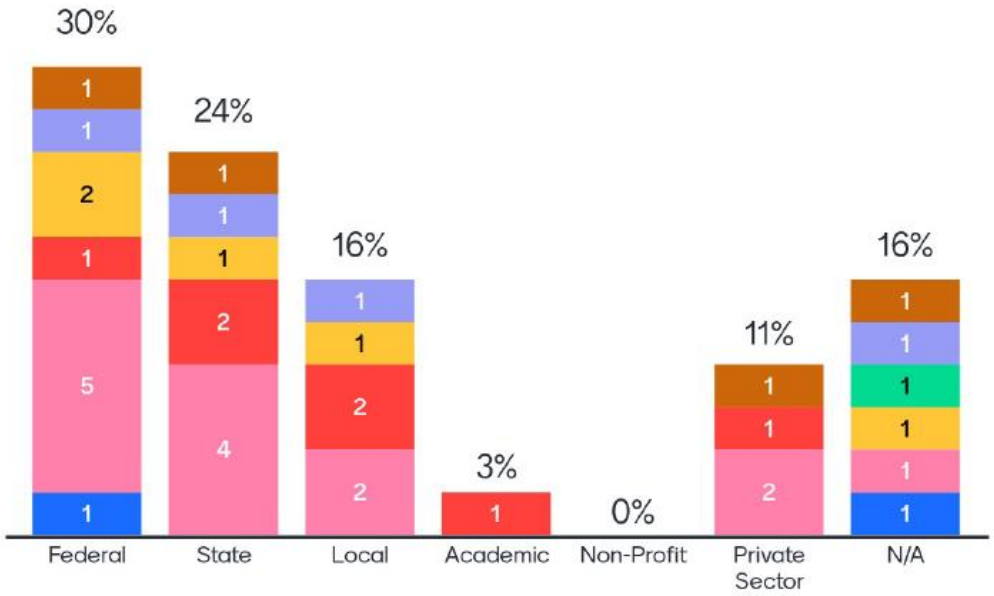
Mentimeter



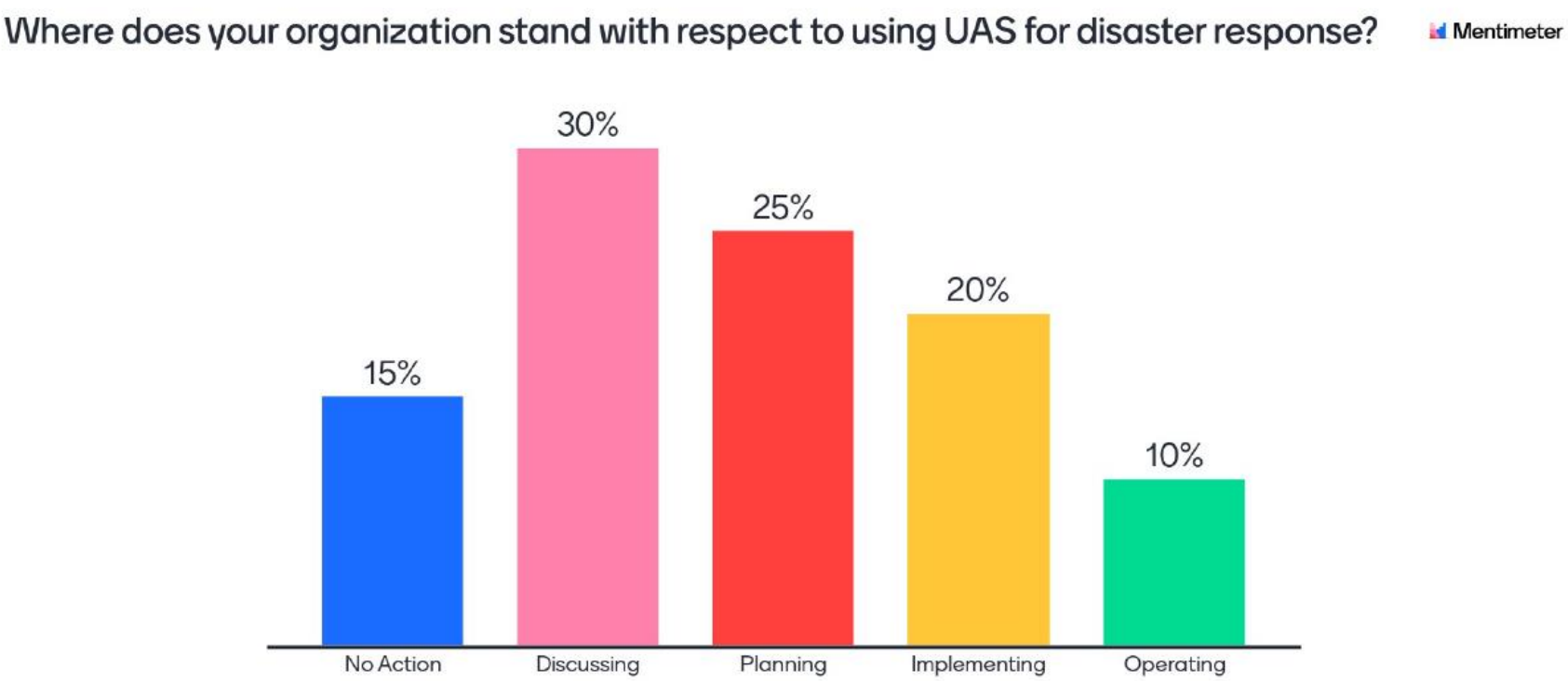
20

What organizations/agencies has your organization coordinated airspace with during a disaster?

Mentimeter

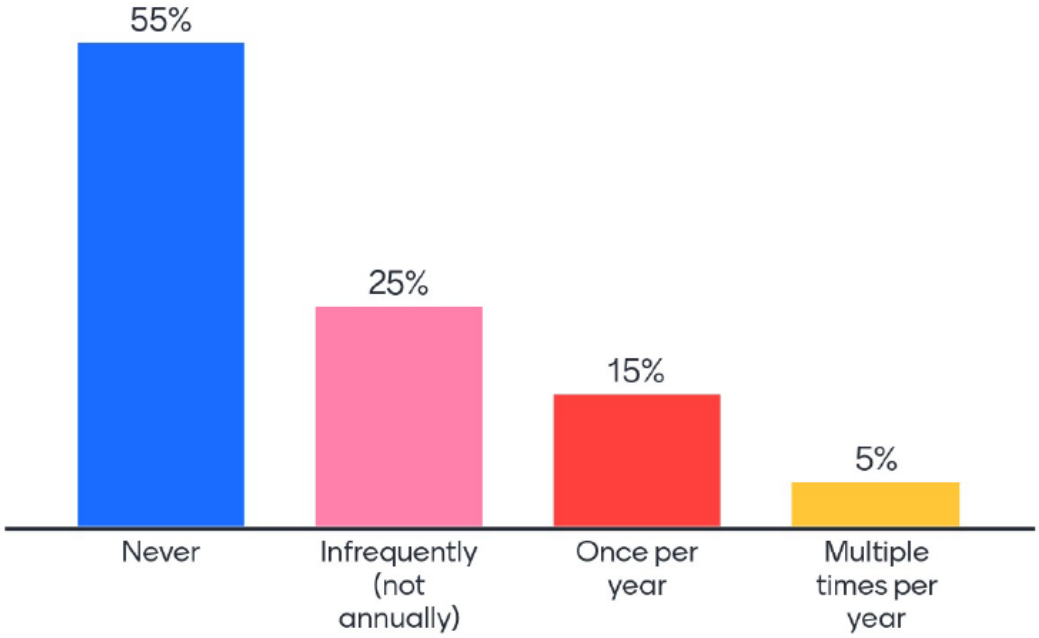


37


Where does your organization stand with respect to using UAS for disaster response?
Mentimeter
30%
25%
20%
15%
10%
No Action
Discussing
Planning
Implementing
Operating

How often does your organization respond to disasters using occupied/manned aircraft?

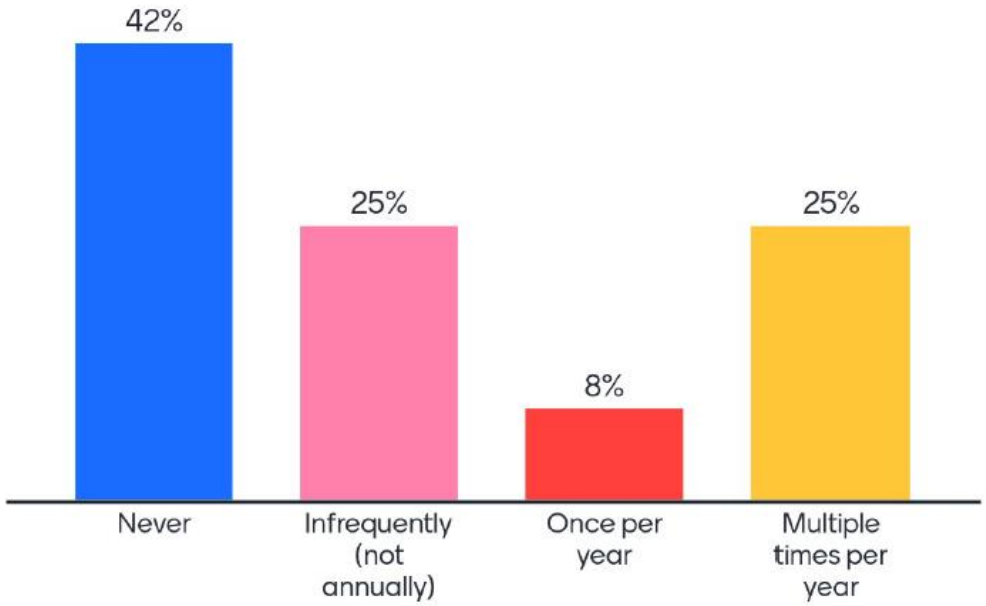
Mentimeter



20

How often does your organization respond to disasters using UAS?

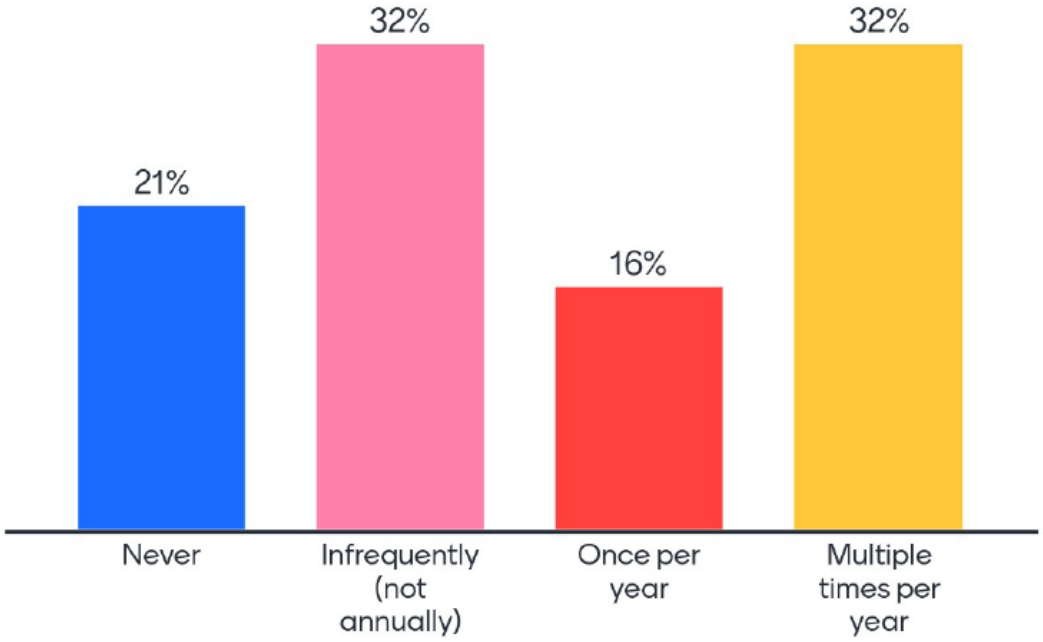
Mentimeter



12

How often does your organization participate in multi-agency disaster response exercises that involves airspace coordination?

Mentimeter



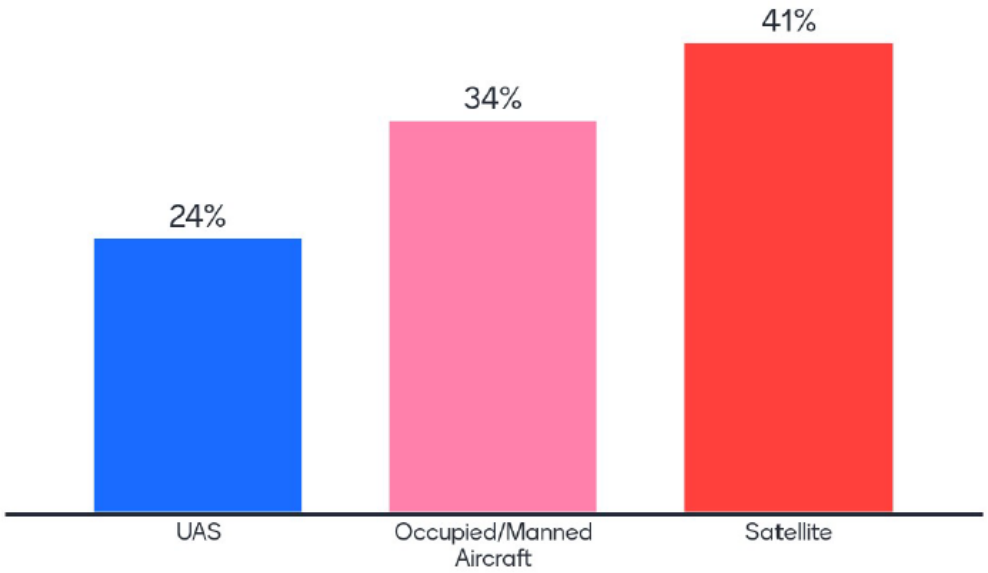
19

Mentimeter

Platforms & Applications

Which platforms does your organization currently use for disasters?

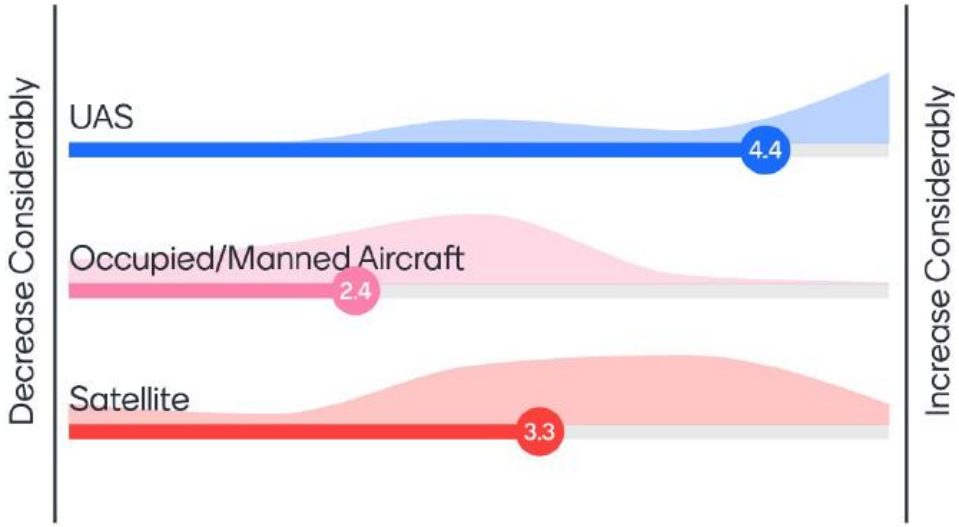
Mentimeter



17

How do you see your organization's use of the following platforms changing over the next five years for disaster response?

Mentimeter



18

How do you think UAS technology will help your organization respond to disasters?

Mentimeter

25

Concerns

How concerned are you about the following during a disaster?

Mentimeter

17

What are you most worried about in terms of UAS and disaster response?

Mentimeter

17

The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

What are the barriers at your organization for employing UAS during a disaster?

Mentimeter

27

What do you need to trust that another organization can operate their UAS safely during a disaster?

Mentimeter

23

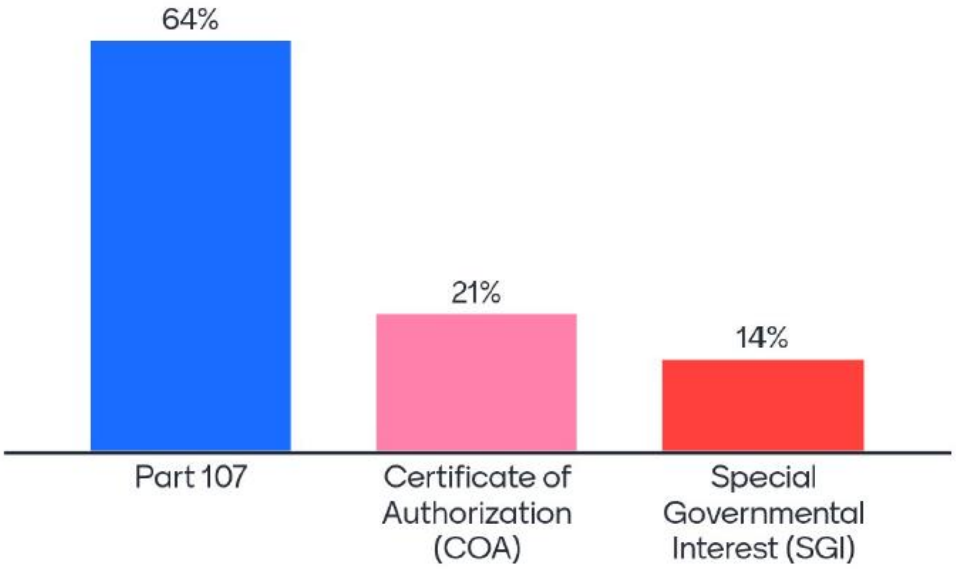
The FAA's Center of Excellence for UAS Research
ASSURE
Alliance for System Safety of UAS through Research Excellence

Mentimeter

Waivers & Needs

Has your organization obtained any of the following for UAS?

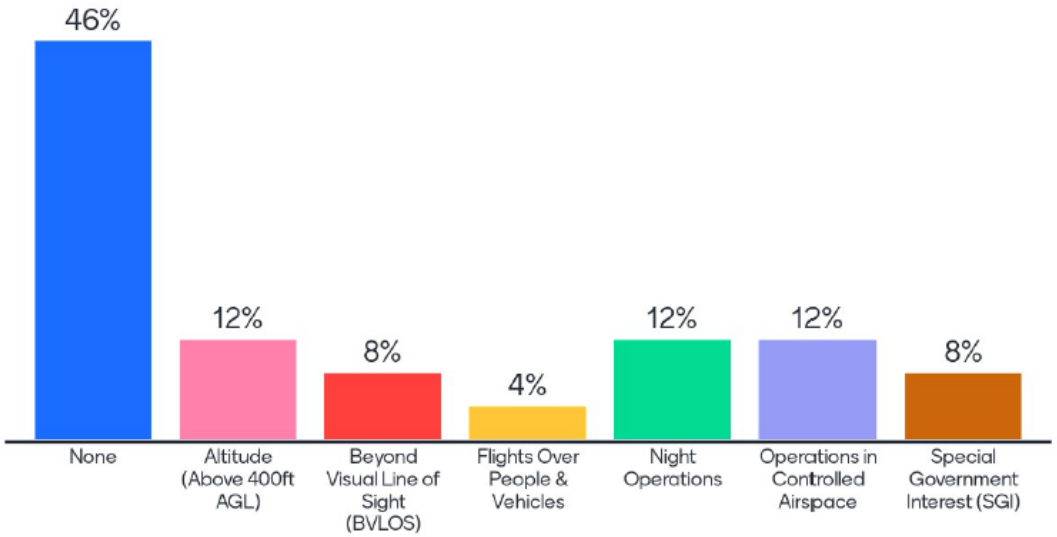
Mentimeter



9

What waivers have you obtained for UAS operations?

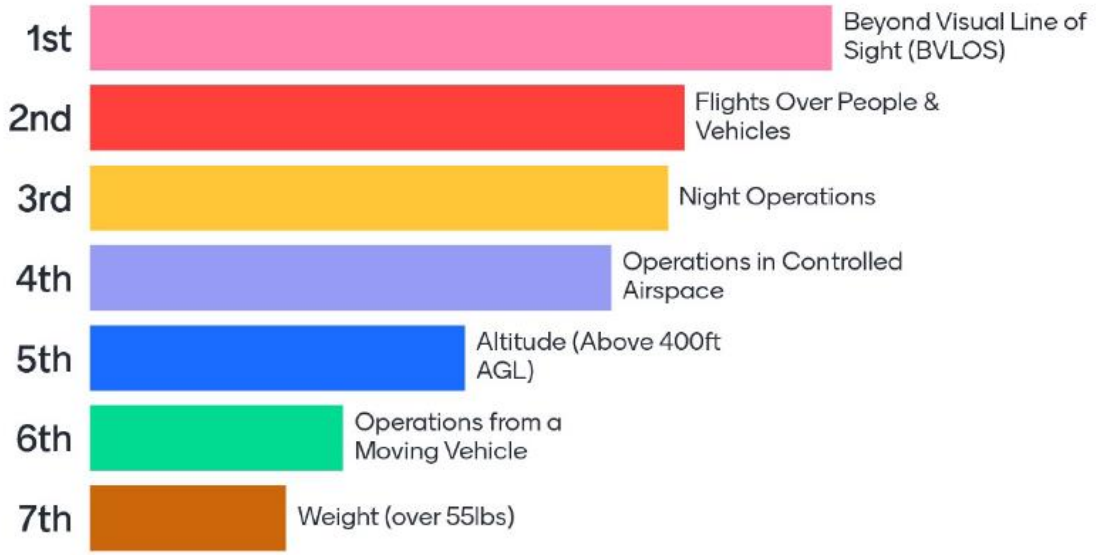
Mentimeter



16

Rank the types of waivers you think would be critical to using UAS for disaster response

Mentimeter



17

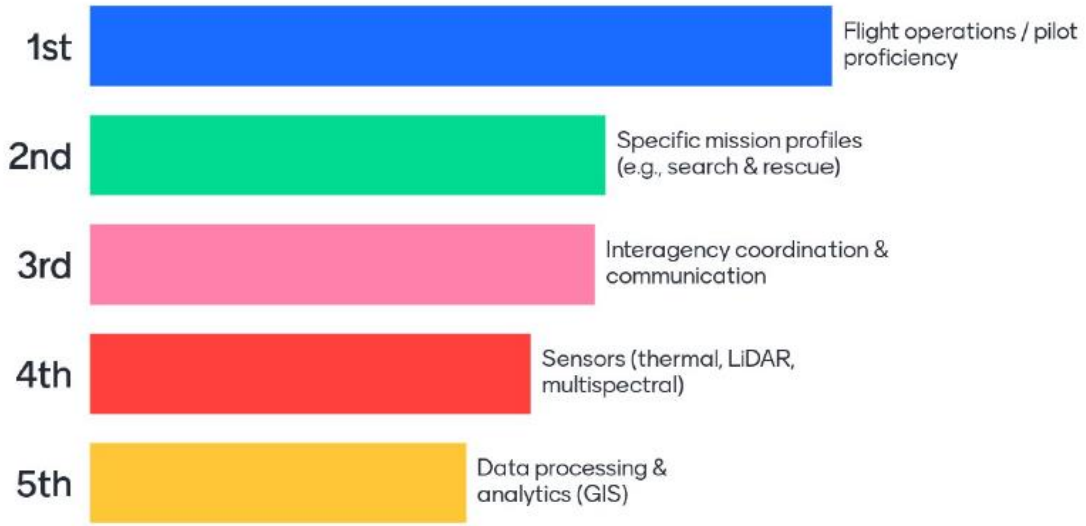
Rank what would help your organization improve your use of UAS technology in response to a disaster.

Mentimeter

17

Rank the types of training that would help improve your agency's response to a disaster using UAS.

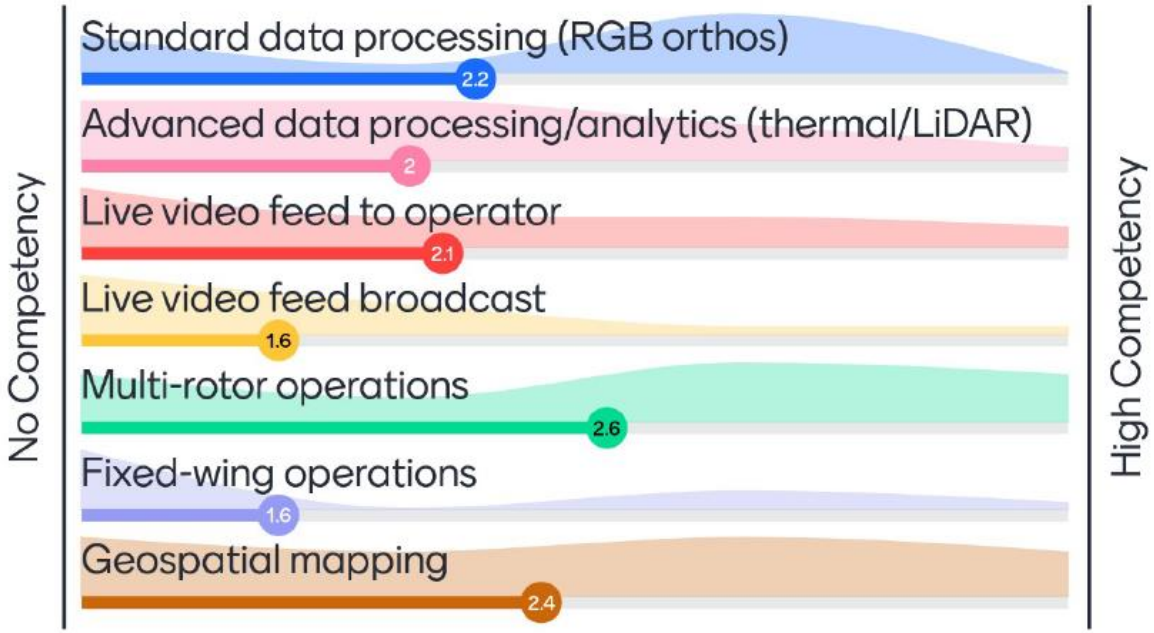
Mentimeter



17

Rate your organizational UAS competency

Mentimeter



16