

2012 Non-FSA Imagery Requirements Survey: Summary Report

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Aerial Photography Field Office
Salt Lake City, UT 84119
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Section 1 – Executive Summary

The USDA-FSA Aerial Photography Field Office (APFO) has been providing hard copy and digital imagery to support a wide range of customer driven imagery needs for many years. 2011 is the last year of a 5 year contract cycle for the National Agriculture Imagery Program (NAIP), FSA's primary imagery program. Thus, summer 2011 is the ideal time to gather and analyze existing and new requirements for imagery products in preparation for a new contract cycle. While NAIP is FSA's primary imagery program, FSA recognizes that a much larger customer base exists, and as such, sought feedback regarding Non-FSA Agency imagery needs.

The 2012 Imagery Requirements Survey was built using a web based survey engine. The survey link was distributed to the National Digital Orthophoto Program (NDOP) Steering Committee, who then distributed it as appropriate to their Agency representatives. The survey was open throughout the month of July.

The survey:

- establishes a standardized feedback mechanism for imagery requirements
- allows for adjustment of program strategy as necessary based on survey results analysis

The following is a brief summary of survey responses:

Total Survey Responses = 1282 (79% USFS, 8% DOI, 6% NRCS, 7% Other). Note that while the survey was intended for Non-FSA Federal Agency feedback, a handful of FSA responses were recorded, and several state or local agency responses were also recorded. In order to maintain the integrity of the survey response data, these responses were *not* removed. The percent of FSA and/or Non-Federal responses was low.

The overwhelming number of survey responses came from the USFS. Because of this, survey responses filtered by Agency/Department have been made available in Appendix E for USFS, DOI, and NRCS. The raw survey responses filtered by Agency/Department (in spreadsheet .xls format) can be made available by request.

- Approximately 66% of respondents indicated that they needed historical imagery going back as far in time as possible, and the majority preferred historical imagery be delivered via web services.
- Approximately 75% of the respondents found elevation data/models either very important or important.
- Respondents indicated it is important to be able to share the data openly.
- Being able to recognize single trees or fence lines seems to be the threshold for spatial resolution regarding what needs to be distinguishable on the imagery. This would imply that ½-meter to 1-meter resolution would be optimal. Additionally, some responses in Appendices A and C support this statement.
- 40% of respondents indicated they needed imagery every year, while another 29% indicated they needed imagery every other year.
- Respondents indicated that quality of the imagery is every bit as important as horizontal accuracy.
- Less than 40% of respondents indicated they still needed media copies of the imagery, and of those who did, almost 70% indicated they needed it for field work, among other activities.
- Approximately 93% of respondents indicated that knowing the year, month, and day that the imagery was acquired is good enough for their work (the majority only needed to know the year and month); about 6% indicated they needed to know the hour of the day the imagery was acquired.
- Approximately 60% of respondents preferred Natural Color imagery over 4-band, CIR, or >4 spectral bands.
- Approximately 60% of respondents indicated that the current accuracy specification meets their needs. Of those who indicated it did not meet their needs, 68% indicated they would like to see a 2 meter to true ground specification, and another 28% indicated they would like 3 meters to true ground.
- Approximately 83% of respondents indicated that if FSA imagery was not available, they would need to seek out other imagery sources to do their work. 38% indicated they would increase field work.
- For those that need a 2d or 3d national image cache to do their work, the vast majority need to be able to have that cache consumed by the ArcGIS platform (9.3.1 or 10.x).

See Section 2 for question by question detail.

Section 2 – Question by Question Breakdown

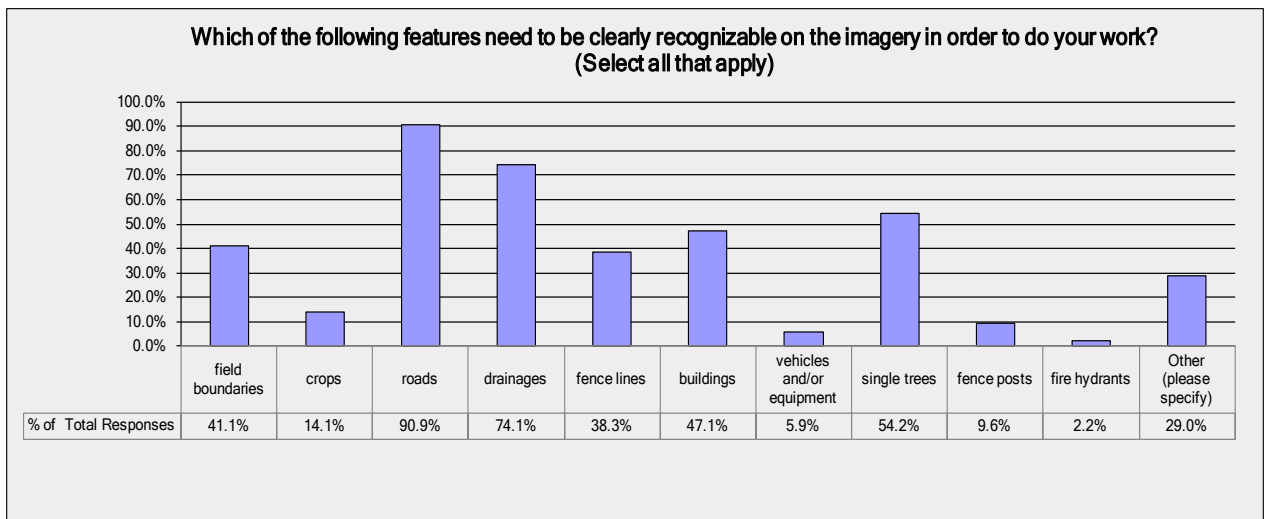
Question 1 – What is your name? Responses varied.

Question 2 – Who do you work for?

	Response Percent	Response Count
BLM	5.6%	72
FAS	0.1%	1
NPS	1.5%	19
NRCS	5.8%	74
RMA	0.1%	1
USFS	79.3%	1016
USGS	0.6%	8
Other	7.1%	91

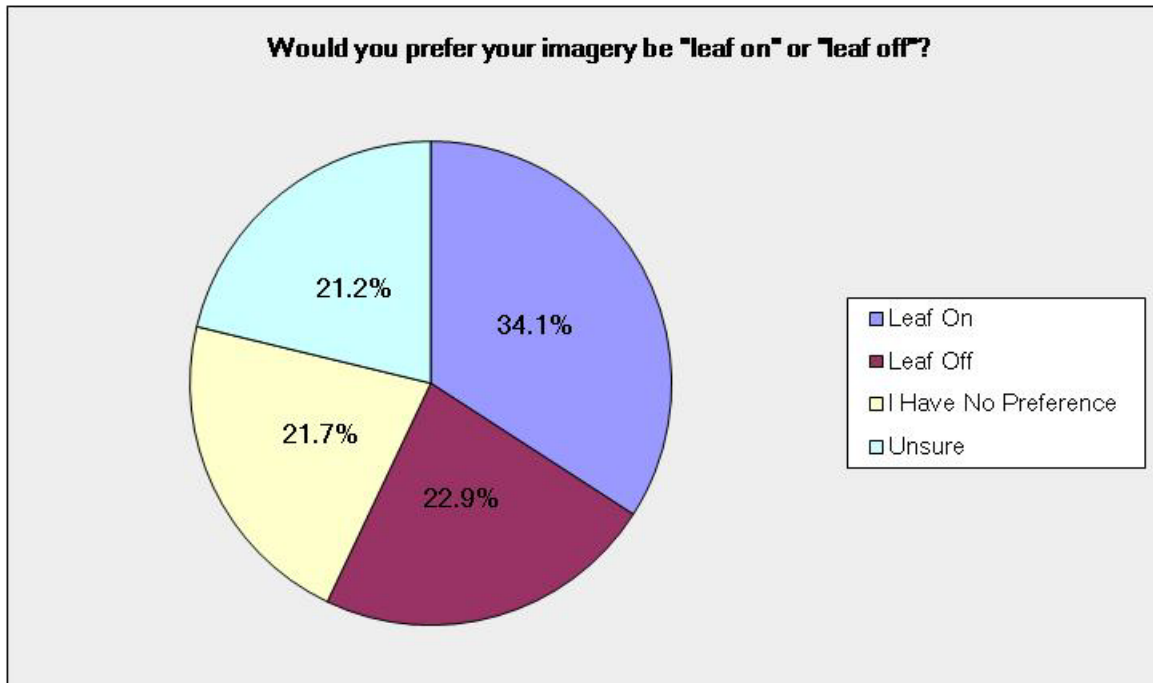
Question 3 – What is your position/job title? Responses varied.

Question 4 –

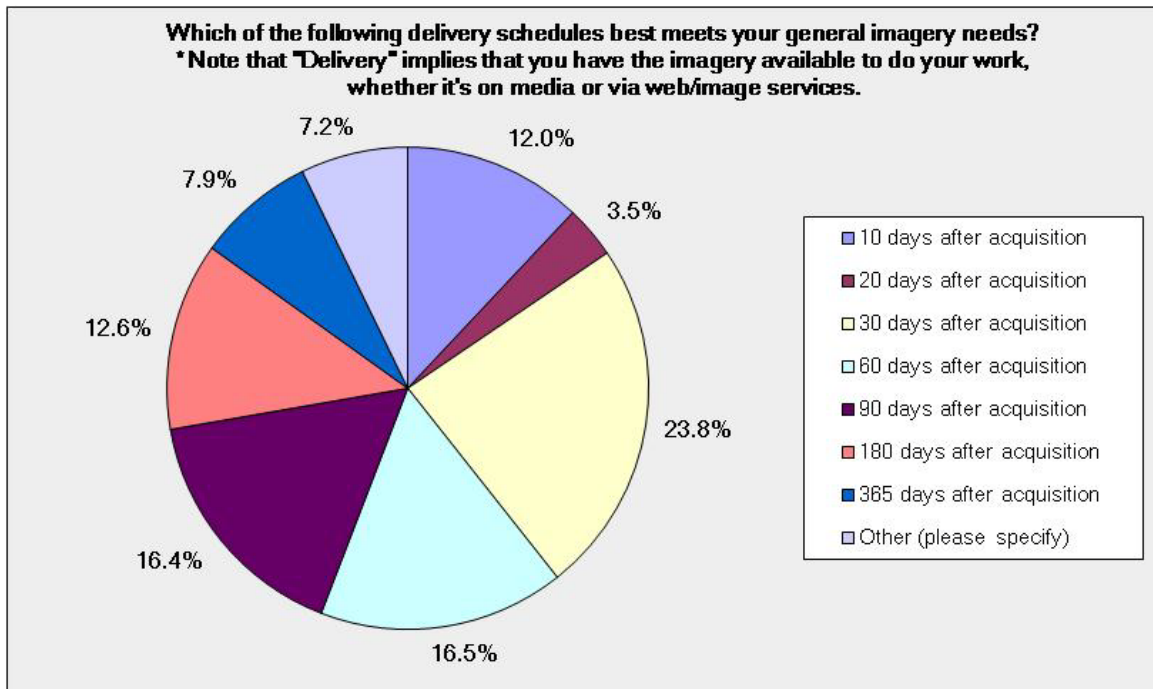


Question 5 – What is the smallest object you need to see clearly on the ground in order to do your work? Responses varied. Generally speaking, responses ranged from individual trees or bushes, to buildings, cattle guards, trails, drainages, fence lines, and fence posts. Many responses indicated a physical area or resolution (e.g. 1-foot) rather than an object. Raw responses can be found in Appendix A. Responses have been edited for spelling, but not for content.

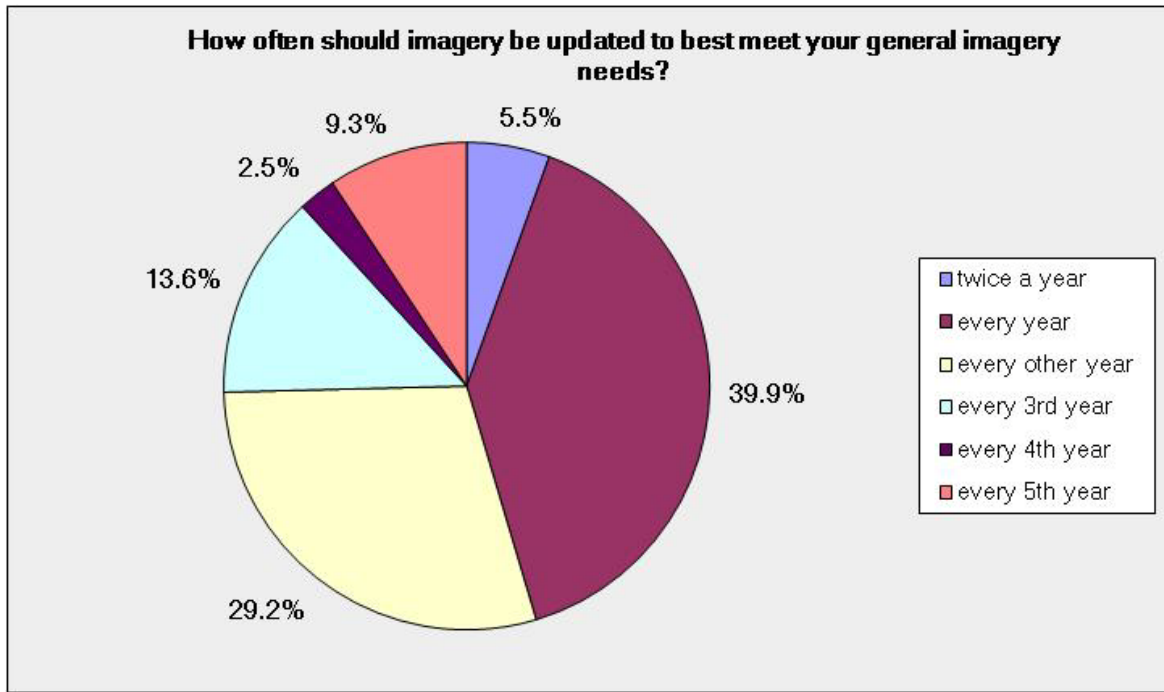
Question 6 –



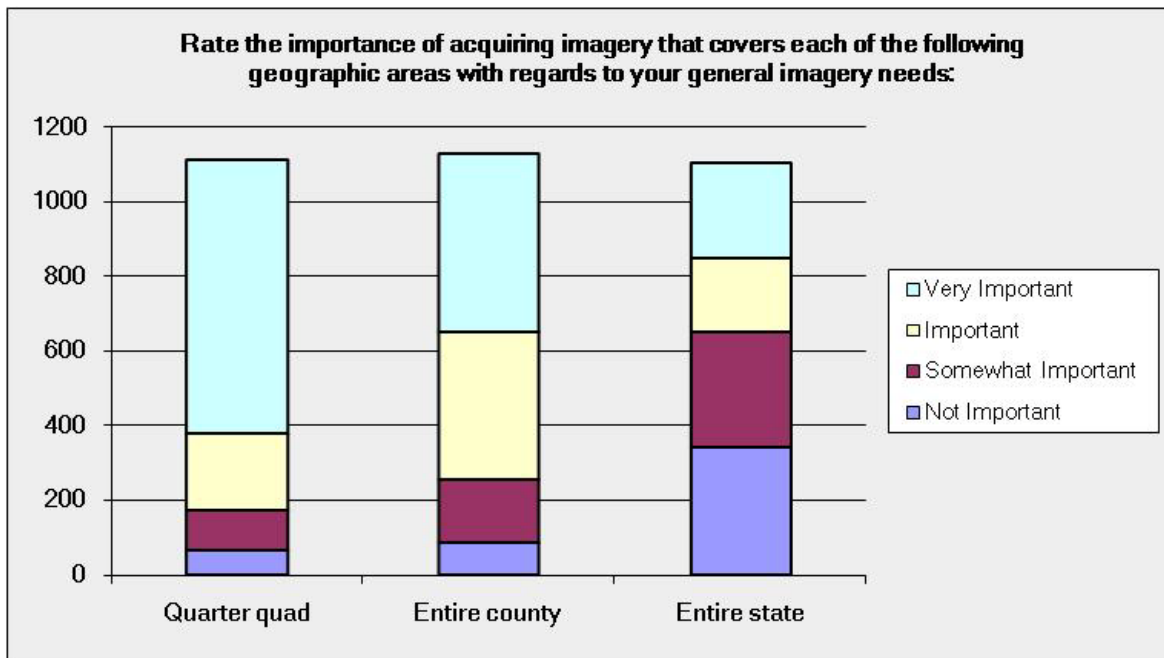
Question 7 –



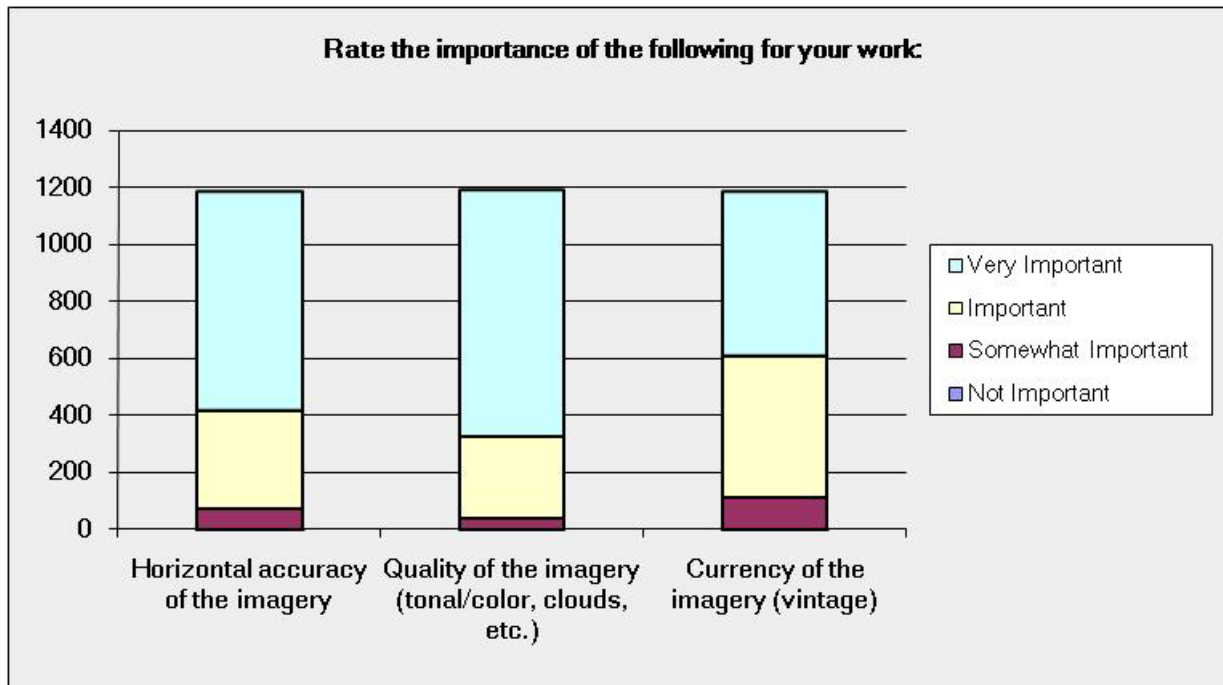
Question 8 –



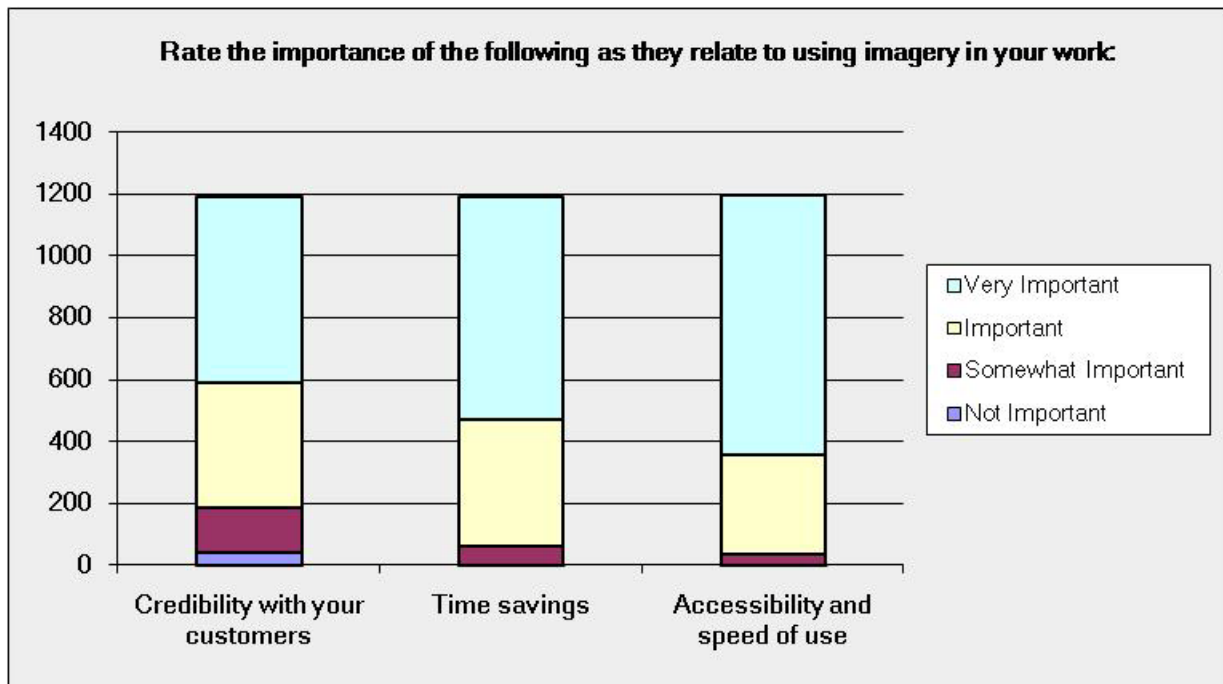
Question 9 –



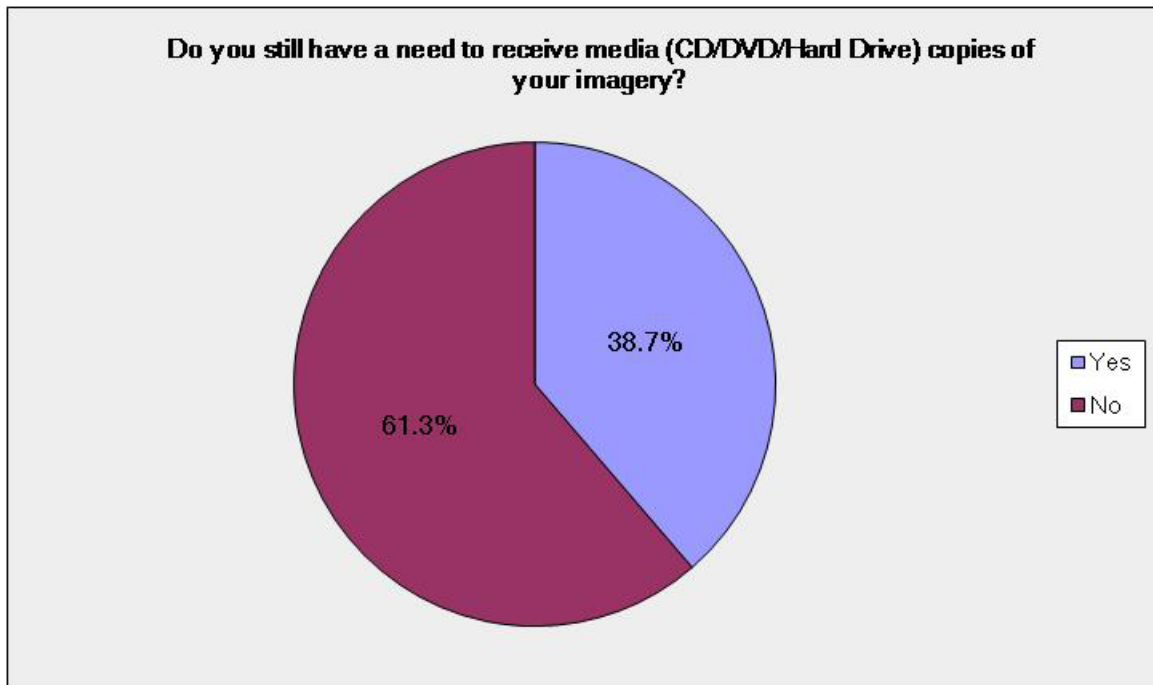
Question 10 –



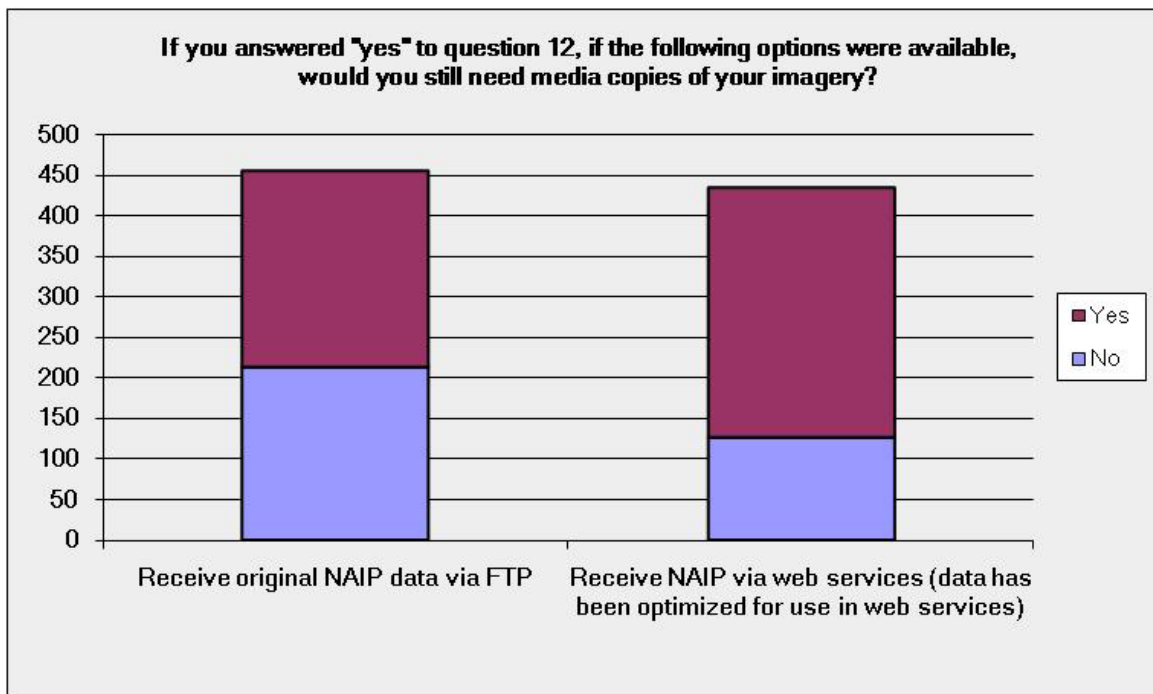
Question 11 –



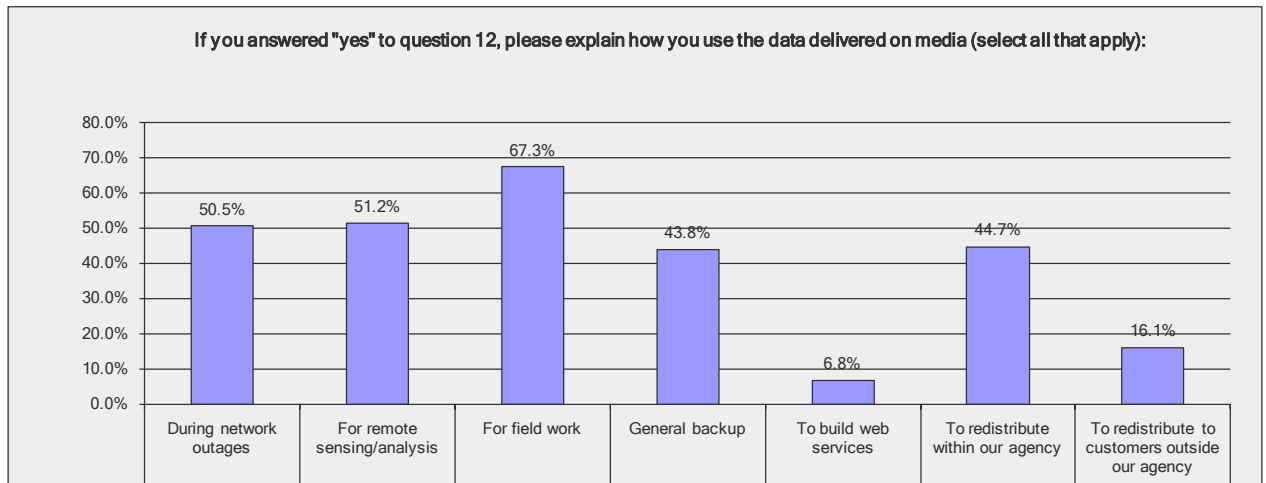
Question 12 –



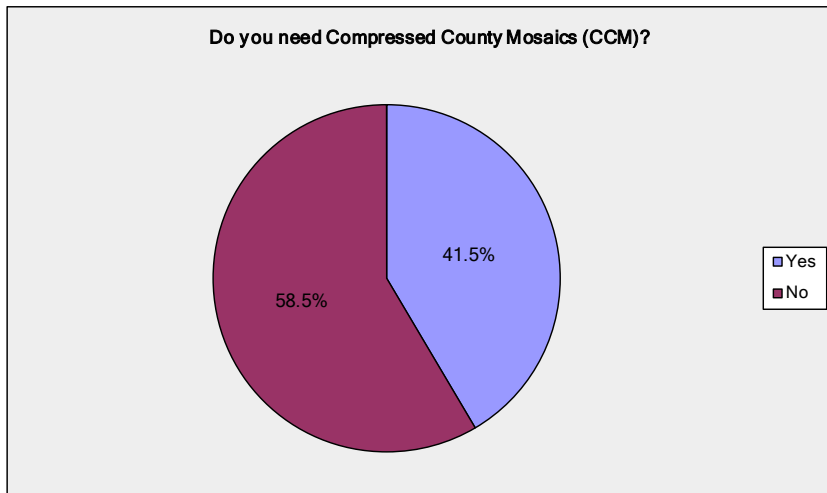
Question 13 –



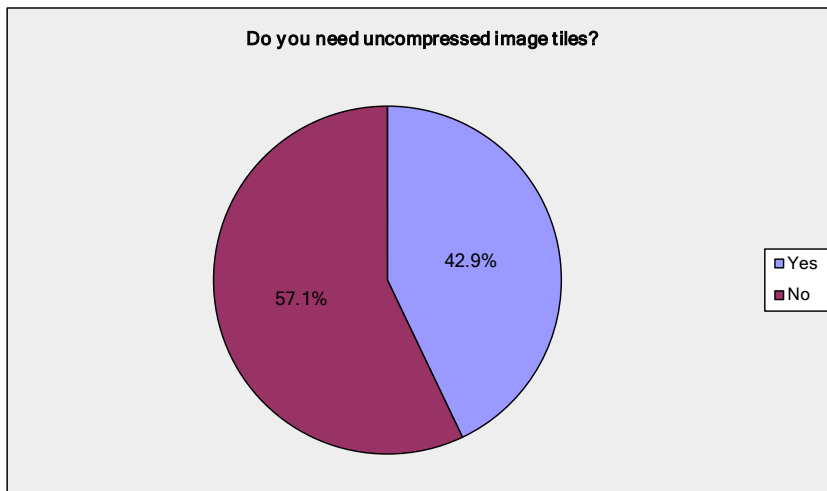
Question 14 –



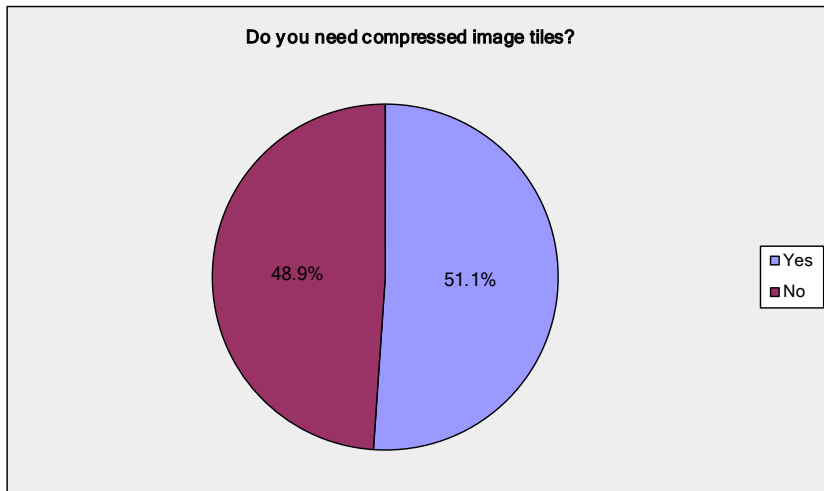
Question 15 –



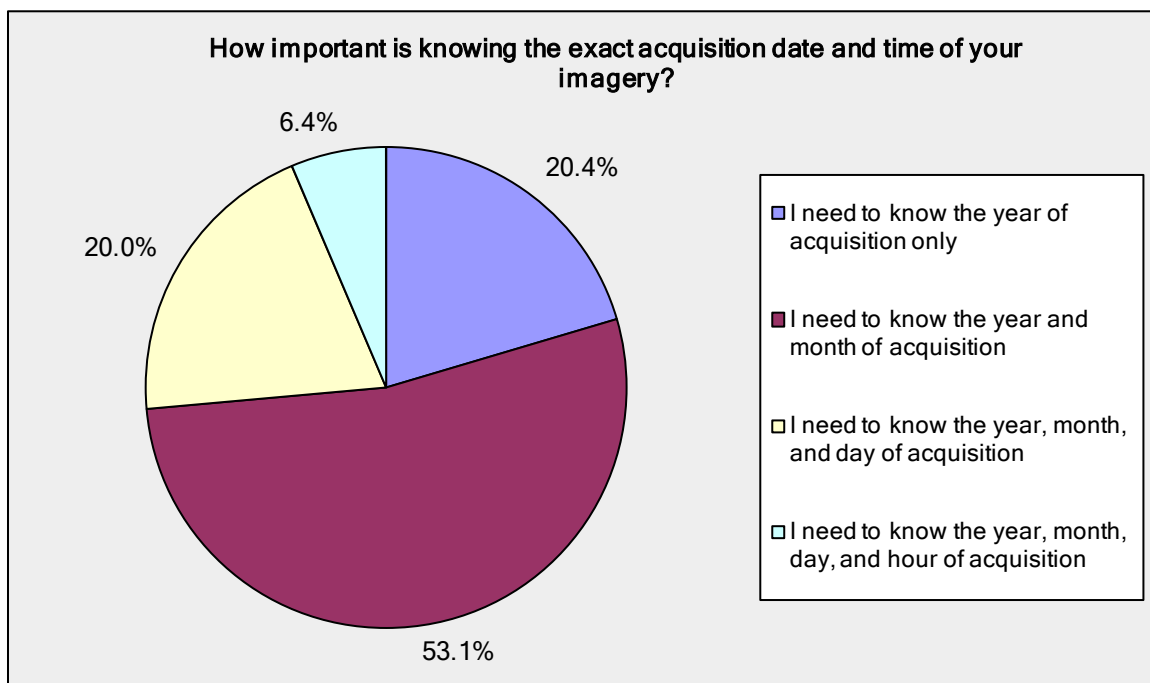
Question 16 –



Question 17 –

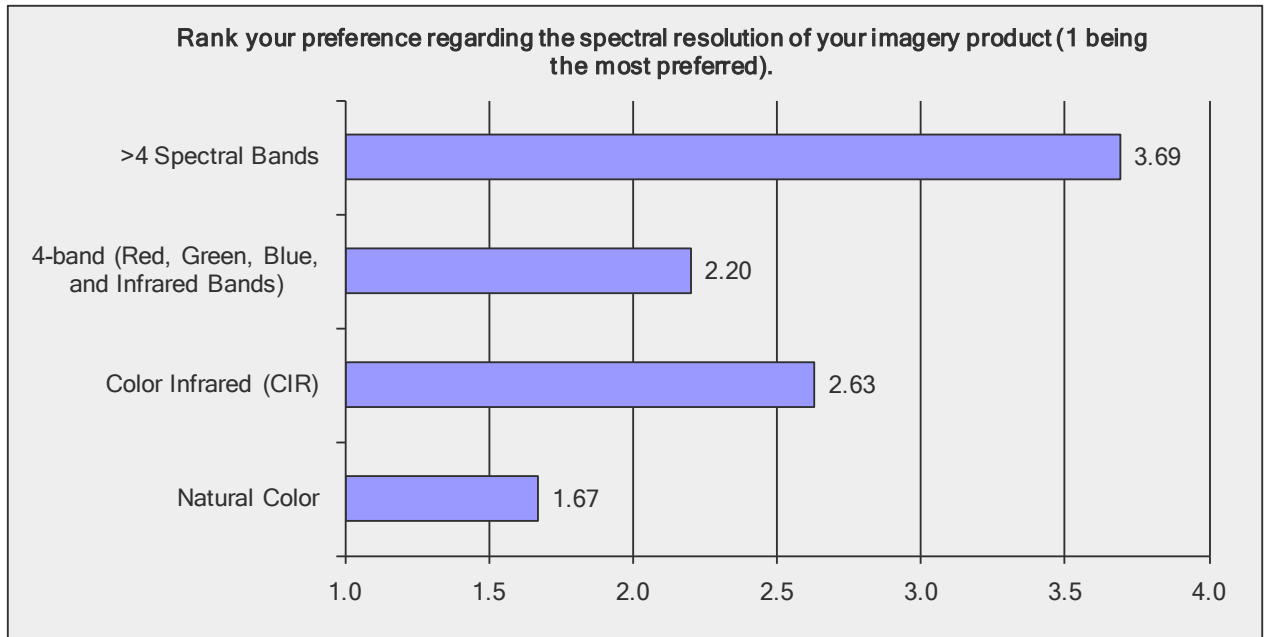


Question 18 –

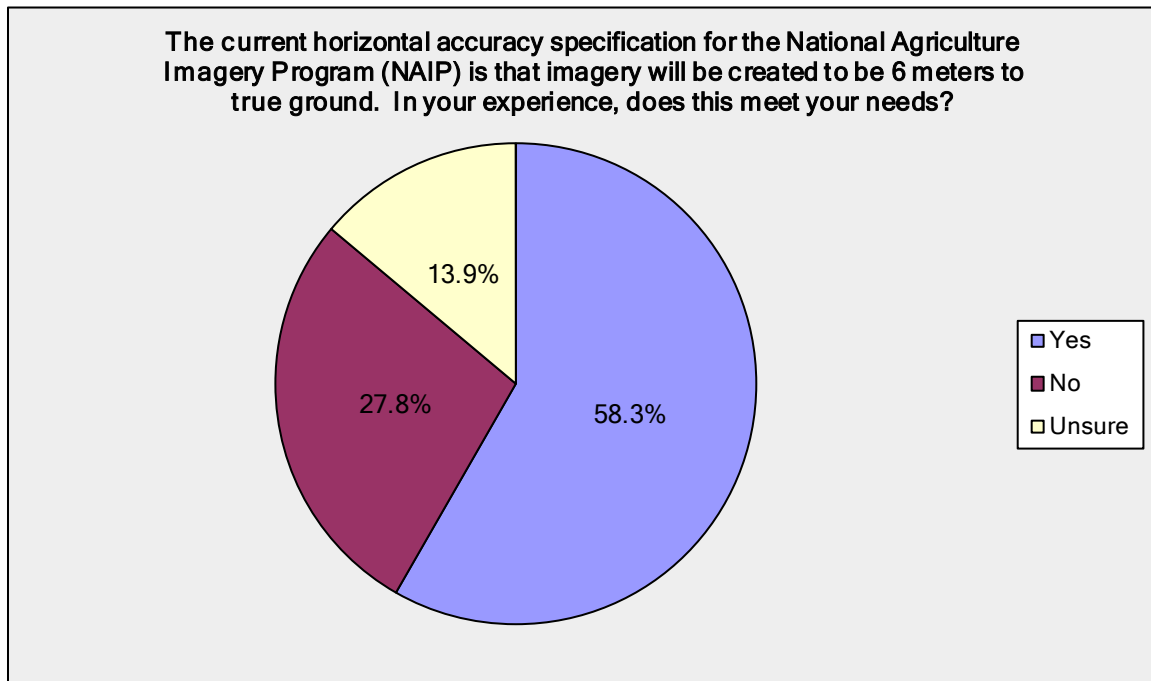


Question 19 – What other metadata/information do you need to know about your imagery product? Responses varied, and can be reviewed in Appendix B. Generally speaking, answers ranged from accuracy, scale, resolution, flying height, camera information, and so forth. Responses have been edited for spelling but not content.

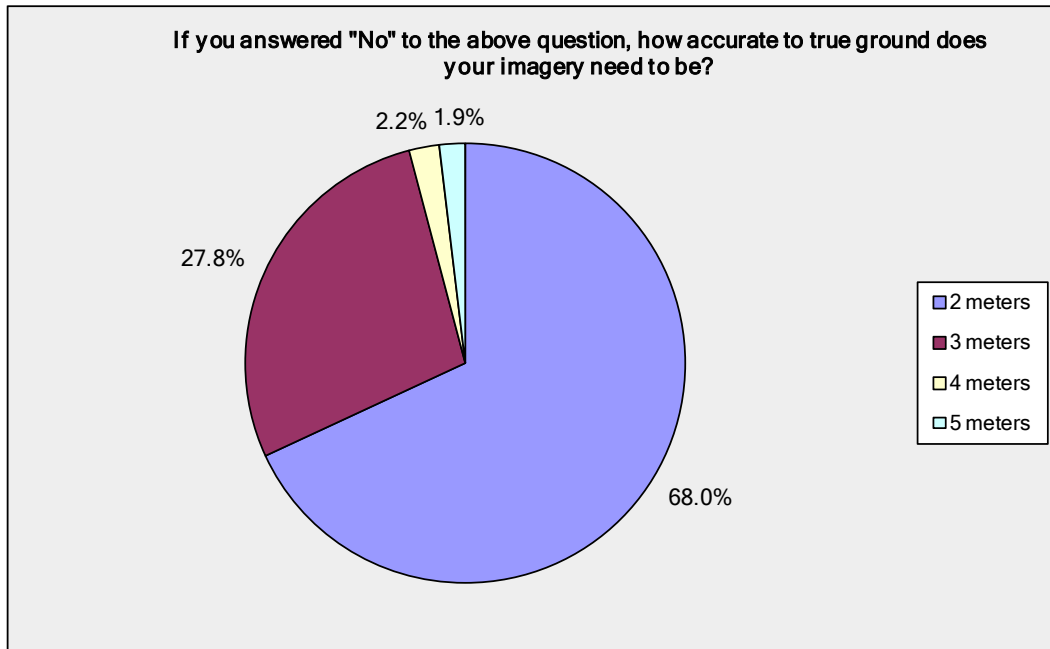
Question 20 – This question asked for a ranking; what is shown is the average ranking, with 1 being the *most* preferred. The closer to 1 the response is, the more preferred it was by the survey takers (e.g. Natural Color was the most preferred). Around 60% of respondents preferred Natural Color imagery.



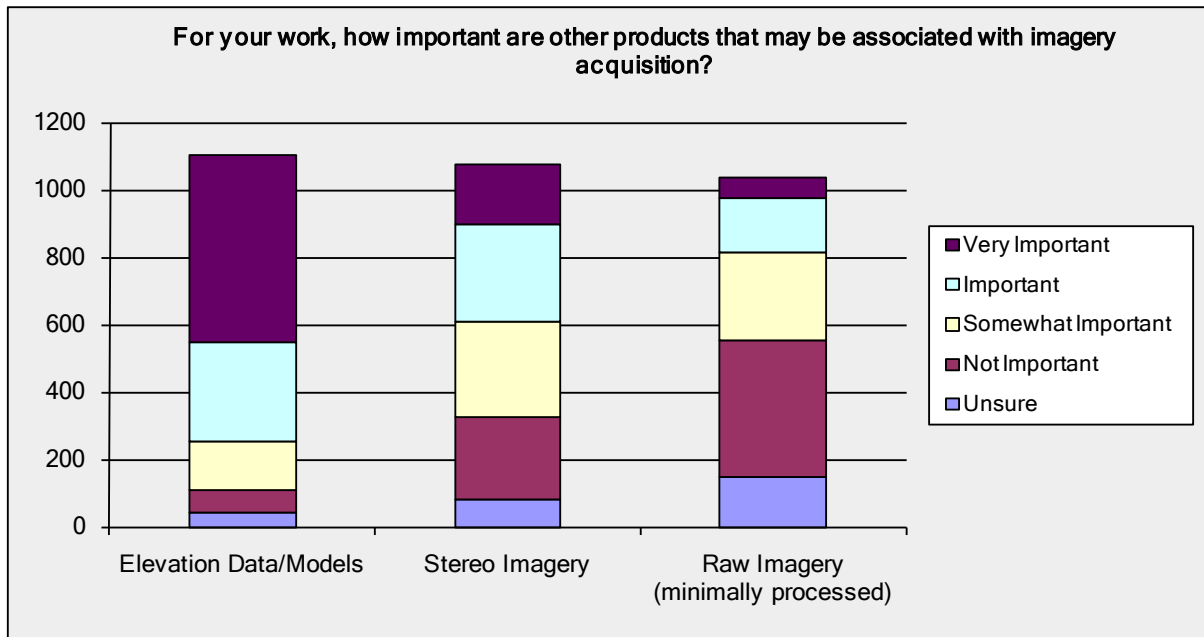
Question 21 –



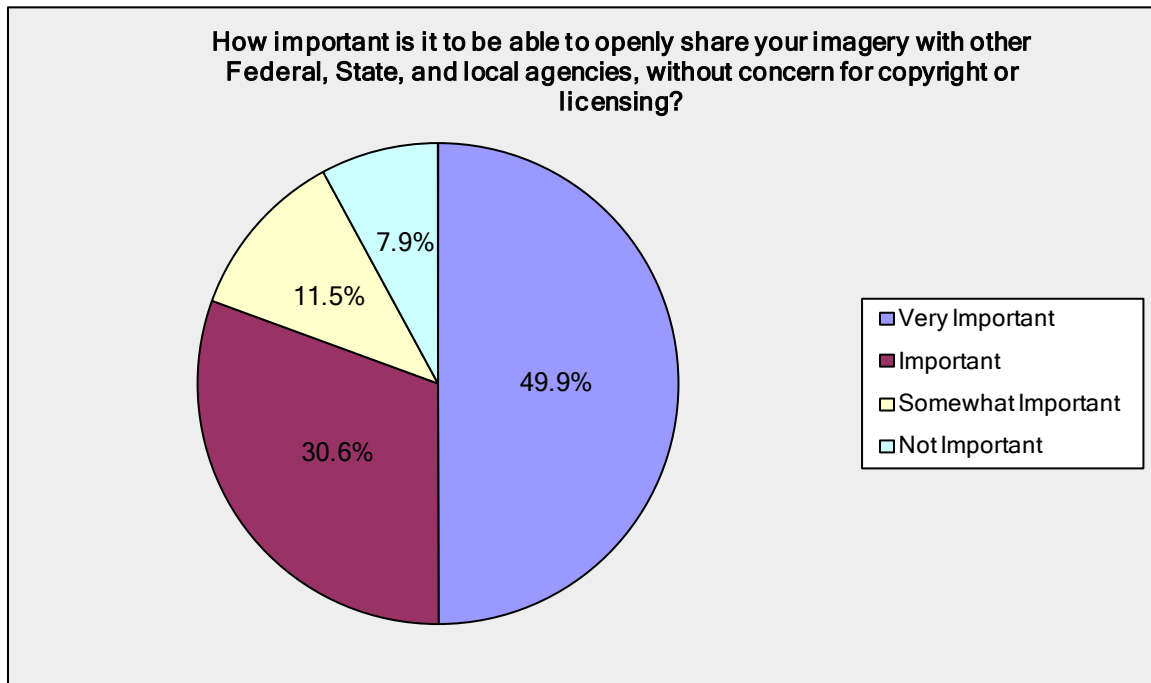
Question 22 – If you answered “No” to the above question, how accurate to true ground does you’re your imagery need to be? 316 respondents answered this question, with 59 of those answering “Other”. “Other” responses indicated generally that horizontal accuracies of 1 meter or less would be good, but several responses indicated that it depended on what they were working on. Note that this question does not attempt to bias the survey taker with any indication of whether the accuracies they would like to see are possible, provable, or economically achievable.



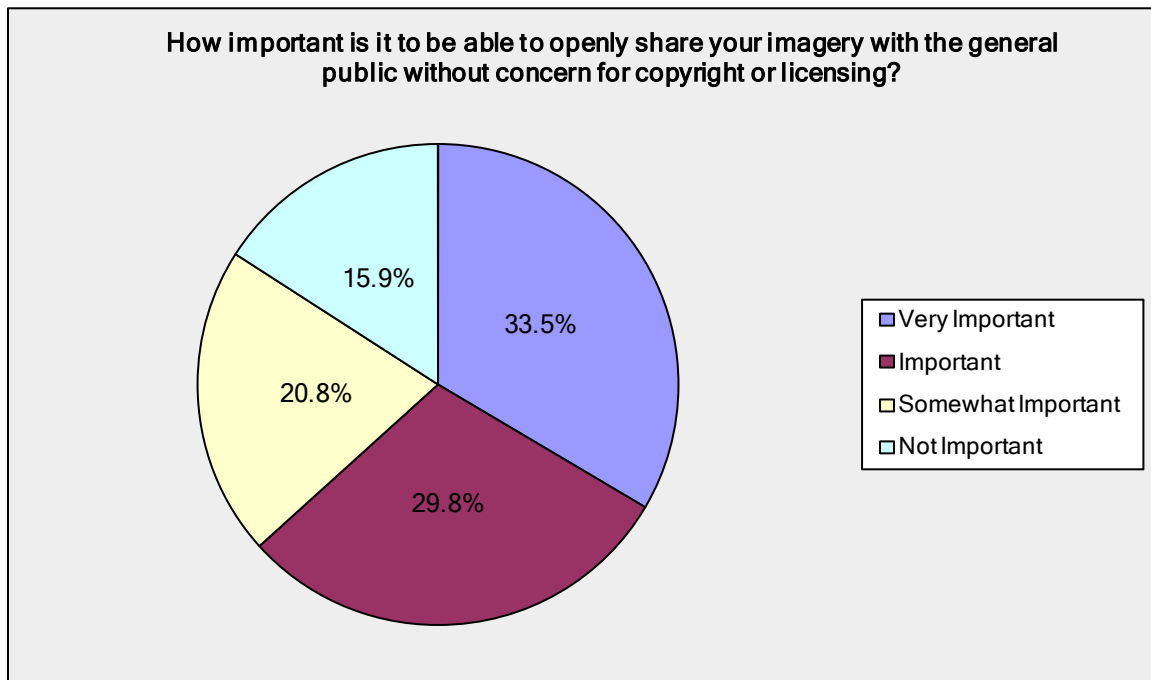
Question 23 –



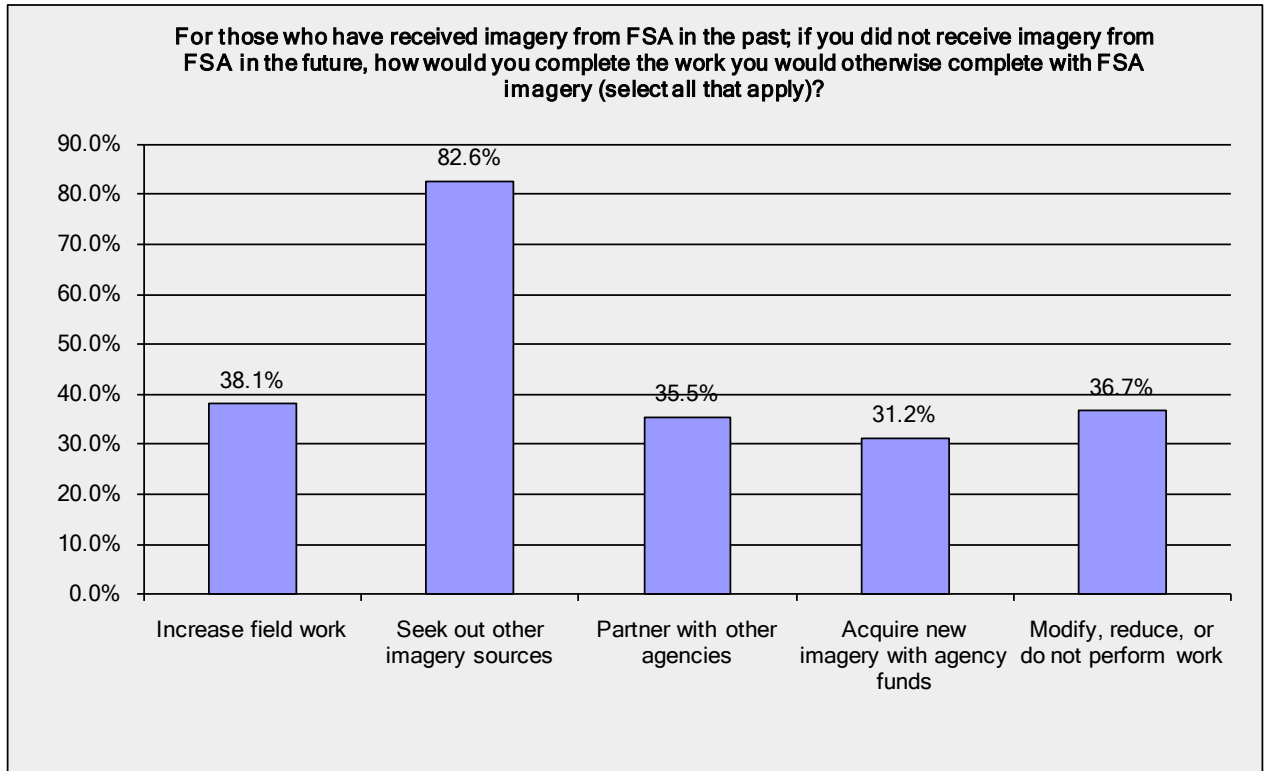
Question 24 –



Question 25 –

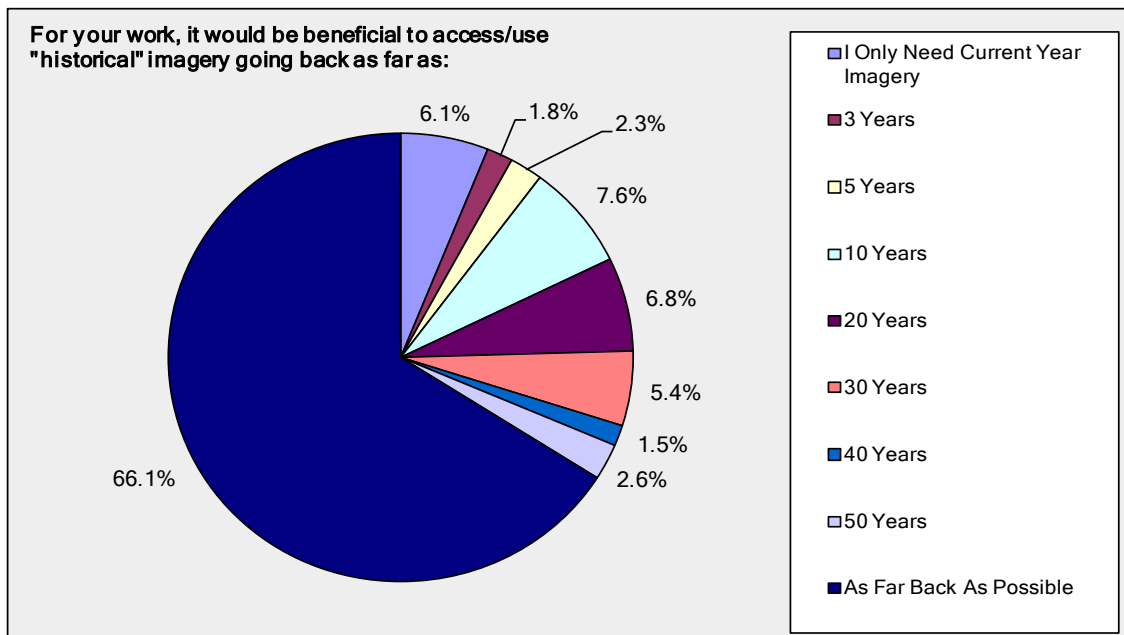


Question 26 –

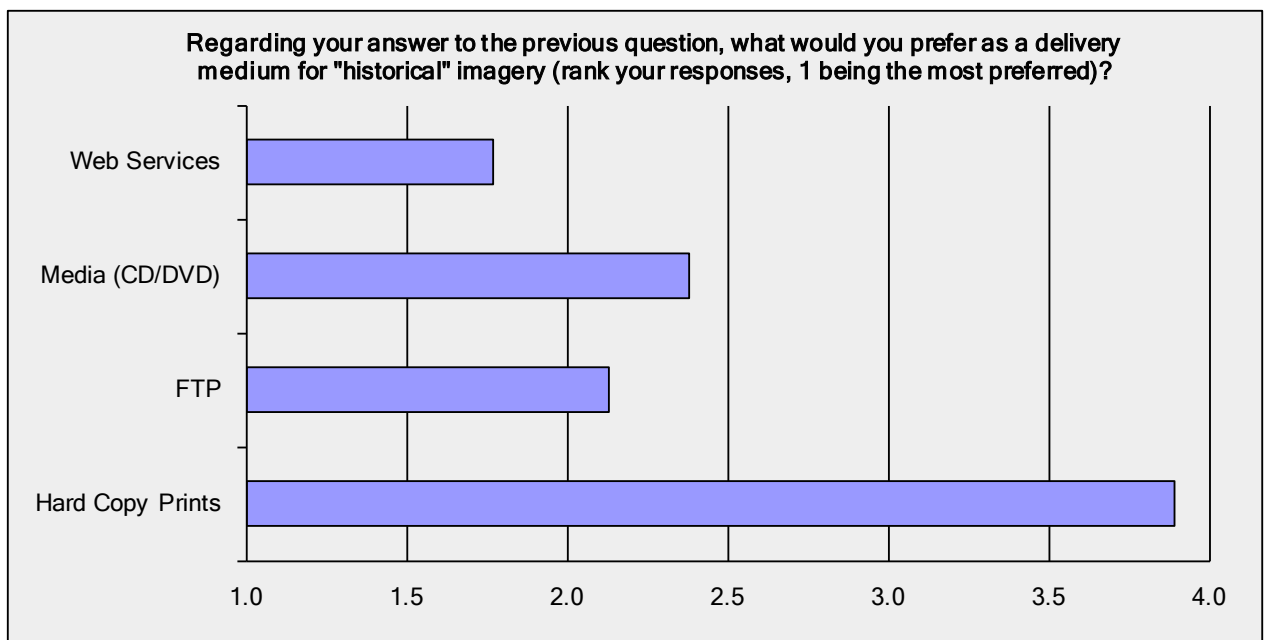


Question 27 – Please explain the impacts of not having quality current, accurate imagery to work with, in the completion of your work. Raw responses can be reviewed in Appendix C. Generally, responses indicated the inability to efficiently do work, the inability to complete work at all, increased time, decreased accuracy, more field work, etc. These responses have been edited for spelling but not content.

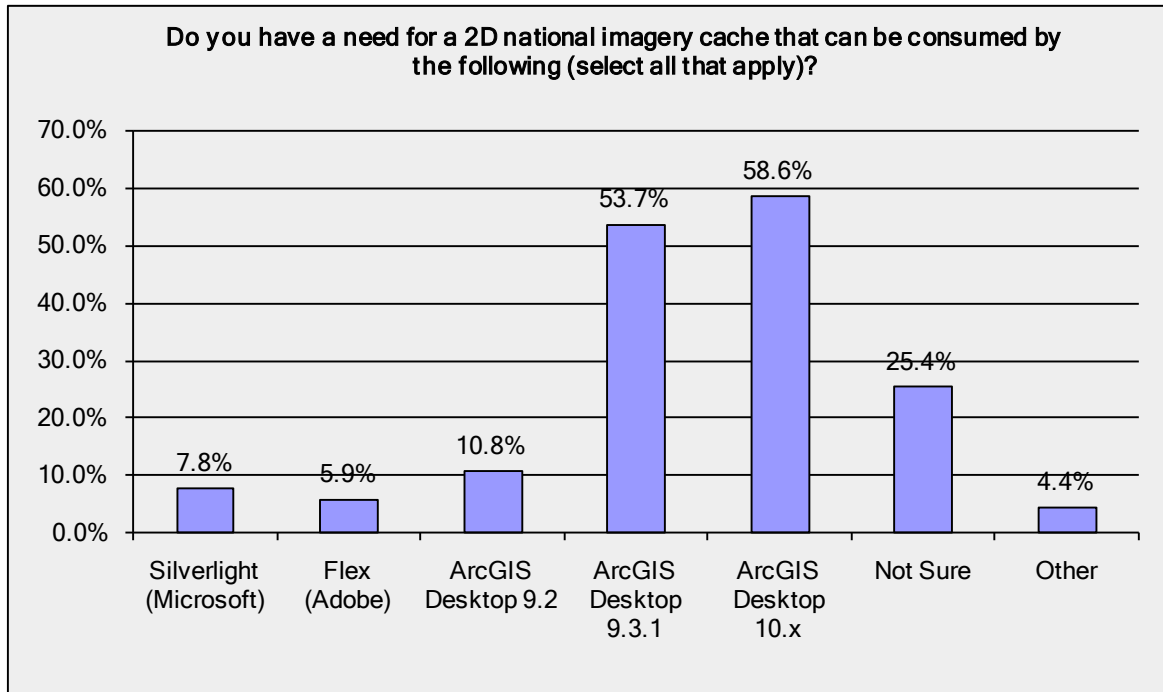
Question 28 –



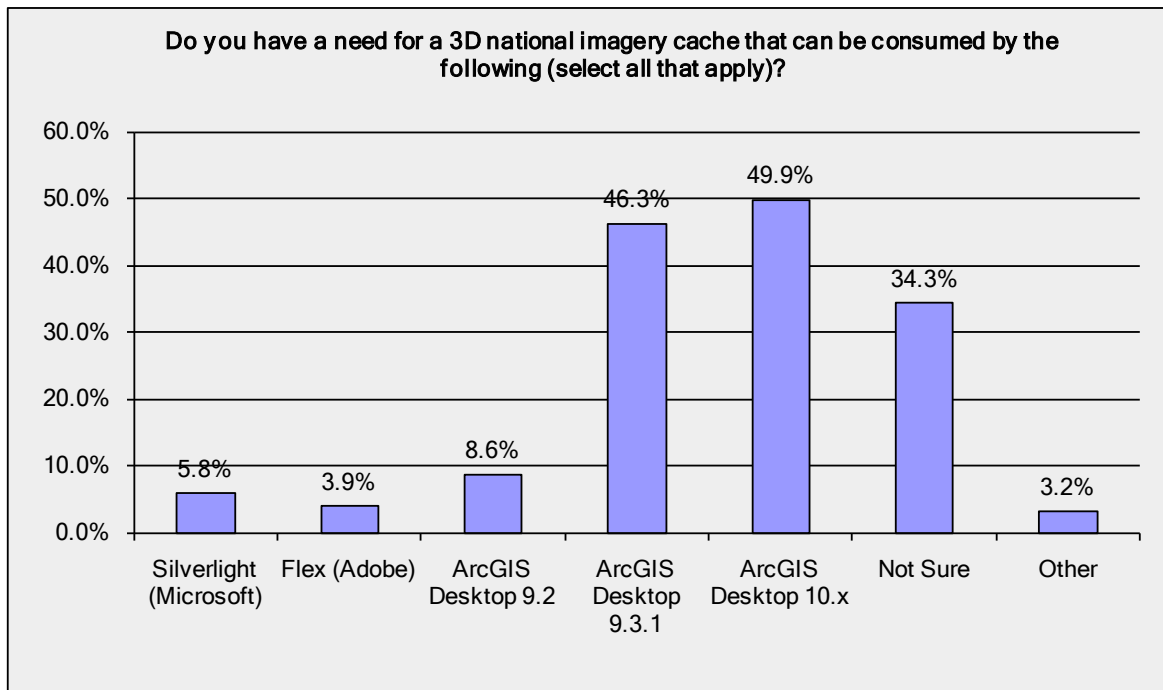
Question 29 – This question asked for a ranking; what is shown is the average ranking, with 1 being the *most* preferred. The closer to 1 the response is, the more preferred it was by the survey takers (e.g. Web Services would be the most preferred method to deliver historical imagery). Around 50% of respondents would prefer web services over other forms of historical imagery delivery.



Question 30 –



Question 31 –



Question 32 – Is there anything else you would like to add regarding your imagery requirements? Responses to this question can be found in Appendix D. Responses have been edited for spelling but not content.

- Depends on the application - from fence posts to small sheds - nothing larger
- Depends on the work, 1 foot areas are helpful.
- depends on the work, but individual wetlands, springs, and channel pathways are important in my work
- Describe single trees
- Distinguishable features (rock outcroppings, etc) vs. pixilated features
- Ditch
- ditch line
- ditches & canals
- Dominant vegetation
- down tree trunk 18" diameter
- down trees or logs
- downed tree in stream (to assess large wood abundance)
- drainage
- drainage
- Drainage ways
- drainages
- Drainages
- drainages
- drainages and wet areas such as springs or seeps
- drainages/land forms
- drainage features - culverts/bridges etc.
- draws and riparian areas
- drill pad
- driveway
- driveway
- During my time as a forest GIS Coordinator, NAIP imagery was found to be very useful as a background to various types of maps. Generally what needed to be seen was roads/trails, drainages, vegetation patterns, buildings, etc. In some cases we were trying to see individual downed trees in wetland areas.
- dwellings and other structures
- Ecological edges
- Edge of asphalt on paved roadways, small wetlands
- edges between features
- encroachments - cabins, fences, trails, wells
- Features about 1 meter wide
- Features such as Dams, Reservoirs, Wetlands
- fence
- Fence
- fence
- fence and/or water tank
- Fence corners
- fence line
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- Fence line evidence
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- Fence Lines
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- Fence Lines / Property Boundaries
- fence lines, drill sites, sediment ponds
- Fence lines, stock ponds, trials
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- fence posts
- fence width (area of disturbance)
- fenceline
- fenceline
- fencelines
- fencelines, plant community borders, field borders, 2-track roads
- fencepost
- Fences
- Fences
- Fences
- fences
- fences and roads
- fences posts unless you could do a dime on a driveway
- fences, signs and culverts
- Fiber optic cable boxes on road side
- Field Boundaries/crops grown
- fire hydrants
- foot trail, approx 3' wide
- foot trails
- foot trails
- forest clearings less than .1 acre
- forest road clearings - approx. 10-12 ft wide
- forest road tread 12 feet wide
- foundation stone
- Gates
- Gates
- General tree stand make up helps
- generally wet lands about 0.1 acre
- Gravel roads
- gravesite
- group of trees
- Group of trees, road corridor
- groupings of similar trees
- Groups of 10-20 trees
- Groups of 5-10 trees

- Hiking trails and ATV trails
- Historic cabin sites
- house
- house
- houses
- houses
- houses
- houses
- Hunting blind
- I could get my work done all in the field but it'd take more time
- I don't use them extensively at this time, the clearer the better.
- I need clearly defined roads through thick timber
- ideally 1 meter diameter
- ideally 1m squared pond
- Ideally, single trees
- Identification of single tree
- If we could see fence lines that would be fantastic
- I'll leave it at trails
- I'll use anything that I can get, but fence posts and lines should be adequate for about anything that I do.
- individual 10 ft diameter shrubs
- Individual conifer crowns
- individual conifer trees
- Individual crowns of mature trees
- Individual Dead trees
- individual forest trees (species, crown cover, size, etc.)
- individual shrubs
- Individual shrubs about .5 meters in size
- individual small trees or large shrubs
- individual tree
- individual tree
- individual tree
- Individual Tree
- Individual tree canopies
- individual tree canopies
- Individual tree canopies
- Individual tree canopy
- Individual Tree Canopy Diameter
- individual Tree canopy, Shrubs, etc
- Individual tree crowns
- individual tree crowns
- individual tree crowns
- individual tree crowns
- individual tree crowns; spring seep channels
- individual trees
- Individual Trees
- individual trees
- individual trees
- individual trees
- Individual trees
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- Individual trees
- individual trees
- individual trees
- Individual trees
- Individual trees
- INDIVIDUAL TREES
- individual trees
- individual trees
- individual trees
- individual trees - some of which are planted in plantations
- individual trees (1 ft to 1m resolution)
- individual trees and small trails/buildings are very helpful in doing my work
- Individual trees or bushes
- Individual trees would be helpful
- Individual trees would be nice!
- Individual trees/shrubs
- individual vegetative components
- individual trees
- intermittent streams
- intersections
- Intersections of roads
- invasives
- irrigation check structure
- It varies - but usually a single tree with canopy diameter of 15 feet.
- it would be nice to better delineate vegetation types
- It would be nice to see house sized rocks in the forest
- It would be nice to see patches of invasive grasses, but we're not there yet
- Land Survey Markers, USFS Boundary signs
- large boulders, similar to the size of small cars
- Large buildings are helpful, ie houses & outbuildings
- large bush
- Large bushes and streams
- Large downed trees in river channel
- large individual trees
- large individual trees or clumps of individual trees of similar species within a forest canopy
- large logs
- large power poles
- large shrub
- large shrub
- Large single trees
- large tree
- large tree
- Large tree or group of trees in an open area
- large tree, farm lanes, two-tracks
- large trees
- larger tree crowns
- license plate
- Lidar would be great
- livestock
- livestock
- livestock
- livestock - cow, a horse, a sheep
- Livestock water tanks, fence line contrasts and pipeline construction - current resolution of 1 meter seems adequate

- location of a road sign
- log, elk
- logging roads and streams
- logging systems/landings
- logs
- major vegetation - trees, shrubs
- Man Made Structures and Vegetation
- manhole covers, fire hydrants
- mature tree
- mature tree
- mature trees
- Medium to large trees (2-10 m diameter)
- microsites which would have sensitive plants.
- mine shaft or wells
- mining/excavation equipment
- More resolution the better. Single trees would be great.
- motor vehicle
- N/A, the higher the resolution the better
- Narrow streams (approx 6 feet wide)
- narrow motorized trails (48" wide), wetlands about 1/10 acre, irrigation ditches - 48" wide
- Need to be able to see manholes, fire hydrants, irrigation boxes. Well, maybe not clearly, but at least to be able to make them out kind of sort of.
- need to clearly see about a meter size object
- No lower limit...seeing smaller objects makes the work easier and the data better. If I can see flowerheads on the ground, it helps identify the plant species. If I can see individual leaves in a forest canopy, it helps identify those species. There is almost a linear relationship between image resolution and data quality in my work.
- Not sure which is "smaller", buildings or roads
- objects for orthorectification - individual trees, small buildings
- oil well jacks
- Old Guzzlers - when possible
- old road prisms
- old roads
- old woods roads and hiking trails
- on the ground:seedlings, flower parts. On an image:trees and (if not trees) shrubs or rock outcrops.
- one foot
- one foot wide channels with or without water
- One Foot, but One Meter is more realistic.
- One large tree at the finest resolution
- one meter
- one-lane dirt roads
- openings in tree canopy
- out buildings
- patches of invasive plants !100 square feet
- pavement highway marking stripe
- pickup truck sized vehicles
- picnic table
- picnic-table size objects
- Piled material and roads 10 x 10
- Plantation trees
- point (tree), line (narrow trail), area (small wetland)
- point for location of range improvement
- points on a ridge to locate potential raptor nest sites
- pond
- ponds
- ponds and water containers for wildlife (guzzlers)
- ponds or grassy prairies
- potential Indian mound
- power pole
- power pole
- Power Pole
- Prairie Dog Burrow
- probably fences
- Quad and motorcycle trails - I would like 1 foot resolution
- range improvements maybe 2 yards square
- rapids
- Rare Vegetation and Trees
- resolution to single trees has been very useful
- rills
- rills
- riparian shrubs species such as willow.
- riparian vegetation
- road
- road
- road
- road
- road
- Road
- road
- road / trail / stream
- road junction
- road width
- Road width
- road, small landslide
- Roads
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- single trees
- Single Trees
- Single Trees
- single trees
- single trees
- Single Trees
- Single trees and fence posts
- single trees would be helpful
- Single trees would be nice but stands of ~5 acres are adequate
- Single Trees, Large Rocks, Shorelines
- single trees, out buildings
- Single trees, power lines, significant erosion features
- Single trees. 6 inch pixels would work wonderfully.
- single-track trails
- single-track trails, fire-rings
- site boundary
- Size of basketball
- small (1/5 acre) openings
- small brush/trees
- small building or archaeological site
- Small Buildings
- small buildings
- small buildings <1000 sq. feet/ clear road and stream bank boundaries
- Small buildings, rock outcrops
- Small buildings/sheds
- small cabins & rock outcrops
- small canals/laterals
- small car
- small clumps of trees
- small drainages
- small forest stands (10-20 trees)
- small groups of trees
- small groups of trees 2 to 3 trees
- Small herbaceous plants
- small juniper trees 0.5 meter
- Small mining operations which can be less than 5 acres.
- small out buildings
- small ponds (<.5 acres, small groups of trees (1-5 indiv.)
- small ponds and wildlife openings would be great
- Small ponds, sinks
- small ponds, water troughs
- small riparian areas
- small rock outcrops
- small sheds
- small shrubs
- small spur roads, older roads
- small storage buildings and driveways
- small streams
- small structures, water tanks
- Small Trails
- Small tree with canopy of 3m in diameter
- small trees
- small trees
- small trees
- small trees about 5 ft tall.
- Small trees and large shrubs
- Small trees and other vegetation along streams
- small trees or fence posts
- small trees, snags, large shrubs
- Small trees/shrubs
- small wetland (~10X10')
- small, woods roads
- snags, downed logs
- snake
- Something the size of a car.
- spring developments/wildlife guzzlers if in open areas.
- spring sources/improvements, ditches
- springs and spring developments
- sprinkler or well heads and irrigation pipelines
- stands of trees, water features, camp sites
- stands of vegetation, streams
- stock tank
- stock tanks
- stock water tanks
- stock tank/windmill
- Stone Walls and fence lines
- Storage Building
- stream channel or road (so width would be limiting factor)
- stream channels
- stream channels and the associated riparian zone
- Stream channels, about 3 meters wide
- stream edges
- stream point bars
- stream width
- stream width
- stream/ditch
- streams
- streams
- streams
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- streams
- Streams
- Streams
- streams
- Streams and Roads and Vegetation
- structure
- structures
- structures 8-10 ft on a side; land cover to 1/4 ac
- sub meter is good
- surface expression of mine features
- The change in color contrast from one crop to another
- the crown of a tree

- the ends of culverts at road/stream crossings
- the more detail the better
- The more detail the better
- the size of a house
- The smaller the better
- The smaller the better
- the smaller the better, but usually 2 ft by 2 ft
- the smaller the better; we take what we can get
- This varies. 1 m resolution works for most things.
- trail
- Trail
- Trail corridors--as small as 3ft. or fence lines
- Trail Location, or Houses
- trail, .5 - 1 meter wide
- trails
- trails
- trails
- Trails
- trails
- trails
- trails (> 3' wide)
- trails 1 meter wide
- Trails and small outbuildings
- Trails, natural barriers, vegetation changes
- Trails, water tanks
- tree
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- Tree
- Tree - delineation of Cover Types
- tree canopies
- tree canopy
- tree canopy
- Tree Canopy
- tree clumps
- tree crown
- tree crowns
- Tree Crowns
- tree crowns
- Tree Crowns 1 meter plus in size
- tree crowns and small forest openings
- Tree groups - we haven't made use individual tree crowns or downed logs
- Tree level canopy
- tree or shrub
- tree seedling
- tree seedlings
- tree seedlings
- Tree seedlings and saplings
- Tree sizes/classes
- Tree Species Canopy Cover, Shape, Color
- tree stands
- tree tops
- tree with 10' crown
- tree, stream
- Tree, vehicle
- Tree/Bush
- tree/shrub
- tree/shrub

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- Trees

- trees - .5m res
- trees and shrubs
- Trees and vegetation
- Trees between 1 and 5 inches in diameter at breast height or at root collar for woodland types.
- trees individual
- Trees of merchantable size.
- trees or shrubs
- trees vs. openings
- Trees
- trees, forest canopy texture (i.e. are they big trees or small trees?)
- trees, roads, anything smaller would be icing on the cake
- Trees, snags
- trees/ shrubs
- trees/shrubs
- trees/shrubs
- trees/shrubs
- Trees/Small openings in forest stands
- trough or fence
- twig
- Two-track roads
- Two-track roads
- type of tree
- understory shrubs
- unique habitats, like wet marshes in the forest. 1/4/acre
- Up to a single tree clarity
- User-created trails or actual system trails
- Utility Poles
- Utility pole
- Utility Pole
- Utility Poles
- Utility Poles / signs
- utility poles would be nice but leaf off forest roads more important
- Variable, but previous NAIP imagery has been adequate for most needs.
- varies, but 1 meter imagery is the coarsest acceptable
- vegetation
- vegetation
- vegetation
- Vegetation changes for landslide terrain - springs
- vegetation type changes
- vegetation within small meadows and wet areas
- vegetation: shrubs, small trees
- vehicle
- vehicle
- vehicle
- Vehicle size
- Vehicle Sized object
- Vehicles
- vehicles
- vehicles
- virus
- Wall tents
- Water trough
- water trough
- water troughs, canals or pipelines
- Water Valves
- Well heads and irrigation diversions.
- Well pads or fence posts would be great
- wellbore/wellhead
- wetlands
- Width of a skid trail, average width is 12 ft
- wildlife ponds
- Willow vegetation
- wood in the channel
- Wood in the stream.
- woods roads and boat docks
- young (newly planted) trees

Appendix B – What other metadata/information do you need to know about your imagery product?

The following list contains raw responses from this survey question. Responses have been edited for spelling but not content.

- % cloud cover
- A scale would be nice.
- Absolute and relative accuracy
- accuracy
- accuracy level
- accuracy of placement; whether absolute or relative
- Accuracy, amount of moisture (flood, drought) if unusual.
- accuracy, if/how any image processing was done
- Accuracy/resolution
- Age, Site index, Species, Size class, Stand #, location #, Rx, Year of treatment
- All flight and camera parameters
- altitude it was collected from and any special circumstances that would change the interpretation
- altitude of collection, band wavelengths
- altitude, angle, coordinates
- altitude, centerline locations
- any corrections applied, are pixel values transformed in any way - would like 'true', uncorrected values (nearest neighbor as opposed to bi-linear or cubic convolution)
- approximate accuracy. I notice sudden displacement (tears) in the last imagery, some were 20-30 ft (obvious - on a road), but I wonder if it might be worse in other places
- Atmospheric conditions at time of acquisition solar illumination angle
- band information
- band wavelengths to compare with
- band wavelengths, horizontal control, aerial contractor,
- Basic band combination
- Basic stuff, who, what, where, when
- block files from making orthophotos and the raw imagery files for digital stereo viewing. Camera calibration coefficients are needed for this.
- Camera data
- camera equipment used, bands measured
- Camera type, horizontal accuracy, contract specifications with the contracted agency taking the photos and the processed used in ortho-rectification.
- camera, altitude
- changes in resolution
- cloud cover/clarity
- Collected resolution. Any re-sampling that has occurred.
- Collection sensor
- Company that acquired/flew original data/imagery
- coordinate system, projection system
- coordinate system, projection, datum, units, spheroid,
- current scale
- Data correction QA/QC methods/processes.
- Date data was queried and/or compiled must be made available to externals (ie. FOIA requests).
- datum and projection
- datum, projection, units
- elevation data
- elevation of flight
- Estimated Horizontal Accuracy
- Exact location information referencing the Ohio code or similar system. Camera specs, detailed specs for each digital band.
- FGDC metadata standards
- flight height, focal length, camera type
- Flight height.
- Flight line numbers
- flying altitude, speed of airplane, swath overlapping percentage
- flying height
- flying height scale pixel size
- Frame position
- Full description of the camera/sensor used to collect the image
- general altitude imagery was acquired
- georeferencing information
- Ground position control (GPS control points or older photography)
- ground resolution, accuracy, rectification source, scale of source photography
- ground sample distance, horizontal accuracy estimate
- GSD, projection, vendor
- height of acquisition,
- height, spectrum,
- Horizontal accuracy
- Horizontal and Vertical Accuracies. Also Datums, coordinate system.

- Horizontal accuracy
- Horizontal accuracy
- Horizontal accuracy Spectral band info
- Horizontal Accuracy assessment and error flight, elevation
- horizontal accuracy if it's an ortho product
- Horizontal accuracy.
- horizontal accuracy.
- horizontal positional accuracy
- horizontal positional accuracy
- How data was collected. Who collected the data.
- I need access to past images to show changes over time VERY important.
- If the imagery was collected digitally or scanned from film.
- Imagery platform
- It may be helpful to offer the camera calibration reports. I understand this is information that most users do not need. If it was option data that could be downloaded then I'd be more likely to create some stereo imagery.
- It would be helpful for someone to annotate any differences from prior flights. We do a lot of imagery comparison and it would be good to make sure that we are comparing "apples to apples".
- just date of acquisition
- Just the standard information, date, resolutions,
- known problem areas
- lat & long
- latitude and longitude or some other referential data would be good.
- lens and altitude
- LIDAR of my National Forest would be extremely helpful.
- margin of error for location wavelengths
- meter size
- Method produced by.
- Method used for collection. With what and how was the data collected. Resolution
- nadxx utm
- Name of service, date of acquisition
- Need SIMPLE language from FSA that describes the contents, purpose, and use limitation of each NAIP flight. See these CT ECO Data Guides as examples we prepared for the general public for the NAIP 2006, 2008, and 2010 imagery available for CT.
http://cteco.uconn.edu/guides/Ortho_2006_Color_NAIP.htm
http://cteco.uconn.edu/guides/Ortho_2008_4_Band_NAIP.htm
- http://cteco.uconn.edu/guides/Ortho_2010_4_Band_NAIP.htm
- Need to know what level DEM it was orthorectified over.
- Nominal Scale and altitude the image was taken at/from.
- Not much more, just fine right now
- Number of sensors, elevation flown, aircraft pitch and yaw
- off nadir angle during acquisition
- Only a little to explain it to users and customers
- Original Date and time taken, SCALE taken, orthorectification and mosaic process
- Partial or full imagery for state
- Percent cloud cover per tile
- photo points
- Photographer (company responsible for the flight and images) to support litigation discovery needs.
- Pixel size and resolution. Time of day (for shadows). Time of year (foliage).
- Point-of-contact info, Coordinate System, Date of Imagery
- Process and format documentation
- Processing methods. - Control & DEM used.
- Projection
- Projection and datum
- Projection data, source
- projection info
- projection, accuracy
- Projection, DRA on/off, Geometric Corrections applied, Radiometric corrections applied, camera calibration information
- projection, extent, scale
- projections, bands, accuracy
- Radiometric calibration procedures
- radiometric information for atmospheric correction
- radiometric settings of imaging sensor
- Reference DEM used for rectification. Tile number.
- resolution
- resolution
- resolution
- resolution
- Resolution
- resolution
- resolution
- Resolution
- resolution
- Resolution
- resolution
- Resolution
- Resolution

- Resolution - number of bands - horizontal accuracy
- resolution - spatial and spectral
- Resolution and accuracy
- Resolution and presumed accuracy
- resolution, horizontal accuracy
- resolution, horizontal accuracy
- Resolution, horizontal reference information, and as much info as possible about the density of flightlines (i.e., how far does each base image extend from nadir)
- Resolution, pixel size, corrections performed on imagery (orthorectification).
- resolution, projection
- resolution, projection, originator and point of contact
- Resolution, source, map datum, where to find it, who to contact with questions
- resolution, what post-processing steps were performed such as cloud work or edge cleanup, what method of orthotizing was done.
- resolution; 1m, 2m, 5m...
- Resolution; projection.
- Scale
- Scale
- scale
- Scale
- scale
- scale
- Scale
- scale
- Scale - 1:24,000
- Scale and orientation.
- Scale of course
- scale would be nice
- Scale,
- scale,
- Scale, contractor, imaging platform
- scale, date taken, index
- scale, height, resolution
- Scale, precision
- Scale, whether vertical or oblique photos
- Scale/resolution
- season
- Sensor
- Sensor information and processing steps, e.g. what DEM was used for ortho. Horizontal accuracy.
- Sensor type, GSD, production process, what software was used making the orthos, source of DEM for ortho production
- Sensor type, hw and sw, including versions, used to create the image.
- Sensor type.
- Sensor, focal length, altitude, speed of acquisition
- sensor, resolution, camera report, image center point, coordinate location.
- shapefile that shows seamlines for individual images used in mosaicking
- Some analysis requires information such as camera and lens information, flight plan, degrees from Nadir, etc.
- Source, steward
- spatial accuracy
- spatial accuracy, resolution
- Spatial and spectral resolution
- Spatial and spectral resolution
- Spatial and spectral resolutions, coordinate system, camera/sensor, acquisition extent, data originator.
- Spatial location of imagery dates
- spectral wavelengths of the bands
- standard FGDC metadata
- Sun angle, clouds, etc.
- sun zenith angle geographic reference, map projection, etc. image dimensions, nominal pixel size radiance to DN calibration coefficients (gains and biases if applicable)
- The contact information from the contractor for correcting the imagery within the 12 month grace period. typically I contact APFO and they contact the contractor.
- The day is not as important as time of day for shadow interpretation
- The GIS shop should let you know this.
- The more information, the better. Generally there isn't much, but it would be nice to have that change.
- The Projection information
- The scale.
- the standard for all data files that is used in projections and relational GIS data
- the usual projection data, etc
- time is also important on occasion
- time of day
- Time of day.
- Time of year the NAIP photography was taken.
- To within X meter(s)
- Type of sensor
- Varies
- want to see conifer, rocks, hydrology, roads, forest and forest openings
- We find the camera report useful.
- weather conditions at time of photo
- What altitude was it taken from?
- Where it came from, who collected the data, and what classification of the imagery is

- Who produced it and what for. Quality of data and how data was produced. what projection the data was taken in.
- who, what , when & how it was taken

- Would like to have the NAIP imagery available in 100K quad format for Oregon and Washington.
- Year and time acquired

Appendix C – Please explain the impacts of not having quality current, accurate imagery to work with, in the completion of your work

The following list contains raw responses from this survey question. Responses have been edited for spelling but not content.

- *CLU boundaries would not be accurate for conservation planning. *contracting issues could arise establishing benchmarks. *disaster recovery could be problematic if current imagery doesn't identify extent of disaster. -- could make a long list here...
- 10 steps backward, we would no longer have a key component to working in a digital environment with accurate and complete natural resource data at our finger tips.
- A lack of imagery for use as a guide to our planning activities would greatly reduce our accuracy, and greatly increase our work loads.
- A lack of imagery means a reduced ability to determine changes in the health of range and pasture lands, as well as a reduced ability to find navigable roads to get to specific sites.
- A large increase in the amount of time spent in the field to verify prescriptions for various silvicultural treatments prior to contract preparation would be vital; usually during months that the field work is not feasible due to weather restrictions.
- A lot of wasted time running around on the ground to obtain information.
- A map is a snapshot in time and the surface of the earth changes every minute. So the latest and greatest imagery is very important to keep everything up to date....
- Access to high-quality NAIP imagery makes my work much more efficient - it saves me a lot of time in the field and it means that I don't have to purchase imagery from outside sources. Including an IR band would be fantastic!
- Access to the imagery increases my productivity and makes communication in my reports more clear and accurate. Without current imagery I cannot use the data to visually communicate the layout of the project areas accurately.
- Accurate and current imagery increases productivity by providing some visual ground-truthing for numerous projects, without actually leaving the office.
- Addressing and Emergency Response/Dispatch would be severely hampered. We depend on NAIP every day in our normal work processes.
- Adds to the already heavy workload; requires more field work than a person has time for. Can delay getting work completed.
- Aerial imagery is important in all aspects of public lands management and can save a lot of time in answering spatial questions. Without aerial imagery a field person often needs to visit a site on the ground to make determinations for planning and land use decisions which costs man hours and fuel. Clear imagery in association with map production is of utmost importance. Without the ability to communicate with the public via printed aerial photography, our credibility can come into question regarding some issues. Other layers are not viewed as being as trustworthy by the general public, but they do not argue with good aerial imagery.
- Aerial photos allow us to determine stand density, where pines stands vs. hardwood stands are located, SPB spots, water bodies, roads, etc. It would be great if there were a way to determine species -- but that is probably for the future to figure out.
- Alaska is years behind the lower 48 for sufficient imagery. Alaska needs NAIP for research and management decisions.
- Almost impossible to prepare quality silvicultural prescriptions without current, accurate imagery
- Analyses of fuel beds, trees so on for fuel reduction projects or fire spread analyses would be greatly affected. We use NAIP for fire maps to show slop, fuels, other hazards or threatened resource.
- Analysis of effects and project planning would take longer and be less accurate and credible. Already our current highest-resolution imagery is seriously out of date for work around rivers, for example.
- Analysis of management activities may not be as accurate as possible
- Annual updates to data will not be done.
- As a GIS Specialist (GISS) on a Type 2 Incident Management Team, I use Mosaic County Imagery very frequently. I often do not have adequate internet connectivity to use other image sources, while on incident and must rely on stand-alone County by County NAIP to relay critical feature information to our Operations Personnel. We use the NAIP for everything from General Location info to structure location verification or road and trail location. This imagery, as a stand-alone product is very important to GIS personnel throughout the country.
- As a land management agency, having the ability to visualize the current landscape conditions enables us to more efficiently run our business operations. If we do not have this data, we are less knowledgeable about activities occurring adjacent to or on our land holdings and what effect these may have on us.
- As archaeologists, we compare recent images with older images to determine changes in structures, roads, and landforms over time.

- As described in 26 we would be acquiring the imagery elsewhere using agency and project funds.
- As imagery becomes outdated so does my ability to maintain up-to-date data layers which will affect the high quality of my maps.
- As we become more centralized, the imagery is often the closest users are able to get to the ground. This is not ideal but it is the reality. Field work is more focused and efficient because of our ability to do pre-planning with imagery. Data correction (improvement) within GIS can often be accomplished without the need for GPS level accuracy. Without current imagery, these tasks would be much less efficient or impossible.
- Assessing the effects of our activities would be more time intensive and more difficult to explain to the public.
- at this point, we would rely on satellite imagery, older versions of NAIP or older USGS or FS DOQs.
- Availability of imagery greatly increases efficiency. Without imagery, my work would cost substantially more both in time and personnel costs
- Bad input = bad output. The worse the photos are, the worse our products are whether that be maps or EA type analysis.
- BLM has very large land holdings with low availability of funding. Most of the area would not be covered by others. The lack of imagery would impact study of transportation and utility, wildlife, water quality and riparian, forestry, and wilderness issues.
- Cannot detect insect/disease problems, mapping of timber types and vegetation type map updating. Harvest unit and landscape analysis. Lack of these would lower quality outcomes and increase cost of NEPA preparation.
- Cannot effectively meet business requirements for land management, inventory, and planning.
- can't complete accurate work
- causes difficulty in creating accurate stand delineations and difficult to separate areas by vegetation type
- Class II modeling much more difficult
- Could not complete necessary forest monitoring or forestry project planning.
- Could potentially not be able to provide the public with the same level of quality output and it may take longer to produce results.
- couldn't do it
- Critical to our photo interpreting efforts and vital for our field crews for navigation.
- Current accurate imagery aids with field work greatly.
- Current accurate imagery enables project planning, focuses fieldwork and allows more sophisticated image analysis.
- Current and accurate imagery helps us to be better land management stewards. The currentness of high resolution statewide Alaska imagery is lacking, which makes it difficult to be an effective land manager and steward of natural resources. Without current information about the land we manage, we cannot know the current status of the land, so our management decisions are subject to become ill-informed decisions.
- Current and accurate imagery is a very valuable tool, and the quality and reliability of our work would suffer. I believe it would make us less efficient overall.
- Current and accurate imagery is critical in assessment work for landscape scale planning in maintaining credibility with public in environmental analysis processes.
- current and accurate imagery is key to making good land management decisions and critical for planning tool
- current high quality NAIP imagery is a vital part of the Okanogan and Wenatchee National Forest Restoration Strategy. Without this we will have to find other ways to go about our business.
- Current imagery allows us to delineate stands for silvicultural treatment. When working in mixed species stands and gradual transitions between different forest types NAIP imagery is the fastest and most useful imagery available. Not having it would require more field time in stand delineation and possibly more time and funds spent acquiring other imagery.
- Current imagery helps me get an understanding of site conditions before I complete a field review. Also, improves modeling and helps develops trends in forest stand changes.
- Current imagery is critical for a mix of reasons ranging from emergency management (e.g., fighting fires, etc) to forest management...we rely on quality imagery as a daily data source. Yes, Google Earth is very useful for display purposes, but current imagery added to ESRI GIS products equals a robust toolset that allows us to do more sophisticated analyses that is not available with Google Earth or ArcGIS Desktop Explorer.
- Current imagery is vital for employee and resource safety, forest health assessments, and general situational awareness.
- Current, accurate imagery is key to providing technical and farm bill assistance to all our customers.
- currently short on field staff - good imagery allows me to plan and use a process of elimination to direct field staff to areas of concern instead of all areas.
- Daily work would not be possible.
- Decisions would not be based on accurate information
- Decrease in confidence when attempting to calibrate some fire modeling programs being employed in remote areas. Increased costs and time to ground verify, if at all possible.
- Development and implementation of land use plans and communication with the public, developers, etc., is significantly impacted when current, accurate imagery are unavailable

- development and maintenance of spatial data would be much more inefficient and costly.
- difficult to display current conditions on the landscape and do detailed alternative development for display purposes.
- Difficult to explain basic resource management needs to officers and clients.
- difficult to impossible
- Does not reflect changes that have recently occurred on the ground.
- Emergency Response, situational awareness, data maintenance, road and address QC, user confidence in base map information at all levels of government suffer. Users look elsewhere, even if the imagery they consume is not as accurate or is of an unknown pedigree they will take the more current imagery as gospel.
- Encroachments on Nation Forest System Lands occurs all the time, so up-to-date imagery will help us locate these encroachments sooner.
- Errors in planning project polygons due to changed forest conditions including timber harvest, fire, and insect mortality.
- Especially for ARPA cases, we rely on the NAIP imagery to a huge extent in establishing date of disturbance (and therefore narrowing down responsible party for disturbance)
- Essential to my work, no work without it. Imagery is the key to solving many environmental challenges now and in the future. So much of what we do depends on analyzing the conditions on the ground over very large areas in a temporal manner.
- Every GIS user in our agency relies most heavily on natural color NAIP imagery, 1m resolution. The work simply cannot be completed without some form of imagery of at least that quality; 1/2 meter resolution would be better for all of us, but would slow our work too, due to larger file sizes. CPU and graphics card RAM are going to increase with Windows 7, and maybe that will be less of a problem in the future.
- Existing condition on the imagery may not represent accurate ground conditions.
- Extended field work became of reduced ability to do pre-work.
- Extremely critical in mapping and monitoring geologic features (such as landslides) and scoured stream channels and in monitoring vegetative recovery of landslides and scoured channels.
- Failure of our mission
- Farmers in our area make changes to their fields on a yearly basis.
- Faulty or out-of-date assessments resultant from the lack of current and accurate imagery.
- field time is increased confidence that I understand my interpretation of the resource is reduced
- Field use changes and forest damage needs to be updated fairly often to keep accurate records without having to field check sites as often or as thoroughly. We don't have personnel to conduct thorough field checks, so work done will be more inaccurate, which hurts our agency credibility when work is discovered by outside sources to be flawed. Acreage determination is very important; if imagery data is off, then those discrepancies can cost contractors or agency resources extra money.
- field verification of treatments would be costly, therefore I will need to acquire the data elsewhere. Trespass identification through change detection would not be in the tool set anymore and could lead to increased illegal activities on the forest.
- Field work is sometimes not performed or done at greater cost when imagery is not available
- Field work would be more expensive to the Forest Service. Since our spatial roads need to be within 40' of the actual location NAIP is perfect for aligning the roads within this distance and saves money because I can see the roads and digitize from NAIP within the required 40' distance most of the time, barring shadows or had to see roads.
- First step to field work is to acquire and map existing conditions. Go back to aerial photography.
- For eastern Oregon, where there are vast public lands, NAIP is invaluable. Without it, we are unable to monitor riparian vegetation, weed infestations, juniper encroachment and land management techniques; detect OHV invasions without extensive field investigation, determine fire recovery success, and other tasks too numerous to mention.
- For the past 5 years, NAIP has provided us with a 3rd unique source of imagery (leaf on, true color) that has become critical in Forestry work alongside our other sources (CIR, and leaf off). Not having this source of imagery would hinder foresters who use the NAIP imagery daily to review changing conditions of land throughout the seasons and develop plans using that information. NAIP is also often use to identify ground truthing priorities, verify other GIS datasets, and accompany mapping projects.
- For violations of wetlands ,it is very important to have high quality imagery, to be fair to landowners and justify violations if they exist.
- Fremont County would be unable to perform with any accuracy many important governmental operations.
- Funky old images make it more difficult to navigate to field points. They also look bad when you make a map for public presentations.
- Garbage in = Garbage out
- Generally low impacts for 3-5 years, high impacts if there is a major disturbance event, we will incur the cost of imagery for those areas. More field work in areas with management or disturbance.
- GIS data will be updated and corrected less frequently
- GIS layers such as existing vegetation would not be accurately updated.
- Go back to the stone age. But, then again, maybe that's where we're headed if we aren't funded.
- good and varied imagery is extremely important to do pre-field work and set context and priority

- for analysis, implementation, and monitoring at multiple scales and resolution. I don't know how we can do any credible land management without good and varied imagery. Not possible.
- Good imagery saves me an incredible amount of time, and time is taxpayer's money.
 - Greater reliance on inferences and field verification rather than sound imagery depicting current ground conditions
 - Greatly increase field and office time.
 - greatly increases field time needed to verify current conditions
 - hard to answer because some imagery will always be available even if it is out-of-date. But if available imagery is more than 5 years old, then it can be a limitation or impediment to some of my work.
 - Hard to assess whether land is being farmed or in trees without current imagery. Cannot see areas recently harvested and planted.
 - Hard to draw the park boundaries and private tracts without good imagery
 - harder to navigate in the field, harder to interpret the imagery when it does not match what is on the ground
 - Have become reliant on imagery as essential part of GIS work. To not have the imagery would be like stepping back nearly 20 years. We could not keep up with demands.
 - Have to make do with the best available.
 - Have to produce work with less accuracy.
 - Have to spend more time on the ground, figuring out what is there and not there. Which can be costly if a helicopter is needed to get there .
 - Having access is not the issue, the ability to carry the product to the field is a hindrance.
 - Having accurate imagery allows me to assess the impacts that project implementation may have had on an archaeological site, before going into the field -- particularly with projects that might affect the view shed at a particular site. Being able to compare historic aerial imagery to current images allows me to assess if there are substantive changes on the ground, and identify patterns of disturbance easier. also, with more accurate identification of vegetation types and soils from aerial images, we are better able to predict the potential for cultural materials (because some vegetation types are present in disturbed area and indicative of archaeological sites). better imagery allows me to be more accurate and efficient in my daily business.
 - Having accurate imagery reduces the time needed to spend in the field. The imagery allows me to target the areas most likely to yield suitable habitat and greatly reduces the time spent surveying areas that are not suitable rare plant habitat. Accurate imagery from years past also allows me to see how the landscape has changed over the years and helps in predicting impacts to known populations.
 - Having current images (and the historic images) allows us to document the change on the land over time. Without this capability it would be hard to resolve issues about when an action happened.
 - Having current NAIP drastically reduces the amount of field work required for NEPA analysis, and it also lets us prioritize our field work making us much more efficient.
 - having current, historic and quality imagery saves me lots of time. I can do more from the office, which is quicker and cheaper.
 - Having high quality current imagery is very important to the quality of my work.
 - Having high quality, current and accurate imagery is essential for me in tracking vegetation management areas. I need to be able to see disturbances so that I can verify GIS features that are submitted to me for accomplishment reporting.
 - Having high quality, current, accurate imagery is vital to our mission at The Colorado Division of Water Resources.
 - Having NAIP imagery available takes out much of the guesswork. It is used daily by multiple folks in my office for a variety of reasons. Confirmation of what is on the ground, heads up digitizing, change detection, and backgrounds are a few uses.
 - Having quality current and accurate imagery greatly increases the quality of my work, reduces field time (which is now being restricted in my agency), and improves the appearance of my deliverables.
 - Having quality current, accurate imagery is very important with the completion of my work. I use NAIP photography on a daily basis and would be lost without it.
 - Having quality imagery available is critical to the work I perform, including preparing maps for seasonal employees. Poor quality imagery affects the way surveys are done, requires more ground time, and decreases the efficiency of ground surveys.
 - Having quality imagery via NAIP or Satellite will not allow cost effective, time lapsed, dam surveys to assess the performance and progression of vegetation and damage to low and significant hazard dams.
 - Having quality information that is accurate makes creating maps for projects better and helps us to know how the land is changing.
 - having the products assist in project work, and mapping for display.
 - High quality imagery allows us to monitor forest health, design effective treatment areas and implement the project. Without imagery our time would be at least tripled to design and implement projects. The higher the quality the better the information and the better the project. The impacts are more time to do less that is of the high standard the FS is known for.
 - High quality, current imagery provides critical reference information for modeling and mapping forest attributes using satellite imagery. We cannot execute our research agenda without

quality reference data, and aerial photography is by far the most economical data available. Without FSA imagery, costs will increase, and we will need to reduce the scope of our research accordingly.

- High quality, current, and accurate imagery is of the utmost importance to our work in Forest Service Research. These are the most versatile data and save us thousands of dollars in pre-field work every year. If these data were not available, it would become cost prohibitive to continue multiple lines of research.
- Higher cost, greater uncertainty in products
- Higher labor costs: more field time required to gather data that could have been gotten from high-quality imagery. We would be unable to do remote sensing processing if the data was low quality and not current.
- Higher rate of error for wildlife models - habitat identification. May increase field time if not accurate.
- Higher uncertainty in interpretation of satellite imagery
- High-quality, current imagery is THE fundamental data source for inventory, conservation, and environmental modeling and analysis. The impacts of losing consistent access to current imagery are hard to fathom. NAIP continues to be absolutely necessary: It offers current and historic, high-resolution, accurate imagery with metadata and is available on local servers, all of which are industry imperatives. Google and Bing and most web services offer no viable substitute!
- I am a field going person. Having an aerial photo in my hand greatly improves my ability to navigate; both while driving and while hiking.
- I build Image Services for the USDA Nationwide, and Publish the most current NAIP as it passes QAQC from APFO. It is very important to my position to have quality assessed and corrected imagery prior to building the services to reduce time spent correcting image mosaics.
- I couldn't provide current resource management information over larger scales than field work allows
- I create maps for fieldwork - thinning, surveys, etc. Having current and precise imagery is very important for the accuracy of data collection and the efficiency of our crews.
- I do not often have to use aerial imagery for my day to day duties of my job, but there are times when it is needed or is helpful in carrying out my duties, so is good to have a source for it when needed.
- I do the GIS road and trail layer for Eng. I use imagery every day in my job for routing road and trails. I would not be able to do my job very well without the imagery. I could pick up the data with a GPS but it would take days longer to do a job I can complete in a few minutes with the imagery. Accuracy is also very important as the work I do must meet national mapping standards.
- I either would not be able to assess on-the-ground conditions to complete necessary to complete environmental analysis
- I have not worked on a project in the last 2 years that didn't require and was enhanced by the use of NAIP photography.
- I have used NAIP 1 meter data extensively in the past couple years. It has greatly improved the efficiency of our work and the quality. Field work is greatly facilitated. I can even answer many questions I have without going to the field with the use of NAIP.
- I may not be aware of changes in forest conditions such as insect and disease outbreaks.
- I rely highly on the use of the imagery, almost day to day use at times. Don't know how I would get my job done without it.
- I survey for potential trespass issues as I update wilderness and road (GTLF) networks. BLM GTLF's can move around and reroute.
- I use aerial imagery all the time, in searching for water rights and water conveyance structures, any sign of water use, irrigation, ditches, canals etc.
- I use FSA imagery daily in my work. Mostly imagery from the last 5 years on a daily basis. I use it for analysis, as well as background imagery and digitizing. I also use older imagery to do temporal analysis for multiple forests. Without this data, I would be extremely hampered in my day to day activities. In most cases, I would either not be able to perform my work at all, or I would have to work with inferior resolution data. This data would be extremely hard for my customers to use and would make my analysis much less effective. It would be a major hindrance not to have this imagery.
- I use GIS almost every day to plan, implement and monitor projects in open lands and forest management. Not having good quality current and accurate data impacts project implementation and accomplishments. Budgets are declining and fewer people are expected to do more work. If we have to rely on older data and also try to attain the most recent imagery through other means then this takes time and money away from work that needs to get done.
- I use GIS imagery almost daily. It is very important to my every day job and would not be able to perform as good if I didn't have it. I would have to use Old areal photo's which are now 10 years old on our district and would not be as effective
- I use imagery all the time in conducting my work with project planning and implementation. It's not a tool, but a requirement.
- I use imagery almost on at least a weekly basis and it is essential to the completion of my work.
- I use imagery for every project, it is a requirement that an aerial photo be included in the project documentation.
- I use imagery to identify areas of concern prior to visiting in the field. Without accurate imagery, I

- would ultimately have to spend more time on the ground identifying such concerns.
- I use NAIP to orthorectify. It would make my job very difficult.
 - I use the imagery for planning my field work to be efficient, Analyzing projects, Identifying habitats, sharing information with partners.
 - I use the imagery to update spatial layers, identify vegetation, structures, past fires, and boundaries. I use the information for project analysis. Not having current imagery would impact my work greatly.
 - I use the images working in remote areas that are regularly affected by fire
 - I use the NAIP imagery daily. I have databases with vegetation delineations on them that would require extensive re-delineation if accuracy varied from what is currently available.
 - I work for large, remote National Parks in Alaska. Imagery is my only source of info besides infrequent and very limited site visits.
 - I work in inventory and as a photo interpreter. The standards for plot placement for inventory are very tight and in photo interpretation the more you can identify (in stereo), the more you can analyze remotely. Photos are still the best tool for delineating stand variance to keep statistical variance at a minimum. Computer based programs like e-cognition are in my opinion worthless for it is based in 30 meter pixelated data averaged reflectance and it combines or bridges stands into highly variable polygons. While computer programs are constantly being improved, stereo imagery is still our “tool of choice” for many project preparations.
 - I work in the river corridor. Channel migration for creeks and rivers over time is critical information to me. I have a number of habitat improvement projects ongoing, planned and completed. Imagery is critical in documenting effectiveness.
 - I work in young stand management, so current imagery is very important because of the speed with which our landscape changes. This includes not only vegetation, but dynamic events like landslides, decommissioned roads, or fire scars. The more current our imagery, the better informed some of our early season decisions are.
 - I work on a forest that does a lot of vegetation treatment. Having current imagery is important to complete environmental analysis of effects for NEPA and to plan future wildlife improvement projects. Not having quality current imagery would require 80% more field work, increase turn-around time for analysis, and increase uncertainty of effects determinations. This could also affect quality of data, especially if imagery was used to assess vegetation structure and community types which would likely affect modeling of wildlife habitat and suitability of that habitat.
 - I work with a lot of oil and gas infrastructure including well pads, pipelines, and other related facilities. Since our oil fields are rapidly becoming more developed, current imagery is nice to have.
 - I work with forests. Forests are dynamic and change. I need to find what is happening on the forest from aerial photography or good satellite imagery since I do not get to walk every acre every year. I need to find stand conditions, changes and location to get the work done. The older the data the more I get things wrong. Especially now with a good number of faster working mortality agents in the forest and a heavy change due to human impacts and fires.
 - I work with mining and it is great to have current imagery to compare with other years and how things change
 - I would be unable to perform my job.
 - I would be unable to produce maps for active fires that accurately represent vegetation types and mortality
 - I would be unable to satisfy mapping requirements as defined by State regulations. My safety in the field would be compromised
 - I would cost us a lot of more money to go out and buy imagery of our own
 - I would no longer to be able to provide my clients accurate and timely products thus affecting the meeting of agency goals and requirements.
 - I would not be able to accurately estimate encroachment of fields by trees without physically driving to and inspecting each individual field.
 - I would not be able to complete accurate forestland inventories in the absence of high quality imagery.
 - I would not be able to keep an accurate inventory of the transportation system.
 - I would not be able to perform my job at the level of accuracy I am required.
 - I would not be able to perform visual simulations with the same degree of accuracy for our clients. It would be more time consuming to find another source for the imagery to use in developing scenery management system inventories for various Forests.
 - I would not be able to produce a high quality product for Plans of Operations and inspection reports, etc.
 - I would not be able to provide model products based on current conditions. This is particularly important due to the fact that fires result in constantly changing forest structure and vegetative cover. Unless imagery is available reflecting the effects of each year's fire season, model results will be false.
 - I would use aerial photos instead, which works better anyway.
 - I wouldn't have a job. Our clients would go to some entity that would have quality, current, accurate imagery.
 - I'd have to resort back to older naip, with the 2009 flight being considerably better than 2005.
 - If we don't have current, quality, accurate imagery, my job would be more enjoyable, but it'd

- take longer to do many of the tasks my job requires and likely cost more money. In addition, having up to date (annually to bi annually based on previous fire season) images helps us manage our land base with wild land fire as our district is over one million acres.
- If we had poor imagery, we would spend much more time in the field looking at areas we don't need to (because they are not suitable for timber management).
 - If working in an unfamiliar area or virtually the image layers help verify roads, units or possible units and other improvements in the area.
 - Imagery data is one of the major data sets I use daily and to not have current imagery would shut down half of the mapping projects I do. It would mean spending a lot of time trying to find imagery or attempting to partner to acquire imagery
 - Imagery has a part in all the work we do. Much of our work has to do with T&E, and Sensitive species and where projects or management decisions may have an impact on those species habitats. Current, high resolution, accurate imagery, in my opinion, is critical to developing those base layers like T&E habitats, which help in the management of the species and avoid costly lawsuits later. As field staff shrinks due to lower budgets, we also become more reliant on imagery to help us gain a precursor understanding of the situation in the field. Better imagery also helps give us better credibility with the public by being able to show them what we see and where an issue may be in relation to their homes or other area of reference. There are simply too many things we use imagery for to try and explain them here. But I will say it's a critical piece of our work.
 - Imagery is a critical tool for modern land management. I use it every day for my job with the USDA Forest Service. If I did not have imagery, I would have to take many more field trips to confirm conditions on the ground. While imagery does not replace field verification, it helps clarify locations and also helps me to focus my field work to areas of greatest concern. The cost of doing my work would most definitely increase and/or less work would get done and/or would take longer.
 - Imagery is a necessity. Not having imagery is not acceptable.
 - Imagery is central to what we do. It is so important we have assembled the only collection of all geotiffs for all government funded statewide, regional, and coastal orthophotography in CT since 1990, compressed and delivered them to department staff, sister agencies and the general public. Partnering with other state agencies and libraries, we have also scanned and created photo index for statewide 5 year aerial surveys (of stereo pair photos) started in the 1950's. Through these actions today, we are in the process of assembling the collection of tomorrow's historic photography.
- Imagery is critical to pre- and post-field surveys, planning, and analyses. The absence of imagery would significantly impact resource analyses and workload/budget efficiencies.
 - imagery is critically important to support the various contracts we have with various federal agencies
 - Imagery is important to do effective monitoring (almost 1/3 of our monitoring questions rely on remotely sensed data) and do Adaptive Management.
 - Imagery is incredibly important to completing my planning work. I could not perform my job acceptably without current and accurate imagery.
 - Imagery is used as part of our forest health surveys and evaluations. When current, accurate imagery is not available, we resort to using less detailed satellite information and other sources, which do not provide the same level of information.
 - Imagery is useful to preserve a record of ground disturbances and reclamation of polluting mine sites in support of litigation. Imagery is an important to help validate reported land disturbance and acreage.
 - Imagery is very important because it decreases the need for a large work force to do field surveys. It is helpful for all resources to estimate forest stand type and give general overview of stand condition! We use imagery daily to help us to orient ourselves on the ground for timber stand layout.
 - Imagery is very important for project planning, layout, and monitoring.
 - Imagery is very important for travel management, need it for this and other uses.
 - Imagery is vital to complete our work. We do not have staff to do the ground work. I would be forced to find the funding from other budgets to acquire imagery
 - Imagery less than 10 years old greatly saves time. Not having imagery would increase planning time five-fold.
 - Imagery provides important tool to document changes in vegetation over time.
 - Imagery provides quantifiable data at my desktop, the requirement to replace of this data utilizing field visits would be incalculable.
 - Images are essential for evaluating disturbance to cultural resources and for background / planning in advance of archaeological field work. Not having imagery would hinder my ability to complete my work and increase costs.
 - Imagine walking into the forest with blinders on.
 - Impact is not having the most recent, accurate filed information to base scientific decisions upon. Would affect credibility of the agency I believe.
 - Impact would be HUGE - we DEPEND on it. NAIP is an ESSENTIAL component of our day-to-day operations.
 - Impacts many, if not most, aspects of my program because I rely heavily upon remotely-sensed

- imagery. Imagery saves time with planning, executing, and publishing a project.
- Impacts our ability to assess facilities and impacts to resources.
 - impair quality of project work and decrease work efficiency
 - Improved accuracy is always best but not critical at the moment.
 - In a time of "doing more with less" it is critical that we work as efficiently as possible. Quality aerial photography and elevation data is an extremely valuable tool that can be used to improve speed and accuracy of work. More time and resources will be used to complete the work without the imagery.
 - In my job, it would make for inaccurate acreage reports.
 - In my rural area, there isn't a lot of urban buildup from year to year, but having current vegetation data is critical to our annual workload in Range, Biological and Wildfire issues.
 - in order to accurately map invasive weed species and maintain accurate inventories, it would be very difficult or nearly impossible to do what I need to without accurate imagery
 - Inability to collaborate with public. Adding visual background to GIS essential for building trust. Current imagery essential as validation of critical assumptions.
 - Inability to determine whether archaeological sites may be located in an area
 - Inability to monitor changes in vegetation, and building construction on private land that negatively impacts rivers
 - Inability to optimize collaborations with other partners, contractors etc...Reduces ability to conduct landscape level analyses and accurately depict more subtle vegetation changes which may be important for wildlife species of interest.
 - Inability to represent present condition of the lands, inability to answer questions about what is there, inability to do change detection on a fine scale.
 - Inaccuracy of boundaries and objects on the land, Out-of-date imagery does not show what the land looks up to this day, Blurriness when you zoom into the imagery at a certain scale
 - inaccurate analysis and decision making
 - Inaccurate data for ESA consultation with the FWS; inaccurate data for project analysis/corporate GIS layers
 - inaccurate data, more time, more funding
 - inaccurate products, maps, data, etc.
 - Incorrect horizontal accuracies cause incorrect database boundaries
 - Increase in field time, and data processing. Increased surveys of areas which could be eliminated from survey through photo interpretations. Decreased ability to collaborate/communicate effectively with other agencies, organizations, and individuals.
 - Increase of field time.
 - increase our field work requiring increased personnel which is not going to happen.
 - Increase the difficulty of field work. Would also increase the need for field surveys to determine re-vegetation after fire
 - Increase time in field to ID stand boundary, roads and trail locations, insect and disease location, and Forest Service boundary.
 - Increased cost of field checking.
 - increased cost of field work
 - Increased cost of photo acquisition
 - Increased cost to local tax payers in additional field time and increased office time to process data.
 - Increased costs to adjust for inaccuracies, loss of credibility with partners, cooperators and the public.
 - increased expense
 - increased field time would be required limiting the number of projects to be attacked at any one time
 - Increased field time and decreased geodata accuracy in corporate mapping.
 - Increased office and field time in identifying, mapping and quantifying habitat, finding key unique habitats. Not have the ability to have high quality image to tell the story accurately.
 - Increased time and money field checking/verifying.
 - Increased time spent searching for proper habitat in the field. Potential safety issues like getting lost more easily.
 - Increased time to conduct field and office work
 - Increased time/cost in trying to find image sources, since we don't have the funding to do extensive field work. Limited funding to purchase other imagery as well.
 - Increased travel/field time to evaluate conditions
 - Increases expense b/c we cannot do good pre-survey stratification, cannot develop good habitat models, etc.
 - increases field time with serious reduction in products - data collected on vegetation to administer grazing permits and be compliant with federal regulations.
 - Inefficient use of field crews, resulting in wasted resources. Inaccurate contracts that could lead to legal action against the Agency. Possible impact on threatened/endangered species
 - information becomes dated - less useful
 - Inventory of Trees is increasing importance, imagery can help reduce the need for field collection.
 - Is used for forest stand location & feature location.
 - It allows me to update features in current feature classes and to create shapefiles from things drawn on aerial photos.
 - It could be huge. A lot of resource specialist use it for everything from display purposes to some analysis work. Without it those wouldn't be done.

- It has become an absolutely necessary part of my mapping for the Forest Service. Every project is shown with NAIP in addition to any other type of background that is needed. Currency of data, within reason, is important to show recent road building or timber sales and other such important landscape altering projects that we spend all our time dealing with.
 - It has helped tremendously with accurate location of buildings, roads, and defining commission boundaries due to the boundaries crossing population blocks. It is nice to have accurate information when you are a small very poor county.
 - It has huge impacts on NRCS as an agency. NRCS relies heavily on current, quality imagery to do their work and to assist customers.
 - It helps to know where the pine plantations are and the mature timber is. I need to know where the pine and hardwood stands are or where the mixed stands are. It helps me plan my field work to take measurements and if I need more or less data plots in a stand. It helps to know where the steep rocky ground is or where the roads and ponds are.
 - It helps us to develop up to date forest inventories
 - it impact analysis. It depends a lot on what sort of local knowledge is available to provide feedback to old imagery.
 - It improves my field work and lessens the amount of time required to complete it.
 - It is a required tool now.
 - It is critical to determining forest stand boundaries, landmarks, wetlands, and other items of concern when planning for timber sale treatments
 - It is essential on the districts. In times of emergency (hurricanes, fire, shuttle recovery) it was the source I went to in order to prepare maps for personnel not acquainted with the area. Day to day workers used the information to establish stands more efficiently.
 - It is hard to imagine the additional field work that would be needed to replace the images. Twice? And the field work would not be as focused.
 - It is imperative for conservation planning, GIS analysis, something we can't do without, for our work!
 - It is important to efficiently plan, conduct, and accurately report my field work. It is important for comparing landscape changes over time. If it became unavailable, the quality and quantity of my work would reflect the loss and it would be frustrating.
 - It is important to have accurate imagery to identify areas for planning projects and during project implementation.
 - It is important to have new imagery in heavy fire years.
 - It is impossible to complete required compliance, d and acreage reporting duties without imagery now that all is computerized. Disaster and insurance programs also require current imagery.
- The last hard copy photos we have are from the mid 90s. the last slides from 2002.
- It is mainly for appraisal work in our office but our mapping department also use it for splits, etc. Sometimes the legals that come in are difficult to follow along "canyon rims, etc" so the higher the quality the better. As for the appraisers the better the product the easier it is to determine buildings, etc. in office for appraisal purposes.
 - it is ok, but rather have good data for NEPA documents.
 - It is the basis of much of our analysis and supports decision-making. We could not fulfill our mission without it.
 - It is very important that we have imagery that is accurate and reasonably up to date (within a year or two) in order to more effectively perform our work.
 - It is very important to have quality up to date NAIP imagery for my job. I use NAIP almost every day in my planning of projects on the forest. Having updated images every year has been critical in tracking our mountain pine beetle outbreak on the forest
 - It makes it harder for my employees and I to do field surveys. Relying on old aerial photos that may be lost makes it harder to focus on good habitat for rare plants,
 - It makes it Harder to Map Electric and Gas Facilities without current images to show were the Building are.
 - It makes me much more efficient and truthful with my analyses for wildlife habit. With declining budget, without good imagery the quality of my product and ultimately the quality of meeting the agency's mission will suffer.
 - it makes our work much more difficult in determining map adjustments and parcel boundaries to know if we're close
 - It means more time in the field, which means more employees needed to do the same amount of work, which means more funding needed.
 - It reduces the quality of derived products, such as fire perimeters; it reduces confidence in derived products, such as new structures/activities that have occurred since the previous imagery acquisition.
 - It requires additional field verification of forest inventory plots that otherwise could be completed using imagery (i.e., non-forest plots where we record land use/land cover/tree cover). It would also prevent us from assessing canopy cover at forest plots using dot-count procedures; these assessments feed into the NLCD tree canopy cover layer. Also, outdated imagery results in decoupling the photo-interpreted or processed data from the data collected in the field.
 - It saves field work time.
 - It takes longer - more time and money - to complete project work without quality NAIP layers.

- it will be difficult to fulfill agency responsibility for implementing provisions of Congressional rules.
- It will break our business. We have become operationally dependant on current NAIP and our publics and stakeholders expect us to have and use current NAIP
- It will take much longer to answer questions in the field that could otherwise be easily answered in the office with accurate aerial photography.
- It would add significant impacts to the workload, and decrease the accuracy of certain analyses for T&E species.
- It would affect our ability to provide timely and accurate aerial surveys of forestlands in Michigan. This is an annual effort coordinated with USFS.
- It would be a large inconvenience for project level work.
- It would be detrimental to our work. It would include increased field work and less money to spend on other projects. Longer turnaround time on projects.
- It would be difficult to do good analysis for resource management plans, and other planning efforts.
- It would be difficult to identify features on the ground and using imagery as backdrop for mapping products
- It would be difficult to perform my job
- It would be extremely difficult to carry out wetland compliance activities without current imagery.
- It would be extremely difficult to manage without quality imagery. We currently use NAIP constantly is our GIS shop for a wide variety of uses. Not having this would be a huge negative impact on data collection, field navigation, maps for communication with the public, wildfire suppression, and the list goes on and on. The Forest Service does collect its own imagery but at least in our region it is limited to the area inside the Forest boundary and only every 10 years. Having seamless imagery at 1 meter or better resolution over a larger area than just our forest and with new imagery every 3 to 5 years is a HUGE plus for us.
- It would be hard to accurately identify features on the ground and compare them to other GIS data.
- It would be impossible to do any work without current, quality and accurate imagery. It is also important to have all of the older imagery available for change detection.
- It would be impossible to receive this type of data otherwise at the current NAIP resolution for the entire state. Forest cover assessments would be very difficult to perform and inconsistent from place to place.
- It would be more difficult to track yearly changes to the forest landscape and individual stands. Some changes would not be detected without expensive and time-consuming fieldwork, which may not even occur.
- It would be more time consuming (expensive) or accuracy and credibility would considerably diminish in terms of describing existing conditions of forest resources and evaluating the impacts of activities. Public trust in public lands management would be at stake and the NEPA process would become even more difficult and expensive.
- It would be much more difficult and time consuming to track vegetation changes due to harvest and natural disturbances.
- It would be very detrimental to most of the programs in this agency
- It would be very difficult to update our maps.
- It would be very hard to complete some projects without good quality, accurate and up to date imagery.
- it would greatly increase my work load (3-4x)
- It would hamper our ability to detect and monitor vegetation and land cover changes due to fire, storms, flooding, and land use changes. This is important for land and resource plan monitoring and keeping vegetation and land cover information current as it is applied to various vegetation, wildlife habitat, and other resource models and assessments.
- It would impact the quality and accuracy of our data and also jeopardizes all the time invested in updating our corporate data.
- It would increase costs of our highway project delivery work and increase costs for acquisition of our own imagery. We would end up doing more field visits, it would reduce our ability to discuss and display project information to the public and other stake holders and overall increase our operating costs.
- It would increase my field time, lengthen the environmental analysis process, and decrease productivity.
- It would increase the time to complete work and probably decrease the accuracy of the work.
- It would just be equivalent to working with a handicap.
- It would lead to greater field work to verify the accuracy of outdated imagery. Some work would require greater assumptions based on outdated or lower resolution imagery.
- It would make it almost impossible to prevent legal challenges to the NEPA permitting process. We will spend too much extra time trying to prepare NEPA documents/plans and waste time in courts trying to defend the lack of current data in our analysis.
- It would make it extremely difficult to carry out the mission. We would lose a huge advantage in utilizing technology. Leaf off would be very beneficial as most other sources of imagery are leaf on.
- It would make some products less useful.
- It would make the completion of our work very difficult as it would no longer allow us to have current data to work within our vegetation classifications and make tracking of vegetation

- changes due to mortality from insects all but impossible to quantify.
- It would mean finding people to go out and GPS roads to get the location as opposed to one person seeing many of these roads on the imagery and being able to digitize from that.
 - It would mean higher costs and less accuracy in products produced.
 - It would negatively impact my ability to do project planning, and environmental analysis substantially and ruin the ability to efficiently do this work.
 - It would require our agency to spend dollars and time updating via field visits those areas where imagery is not current.
 - It would result in spending a lot more time and money to get similar results.
 - It would significantly reduce my ability to perform reconnaissance for projects (unable to have a current picture of stand conditions, less accurately locate stands and geographic features) and respond to catastrophic events such as wildfires (determining intensity and mortality following wildfires).
 - It would take greater time and field truthing to delineate territories for different species, to find key habitat attributes on the ground and to evaluate impacts on habitat by different types of projects.
 - It would take more time to display a less accurate portrayal of what has occurred on the ground. Would spend more time verifying on the ground and lost time trying to reconcile reality.
 - It's really helpful to have current, accurate imagery. It reflects what currently exists on the ground and is invaluable in doing field work.
 - It's very important to have updates to ensure I can see new trails and roads forming and match our shapefiles to the NAIP. It is our check on the accuracy of our shapefiles for roads and trails.
 - It's what we base most of our work on, so it is very important. But we need to improve horizontal accuracy.
 - jeopardizes credibility and confidence of working relationships with outside parties
 - JPA members will rely on less cost efficient methods of obtaining required imagery
 - Lack of confidence in the derived Geospatial products.
 - Lack of current imagery would have a negative impact on conservation planning by increasing field work time to identify potential erosion sites. Aerial imagery reduces field time and improves planning accuracy.
 - Lack of high quality imagery will impact our ability to accurately map glacier boundaries on a landscape scale. Melting of Alaska's glaciers contributes substantially to sea level rise and has the potential to significantly affect/alter both terrestrial aquatic and near-shore marine ecosystems. Our ability to track the status and trends of glacier cover in Alaska is very important.
- Land use interpretations would be obsolete, leading to possible mis-location of features and erroneous navigation.
 - Land uses and conditions often change at a rate that exceeds our ability to plan.
 - Lands and Cadastral Survey program are very important to find past monuments, and structures such as roads, buildings, other disturbances to show encroachments, monuments, surveyed lines, etc
 - large area change monitoring is not possible
 - large area, say county, level forest area and volume estimate uncertainty would increase
 - Less ability to focus field surveys for shade intolerant non-native invasive plants - looking for 'open' canopy areas prior to field surveys.
 - Less able to detect changed conditions and trends.
 - less accuracy, more time spend in assessing, inability to answer resource questions.
 - Less accurate. Less efficient.
 - Less background information for explanation of situation
 - less production, less efficiency, etc
 - less productive
 - Less research done, fewer tools for land managers.
 - Less work would be done or if done approximated, not as good as having accurate imagery. May be harder to get an overall picture to help prioritize work.
 - Life before NAIP required a lot of guesswork as imagery was old, had no metadata to support it, and was low quality. NAIP imagery has helped immensely analyzing current forest conditions, fire effects, insect and disease effects, road accessibility, stream changes. All of these things in the past had to be field verified, taking a lot of time and effort. Imagery will never fully replace on the ground truthing but it can greatly reduce time spent in the field. An imagery update to our forest in 2008 after a large fire the previous year greatly helped us with viewing fire severity effects on old growth stands.
 - Location of land boundaries, ownership, changes in occupation, create project planning and implementation issues.
 - lose capability to conduct change detection, loose multi-scale (landscape to site) analysis, diminish user flexibility, require greater IT services, increase the need for user IT capability
 - Loss of accuracy, increase in required field time.
 - loss of current program remote sensing vegetation
 - Loss of efficiency
 - Loss of quality check for all ground field work. Loss of method to make area surveys where access is difficult (impossible). Loss of method of using remote-sensing measurements to supplement ground work - which can reduce our statistical processes to a third of the original time without such imagery. Loose the backup for unavailable GPS.

- loss of time, History loss, loss of changes, Correct locations of roads and managed stands
- Lower quality, less accurate, assessment. May miss important areas which should be visited on the ground when reviewing maps/data.
- mainly helps with access into areas and management of currently recorded resources
- make analysis very difficult without extensive field survey
- Make job harder
- Makes for more work.
- makes job more difficult. Would increase amount of time spent and would reduce quality of work that is done now.
- Makes mapping, re-locating, and sharing noxious weed information very difficult
- Makes my work more difficult and a lot more field work needed
- Making incorrect assumptions of vegetation health, burns, etc.
- many projects would not be able to be completed, or if completed, the products would be of marginal use
- Many questions regarding surface change, and Wetland ID!
- Many times in the field, imagery allows us to locate a particular stand when GPS coordinates are not available. Additionally, it allows us to gauge the density of a particular stand.
- Many trails on our national forest were drawn with a fat crayon on a small scale map. Until I have access to imagery that shows the trail, I can't correct the locations. Many recreationists are downloading our data into GPS units, so it's embarrassing to have the trail on the wrong side of the hill.
- Mapping would be far less robust, defensible, and accurate.
- maps created without current data do not have much use to managers
- Maps would require other data sources be collected without being ground truthed.
- More difficult to assess watershed and stream channel changes through time.
- More ground Labor
- More field time to do surveys.
- More field time, higher costs, longer processing times
- More field work to check what we have. Disclaimer on age or images may be old.
- More field work to confirm the presence or absence of roads especially for recreational permits and potential effects to cultural resources by said activity
- More field work would be necessary, and a good overview of burn projects would not be possible without an actual flight or some other form of aerial photography.
- More field work, more intense and detailed mapping requirements for field personnel so they can find their work location,
- More ground verification would be needed and mistaken diagnoses and less effective prescriptions would be more likely to take place.
- more ground work or partnerships would need to be created taking away from valuable time working on implementing natural resource management projects
- More reliance on older imagery and field data.
- more time ground truthing
- More time to track oil and gas development on the forest.
- more time, less accuracy, poorer quality decisions,
- More work , less time to get the info to do a good job
- Mountain Pine Beetle infestation tracking requires new imagery each fall.
- Much of our analysis work would be inaccurate, or impossible to produce with current, quality imagery.
- Much of our work involves spatial analysis now, it would be tough to display our needs or to convince the public that we do not have the resources available that private industry and other agencies have.
- My FS Enterprise unit responds to NEPA planning and field implementation projects across the country. High quality and updated imagery is a must to accomplish our unit's workload in the most efficient way possible. a lack of imagery will have an adverse action on 350 active projects a year for my enterprise unit. Project costs will soar due to increase field work in an era of travel restrictions. Our NEPA planning projects will suffer from updated imagery to do complex analysis.
- My guess would be that much of the work we do with imagery would not get done. There really isn't a cost effective way to do it without the imagery.
- My work as a boundary surveyor as well as my work with oil and gas road development on our national forest makes current and high resolution imagery resources essential to effective and efficient field work and site planning.
- NAIP data have become central to resource assessment, monitoring, and analysis across the Forest Service. Reduced efficacy and efficiency associated with all these business functions would result from use of less available and more costly data resources.
- NAIP has already replaced Resource Photography (1:15840 stereo pairs) in the Forest Service. If you take NAIP away we will NOT have any air photos in the future. This will affect our ability to inventory and monitor forest vegetation effectively.
- NAIP imagery helps to identify areas to target for surveys of potential habitat for Sensitive species. It helps to answer some questions that would otherwise require additional field time.
- NAIP imagery is key to having wide area coverage at high spatial resolution

- NAIP Imagery is used on a daily basis for every kind of project we do for the USDA-Forest Service
- NAIP imagery is a Base Layer in GIS that we use to identify project areas and to reduce field work.
- NAIP is an important current and reliable source that is utilized for photo ground control when referencing high resolution satellite imagery across the US.
- NAIP is likely the most essential tool we have to perform our job.
- NAIP is one of the cornerstones of quality control and general mapping (background).
- Natural disturbances, such as fires, and management activities, such as timber sales, annually change the landscape. For planning, important to know existing condition of the landscape.
- Need high resolution imagery to validate Landsat-scale analyses and lidar analyses.
- Need it for my job
- negatively impacts resource monitoring and management requirements
- new roads are built each year, GIS specialists don't have time to update the road layers = I get my new road locations from aerial photo imagery
- New roads/ATV trails are not visible and can cause confusion/lost time in the field. The condition of the range resource is not readily apparent with old imagery.
- no landscape vision of what the Forest looks like
- Not as accurate on estimating contracts for boundary clearing in the trees, estimating canopy for cadastral contracts would be more difficult
- not do the work
- Not having an up to date image for field evaluation may lead to inaccuracy of my reports
- Not having current accurate imagery would increase my work load and decreased effectiveness. Imagery gives much greater context to areas looked at on the ground even with extensive survey.
- Not having current and accurate imagery would make creating farm plan maps more difficult to accomplish and would greatly reduce the effectiveness or value of the plan maps.
- Not having current photo will result in inaccurate land use determination for watershed impact model.
- Not having good imagery would greatly increase the field work required and, thus, the cost.
- Not having it would negatively affect the planning our vegetation projects and monitoring.
- Not having NAIP imagery reduces the quality of our GIS product. We use it to acquire locations of tree mortality on forested lands across California.
- Not having quality imagery would have significant impacts on data quality, staff time, management decisions, and budgets.
- Not having quality images reduces the accuracy of our analysis due to misinterpretation of ground conditions. Not having current imagery increases the quality of our analysis due to misclassification due to changes in ground condition after the data of our latest imagery.
- Not having such imagery impairs our ability to determine forested vs. non-forested areas. This impacts our ability to deliver a quality product to taxpayers (e.g. forest management plans) and affects various analyses we carry out where forested acreage is a variable of interest.
- Not having such imagery will decrease effectiveness of profiled review and increase investment in personnel (more persons in the field, potentially over greater period)
- not possible to complete program of work without current hi-res imagery
- obviously it is hard to plan proposed actions if images of current canopy conditions are outdated. Imagery would be especially import following a fire or where recent activities have altered vegetation conditions.
- Oil and gas industry very active. New road systems constantly going in. Up to date photos lead to reduced field time and accurate mapping of silvicultural projects.
- Old data will be used for all work planned
- Older imagery means extra time and reduced resolution in my planning work when I work with landowners who have made recent changes to their property. I have to guess at the changes rather than draw them off the current imagery.
- Older imagery would be used and this does not always reflect what is on the ground now.
- One of the ways I use the imagery is to determine which areas need field work. With poorer quality or less timely imagery, I would have to do additional field work, which is time consuming.
- One use is to monitor areas on the forest that are not visited often in the field.
- Our Forest is frequently contested with Law suits for disagreements in natural resources. Having the best available data will save tax payers money in the long run.
- our information could not be updated without multiple image years
- Our landscape is constantly changing due to fire and other ground activities - we depend on the NAIP imagery for our resource information needs.
- Our pre-field assessment is extended significantly, reducing the amount of time and money spent on carrying out the actual archaeological survey, thereby increasing risk of unnecessary impact to heritage resources.
- Our project planning and analysis efforts would suffer greatly. We have come to rely on NAIP imagery for most of our vegetation and stand mapping, land management activity monitoring, and landscape scale assessments. We no longer have current aerial photography to use for project planning and analysis so NAIP imagery has become the ideal substitute.
- Our Restoration Strategy would essentially grind to a halt without this imagery

- Our users use the NAIP imagery continually in conservation planning, wetland determinations and appeals, soil surveying etc. We would be lost without it.
- Our work could not be done accurately or efficiently. Having quality, current, accurate imagery is crucial to our agency mission.
- Our work would be very difficult and non-existent
- Please collect imagery at least at the current quality but CIR with horizontal accuracy of 4 m or better would be a significant improvement. Stereo would be too much to ask for I suppose, but PI work in mono is not very accurate for forest structure estimates (crown closure, height, crown diameter). Anyone doing forest inventory biomass, carbon stocks estimates needs these kinds of specifications. I have been teaching photogrammetry and photo interpretation to 30+ forestry students per year since 1987. NAIP true color orthophoto quads at 1 meter ground pixel is not very useful for interpretation and stand mapping - only for supplementary visual mono clues and current imagery source for monitoring recent disturbances. Having said that though, I would hate to see NAIP imagery go away in the future even in the mono, true color format- it is well used in the forestry school in RS/GIS education and research. Feel free to contact me if I can help.
- poor, less defensible environmental planning and analysis.
- Potentially heavy impact
- Prescribed fire maps would not be as accurate or as useful for tactical and strategically planning.
- Produces more effort and time to solicit vintage that does portray representative data that could be shared internally and externally.
- Product produced would change and quality would drop significantly, substantially more field work would be needed,
- Project NEPA would not be able to be completed in a timely manner. Field pre-work to narrow down scope would not occur, which would increase project costs on a per project basis. More staff time = more cost. As a hydrologist, the work I do could not be done without good imagery.
- Publication of research involving ground and remotely sensed data may not be feasible when current, accurate imageries are not available.
- quality accurate imagery is a very large part of what we do at the City. Currently we rely on 6" Avista Ortho imagery, however, as budgets tighten we will most likely be looking to other less costly alternatives.
- Quality current, accurate imagery is important in my work for mapping rare plants, noxious weeds, and special habitats. It also is important for identifying veg types, roads, landmarks, etc for field maps and navigation in the field. Without good quality imagery, executing these tasks would be more difficult and risk losing accuracy themselves.
- Quality imagery helps us to locate archaeological sites faster and helps us to map the site boundaries much more accurately.
- Quality imagery is critical for my work- I use it to verify disturbances- roads, well pads, pipelines, and vintage is key. New disturbances are constant, and we need the most up to date imagery so I can keep up.
- Quality imagery is critical to my missions.
- Quality imagery is crucial to the work of identifying the public land boundaries of the National Forest System.
- Quality imagery reduces the need for field visits and allows us to analyze and plan at a larger (landscape) scale.
- Quality imagery reduces time in the field, and may produce more consistent results regarding photo interpretation.
- Quality imagery saves time with land surveying field work.
- Quality, current imagery underpins much of our resource analysis. It is the foundation of our Mid-scale vegetation mapping program, and a key planning tool.
- Quality, current, accurate, state-wide imagery saves field and photo interpretation time, and most importantly, substantially increases the accuracy and precision of the information we produce.
- Quality, current, and accurate imagery is critical to managing field costs. The more spatially accurate and higher resolution the imagery, the less we rely on GPS by field crews to verify the locations of roads, trails, other infrastructure, as well as delineating certain types of habitat.
- Rapid changes (glacial retreat, isostatic rebound, outburst floods) in the watershed containing NSP land create an ongoing need for current imagery, used to assess hazards to lands and infrastructure.
- recent projects are not represented in older imagery so can't use
- Reduce the accuracy and quality of my work
- reduced efficiency in times of declining budgets and staff
- Reduced efficiency of planning, analysis, and recording efforts.
- reduced efficiency, reduced safety
- Reduced quality of products.
- Reduces ability to effectively and efficiently perform forestry work in regards to stand typing, identifying tree species and disease, and to identify topographic features.
- Reduction in the ability to effectively carry out management activities to manage NFS lands
- Renders it useless.
- require more field work
- requires more field sampling.
- research will be slowed and much more difficult
- Restoration work not as precise and planning and implementation delayed.
- Right now our limitation with using the NAIP imagery is the lack of resolution and lack of

- stereo-pairs. We are attempting to do airphoto interpretation with images that are difficult to discern individual trees, or even canopy shapes. The annual timeliness - IF we could get the stereo products - is perfectly fine.
- Right of way, Highway User Tax Fund, fiber optic network, NEPA, intelligent transportation system, access, project design, asset management/inventory we are a large state agency and many projects use the NAIP imagery
 - Safety both public and federal service. increase cost related to travel and field work
 - Sentry Dynamics provides the Title and Real Estate community, as well as, natural resource companies with web applications that are significant to the economic development of the communities they work in. NAIP imagery is critical for our forestry users in vegetation analysis. We have brought this data to this wide user base, and I am sure having metrics on the value would be significant to your justification. Metrics, however, are difficult to obtain. I can let you answer the phone when all NAIP imagery is no longer on our property profile and mapping application; it will be ugly!
 - Several broad-scale inventories would be seriously compromised, may have to be scrapped. That would result in greater risk to decision-makers, more appeals and litigation.
 - Significant
 - Significant loss in efficiency to complete technical work relating to conservation planning and significant increase in costs to seek alternatives through partners or agency funds.
 - Since the historic flood of 2009, directing river travelers to sites that prevent impacts is difficult without current imagery
 - Since we can no longer perform 10 yr stand exams the imagery fills in the gaps for forest health
 - slows down road mapping and vegetation management planning.
 - Soil survey polygons are delineated based on aerial imagery. If the base aerial imagery is out-of-date or is of poor quality, the soil survey product will suffer.
 - Soil Survey updates and NRI data collection both require current imagery.
 - Soil survey will move forward at a much slower pace than is needed to meet customer demands.
 - Some analysis tasks could not be completed. Some tasks would result in reduced data accuracy. Some tasks would have reduced planning efficiency.
 - Some maps for some people just aren't the same without current, accurate imagery. The visual component of the imagery is very profound for explaining maps
 - Some projects cannot be accomplished (i.e., change detection); Other projects are forced to work with inferior or inaccurate data. Nevertheless, we work with what we have and do the best with what's available..
 - some projects would simply not be possible
 - Stale data will increase need for additional field work to fill in gaps, funding for that is disappearing.
 - Substantial, as the forest access, lands, and boundary management staff I use the imagery almost every day.
 - Take longer to get my work done. Have to find other ways to do it. May not be as accurate.
 - Takes more time to complete work assignments.
 - Takes more time to orient to landscape and conduct accurate, effective field work.
 - The better the imagery; the more accurate the forest typing. The more accurate the forest typing the better decision making on necessary surveys. Getting biologists to more accurate locations in the field saves time and money.
 - The effects would be huge. Cost savings to Maine are in the hundreds of thousands of dollars vs. not having orthoimagery.
 - The FIA program saves thousands of dollars in field expenses by pre-screening locations on NAIP imagery that do not have any trees. The cost of acquiring and processing alternative sources of imagery (Quickbird, IKONOS) would be very high and not reliable due to cloud contamination. We would spend more money visiting non-forest locations if we didn't have NAIP imagery.
 - The forest is an ever changing system which can best be seen with good current imagery. Old imagery is good for historical purposes, but doesn't help meet the present need.
 - The Forest Service, Forest Inventory and Analysis program uses NAIP imagery to identify sample field locations, measure tree canopy cover, and analyze disturbances. The imagery need to be high quality and timely to get the best results.
 - The imagery enhances my work as I don't have access to annual photography. We have fall color infrared, which is great, but it only have an interval of 5-6 years. Annual is best.
 - The imagery is essential for managing the resources in the Forest Service. It saves so much time and effort when we're able to use the imagery to narrow down the areas that need the actual fieldwork.
 - The imagery is essential to support production verification conducted at mineral material sites, evaluating trespass situations, evaluating environmental conditions with regards to mining impacts and working with other agencies on common understanding of work.
 - the impact will cause more time looking for certain locations. Instead of doing the work intended.
 - The impact would be great. I use NAIP imagery to plan data collection and to differentiate between treated and un-treated stands in our experimental forests. It is also handy for basemaps. I have used maps with NAIP imagery to find plots on the ground. It would certainly

- have a negative impact on my work if I didn't have NAIP imagery.
- The lack of current, accurate imagery would cause additional time to be spent finding roads to access boundary lines, property to be managed outside of the most familiar tracts, and in locating encroachments on federal lands.
- The NAIP imagery is a critical tool for the Aerial Survey program in OR and WA. It is used as a base map and had improved our mapping accuracy tremendously.
- The NAIP photography provides high quality resolution necessary for project development, monitoring and planning.
- The need for quality remote sensing data will only increase with time in the USFS. Nearly all of the spatial data we currently use to support ecological landscape assessment is derived from RS imagery, directly or indirectly.
- The time and cost associated with acquiring imagery would most undoubtedly increase to the point that much less imagery would be used both because of the cost and the processing time needed.
- The work load and time would increase dramatically
- The work we are doing could not be done without high resolution, quality imagery
- Then lack of such imagery impedes accomplishing workload efficiently and effectively.
- There would be potential of having incomplete information regarding my inquiry into a water right.
- There would be some places within the county that we would just have to guess where things were in relationship to other items.
- These days changes (man-made and natural) seem to occur rapidly, so current info is much more reliable and useful. The time of day and season are important to show the vegetation to best advantage, i.e., winter shots are useless.
- They are extremely valuable when conducting pre-survey for forest types, sub-habitats, etc. In addition, having imagery for field GPS units is useful for navigating to features and not getting lost.
- things are changing fast need to keep things current
- This imagery is very important for accurately delineating forest stands. Management is much more efficient with uniform stands and prescriptions can be tailored to maximize desired conditions.
- This is essential
- This is the digital product that I use most, at least 6 months of the year. I also do time comparisons using previous years' images. My agency would not replace it because of cost. It would be very difficult for me to do my job as fully as I do now.
- This type of data greatly improves productivity and answers many questions without timely visits to the field.
- This would have a substantial increase in the amount of work load for me. I would have to spend time trying to find other imagery sources and/or by increase ground work, which would be near impossible due to being involved with Forest wide projects.
- Through reorganization/downsizing--we are at a point we cannot perform our work timely and proficiently without this tool in the fashion described.
- Timber sale and timber stand boundaries
- Time spent ground truthing. Very spendy these days.
- Timely and accurate imagery can assist the Black Hills National Forest with understanding the spread of mountain pine beetle over time and facilitate response planning efforts.
- Too much information to provide in a survey, too many scenarios. Just understand that imagery is extremely important to us and it needs to be a decent and legible data.
- Topographic 1:24,000K Quads would not be updated within our region that intersect Forested Lands, and Forest Visitor Maps.
- Trending analysis would be handicapped and gaps would contribute to poor statically algorithms
- Two things: (1) ensuring next monitoring crew (10 year monitoring interval) can find a monitoring plot; (2) Navigating to and from a plot (safety and productivity).
- Unable to accurately delineate ecosystems and ground truth them.
- Unable to accurately assess forest resources on public lands. Negatively affects ability to develop and implement sound land management decisions.
- Unable to analyze landscape features accurately and fulfill congressional mandate.
- Unable to correctly identify all survey sites for amphibian monitoring. Requires more field work. Some sites will not be found and surveys will be incomplete.
- Unable to do appropriate planning and develop strategies to accomplish field work.
- unable to do research well - NAIP is often used as a background mapping image
- Unable to perform the current level of analysis. Substantial increase in cost/time or reduction in analysis depth.
- Unable to: locate resources, document existence of resources, determine change to resources, assess damage to resources, rectify new data sources to standard set.
- Up to date imagery is crucial in analyzing wildlife habitats impacted by project activities
- Updating maps becomes much more difficult. Selecting photo identifiable control points for photogrammetry projects is more difficult. Confidence in GIS layers is eroded without quality current imagery to use as a base for comparison.
- Use for change detection and location of facilities for recreation and other purposes.

- Use imagery at least weekly. Print maps with imagery for multiple field trips and team meetings, etc.
- Use of imagery is integrated into everything from data development to field maps. Main impacts- less spatially accurate vector data much greater expense and loss of accuracy in our maintained vegetation data
- Using GIS everyday and working with a variety of people who are in all different places, the use of imagery supports many program analysis and validates fieldwork (or serves as a guide in the field). I'm very happy with our NAIP program to date, I continue to use the product and have had good reviews with my co-workers. Thanks!
- Using GIS is a small but important component of my work. When doing GIS work, I nearly always use NAIP imagery. It would be difficult to complete my GIS work without access to current and high quality imagery.
- Using NAIP imagery has allowed us to produce fine quality maps and more accurate data. We would hate to lose this excellent resource product.
- verification of mining disturbance would take more time and we have less time to do more workload
- Very difficult in rough terrain over large often remote areas to survey invasive species and to monitor treatments
- Very important: I manage paleontological resources in 7 Northern Great Plains states of the USFS. Being able to see individual outcrops to develop surveys and conduct field work is crucial. This imagery is a tremendous help.
- Waste time physically seeking features on the ground when imagery could have directed staff to area in question; waste time getting lost trying to access areas of difficult terrain when access routes were not mapped and not clearly discernable on images or imagery not available; some features such as earthworks are more visible on imagery than on the ground, especially in thick vegetation, and could be missed during surveys without accurate imagery to work with
- We are beginning to rely heavily on imagery to update our Forest Visitor Maps, which in some cases, the base maps have not been updated in 20 - 30 years in the non forest areas.
- We are constantly restoring streams and the old imagery does not accurately depict the streams new location. This makes project planning and monitoring difficult.
- We are dependent on GIS as part of our data management and acquisition of new data. If the image quality is poor or not current, then it presents problems for us during field acquisition of new data.
- We are increasingly relying on the NAIP for field going maps. Sharp crisp images help locate features in the field.
- We are the largest national park in the largest state. It is very difficult to access and imagery is a safe, essential tool for us.
- We can't get the quality of product we need to the client.
- We can't meet national mandates. -
- We could miss important events that happen to a stream. We would not get a clear reflection of surrounding uses leading to poorer quality effects analysis.
- We do annual inventories, have leaf off imagery available on a periodic basis would help greatly with identifying features beneath a canopy and with tree identification.
- We do not have it at present. As a result we are conducting ground-based data collection, spending approximately 20 person-days per year in field data collection that would otherwise not be needed.
- We do not have money to acquire imagery, as in the past. NAIP is a reasonable substitute (except for currently no stereo). Need to have digital format to use as a background in GIS.
- We have a tremendous need for quality, accurate imagery. Without it much of my job would revert to early twentieth century technology levels.
- we lose credibility with the public and partners when our road data is out of date.
- We make do with what is available knowing that there may be a great deal of inaccuracy introduced due to poor quality data or out of date data.
- We manage a large-scale land area that, in the last decade, has experience landscape scale changes via insect/fire/floods. Update imagery allows us to better manage these areas.
- We manage forest with wildfire & prescribed fire - getting and accurate idea where the burned acres are for field work is critical for efficiency.
- We produce maps that have aerial background files for completing stand exams and projects. It gives an idea of where someone is located on the ground.
- We regularly use imagery to map our roads. Horizontal accuracy is very important, especially where roads move in and out of federal land (and therefore are jurisdiction).
- We rely on imagery to review water use around the state. Without it, there would need to be significantly more field work, which isn't funded at this time. Given state budgets, I don't think it would be. Changes in water use would go undetected for the most part.
- We rely on the imagery for distribution to field workers.
- We research changes in land cover, so current datasets are paramount to our success.
- We use imagery as a base data in nearly all our products. We can't do our work without it.
- We use imagery to assist with NEPA Projects.....not having quality imagery could create potential for litigation.
- We use imagery to identify routes into wildfires, identify structures that may be threatened by wildfire, identify possible trespasses onto National Forest property, as well as for planning

land line maintenance and for editing/updating our vector data. Not having quality imagery could cause some pretty serious losses/problems in certain situations.

- We use imagery to monitor Oil/Gas Drill Rigs, including illegal drilling. Annual NAIP imagery has been indispensable for the Mountain Pine Beetle die-off of the Lodgepole Pine trees.
- We use NAIP imagery practically daily
- We use NAIP to help with NRI and Stewardship Lands image analysis. We need current imagery to support orthorectification and change detection for these programs.
- we use the imagery almost daily - as a map base, to screen digitize features - to visually search an area for features. Having current (1-2 yrs), high resolution natural color photography is critical to our mission of managing the public lands.
- We use the imagery to verify timber sale harvest locations for analysis during planning new projects. The impact would be not having up to date data, and having to rely on GIS data for harvest locations, not best science.
- We use the latest available imagery nearly every day to complete our jobs. Without this imagery, it would be nearly impossible to effectively accomplish projects on the National Forest.
- We use this imagery for a variety of purposes, including field direction, landscape analysis and presentations to the public
- We use what we have - poorer quality, older
- We will not be able to do large-scale landscape monitoring without quality imagery. This will impact our credibility with stakeholders and could affect the long-term continuation of the 4FRI project.
- We would attempt to seek other imagery sources but with limited resources, we would most likely have to use existing older imagery or not conduct the analysis. We would have a more difficult time managing public lands.
- We would be severely hampered in doing our work, especially when considering reduced funding for work on the ground.
- We would be unable to do important forest change analysis in support of NF fuels and landscape restoration projects.
- We would be wasting more money to send people which we do not have to field verify what is out there in the woods. Not a very good tool to use when we can you FSA
- We would just acquire it through other sources.
- We would not be able to analyze topography for new or reactivated landslides within forest boundaries. This would mean many additional hours of field would be required, incurring large costs.
- We would not be able to perform many daily tasks such as producing maps of property interests, using photos while out in the field to determine locations, etc. Some big projects would be really difficult as well, we have used NAIP in the past to

do analysis studies of dam/reservoir areas that have a lot of Federal and State money at stake.

- We would probably need to update GIS layers on a much lower frequency. It would be a real lose no to have NAIP
- We'd be unable to check the validity of our data without having to jump through many financial, resource management, and logistical hoops.
- When I am conducting inventory, I rely heavily on NAIP imagery for navigation. When working at the computer, it is very important for remote sensing.
- When there is development or other changes that isn't reflected in the imagery we are guessing - in all aspects of the assets - we end up having to do more field work, it also gives a perception of unreliability to the public when working with older data.
- When we are designing a fuels reduction or forest health and improvement project, while we try to get out to every acre, when the project is 60,000 acres, that's impossible. Current NAIP imagery allows us to plan treatment boundaries with assurance that what we're seeing on the map is close to reality on the ground. This helps with delineating what needs treated, as well as the extent of protected species habitat, such as old growth forest for spotted owls, a stand of large trees for bald eagles, an aspen stand, or a meadow that is used by an elk herd.
- where to begin? Current (as well as historical) imagery is a tool that is utilized on a DAILY basis for our organization.
- Wild area Timberlands and watersheds generally persist with minimal change from year to year except for damage due to windstorm, fire, landslide or other natural or human-caused ground disturbance. When these occur however, conducting field work in an area where the changes are NOT shown on imagery can be time-consuming, more expensive and even dangerous. Additionally, sighting the disturbance on imagery can be the primary reason for field work.
- Will continue to do work with older or other imagery sources.... data quality would suffer.
- Will decrease the efficiency in evaluating potential impacts to resources from proposed projects.
- will delay completion and reduce quality of final work
- will have to buy aerial photos again. Imagery is very important to my work
- Will increase the likely hood of setting a usable base camp and mapping same.
- With current, accurate imagery, our work would be far more efficient, effective and much less expensive
- With forestry, events that change structure and composition of large tracts of forest land may be difficult to delineate by field work alone. Up to date imager can help speed up and pinpoint areas for additional fieldwork.

- With fuels work, the impacts would be an inability to show fuels reduction and fire impacts both internally and externally. The parties involved are very understanding of these images and are value-added to the program.
- With out of date imagery identifying the extent of mortality in tree stands is just guess work. Western pine beetle mortality is happening so quickly that trying to keep ahead of it depends on having current aerial photos NAIP or otherwise.
- With reduced field staff, not having current accurate imagery would greatly reduce our agencies ability to complete our work in a timely manner
- With the current budget situation, hiring more people to do extensive field work doesn't seem to be an option. Accurate, clear imagery helps accomplish some tasks that would otherwise be done by field crews. It also improves the efficiency and accuracy of work being done by existing field crews.
- With the emphasis in watershed level restoration, high quality imagery is extremely important for assessments, and being able to focus on potential restoration projects. High quality resolution saves time by being able to more quickly highlight true potential restoration opportunities for field verification. Also to track trends in disturbance from activities (such as timber harvest skid trail recovery & calculating acres of disturbance), without having to walk every trail, to develop ballpark estimates. I don't have the time or budget to do all this work in the field, as much as I'd like to.
- With the Mountain Pine Beetle epidemic advancing across the landscape, it would be nice to have yearly imagery to capture the effects. Imagery is the new method of vegetation inventory for our projects and landscape analysis. Without NAIP, we would have to go back to our previous way of doing business.
- With the proliferation of Off Highway Vehicles (OHVs) and the amount of users of public lands that choose to recreate with OHVs, having accurate, true-color, up-to-date (every three years) imagery is critical to be able to quickly and accurately assess areas prone to non-system or illegal travel activities. Additionally, landscape productivity, tree stand health/vigor, and forest insect/disease activity levels can all be quickly and easily assessed with the use of good quality NAIP imagery.
- Without accurate imagery our work would not be done, or would be very field intensive and expensive. We currently seek any imagery available within our cost constraints. Low quality imagery degrades the quality and limits the utility of the imager.
- Without accurate imagery, the spatial data is not as easily maintained.
- without current accurate imagery the planning of forest policies can fall behind and be less responsive
- Without current and historical imagery I cannot determine the proper horizontal location and skew of bridges and culverts relative to the long-term hydrologic needs of the floodplain.
- Without current imagery data any changes to the landscape will have to verify on the ground, costing many man hours of work and the associated costs.
- Without current imagery it would be difficult to estimate vegetation growth, encroachment, and ground disturbance within the area.
- Without current, accurate imagery we cannot assess the current condition of the forest. We are also less able to monitor the effects of our forest treatments.
- Without current/clear imagery, it makes it very difficult to evaluate the areas of concern, and projects with the variability of change on the ground from season to season and year to year.
- without good imagery it is hard to determine new disturbance (for mining reclamation), having a series of years also helps determine when disturbance occurred which makes it easier to attribute it to a specific operator
- without good imagery would need to GPS many things that could be digitized. this would be very time consuming. PS- time of year question- strong preference for fall images helps distinguish tree and shrub species.
- Without having current high quality imagery the accuracy and efficiency of USFS monitoring and management would be compromised. This would impact not just the agency but would impact everyone. Through being able to manage public lands to the highest level possible the quality of life and the health of ecosystems would improve; not just on a national level but on a global scale.
- Without imagery, multiple on-site visits would be necessary for monitoring purposes.
- Without the imagery it would increase the cost of project work tremendously = resulting in reduce efficiencies and inability to conduct landscape scale work with multiple agencies and partners.
- Without this sort of imagery, the amount of time spent in the field just to assess general tree cover, topography, stream location, and other such general field information.
- Won't be able to complete NEPA analyses, yearly allotment monitoring and permit administration
- Work could be impacted
- Work in an area where oil and gas operators are building up to 400 miles of new road every year. This imagery helps us document the locations of those roads.
- Work would be nearly impossible if NAIP was no longer available.
- Work would suffer with regards to being able to pinpoint cultural resources.
- Work would take more time and be less accurate.
- Working in FIA, we need the most current imagery to determine if a field visit is necessary.
- Would be difficult to complete large NEPA analysis without the use of imagery due to the

- current workforce and budget. Priority projects would be delayed as it would take longer to obtain data.
- would delay the quality assessment of my team's product and push back the deadline for completion
 - Would have to do less because budgets are shrinking, personnel is shrinking and both are at limits that barely sustain us now
 - Would have to rely on legacy data and a significant increase in field time, or force us to acquire replacement imagery from other vendors; which is generally much more expensive.
 - Would have to spend more time in the field ground truthing - more driving, more gas.
 - Would need to change our production cycle.
 - Would not be able to provide a quality mapping application to our customers.
 - would not be able to accurately update my roads layer
- Would not be able to adequately evaluate geologic hazards such as Landslide hazards. Would not be able to adequately evaluate forest conditions in terms soil disturbance, meadow condition, etc.
 - Would not be able to track Mountain Pine Beetle as well. Would not be able to fight wildfire as effectively.
 - Would not be able to validate the accuracy of research and development LiDAR tools.
 - would reduce the efficiency and ease of creating map products for field work/analysis
 - Would require more field time to verify conditions on the ground. This would make it difficult to meet current budget and time constraints in meeting planning timelines.
 - Yearly imagery is very important for a historical record of conditions and a benchmark for changes. It is needed for mapping, monitoring fire, vegetation, hydrology, transportation, everything....

Appendix D – Is there anything else you would like to add regarding your imagery requirements?

The following list contains raw responses from this survey question. Responses have been edited for spelling but not content.

- "Cloud Free" is very important.
- Delivery - ftp would probably not work given the size . It would be possible to take a hard drive to another entity such as USGS, IDWR, FSA, if they have the data, rather than having the data delivered. There is a lot of reluctance to not having the data locally - services could be down or slow. 2) Compression - we may be able to compress images locally, so if there is a cost savings in not having it part of the NAIP program, money could be saved. 3) Shadowing has been an issue. Can contract be tweaked for more northerly/mountainous/canyon areas.
- 1/4 ft imagery would be wonderful. We have that from our city.
- A weakness of NAIP imagery is not the imagery itself, but the misuse of 2D. People think they are seeing more than they are. 3D views, more than just a hillshade background, but what you would see in stereo completely changes the picture and accuracy of interpretation. Stereo imagery would reduce this problem and be a valuable tool.
- ability to cut out portion of image to take to field but still zoom in and out to see detail or whole picture.
- Access to historical imagery (>50 years) would be very beneficial!
- Access to NAIP has hugely increased our GIS work efficiency, and created credibility to our data collection and display.
- Acquisition of imagery during periods of leaf off as well as leaf on would be beneficial (in the same year).
- Add IR to the NAIP imagery!
- Adding GIS vector polygons layers might be beneficial as it'd create a one stop shop for most users. Something in the way of impervious surfaces, farmland, etc. etc. Availability of stereo imagery would be extremely useful.
- Aerial Photography is an invaluable resource since can be incorporated with ArcMap. It saves field time and speeds up map work on ArcMap.
- Aerial photos with stereo are great when we can afford them. But NAIP will work if they can be made to print out clearly on a plotter.
- Alaska needs to be included in the national imagery programs. NAIP Funding to leverage partnership funding within the Stake would yield immediate results as the State of Alaska and its federal partners are currently attempting to acquire the first cycle of Statewide ortho imagery coverage. While 3 year refresh would be desirable, one time statewide coverage with a 5 year refresh cycles would be adequate.
- An issue that needs to be addressed is cloud cover/shadows and the color blending for county mosaics. This problem only seems to be getting worse, some areas are unbearable to decipher.
- annual imagery is frequent enough for my needs. Having as good as possible resolution really helps me to do the work I need to do.
- Any assistance in determining the type of vegetation (sagebrush vs. rabbitbrush) would be very helpful
- any imagery which can move toward LiDAR would assist with conservation planning and practice design workload.
- --basic interpreting tasks work best with web services --please use a different projection on the APFO image server, such as UTM, not geographic --uncompressed imagery needed for image segmentation and mapping research projects --need access to flight line path GIS layers
- Bring Alaska up to the same imagery standards and attention that the lower 48 receives.
- Broken-record I know, but LIDAR would really help us out here.
- Can't really do the job without imagery, all our work is pulled together in the ARCMAP environment with imagery as the background.
- Carry on the good work. We need you!
- CIR imagery is great for gauging tree mortality. This is a "great product". 2009 is better than 2005 and I am anxious to see the 2011. Keep up the good work!!!!
- Coordinating activities with states and providing a contracting mechanism for optional imagery and elevation products would be very useful.
- Current imagery of Alaska Interior area
- Current imagery is of utmost importance and is currently lacking for the local area.
- Digital Stereo at 30 cm resolution and IMU provides the basis (ten year update cycle) for resource interpretation and evaluation that can save significant field costs. Imagery at lower resolution taken more frequently provides useful updates at much lower cost. Staging costs and poor flying weather prevent optimal imagery acquisition. NAIP images provide needed updates to imagery and sometimes become the best available sources when taken during optimal flying conditions.
- elevation data is very important to us.
- fall imagery is best
- Fantastic service, don't know how I would do my job without it.
- Faster viewing. Thanks!

- Feedback from our field units is that <1/2 meter resolution is desirable for supporting our mission. The RSAC image server provides much clearer images than the APFO service, not sure why, but it is noticeable enough that I wouldn't recommend relying on the APFO service, as desirable as that would be to eliminate the redundancy and extra storage needs.
- For glacier mapping, imagery must be cloud free, late season imagery. For Alaska this typically means mid-Aug through mid-Sept imagery acquisition. These imagery requirements ensure that glacier boundaries are not obscured by clouds and that the maximum amount of seasonal snow has melted but also there is no new snow across the landscape.
- Forestry has historically used stereo-photos for all manner of field recon and planning. The lack of a suitable product, with reduced budgets, has had a significant impact on data collection and planning. The imagery must be at a resolution comparable to a 1:15k or 1:12k and must come in stereo, furthermore an effort must be made to reduce the radial displacement which can be tremendous in the current product. The current product is useful for map backgrounds and for land cover classification. Additionally, the reliance on satellite and LiDAR technology, DOES NOT meet the field requirements for data needs nor accuracy.
- Good old hard copy film aerial photographs still provide superior imagery for forest resource use and stereo interpretation. Electronic imagery can of coarser quality to provide a realistic mapping base in ArcMap type products.
- Good survey!
- Good survey. One item I believe you missed was the importance of image resolution. Higher resolution is always a plus. Example being the availability of 1/2m GSD as a buy-up option on the next NAIP contract. Speaking for the BLM we would like to see it.
- Google Earth is currently providing good quality recent imagery for our needs. Is it possible to contract with it to bring both NAIP and Google Earth together into an ArcMap session?
- greatest resolution possible on historical scans would be most helpful
- Having access to minimally processed imagery is very important to me. If too much processing occurs, you lose the ability to derive meaningful information from digital image processing.
- Having seamless imagery to use has become nearly indispensable to our program. Because of the high elevations we work in, having accurate, timely imagery to access is invaluable early in the season before the snow melts out, and we are able to ground truth the project sites. These projects are scattered all over our district, so accurate imagery is vital to how we have come to do our business.
- Having the tools to make measuring more accurate and faster
- Higher resolution would help with identifying ground features prior to going in the field. Proper road alignment is a huge concern with our current air photos. Electronic copies of historical air photos would be a huge help when determining what roads and harvest unit boundaries were like when constructed.
- Historical imagery isn't used by me very often, but if you want to track changes over time, photos don't lie. We searched for the oldest photos we could find (project scale ~1:12,000, stereo coverage) for the Eastside (of the Cascades) Ecosystem Health Assessment to get comparative values of density, size, and species over time. It would be nice to have a centralized distribution location that stores this resource to expedite any future needs.
- historical/archive imagery on the image server would be great
- How about a yearly Lidar flight!?
- I am greatly indebted to you for the services you have provided.
- I am pretty new to working for NPS and have not actually used any of the mentioned imagery products in this survey, but I could see their utility for future work, mainly for creating maps in annual reporting.
- I am very glad to see the historical imaginary questions.... we have a need to show progression and access to historical imaginary would help....
- I can't think of anything else to add.
- I have also taken advantage of this imagery resource in preparing field maps and working out logistics for a recent TEAMS engineering project on another forest.
- I have been on vacation, there for I am just responding to this email. My department is required to submit a copy of the latest and oldest aerial photographs of the project area with each project. The availability of this product is vital to the Realty department of the Forest Service.
- I have to admit I do not know too much about the technology but I find NAIP imagery VERY helpful during my office and field work!! I can often see roads better on the NAIP layer and more accurately than topo maps. In the field these maps help to orient me in the proper location in less time than without these maps.
- I hope NAIP funding continues in the future. Most Government Agencies funding is so erratic that we cannot even plan for these costs, and soon planned expenditures of this size will be out of the question.
- I hope that NAIP imagery at 1-meter resolution will continue to be available through USDA-FSA.
- I like having access to leaf-on and leaf-off imagery when digitizing roads and trails. It gives a better idea where real roads are located versus skid trails, power lines, and old rail road.
- I like the stuff that has been supplied in the past. It makes my work possible with a good degree of accuracy. If anybody can stitch together some

- 60's data that would be great. Trend analysis is important.
- I look forward to seeing FSA-APFO imagery in Alaska.
 - I need NAIP when I need it - it's not all the time, but it's important when I do.
 - I occasionally require high resolution imagery for small areas. I have been scanning paper film prints and performing custom ortho-rectification. Could we have FTP access to individual full resolution tiles (~1KM)?
 - I perform image analysis with data, not just as an image backdrop
 - I really, really like the fact that the Kansas City database server is providing the PBS quads seamlessly across the lower 48. Also, the 1 foot true-color imagery that is being put out Forest by Forest is simply AWESOME!
 - I rely on its availability to complete mission.
 - I think that the USGS GLOVIS tool would serve as a good model for serving NAIP imagery.
 - I use imagery every day, for lots of different application. I use the old stuff as well as the most current. It is very important in my job.
 - I use imagery in making maps and assessments related to my work 3-4 days a week. Access to high quality imagery is very important in the performance of my job.
 - I use NAIP color infrared and 4 band imagery on a daily basis in doing Forestry work. It is one of the single most valuable spatial data resources available to me as a field going employee. Please maintain acquisition of this data. If new technology allows, higher resolution data would even be more valuable for ecological monitoring before and after forest fuels treatments. Use of this data would allow foresters to quantify forest spatial patterns created through treatment. Such patterns are an objective of many forest treatments, but are rarely quantified. Frequently acquired, high resolution data would allow us to quantify these patterns quickly and easily.
 - I use the best available imagery for my work making maps for project and for doing geologic assessments for planning and for Burned Area Emergency Response. Particularly love having imagery after big fires so that burn severity can be mapped more accurately. Also use historical imagery to see patterns of development and uses on the forest for example, answering the question of when was this rock pit first developed, or when was this road constructed etc. Thanks for the survey.
 - I use the data and find it very helpful to use. I don't know details on how the BLM obtains the data and the criteria for the agency to obtain the data. I need the data.
 - I want to emphasize the finer the resolution, the better. We have to map specialty crop plantings which can be small and varied.
 - I would just like to emphasize the value/importance of having imagery with the NIR band for our work.
 - I would like to stress the importance of having 4-band imagery available. The CIR band is extremely important for detecting and monitoring vegetation health and vegetation types (in combination with natural color. 1 meter resolution is the absolute maximum resolution for interpreting vegetation. Sub-meter is preferred, but probably not realistic, given the space requirements. I would like to be able to sub-contract for higher resolution and stereo pairs for selected point locations to incorporate photo-interpretation into vegetation monitoring.
 - I would like to thank FSA for sharing their imagery with us NRCS folks. We are truly grateful!
 - I would love to be able to get 4 Band (including NIR) imagery, at no additional cost to my agency.
 - I would love to find a way to get rid of the black boundaries on the edges of the county mosaics where they overlap. There's never just one color combination to represent the black that can be turned off. Also when black is turned off it shows holes in the imagery where there was black that actually should be there for the image to look its best.
 - I would love to see more flights during the fall. it makes it much easier to tell the difference between maple and aspen.
 - If by web services you mean that electronic copies could be downloaded, that works just fine!
 - If I could get more information regarding the 3D national dataset I would greatly appreciate it.
 - If I understand NAIP correctly, it is taken at the height of the growing season. It might be useful to have imagery from the fall when the deciduous trees have lost their leaves. This would make it easy to differentiate the difference between deciduous and evergreen vegetation.
 - If it is possible to get historic imagery for USFS R6 please contact... This historic imagery would be extremely useful for mapping presence of detrimental soil disturbance for planning documents and NEPA disclosure.
 - If possible, images from both leaf-on and leaf-off would be ideal for our needs.
 - I'm stationed in ALASKA. NAIP historically has not covered this state. I realize that agriculture issues are not prevalent here, but there is still a need for this kind of product.
 - I'm thrilled that I have the NAIP imagery to use in my project work. It's saved me so much time and it's such a great analysis tool. I can't imagine working without it. Keep up the good work!
 - Imagery cannot determine size class
 - Imagery data (leaf-on) for several times during the growing season would be very helpful in depicting early flowering non-native invasives - different color signatures.
 - Imagery is critical for us and based on my participation on the State-Steering Committee for West Virginia it is critical for many other stakeholders as well.

- In archeology we look for linear alignments, patterned ground, depressed shapes, vegetation mosaics and recent mass movements.
- In areas where snow cover is an issue, such as the Rocky Mtns and all the forests located in that geographical area, please time the flights so that snow is not covering the ground. Some of the imagery in the past is useless because the ground is still under several feet of snow.
- In Idaho, the flight windows need to be tightened. The mountains here in Idaho can leave a lot of shadows the further away from solar noon the data is collected.
- In the areas I work we have a very rough DEM (60 resolution) and no ortho imagery (though a 5 m product is in the works). A decent DEM (e.g. 5 m resolution) and timely hi-res imagery (every 5 years or so) would replace a lot of what we currently do by guesswork or by expensive and dangerous travel.
- Incorporate minimum sun angle criteria for data collection flight conditions to reduce extent of shadows on resulting images.
- Increased resolution.
- Input quality data Output quality answer
- It has come to be an important source of information to update our GIS. THANKS
- it is a wonderful tool to have-thanks!
- It is an awesome product that I use weekly for planning, recon, maps, presentations, etc. Hopefully we can continue to fund this project!
- It is important to have county imagery on our Field Office Servers. It is also important to have statewide imagery on fast, reliable web services.
- It is impressive that we can obtain so much information from current, accurate and high resolution imagery. It sure beats the imagery of the past and using Stereoscopes.
- It is very important that I have leaf on imagery for the vegetation analysis work that I do.
- It would be beneficial to be able to send private sector consumers to a single site for retrieval of the imagery and other statewide datasets.
- It would be nice to have imagery for all of the 50 states, not just some of them
- It would be useful to have both leaf on and leaf off imagery for every year.
- It would be very beneficial to have .5 meter 4 band imagery every other year.
- It would be very good if there was anything like NAIP for Alaska.
- It's necessary!
- It's not really imagery, but a national, 1 meter surface or bare earth DEM co-referenced with the NAIP imagery would make the imagery far more useful.
- Just so it's fast & I'll be happy.
- Just Thank you for doing this
- Just thank you for the work that has been done that the products that have been made available for use. They have been extremely valuable.
- Just that we need it every few years and Leaf off is the best. We have a leaf sett from 2007 and I go back to these photos to see the ground. One meter is great but I don't think we have to have it.
- Keep it coming.
- Keep up the good work!
- Keep up the good work, without your imagery we would have to invest in our own imagery and across the USFS it would be a patchwork of flights that only the USFS would likely use. Your product serves so many and is standard across the country which is very important.
- keep up the good work. maintain us up to date on what is going on. thanks
- Late season (October) "leaf on" flights capturing yellowing aspen stands in the fall would be valuable.
- LIDAR has great potential for archeological use. Whatever the field office does should complement, not compete with, what is readily available through other sources.
- Limit the time span in which imagery can be collected to +/-1 hour of solar noon. Require the collection of imagery with a digital camera that collects true R, G, and Blue spectra, not cameras using a Bayer filter approach.
- Looking forward to the next NAIP.
- NAIP is a great asset to our agency. The quick turn-around from acquisition to delivery (under 60 days) has been impressive. NAIP is also vitally important to non-USDA/state/local/public - especially in smaller communities and all rural areas.
- Make access and use as simple as possible for those of us who are required to use ArcGIS, but may use it infrequently and are not experts.
- Makes the job easier and faster
- Maximum LiDAR coverage of the National Forests would be excellent.
- metadata would be better if information on color balancing or mosaic process were transparent, and included as part of metadata
- Mid spring, in the middle of the time when trees are leafing out. You can tell tree species by the shade of green and the timing.
- More spectral consistency would be nice for larger areas, otherwise we have to limit the extent of analysis to a quad or quarter quad.
- mosaic and orthorectify across hundreds of thousands of acres, good off-NADIR acquisition, minimal shadows (avoid early morning or late afternoon acquisition)
- Much of our work requires stricter standards for sun angle and obscurity since we deal with high relief and tall trees creating areas in deep shadow. Infrared is becoming more in demand as we see environmental stresses affecting forests and riparian areas.
- My current needs are minimal, but if there was current year or last year imagery available that had the resolution to see single trees, it would change the way we do business for the better.

- My data needs are primarily for Denali and Wrangell St. Elias National Parks.
- NAIP 09 is SO MUCH better than NAIP04. Thank you! I use it from the image server.
- NAIP allows me to overlay important GIS features and perform crucial affected environment analysis. Using satellite imagery as a file is way too slow and timely to use.
- NAIP for Alaska.
- NAIP has been a godsend for BLM field 'ologists, particularly east of the Cascades.
- NAIP has been pretty good for a lot of our needs, however, we have a real need for higher resolution, more accurate imagery for a number of our needs. We have had to beg our County counterparts for their imagery with mixed results, but in general their imagery product has been much better than what we have had access to.
- NAIP imagery has been extremely useful for FS and other local agencies, quality has improved from 2004 to 2009, still need to work on resolution and blurry areas
- NAIP imagery is critical in effective management today
- NAIP imagery is important in my work. Please continue to provide it. Thanks.
- NAIP imagery is well used for natural resource planning and public information
- NAIP is a great program. Would like to see full 1m resolution data extracts available on the GDW instead of just compressed data extracts. This would be my biggest request. Thank you.
- NAIP is essential to public collaboration - a requirement for new Forest Planning Rule.
- NAIP is very important in my day to day work.
- Need staffing, local expertise, FTE's
- Need to assure electronic spatial data is made available for all NFS units. Otherwise, data is limited to only NFS units with progressive efforts.
- Needs to be better distribution and notification when products are ready for those contributing partners to the NAIP program.
- No other than the imagery has been great and very useful in natural resources work.
- No, thank you!
- No, thanks for the opportunity to participate in the survey!
- Nope, but thanks for asking.
- One foot resolution please.
- Past imagery has been very good and very helpful. Thank you!
- Please consider Alaska. We do have farmland here. A large portion of our population relies on some form of year round subsistence (i.e., hunting, fishing, gathering.)
- Please consider needs in Alaska for future imagery acquisition missions. Thanks
- Please continue the imagery program it is vital to our work.
- Please continue this program, it is important for the US Forest Service core business needs.
- please continue this service.
- Please do not let this be a replacement for aerial photos. Aerial photos are a very valuable tool for field going personnel and are also available when computers crash (which they seem to do often).
- please don't solely use imagery with "snow on" for mountainous areas - it is pretty useless for roads. Otherwise, I love your products.
- Please keep it coming regularly.
- Please keep NAIP imagery available. It's a valuable research tool! Thanks!
- Please make imagery available to ArcGIS
- Please press for statewide 0.5m cell size in California
- please work on scanning the 1930's photos and then georeferencing the mosaics... thanks
- Please! keep it up, we use and appreciate this data.
- Regular availability of high quality NAIP imagery would increase our ability to detect changes needed for managing for sustainability in a changing environment.
- Shooting high, it would be nice to have 6in GSD.
- Since having the NAIP, I am able to perform a more quality job and be more productive.
- Soil survey and mapping imagery requirements are different than FSA imagery requirements. These requirements need to be defined, addressed, and filled so soil survey can move forward.
- Some lingo on survey I did not understand, and no time to find out on my own.
- Some of the technology discussed is beyond my ability to answer the questions. Some explanation of what some of this means would yield better answers, but I also would count on the experts to get field staff what they need. I just know I really use NAIP a lot for many purposes. Having it is necessary.
- speed of imagery and understanding how to retrieve imagery is very important !
- Stamp of date
- Suggest alternation of leaf on and leaf off imagery for eastern U.S. Leaf on is useful for assessing forest canopy conditions, disturbances, damage, decline, etc. Leaf off is useful to assess streams, roads, oil and gas developments, and things closer to the ground level.
- Thank you for all you do.
- Thank you for allowing me the opportunity to contribute to this survey.
- Thank you for asking. I use NAIP imagery all the time and wish we had access to more historic imagery as well as recent imagery.
- Thank you for providing this important resource!
- Thank you for supplying past imagery. It has been a great asset in showing boundaries and drawing parcels.
- Thank you for taking the time to get our input, and for considering it.
- thank you for the dataset. It has progressed the USDA Forest Service in many ways.
- Thank you for the opportunity, and have done some historical aerial image rectification on my

- own, and are hugely beneficial to show change over time for our own personnel and the public!
- Thank you for updating your NAIP imagery and for requesting user input! Kudos to you!!!
 - Thank you NAIP is great and has helped us complete our mission.
 - Thank you.
 - Thanks and hopefully we can continue to acquire and improve our use of imagery as it helps tell our story, complete our analysis and plan and implement projects
 - Thanks for a great product!
 - Thanks for all your help. I'm loving web service (Image Server). Boy does it save time. Is DEM available?
 - thanks for asking!
 - Thanks for asking!!
 - Thanks for asking.
 - Thanks for asking. Love having NAIP available.
 - thanks for doing this!
 - Thanks for the great data!
 - Thanks for the opportunity to share my program needs for the imagery.
 - Thanks for the service you provide
 - Thanks so much for all you do!
 - Thanks!
 - Thanks!
 - The 1m resolution NAIP we've been using has been great for field maps, presentation images and analysis. Thank you!
 - The 5 year program for aerial imagery is one of the most valuable programs for capturing a snapshot of forest condition. I would be a real loss if we lost this valuable tool.
 - The ability to have overlapping stereo pair imagery is vital to my field work. Current imagery for GIS use is also used extensively.
 - The aerial imagery is hands down essential to most of what I do and I hope that we continue to be able to utilize this resource!
 - The availability of this type of imagery is a very valuable asset for communication of land management issues, project planning and litigation exhibits. The horizontal accuracy for land survey application is critical as the use of imagery is becoming an increasing component in survey project resurveys and new projects.
 - The better the resolution of the imagery, the more useful it is to me.
 - The closer you can get, the better I like it.
 - The current resolution of the 2010 NAIP imagery for Louisiana is I believe 3 feet or 1 meter. Higher resolution imagery, say 1 or 2 feet would be quite helpful.
 - The half-meter resolution imagery provided by the Forest Service Image Server best meets my needs. Thanks.
 - The high quality imagery you provide allows for efficient work. In these times of shifting forest health and rapid development of minerals on our Forest, please keep intervals to one year.
 - The imagery be available via web services and the ability to order data on dvd/cd.
 - The imagery needs to be as clear as possible and accurate.
 - The improvements in the available aerial photography realm have been amazing since I started my career 10 years ago. I am excited about the developments and the ability to compare high quality imagery over time from my computer will only continue to improve my efficiency. Being able to see features (emigrant trails, prehistoric villages, house pits, railroad grades, etc) in aerial photos before going into the field makes my work that much more efficient and means I can spend more time protecting and documenting things and less time searching for them!!
 - The intent of some of these questions is not clear. I hope you will rely on additional conversation with your customers to clarify our needs. Thank you for the opportunity to weight in with our needs.
 - The NAIP has been a HUGE help in the ability to do more with less and to be more efficient and accurate. It has become essential to our daily work.
 - The NAIP images have been the most useful imagery we have had to-date.
 - The nature of the questions asked in this survey is a little puzzling to me. It seems to me that it might be more valuable to ask specifically what users need rather than leading them into confined boxes which have been created by creators of the survey. What I'd like to see is: 1. Regularly acquired area-wide imagery in color or color IR at relatively small scale to track broad landscape changes in 2D in orthorectified format; 2. High resolution imagery which can be viewed stereoscopically at various scales and acquired at regular intervals (5 years or so).
 - The product is a great tool for us to work with, and I have had very pleasant interactions with the staff in Salt Lake City.
 - The quality of aerial photography provides unmatched utility for vegetation inventory and monitoring. While images such as through Google Earth images are easy to access, they sorely lack the detail needed for many aspects of public land management. We learn what quality of information is needed when we go to court; acquiring aerial photographs is essential work.
 - The Remote Sensing Applications Center provides enterprise data services that include NAIP to internal agency users. RSAC has a requirement for rapid access to NAIP data as soon as they become available from the vendors. RSAC would benefit from a direct data 'pipeline' to FSA-APFO to facilitate this data transfer. RSAC is also interested in developing a coordinated strategy to provide image services to agency users that relies on data provisioning applications hosted and managed by both agencies.

- The statewide ortho-rectified images are great for quick change detection, trend information, and map layer.
- This imagery has been very helpful, useful and a tremendous time saver versus going out to the field or acquiring other imagery - Thanks and hope the program continues
- This imagery is a great asset to our work
- This imagery is a great resource and is used.
- This is a great product that saves countless hours of field work.
- This is a very worthwhile program, and a great example of federal and state interagency cooperation.
- This is absolutely the best survey I have responded to from any provider of data. Thank you so much for the opportunity to explore our future needs for imagery. And I truly thank you for persevering with NAIP acquisition despite funding challenges. It is essential data for NRCS' planning work.
- This product is invaluable to my work. Annual imagery is essential to the quality and efficiency of getting my work done.
- This set of answers is actually based on a project I have worked on the last 11 years. It is now "unfunded" and will not be completed. The crew has disbanded.
- this survey was too long
- To perform my job I use the most up to date imagery available. If using "older" imagery, I spend time updating vegetation changes done since the imagery was acquired. Spot imagery updates where only vegetation changes since the previous imagery was acquired would be acceptable if those changes could be melded with the previous imagery acquisition. Might be cheaper (or not) than re-acquiring the entire landscape.
- We appreciate your help!
- We can't thank you enough for the product you provide and have partnered in 2008 to buy up to 4Band. Much to our surprise, the 2010 came 4Band without our buying up to acquire 4Band (We had no funds at the time). So thanks for that. Our users are coming to expect that this information is made available to them on a regular basis. My advice is to publish web services for BOTH ArcGIS and non-ArcGIS (WMS) clients to broaden use of imagery. Avoid licensing arrangements (and keep the original tiff image data files in the public domain). Avoid funding a cloud that includes imagery you funded the acquisition of but do have ownership rights to. Consider the possibility that one day a future generation might be unable to access the original NAIP imagery because it is owned by a company that went out of business. This has happened in CT with a company that possesses the negatives of an early stereo pair flight such that now it is not possible to purchase hard copy prints.
- We continue to use NAIP imagery when available and it is an important component of our spatial programs.
- We could really use LiDAR Imagery for Southeast Alaska.
- We have been very appreciative and thankful for this program. Without this program, our aerial imagery program would only be updated every 5 years and only specific areas of growth would be updated then. It has been very cost effective and beneficial to participate in this program.
- We need accurate imagery for our work at the Forest level and you play a vital role in providing that service.
- We need to invest in and coordinate or do cost share with local governments or other agencies to acquire national level high resolution hyperspectral imagery. Acquisition for this data type is too expensive for unit's declining budget.
- We need to partner to keep costs low for all agencies. Everyone needs imagery!
- We use the NAIP data on a daily basis as a backdrop as well as for mapping.
- We work in an agency with declining budgets and personnel. Having current imagery is important to do our work most efficiently with less available time. There is a need to have frequently updated imagery so our landscape can be evaluated with less intensive field work.
- We would like to get or upgrade to higher resolution, especially in urban areas. 1/2 meter or better in rural areas and 1 foot or better for urban areas. We need costs as early as possible (1 year to 18 months) in order to budget if it is a cost sharing program.
- We would really like to see the program provide for leaf-off options.
- Web services are a great option but they are no substitute for having data available locally. The main (and well-known) drawbacks to web services are Performance, Internet Connection Required, and Metadata, i.e. knowing what it is you're looking at. In addition, analysis typically requires manipulation of the data which is impossible without a local dataset.
- When images are recent and high quality we save a lot of funds.
- With current budget reductions we can no longer purchase broad scale aerial photography essential to analysis processes. NAIP images help fill in the gaps and needs.
- Without accurate and high quality full color imagery there are projects that would not have gotten completed in a timely fashion, if they were able to be completed at all.
- Would actually prefer photography when leaves are just coming onto hardwood trees in March/April.
- would be good to have standards for the NIR product or have access to the raw data
- Would like easier access to Landsat updates
- Would like to see imagery taken at spring or fall leaf-on to distinguish between hardwoods.

Appendix E – Agency/Department Responses

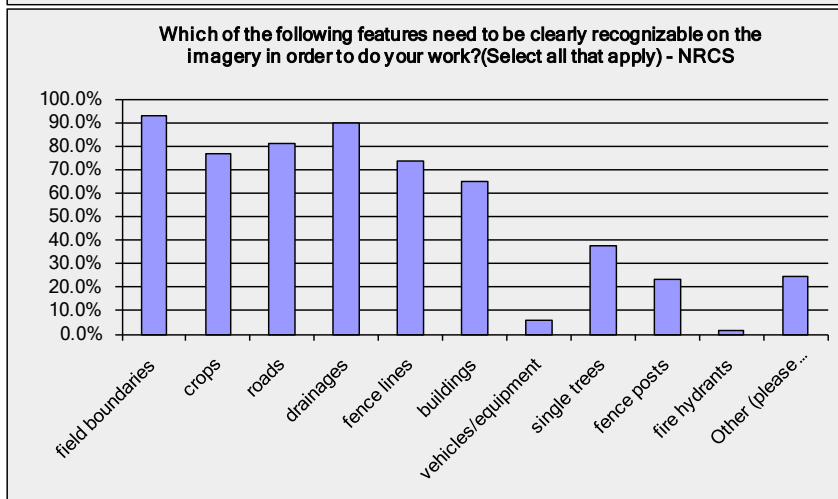
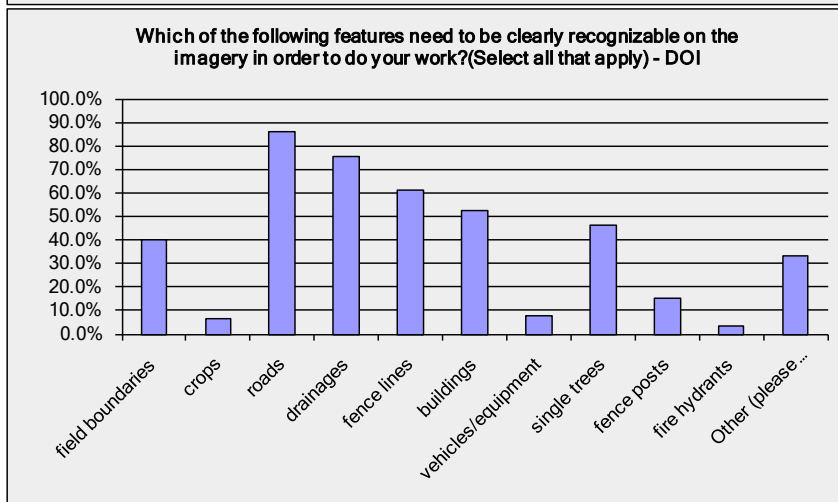
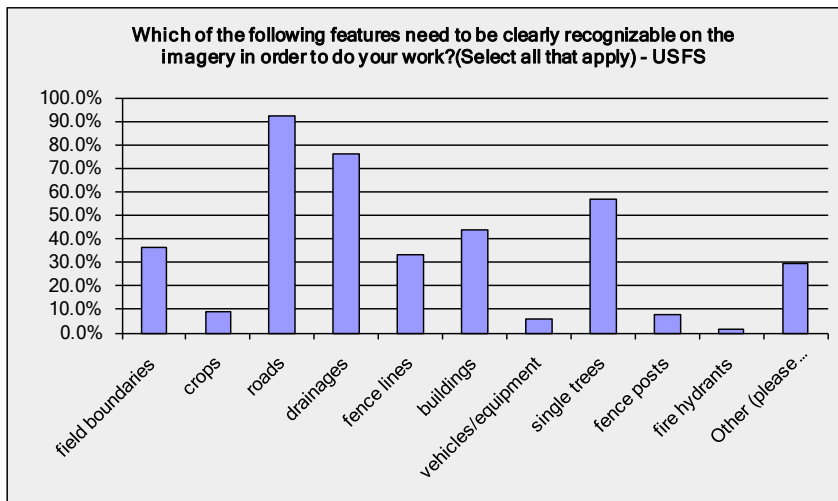
Question 1 – What is your name? Responses varied.

Question 2 – Who do you work for? The chart below shows the overall responses for purposes of comparison.

	Response Percent	Response Count
BLM	5.6%	72
FAS	0.1%	1
NPS	1.5%	19
NRCS	5.8%	74
RMA	0.1%	1
USFS	79.3%	1016
USGS	0.6%	8
Other	7.1%	91

Question 3 – What is your position/job title? Responses varied.

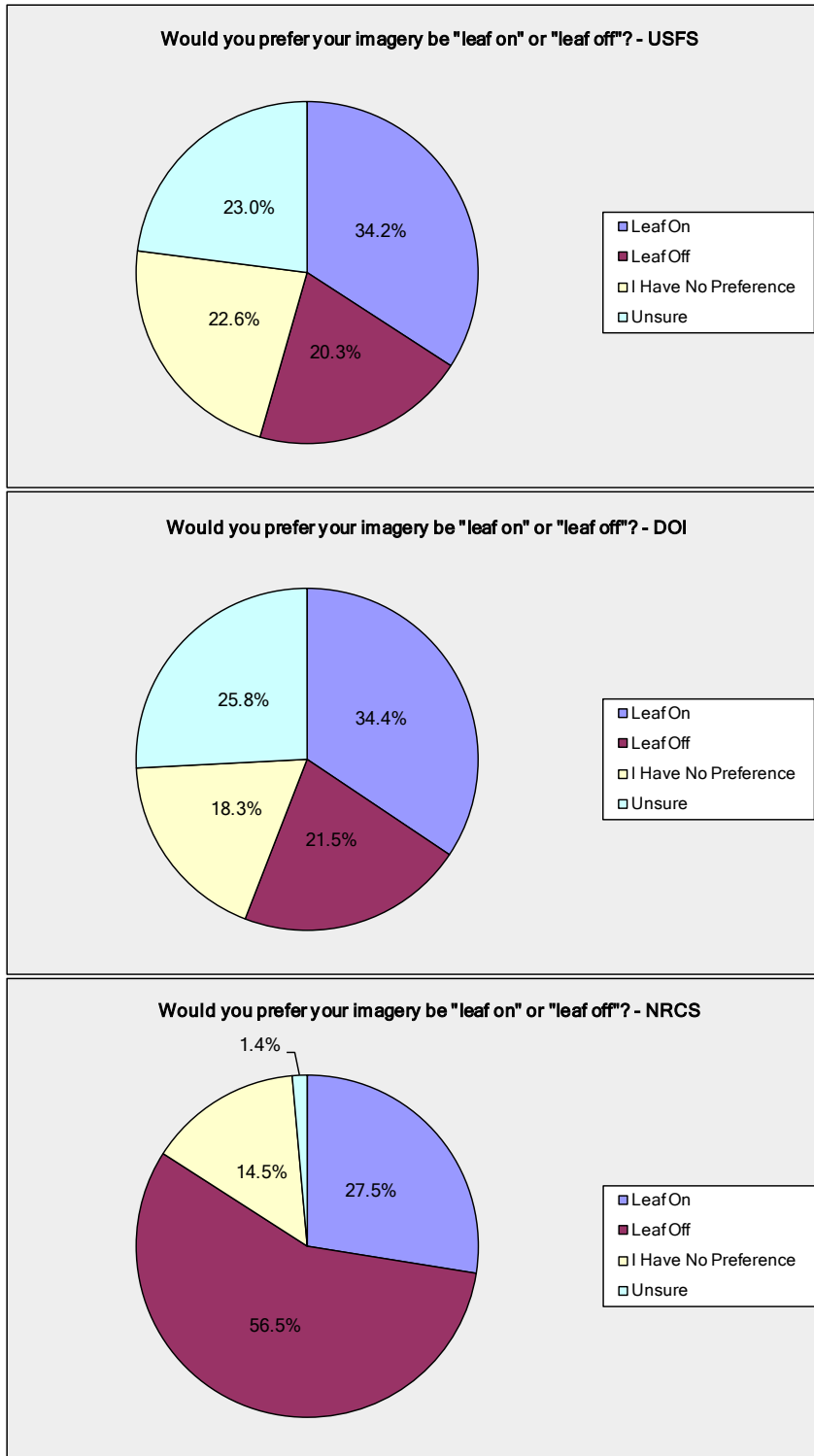
Question 4 –



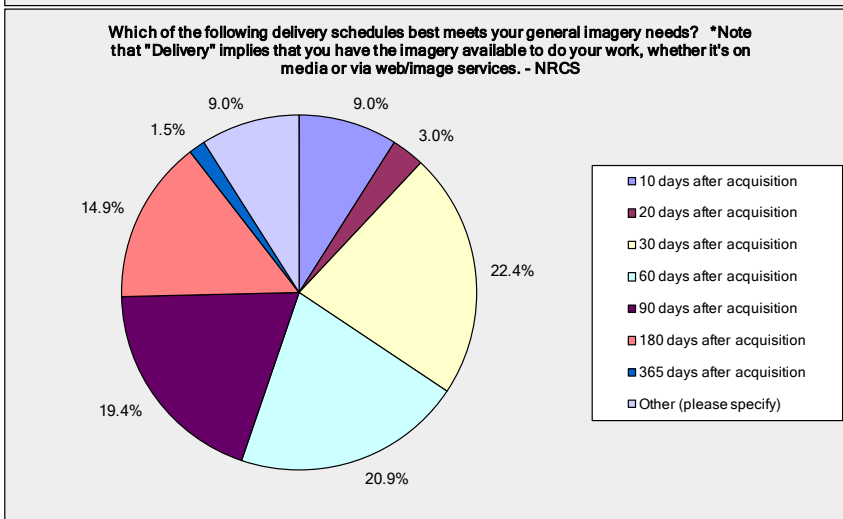
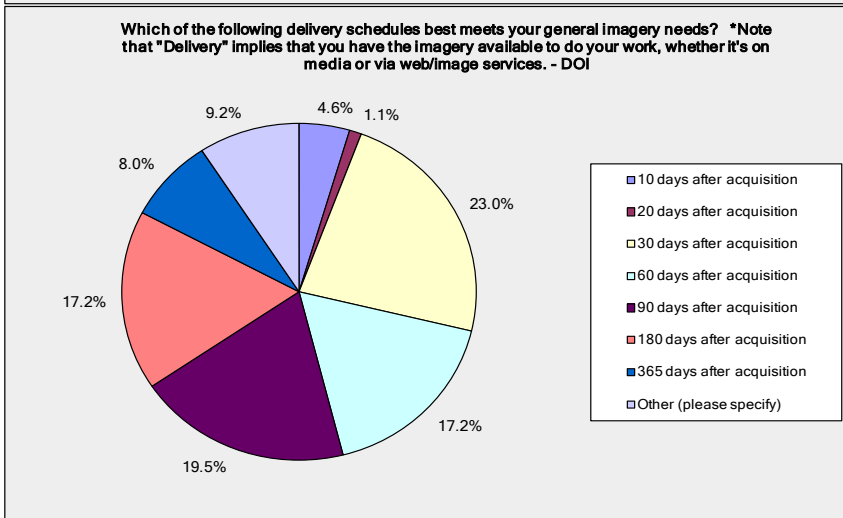
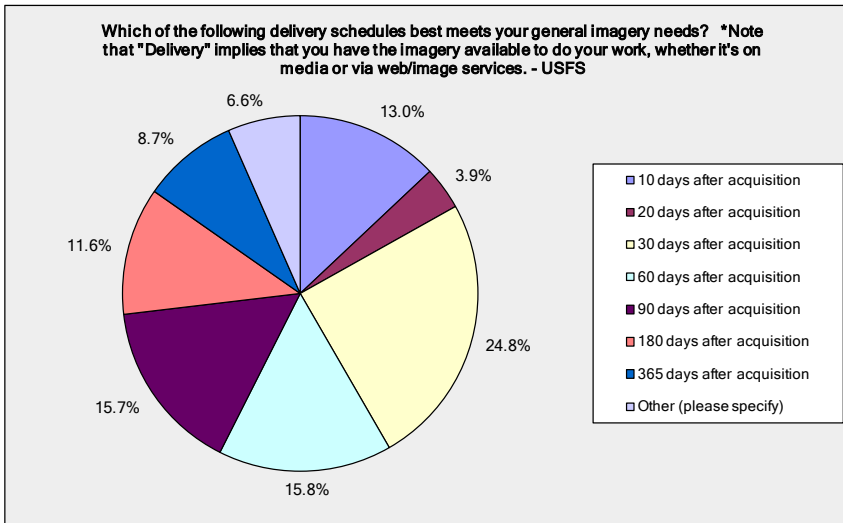
Question 5 – What is the smallest object you need to see clearly on the ground in order to do your work? Responses varied. Generally speaking, responses ranged from individual trees or bushes, to buildings, cattle guards, trails, drainages, fence lines, and fence posts. Many responses indicated a physical area or resolution (e.g. 1-foot) rather than an object. Raw responses for all

agencies can be found in Appendix A. Responses have been edited for spelling, but not for content.

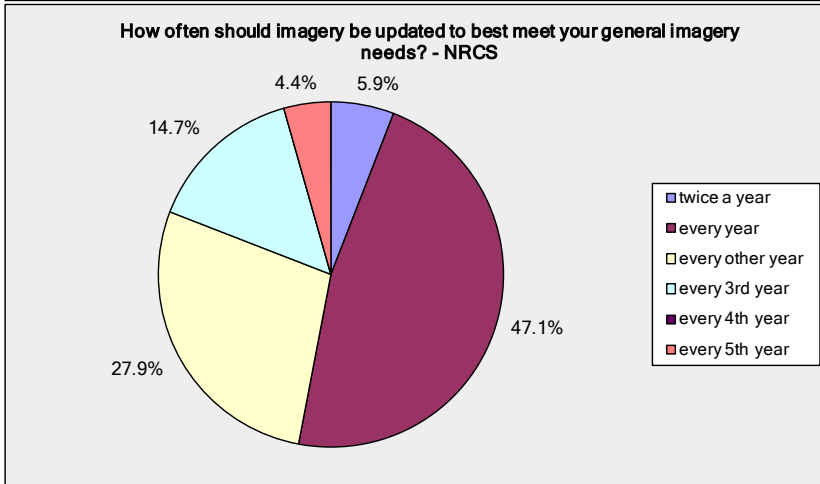
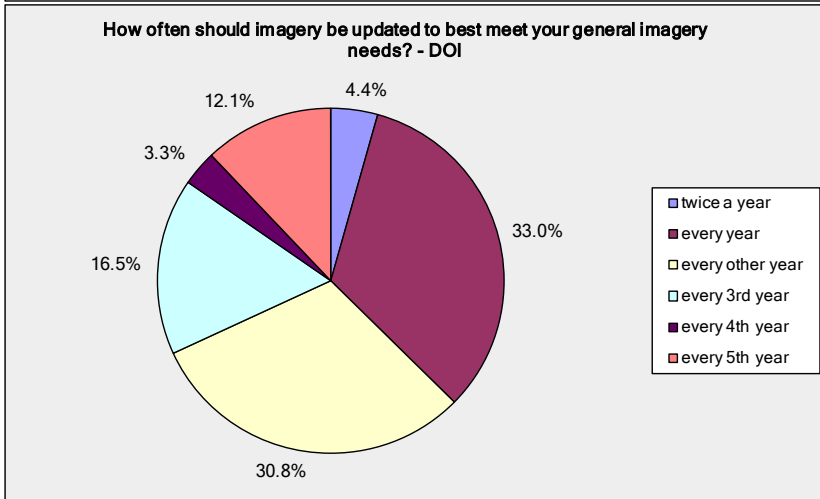
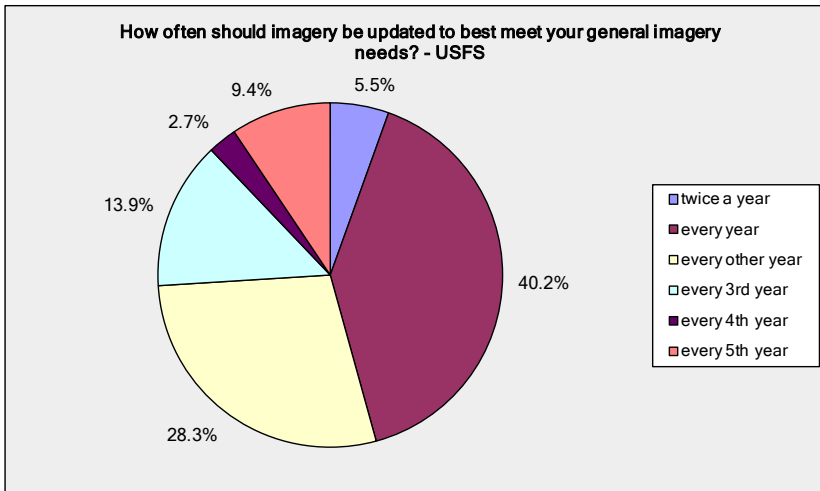
Question 6 –



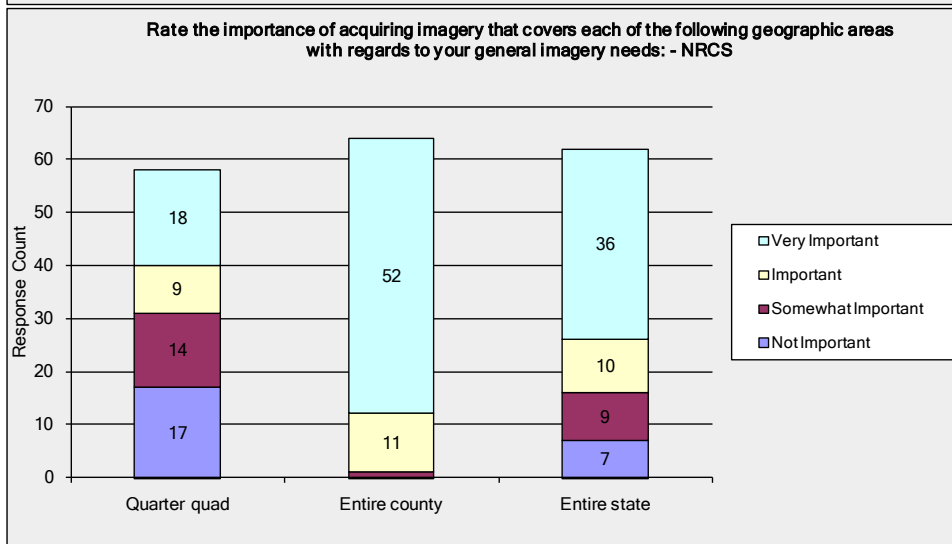
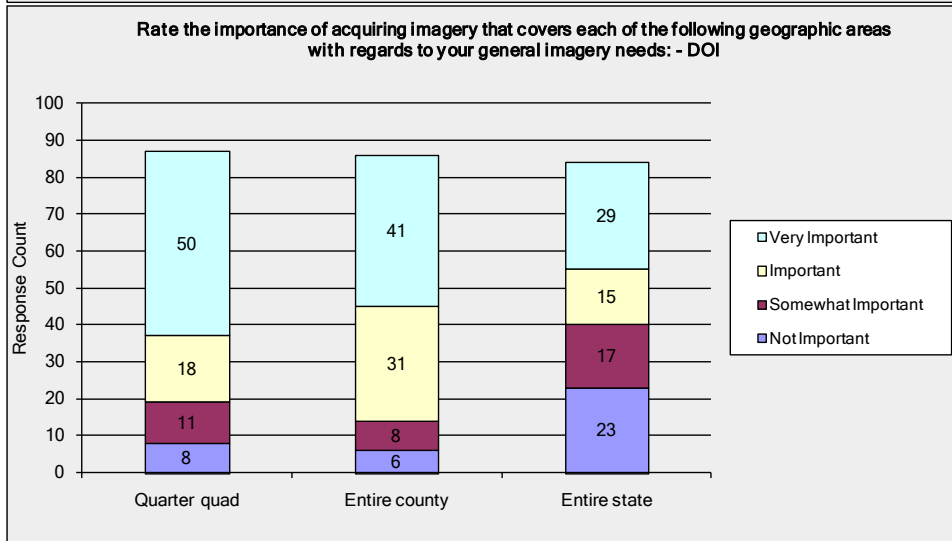
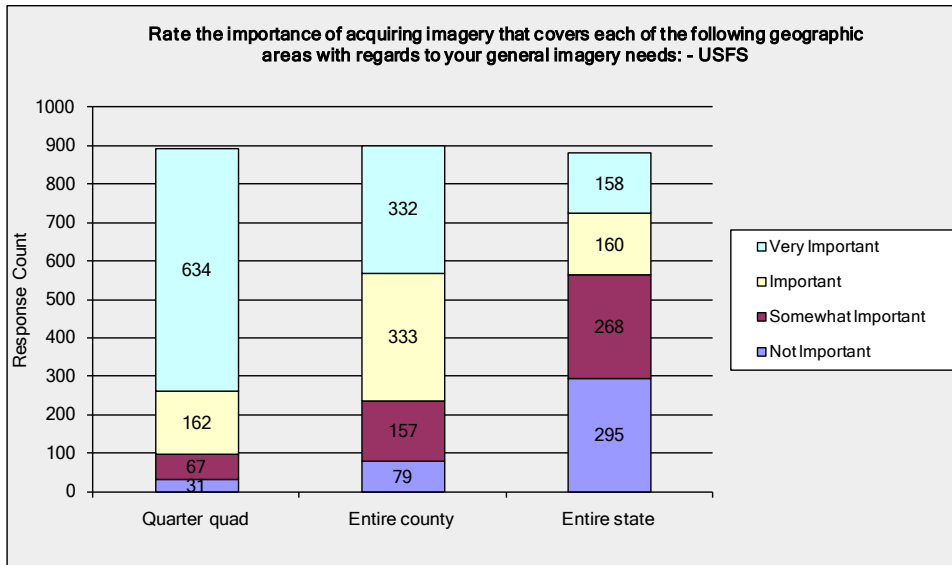
Question 7 –



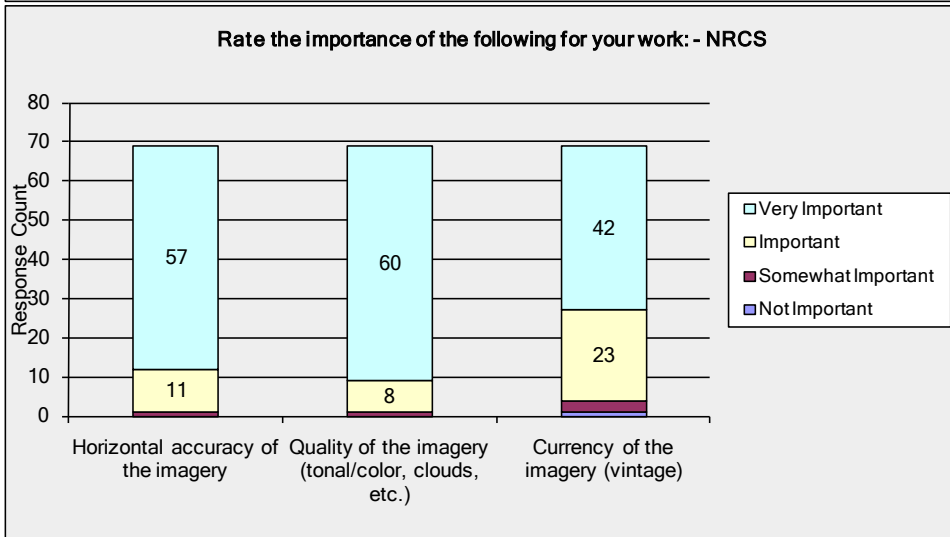
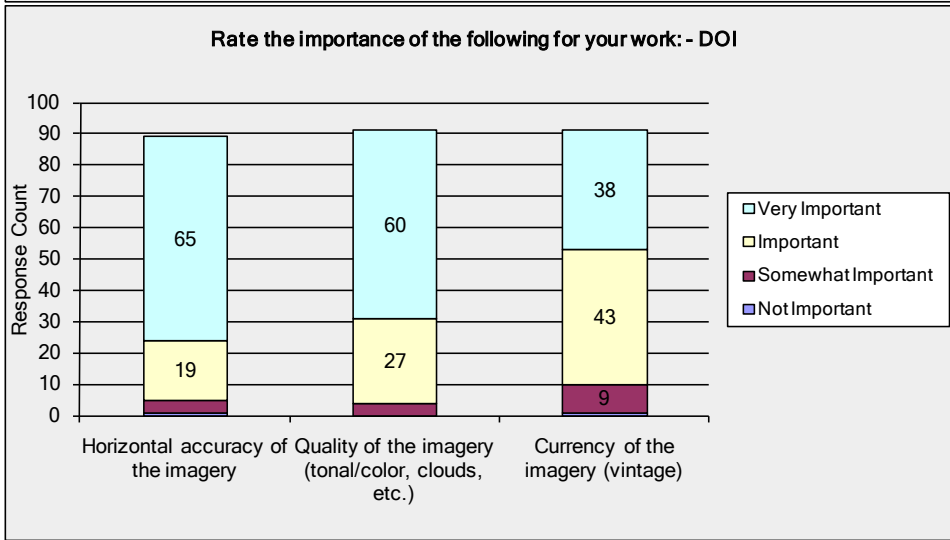
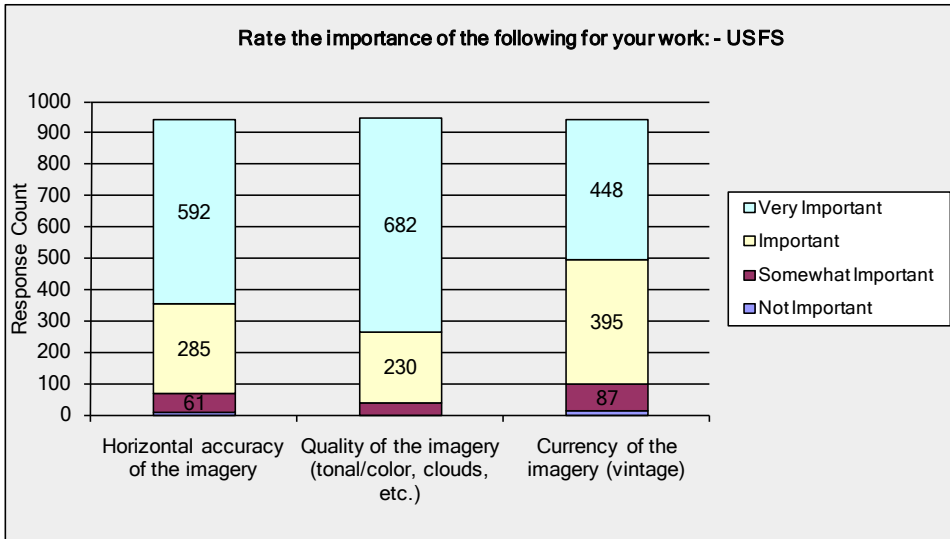
Question 8 –



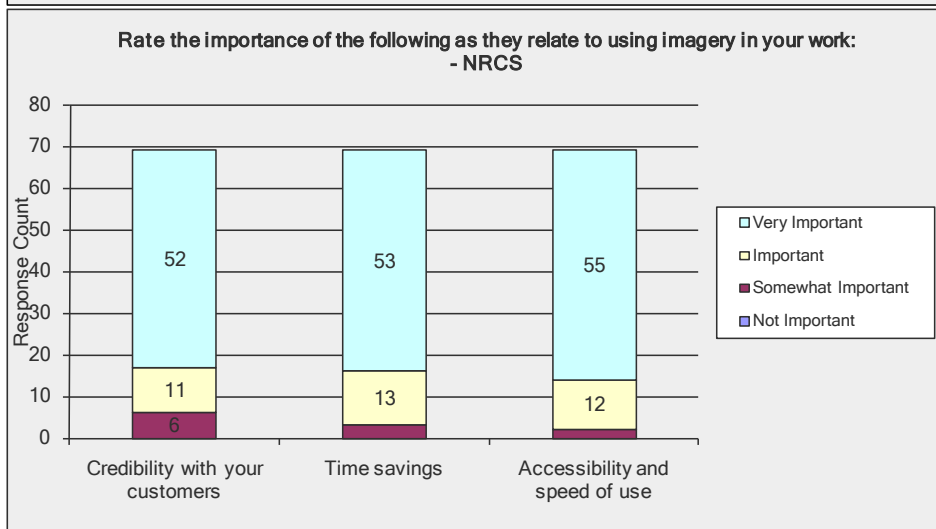
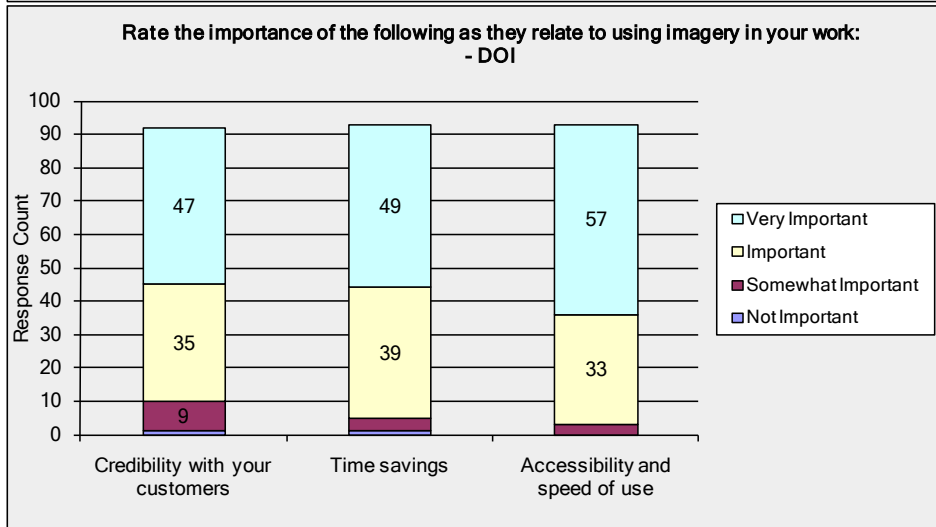
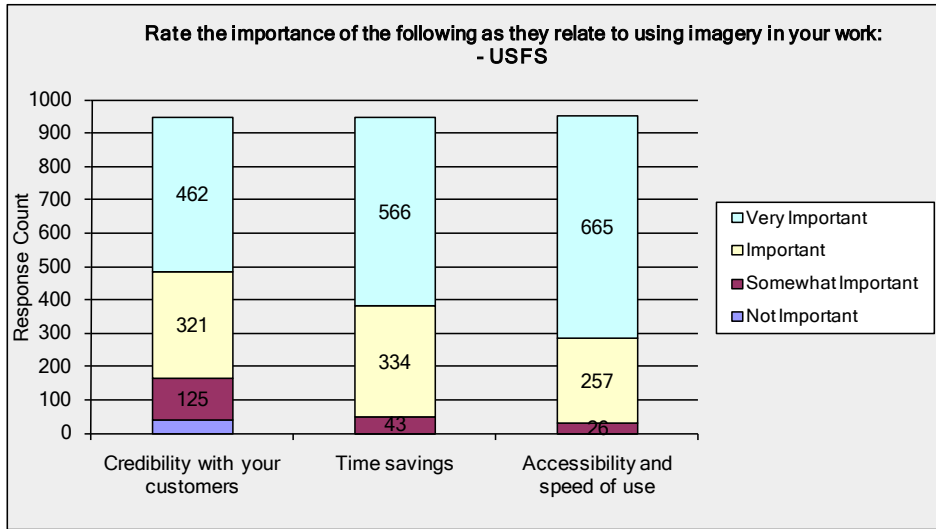
Question 9 – Responses are not normalized; the vertical axis indicates total response count.



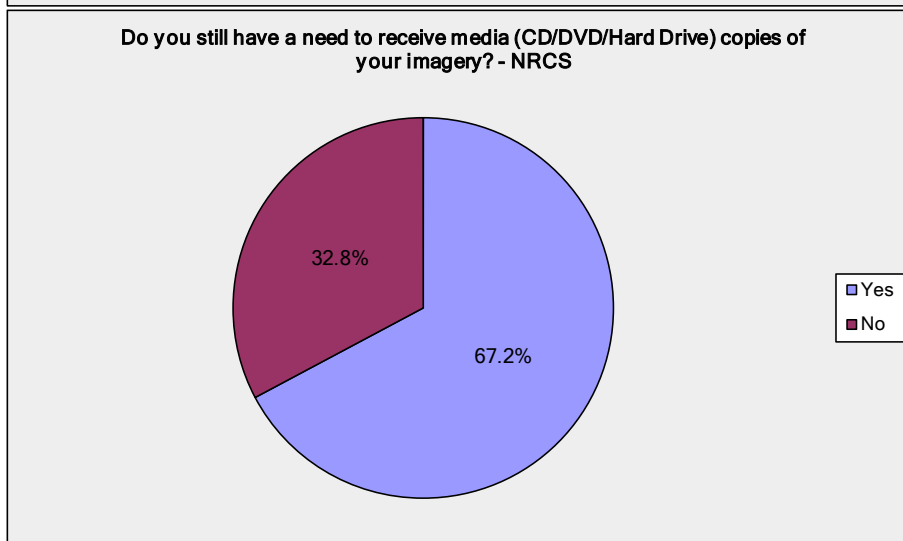
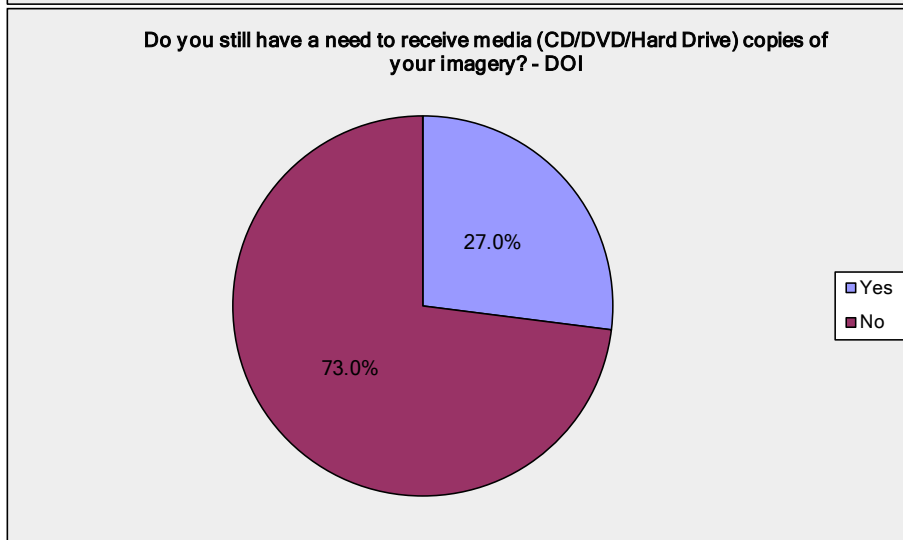
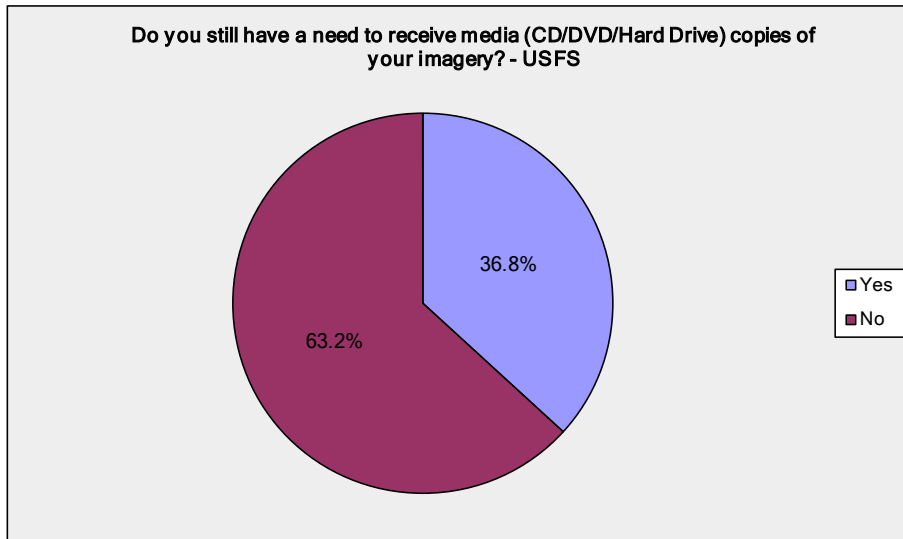
Question 10 – Responses are not normalized; the vertical axis indicates total response count.



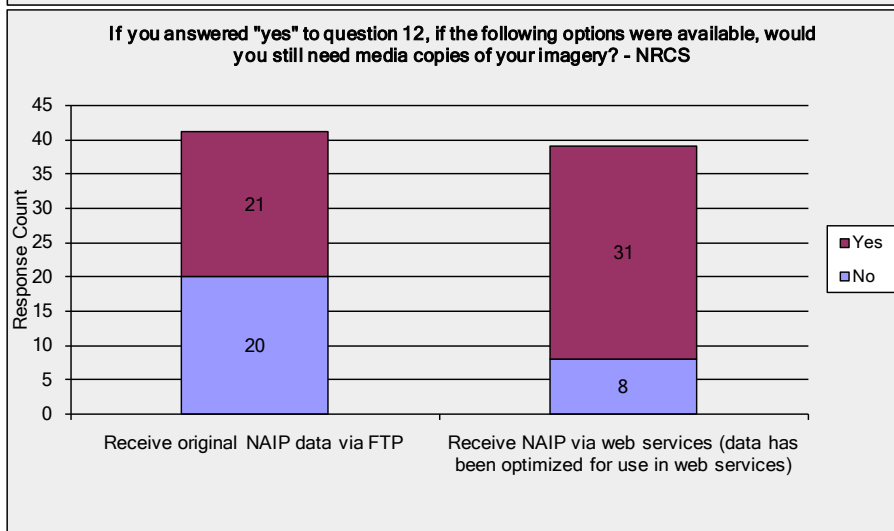
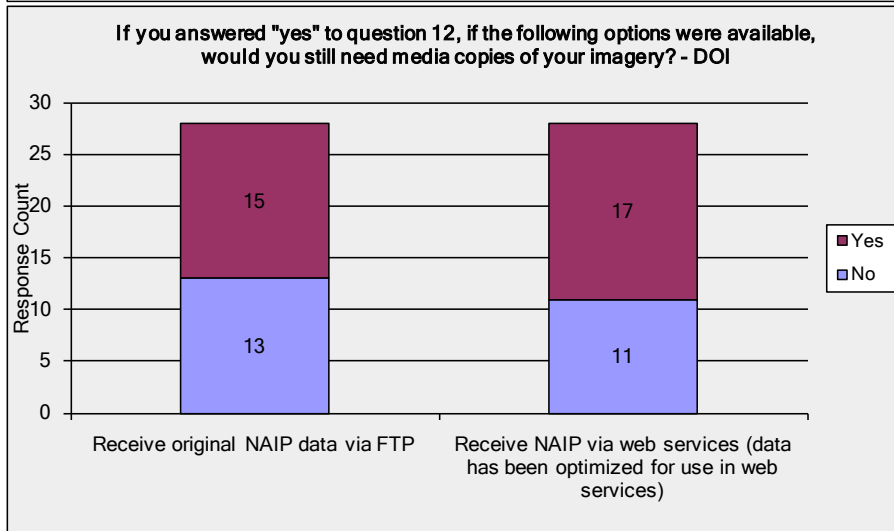
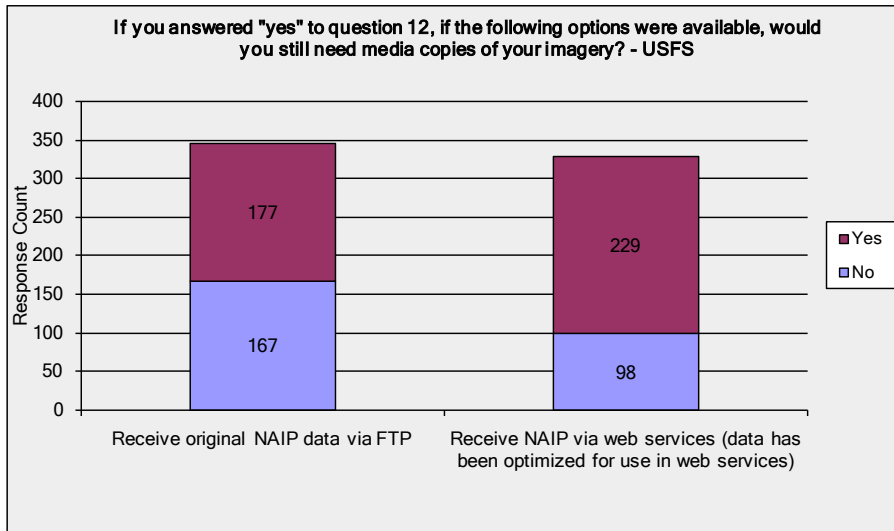
Question 11 – Responses are not normalized; the vertical axis indicates total response count.



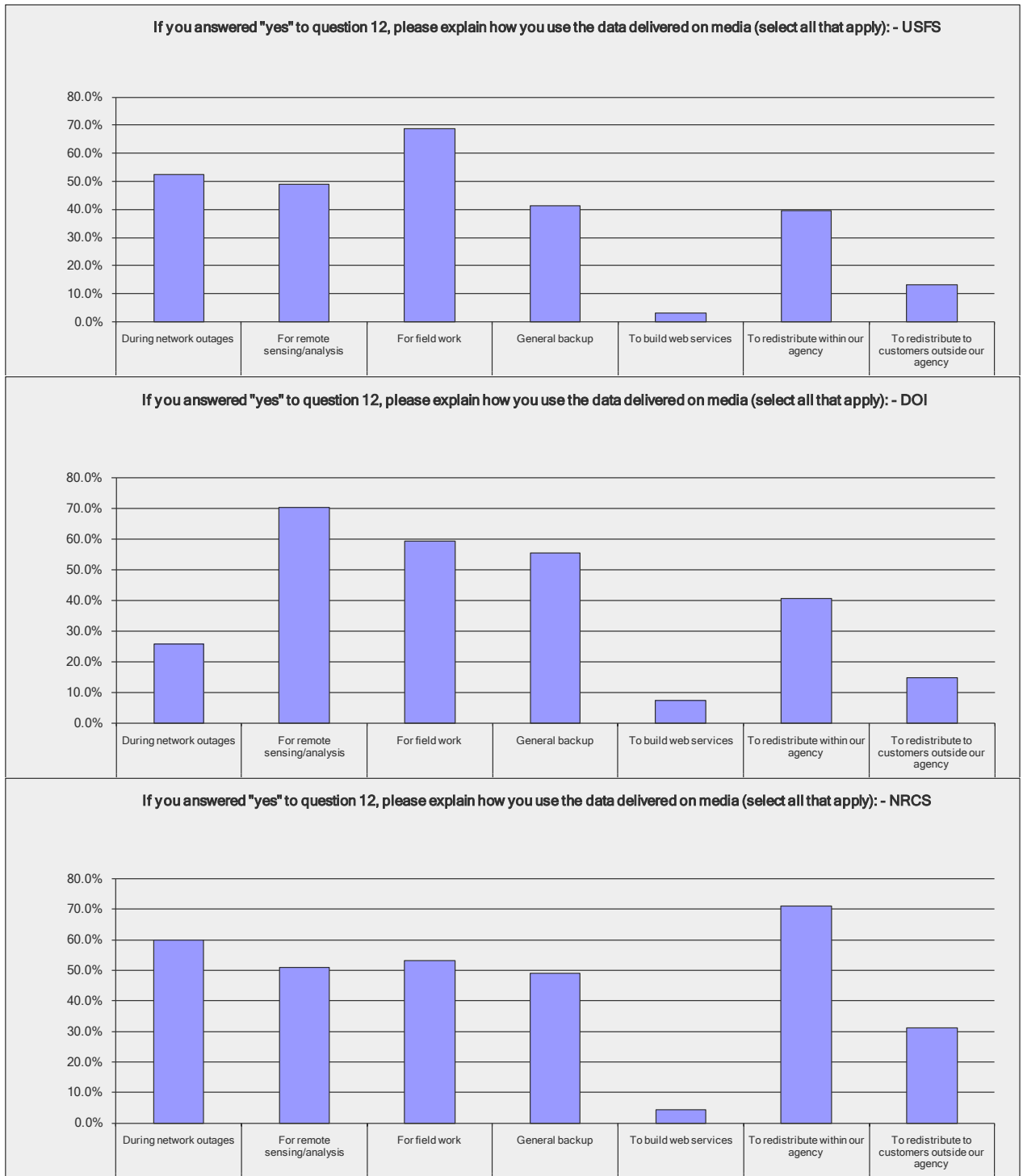
Question 12 –



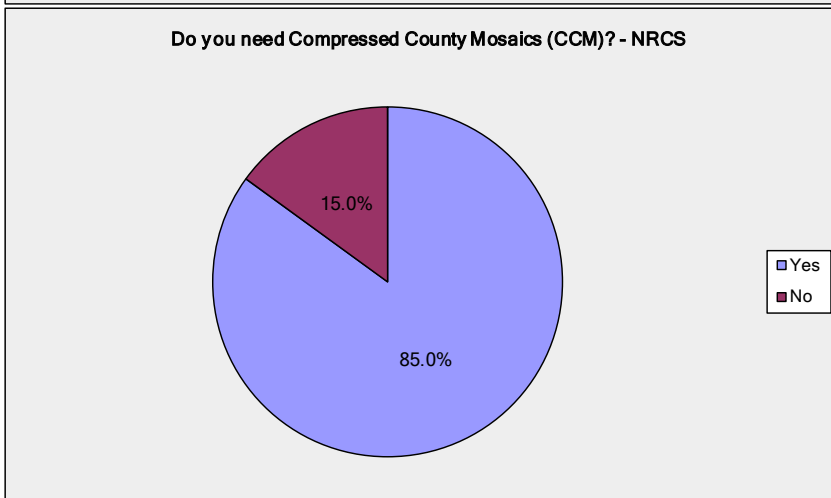
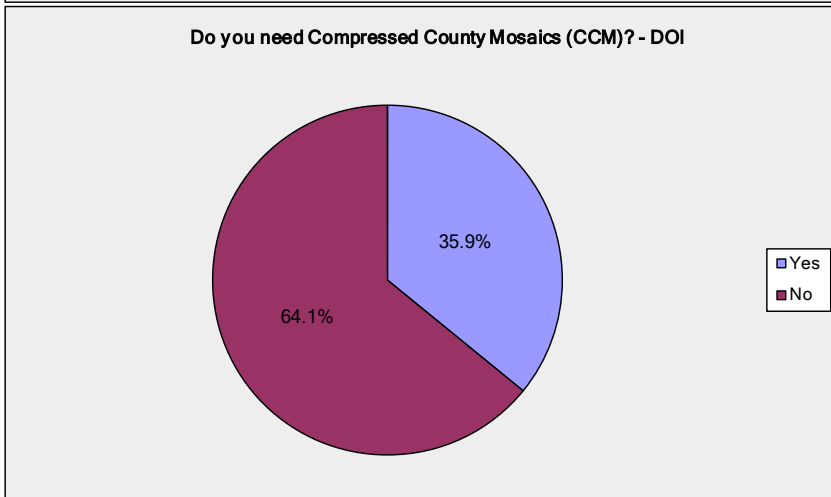
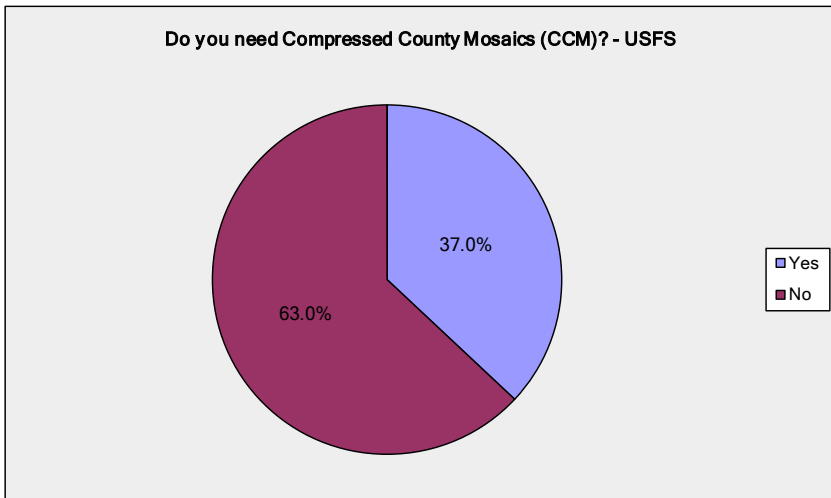
Question 13 – Responses are not normalized; the vertical axis indicates total response count.



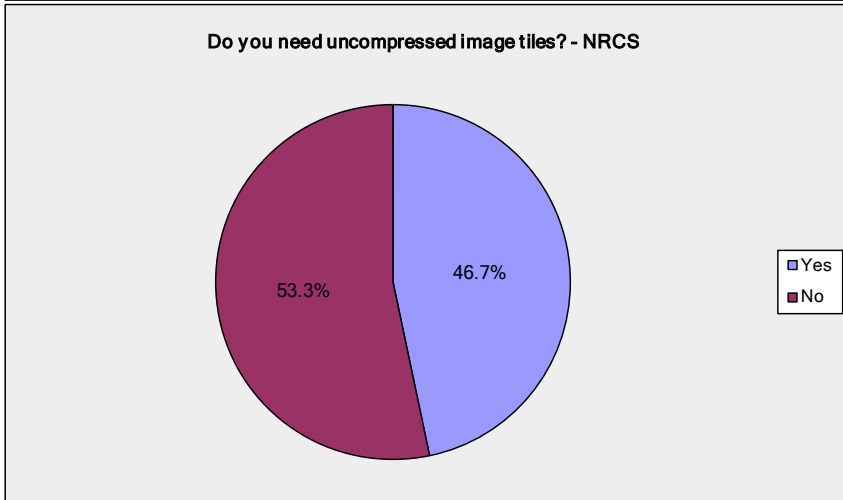
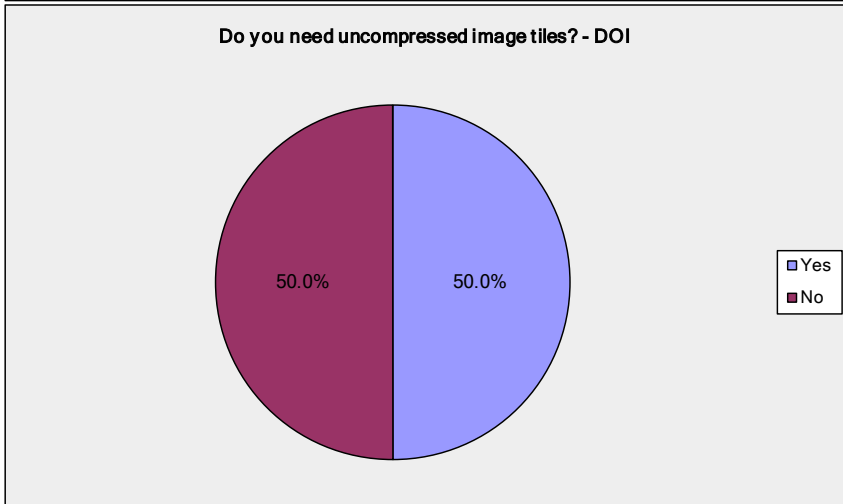
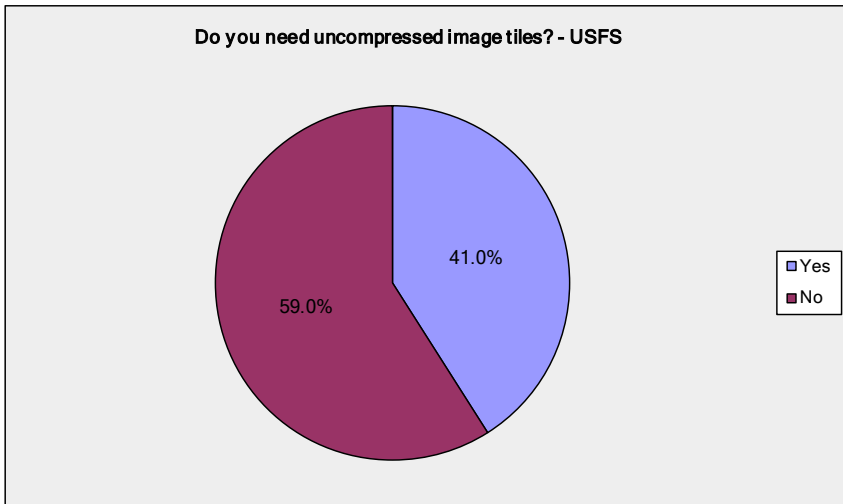
Question 14 –



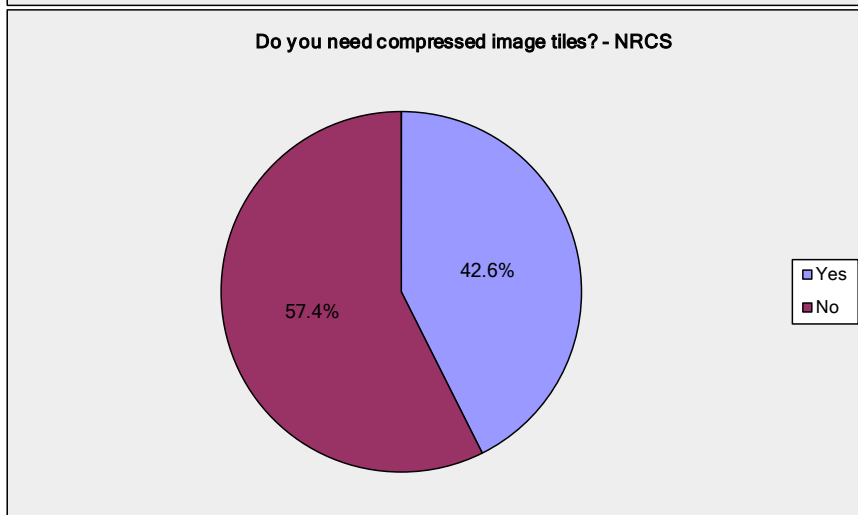
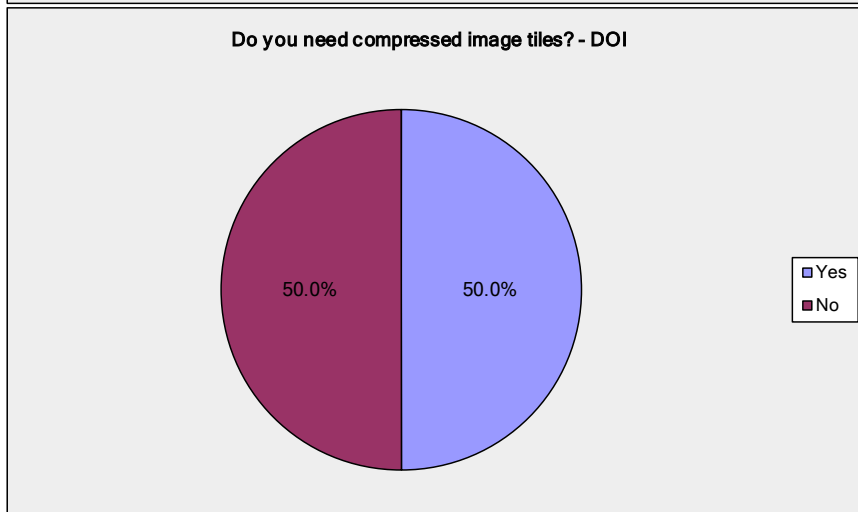
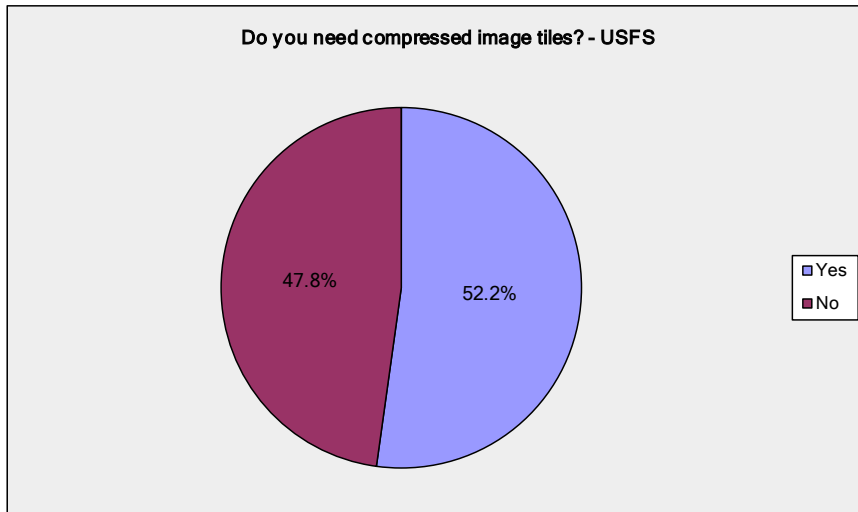
Question 15 –



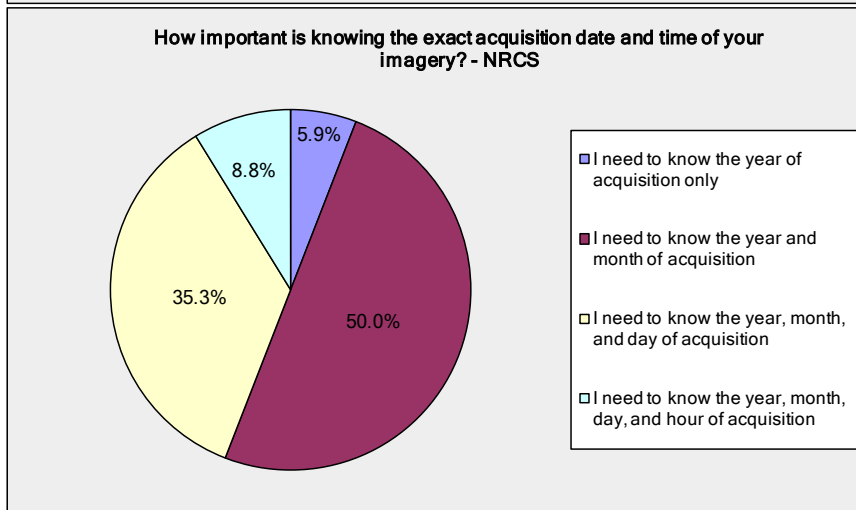
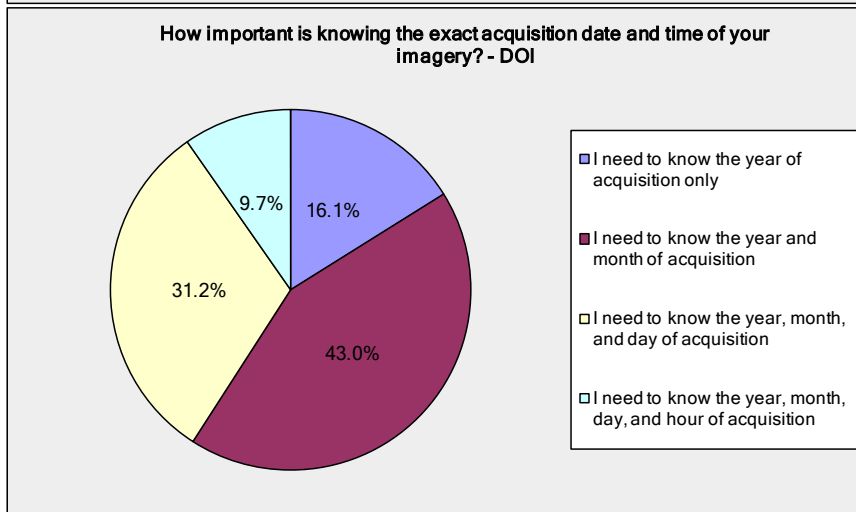
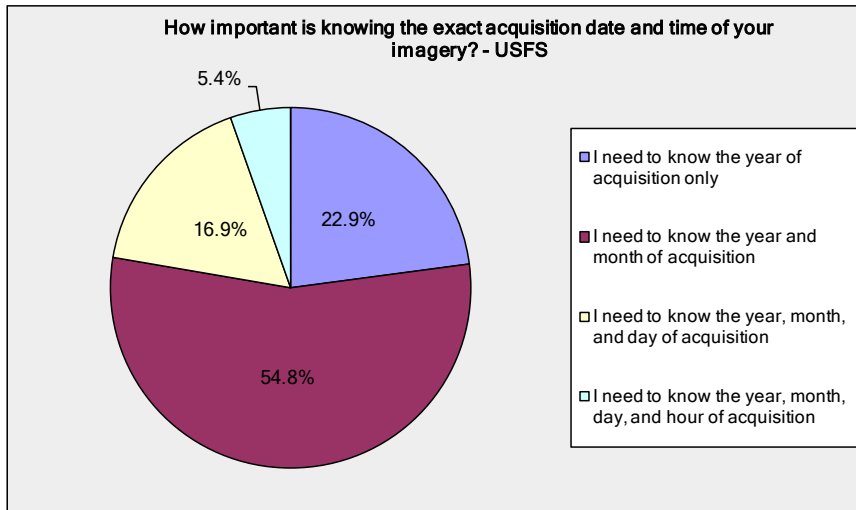
Question 16 –



Question 17 –

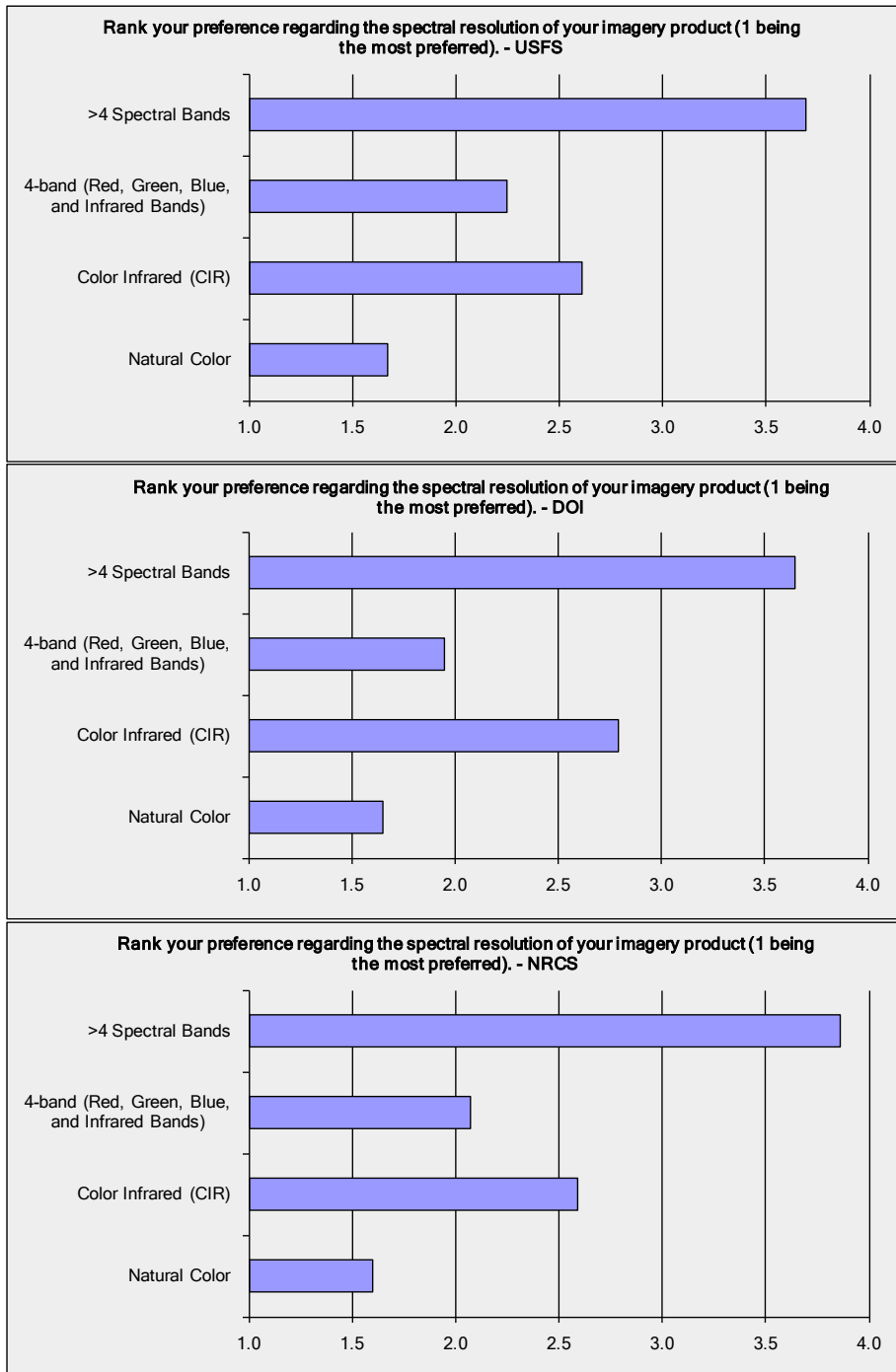


Question 18 –

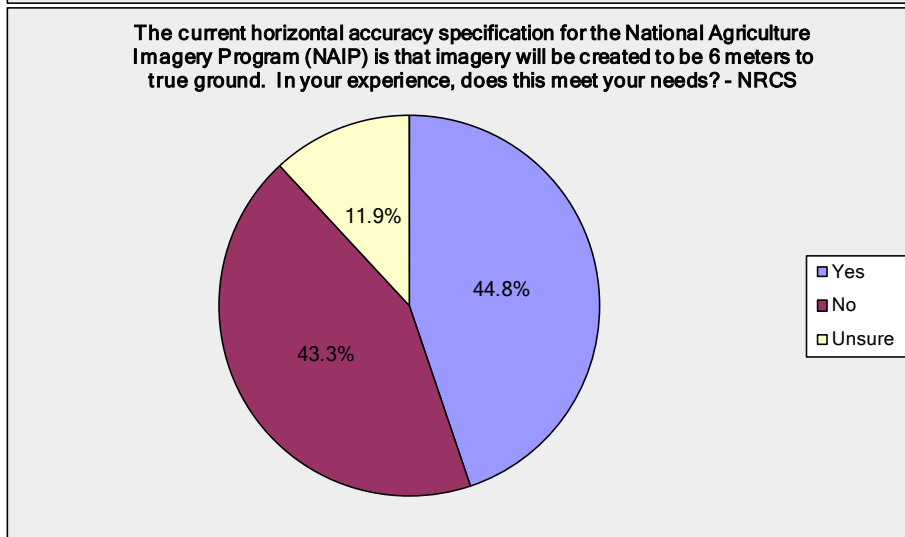
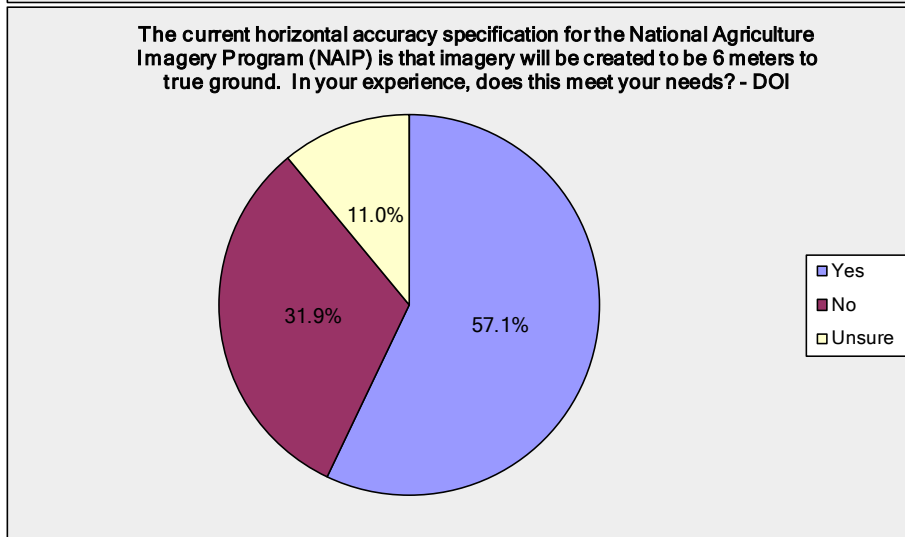
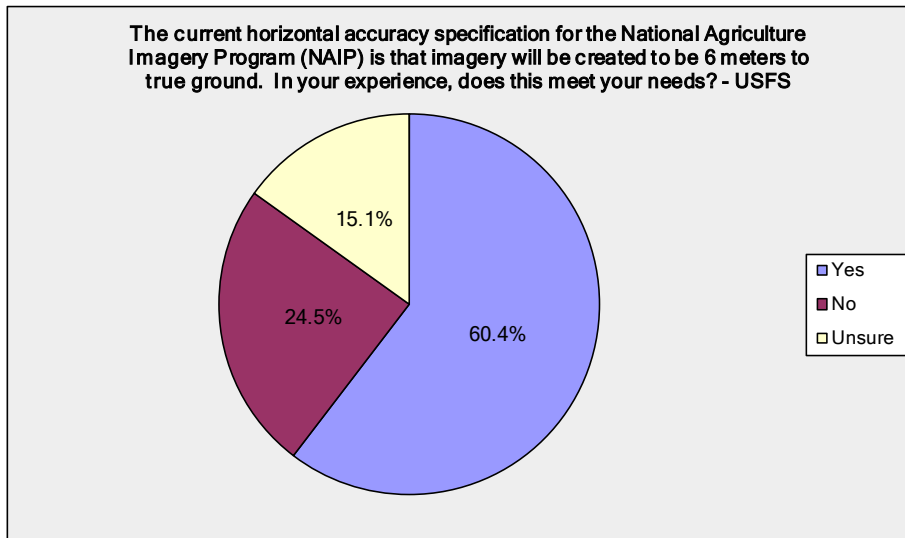


Question 19 – What other metadata/information do you need to know about your imagery product? Responses varied, and raw responses for all agencies can be found in Appendix B. Generally speaking, answers ranged from accuracy, scale, resolution, flying height, camera information, and so forth. Responses have been edited for spelling but not content.

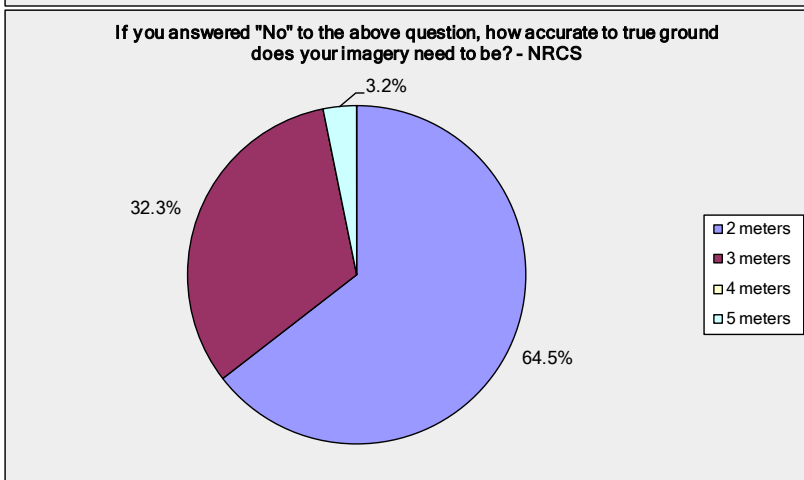
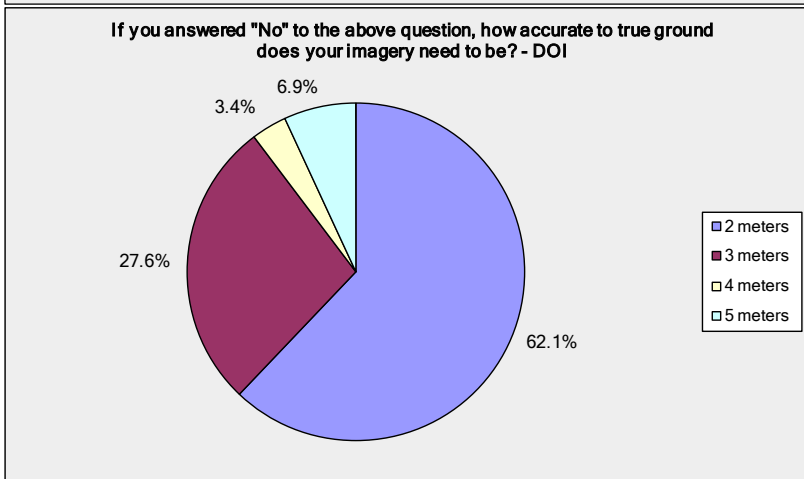
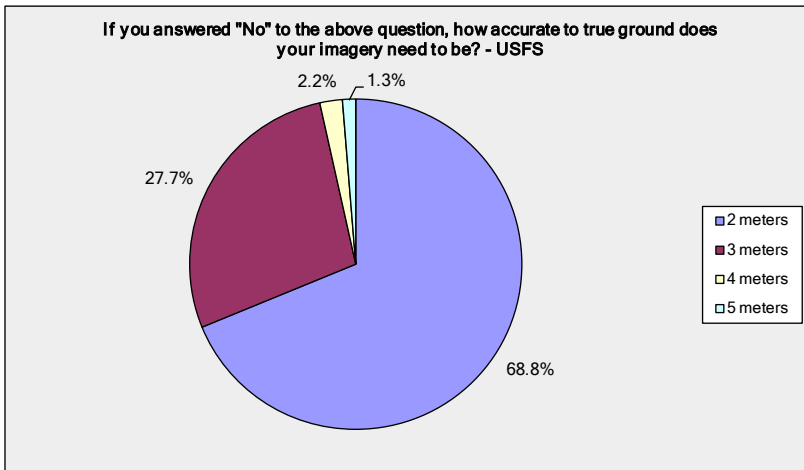
Question 20 – Note that this question asked for a ranking; what is shown is the average ranking, with 1 being the *most* preferred. The closer to 1 the response is, the more preferred it was by the survey takers (e.g. Natural Color was the most preferred, followed by 4-band).



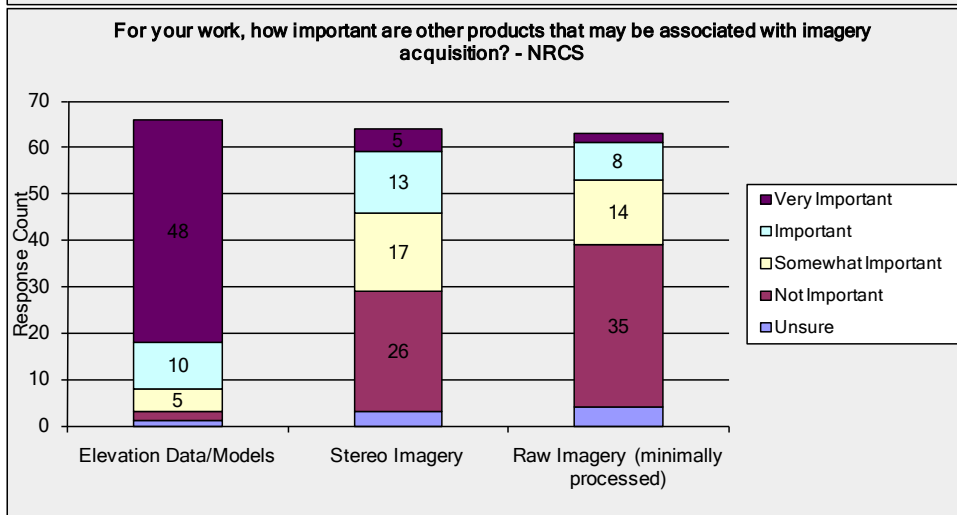
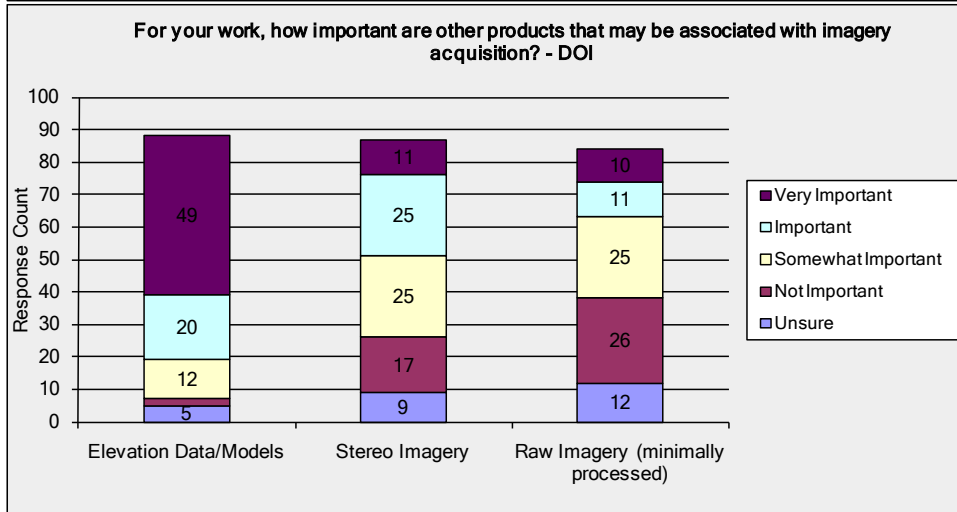
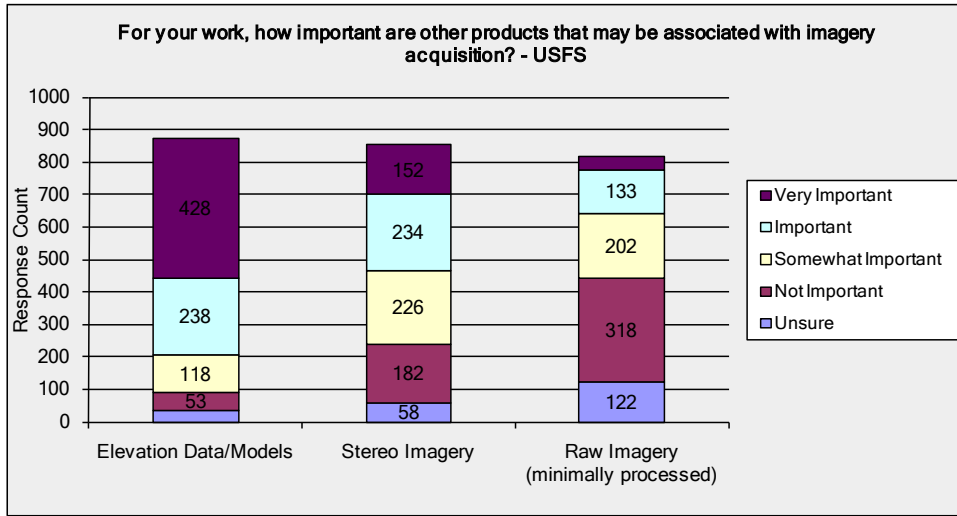
Question 21 –



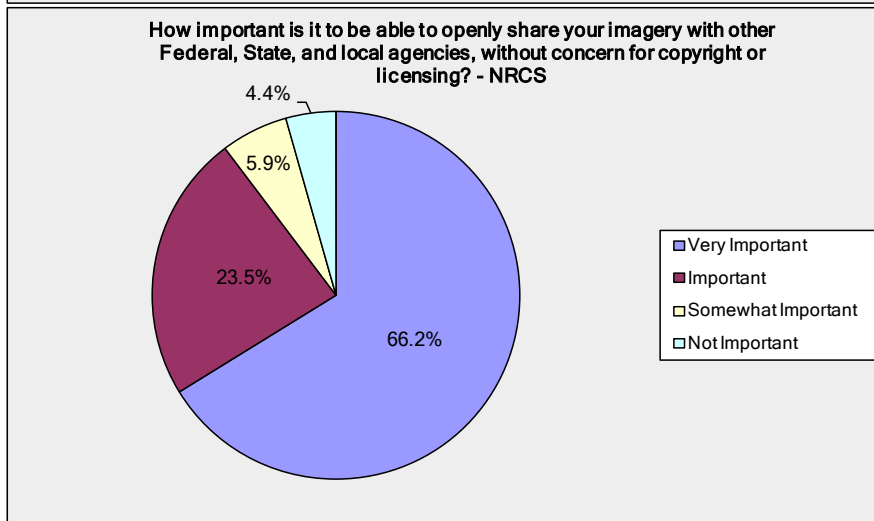
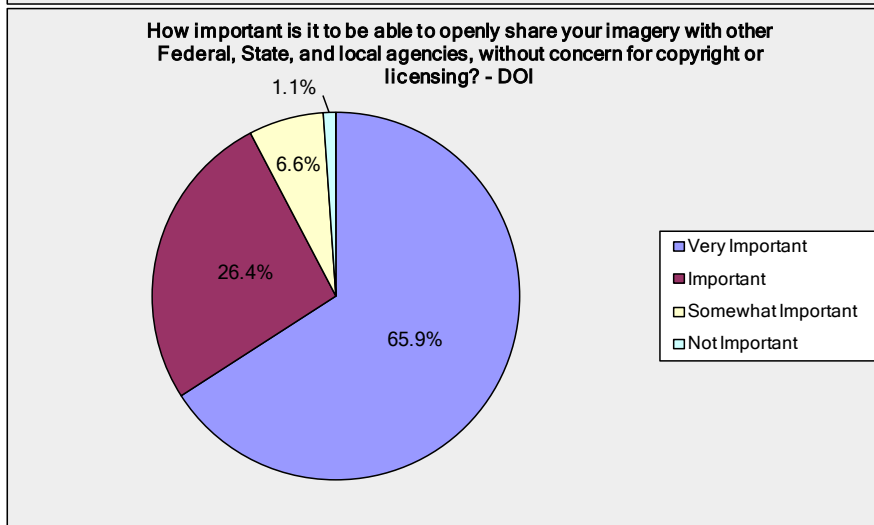
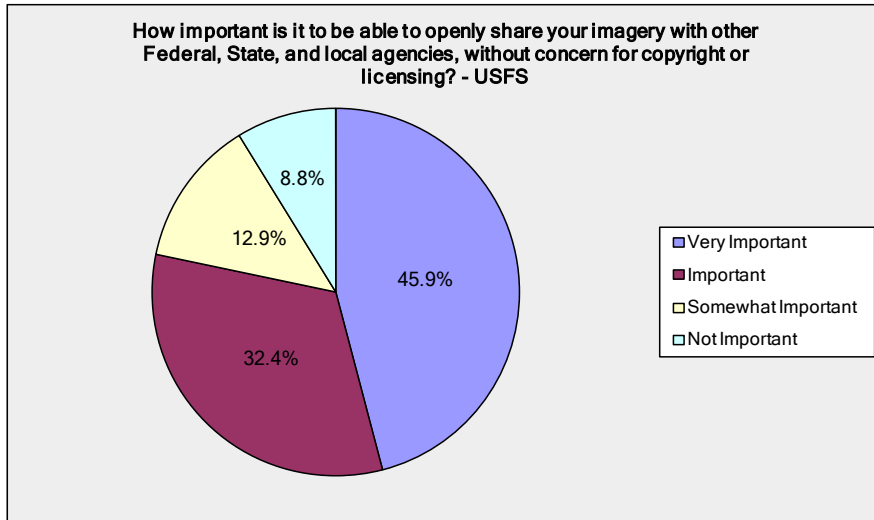
Question 22 – If you answered “No” to the above question, how accurate to true ground does you’re your imagery need to be? 316 respondents answered this question, with 59 of those answering “Other”. “Other” responses indicated generally that horizontal accuracies of 1 meter or less would be good, but several responses indicated that it depended on what they were working on. Note that this question does not attempt to bias the survey taker with any indication of whether the accuracies they would like to see are possible, provable, or economically achievable.



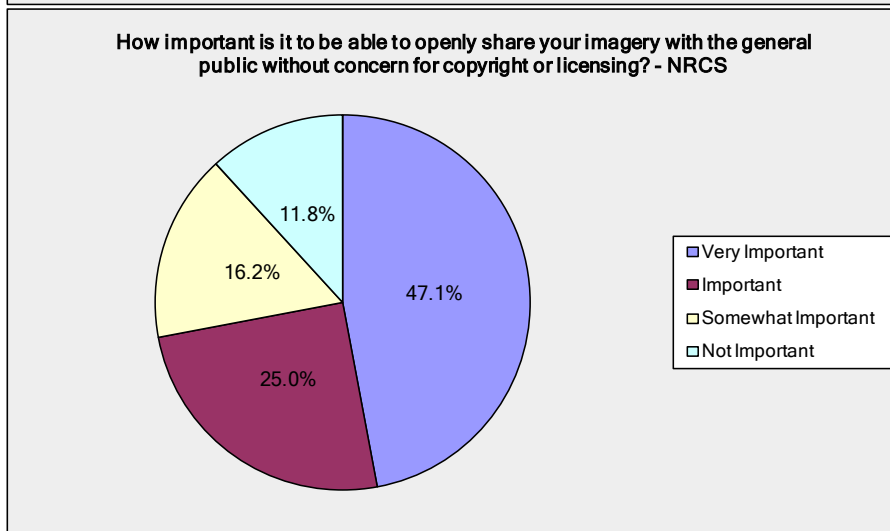
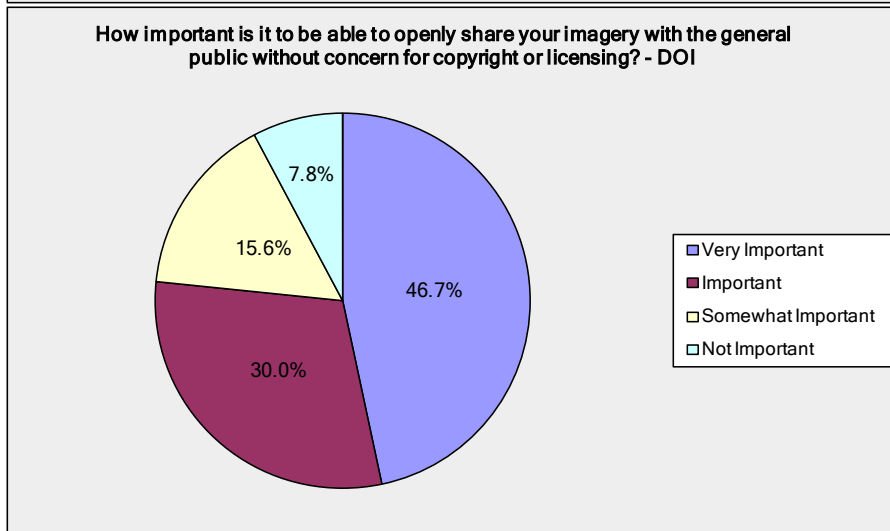
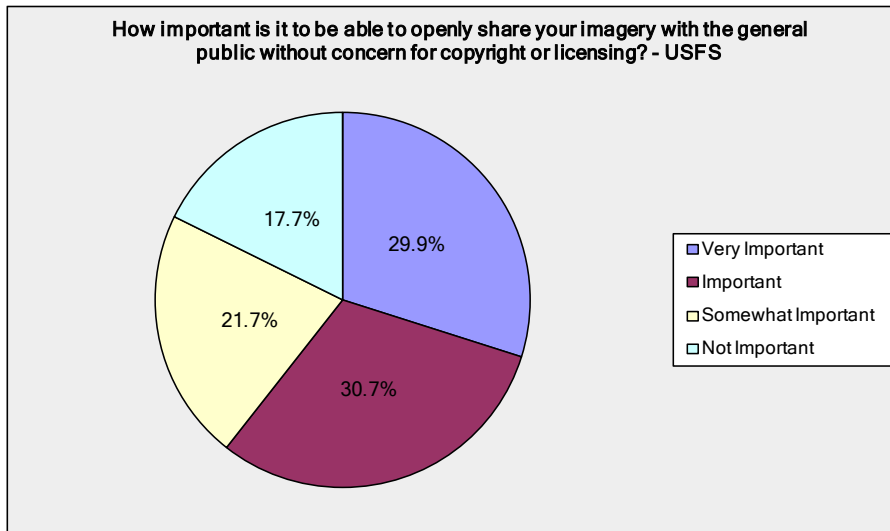
Question 23 – Responses are not normalized; the vertical axis indicates total response count.



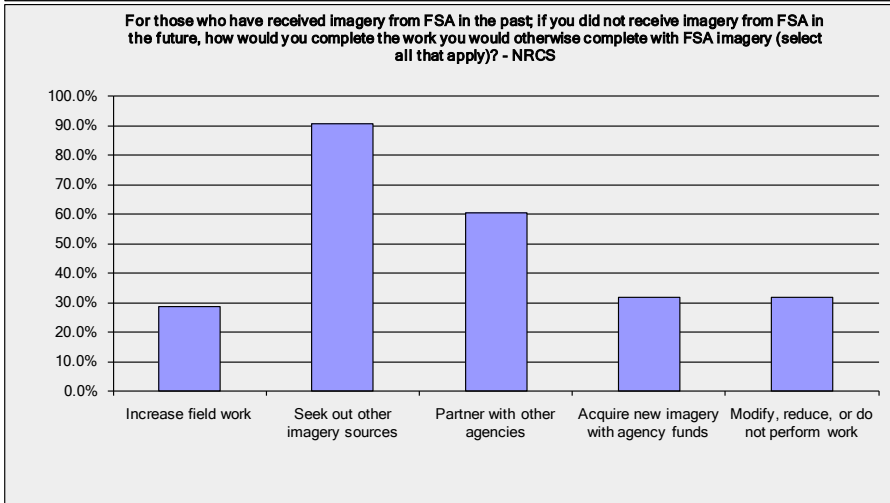
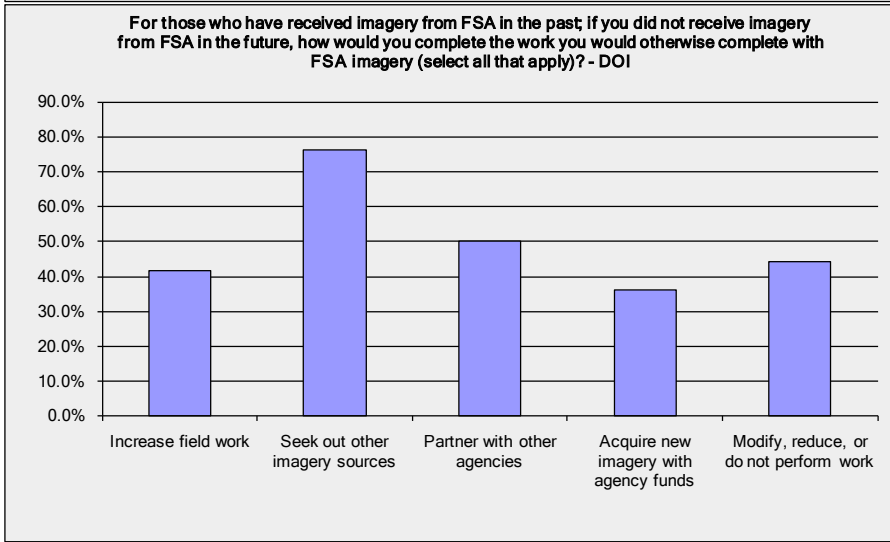
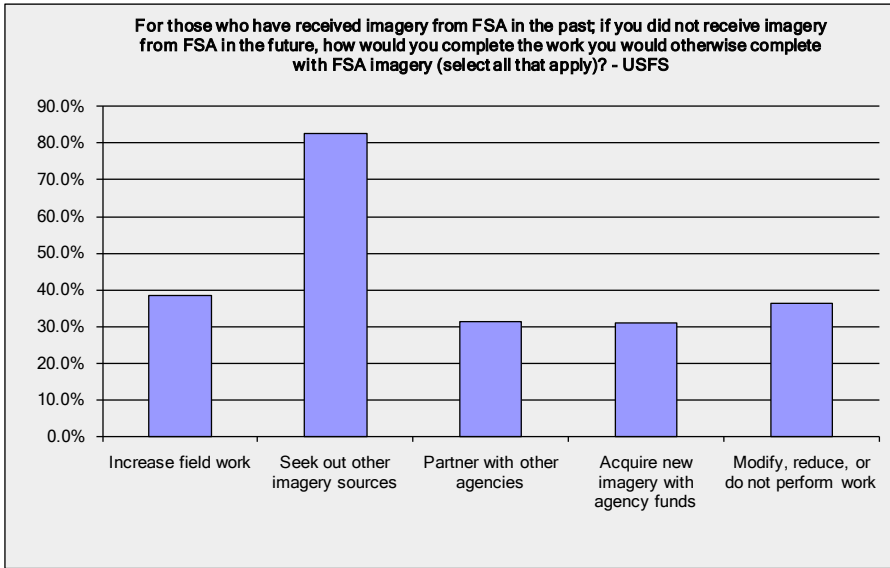
Question 24 –



Question 25 –

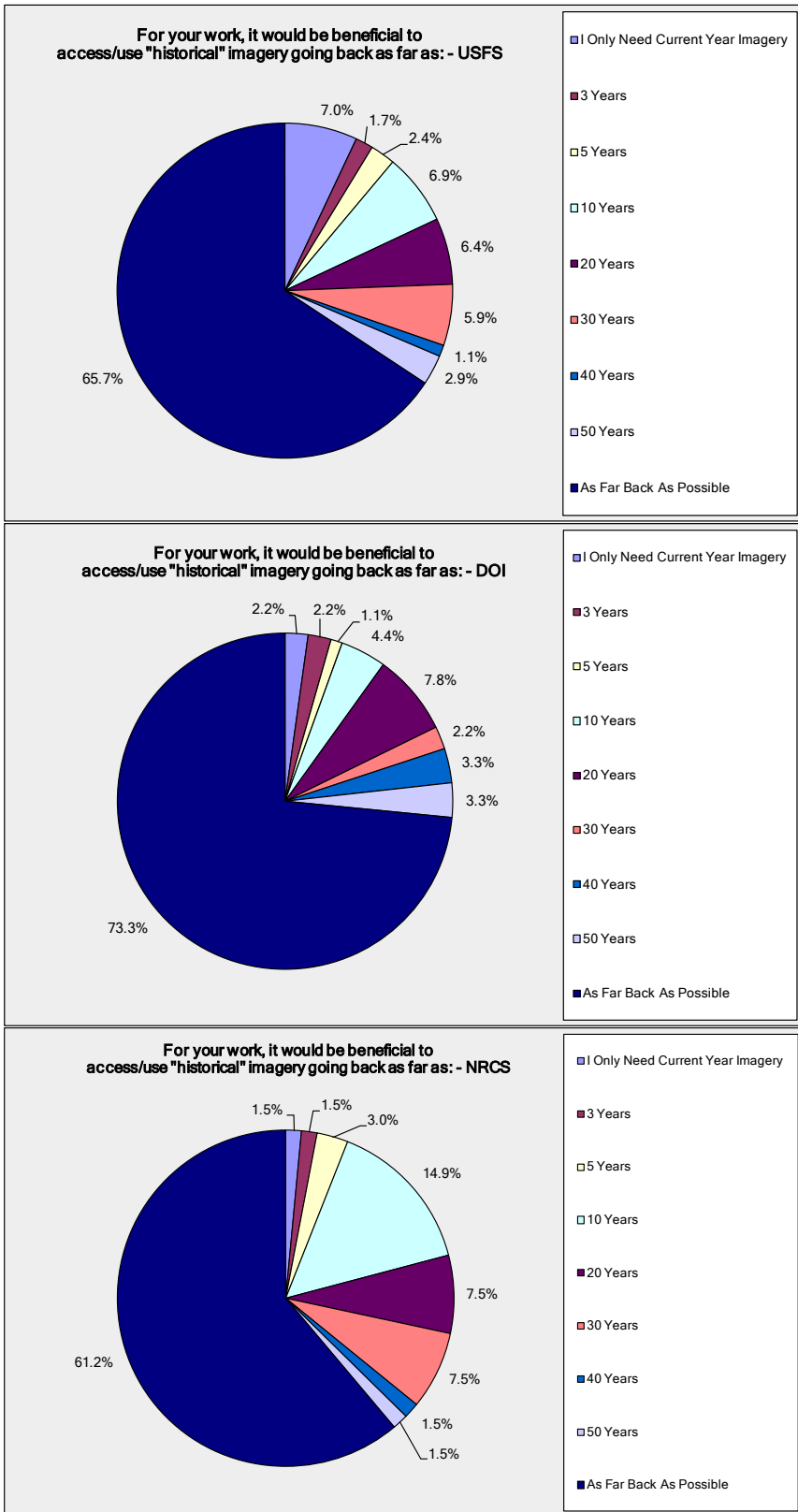


Question 26 –

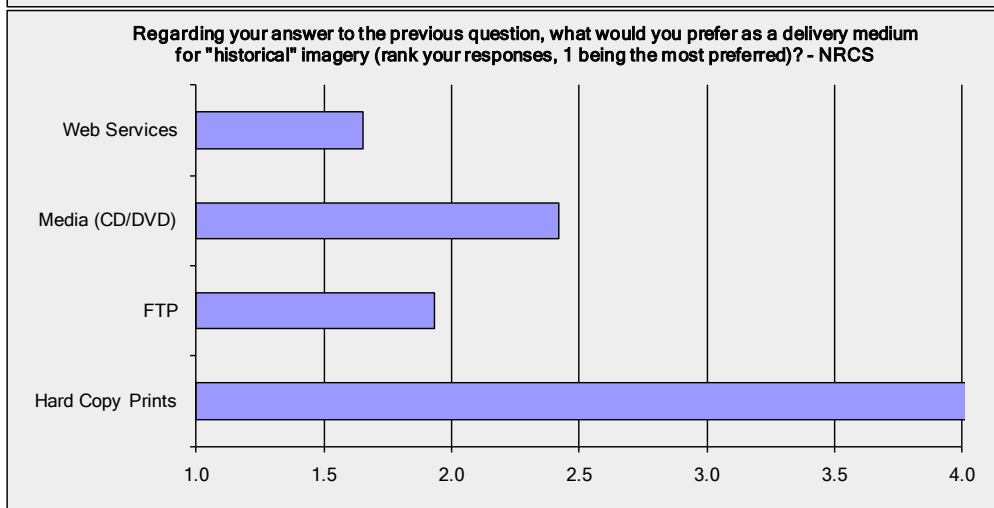
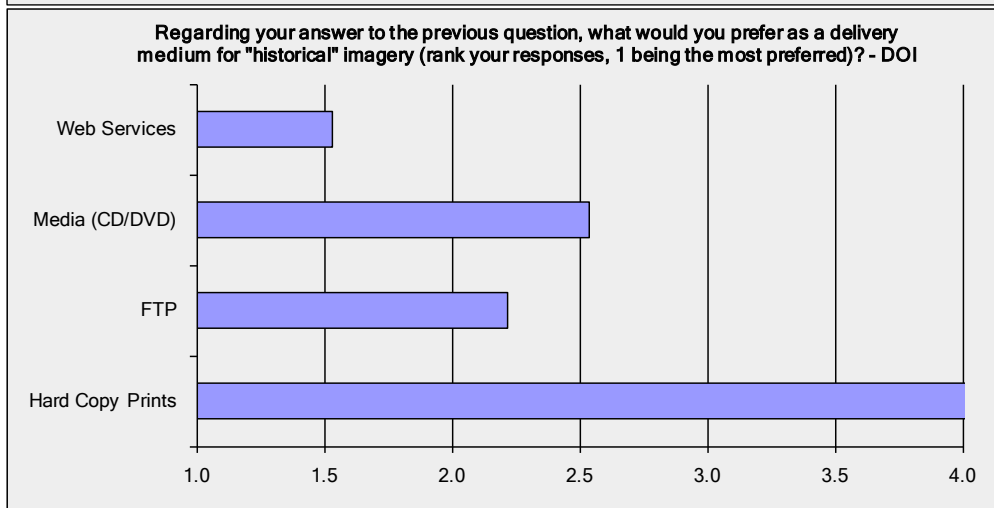
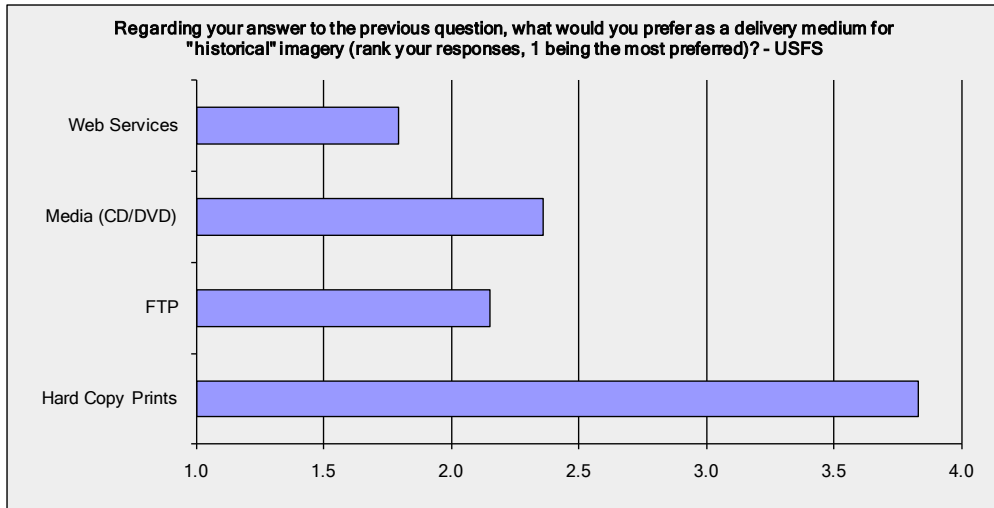


Question 27 – Please explain the impacts of not having quality current, accurate imagery to work with, in the completion of your work. Raw responses for all agencies can be reviewed in Appendix C. These responses have been edited for spelling but not content.

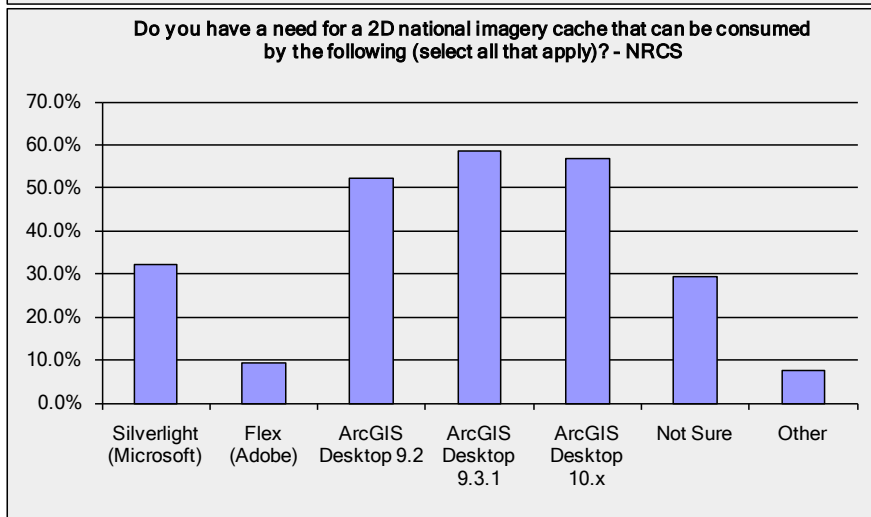
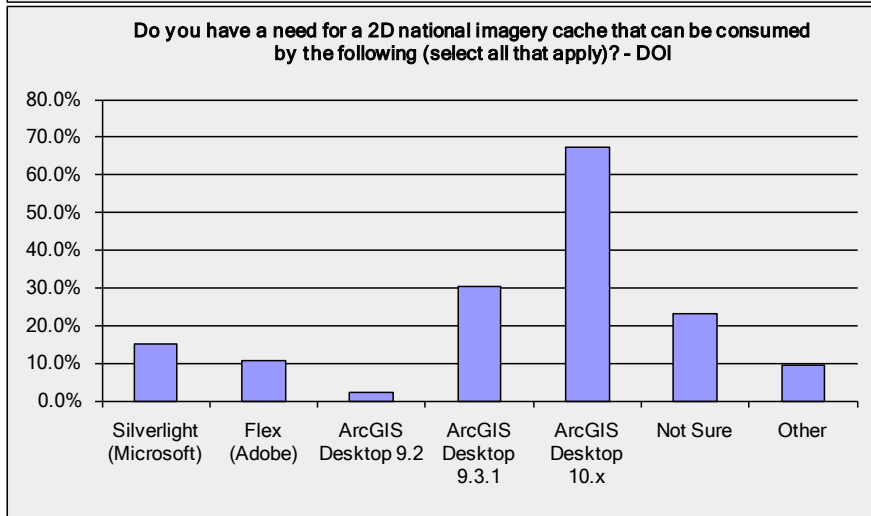
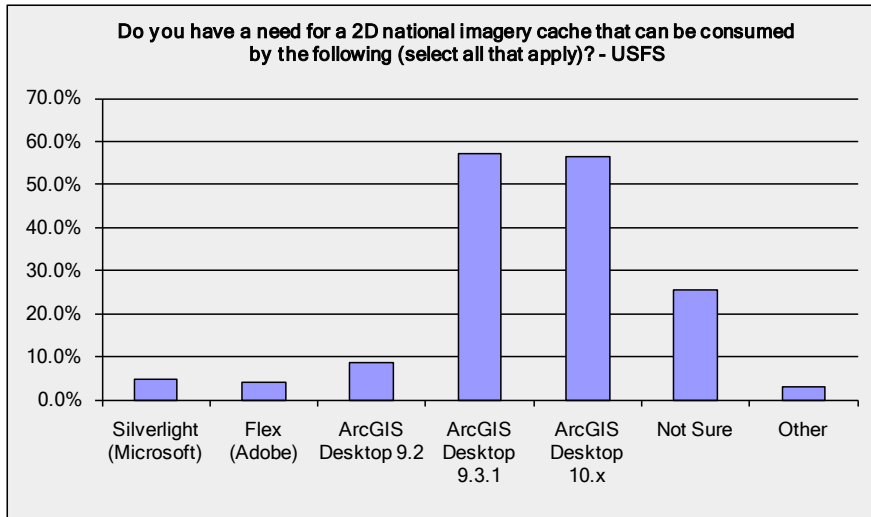
Question 28 –



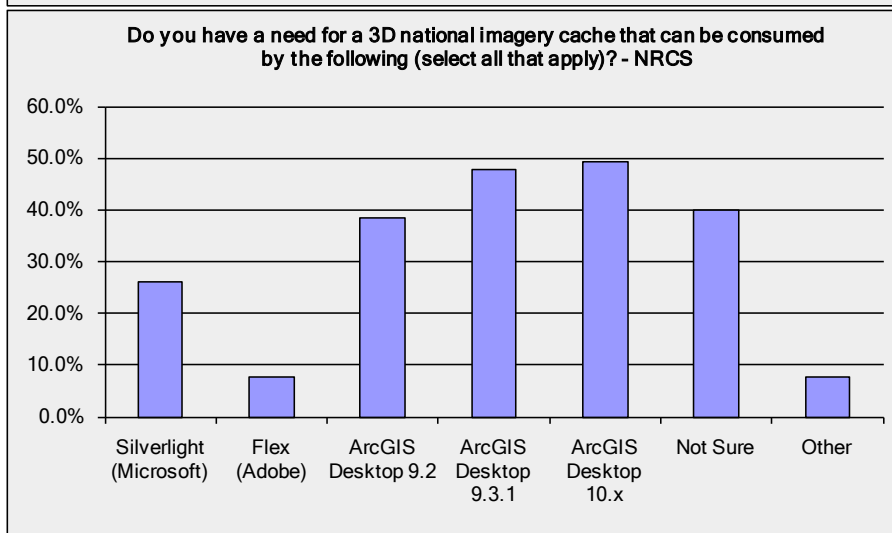
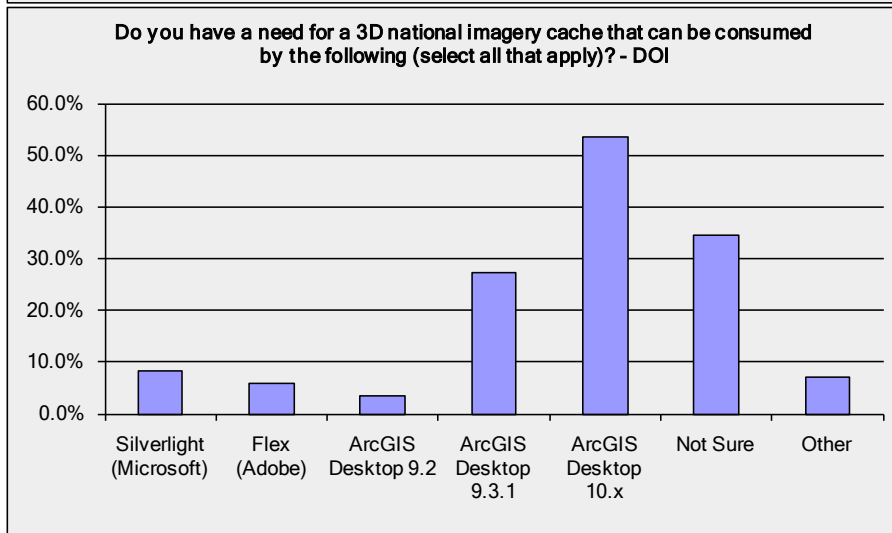
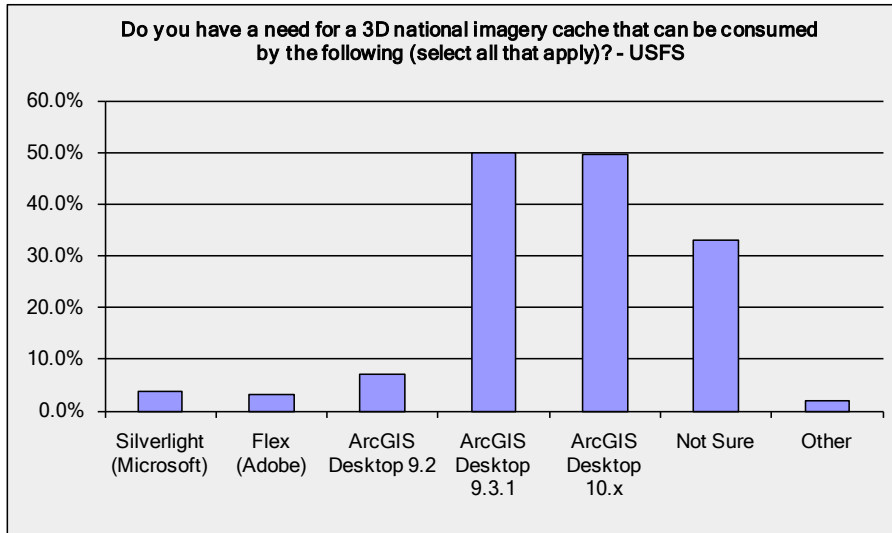
Question 29 – This question asked for a ranking; what is shown is the average ranking, with 1 being the *most* preferred. The closer to 1 the response is, the more preferred it was by the survey takers (e.g. Web Services is the most preferred method to deliver historical imagery).



Question 30 –



Question 31 –



Question 32 – Is there anything else you would like to add regarding your imagery requirements?
Raw responses from all agencies can be found in Appendix D. Responses have been edited for spelling but not content.