Change in Public Perceptions of AFR and Forest Restoration

Summary and Data Tables
from a Longitudinal Study of Ashland Residents

SOUTHERN OREGON UNIVERSITY RESEARCH CENTER

January 10, 2014

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Introduction

This report summarizes the results from a second public opinion survey measuring beliefs and attitudes about forest conditions and management practices in the Ashland Creek watershed. The survey was made possible by a grant from the Collins Trust Northwest Conservation Fund, which supports work by The Nature Conservancy seeking to restore frequent-fire adapted forests in southern Oregon, and funds from the American Recovery and Reinvestment Act of 2009.

As part of the multiparty monitoring effort to measure public support for the Ashland Forest Resiliency Stewardship Project (AFR), baseline data were gathered from a random sample of Ashland residents in April 2012 (Shibley & Schultz, 2012). A sub-sample of those respondents was re-surveyed in September 2013 to measure change in attitudes toward fuel-reduction and forest restoration following the implementation of AFR treatments in the Ashland watershed.

Research Methodology

This follow-up survey was designed to evaluate public awareness of and support for the AFR, a key objective of the AFR Monitoring Plan [1] (Metlen & Borgias, 2013). By comparing these results to baseline data from the 2012 survey, we can measure change in the level of public support for fuel-reduction and forest restoration in response to the implementation of both commercial and non-commercial treatments in the AFR project area.

An email survey, **using Dillman's (2007) Tailored Design Method**, was administered by Southern Oregon University Research Center between August 21, 2013 and September 20, 2013. Subjects were contacted by email up to five times using Qualtrics, an online survey tool. The questionnaire included both open and closed-ended questions (see Appendix A) exploring beliefs about forests in the Ashland Creek watershed and attitudes towards AFR goals and newly implemented treatments.

The study population was adult residents of Ashland, Oregon and the surrounding area. The sampling frame was registered voters in October 2011. Our 2013 sample (n=289) was a sub-set of respondents from the 2012 survey (n=597) who agreed to be contacted for follow-up surveys. Of the 289 people contacted, 151 started and 124 completed the online survey, thus generating a panel of respondents (n=124) who completed both surveys. A comparison of 2013 panel results to 2012 sample results and population parameters (see Appendix B) shows no significant bias by gender and residence. However, our sample is biased toward middle age, middle income and college educated respondents. The 2012 sample was biased in these same ways, and the 2013 panel accentuates this bias.

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[1] Project monitoring plans are available on the AFR website at http://ashland.or.us/Page.asp?NavID=15104.

Opinions about AFR Treatments

A descriptive summary of all results from the 2013 survey are reported in Appendix C. Following is a summary of the key findings about public opinions toward AFR treatments.

1. *A majority of panel respondents heard more about AFR since completing the 2012 survey*, but most still know only a little about specific project goals. The local newspaper is by far the most common source of information about AFR.

2. *Panel respondents favor maintaining late-seral, open forest conditions in the Ashland Creek watershed by thinning smaller trees from dense forest stands.* If the watershed management goal is to balance fire safety, water quality, wildlife habitat, natural beauty and recreation (see Appendix B: Q13), then respondents think higher proportions of forest conditions 2 and 4 should be maintained across the landscape, compared to conditions 1 and 3 (see Appendix C: Figure 2) .[2] In open-ended comments, respondents explicitly encouraged managers to thin forest conditions 1 and 3 (see Appendix C: Figures 3 and 5).

3. *Panel respondents favor forests closer to historic than to current conditions in the Ashland Creek watershed.*[3] Respondents' opinion about desired forest proportions can be compared to current and historic reference proportions. Historically 45% the forested landscape would have been in the late-seral condition of large old trees with openly spaced canopies, represented in Condition Photo 2. This condition currently occurs on only 1% of the forested landscape in and around the Ashland watershed, and respondents would increase the proportion to 42%. Multilayered late-seral, closed-canopy forest, as in Condition Photo 4, historically comprised 15% of the landscape, currently exists over 24% of the landscape, and respondents desire 28%. Condition Photo 1 and 3 represent formerly open stands in which many younger trees have grown in, creating a closed-canopy patch which could be mistaken for late-seral closed forest shown in Condition Photo 4, but respondents differentiated these and suggested that the desirable landscape proportions for these encroached forests types should be relatively less at 16 and 7% respectively. Condition Photo 3 could be interpreted as a mid-seral closed successional class which historically would have only comprised 5% of the forest, but now comprises 33% of the

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[2] Darren Borgias provided the following description of condition photos (see Appendix B: Q13) as they relate to seral stage from the LANDFIRE dataset (Wildland Fire Leadership Council, 2013). The comparison is most relevant at the watershed scale of Bear Creek, including Ashland Creek, a landscape predominantly made up of the Mediterranean California Dry-Mesic- and the Mesic- Mixed Conifer Forest and Woodland Biophysical Settings, also mapped by LANDFIRE in the following groups: Ponderosa Pine-Incense Cedar, Douglas-fir-White Fir-Sugar Pine, and Ponderosa Pine-California Black Oak. Condition Photo 1: At-risk, formerly open, old, dry forest densely crowded by small, young trees. Condition Photo 2: Open old, dry forest not crowded by young trees. Condition Photo 3: At risk, formerly open, large, old, dry forest densely crowed by tall younger trees. Condition Photo 4: Dense, mixed species, moist, old growth forest (late seral closed).
[3] This analysis was developed by Darren Borgias.

landscape. Both photos 1 and 3 represent stands identified for thinning from below by scientists and respondents alike.

4. *Considering several pre- and post-treatment photo pairs, most panel respondents think the cut **"**looks good**"***; AFR project managers **shouldn't** remove more or fewer trees. While there is substantial variation in this opinion, more respondents favor a slightly heavier cut than favor a slightly lighter cut (see Appendix C, Figure 7). There is growing support for removing enough large and small trees if science provides a historical basis for it.

5. *According to written comments about treatment photos, many panel respondents said in effect **"the forest looks good."*** Respondents were asked to provide comments about the work being done in the Ashland Forest Resiliency Project, as represented by photos (see Appendix C, Figure 8). The word cloud image below, where words are scaled to frequency of use across all comments, suggests a positive view of AFR treatments.

6. *Panel respondents are satisfied with AFR treatments.* Based on post-treatment photos of commercial thinning and brush removal, three-fourths of panel respondents indicated they were satisfied with the work being done by AFR (see Appendix C, Table 13).

Opinion Change from 2012 to 2013

Only panel responses are used to estimate opinion change. The tables and charts in Appendix D report response proportions and highlight change between 2012 and 2013. Most change over the eighteen month period between the two surveys is relatively small (less than 10%). Whether the changes are statistically significant is determined by using one-sample *t*-tests based on mean differences (i.e., the average change in raw scores) for each question. Statistical significance is reported if the *p*-value is below .05. A lack of statistical significance **means that we can't be sure our sample results reflect real o**pinion change in the population even if there is some observable change in our sample data. The following summary emphasizes change that is both substantial and statistically significant.

1. *Respondents continued to visit to the watershed during the AFR project.* Panel respondents reported a drop in visits to the watershed between 2012 and 2013, but the change was not statistically significant. One-third of panel respondents made more than 10 visits last year.

2. *There is growing support for forest restoration on public land in southwest Oregon.* Nearly half of panel respondents believe that public forests in the region need large-scale restoration (up 10 percent); and increasing numbers, nearly a third of respondents, agree that forest restoration should remove trees, large and small, if science suggests that is what the landscape used to look like (up 14 percent, representing a doubling from 2012). Slightly more than half of respondents believe that, prior to European settlement, forests were generally more open than they are today (up 7 percent, though this change is not statistically significant).

3. *There is growing support for commercial thinning as a fuel-reduction tool.* There was a big, statistically significant increase in support for commercial thinning as a legitimate fuel-reduction tool that resources managers should use more often. There also appears to be growing support for the use of controlled burning as a legitimate fuel-reduction tool, though that change was not statistically significant.

4. *Completing AFR is a high priority, despite a drop in the strength of support of AFR goals.* Based on photos of the work being done, almost all panel respondents agree that completing AFR and maintaining AFR treatments should be a high priority even though the strength of support for AFR goals among respondents eroded some between 2012 and 2013**, from "strongly approve" to "somewhat approve"**.

5. *Among AFR partners, The Nature Conservancy continues to be the most trusted group.* With the exception of the Southern Oregon Forest Restoration Collaborative, no changes in the level of trust in various groups to make good decisions about fuel reduction and forest restoration are statistically significant, and the increased trust in **SOFRC may not be meaningful since the group's name changed from the first to** the second survey.

6. In sum, *there is ongoing support for AFR and growing support for forest restoration in southwest Oregon more generally.* This support includes the use of commercial thinning as legitimate fuel-reduction tool, and there remains very little support for simply leaving public forests alone. According to the 2012 survey, these attitudes toward forest management rest on underlying forest values that are both eco-centric (biodiversity, life sustaining) and anthropocentric (clean water and recreation) (Shibley & Schultz, 2012). If the public comes to see fuel-reduction and restoration efforts as undermining these basic values, support for future work can be expected to erode quickly.

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Southern Oregon University Research Center (SOURCE)

<u>Purpose:</u>
This questionnaire has been developed by researchers at Southern Oregon University working with The Nature Conservancy, the City of Ashland, Lomakatsi Restoration Project, and the U.S. Forest Service. It is designed to learn what the citizens of Ashland and surrounding areas think about forest conditions and management in the Ashland Creek watershed (i.e., forests above town and below Mt. Ashland).
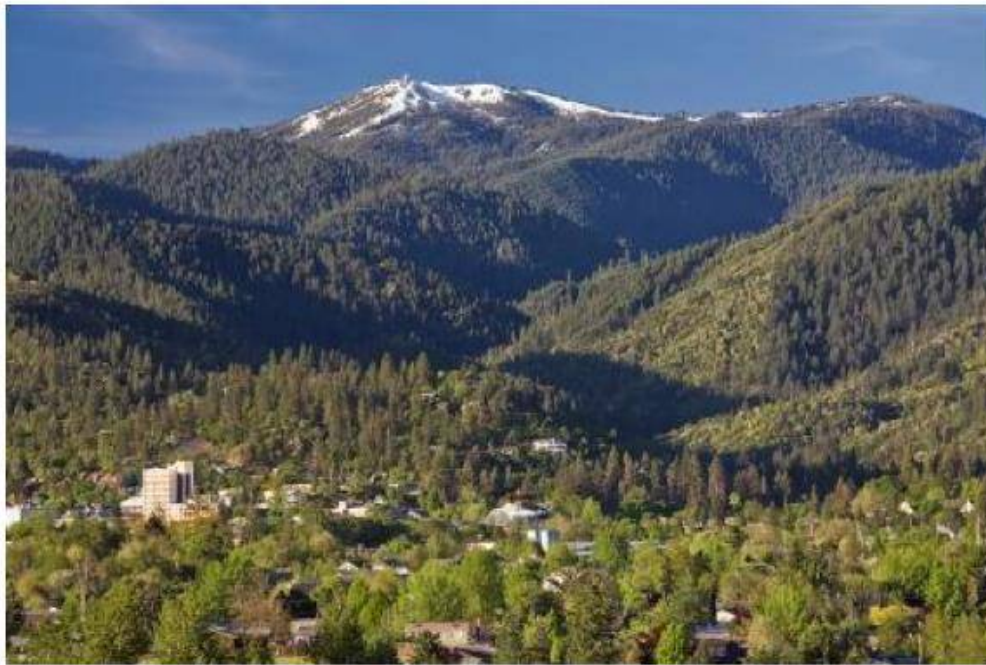
<u>Questionnaire Instructions:</u>
For each question, please choose the answer that most closely reflects your perspective and experience. Even if you are unfamiliar with certain issues, it is important that you tell us that as well. Your answers and comments will be kept confidential. If there are issues about the Ashland Creek watershed and forest restoration not covered in this survey that are important to you, please share your thoughts at the end of the questionnaire. Completing this survey will take about 15 minutes.

Thank you in advance for your thoughtful response to our survey. Your participation is very much appreciated.

If you have any questions, please do not hesitate to contact us.
Email: shibleym@sou.edu

Q1 **About how many times during the last 12 months have you entered the forest in the Ashland Creek watershed, beyond Lithia Park?**

- ○ None
- ○ 1 to 2 times
- ○ 3 to 5 times
- ○ 6 to 10 times
- ○ 10 times or more

Q2 **What do you do when you enter the forest in the Ashland Creek watershed above town and beyond Lithia Park?**

Q3 **In general, how would you rate the overall condition of the forests in the Ashland Creek watershed?**

Very Unhealthy	Somewhat Unhealthy	Somewhat Healthy	Very Healthy	Don't Know
○	○	○	○	○

Q4 **In your opinion, what are the chances of a large-scale, high severity fire occurring in the Ashland Creek watershed in the next five years?**

Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Don't Know
○	○	○	○	○

Q5 **We're interested in learning more about what you think about wildfires in southwest Oregon forests, generally including the Ashland Creek watershed. Please respond to each statement to the best of your ability by indicating whether you believe it is generally false, generally true, or that you are not sure.**

	Generally False	Generally True	Not Sure
Years of fire suppression has increased the risk of severe wildfire in our region's forest.	○	○	○
Fires play an important role in controlling insect and disease outbreaks in forests.	○	○	○
Fires are not important for maintaining wildlife habitat.	○	○	○
Some trees, like ponderosa pine, grow better in open, sunny areas than shaded ones.	○	○	○
Many plants require occasional fires so that new seeds or seedlings can sprout.	○	○	○
Fires in one year are not influenced by fires in previous years.	○	○	○
Prior to European settlement, forests were generally more open than they are today.	○	○	○
Climate change has directly affected the frequency and severity of forest fires.	○	○	○

Part 2:
We need to ask you a few questions about forest management in the broader region, beyond the Ashland Creek watershed. There are a variety of perspectives among resource managers, interest groups, and the public about forest restoration in Southwest Oregon and the tools used to achieve restoration goals.

Q6 **We would like to know your opinion about the broad goals of forest restoration on national forest land in southwest Oregon. Please tell us your level of agreement with the following statements.**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Restoration efforts should return forests to their condition before European settlement.	○	○	○	○	○
The main purpose of forest restoration should be to promote well-functioning ecosystems.	○	○	○	○	○
Forest restoration should alter fire behavior by reducing the fuel that has accumulated in the forest as a result of fire suppression and the past management.	○	○	○	○	○
We should allow forests to evolve as they will without any more human intervention.	○	○	○	○	○
Forest restoration should remove many trees, large and small, in a particular stand if scientific evidence suggests that is what the landscape should look like.	○	○	○	○	○

Q7   **Continued...**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Forest restoration efforts should be used to help recover native plant and animal species that are rare and endangered in order to maintain biodiversity.	○	○	○	○	○
The main purpose of forest restoration should be to protect humans from fire.	○	○	○	○	○
Large trees should never be removed in forest restoration efforts.	○	○	○	○	○
Public forest lands in Southwestern Oregon need large-scale restoration.	○	○	○	○	○
Restoration efforts should focus only on the Wildland Urban Interface (i.e., the forest edge near town).	○	○	○	○	○

The next few questions ask for your opinion about specific practices resource managers can use to change environmental conditions in the Ashland watershed. Please read the following paragraphs, and then answer the questions below.

For nearly a century, natural resource managers put out all wildfires. However, scientists have learned in recent years that wildfires are an important part of how nature works. Conditions in many forests, including the Ashland Creek watershed, now differ substantially from how they looked and functioned a century ago. Fire suppression has allowed leaves, dead branches, small trees, and other debris to build up over time, creating "fuel" that promotes hotter, larger, and more frequent fires. In many parts of the Ashland watershed, trees are more numerous than before but also smaller, so they are more likely to burn in a fire.

Public resource mangers now seek ways to allow fires to burn more naturally and less dangerously in forest like those in the Ashland Creek watershed. To do this, they want to reduce the amount of fuel and change the mix of trees to create landscape conditions more like what existed before fire suppression. Some practices that can do this are:

- Mechanical vegetation removal- Managers can use chainsaws, mowers, or other machines to reduce the number of shrubs and small trees where they are so numerous that they increase the risk and size of wildfires.
- Thinning- In some high-risk areas with numerous trees, some trees can be selectively cut and removed using chainsaws or other harvesting equipment.
- Controlled burning- This practice can involve 1) letting a naturally caused fire burn within predetermined boundaries and conditions under close and careful watch; or 2) intentionally setting fires in ways that can be controlled to produce desired conditions.

Q8 **Please identify the statement that best represents your opinion about mechanical vegetation removal, thinning, and controlled burning.**

Mechanical vegetation removal is...

Thinning is...

Controlled burning is...

an unnecessary practice
a practice that should not be considered because it creates too many negative impacts
something that should be done only infrequently, in carefully selected areas
a legitimate tool that resource managers should be able to use whenever they see fit
I know too little to make a judgment about this topic

Q9 **Since completing the initial survey in Spring 2012, have you heard or read more about the Ashland Forest Resiliency Stewardship Project (AFR)?**

○ No, I have heard nothing else about it.

○ Yes, I have heard more about it but I don't know what it involves.

○ Yes, I have heard more about it and I know a little about the project goals.

○ Yes, I have heard more about it and I know a lot about the project goals.

Q10 **If you have heard more about AFR, where did you hear about it? (Check *all* that apply.)**

☐ I attended a public tour about AFR at the Ashland Creek watershed.

☐ I attended a public lecture or meeting that discussed AFR.

☐ I read about AFR on the AFR website.

☐ I read AFR newsletters circulated via email.

☐ I heard about AFR from US Forest Service employees or media.

☐ I heard about AFR from City of Ashland employees or media.

☐ I heard about AFR from The Nature Conservancy employees or media.

☐ I heard about AFR from Lomakatsi Restoration Project employees or media.

☐ I read about AFR in the local newspaper.

☐ I heard about AFR on the television.

☐ I heard about AFR from friends or neighbors.

☐ I heard about AFR from kids in school programs.

☐ Other

AFR GOALS

Ashland Forest Resiliency Stewardship Project (AFR) is a fire hazard reduction plan, developed jointly by the U.S. Forest Service and the community of Ashland, to reduce the potential for large-scale, high severity fire in the Ashland Creek watershed. The plan is designed to protect the City's water supply and to protect and enhance old growth forest ecosystems by creating a more fire resilient landscape. Along with the U.S. Forest Service, AFR partners include the City of Ashland, The Nature Conservancy, and Lomakatsi Restoration Project.

Q11 **We'd like to know your opinion about the Ashland Forest Resiliency Stewardship Project as described in the paragraph above. Do you approve or disapprove of AFR's goals?**

Strongly Disapprove	Disapprove	Neither Approve nor Disapprove	Approve	Strongly Approve
○	○	○	○	○

Q12 **Please indicate your level of trust in the following groups to make good decisions about fuel reduction and forest restoration in the Ashland Creek watershed. If you have no basis for judgment, please mark "no opinion".**

	No Trust	Some Trust	Full Trust	No Opinion
U.S. Forest Service	○	○	○	○
City of Ashland	○	○	○	○
The Nature Conservancy	○	○	○	○
Lomakatsi Restoration Project	○	○	○	○
Ashland Fire and Rescue	○	○	○	○
Southern Oregon Timber Industry Association	○	○	○	○
Klamath-Siskiyou Wildlands Center	○	○	○	○
Southern Oregon Forest Restoration Collaborative	○	○	○	○
Geos Institute	○	○	○	○

Part 4:
This section of the questionnaire asks for your thoughts on the relative value of different forest conditions in the Ashland Creek watershed.

Q13 **The following four photographs represent three common forest conditions in the Ashland Forest Resiliency Project. How much of each forest condition should be maintained across that landscape if the management goals are to balance fire safety, water quality, wildlife habitat, natural beauty, and recreation?**

| Condition 1 | Condition 2 |
| Condition 3 | Condition 4 |

Q14 Slide the bars to indicate the percent of all the forest landscape in the AFR project that should be maintained in each condition. (*All four conditions **combined** cannot total more than 100 percent.*)

Percent

	0	10	20	30	40	50	60	70	80	90	100	

Condition 1 — 13

Condition 2 — 13

Condition 3 — 12
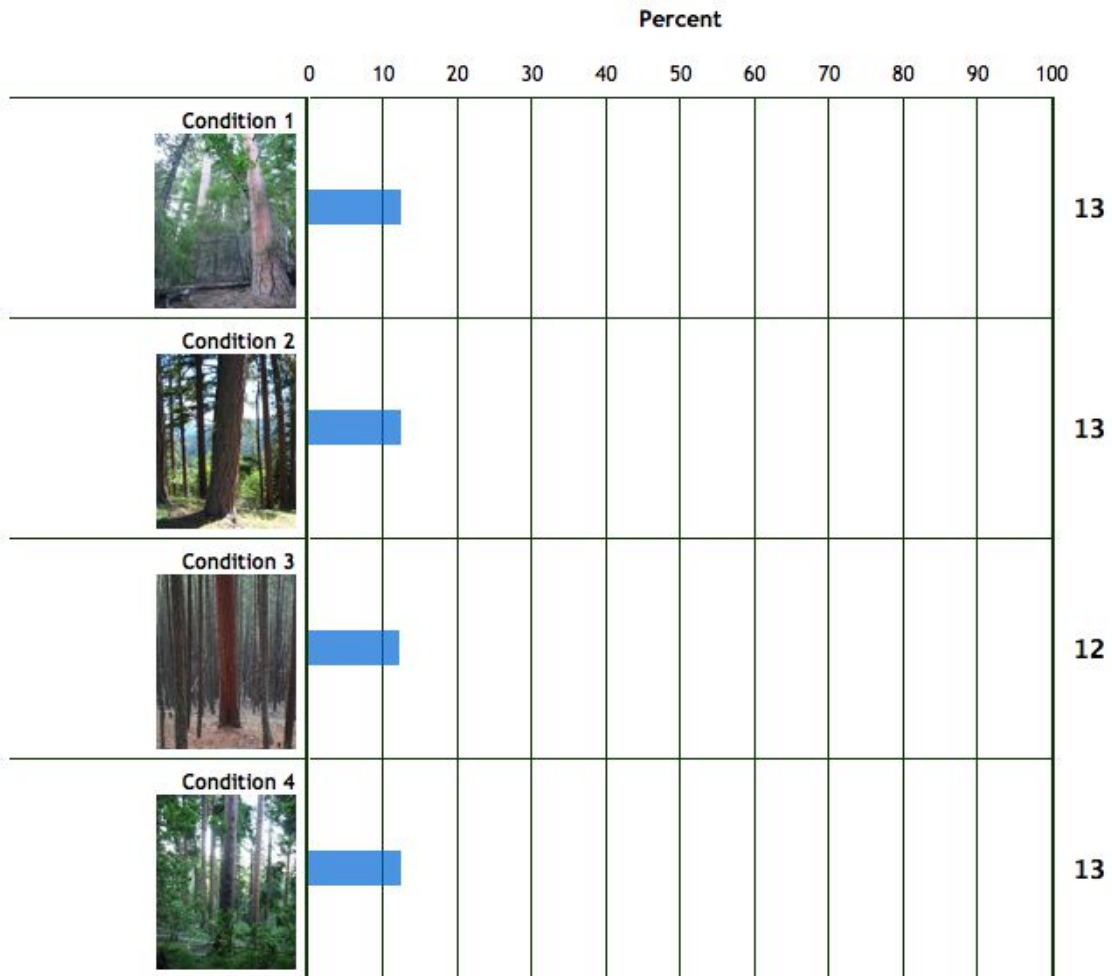
Condition 4 — 13

Q15 Considering Condition 1, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project?

Q16 Considering Condition 2, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project?

Q17 Considering Condition 3, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project?
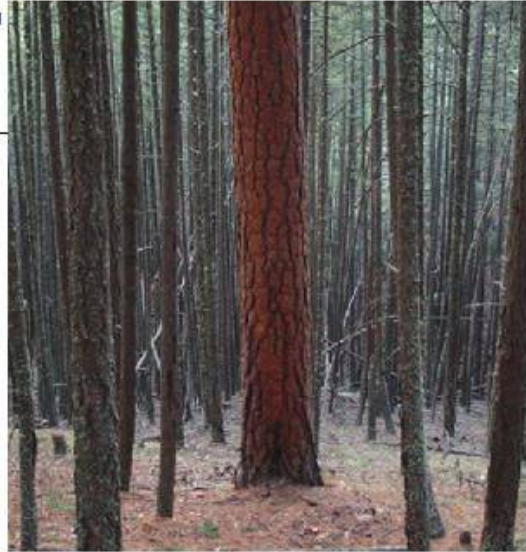
Q18 Considering Condition 4, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project?

Part 5:
What are your thoughts on the AFR work being done in the watershed and progress toward project completion?

AFR PROGRESS

Forest thinning, and cutting and burning of small trees and brush, is reducing the risk of a mega-fire in the Ashland watershed. These treatments are being completed on 3200 acres located on the major ridges that are critical for managing future wildfires and controlled burns. Roughly 4000 acres still need treatment to complete AFR as planned. The watershed map below shows the AFR project area and the area treated as of July 2013.
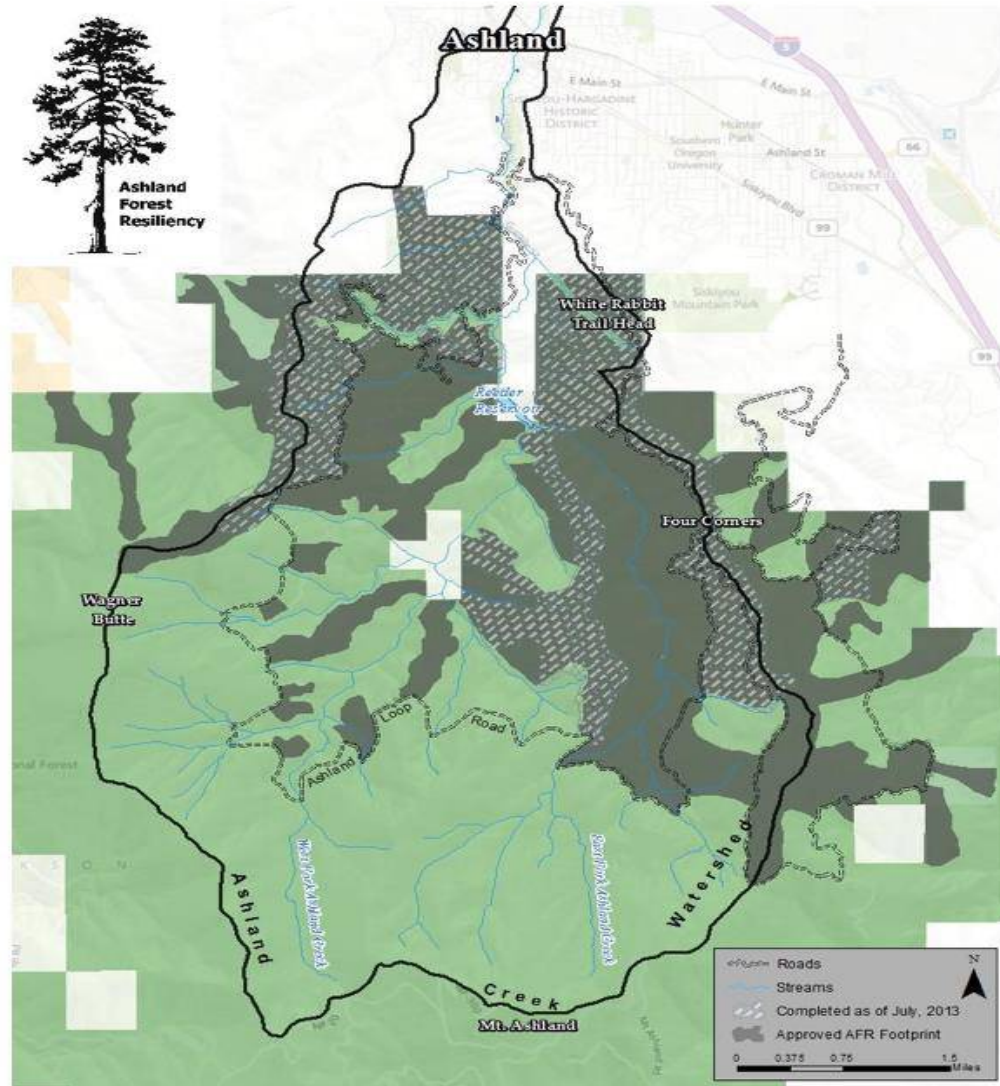
Q19 **The next three photos show AFR treated forests. Trees have been thinned out, brush has been cut, and slash piles will be burned when weather conditions allow safe burning and minimal smoke impacts. Please indicate below each photo whether you are satisfied or dissatisfied with the work being done in the picture.**

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
○	○	○	○	○

Q20

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
○	○	○	○	○

Q21

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
○	○	○	○	○

Displayed below are paired pre- and post-treatment photos of the same forest locations (or stands) in the AFR project. The top photo in each pair was taken prior to treatment, and the other was taken after cutting and piling. Based on this photo comparison, please indicate on the sliding scale below whether you think the AFR project managers should have removed more or fewer trees in treatments to reduce the risk of a mega-fire in the watershed.

Pre-treatment forest 1   **Post-treatment forest 1**

Zero on the scale below means you like the cut; mangers shouldn't remove more or fewer trees. A -3 score means you think managers should have cut *fewer* trees on this site. A +3 score means you think managers should have cut *more* trees on this site.

Q22

	Cut Fewer Trees			Do nothing different. The cut looks good.			Cut More Trees
	-3	-2	-1	0	1	2	3
To reduce the risk of a mega-fire in the watershed, we should....							
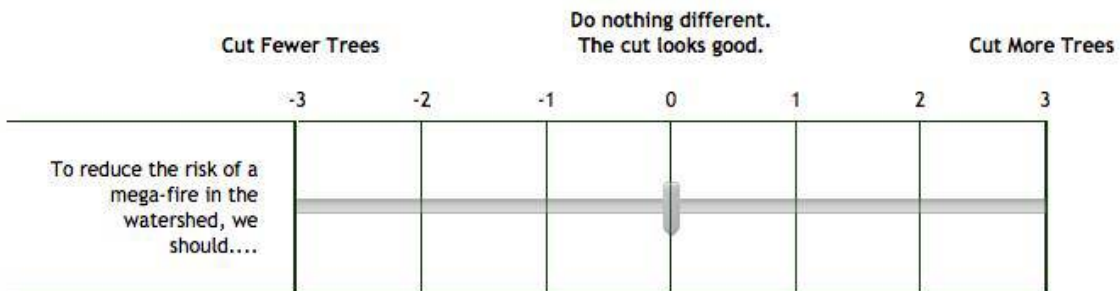
Pre-treatment forest 2

Post-treatment forest 2

Zero on the scale below means you like the cut; mangers shouldn't remove more or fewer trees. A -3 score means you think managers should have cut *fewer* trees on this site. A +3 score means you think managers should have cut *more* trees on this site.

Q23

	Cut Fewer Trees			Do nothing different. The cut looks good.			Cut More Trees
	-3	-2	-1	0	1	2	3
To reduce the risk of a mega-fire in the watershed, we should…							
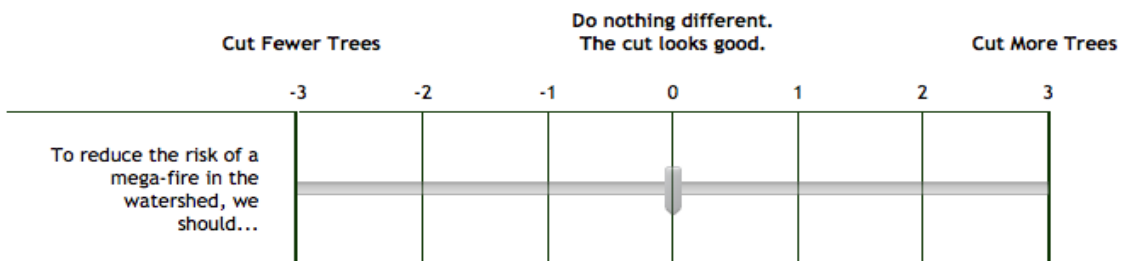
Pre-treatment forest 3

Post-treatment forest 3

Zero on the scale below means you like the cut; mangers shouldn't remove more or fewer trees. A -3 score means you think managers should have cut *fewer* trees on this site. A +3 score means you think managers should have cut *more* trees on this site.

Q24

	Cut Fewer Trees			Do nothing different. The cut looks good.		Cut More Trees	
	-3	-2	-1	0	1	2	3
To reduce the risk of a mega-fire in the watershed, we should…							
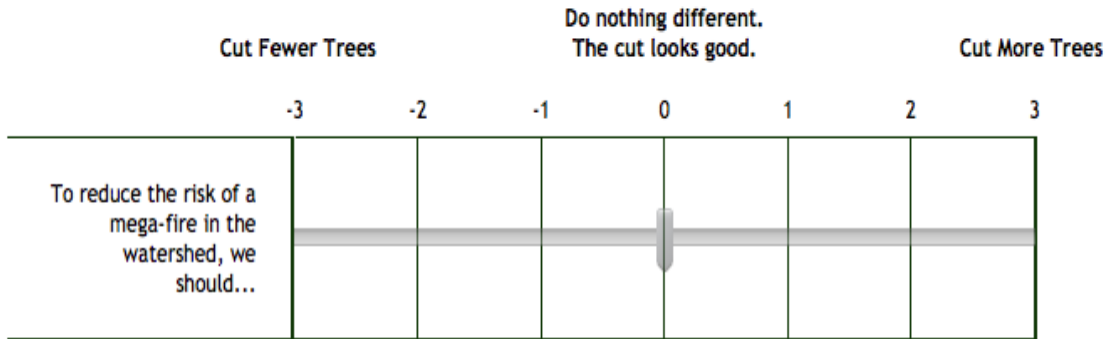
Q25

In the space below, please provide any comments you have regarding the work being done in the Ashland Forest Resiliency Project, as represented in the three photos above.

Q26

Having viewed post treatment photos, pre-post pairs, and including everything you know about AFR, please indicate whether you agree or disagree that

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
…completing AFR should be a high priority.	○	○	○	○	○
…maintaing the forests treated by AFR should be a high priority.	○	○	○	○	○

Appendix B: Panel Demographics

CHART B1: Panel result compared to initial sample and population, by Gender

CHART B2: Panel result compared to initial sample and population, by Age Cohort
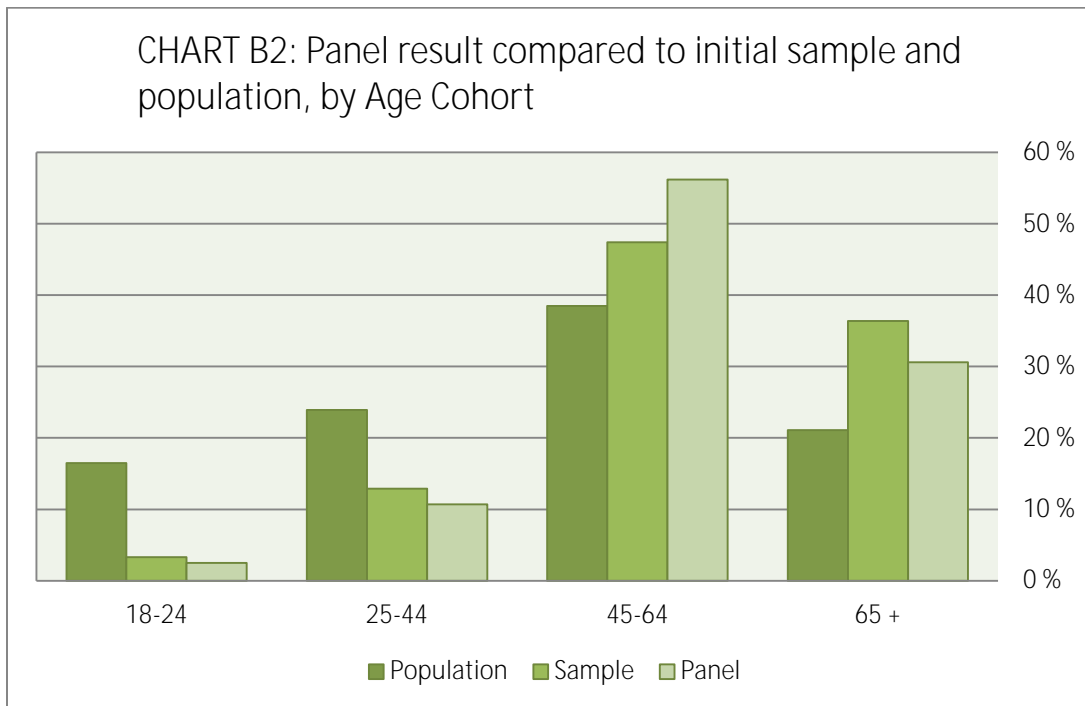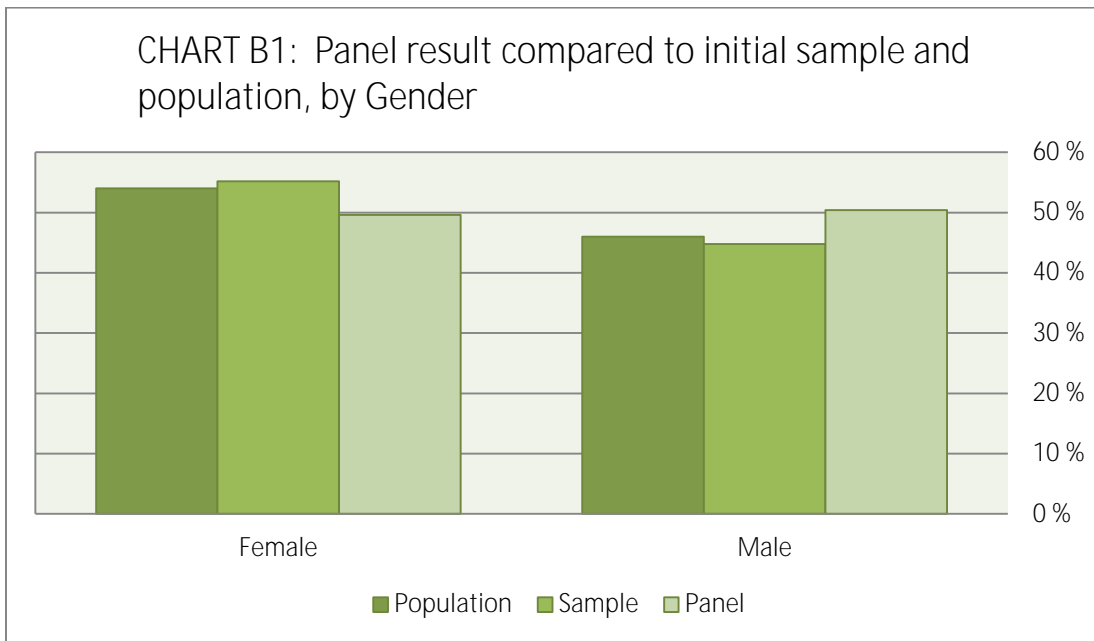
CHART B3: Panel result compared to initial sample and population, by Income

Less than $50,000 $50,000 to $100,000   More than $100,000

■ Population   ■ Sample   ■ Panel
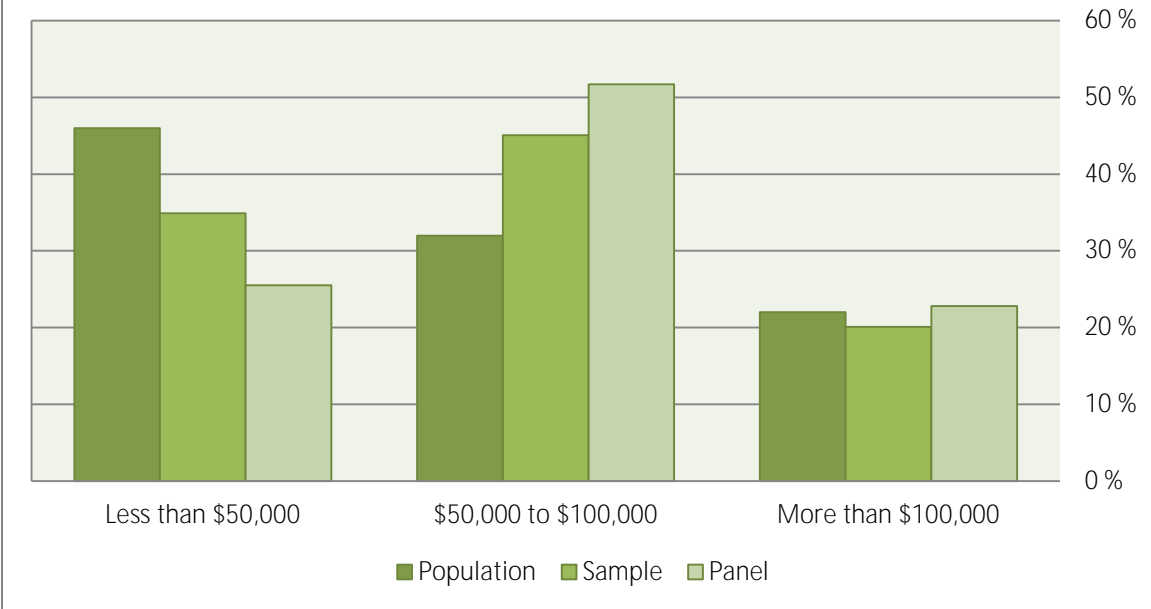
CHART B4: Panel result compared to initial sample and population, by Residence

Inside Ashland City Limits   Surrounding Area

■ Populatio   ■ Sample   ■ Panel
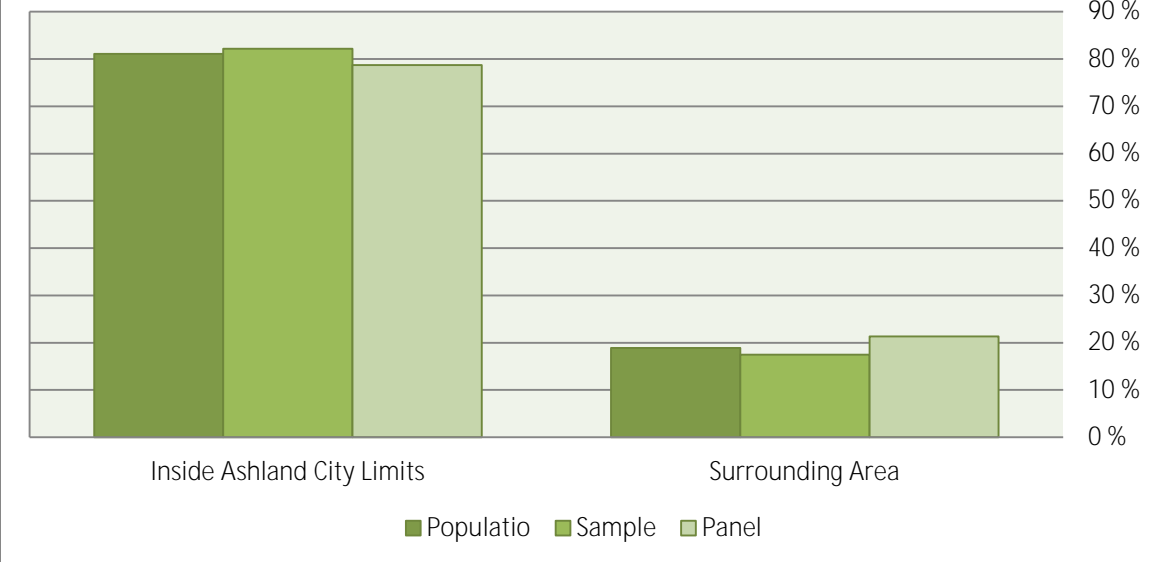
CHART B5: Panel result compared to initial sample and population, by Education (highest degree attained)

Legend: ■ Population ■ Sample □ Panel

Categories: High School or Less, Associate Degree, Bachelors Degree, Graduate Degree
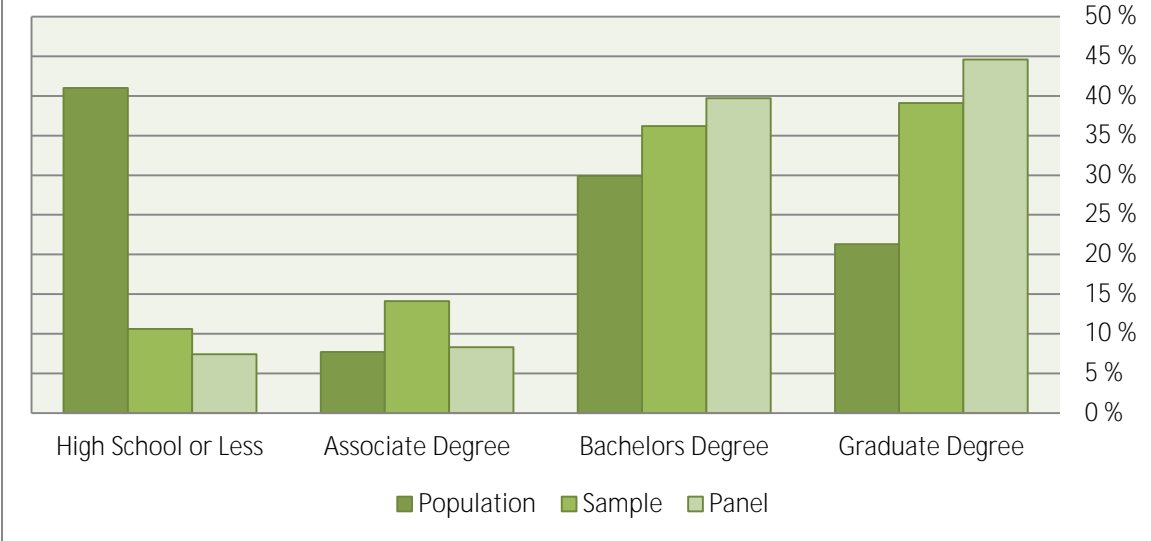
Appendix C: Frequency Distributions, Closed and Open-ended Questions

Part 1: Visits to Forests in the Ashland Watershed

TABLE 1: Visits to the Watershed		
About how many times during the last 12 months have you entered the forest in the Ashland watershed, beyond Lithia Park? (Q1)	Percent	Count
Greater than 10	34.7	43
6 to 10	10.5	13
3 to 5	15.3	19
1 or 2	17.7	22
None	21.8	27
Total	100%	124

FIGURE 1: What do you do, primarily, when you enter the forest in the Ashland watershed above town and beyond Lithia Park? (Q2)
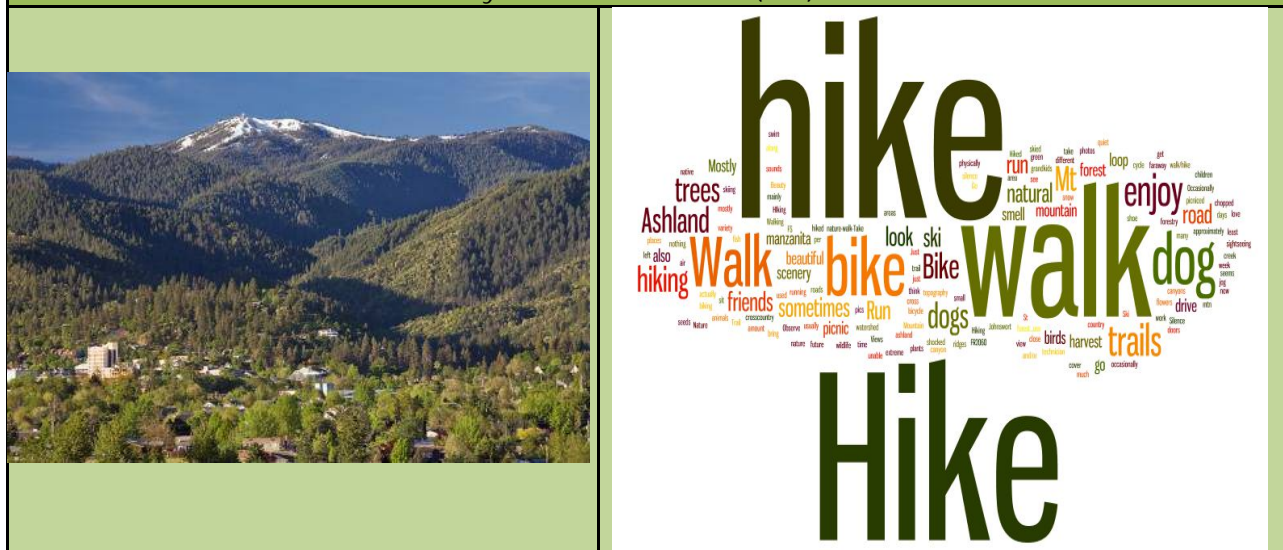
The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments. Illustrative comments from Q2:

Case 2321: "Go for a hike to get away from it all"

Case 3927: " ...hike and enjoy all the natural beauty of the area, the smell of the air, the natural sounds, the green of the trees and the topography, all of the it!"

Part 2: Forest Conditions and Responsible Management in the Ashland Watershed

TABLE 2: Overall Health of the Watershed

In general, how would you rate the overall condition of the forests in the Ashland Creek watershed? (Q3)	Percent	Count
Very healthy	29.8	37
Somewhat healthy	40.3	50
Don't know	20.2	25
Somewhat unhealthy	9.7	12
Very unhealthy	0.0	0
Total	100%	124

TABLE 3: Chance of Fire in the Ashland Watershed

In your opinion, what are the chances of a large-scale, high severity fire occurring in the Ashland watershed in the next five years? (Q4)	Percent	Count
Very Likely	22.6	28
Somewhat Likely	50.8	63
Don't Know	14.5	18
Somewhat Unlikely	12.1	15
Very Unlikely	0.0	0
Total	100%	124

TABLE 4: Opinion about Wildfires in Southwest Oregon Forests

Please respond to each statement to the best of your ability by indicating whether you believe it is generally false, generally true, or that you are not sure. (Q5)	True	False	Not Sure	Total (n=124)
Years of fire suppression has increased the risk of severe wildfire in our regions forest.	78.2	6.5	15.3	100%
Fires play an important role in controlling insect and disease outbreaks in forests.	89.5	2.4	8.1	100%
Fires are not important for maintaining wildlife habitat.	12.1	77.4	10.5	100%
Some trees, like ponderosa pine, grow better in open, sunny areas than in shaded ones.	74.2	1.6	24.2	100%
Many plants require occasional fires so that new seeds or seedlings can sprout.	89.5	4.0	6.5	100%
Fires in one year are not influenced by fires in previous years.	9.7	70.2	20.2	100%
Prior to European settlement, forests were generally more open than they are today.	52.4	9.7	37.9	100%
Climate change has directly affected the frequency and severity of forest fires.	62.9	14.5	22.6	100%

TABLE 5: Attitudes to Forest Restoration						
Please tell us your level of agreement with the following statements. (Q6&7)	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Total (n=124)
Restoration efforts should return forests to conditions more like those before European settlement.	8.9	31.7	38.2	17.1	4.1	100%
The main purpose of restoration should be to promote well-functioning forest ecosystems.	43.5	51.6	2.4	2.4	0.0	100%
Forest restoration should alter fire behavior by reducing the fuel that has accumulated in the forest due to fire suppression and past management.	29.8	55.6	12.9	1.6	0.0	100%
We should allow forests to evolve without any more human intervention.	0.0	6.5	21.8	50.0	21.8	100%
Forest restoration should remove enough trees, large and small, in a particular stand if scientific evidence suggests that is what the landscape used to look like.	10.6	19.5	39.0	23.6	7.3	100%
Forest restoration efforts should be used to help recover native plant and animal species that are rare and endangered in order to maintain biodiversity.	29.8	54.0	9.7	3.2	3.2	100%
The main purpose of forest restoration should be to protect humans from fire.	2.4	13.0	27.6	50.4	6.5	100%
Large trees should never be removed in forest restoration efforts.	7.3	23.6	25.2	30.1	13.8	100%
Public forest lands in southwest Oregon need large-scale restoration.	14.6	34.1	43.9	7.3	0.0	100%
Forest restoration efforts should focus only on the Wildland Urban Interface (i.e. the forest edge near town).	2.4	12.1	23.4	43.5	18.5	100%

TABLE 6: Mechanical Vegetation Removal

In my opinion, mechanical vegetation removal in the Ashland watershed is... (Q8_1)	Percent	Count
A legitimate tool that resource managers should use more often.	58.5	72
Something that should be done only infrequently, in carefully selected areas.	26.0	32
I know too little to make a judgment about this topic.	13.8	17
A practice that should not be considered because it creates too many negative impacts.	1.6	2
An unnecessary practice	0.0	0
Total	100%	123

TABLE 7: Commercial Thinning and Density Management

In my opinion, commercial thinning and density management in the Ashland watershed is... (Q8_2)	Percent	Count
A legitimate tool that resource managers should use more often.	74.0	91
Something that should be done only infrequently, in carefully selected areas.	17.9	22
I know too little to make a judgment about this topic.	6.5	8
A practice that should not be considered because it creates too many negative impacts.	0.8	1
An unnecessary practice	0.8	1
Total	100%	123

TABLE 8: Controlled Burning

In my opinion, controlled burning in the Ashland watershed is... (Q8_3)	Percent	Count
A legitimate tool that resource managers should use more often.	58.5	72
Something that should be done only infrequently, in carefully selected areas.	27.6	34
I know too little to make a judgment about this topic.	9.8	12
A practice that should not be considered because it creates too many negative impacts.	2.4	3
An unnecessary practice	1.6	2
Total	100%	123

Part 4: Knowledge of AFR Project

TABLE 9: Knowledge of AFR

Since completing the initial survey in Spring 2012, have you heard or read more about the Ashland Forest Resiliency Stewardship Project (AFR)? (Q9)	Percent	Count
Yes, I've heard more about it and know a lot about the project goals.	8.9	11
Yes, I've heard more about it and know a little about the project goals.	36.3	45
Yes, I've heard more about it but don't know what it involves.	15.3	19
No, I've nothing else about it.	39.5	49
Total	100%	124

TABLE 10: Where Respondent Heard of AFR

If you heard more about AFR , where did you hear about it? (Q10) (circle all that apply)	Percent	Count (n=75)
I attended a public tour about AFR in the watershed.	2.7	2
I attended a public lecture or meeting that discussed AFR.	6.8	5
I read about AFR on the City of Ashland's AFR website.	17.6	13
I read AFR newsletters circulated via email.	21.6	16
I heard about AFR from US Forest Service employees or media.	20.3	15
I heard about AFR from City of Ashland employees or media.	35.1	26
I heard about AFR from Nature Conservancy employees or media.	16.2	12
I heard about FR from Lomakatsi Restoration Project employees or media.	20.3	15
I read about AFR in the local newspaper.	83.8	62
I heard about AFR on the television.	14.9	11
I heard about AFR from friends or neighbors.	24.3	18
I heard about AFR from kids in school programs.	0.0	0
Other	8.1	6

TABLE 11: Approval of AFR's goals

Do you approve or disapprove of AFR's goals? (Q11)	Percent	Count
Strongly Approve	50.0	62
Somewhat Approve	42.7	53
No Opinion	4.8	6
Somewhat Disapprove	0.8	1
Strongly Disapprove	1.6	2
Total	100%	124

TABLE 12: Trust in Organizations

Please indicate your level of trust in the following groups to make good decisions about fuel reduction and forest restoration in the Ashland watershed. If you have no basis for judgment, please mark "no opinion". (Q12)	Full Trust	Some Trust	No Trust	No Opinion	Total (n=124)
U.S. Forest Service	35.5	47.6	12.1	4.8	100%
City of Ashland	16.1	68.5	11.3	4.0	100%
The Nature Conservancy	56.5	34.7	1.6	7.3	100%
Lomakatsi Restoration Project	46.0	25.0	1.6	27.4	100%
Ashland Fire and Rescue	43.5	46.0	0.8	9.7	100%
Southern Oregon Timber Industry Association	6.5	34.7	39.5	19.4	100%
Klamath-Siskiyou Wildlands Center	33.1	34.7	5.6	26.6	100%
Southern Oregon Forest Restoration Collaborative	18.5	27.4	1.6	52.4	100%
Geos Institute	12.1	14.5	3.2	70.2	100%

FIGURE 2: The following four photographs represent three common forest conditions in the Ashland Forest Resiliency Project. How much of each forest condition should be maintained across that landscape if the management goals are to balance fire safety, water quality, wildlife habitat, natural beauty, and recreation?   (Q14)

Slide the bars to indicate the percent of all the forest landscape in the AFR project that should be maintained in each condition. (*All four conditions* **combined** *cannot total more than 100 percent.*)

	Percent												Mean	S.D.
	0	10	20	30	40	50	60	70	80	90	100	(N=124)		
Condition 1													16.4	12.4
Condition 2													42.3	23.1
Condition 3													7.4	9.6
Condition 4													27.9	16.9

FIGURE 3: Considering Condition 1, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project? (Q15)

The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments.   Illustrative comments from Q15:

Case 2608: "Remove dead and dying trees and excess fuels from forest floor."

Case 2843: "Remove fallen trees, branches and debris off the forest floor. Possibly do some thinning of smaller bushes and trees."

FIGURE 4: Considering Condition 2, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project? (Q16)

The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments.   Illustrative comments from Q16:

Case 2496: "This looks to me to be a pretty healthy section. There isn't a lot of undergrowth fuel and the trees seem to be pretty healthy."

Case 2684: "LOOKS GREAT."

FIGURE 5: Considering Condition 3, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project? (Q17)

The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments.   Illustrative comments from Q17:

Case 2394: "Thin, thin, thin!!!"

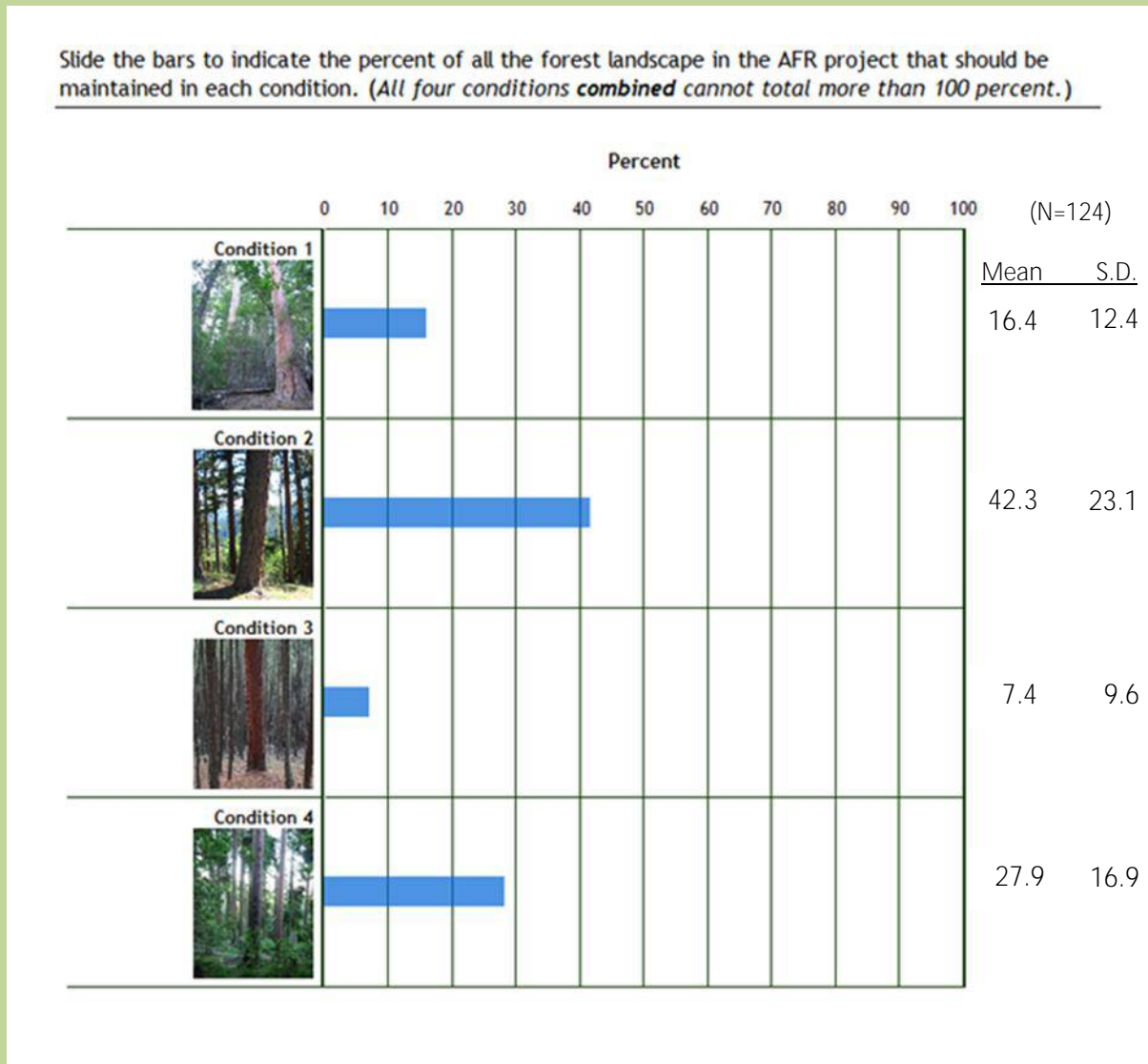Case 2769: "Way too many trees. Serious thinning."

FIGURE 6: Considering Condition 4, what if any forest treatments would you encourage managers to do to achieve a balance among management goals in the Ashland Forest Resiliency Project? (Q18)

The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments. Illustrative comments from Q18:

Case **2818**: "Thin small trees and shrubs."

Case **3099**: "This needs a little clean up. I have a friend that lives up past the top of the park on the right and it scares me with all the brush."

Image 1	Image 2

Image 3

TABLE 13: Satisfaction with AFR Work Being Done

Please indicate below each photo whether you are satisfied or dissatisfied with the work being done in the picture.	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Total
Image 1 (Q19)	22.7	60.5	11.8	3.4	1.7	100%
Image 2 (Q20)	20.2	56.3	16.0	6.7	0.8	100%
Image 3 (Q21)	13.1	56.6	18.0	9.8	2.5	100%

FIGURE 7: Displayed below are paired pre- and post-treatment photos of the same forest locations (or stands) in the AFR project. The top photo in each pair was taken prior to treatment, and the other was taken after cutting and piling. Based on this photo comparison, please indicate on the sliding scale below whether you think the AFR project managers should have removed more or fewer trees in treatments to reduce the risk of a mega-fire in the watershed. (Q21, Q22, & Q23)

	Mean (n=97)	S.D.
Q21	0.21	0.78
Q22	0.38	0.91
Q23	-0.04	0.56

FIGURE 8: In the space below, please provide any comments you have regarding the work being done in the Ashland Forest Resiliency Project, as represented in the three photos above. (Q24; refer to photos in Figure 7)

The *Wordle* image above represents respondents' word usage in open-ended questions, scaled to frequency across all comments.   Illustrative comments from Q24:
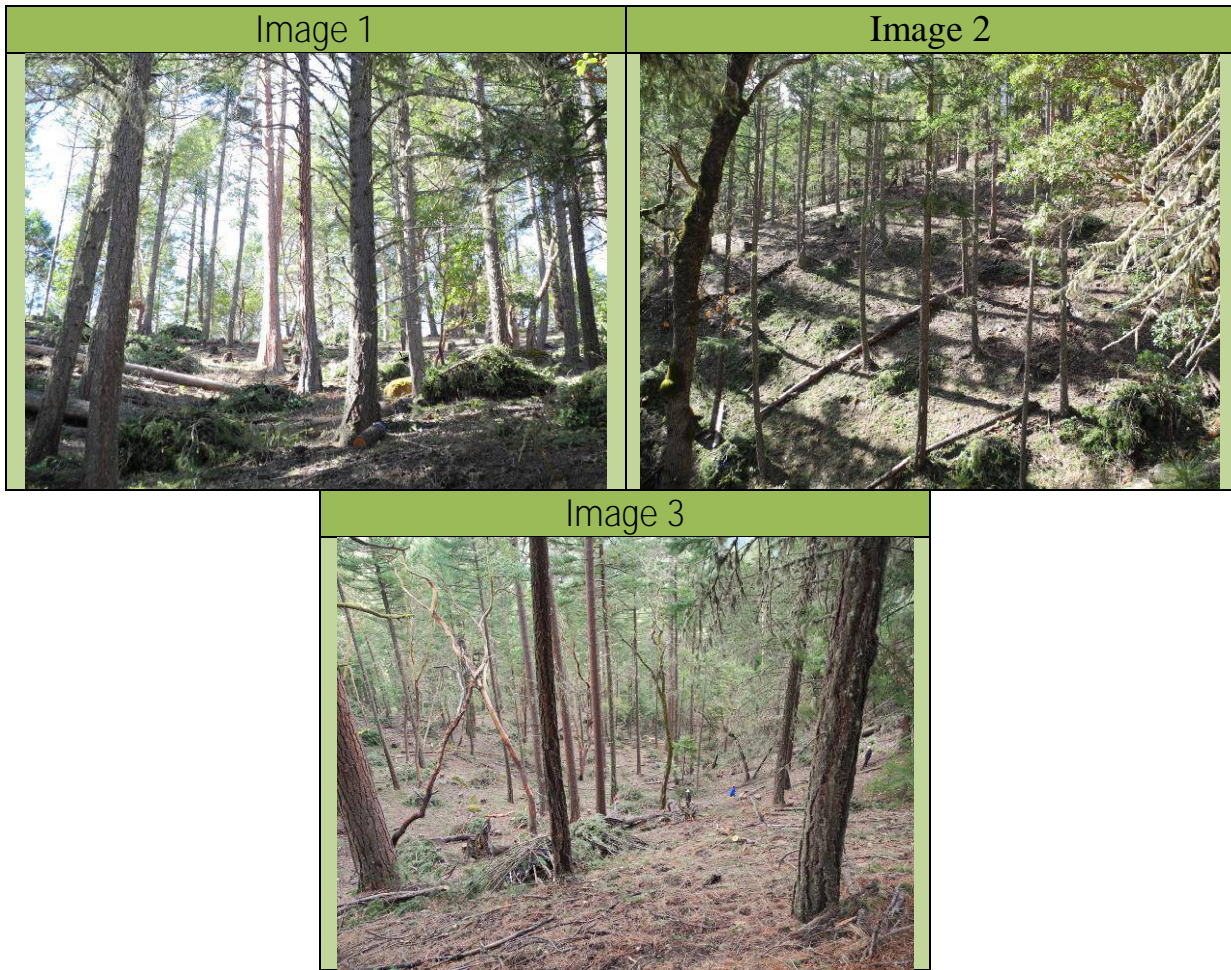
Case 2272: "Keep up the good work...when in doubt, cut it down! There is no tree shortage in this watershed.

Case 3453: "I feel good about the work being done."

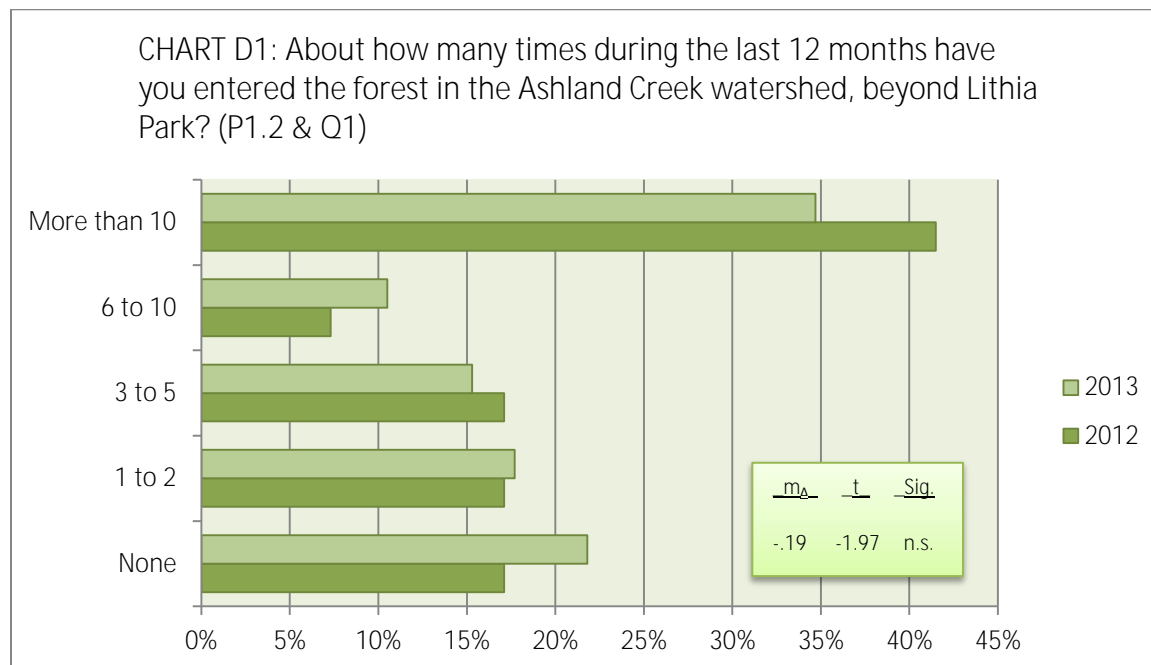| TABLE 20: AFR and Forest Maintenance as Priorities						
Having viewed post treatment photos, pre-post pairs, and including everything you know about AFR, please indicate whether you agree or **disagree that...** (Q25)	Strongly Agree	Agree	Neither Agree/Dis	Disagree	Strongly Disagree	Total (n=118)
completing AFR should be a high priority.	46.6	48.3	3.4	1.7	0.0	100%
maintaining the forests treated by AFR should be a high priority.	44.9	44.9	6.8	3.4	0.0	100%

Appendix D: Paired Comparisons, April 2012 and September 2014

Only panel responses (n=124) are used to estimate opinion change. The tables and charts below report response proportions and highlight change between 2012 and 2013. Most change over the eighteen month period between the two surveys is relatively small (less than 10%). Whether the changes are statistically significant is determined by using one-sample t-tests based on mean differences (i.e., the average change in raw scores) for each question.[4] Statistical significance is reported if the p-value is below .05. A lack of statistical significance **means that we can't be sure our sample results reflect real opinion change in the population** even if there is some observable change in our sample data.

CHART D1: About how many times during the last 12 months have you entered the forest in the Ashland Creek watershed, beyond Lithia Park? (P1.2 & Q1)

m_Δ	t	Sig.
-.19	-1.97	n.s.

---

[4] Raw scores on most questions range between 0 and 4 (strongly disagree to strongly agree). A change measure was created for each question ($X_{13} - X_{12} = X_\Delta$). The one sample t-test evaluates whether the mean change for a given question across all panel cases is enough different from zero (no change) that we can be confident our sample results reflect real change in the population. Put formally,

$$H_0: m_\Delta = 0$$
$$H_1: m_\Delta \neq 0$$

where m_Δ is the mean change between 2012 and 2013 for a given question. The null hypothesis represents no opinion change, and the alternative hypothesis represents change, either up or down.
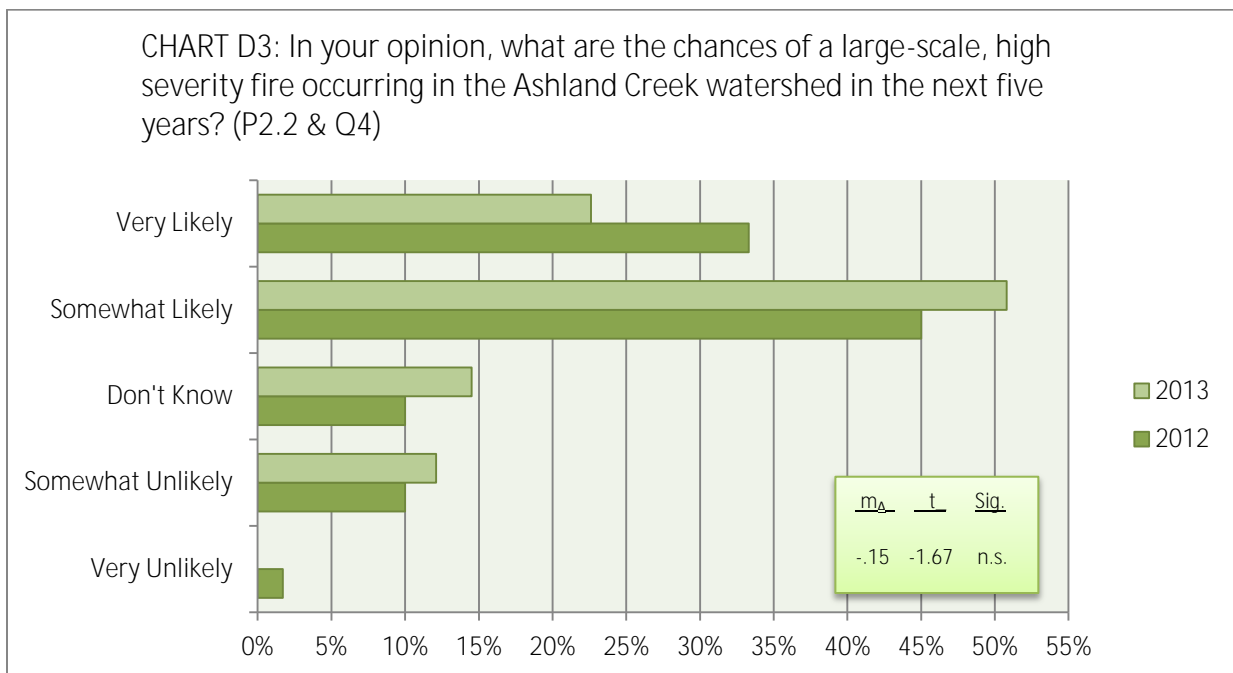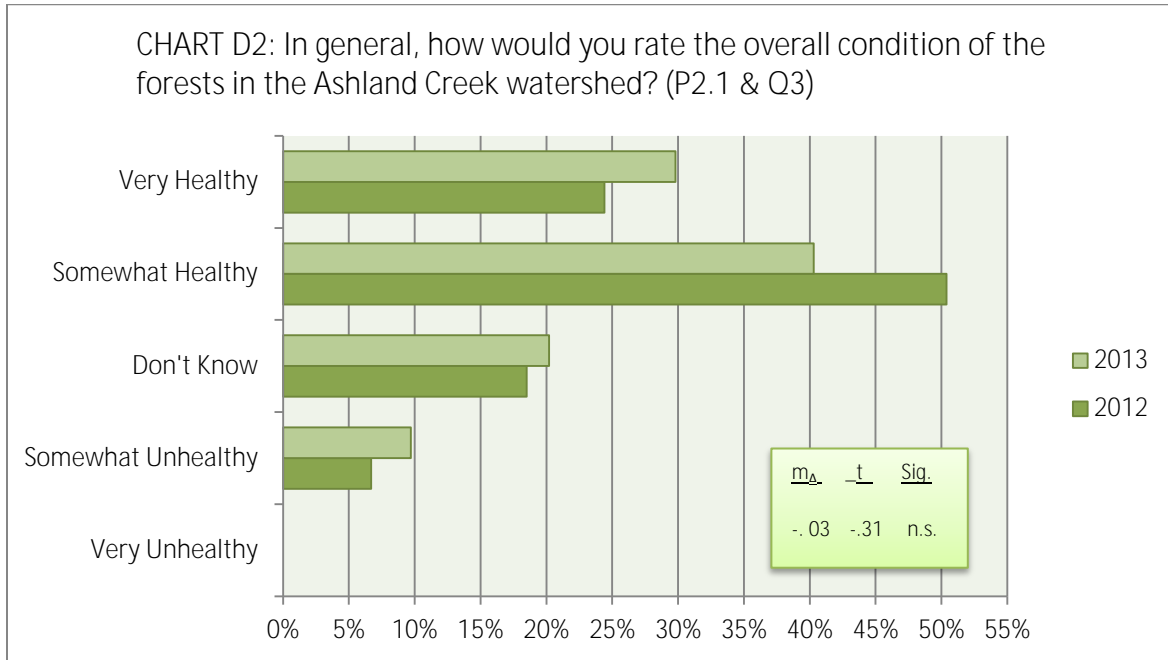
CHART D2: In general, how would you rate the overall condition of the forests in the Ashland Creek watershed? (P2.1 & Q3)

mΔ	t	Sig.
-.03	-.31	n.s.

CHART D3: In your opinion, what are the chances of a large-scale, high severity fire occurring in the Ashland Creek watershed in the next five years? (P2.2 & Q4)

mΔ	t	Sig.
-.15	-1.67	n.s.

CHART D4: In my opinion, mechanical vegetation removal in the Ashland watershed is... (P2.6 & Q8_1)

	m_A	t	Sig.
	-.07	-.82	n.s.

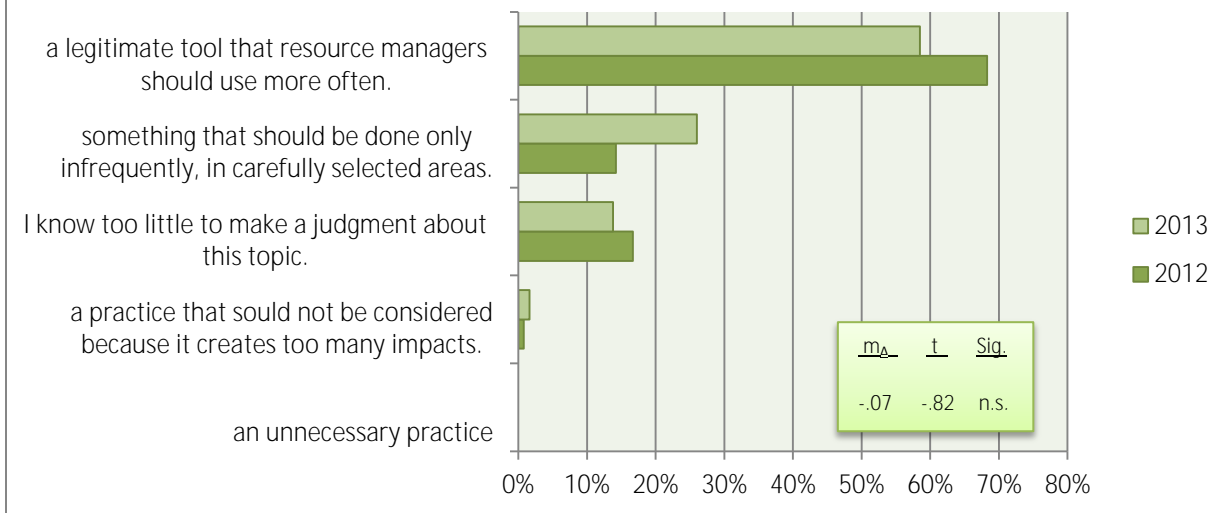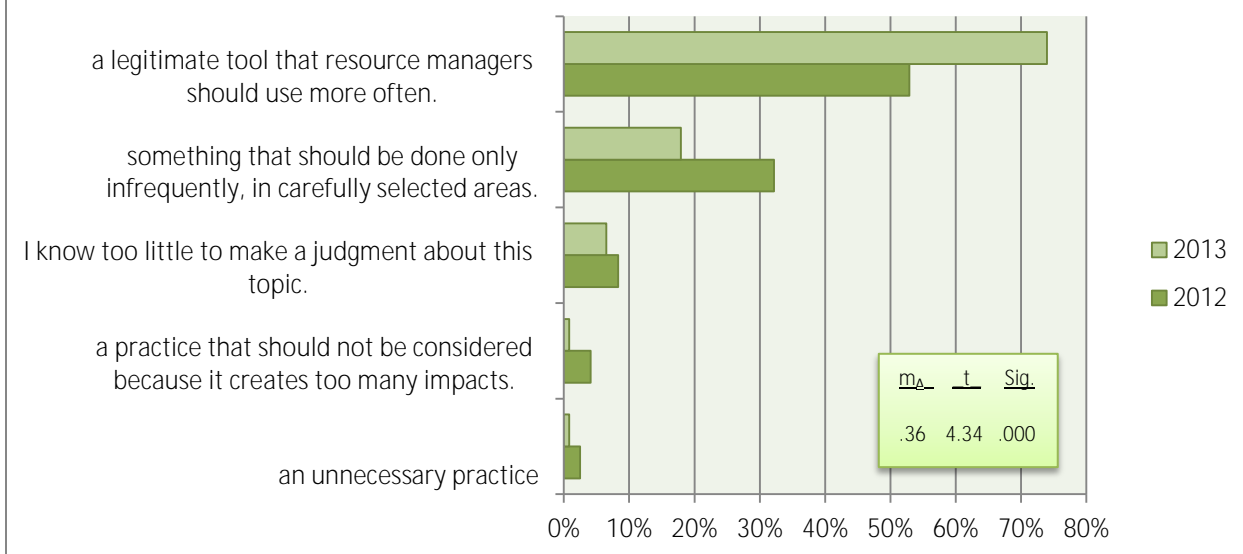**CHART D5: In my opinion, commercial thinning and density management in the Ashland watershed is... (P2.7 & Q8_2)**

	m_A	t	Sig.
	.36	4.34	.000

CHART D6: In my opinion, controlled burning in the Ashland watershed is... (P2.8 & Q8_3)

	m_Δ	t	Sig.
	.14	n.s.	1.96
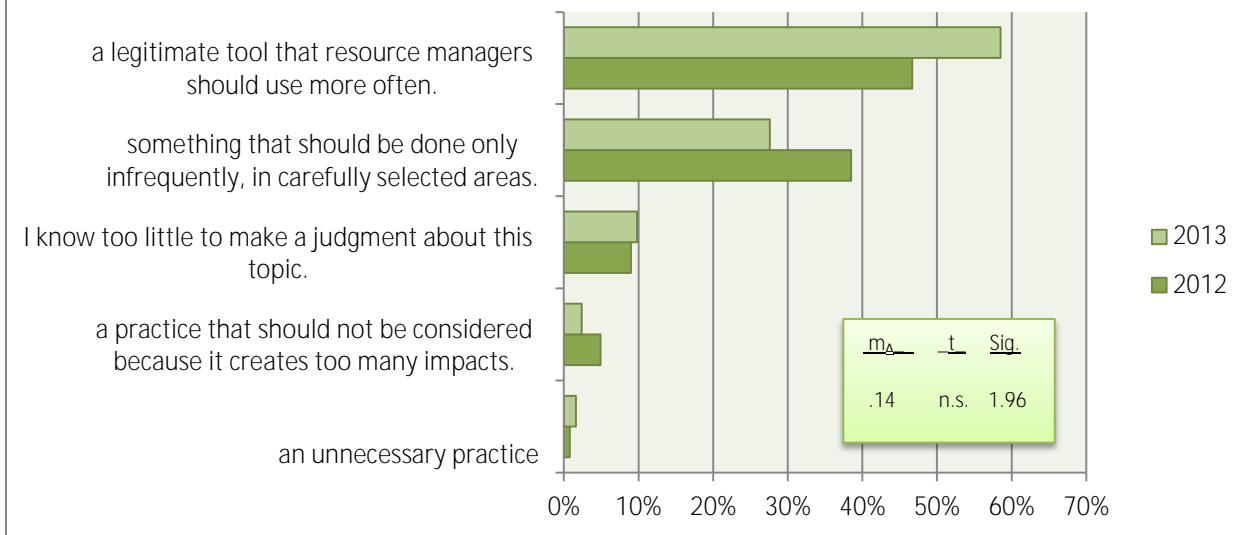
CHART D7: Do you approve or disapprove of AFR's goals? (P3.4 & Q11)

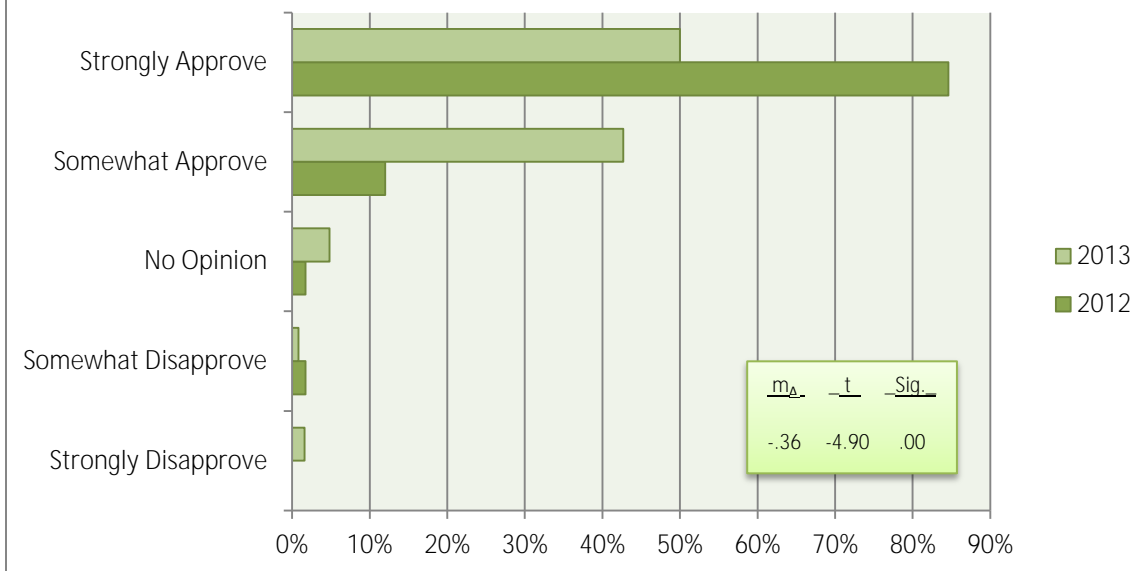|	m_Δ	t	Sig.
	-.36	-4.90	.00

TABLE D1 : Change in Fire Knowledge, Rank-ordered						
Please respond to each statement to the best of your ability by indicating whether you believe it is generally false, generally true, or that you are not sure. (P2.4 & Q5)	% answering correctly			Sig. Test		
	2012	2013	Change	m_Δ	t	Sig.
Prior to European settlement, forests were generally more open than they are today. (TRUE) Q5.7	45.1	52.4	7.3%	.07	1.15	n.s.
Fires in one year are not influenced by fires in previous years. (FALSE) Q5.6	64.5	70.2	5.7%	.07	.84	n.s.
Some trees, like ponderosa pine, grow better in open, sunny areas than in shaded ones. (TRUE) Q5.4	68.9	74.2	5.3%	.05	.88	n.s.
Fires are not important for maintaining wildlife habitat. (FALSE) Q5.3	77.0	77.4	.4%	-.04	-.57	n.s.
Fires play an important role in controlling insect and disease outbreaks in forests. (TRUE) Q5.2	89.2	89.5	.3%	.00	.00	n.s.
Many plants require occasional fires so that new seeds or seedlings can sprout. (TRUE) Q5.5	91.8	89.5	-2.3%	-.04	-.90	n.s.
Years of fire suppression has increased the risk of severe wildfire in our regions forest. (TRUE) Q5.1	82.8	78.2	-4.6%	-.07	-1.22	n.s.

TABLE D2: Change in Opinions about Forest Restoration, Rank-ordered						
We would like to know your opinion about the broad goals of forest restoration on National Forest land in southwest Oregon. Please tell us your level of agreement with the following statements. (P4.2 & Q6-7)	% agreement with statement			Sign. Test		
	2012	2013	Change	m_Δ	t	Sig.
Forest restoration should remove enough trees, large and small, in a particular stand if scientific evidence suggests that is what the landscape used to look like. Q6.5	16.6	30.1	13.5%	.25	2.56	.01
Public forest lands in southwest Oregon need large-scale restoration Q7.4	38.6	48.7	10.1%	.18	2.67	.01
Restoration efforts should focus only on the Wildland Urban Interface (i.e., the forest edge near town). Q7.5	10.0	14.5	4.5%	.07	.76	n.s.
We should allow forests to evolve without any more human intervention. Q6.4	3.4	6.5	3.1%	.03	.29	n.s.
Forest restoration efforts should be used to help recover native plant and animal species that are rare and endangered in order to maintain biodiversity. Q7.1	82.8	83.8	1.0%	-.08	-1.20	n.s.
The main purpose of forest restoration should be to promote well-functioning ecosystems. Q6.2	98.3	95.1	-3.2%	-.18	-2.93	.00
Restoration efforts should return forests to conditions more like those before European settlement. Q6.1	44.2	40.6	-3.6%	-.12	-1.25	n.s.
Forest restoration should alter fire behavior by reducing the fuel that has accumulated in the forest as a result of fire suppression and past management. Q6.3	89.9	85.4	-4.5%	-.07	-.89	n.s.
Large trees should never be removed in forest restoration efforts. Q7.3	35.4	30.9	-4.5%	-.17	-1.81	n.s.
The main purpose of forest restoration should be to protect humans from fire. Q7.2	23.2	15.4	-7.8%	.04	.45	n.s.

TABLE D3: Change in Trust in AFR Partners, Rank-ordered						
Please indicate your level of trust in the following groups to make good decisions about fuel reduction...(P3.6 & Q12)	% with full trust **in...**			Sig. Test		
	2012	2013	Change	m_Δ	t	Sig. 2-tail
Southern Oregon Forest Restoration Collaborative	5.9	18.5	12.6%	.45	5.56	.00
U.S. Forest Service	30.6	35.5	4.9%	.03	.44	n.s.
Southern Oregon Timber Association	4.2	6.5	2.3%	.08	.85	n.s.
Lomakatsi Restoration Project	47.5	46.0	-1.5%	.09	1.33	n.s.
Klamath-Siskiyou Wildlands Center	36.4	33.1	-3.3%	.05	.63	n.s.
City of Ashland	21.5	16.1	-5.4%	-.03	-.49	n.s.
The Nature Conservancy	64.7	56.5	-8.2%	.03	.44	n.s.

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