



Imagery Requirements Survey

USDA Planning Meeting
December 2011

Imagery Requirements Survey

- Image Survey Basics
- Synopsis of Responses
- Conclusions
- FSA Survey
- Non-FSA Survey

Survey Basics

- Total FSA Survey Responses = 415 (46 GIS Specialists/Coordinators)
- Total Non-FSA Survey Responses = 1282 (79% USFS, 8% DOI, 6% NRCS, 7% Other).
- Two surveys, created and administered using a web based survey engine for FSA State and County personnel and for non-FSA agencies. It was open throughout the month of July.
- Establishes a standardized feedback mechanism for **current and future imagery requirements** of FSA State and County Offices and non-FSA agencies, especially funding partners.
- Allows for analysis of current specifications versus existing and future requirements for imagery products in a timely manner, in order to adjust specifications as needed and as budget allows, for upcoming contract cycles.
- Allows for direct customer feedback to ensure continued imagery program development and improvement.

Conclusions

- Horizontal accuracy of better than 6-meters to true ground with target of 2-meters to true ground
- Spatial resolution of ½-meter to 1-meter
- Spectral resolution of at a minimum natural color (NC)
- Temporal resolution – yearly acquisition should still be the goal
- Geographic coverage – at a minimum, full county coverage + adjacent counties = full state coverage
- The requirement for delivery 30 days after the acquisition period is sufficient for majority of respondents, however 24% of FSA responses indicated a preference of 10 days. Faster future delivery?
- Deliver media copies of the imagery – debatable
- Be able to share imagery openly without concern for copyright or licensing
- Access to historical imagery is increasingly important; delivery via web services for historical is preferred

Survey Reports

- 2008

- http://www.fsa.usda.gov/Internet/FSA_File/2008_imageryreqsurveyreport.pdf

- 2011

- FSA Survey

- http://www.fsa.usda.gov/Internet/FSA_File/2012_fsa_imagery_requiresurvey.pdf

- Non-FSA Survey

- http://www.fsa.usda.gov/Internet/FSA_File/2012_non_fsaimageryreqsurfinal.pdf

Survey Responses

- **Who took the surveys?**
 - FSA, DOI, NRCS, USFS, BLM, FAS, NPS, RMA, others
- **What do you need to see on imagery?**
 - Field boundaries, crop, crop patterns, roads, ditches, fences, buildings, grain storage, farm equipment, trees, fence posts, well heads
- **Leaf-on or leaf-off?**
 - Leaf on FSA **36%**, DOI 34%, NRCS 28%, USFS 34%
 - Leaf off FSA 13%, DOI 22%, NRCS **57%**, USFS 20%
 - No opinion/unsure FSA **51%**, DOI **44%**, NRCS **16%**, USFS **46%**
- **When do you need the imagery?**
 - 10 days FSA **24%**, DOI 5%, NRCS 9%, USFS 13%
 - 20 days FSA 9%, DOI 1%, NRCS 3%, USFS 4%
 - 30 days FSA **42%**, DOI **23%**, NRCS **22%**, USFS **25%**
 - 60 days FSA 13%, DOI **17%**, NRCS **21%**, USFS **16%**
 - 90 days FSA 5%, DOI **20%**, NRCS **19%**, USFS **16%**
 - 120 days FSA 1%, DOI **17%**, NRCS **15%**, USFS **12%**

Survey Responses

- **How often do you need new imagery?**
 - Bi-annual 4-6%
 - 1 Year FSA **69%**, DOI 33%, NRCS **47%**, USFS 40%
 - 2 years FSA 22%, DOI 31%, NRCS 28%, USFS 28%
 - 3 years FSA **3%**, DOI 17%, NRCS 15%, USFS 14%
- **Do you need a media copy of the imagery?**
 - Yes FSA 31%, DOI 27%, NRCS **67%**, USFS 37%
 - No FSA **69%**, DOI **73%**, NRCS 33%, USFS **63%**
 - Reasons network outage, RS, fieldwork, distribution
- **If you need a media copy of data, do you need the CCMs or DOQQs?**
 - CCM Yes FSA **57%**, DOI 36%, NRCS **85%**, USFS 37%
 - CCM No FSA 43%, DOI **64%**, NRCS 15%, USFS **63%**
 - DOQQ Yes FSA 24%, DOI 50%, NRCS 47%, USFS 41%
 - DOQQ No FSA **76%**, DOI **50%**, NRCS **53%**, USFS **59%**

Survey Responses

- **How many bands?**

- Order of preference for all agencies: **Natural Color**, 4-band, CIR, >4-bands

- **Is 6-meter to ground horizontal accuracy requirements sufficient?**

- Yes FSA **52%**, DOI **57%**, NRCS 45%, USFS **60%**

- No/Unsure FSA 48%, DOI 43%, NRCS **55%**, USFS 40%

- **If 6-m accuracy is insufficient, preferred accuracy level**

- 2m FSA **64%**, DOI **62%**, NRCS **65%**, USFS **69%**

- 3m FSA 28%, DOI 28%, NRCS 32%, USFS 28%

- 4-5m FSA 8%, DOI 8%, NRCS 3%, USFS 3%

- **Copyright or licensing requirements**

- Share with own or other government agencies**

- Important/Very FSA **79%**, DOI **92%**, NRCS **90%**, USFS **78%**

- No/Somewhat FSA 21%, DOI 8%, NRCS 10%, USFS 22%

- Share with public**

- Important/Very FSA **90%**, DOI **77%**, NRCS **72%**, USFS **61%**

- No/Somewhat FSA 10%, DOI 23%, NRCS 28%, USFS 39%

Survey Responses

- **Importance of non-imagery products**

Elevation/DEM

- Important/Very FSA 36%, DOI **78%**, NRCS **88%**, USFS **77%**
- Not sure/Somewhat FSA **64%**, DOI 22%, NRCS 12%, USFS 23%

Stereo

- Important/Very FSA 13%, DOI 42%, NRCS 30%, USFS 45%
- Not sure/Somewhat FSA **87%**, DOI **58%**, NRCS **70%**, USFS **55%**

Raw Imagery

- Important/Very FSA 15%, DOI 28%, NRCS 17%, USFS 22%
- Not sure/Somewhat FSA **85%**, DOI **72%**, NRCS **83%**, USFS **78%**

Survey Responses

- **Doing work without NAIP imagery**

- Increase field work FSA **81%**, DOI 42%, NRCS 29%, USFS 38%
- Other image source FSA 39%, DOI **76%**, NRCS **91%**, USFS **82%**
- Partner other agency FSA N/A, DOI 50%, NRCS **60%**, USFS 31%
- Imagery agency funds FSA N/A, DOI 36%, NRCS 32%, USFS 31%
- Mod, reduce, not work FSA N/A, DOI 44%, NRCS 32%, USFS 36%

- **Need for Historical Imagery**

- Current imagery only FSA 4%, DOI 2%, NRCS 2%, USFS 7%
- 3 to 5 years old FSA **30%**, DOI 3%, NRCS 4%, USFS 4%
- 10 years FSA **25%**, DOI 5%, NRCS 15%, USFS 7%
- 20 years FSA 6%, DOI 8%, NRCS 7%, USFS 6%
- 30 years FSA 5%, DOI 2%, NRCS 7%, USFS 6%
- 40 years FSA 1%, DOI 3%, NRCS 2%, USFS 1%
- 50 years FSA 1%, DOI 3%, NRCS 2%, USFS 3%
- Old as possible FSA **28%**, DOI **74%**, NRCS **61%**, USFS **66%**

Synopsis of Survey Responses

- For all agencies except NRCS the majority of respondents indicated they do not need media copies of their imagery; however 65% of FSA State GIS Specialists/Coordinators indicated they still needed media copies of their imagery. Of those respondents that indicated they needed media copies, the reasons given were, for use during network outages, general backup, and **field work**.
- Respondents indicated that CCMs are still an important product. All agencies that need a copy of the data wanted DOQQs while only FSA and NRCS had a majority that needed CCMs.
- For FSA, Grain Storage Facilities seem to be the size/spatial resolution cutoff regarding what needs to be clearly recognizable on the imagery; however upwards of 20% of respondents indicated they also need to see single trees. Based on the “other” responses to the program specific questions, the smallest objects that need to be clearly recognizable are hay bales, single trees, wellheads, and grain bins. For non-FSA the responses included: ½ to 1-meter objects, campsites, ATV route width, sage brush plant, and a **mushroom**.

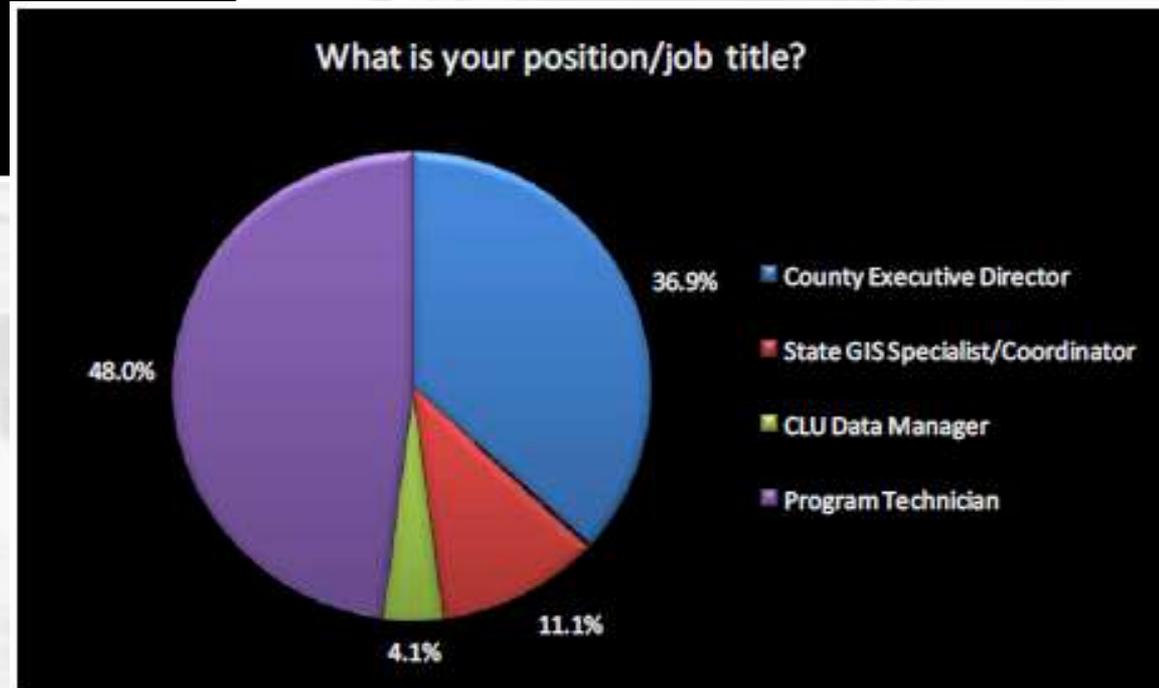
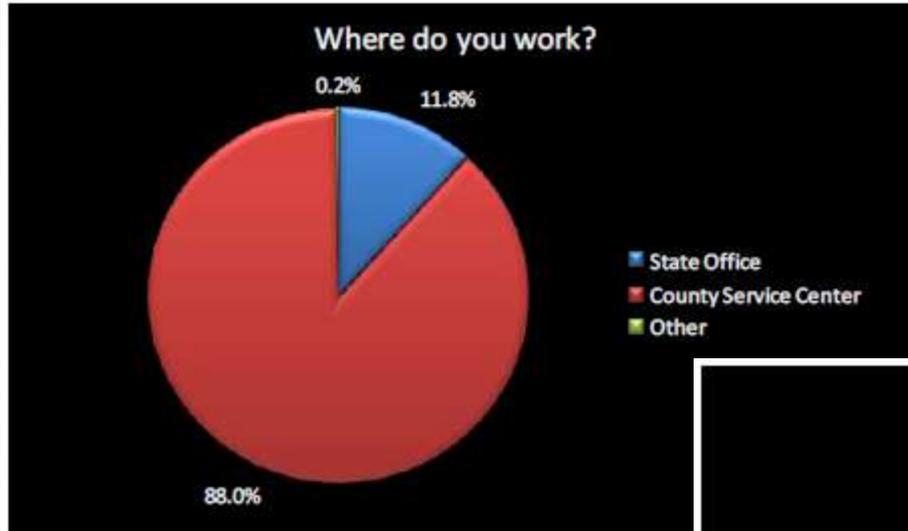
Synopsis of FSA Survey Responses

- 69% of FSA respondents indicated they need imagery every year where as non-FSA agencies indicated 1 to 2 year preference.
- For FSA the vast majority of respondents indicated full county coverage was “very important”, and many indicated that seeing adjacent counties is important as well, regardless of whether they are in the same state or not.
- Respondents indicated quality of the imagery is as important as horizontal accuracy of the imagery. Both were predominately rated “very important”.
- Respondents indicated accessibility and speed of use of the imagery are both “very important”.
- Currency of the imagery, maintaining credibility with the customers, and time savings were also all rated as “very important”.
- Wide variety of responses from the different agencies regarding how quickly they need to receive the imagery. FSA had most responses for 10-30 days, where as non-FSA agencies had most responses in the 30-120 day range.

Synopsis of FSA Survey Responses

- For FSA, almost 99% of respondents feel that knowing the year, month, and day of acquisition is enough detail; 1% felt they needed to know the hour of acquisition.
- Most of the agencies indicated that an accuracy specification of 6 meters to true ground is sufficient. Of those respondents to said no, the majority would like to see a 2 meter to ground accuracy specification. **2-m was the highest accuracy to choose from.**
- Variety of responses regarding historical imagery. FSA responses were mostly in the 3-10 year range with 28% selecting “as far back as possible” where as non-FSA agencies selected 61 – 74% wanting “as far back as possible”.
- The ability to share imagery with Federal, State, and Local agencies, as well as with producers, without concern for copyright or licensing is important to all agencies.
- All agencies noted difficulties to their programs if FSA imagery was not available. Over 80% of FSA respondents indicated that they would have to increase field work to accomplish their jobs; 39% indicated they would seek out other imagery sources to accomplish their work.
- 83% of FSA respondents preferred natural color (NC) imagery over other options. Order of preference for all agencies was: **Natural Color**, 4-band, CIR, >4-bands

Who took the FSA survey?



Who took the Non-FSA survey?

Who do you work for?

Answer Options	Response Percent	Response Count
BLM	5.6%	72
FAS	0.1%	1
NASS	0.0%	0
NPS	1.5%	19
NRCS	5.8%	74
RMA	0.1%	1
USFS	79.3%	1016
USGS	0.6%	8
Other	7.1%	91
Other (please specify)		91

answered question 1282

Who at DOI took the survey?

Who do you work for?

Answer Options	Response Percent	Response Count
BLM	72.7%	72
FAS	0.0%	0
NASS	0.0%	0
NPS	19.2%	19
NRCS	0.0%	0
RMA	0.0%	0
USFS	0.0%	0
USGS	8.1%	8
Other	0.0%	0
Other (please specify)		1

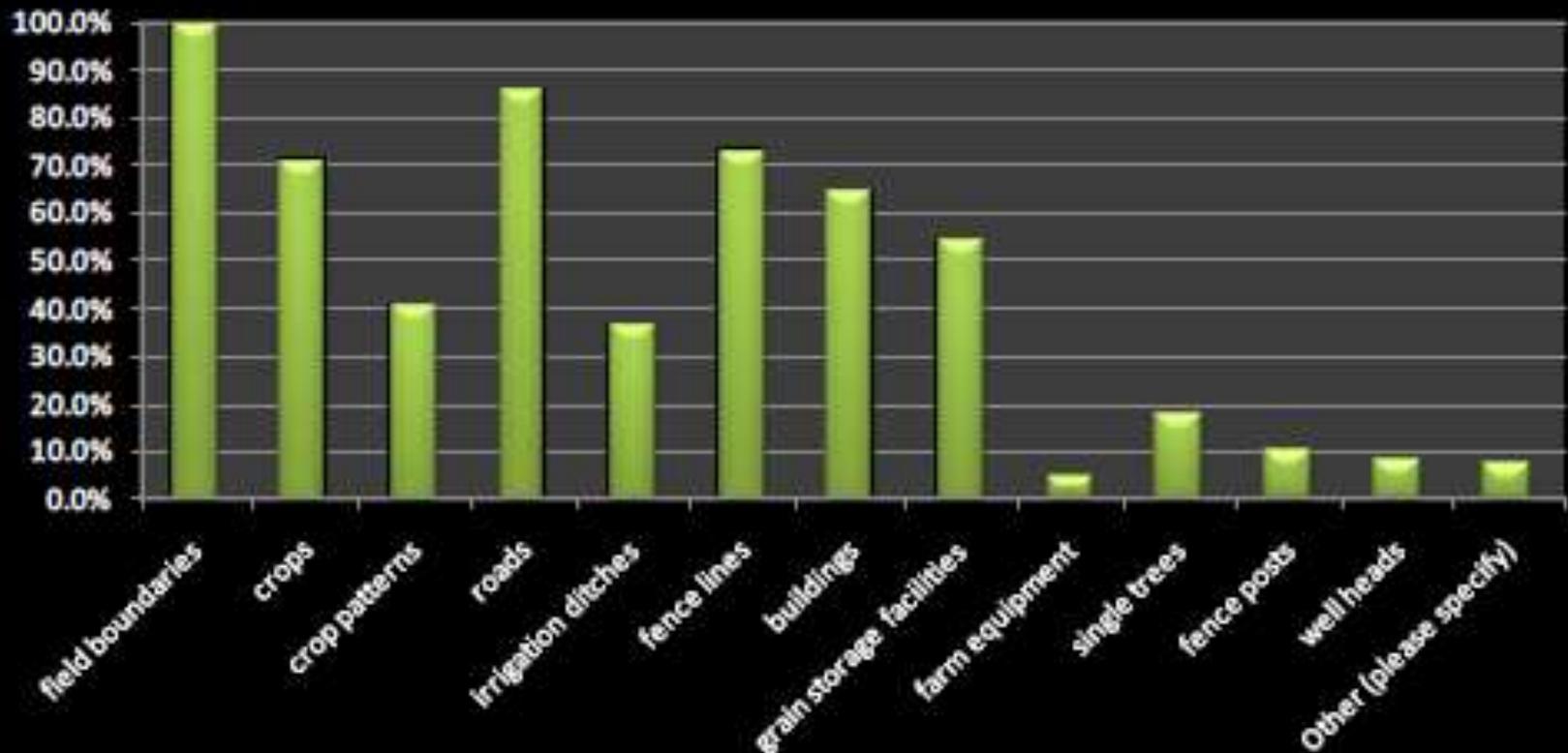
answered question

99

What do you need to see?

FSA

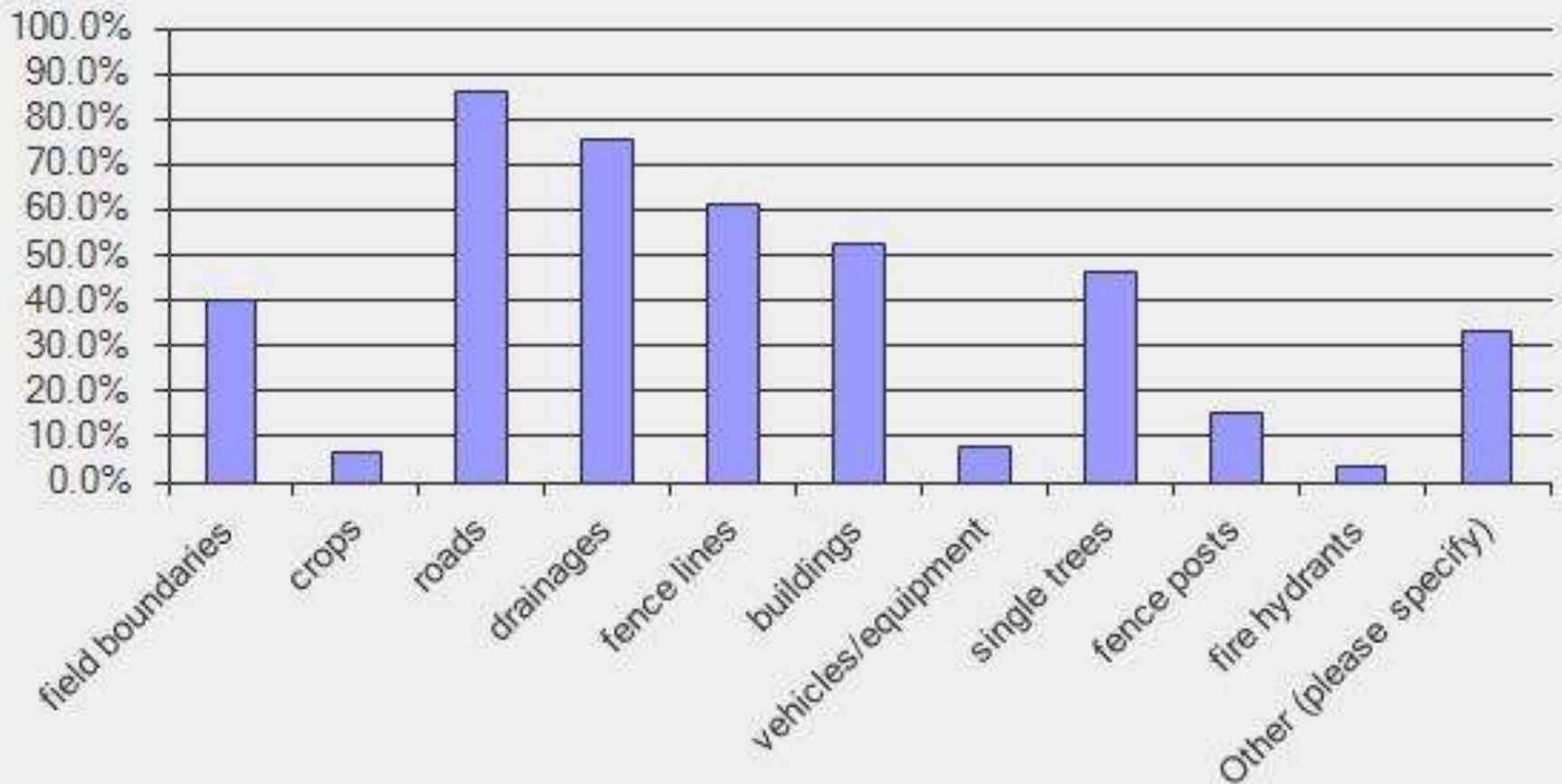
Which of the following features need to be clearly recognizable on the imagery in order to do your work? (Select all that apply)



What do you need to see?

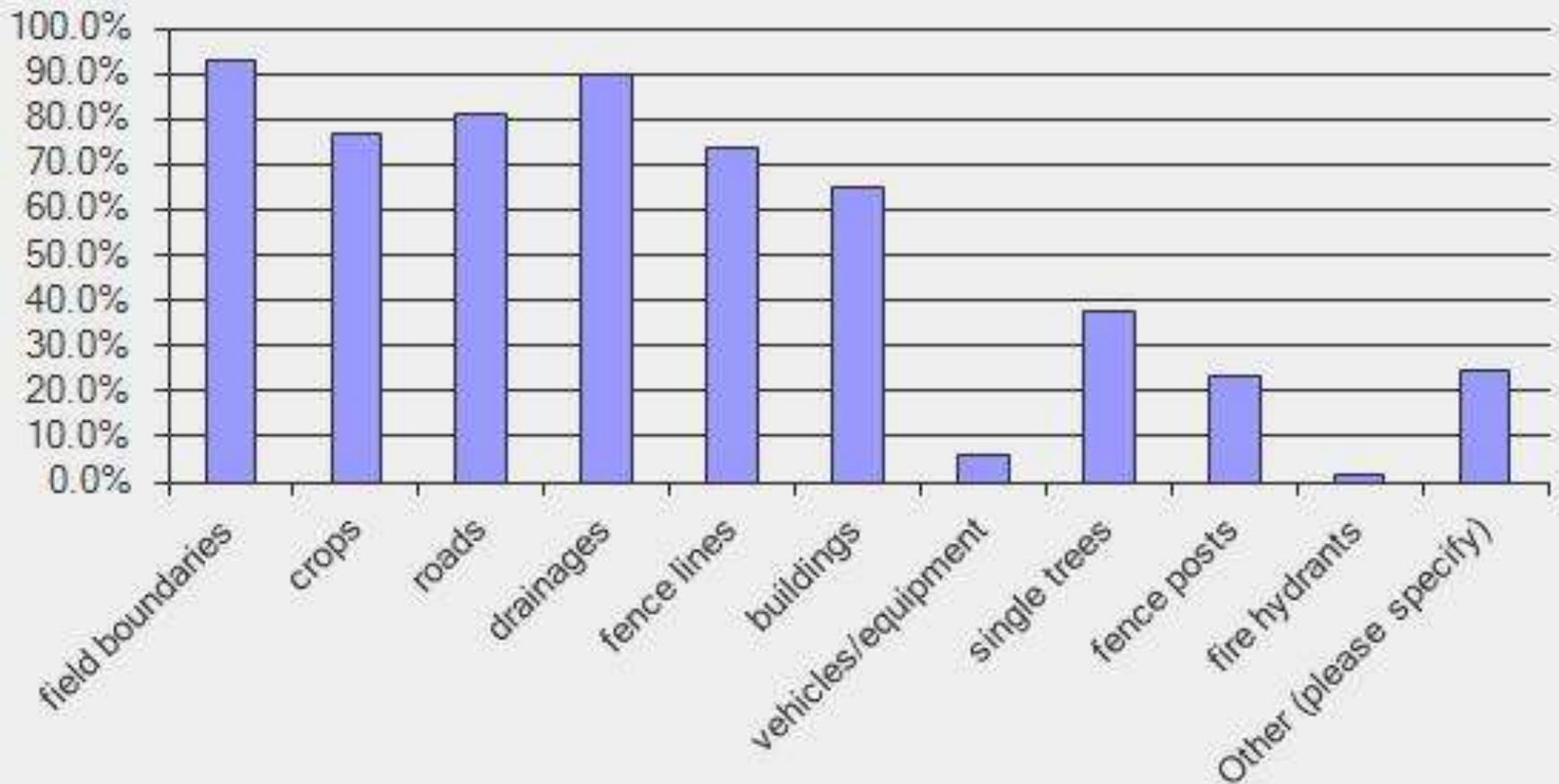
DOI

Which of the following features need to be clearly recognizable on the imagery in order to do your work?(Select all that apply) - DOI



What do you need to see? NRCS

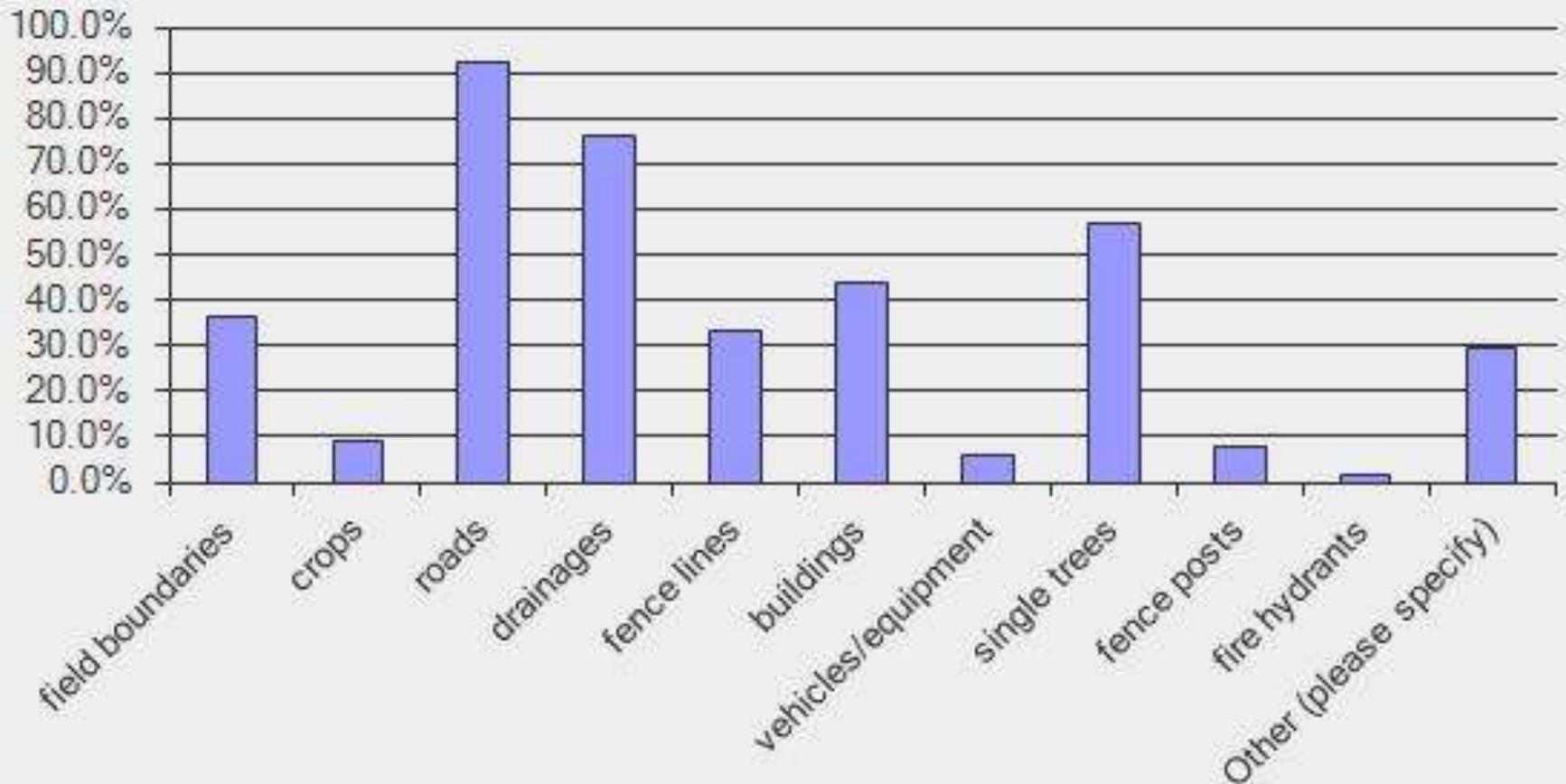
Which of the following features need to be clearly recognizable on the imagery in order to do your work?(Select all that apply) - NRCS



What do you need to see?

USFS

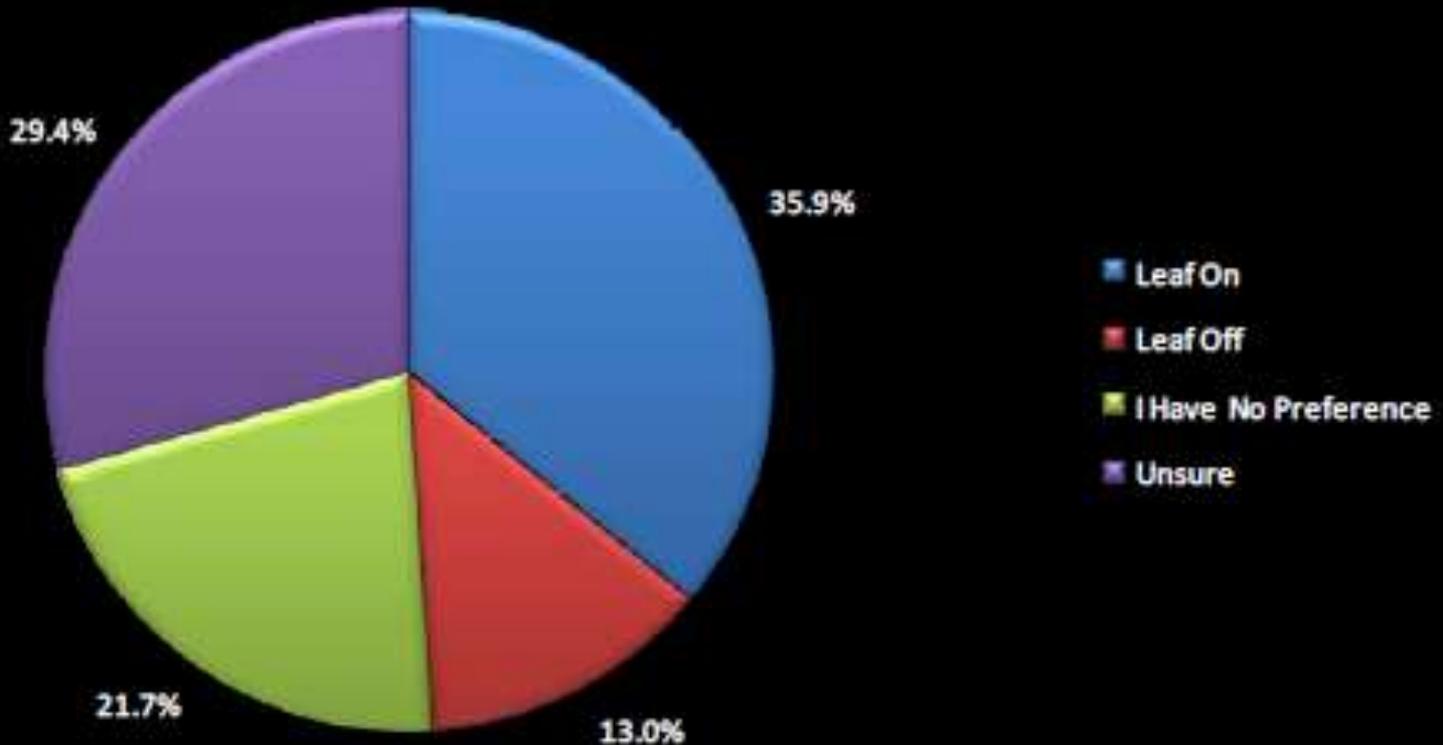
Which of the following features need to be clearly recognizable on the imagery in order to do your work?(Select all that apply) - USFS



Leaf On or Leaf Off?

FSA

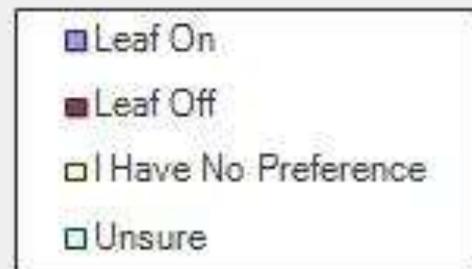
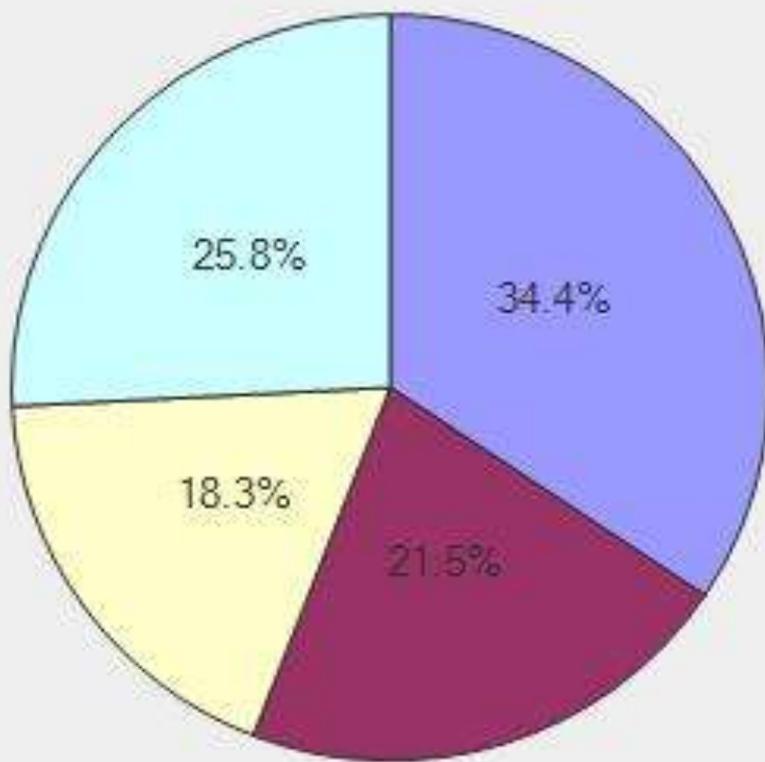
Would you prefer your imagery be "leaf on" or "leaf off"?



Leaf On or Leaf Off?

DOI

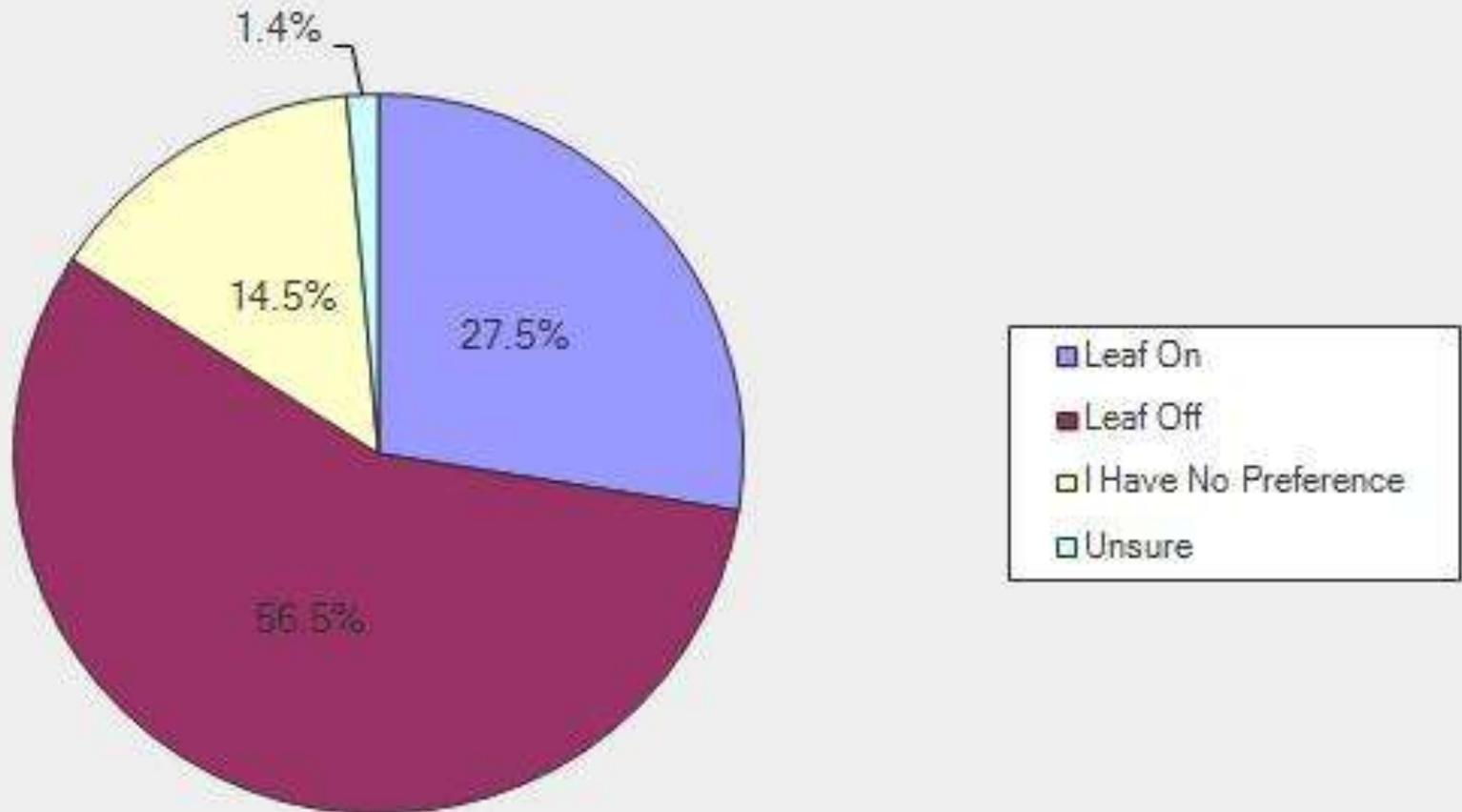
Would you prefer your imagery be "leaf on" or "leaf off"? - DOI



Leaf On or Leaf Off?

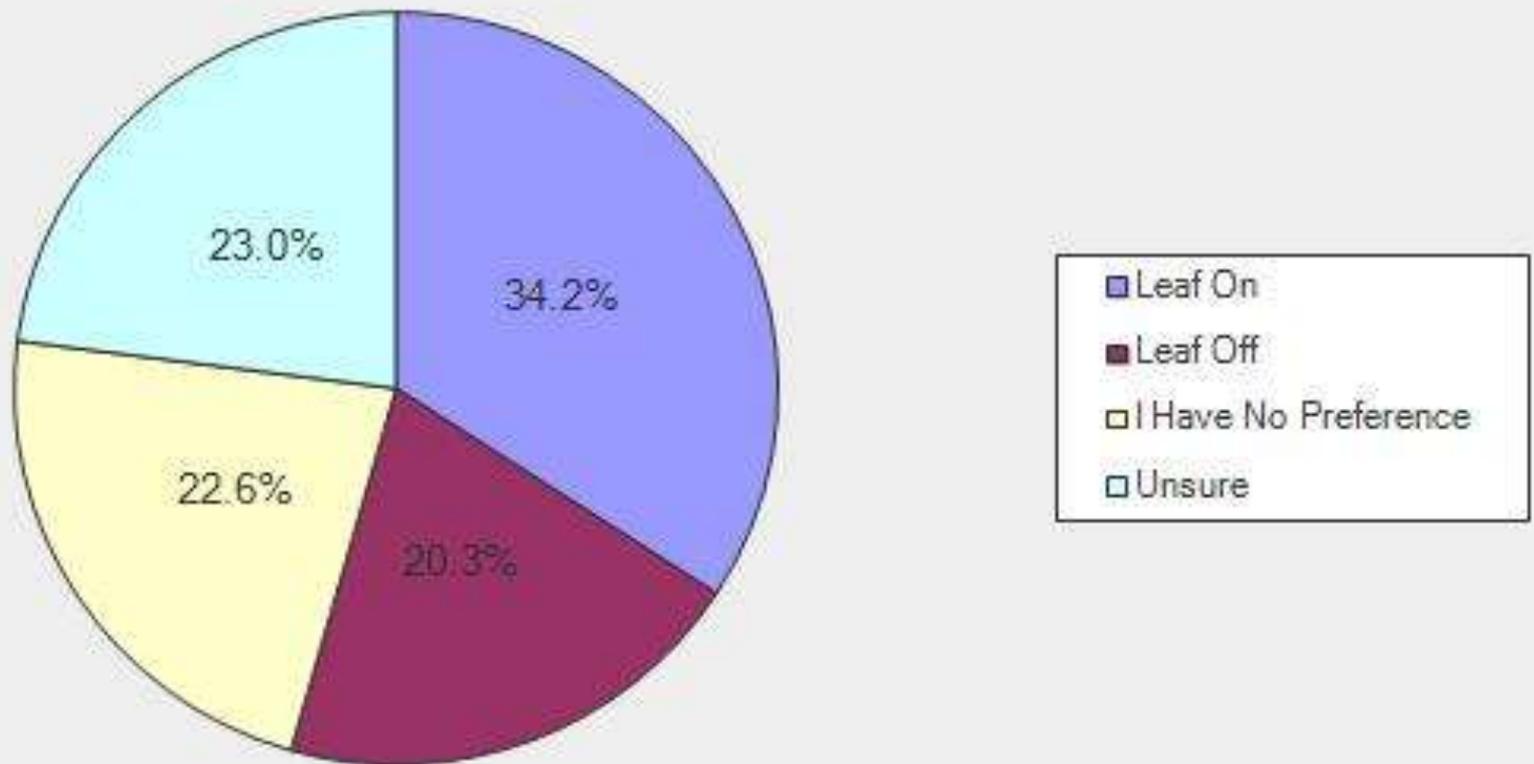
NRCS

Would you prefer your imagery be "leaf on" or "leaf off"? - NRCS



Leaf On or Leaf Off? USFS

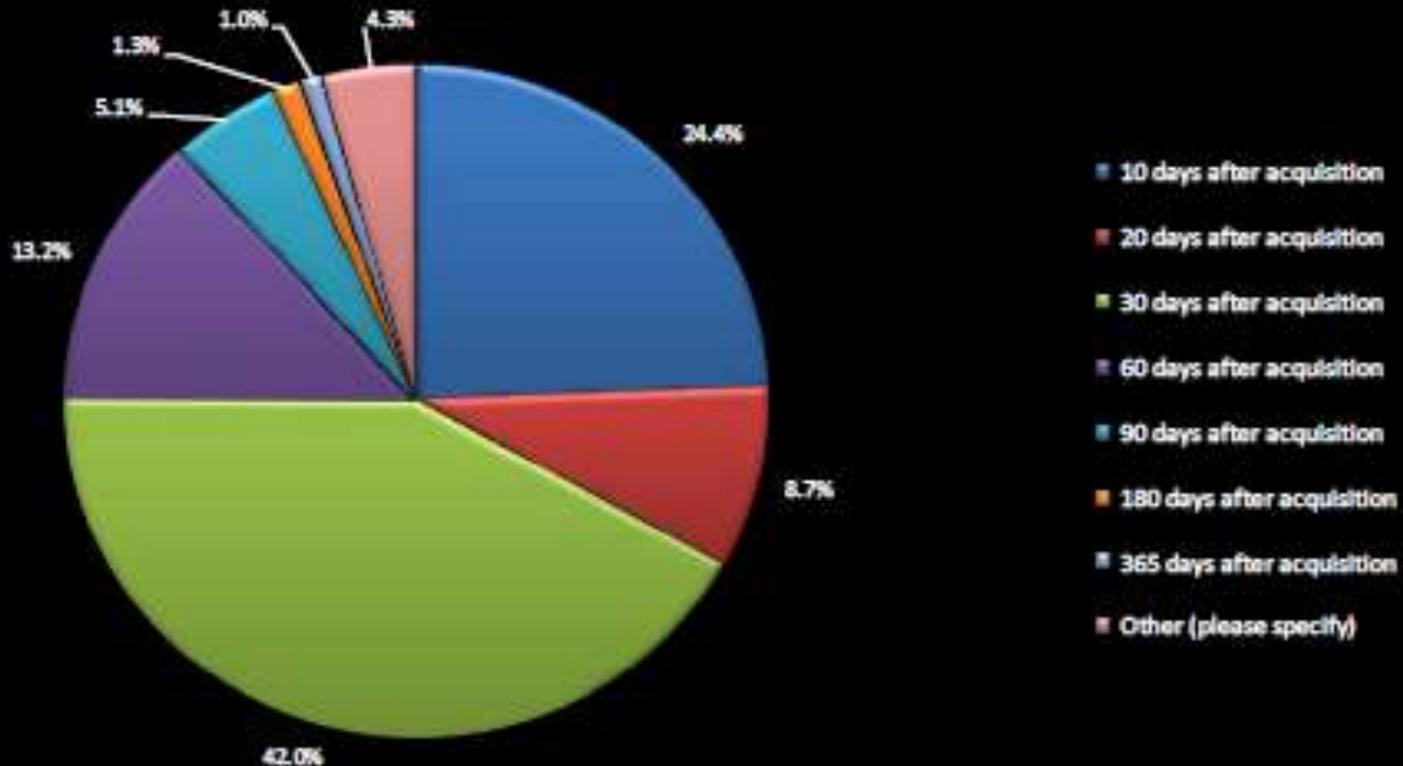
Would you prefer your imagery be "leaf on" or "leaf off"? - USFS



When do you need the imagery?

FSA

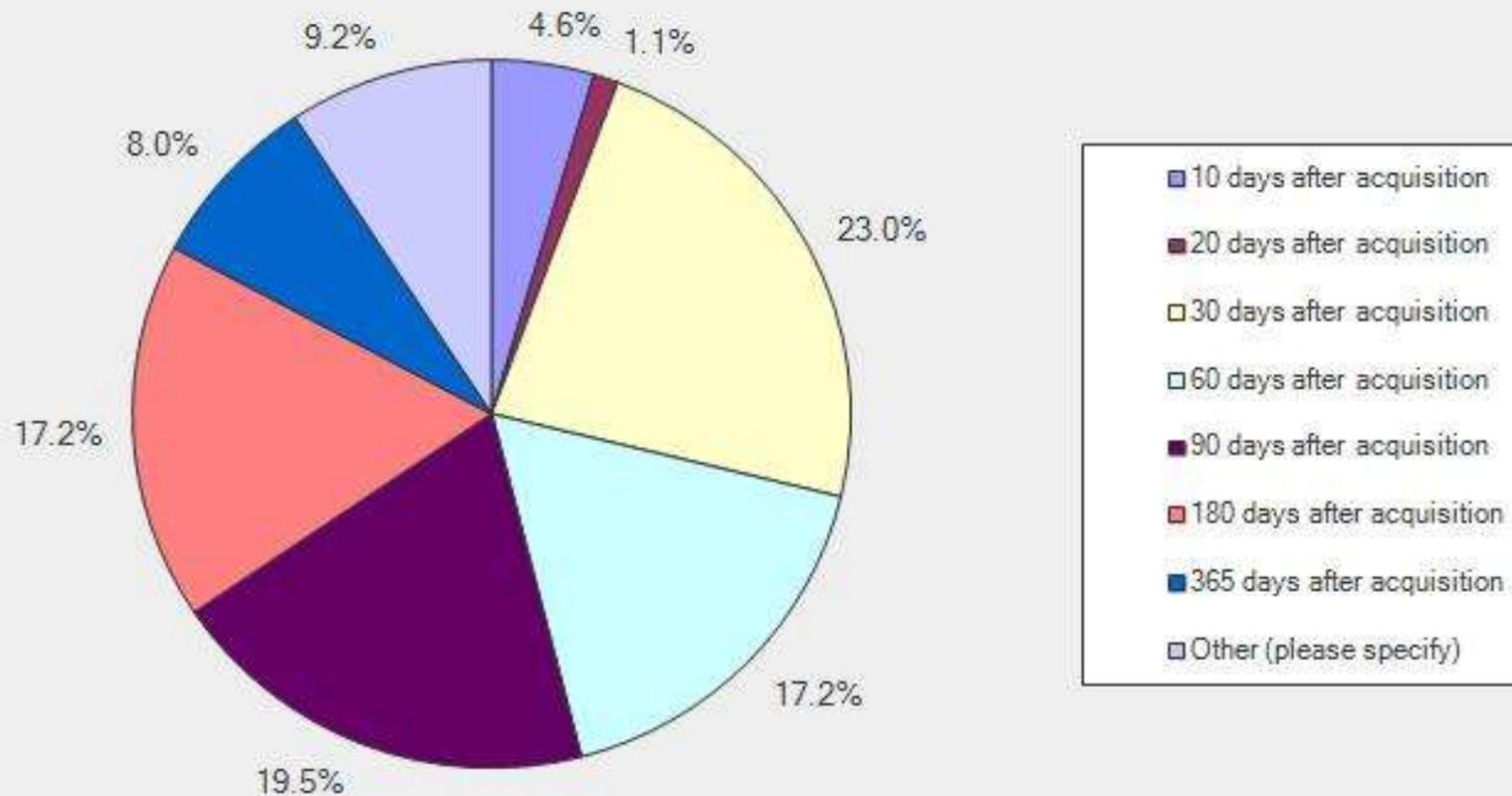
Which of the following delivery schedules best meets your general imagery needs? *Note that "Delivery" implies that you have the imagery available to do your work, whether it's on media or via web/image services.



When do you need the imagery?

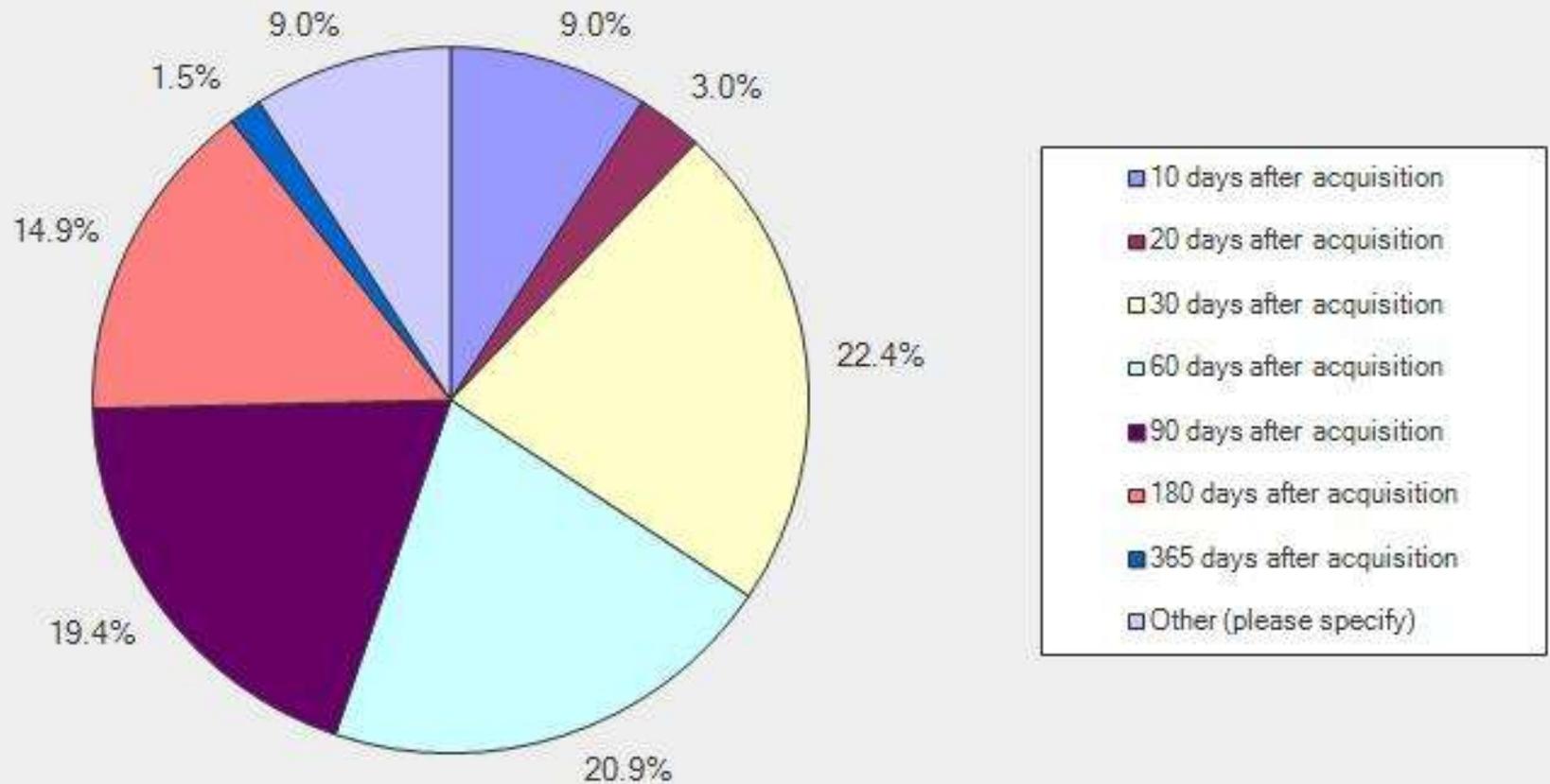
DOI

Which of the following delivery schedules best meets your general imagery needs? *Note that "Delivery" implies that you have the imagery available to do your work, whether it's on media or via web/image services. - DOI



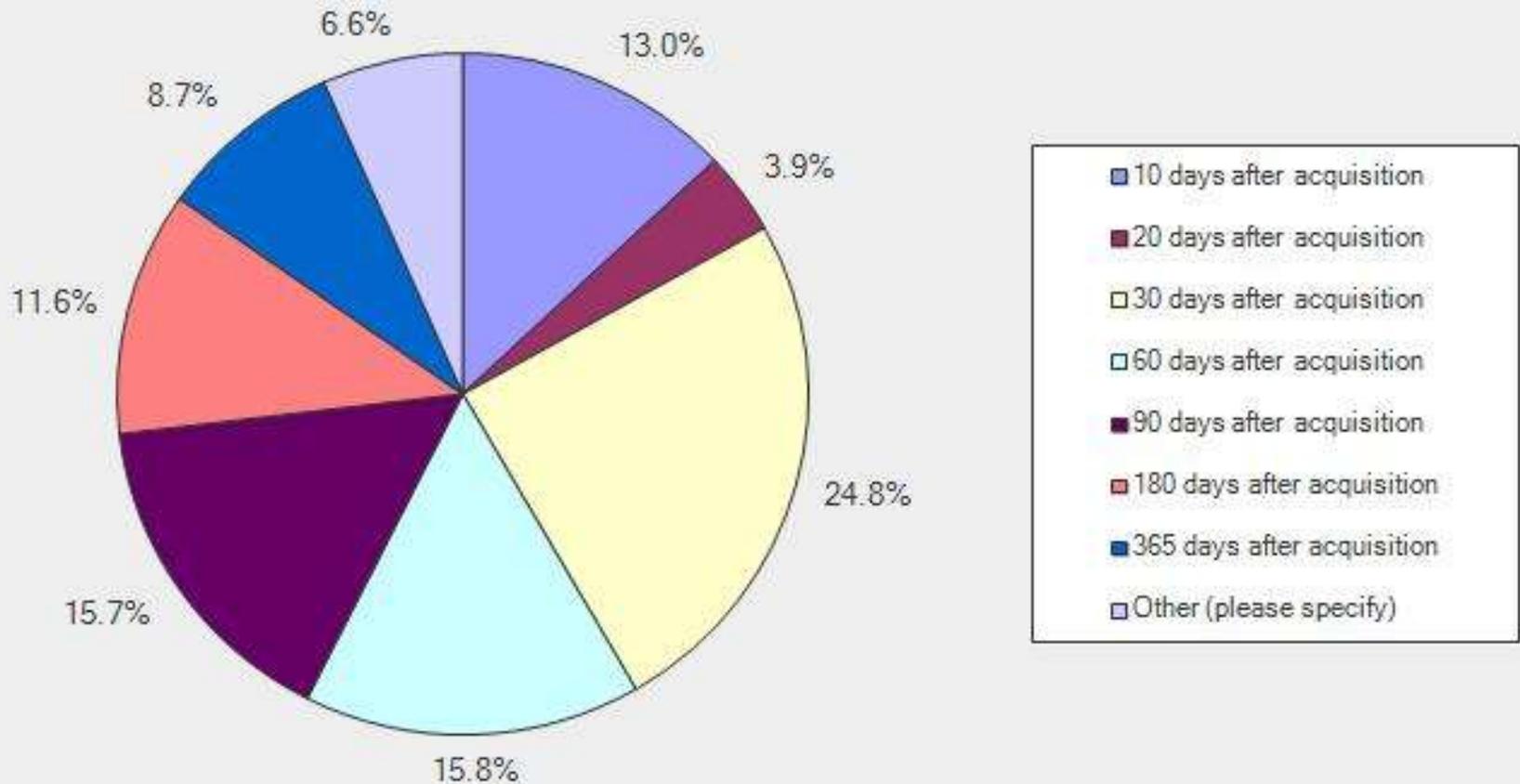
When do you need the imagery? NRCS

Which of the following delivery schedules best meets your general imagery needs? *Note that "Delivery" implies that you have the imagery available to do your work, whether it's on media or via web/image services. - NRCS



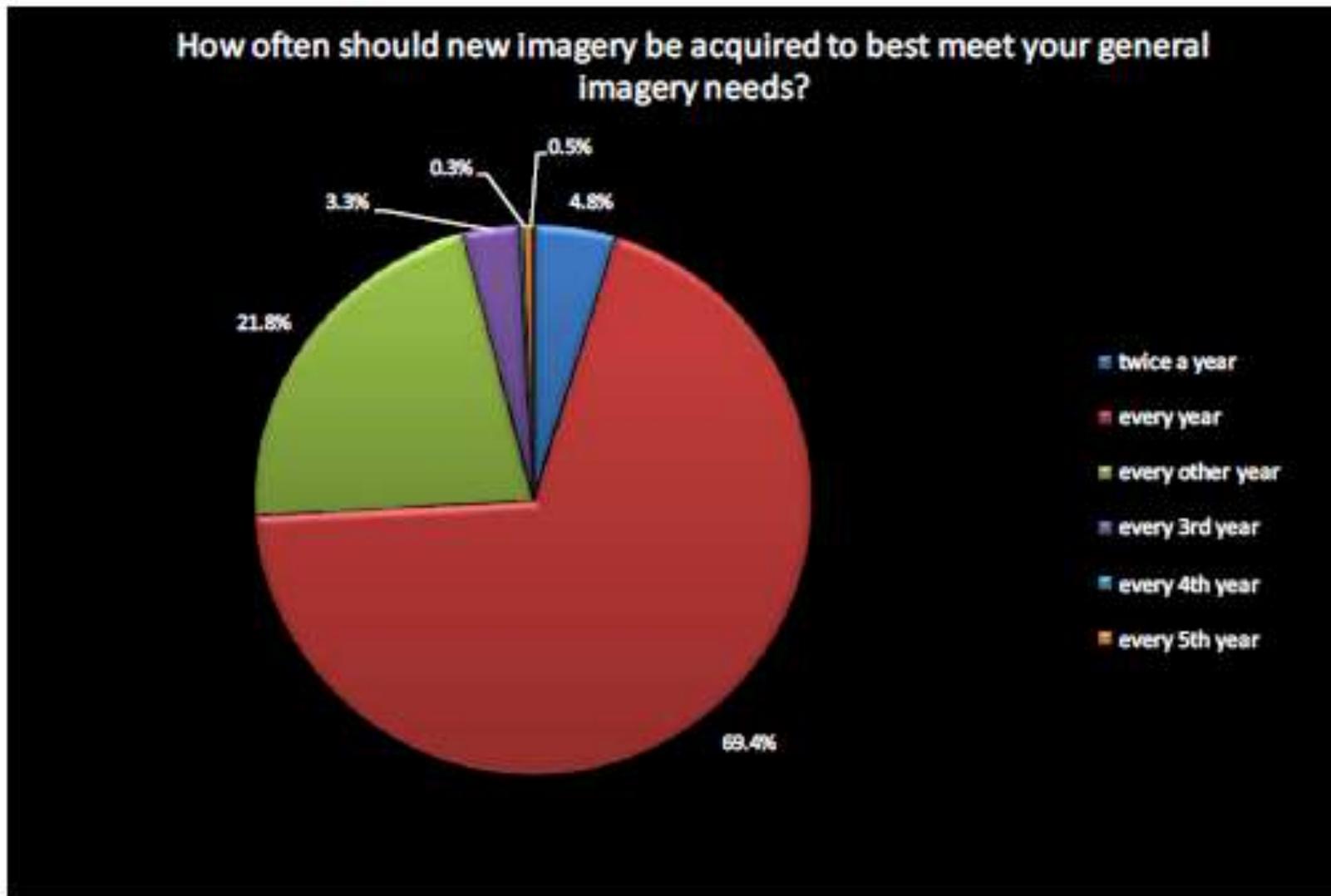
When do you need the imagery? USFS

Which of the following delivery schedules best meets your general imagery needs? *Note that "Delivery" implies that you have the imagery available to do your work, whether it's on media or via web/image services. - USFS



How often do you need new imagery?

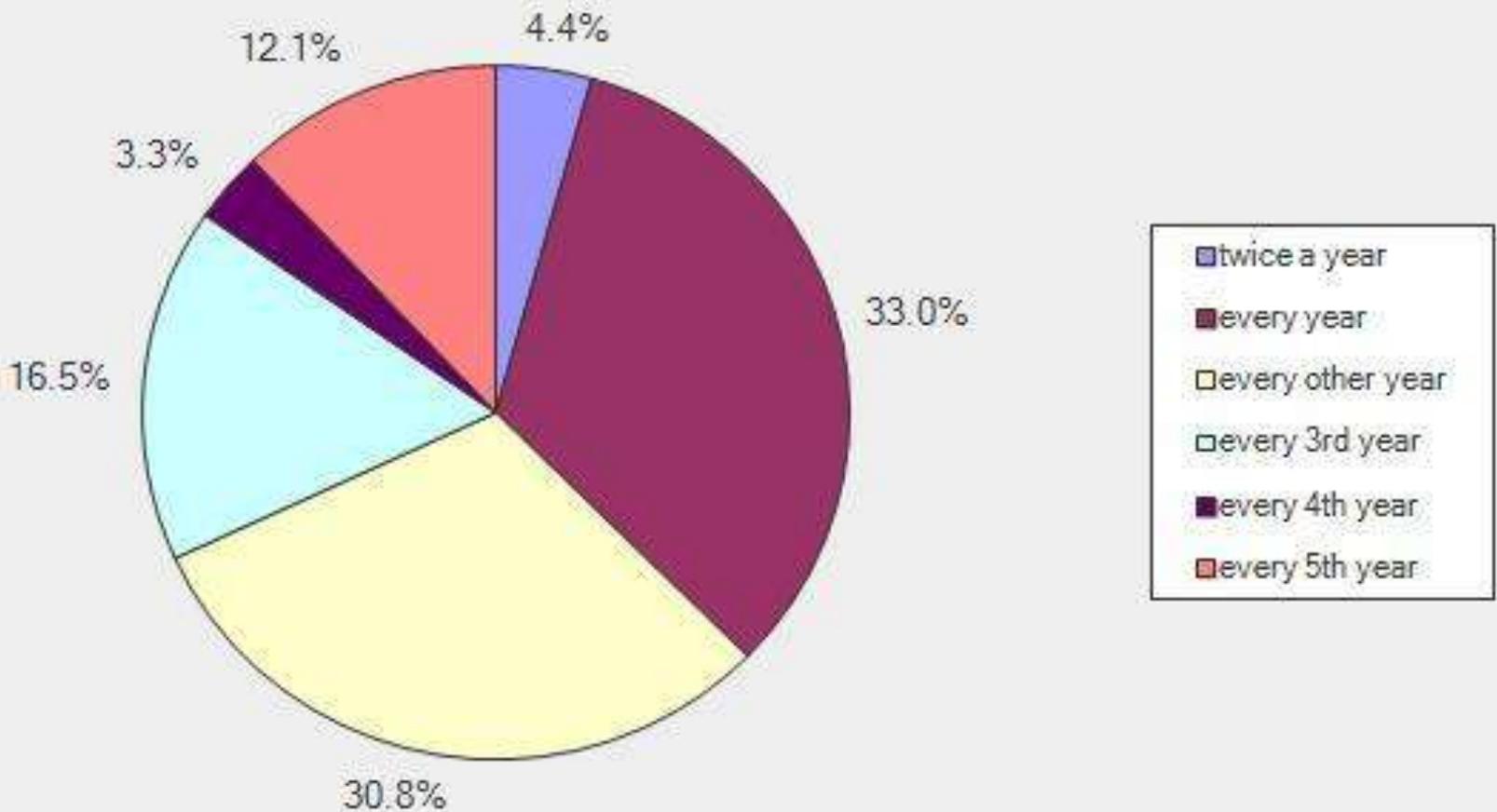
FSA



How often do you need new imagery?

DOI

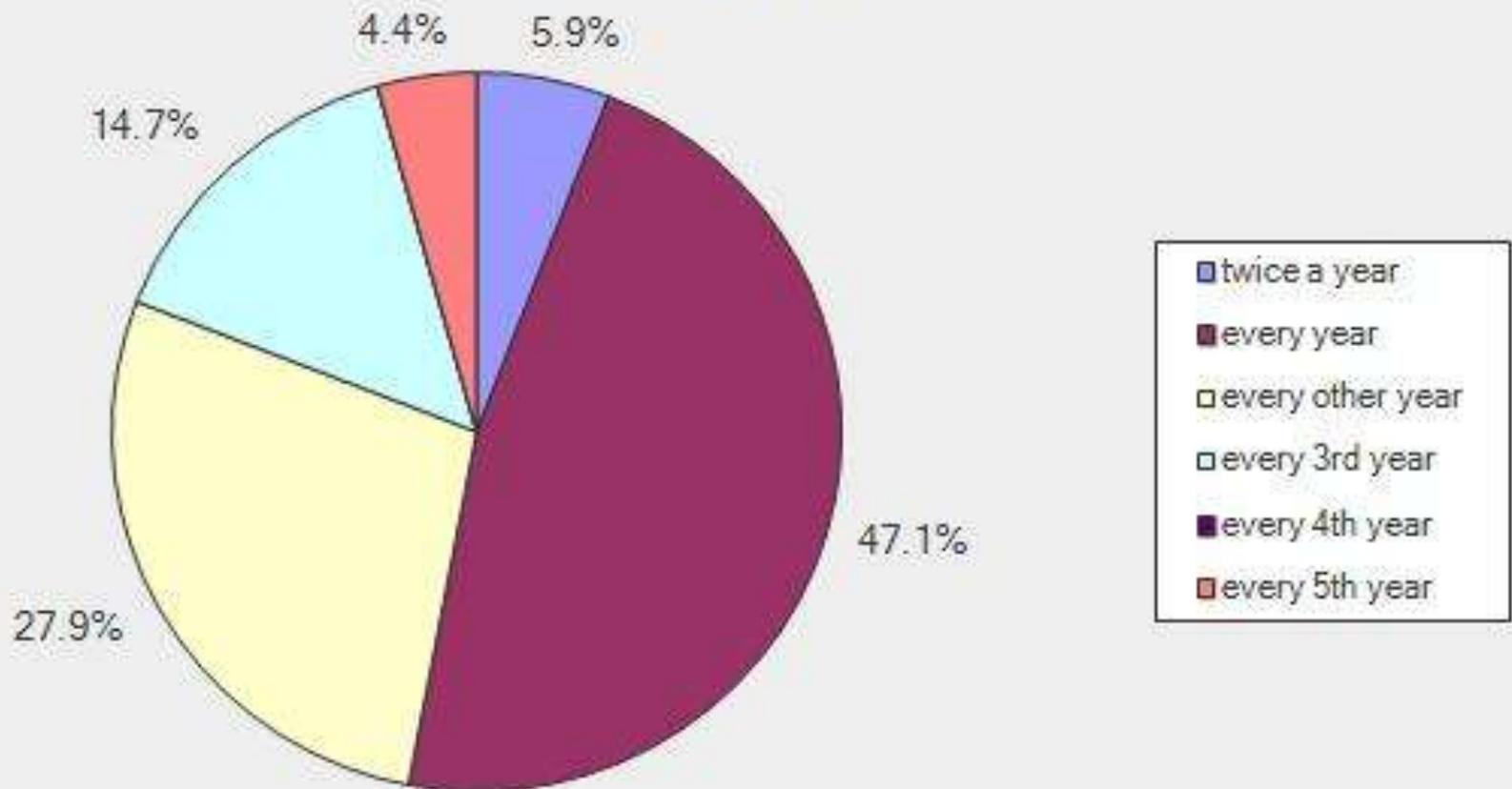
How often should imagery be updated to best meet your general imagery needs? - DOI



How often do you need new imagery?

NRCS

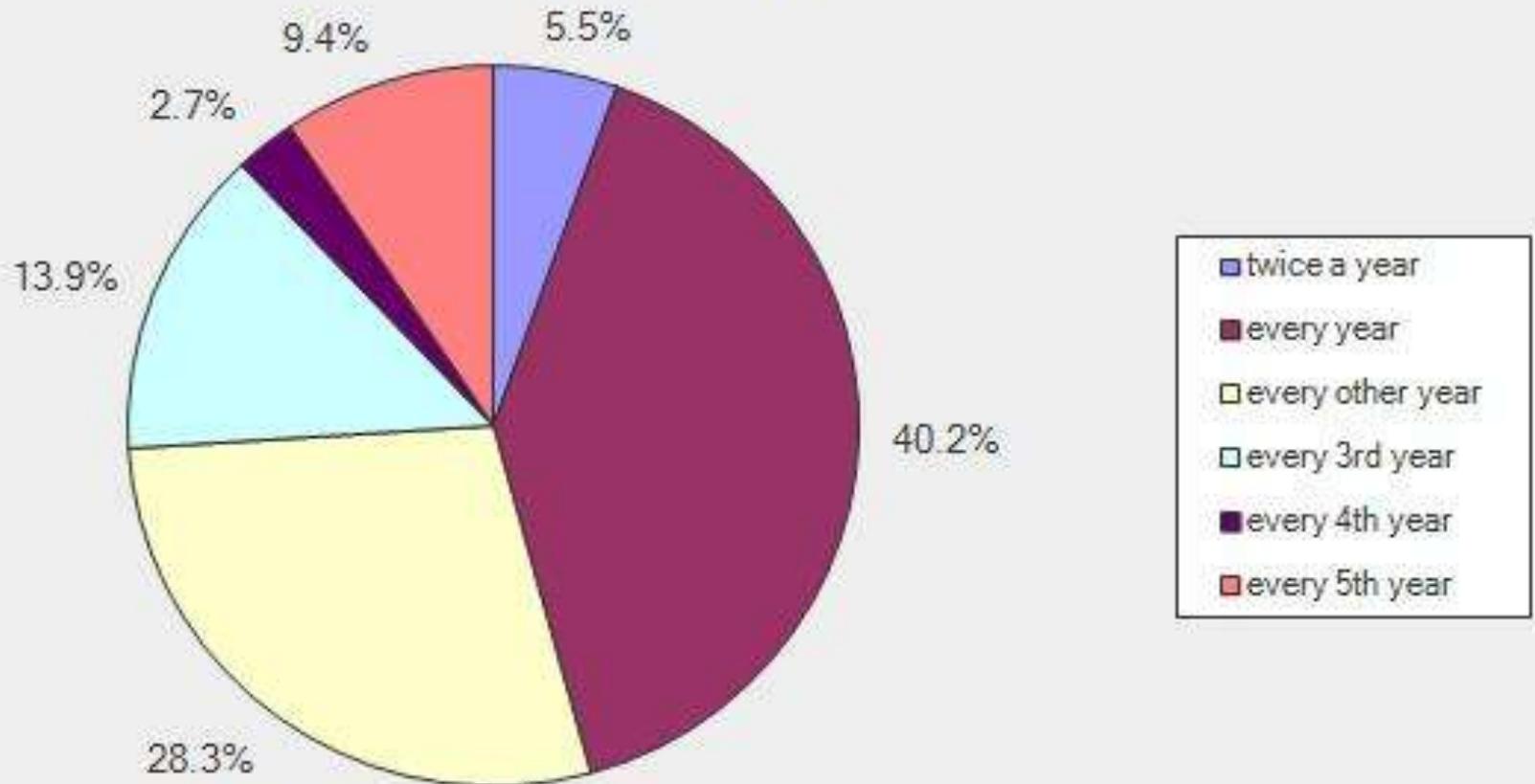
How often should imagery be updated to best meet your general imagery needs? - NRCS



How often do you need new imagery?

USFS

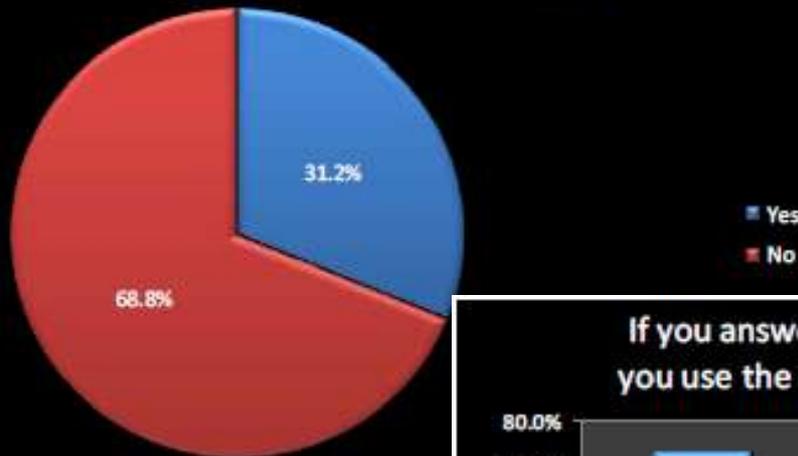
How often should imagery be updated to best meet your general imagery needs? - USFS



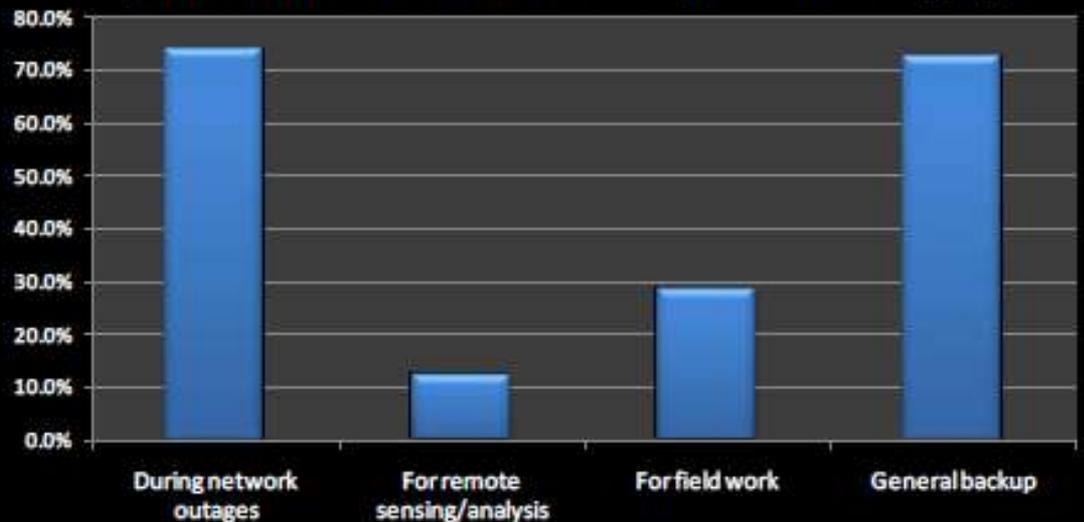
Do you need a copy of the imagery?

FSA

FSA is moving to web services to deliver imagery products to FSA County, State, and National Offices. Do you still have a need to receive media (CD/DVD/Hard Drive) copies of your imagery?



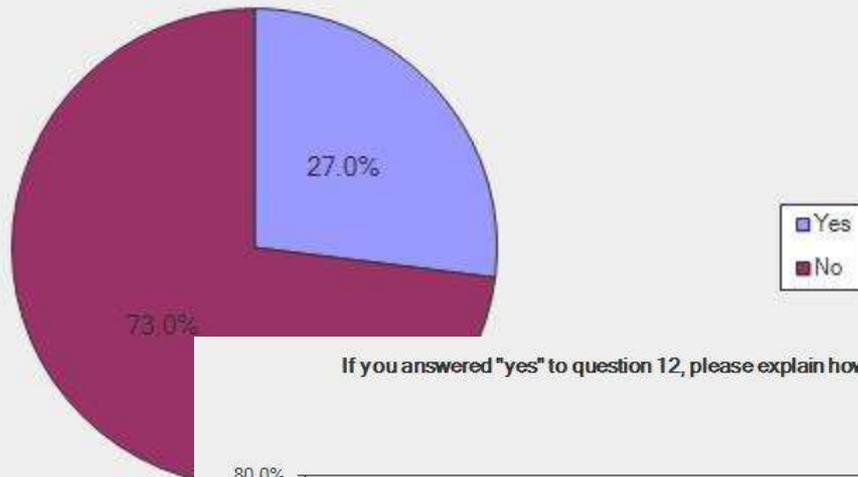
If you answered "yes" to question 15, please explain how you use the data delivered on media (select all that apply):



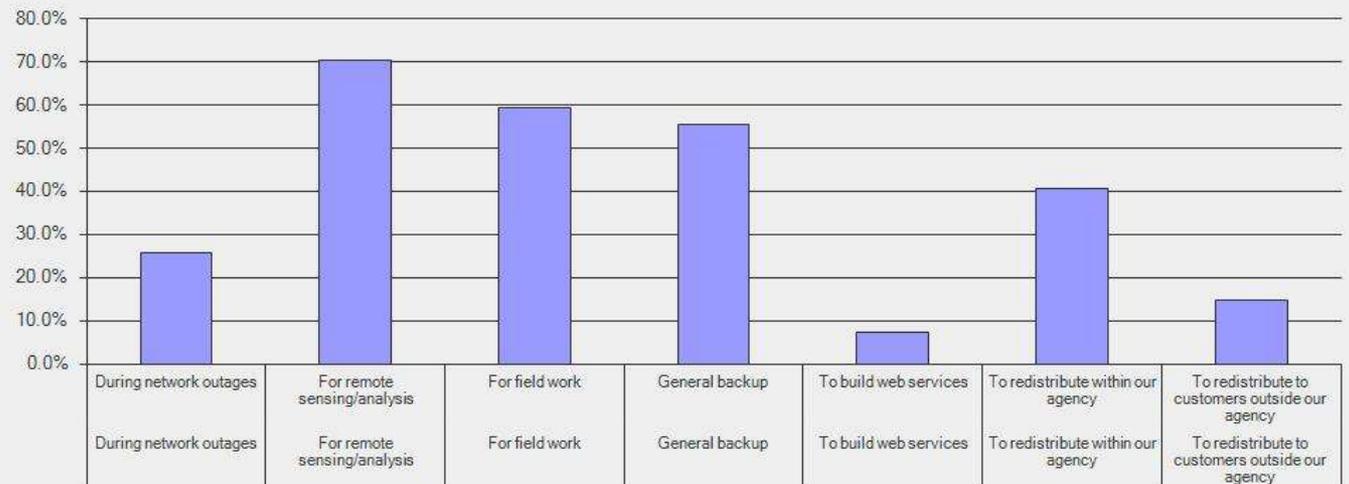
Do you need a copy of the imagery?

DOI

Do you still have a need to receive media (CD/DVD/Hard Drive) copies of your imagery? - DOI

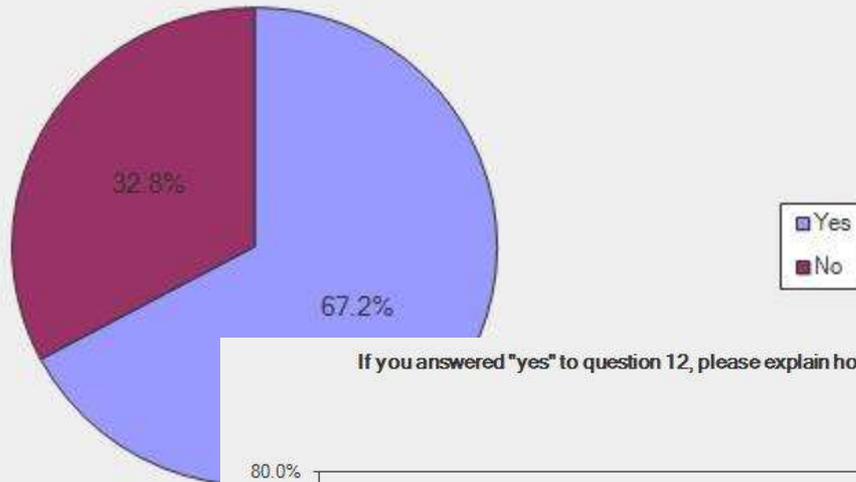


If you answered "yes" to question 12, please explain how you use the data delivered on media (select all that apply): - DOI

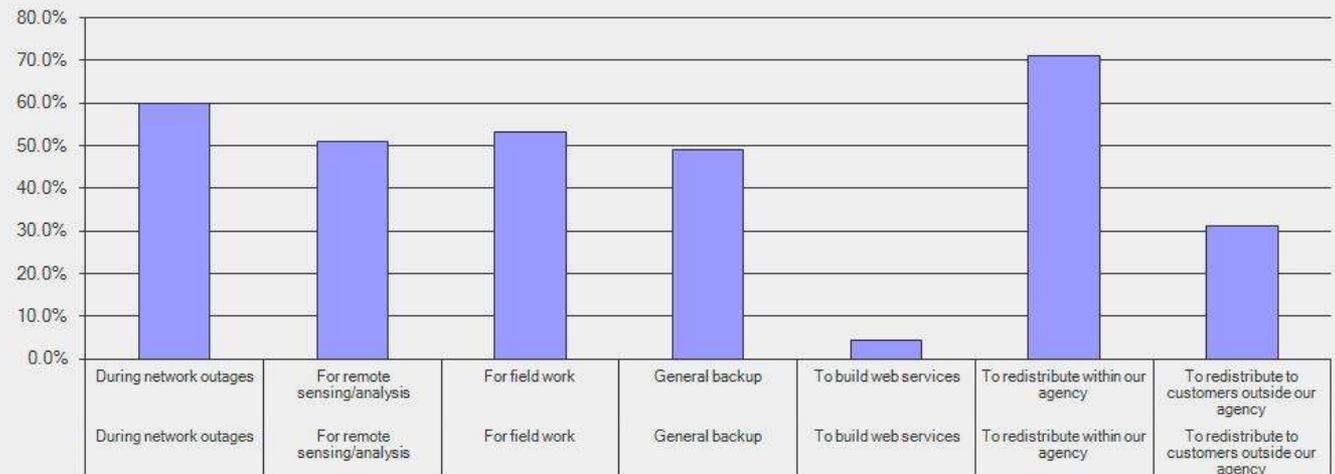


Do you need a copy of the imagery? NRCS

Do you still have a need to receive media (CD/DVD/Hard Drive) copies of your imagery? - NRCS

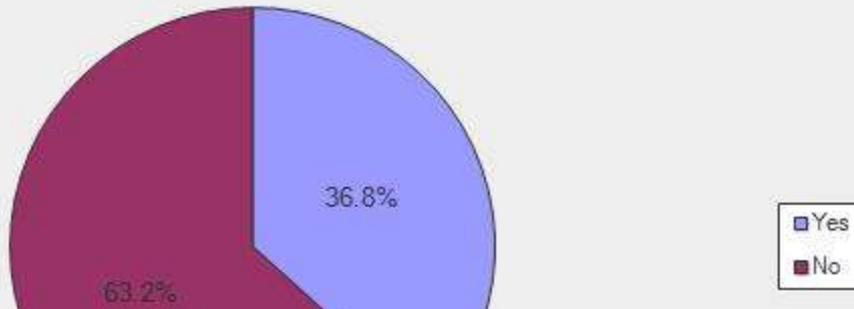


If you answered "yes" to question 12, please explain how you use the data delivered on media (select all that apply): - NRCS

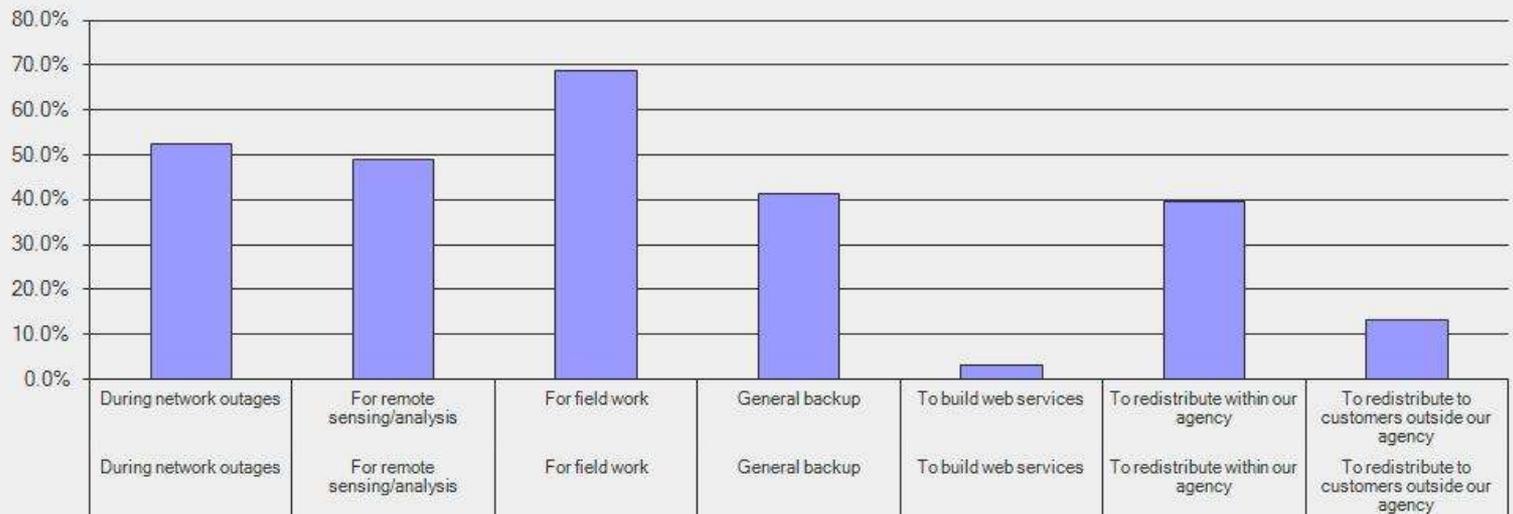


Do you need a copy of the imagery? USFS

Do you still have a need to receive media (CD/DVD/Hard Drive) copies of your imagery? - USFS

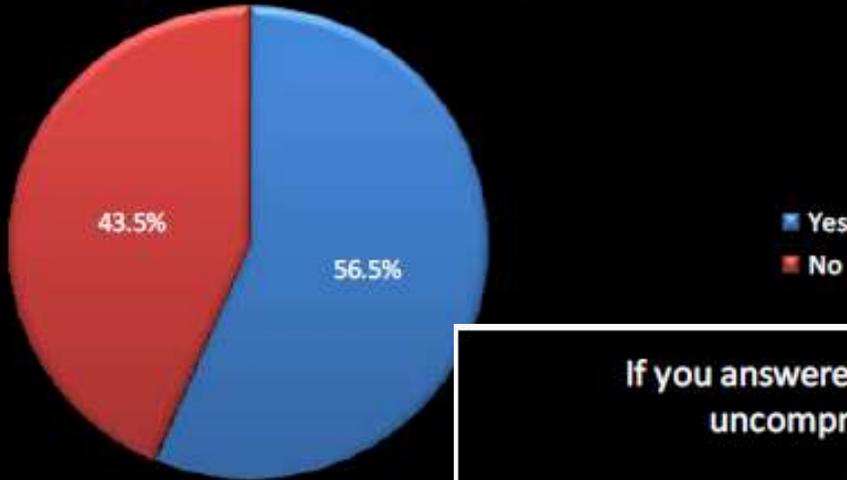


If you answered "yes" to question 12, please explain how you use the data delivered on media (select all that apply): - USFS

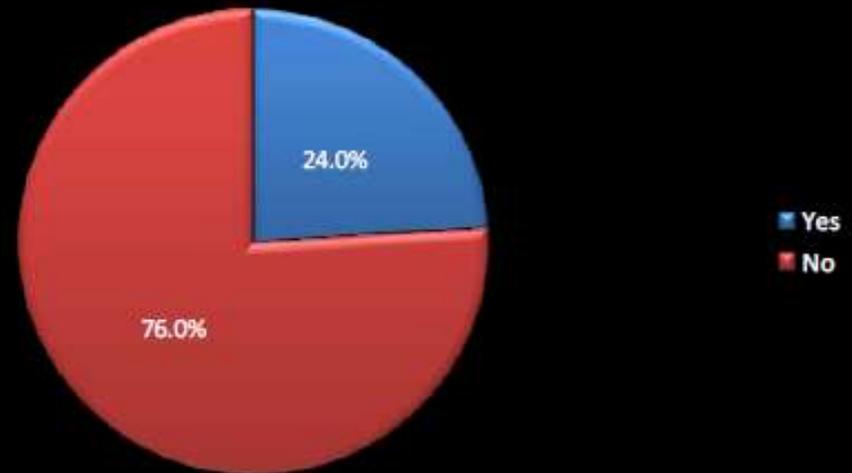


Need a copy of the CCM or DOQQ? FSA

If you answered "yes" to question 15, do you still need Compressed County Mosaics (CCM)?

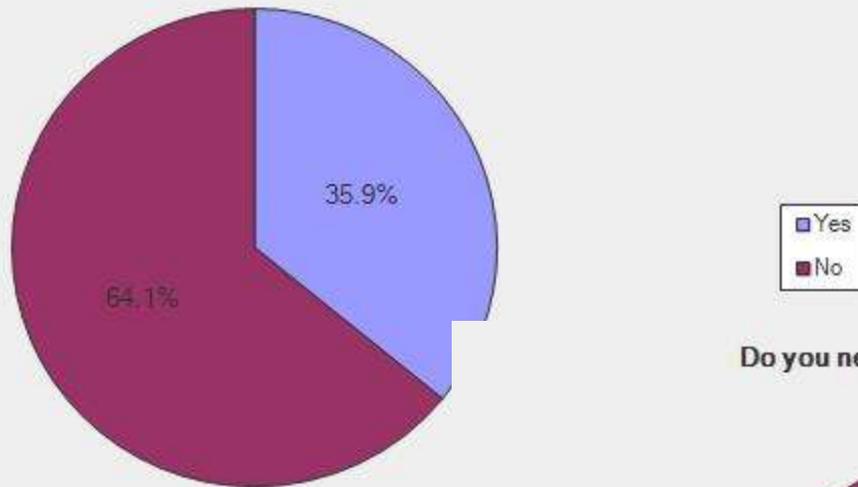


If you answered "yes" to question 15, do you need uncompressed quarter quad (QQ) tiles?

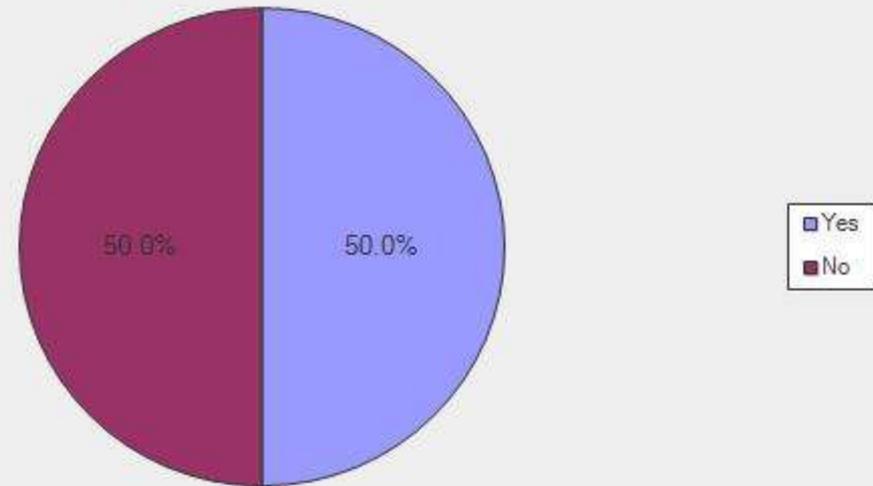


Need a copy of the CCM or DOQQ? DOI

Do you need Compressed County Mosaics (CCM)? - DOI

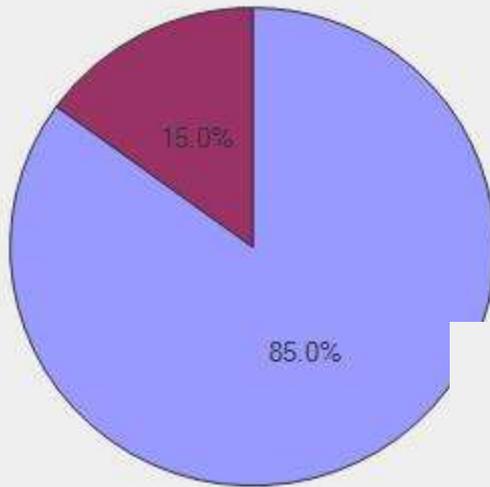


Do you need uncompressed image tiles? - DOI

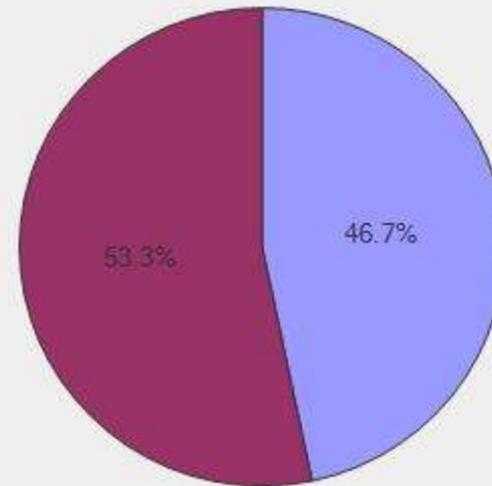


Need a copy of the CCM or DOQQ? NRCS

Do you need Compressed County Mosaics (CCM)? - NRCS

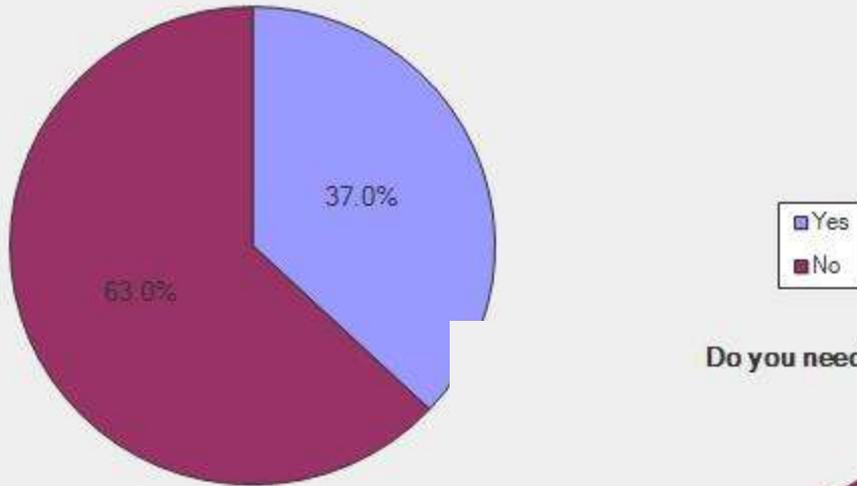


Do you need uncompressed image tiles? - NRCS

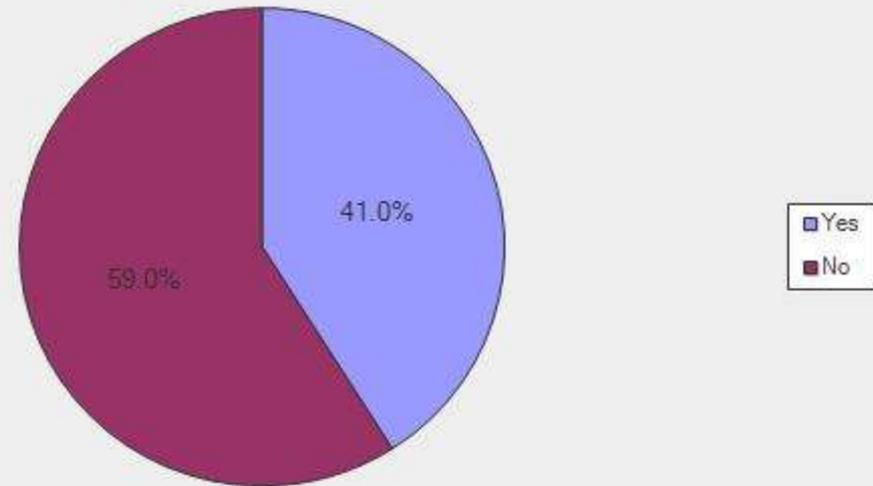


Need a copy of the CCM or DOQQ? USFS

Do you need Compressed County Mosaics (CCM)? - USFS



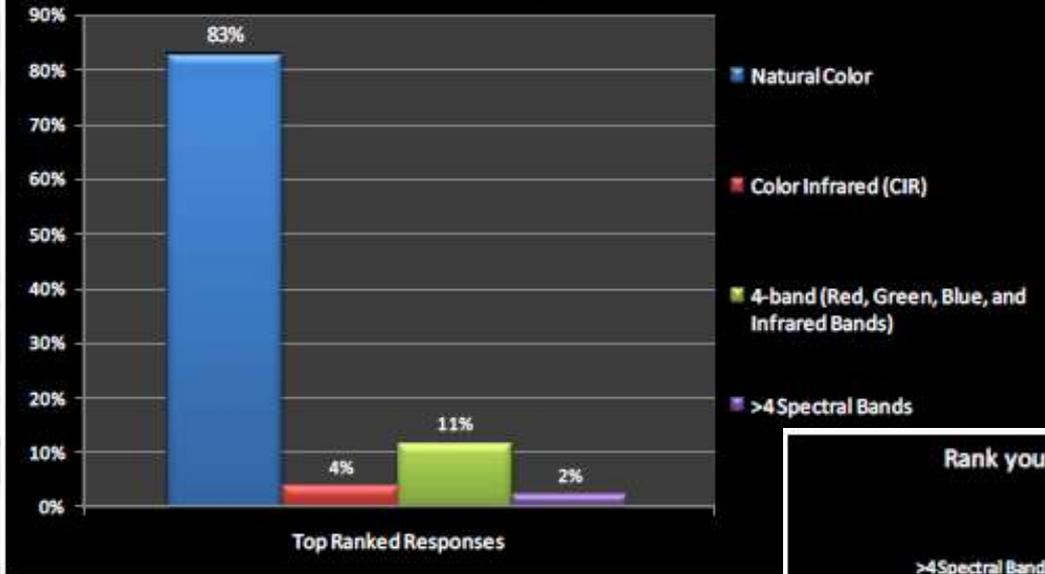
Do you need uncompressed image tiles? - USFS



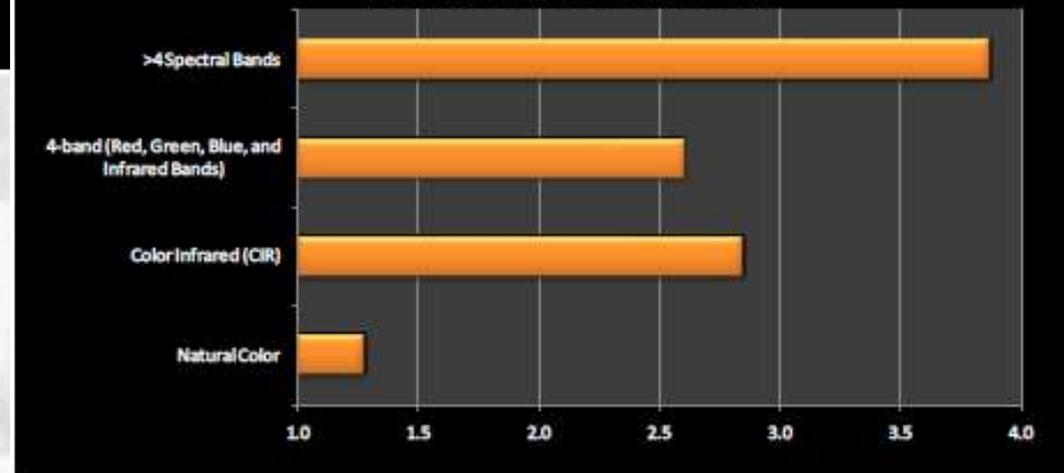
Which or how many bands?

FSA

Preference regarding the spectral resolution of your imagery product



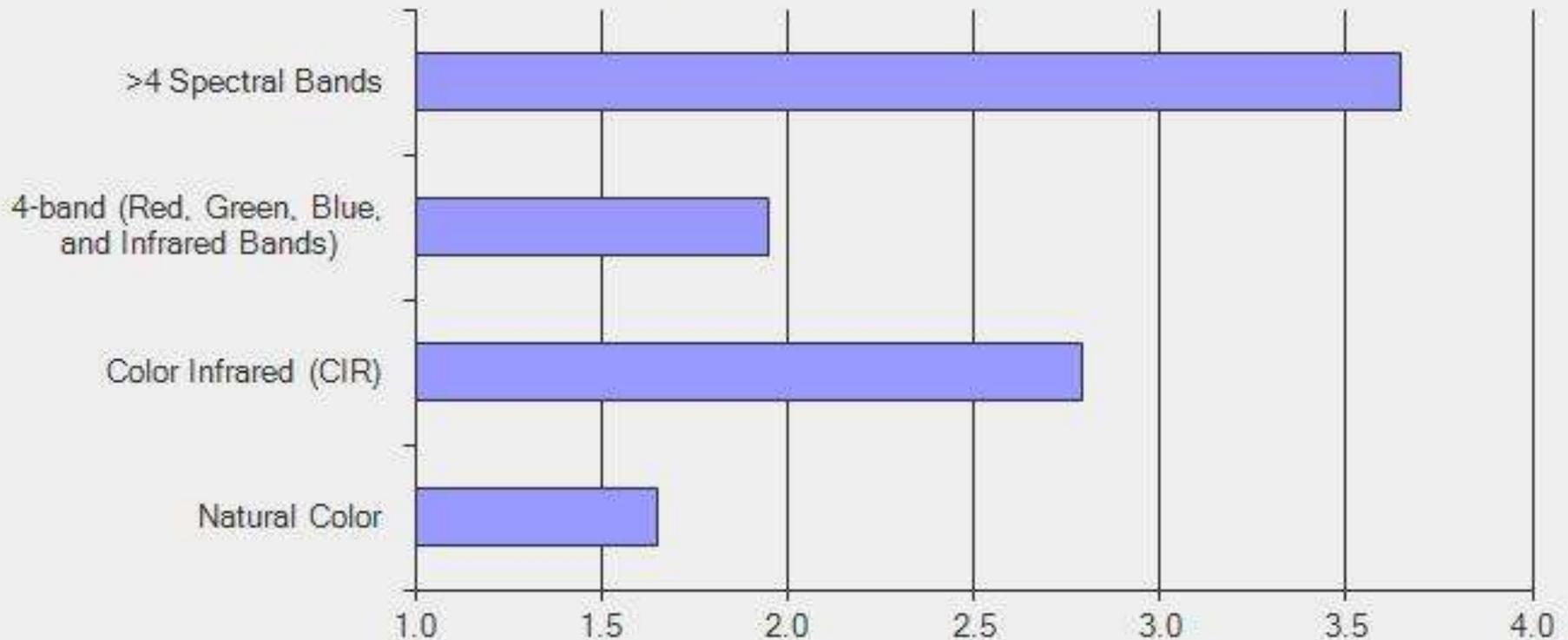
Rank your preference regarding the spectral resolution of your imagery product (1 being the most preferred).



Which or how many bands?

DOI

Rank your preference regarding the spectral resolution of your imagery product (1 being the most preferred). - DOI



Which or how many bands?

NRCS

Rank your preference regarding the spectral resolution of your imagery product (1 being the most preferred). - NRCS



Which or how many bands?

USFS

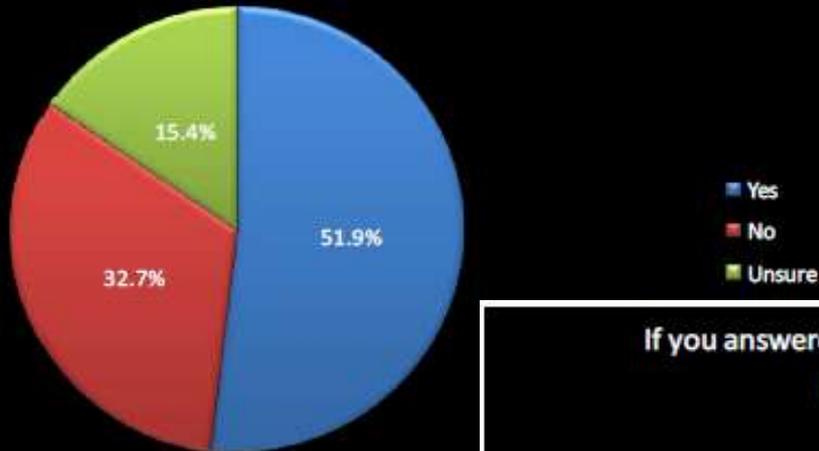
Rank your preference regarding the spectral resolution of your imagery product (1 being the most preferred). - USFS



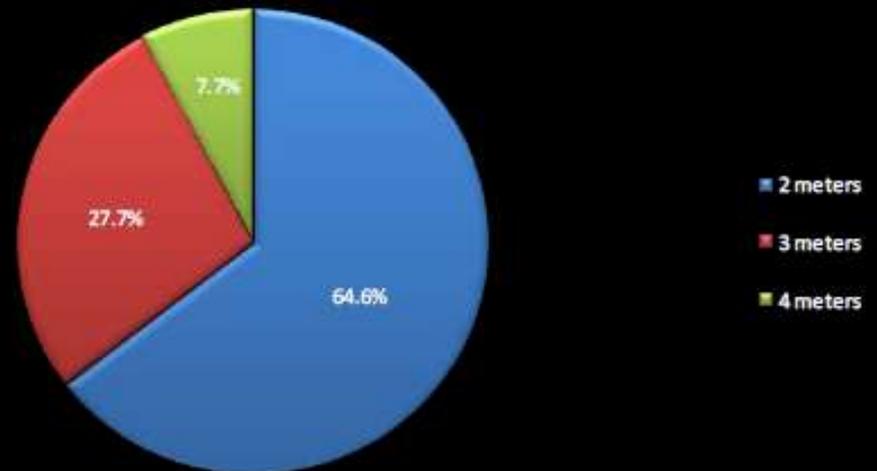
Horizontal Accuracy

FSA

The current horizontal accuracy specification for the National Agriculture Imagery Program (NAIP) is that imagery will be created to be 6 meters to true ground. In your experience, does this meet your needs?

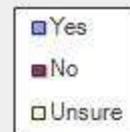
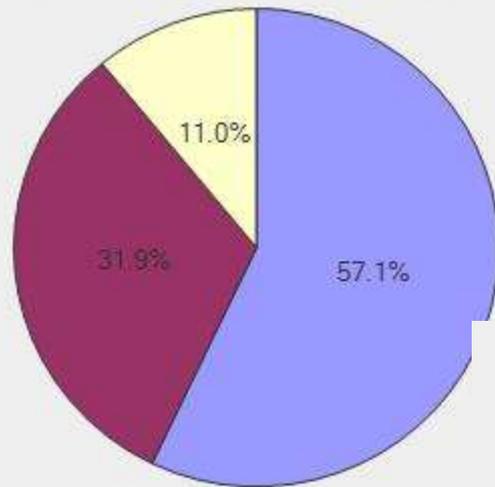


If you answered "No" to the above question, how accurate to true ground does your imagery need to be?

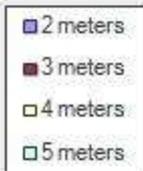
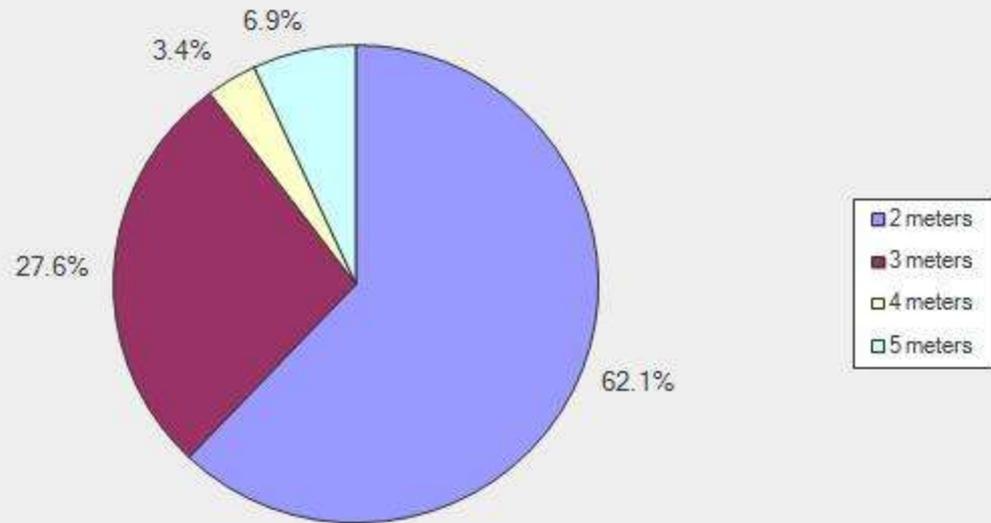


Horizontal Accuracy DOI

The current horizontal accuracy specification for the National Agriculture Imagery Program (NAIP) is that imagery will be created to be 6 meters to true ground. In your experience, does this meet your needs? - DOI

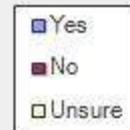
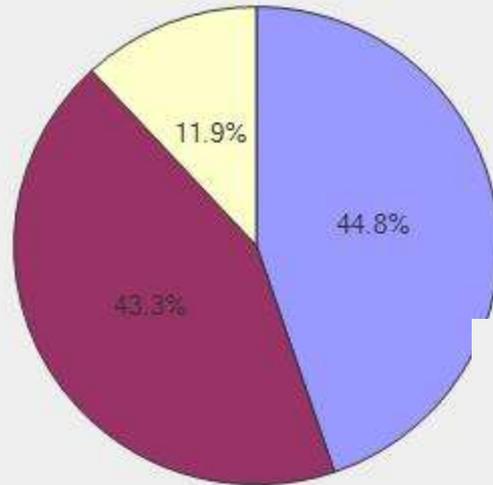


If you answered "No" to the above question, how accurate to true ground does your imagery need to be? - DOI

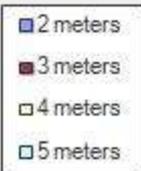
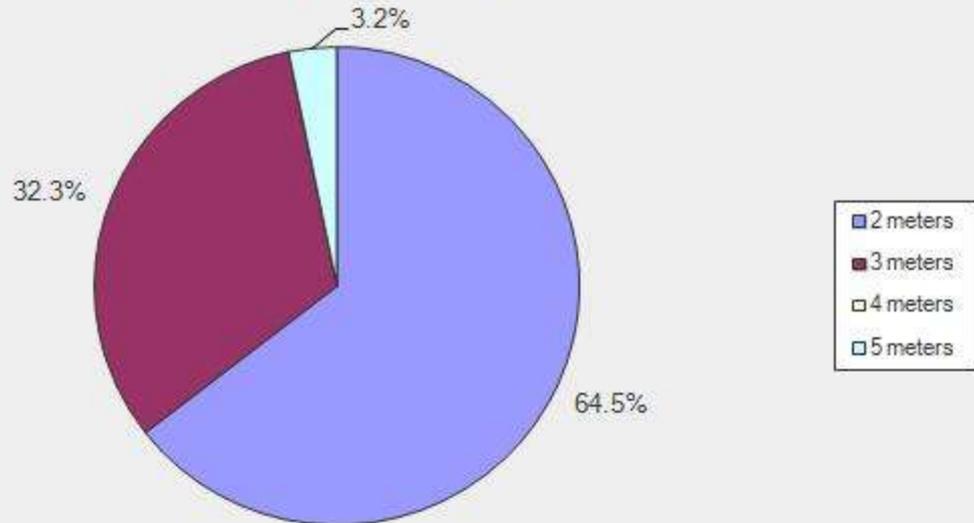


Horizontal Accuracy NRCS

The current horizontal accuracy specification for the National Agriculture Imagery Program (NAIP) is that imagery will be created to be 6 meters to true ground. In your experience, does this meet your needs? - NRCS

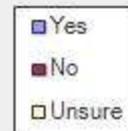
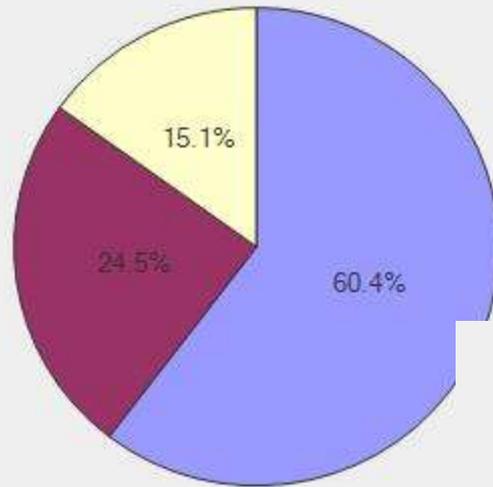


If you answered "No" to the above question, how accurate to true ground does your imagery need to be? - NRCS

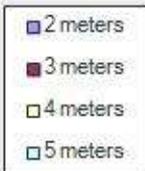
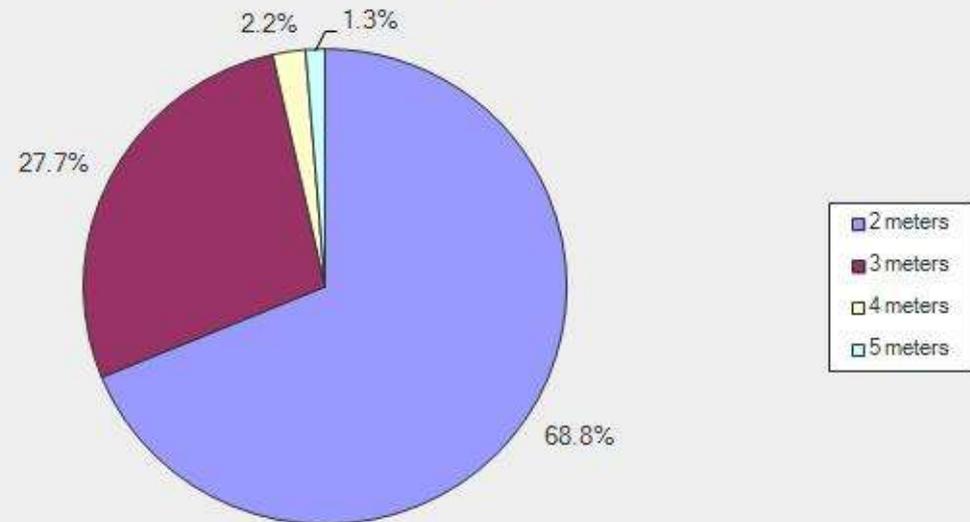


Horizontal Accuracy USFS

The current horizontal accuracy specification for the National Agriculture Imagery Program (NAIP) is that imagery will be created to be 6 meters to true ground. In your experience, does this meet your needs? - USFS

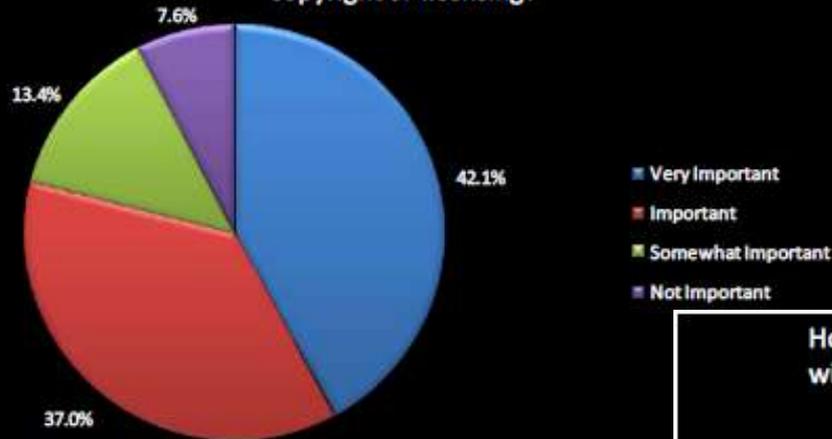


If you answered "No" to the above question, how accurate to true ground does your imagery need to be? - USFS

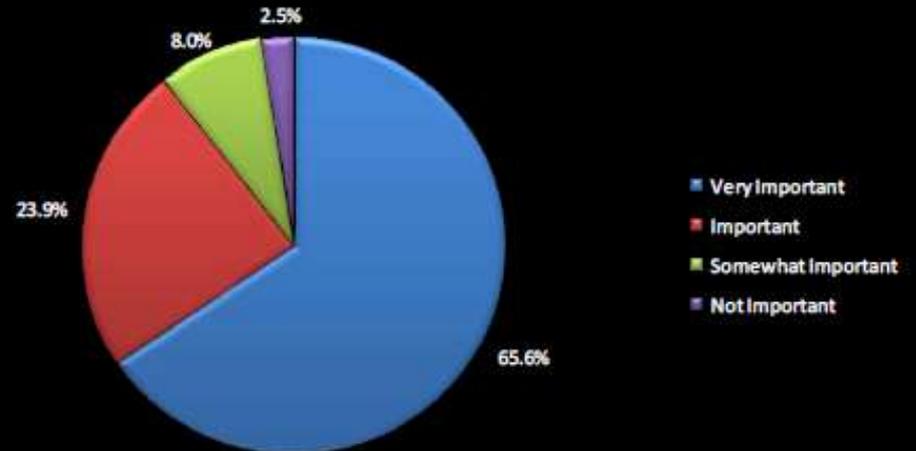


Copyright or licensing FSA

How important is it to be able to openly share your FSA imagery with other Federal, State, and Local agencies, without concern for copyright or licensing?

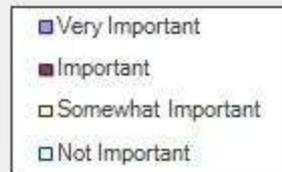
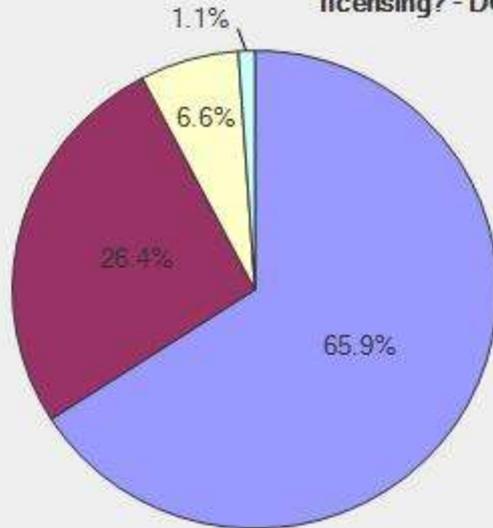


How important is it to be able to openly share your FSA imagery with your producers without concern for copyright or licensing?

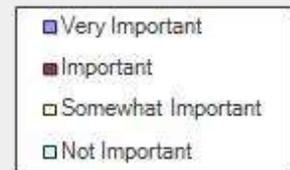
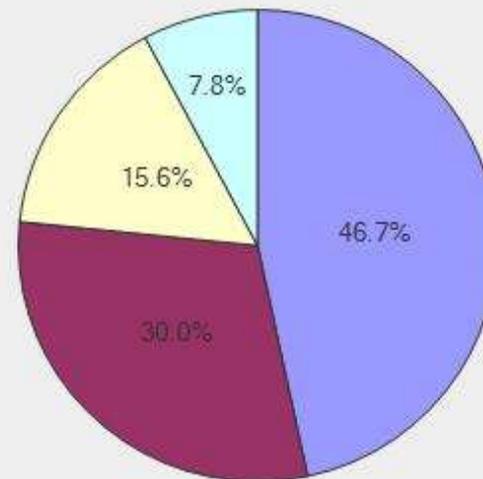


Copyright or licensing DOI

How important is it to be able to openly share your imagery with other Federal, State, and local agencies, without concern for copyright or licensing? - DOI

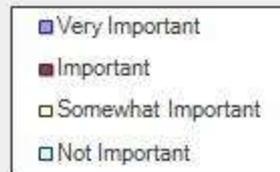
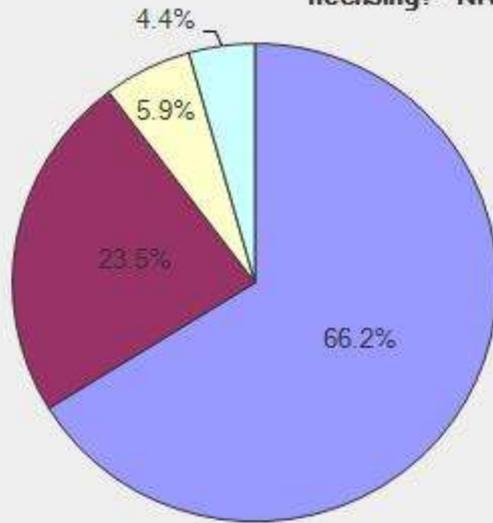


How important is it to be able to openly share your imagery with the general public without concern for copyright or licensing? - DOI

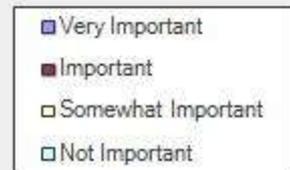
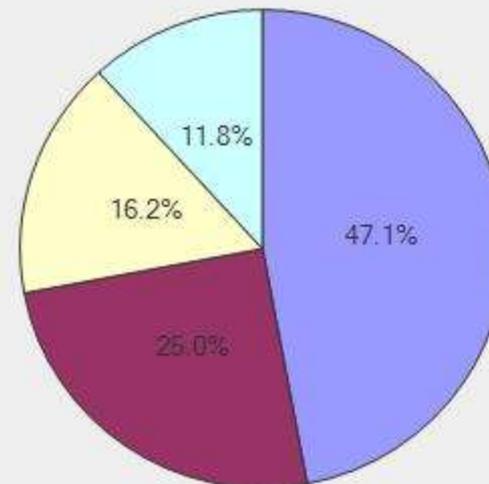


Copyright or licensing NRCS

How important is it to be able to openly share your imagery with other Federal, State, and local agencies, without concern for copyright or licensing? - NRCS

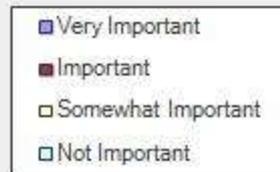
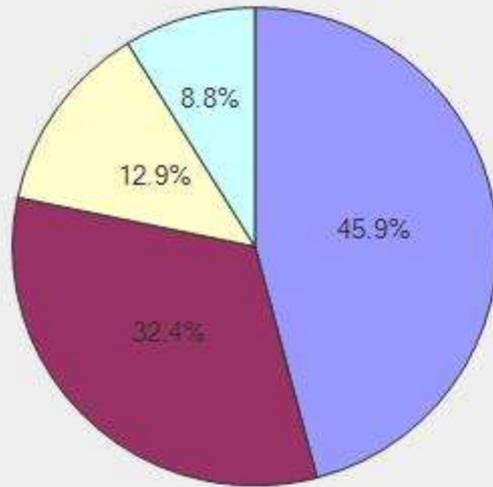


How important is it to be able to openly share your imagery with the general public without concern for copyright or licensing? - NRCS

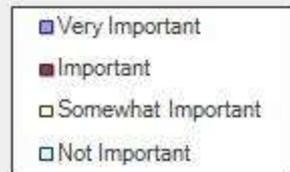
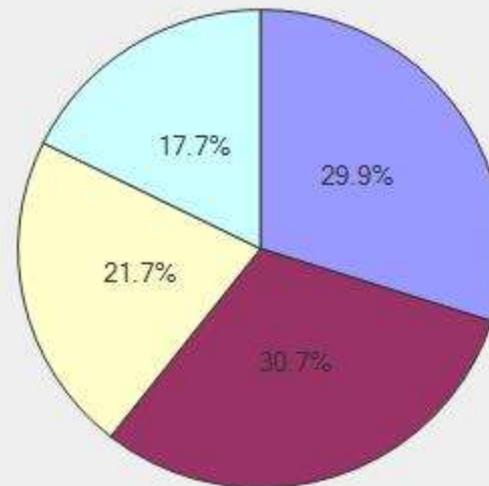


Copyright or licensing USFS

How important is it to be able to openly share your imagery with other Federal, State, and local agencies, without concern for copyright or licensing? - USFS

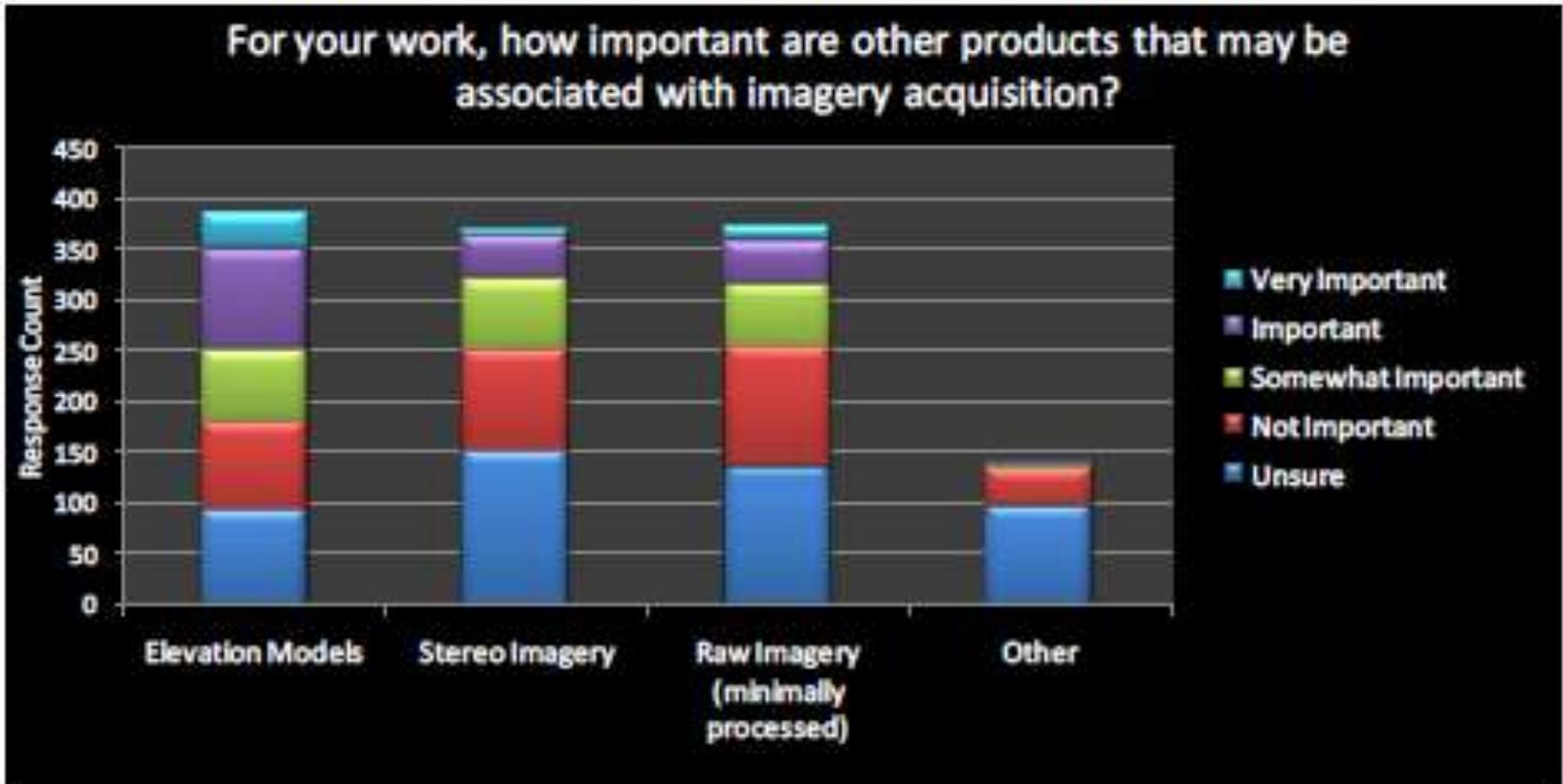


How important is it to be able to openly share your imagery with the general public without concern for copyright or licensing? - USFS



Importance of Non-Imagery Products

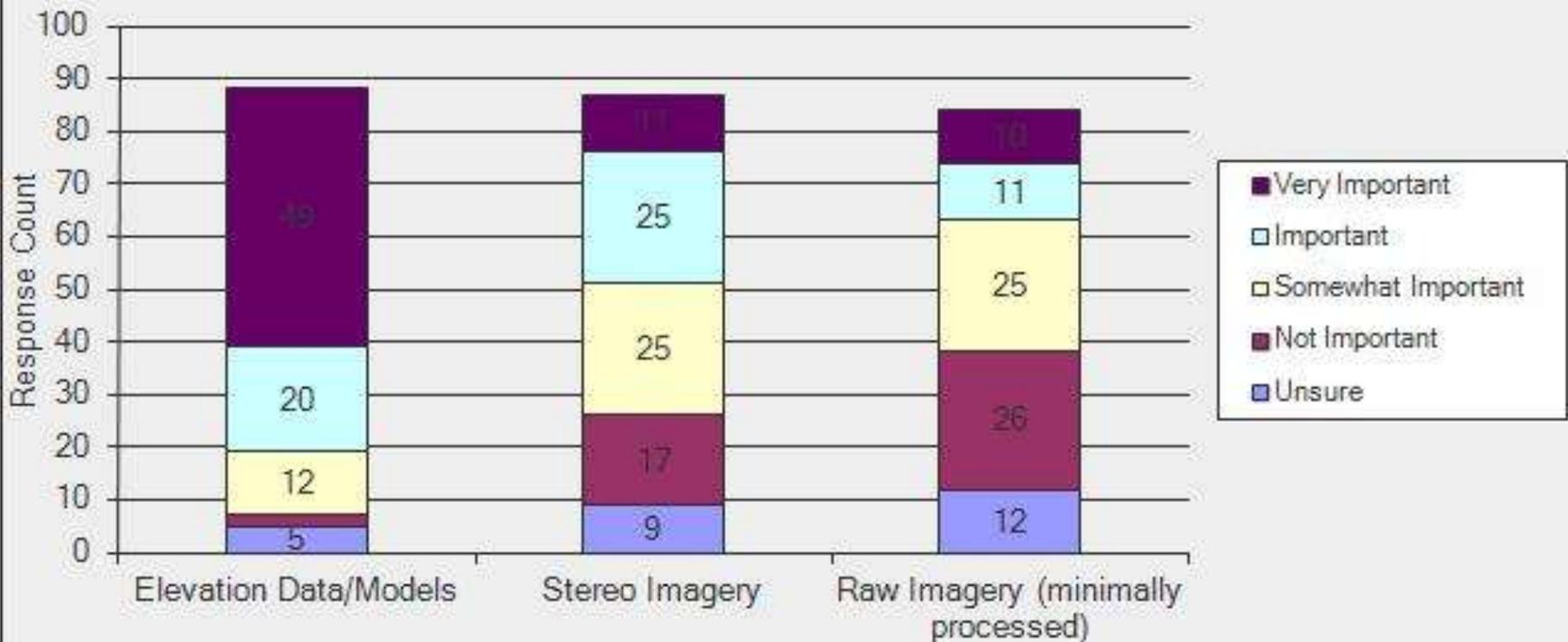
FSA



Importance of Non-Imagery Products

DOI

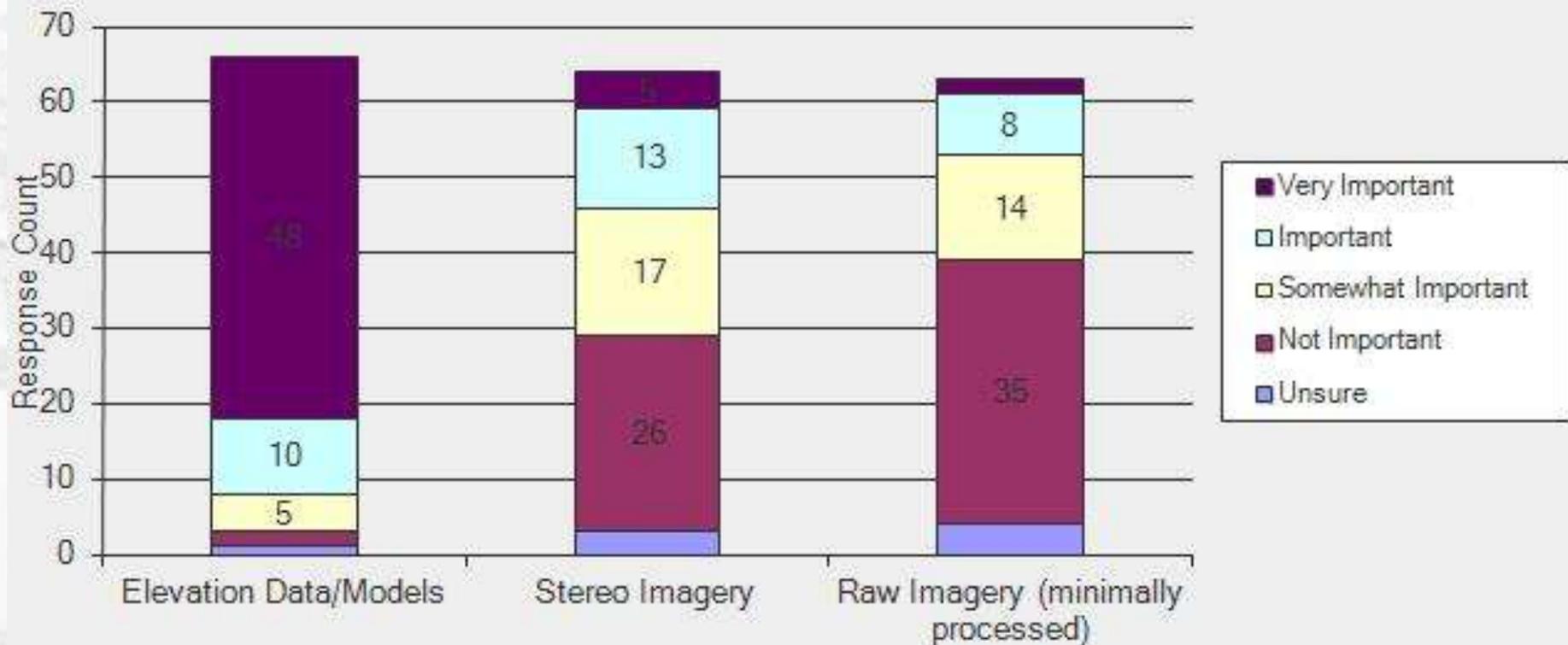
For your work, how important are other products that may be associated with imagery acquisition? - DOI



Importance of Non-Imagery Products

NRCS

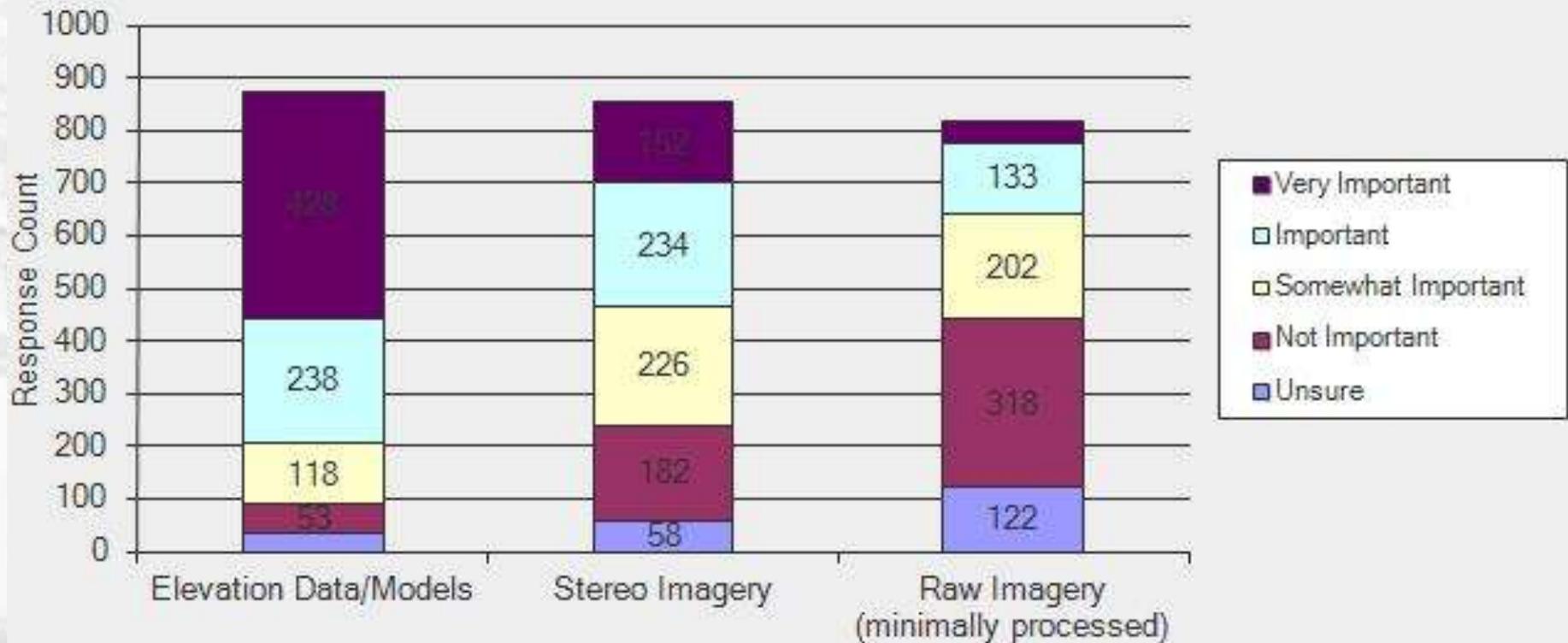
For your work, how important are other products that may be associated with imagery acquisition? - NRCS



Importance of Non-Imagery Products

USFS

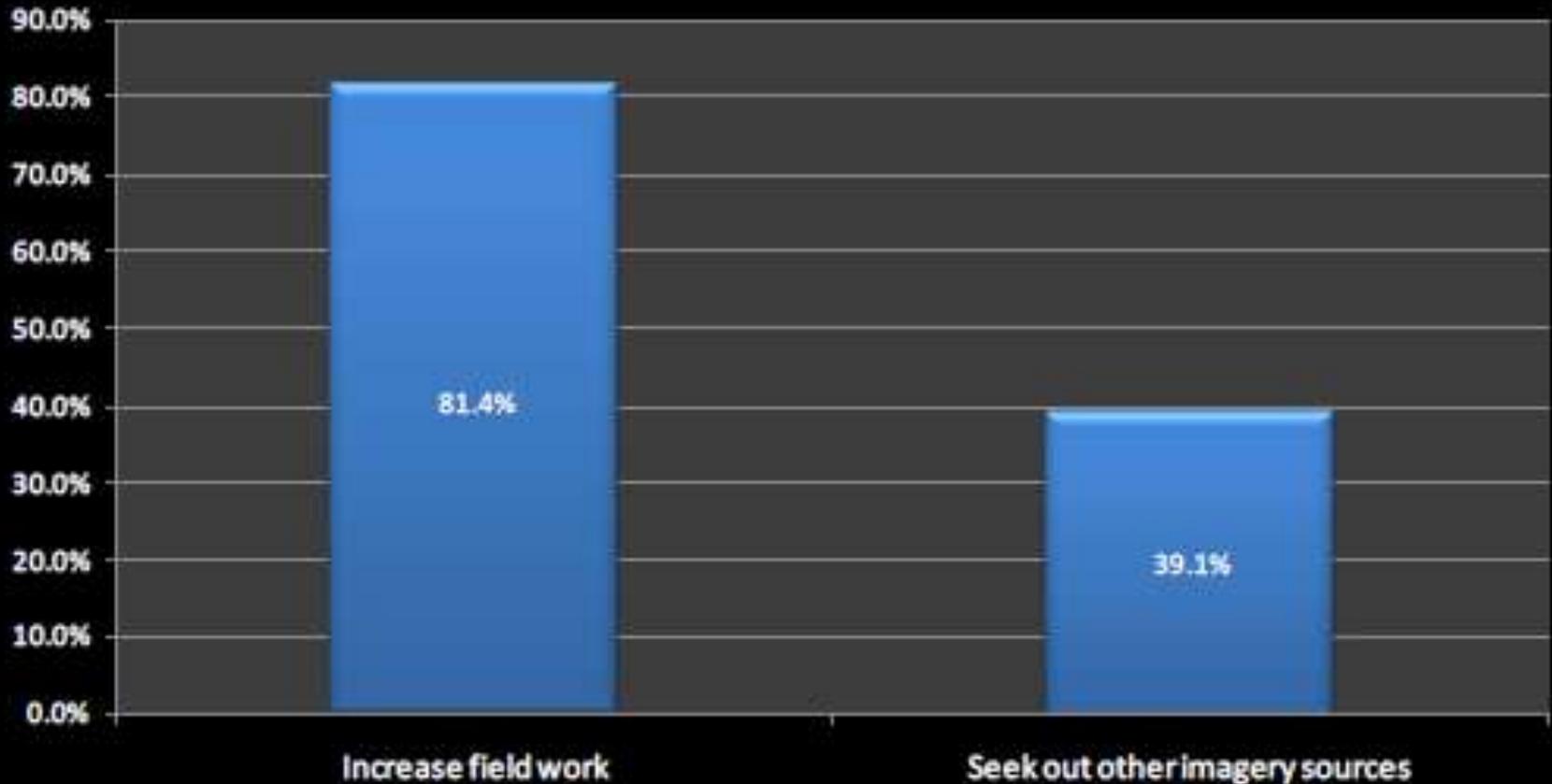
For your work, how important are other products that may be associated with imagery acquisition? - USFS



Doing work without imagery

FSA

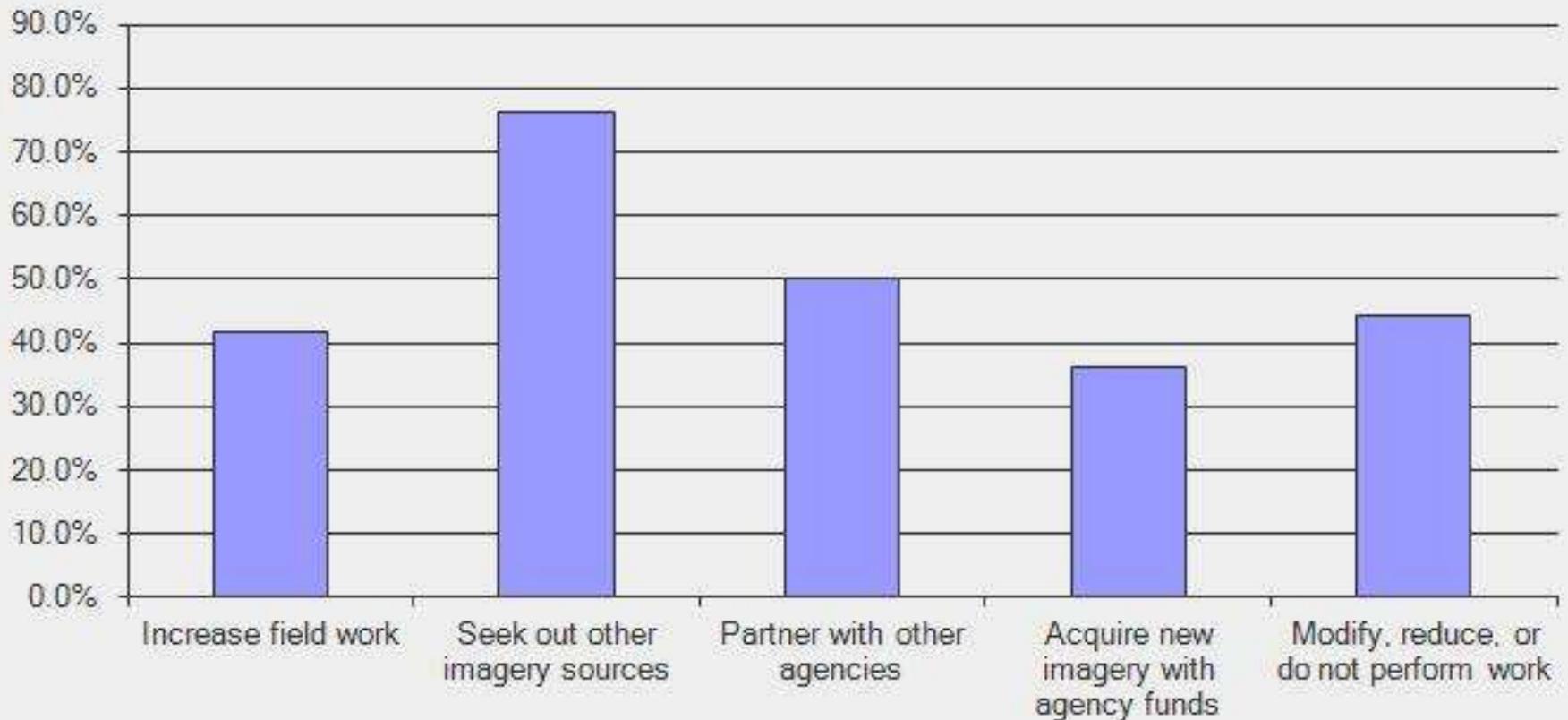
If you do not receive imagery from FSA, how do you complete the work you would otherwise complete with FSA imagery?



Doing work without imagery

DOI

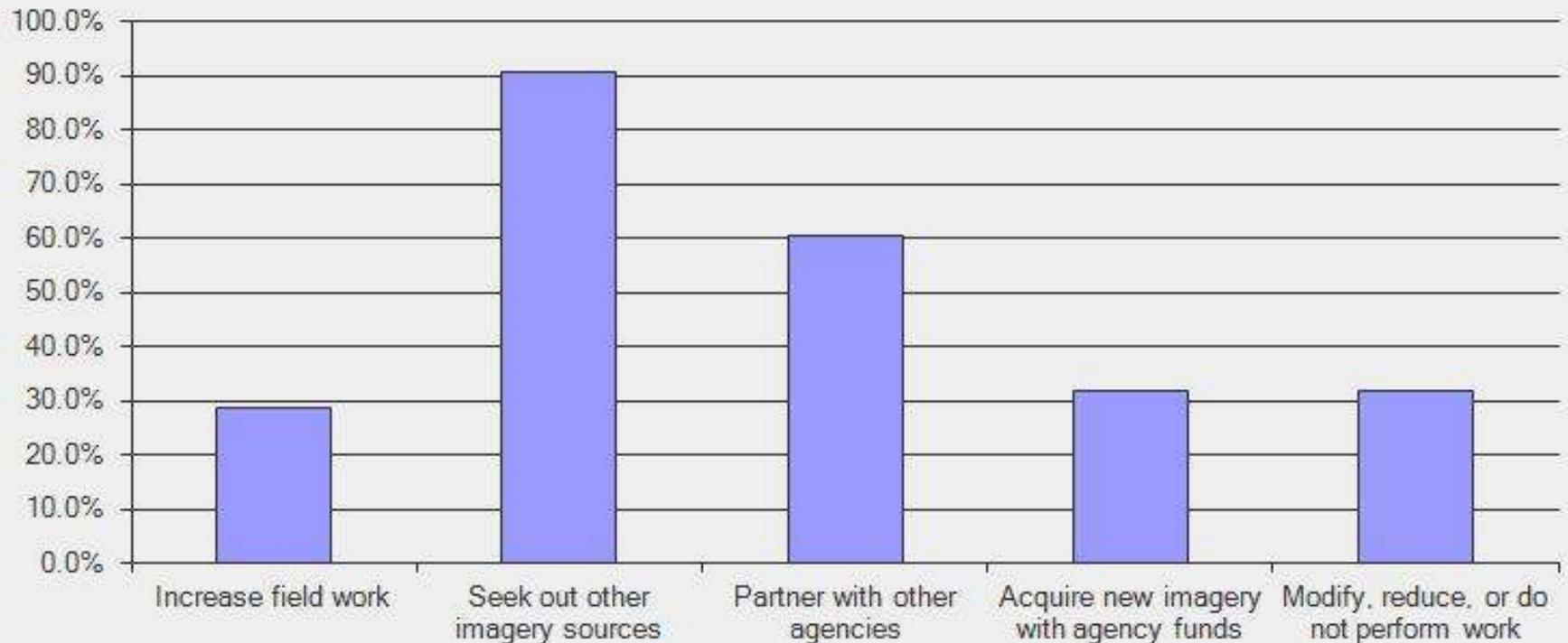
For those who have received imagery from FSA in the past, if you did not receive imagery from FSA in the future, how would you complete the work you would otherwise complete with FSA imagery (select all that apply)? - DOI



Doing work without imagery

NRCS

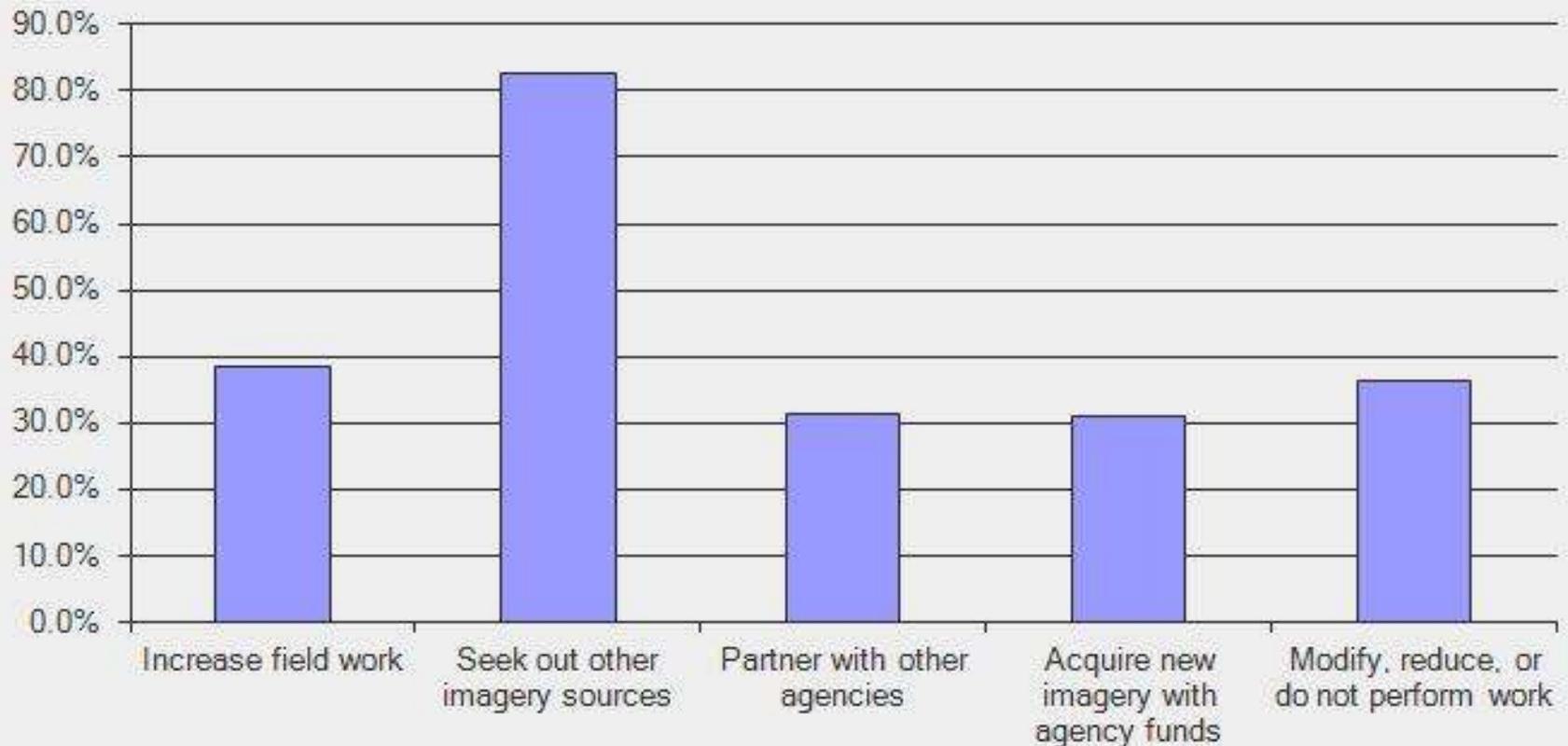
For those who have received imagery from FSA in the past, if you did not receive imagery from FSA in the future, how would you complete the work you would otherwise complete with FSA imagery (select all that apply)? - NRCS



Doing work without imagery

USFS

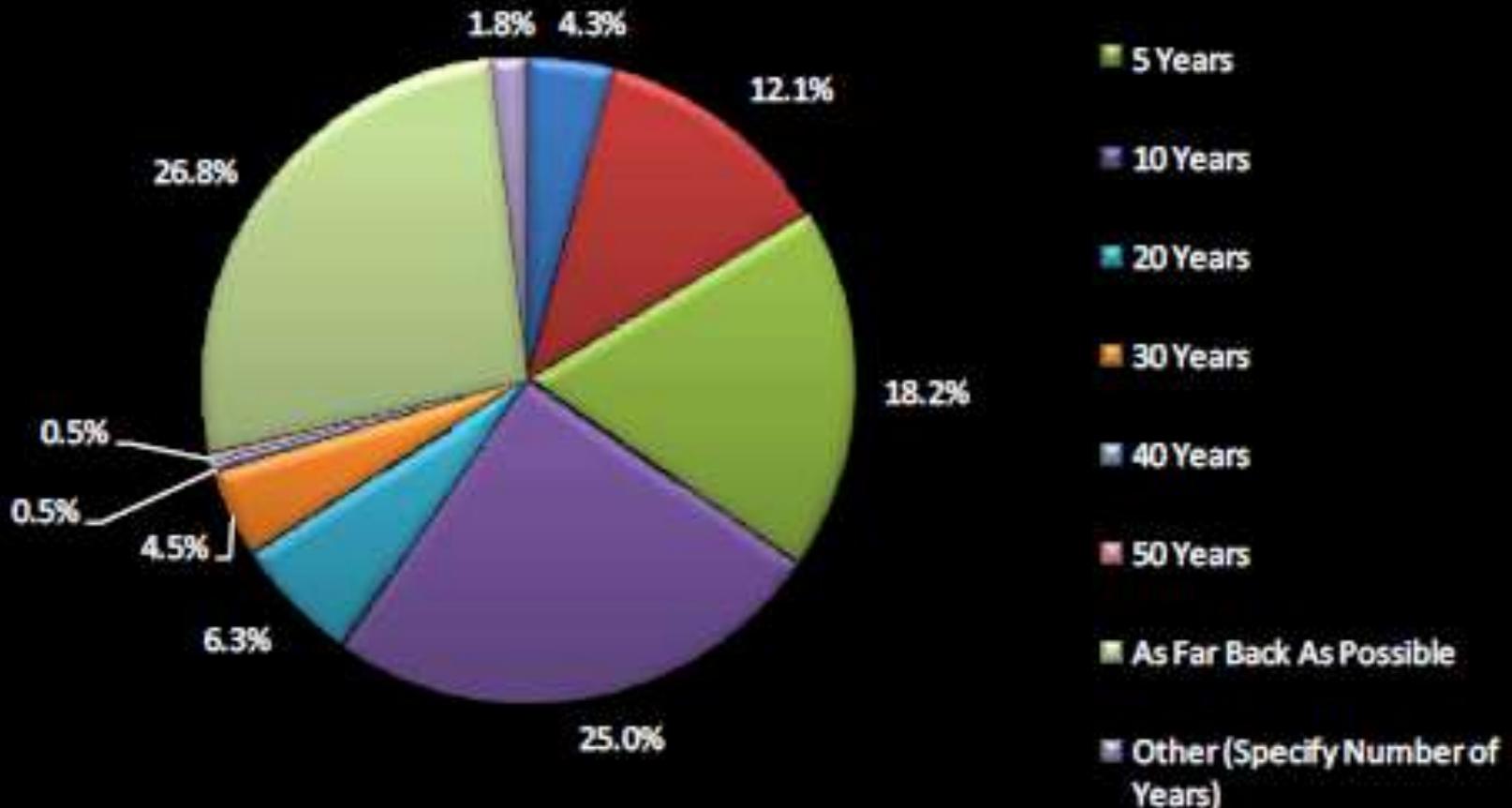
For those who have received imagery from FSA in the past, if you did not receive imagery from FSA in the future, how would you complete the work you would otherwise complete with FSA imagery (select all that apply)? - USFS



Historical Imagery

FSA

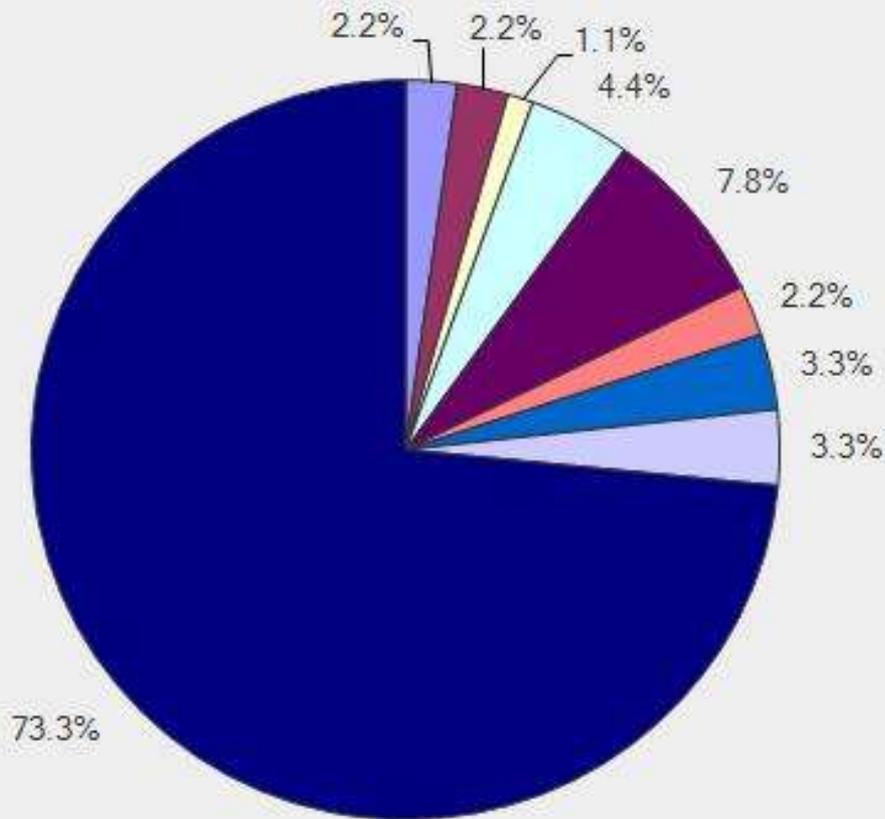
For your work, it would be beneficial to access/use "historical" imagery going back as far as:



Historical Imagery

DOI

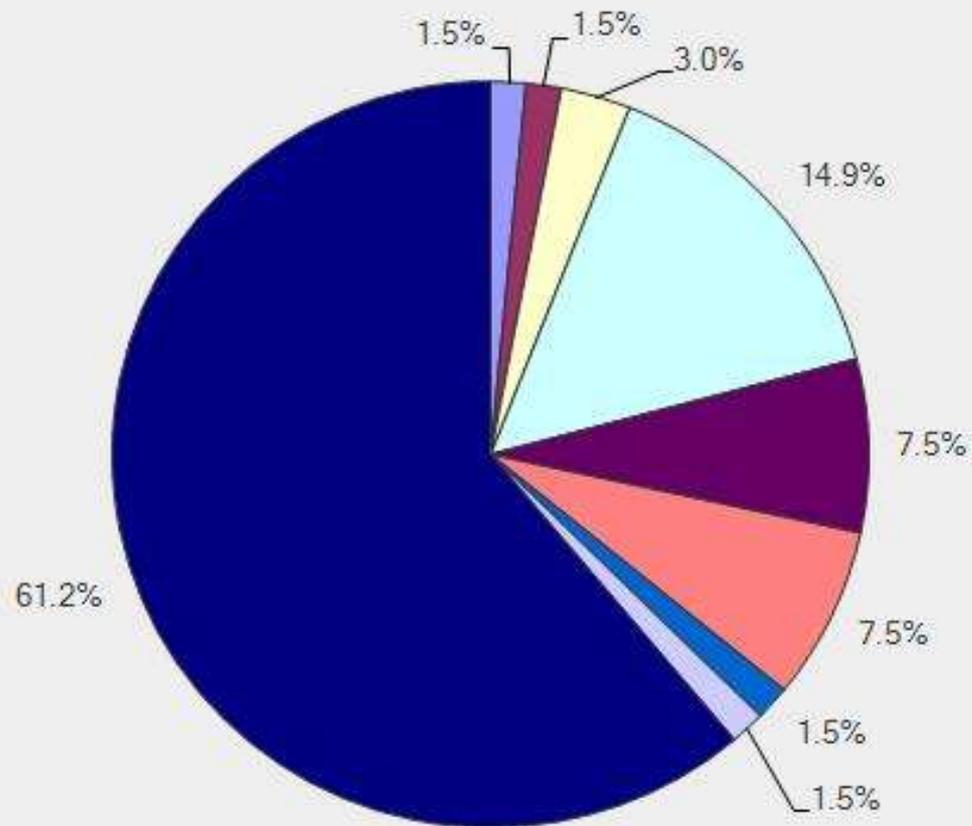
For your work, it would be beneficial to access/use "historical" imagery going back as far as: - DOI



- I Only Need Current Year Imagery
- 3 Years
- 5 Years
- 10 Years
- 20 Years
- 30 Years
- 40 Years
- 50 Years
- As Far Back As Possible

Historical Imagery NRCS

For your work, it would be beneficial to access/use "historical" imagery going back as far as: - NRCS



I Only Need Current Year Imagery

3 Years

5 Years

10 Years

20 Years

30 Years

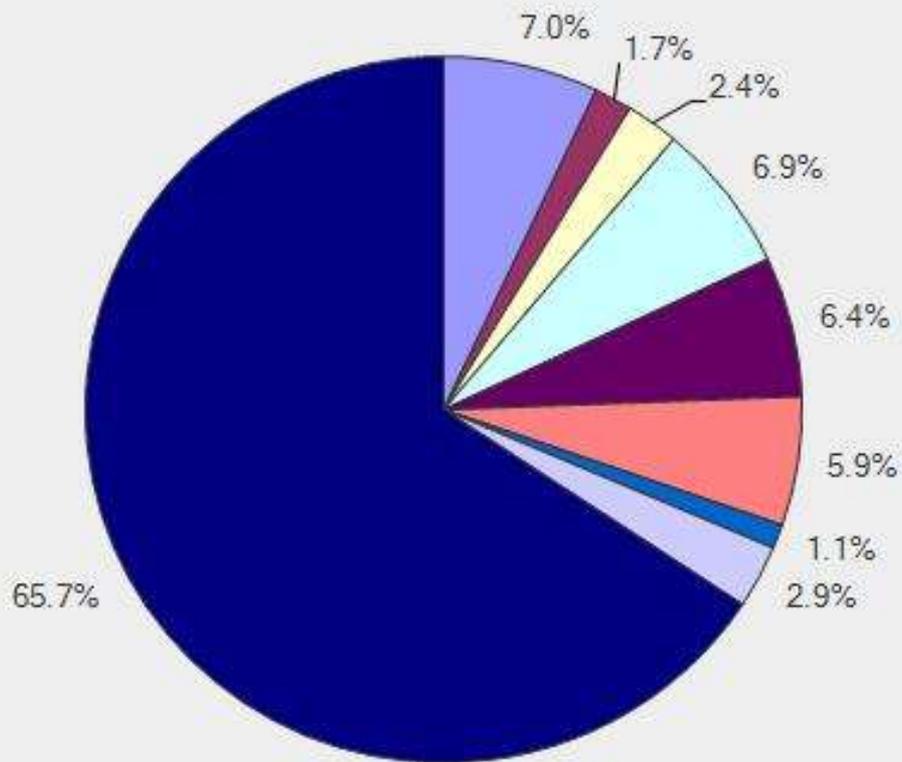
40 Years

50 Years

As Far Back As Possible

Historical Imagery USFS

For your work, it would be beneficial to access/use "historical" imagery going back as far as: - USFS



- 1 Only Need Current Year Imagery
- 3 Years
- 5 Years
- 10 Years
- 20 Years
- 30 Years
- 40 Years
- 50 Years
- As Far Back As Possible

Open Text Questions

- Appendix A – What is the smallest object you need to see clearly on the ground in order to do your work?
 - 4 pages of responses FSA
- Appendix B – What other information do you need to know about your imagery product that you do not currently receive?
 - ½ Page of responses FSA
- **Appendix C – Please explain the impacts of not having quality current, accurate imagery to work with, in the completion of your work**
 - **12 Pages of responses FSA**
- Appendix D – Is there anything else you would like to add regarding your imagery requirements?
 - 5 pages of responses FSA