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# Agricultural and Resource Policy Report

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## PREFERRED PUBLIC LAND USE AND POLICY IN MOFFAT COUNTY: FINAL REPORT OF A COUNTYWIDE OPINION SURVEY <sup>1</sup>

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### Executive Summary

Due to the predominant role of public lands in Moffat County, there is a clear need to better understand public land management issues in order to better inform local decision-making and to create strategies for Moffat County to thrive into the foreseeable future. Issues of access and appropriate use may be particularly contentious and the county's economic base and lifestyle may be strongly affected, either directly or indirectly, by decisions made regarding the management and disposition of public lands.

One piece of information of interest and import to local and national decision-making are the perspectives of local stakeholders. We conducted a two page mail survey of attitudes and uses of public lands among Moffat County residents. Survey respondents were asked

about general and proposed changes in public lands within Moffat County, access, importance to the local economy, their current and projected uses of public lands, and their preferences for public lands in the county. The results of this survey are reported here.

In addition to an overall public perspective, we hypothesize that there may be at least four distinct groups of opinions on these matters: 1) Moffat County residents who own significant amounts of land; 2) Residents who do not own substantial acreages; 3) Nonresidents with acreage; and 4) Nonresident nonlandowners.

Overall, a majority of respondents see federal lands as important the Moffat County economy and tax base. That said, they feel the best way to make use of these

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federal lands is with a multiple use management strategy. While the survey respondents do not generally want to see expansions to Dinosaur National Monument, creation of Vermillion National Monument, or designation of any additional BLM wilderness areas, if any of these proposals were to go through the respondents would like them to allow for multiple use activities such as grazing and oil/gas/mineral exploration and production. The desire for lands to permit grazing on federal lands goes hand in hand with the prominent role ranching plays in the county economy. Overall, there is no desire for any new land designations that would take away current land use practices.

Most statistical differences between means of the various respondent subgroups were not policy relevant. However, the few cases where it was important for policy were for both questions involving gas/oil/mineral exploration and production. There is potential for nonresident nonlandowners to switch from neutral to disagree for policies addressing gas/oil/mineral exploration and production in the proposed Vermillion National Monument, and for resident nonlandowners and nonresident landowners to switch from neutral to either disagree or agree for gas/oil/mineral exploration and production in additions to Dinosaur National Monument. This makes the case that multiple use is the preferred land planning strategy when it includes grazing and motorized recreation, but opinions diverge when it comes to multiple use involving gas/oil/mineral exploration and production. This issue is potentially more controversial.

In terms of public policy implications, particular attention must be paid to the relationship between landowners and nonlandowners. Landowners control the private land resources in the county and arguably have the most to gain or lose financially from policies affecting land use. Nonlandowners constitute the vast majority of local taxpayers and, probably, voters. As a result, local policy is likely to be driven by nonlandowners. When the preferences of these two groups are at cross purposes, local public policy concerns can be expected. However, as a group, resident nonlandowners were rarely in opposition to resident landowners on matters of land use covered in this survey, if perhaps less vociferous in their support or opposition to the various measures proposed. It would be wise to take the stances of the various stakeholder groups into consideration when evaluating the efficacy of potential incentive based or regulatory measures to guide local land use and economic development.

## **Introduction: Land use and change in Moffat County, Colorado**

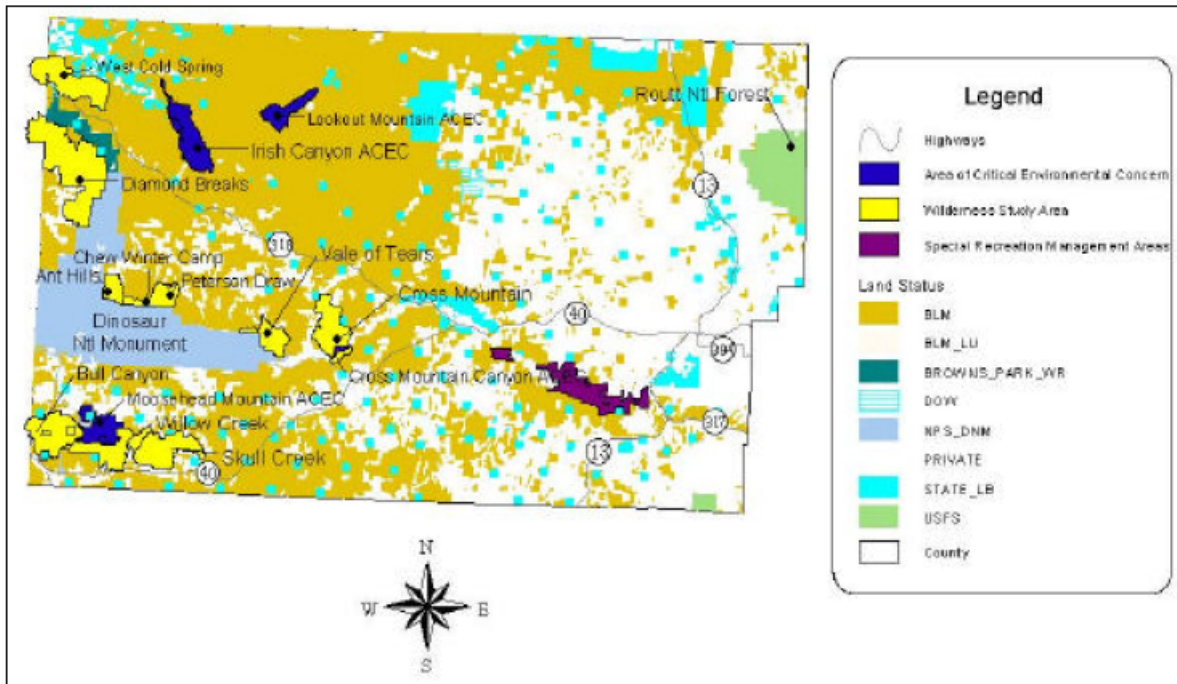
Moffat County is located in the northwest corner of Colorado, bordered by Wyoming to the north and Utah to the west. It is approximately 3 million acres in area, about 2/3 of which is publicly held (60% federal and 6.32% state). About 1.2 million acres (40.3%) of Moffat County are privately owned (see Map 1).

The Bureau of Land Management (BLM) manages 46.8% of the county land (1.4 million acres), more than any other federal agency in Moffat County. BLM manages all Wilderness Study Areas (WSAs) and Areas of Critical Environmental Concern (ACECs), the Wild Horse Management Area, and most land in the Little Snake Resource Area, except for Browns Park National Wildlife Refuge. (*Citizen-Proposed Vermillion National Monument*, undated)

Browns Park National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service (FWS), comprises 13,455 acres located entirely within Moffat County, accounts for 0.44% of all county land. It runs along both sides of the Green River, twenty-five miles below Flaming Gorge Dam. The western border is the Colorado/Utah state line, the southern border is shared with Dinosaur National Monument, and the rest of the land abuts BLM lands. Dinosaur National Monument, 154,161 acres managed by the National Park Service (NPS), comprises 5.1% of the county and is located in western Moffat County and eastern Utah. (Moffat County Commissioners, 2000)

Many areas of Critical Environmental Concern (ACECs) are located in Moffat County, including Irish Canyon (11,680 acres), Limestone Ridge (1,350 acres) and Lookout Mountain (6,500 acres) (Colorado BLM, 2003), as well as a number of wilderness study areas (WSAs) such as the 36,000-acre Diamond Breaks WSA adjacent to the north end of Dinosaur National Monument, the 17,000-acre West Cold Mountain WSA on the north side of Browns Park, and Bull Canyon, Willow Creek and Skull Creek (30,000 acres all together) south of Dinosaur National Monument and north of US Highway 40. (Colorado BLM, 2000)

Several proposals have been initiated in order to alleviate confusion in land management boundaries and to better manage and protect the land and its resources. These proposed changes have implications for private land management and economic development in the county. For example, cattle grazing is permitted on



**Map 1 - Land Use in Moffat County (Source: Moffat County Commissioners 2000)**

BLM land, but not on NPS land, an important consideration due to the prominent role ranching plays in the county economy. Many public lands management plans allow recreational use, including off-road vehicles, but may not necessarily do so. Moreover, wilderness designation precludes oil, gas and mineral exploration and development.

Among the proposed public and private land use changes in Moffat County in recent years are the following. The expansion of Dinosaur Monument, or the Dinosaur Additions, involves small parcels of land adjacent to the northern border of the existing monument that would be designated as wilderness areas. The proposed Vermillion National Monument is a 280,000-acre area that includes two BLM WSAs, several areas of proposed wilderness designation, the Browns National Wildlife Refuge, three BLM ACECs, 1,900 acres of private land along Highway 318, and 200 acres of private land in Vermillion Basin. (*Citizen-Proposed Vermillion National Monument*, undated) In addition, 6,000 acres of land owned by the State of Colorado are to be included in the proposed monument and managed by the National Park Service. At the same time, BLM would transfer a 6,000-acre parcel to Browns Park National Wildlife Refuge, where it would then be managed by the FWS.

According to a report by a group of conservation agencies, “livestock grazing is the most extensive current economic use of the proposed Vermillion National Monument.” (*Citizen-Proposed Vermillion National Monument*, undated) This group considers grazing a threat to vegetative cover, ecosystem health and biodiversity. The Colorado Cattlemen’s Association (CCA) has voiced concern that conservationist groups made no mention of continued grazing on the lands within the proposed monument. Ranchers claim a lack of access to federal lands for grazing cattle will cause substantial economic hardship to local ranching operations. Most of the proposed Vermillion National Monument would still be open to off-road recreation, though there are defined areas where it would be banned. The proposed new monument and the additions to the existing monument would make oil, gas and mineral exploration and development unacceptable, reducing one or more sources of potential local economic opportunity.

Due to the complex and nuanced nature of public land management issues in Moffat County there is a clear need to better understand these important public issues in order to better inform local decision-making and to create strategies for Moffat County to thrive into the foreseeable future. Issues of access and appropriate use

may be particularly contentious and the county's economic base and lifestyle may be strongly affected, either directly or indirectly, by decisions made regarding the management and disposition of public lands. One piece of information of interest and import to local and national decision-making are the perspectives of local stakeholders. Governors of ten states signed a letter to ex-Secretary of the Interior, Bruce Babbitt, asking for assurance that no decisions would be made without a process of local involvement. Land cannot be designated as a National Monument without the opportunity of public as well as local input. Since local opinion may be considered hearsay, unrepresentative of the broader local population, or conventional wisdom unsubstantiated by factual information, it is useful to complement this information by gaining a representative perspective on the various stakeholder groups collected with some degree of scientific rigor. This report of the Moffat County Public Lands survey hopes to work toward accomplishing this worthy goal.

**Moffat County Public Lands Survey: Approach**

The public's perspective on public lands management is important. However, the public does not necessarily speak with one voice on this issue. Ranchers may consider changes in public lands designation as threats to their way of life or business. Preservationists may be concerned about the wildlife, wildlife habit, human historical record, vegetation, and/or natural state of the land. Some people own private land that is part of the proposed land changes, which may create new opportunities or challenges of ownership. People who use the land for recreational purposes may find that certain areas are no longer open to them, but they may also be pleased by the preserved natural character of the land they use. The oil and gas companies may have less access than they did previously, which could result in a loss of current or future jobs, income and tax revenue for the county. However, habitat quality may improve and there may be more potential for tourism and a gen-

eral improvement in quality of life if the wilderness quality of the area were preserved.

In addition to an overall public perspective, we hypothesize that there may be at least four distinct groups of opinions on these matters: 1) Moffat County residents who own significant amounts of land; 2) Residents who do not own substantial acreages; 3) Nonresidents with acreage; and 4) Nonresident nonlandowners. Landowners are defined as owning 100 acres or more. Residency is based upon the mailing address for the property owners. The two-page mail survey (Appendix 1) was included in the mailings for a parallel survey on private lands management preferences. The survey was designed based upon interactions among county personnel, the research team and focus groups representative of the four focal categories of participants. Survey respondents were asked about general and proposed changes in public lands within Moffat County, access, importance to the local economy, their current and projected uses of public lands, and their preferences for public lands in the county.

**Moffat County Public Lands Survey: Diagnostics**

A survey was created and distributed to a total of 2,800 residents and non-residents of Moffat County, Colorado in order to elicit preferences for public lands management within the county. County landowners were identified through the county assessor's office. A list was purchased from a survey sampling company that listed addresses and telephone number of county residents. A master list was created that contained a total of more than 6,000 names once duplicates were removed. Nonlandowners were randomly sampled. All landowners who own 100 acres or more (700 individuals) were included in the survey distribution, because they are such a small population in general. Table 1 shows how many surveys were distributed to each group of respondents.

**Table 1 – Distribution of Survey Group Types**

	Resident Landowners (>100 acres)	Non-Resident Landowners (>100 acres)	Residents owning <100 acres	Non-Residents owning <100 acres	Total Surveys Mailed
Number of surveys distributed	299	401	1659	441	2800



A total of three mailings were conducted with the final mailing being certified mail. Returned surveys were sorted based upon whether or not they were completed. All surveys that were completed are listed as answered surveys. Surveys that were returned due to improper addresses or the individuals had moved were determined to be “undeliverables” and were removed from the sample total. A total response rate of 55% was achieved, after all three mailings. Response rates were also calculated for each respondent group and the results are listed in Table 2.

Two concerns arise when assessing the response rate of a mail survey: validity and accuracy. Accuracy (precision) of the survey results is related to the total number of responses. Validity of the responses is important because it indicates how representative the survey answers are of the targeted population (all Moffat County residents AND nonresident owners of land in the county). Resident respondents’ age, education, and income need to be compared with US Census statistics for Moffat County, to determine how well the sample of households represents the targeted population as a whole. Approximately 40% of the sample was nonresidents to whom Moffat County Census statistics would not apply. The results of the Moffat County Pri-

vate Land Preferences Survey establishes the precision and validity of the survey methods employed in undertaking this project.

**Moffat County Public Lands Survey: Results**

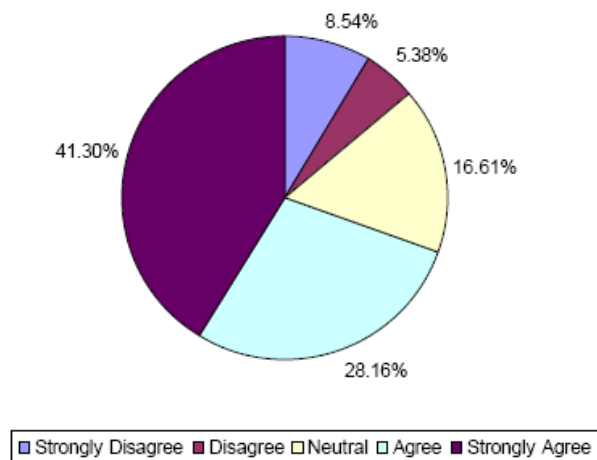
For each question and sub-question, we report the overall response and the response by landowner-resident group and provide a comparison among the responses by group where appropriate. Question 1 states “Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?” Survey respondents were asked to provide their opinion on 15 sub-questions (1a-1o) using a 5-point Likert scale consisting of Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1).

Question 1a. states “Federal lands activities are important to the county economy.” Figure 1 is a pie chart that shows the proportion of all responses falling within each of the five categories. It indicates that almost 70% of all respondents agree or strongly agree with this statement, while about 14% feel that federal lands are unimportant to the Moffat County economy.

**Table 2 – Response Rate by Group**

	Resident Landowners (>100 acres)	Non-Resident Landowners (>100 acres)	Residents owning <100 acres	Non-Residents owning <100 acres	Total Response Rate
Response rate	69%	62%	52%	52%	55%

**a. Federal lands activities are important to the County economy.**  
Number of respondents (n) = 1264



**Figure 1:** Question 1a, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?

Figure 2 is a bar chart that divides responses by stakeholder group and provides a visual comparison among group responses. It shows that the opinion of the general response is fairly consistent across stakeholder subgroups, with the possible exception of nonresident nonlandowners.

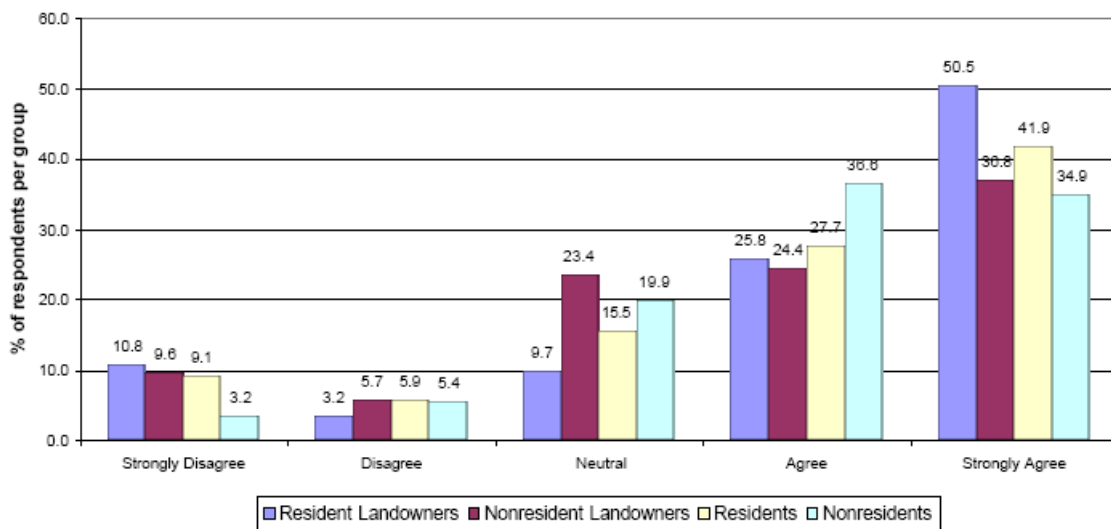
However, visual inspection reveals that resident landowners may feel more strongly about this issue than other landowner and resident subgroups, for example. A statistical measure called a “t-test” can help us to understand whether one response is statistically distinct from another. A t-test indicates whether a pairwise comparison of the average response from each group is statistically identical or distinct with a certain degree of statistical confidence. A general interpretation of the Likert scale is that an average response of 1.5 or less must be considered “strongly disagree,” 1.5 to 2.5 is “disagree,” 2.5 to 3.5 is “neutral,” 3.5 to 4.5 is interpreted as “agree” and mean responses greater than 4.5 are viewed as “strongly agree.” However, the t-test can tell us whether 4.0 should be interpreted as different from 3.5 in a statistical sense. In this case, the traditional 95% level of confidence is used. When respondents within a group are tightly clustered around the same response, there is little observed variation from the mean and it is more likely that statistical distinctions among groups will be detected.

In Table 3 survey responses are divided by landowner subgroup and Likert scale rating. The number of responses falling within each category (frequency), the percentage of overall total responses represented by

that frequency (% of Total), and the percentage of responses represented by that frequency within the respective subcategory (% of Subsample) are provided. In addition, the average (mean) response, degree of variation from the mean (standard deviation), and statistical grouping (family) of mean responses is provided based upon the results of the pairwise t-tests found at the bottom row of the table.

It is also useful to consider whether a local referendum on the survey question would be likely to meet with local support or not and whether different stakeholder groups would react differently to such a policy. Since we conducted a population survey of landowners (all landowners were surveyed) and we have verified that our responses are representative of local demographics, mean responses of landowners can be directly extrapolated to the general landowner population and the two landowner groups can be compared directly. However, the nonlandowner groups were surveyed by representative sample. In this case, about 35% of nonlandowners were surveyed. As a result, in constructing an overall mean response to the survey, nonlandowners will receive a weight of 2.85 while landowners will receive a weight of 1. This weighting factor is represented in the Weighted Average column, which indicates how the general population would be predicted to feel about this question.

Table 3 demonstrates that only resident (group a) and nonresident landowners (group b) differ in the strength of their response to this question, statistically speaking. Resident landowners feel more strongly that federal



**Figure 2:** Question 1a, Response by Group. Federal lands activities are important to the county economy.

**Table 3: Question 1a, Federal lands activities are important to the county economy.**

Response		Group				Total	Weighted Avg
		RL	NRL	R	NR		
Strongly Disagree	Frequency	20	20	62	6	108	233.8
	% of Total	1.58	1.58	4.91	0.47	8.54	8.14
	% of Subsample	10.8	9.6	9.1	3.2		
Disagree	Frequency	6	12	40	10	68	160.5
	% of Total	0.47	0.95	3.16	0.79	5.38	5.59
	% of Subsample	3.2	5.7	5.9	5.4		
Neutral	Frequency	18	49	106	37	210	474.55
	% of Total	1.42	3.88	8.39	2.93	16.61	16.53
	% of Subsample	9.7	23.4	15.5	19.9		
Agree	Frequency	48	51	189	68	356	831.45
	% of Total	3.80	4.03	14.95	5.38	28.16	28.95
	% of Subsample	25.8	24.4	27.7	36.6		
Strongly Agree	Frequency	94	77	286	65	522	1171.35
	% of Total	7.44	6.09	22.63	5.14	41.30	40.79
	% of Subsample	50.5	36.8	41.9	34.9		
Total	Frequency	186	209	683	186	1264	2871.65
	% of Total	14.72	16.53	54.03	14.72	100	100
Family/Group		a	b	a,b	a,b		
Mean		4.022	3.732	3.874	3.946	3.883	3.89
Std. Dev.		1.307	1.277	1.270	1.028	1.245	
Paired T-Test		RL to NRL	RL to R	RL to NR	NRL to R	NRL to NR	R to NR
	$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$						
		2.221*	1.372	0.617	-1.409	-1.845	-0.805

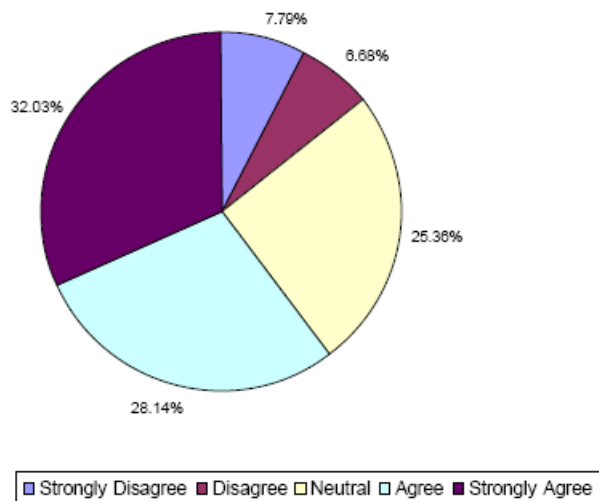
Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

lands are an important part of the local economy than nonresident landowners. As a result there are two statistically distinct groups or families of responses to this question. Resident landowners, resident nonlandowners and nonresident nonlandowners comprise one group (a) and nonresident landowners, resident nonlandowners and nonresident nonlandowners constitute the other group (b) or family of statistically similar responses. The average response of each group is on the positive side of neutral (>3.0). As a result, survey responses would predict that all groups would be in support of a referendum regarding this policy and that their differences, therefore, are not policy relevant. Taking into account weighting of responses to generate a balanced representation of the overall population

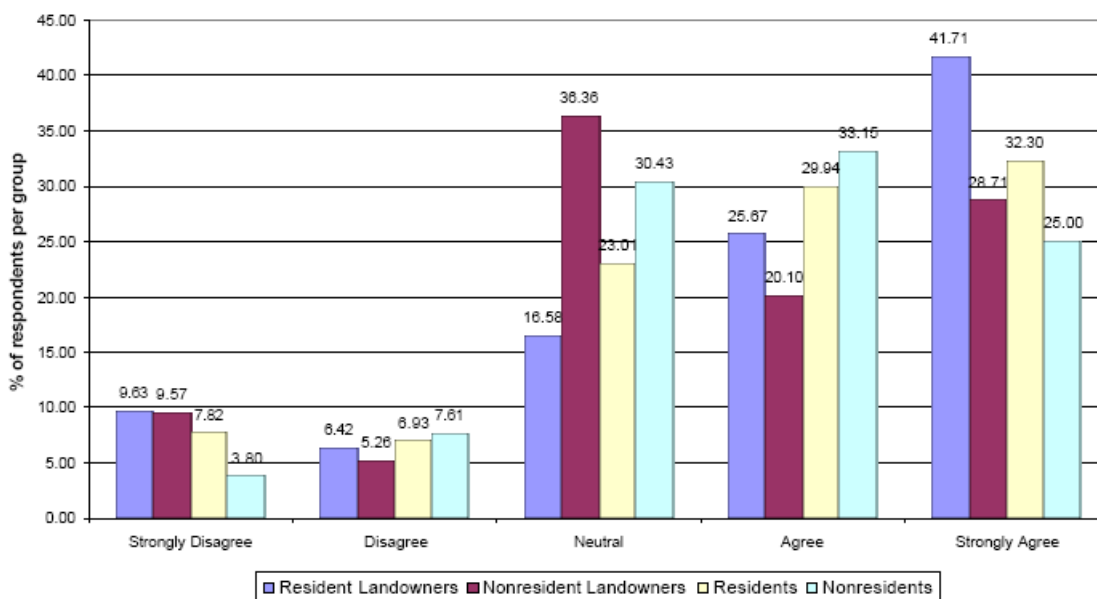
does not change the policy relevance of the responses. Our survey results predict that 69.74% of the people (and the majority of each subgroup) with formal physical ties to Moffat County would be of the opinion that federal land activities are of importance to the county economy, 16.53% would be neutral, and 13.73% would disagree with the statement.

Question 1b. states "Federal lands activities are important to the county tax base." Figure 3 indicates that approximately 60% of all respondents strongly agree or agree with this statement, while about 14% feel that federal lands activities are unimportant to the county tax base. Figure 4 shows that this opinion is consistent across stakeholder subgroups. However, it appears that

**1b. Federal lands activities are important to the County tax base.**



**Figure 3:** Question 1b, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 4:** Question 1b, Response by Group. Federal lands activities are important to the county tax base.

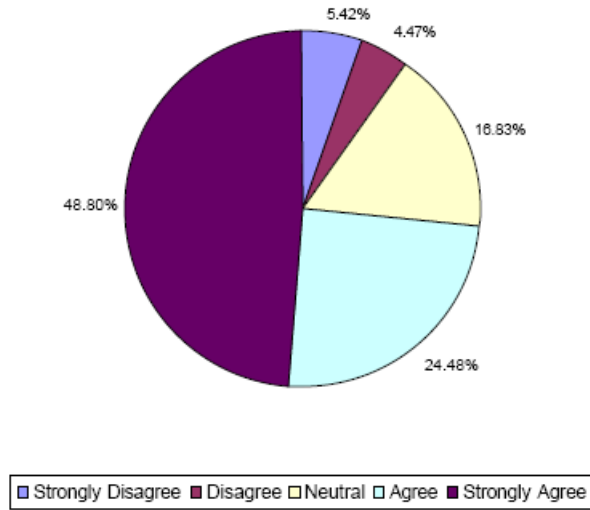
resident landowners may feel more strongly than other landowner and resident subgroups, and nonresident landowners may feel more neutral than other groups, for example. Table 4 demonstrates that both resident groups differ in the strength of their response, statistically speaking, from nonresident nonlandowners. The

two resident groups feel slightly less positive (more neutral) that federal lands are important to the county tax base than do nonresident nonlandowners. As a result there are two statistically distinct groups or families of responses to this question. Resident landowners, nonresident landowners and resident nonlandowners

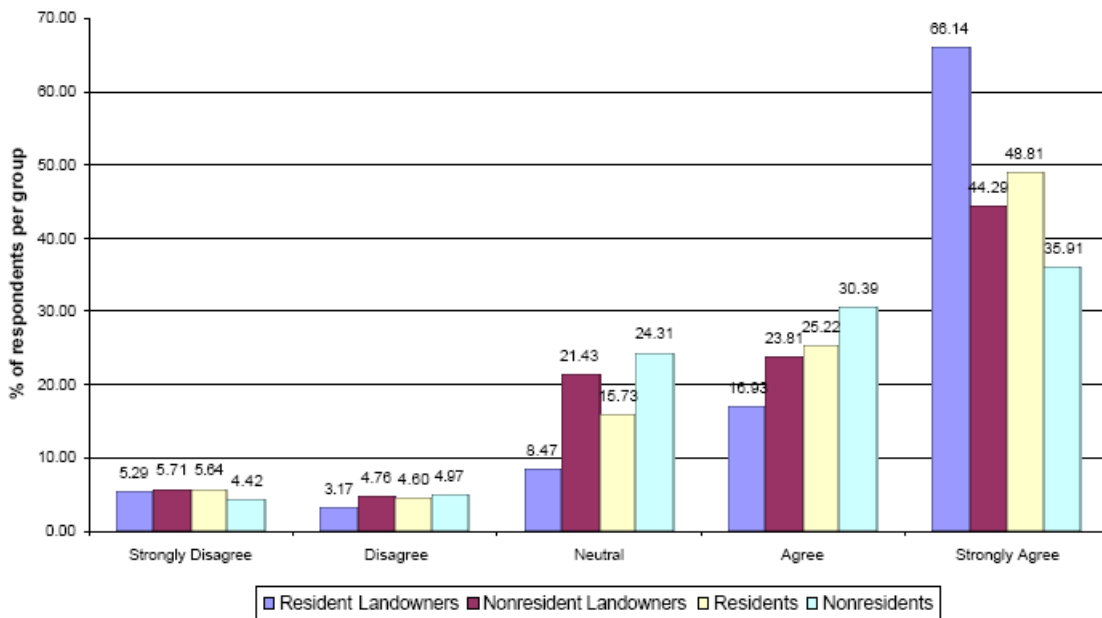




1c. Multiple use should predominate on Moffat County federal lands.



**Figure 5:** Question 1c, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 6:** Question 1c, Response by Group. Multiple use should predominate on Moffat County federal lands.

**Table 5:** Question 1c, Multiple use should predominate on Moffat County federal lands.

Response		Group				Weighted	
		RL	NRL	R	NR	Total	Avg
<b>Strongly Disagree</b>	Frequency	10	12	38	8	68	153.1
	% of Total	0.80	0.96	3.03	0.64	5.42	5.4
	% of Subsample	5.29	5.71	5.64	4.42		
<b>Disagree</b>	Frequency	6	10	31	9	56	130
	% of Total	0.48	0.80	2.47	0.72	4.47	4.58
	% of Subsample	3.17	4.76	4.60	4.97		
<b>Neutral</b>	Frequency	16	45	106	44	211	488.5
	% of Total	1.28	3.59	8.45	3.51	16.83	17.23
	% of Subsample	8.47	21.43	15.73	24.31		
<b>Agree</b>	Frequency	32	50	170	55	307	723.25
	% of Total	2.55	3.99	13.56	4.39	24.48	25.50
	% of Subsample	16.93	23.81	25.22	30.39		
<b>Strongly Agree</b>	Frequency	125	93	329	65	612	1340.9
	% of Total	9.97	7.42	26.24	5.18	48.80	47.29
	% of Subsample	66.14	44.29	48.81	35.91		
<b>Total</b>	Frequency	189	210	674	181	1254	2835.75
	% of Total	15.07	16.75	53.75	14.43	100	100
<b>Family</b>		a	b	b	b,c		
<b>Mean</b>		4.35	3.96	4.07	3.88	4.07	4.05
<b>Std. Dev.</b>		1.109	1.169	1.155	1.092	1.149	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NRR</b>	<b>NR to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		3.441*	3.091*	4.112*	-1.170	0.681	2.007*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

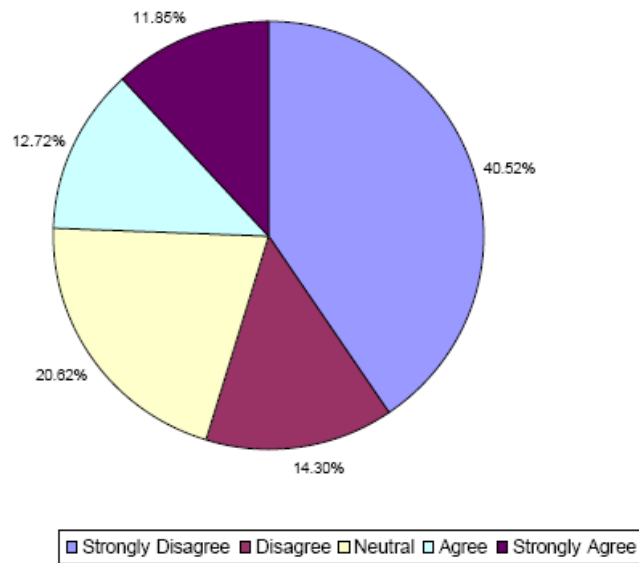
an end to people making use of it, as long as the use is "compatible with the management goals of the particular river." In addition, "development not damaging to the outstanding resources of a designated river, or curtailing its free flow, are usually allowed." (National Park Service, 2003)

Figure 7 indicates that almost 55% of all respondents disagree with this statement, while approximately 25% agree that the river should be designated as wild and scenic. Figure 8 shows that this opinion is fairly consistent across stakeholder groups with the possible exception of nonresident nonlandowners. Table 6 demonstrates that there are three statistically distinct groups or families of responses to this question. Resident landowners comprise the first and most vociferously negative group of responses, nonresident landowners and resident nonlandowners comprise the

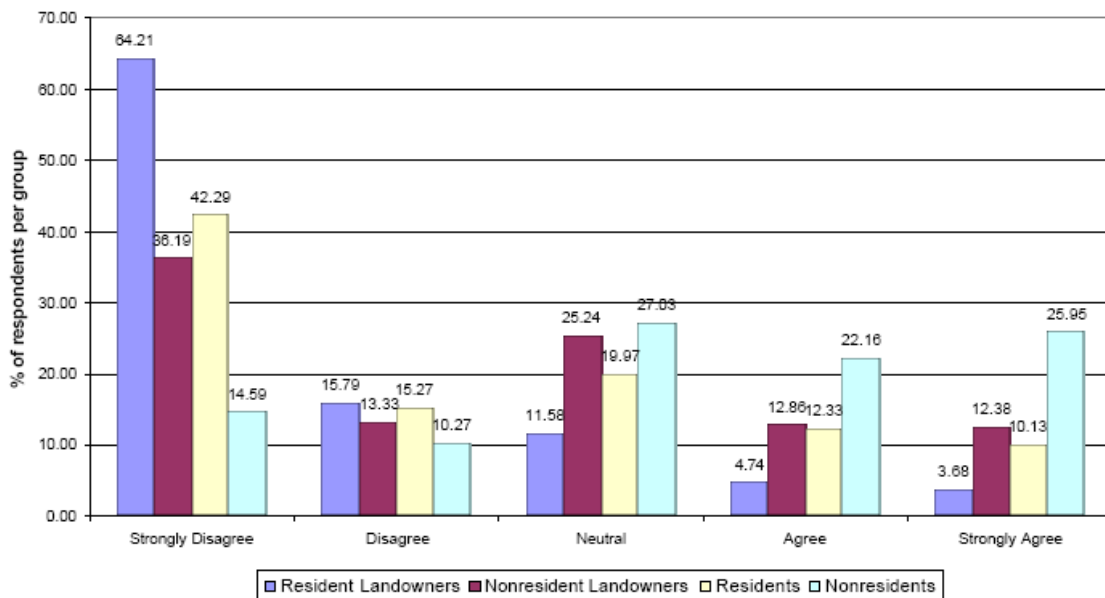
second, and nonresident nonlandowners comprise the third family of statistically similar responses. Notably, responses from nonresident nonlandowners are mildly positive (48% in agreement) and run counter to the sentiments of the other three groups of stakeholders. Since it is a populous group, this could have potential policy relevance in this matter, but does not appear to have an important effect based upon the weighted average of responses, due to the countervailing influence of the resident nonlandowners.

The BLM uses the Wilderness Act of 1964 to define wilderness areas as "federal lands officially designated by Congress and the President as part of the National Wilderness Preservation System", areas untouched by humans. Question 1e states "Additional BLM wilderness areas should be designated on federal lands in Moffat County". Figure 9 indicates that almost 61% of

1d. The Yampa River should be designated as a Wild & Scenic River.



**Figure 7:** Question 1d, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 8:** Question 1d, Response by Group. The Yampa River should be designated as a Wild & Scenic River.

**Table 6:** Question 1d, The Yampa River should be designated as a Wild & Scenic River.

Response		Group				Total	Weighted Avg
		RL	NRL	R	NR		
<b>Strongly Disagree</b>	Frequency	122	76	288	27	513	1095.75
	% of Total	9.64	6.00	22.75	2.13	40.52	38.20
	% of Subsample	64.21	36.19	42.29	14.59		
<b>Disagree</b>	Frequency	30	28	104	19	181	408.55
	% of Total	2.37	2.21	8.21	1.50	14.30	14.24
	% of Subsample	15.79	13.33	15.27	10.27		
<b>Neutral</b>	Frequency	22	53	136	50	261	605.1
	% of Total	1.74	4.19	10.74	3.95	20.62	21.10
	% of Subsample	11.58	25.24	19.97	27.03		
<b>Agree</b>	Frequency	9	27	84	41	161	392.25
	% of Total	0.71	2.13	6.64	3.24	12.72	13.63
	% of Subsample	4.74	12.86	12.33	22.16		
<b>Strongly Agree</b>	Frequency	7	26	69	48	150	366.45
	% of Total	0.55	2.05	5.45	3.79	11.85	12.78
	% of Subsample	3.68	12.38	10.13	25.95		
<b>Total</b>	Frequency	190	210	681	185	1266	2868.1
	% of Total	15.01	16.59	53.79	14.61	100	100
<b>Family</b>		a	b	b	c		
<b>Mean</b>		1.68	2.52	2.33	3.35	2.41	2.49
<b>Std. Dev.</b>		1.087	1.408	1.387	1.355	1.421	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		-6.712*	-6.818*	-13.119*	1.730	-5.942*	-9.020

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

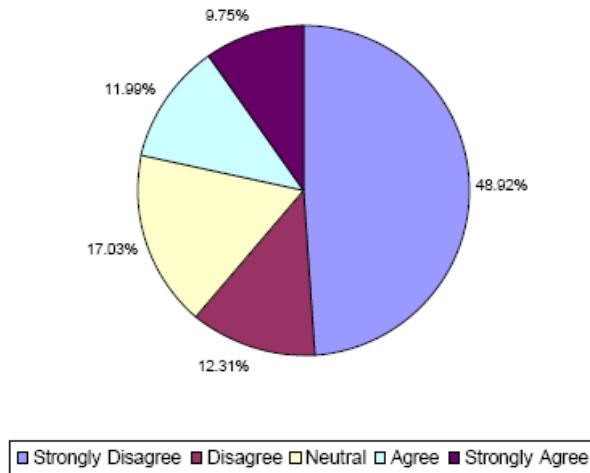
all respondents disagree with this statement, while approximately 21% agree that there should be additional BLM wilderness areas on federal lands in the county. Figure 10 shows that this opinion is fairly consistent across stakeholder subgroups with the possible exception of nonresident nonlandowners. Table 7 demonstrates that resident landowners are strongly against the designation of additional BLM wilderness areas on federal lands in Moffat County, while nonresident nonlandowners are neutral. There are three statistically distinct groups or families of responses to this question. Resident landowners comprise the first and strongest dissent, nonresident landowners and resident nonlandowners comprise the second, milder dissent, and nonresident nonlandowners constitute the third group of statistically similar responses. Since the distinction between the groups does not strongly straddle the neutral response, the statistical differences are probably not policy relevant. Both residents and non-

residents will in general, meet any policy designating additional BLM wilderness areas on federal land with disapproval and the mild support of the nonlandowner nonresidents is insufficient to lead a referendum on the subject to approval.

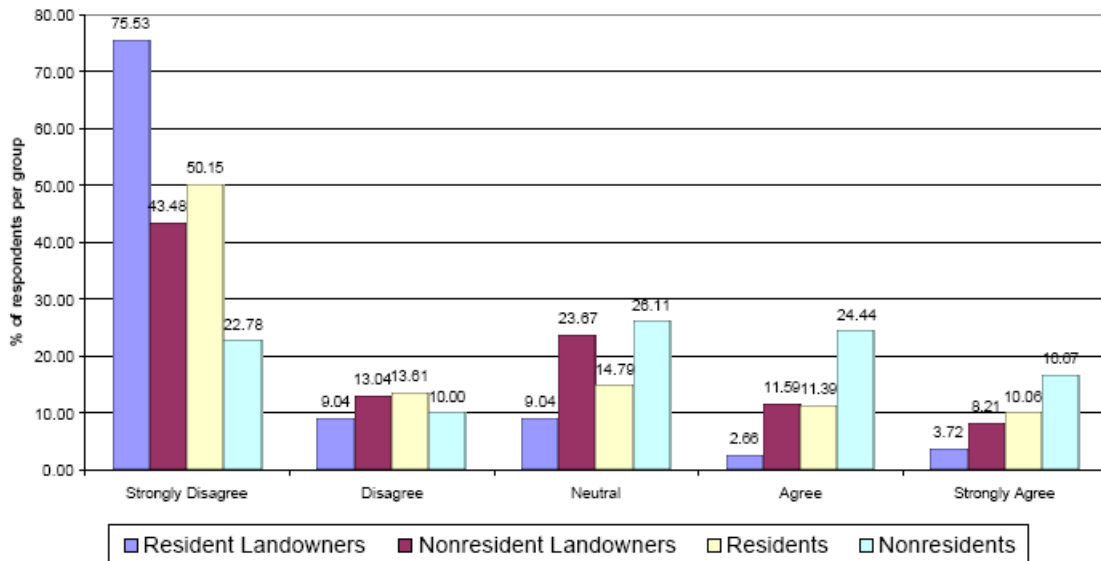
Question 1f states "Dinosaur National Monument should be expanded". Figure 11 shows that almost 65% of all respondents either strongly disagree or disagree with this statement, while approximately 15% think Dinosaur National Monument should be expanded. Figure 12 shows that this opinion is consistent across stakeholder subgroups. However, Table 8 demonstrates that each group differs in the strength of its response to this question, statistically speaking. Continuing the trend, resident landowners were strongest in their dislike for the proposal, followed by resident nonlandowners and nonresident landowners both in the "disagree" range and nonresident nonlandowners



**1e. Additional BLM wilderness areas should be designated on federal lands in Moffat County.**



**Figure 9:** Question 1e, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



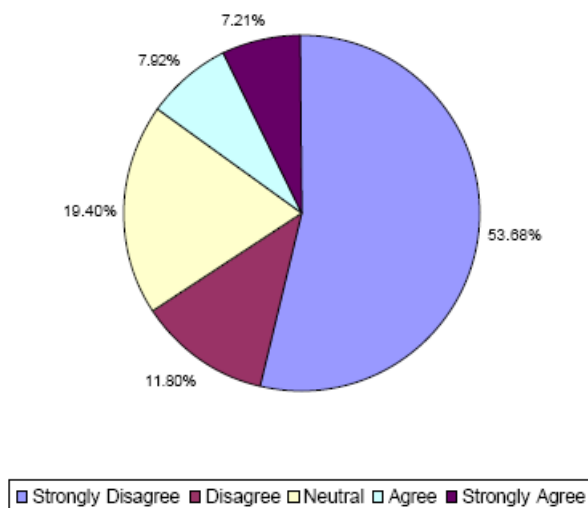
**Figure 10:** Question 1e, Response by Group. Additional BLM wilderness areas should be designated on federal lands in Moffat County.

**Table 7: Question 1e, Additional BLM wilderness areas should be designated on federal lands in Moffat County.**

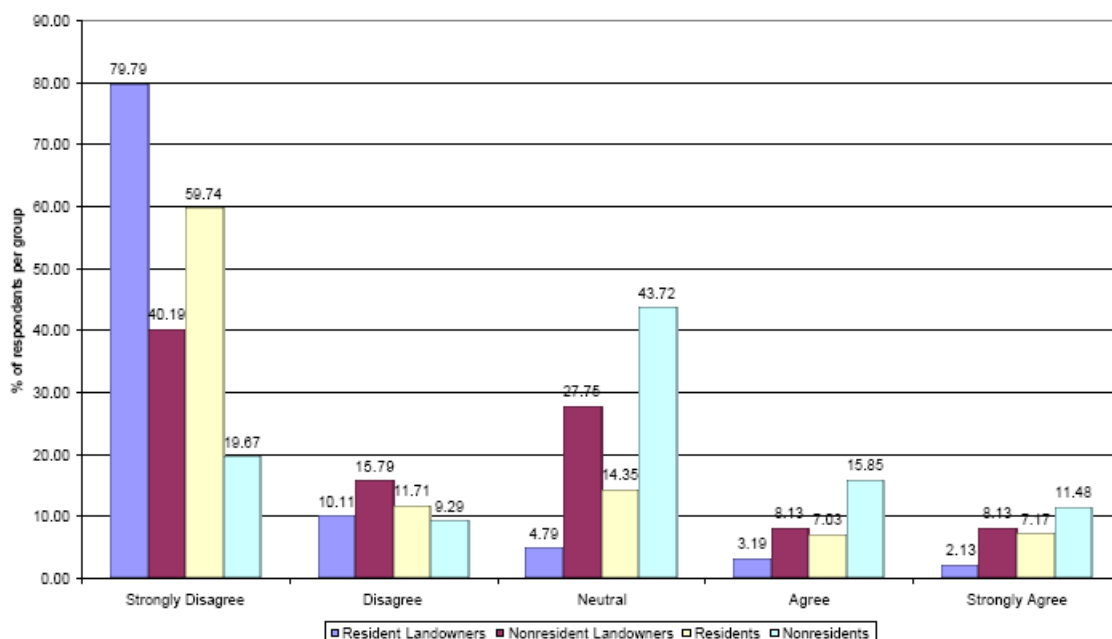
Response		Group				Weighted	
		RL	NRL	R	NR	Total	Avg
<b>Strongly Disagree</b>	Frequency	142	90	339	41	612	1315
	% of Total	11.35	7.19	27.10	3.28	48.92	43.39
	% of Subsample	75.53	43.48	50.15	22.78		
<b>Disagree</b>	Frequency	17	27	92	18	154	357.5
	% of Total	1.36	2.16	7.35	1.44	12.31	12.61
	% of Subsample	9.04	13.04	13.61	10.00		
<b>Neutral</b>	Frequency	17	49	100	47	213	484.95
	% of Total	1.36	3.92	7.99	3.76	17.03	17.11
	% of Subsample	9.04	23.67	14.79	26.11		
<b>Agree</b>	Frequency	5	24	77	44	150	373.85
	% of Total	0.40	1.92	6.16	3.52	11.99	13.19
	% of Subsample	2.66	11.59	11.39	24.44		
<b>Strongly Agree</b>	Frequency	7	17	68	30	122	303.3
	% of Total	0.56	1.36	5.44	2.40	9.75	10.70
	% of Subsample	3.72	8.21	10.06	16.67		
<b>Total</b>	Frequency	188	207	676	180	1251	2834.6
	% of Total	15.03	16.55	54.04	14.39	100	100
<b>Family</b>		a	b	b	c		
<b>Mean</b>		1.50	2.28	2.18	3.02	2.21	2.29
<b>Std. Dev.</b>		1.021	1.343	1.408	1.390	1.405	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		-6.532*	-7.342*	-11.929*	0.965	-5.32*	-7.238*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**1F. Dinosaur Monument should be expanded.**



**Figure 11: Question 1f, Overall Response.** Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land



**Figure 12:** Question 1f, Response by Group. Dinosaur National Monument should be expanded.

**Table 8:** Question 1f, Dinosaur National Monument should be expanded.

Response		Group				Total	Weighted Avg
		RL	NRL	R	NR		
<b>Strongly Disagree</b>	Frequency	150	84	408	36	678	1499.4
	% of Total	11.88	6.65	32.30	2.85	53.68	52.33
	% of Subsample	79.79	40.19	59.74	19.67		
<b>Disagree</b>	Frequency	19	33	80	17	149	328.45
	% of Total	1.50	2.61	6.33	1.35	11.80	11.46
	% of Subsample	10.11	15.79	11.71	9.29		
<b>Neutral</b>	Frequency	9	58	98	80	245	574.3
	% of Total	0.71	4.59	7.76	6.33	19.40	20.04
	% of Subsample	4.79	27.75	14.35	43.72		
<b>Agree</b>	Frequency	6	17	48	29	100	242.45
	% of Total	0.48	1.35	3.80	2.30	7.92	8.46
	% of Subsample	3.19	8.13	7.03	15.85		
<b>Strongly Agree</b>	Frequency	4	17	49	21	91	220.5
	% of Total	0.32	1.35	3.88	1.66	7.21	7.70
	% of Subsample	2.13	8.13	7.17	11.48		
<b>Total</b>	Frequency	188	209	683	183	1263	2865.1
	% of Total	14.89	16.55	54.08	14.49	100	100
<b>Family</b>		a	b	c	d		
<b>Mean</b>		1.38	2.28	1.90	2.90	2.03	2.08
<b>Std. Dev.</b>		0.884	1.290	1.289	1.223	1.302	
<b>Paired T-Test</b>		RL to NRL	RL to R	RL to NR	NRL to R	NRL to NR	R to NR
	$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-8.215*	-6.458*	-13.724*	3.730*	-4.875*	-9.708*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

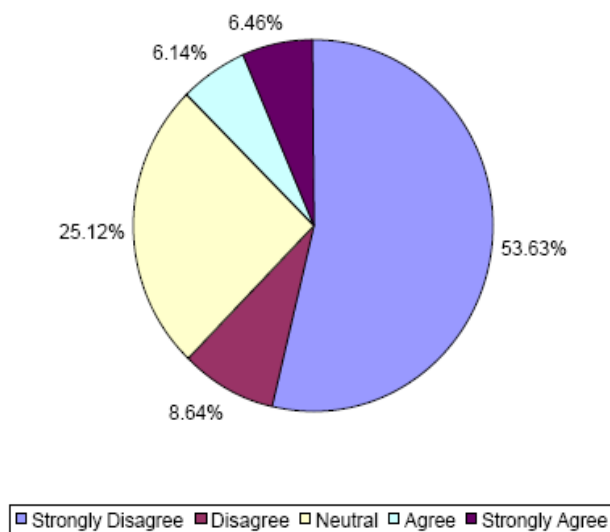
on the disagree side of the neutral range. As a result there are four statistically distinct groups or families of responses to this question, one for each landowner or resident subgroup. Because the distinction between these groups does not straddle the neutral response, these statistical differences are not policy relevant. The weighted average of survey responses does not change this conclusion.

Question 1g states "The proposed Vermillion National Monument should be created". Figure 13 shows that almost 65% of all respondents disagree or strongly disagree with this statement, while approximately 13% would like to see the Vermillion National Monument created. Figure 14 shows that this opinion is consistent across stakeholder subgroups with the possible exception of nonresident landowners. Table 9 demonstrates that each subgroup feels differently from the others, statistically speaking. Typically, resident landowners were strongest in opposition to the proposal followed by resident nonlandowners and nonresident landowners who both fall within the "disagree" range and nonresident nonlandowners whose mean response was on the disagree side of neutral. Since the distinction between these groups does not straddle the neutral response, the statistical difference is not policy relevant and a weighted average of responses will not change the potential influence of the more populous subgroups' responses.

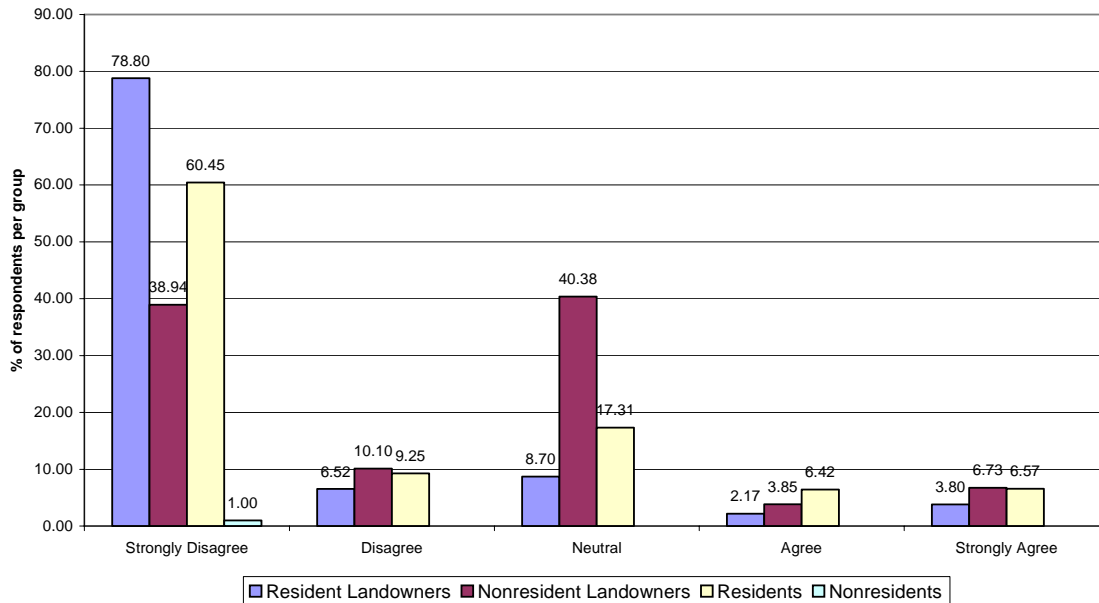
Question 1h states "The proposed Vermillion National Monument should permit grazing". Figure 15 indicates that almost 57% of all respondents agree with the statement, while approximately 17% feel the proposed monument should not permit grazing. Figure 16 shows that this opinion is consistent across stakeholder subgroups with the possible exception of nonresident nonlandowners. Table 10 demonstrates that all respondent subgroups feel differently from each other about this issue. Nonresident nonlandowners are neutral to the proposed possible on average, while the other three categories are mildly in agreement in degrees. The distinction among these groups does not straddle the neutral response. The weighted average response tends to be more neutral (reflecting the high level of neutral responses in nonresident nonlandowners), but does not change overall support for permitting grazing were there a Vermillion National Monument established.

Question 1i states "The proposed Vermillion National Monument should permit gas/oil/mineral exploration and production. Figure 17 indicates that approximately 57% of all respondents agree with this statement, while almost 21% disagree and do not want the proposed monument to all gas/oil/mineral exploration and production. Figure 18 shows that this opinion is fairly consistent across stakeholder subgroups except for nonresident nonlandowners, following the trend. Table 11 demonstrates three statistically distinct

1G. The proposed Vermillion Monument should be created.



**Figure 13:** Question 1g, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 14:** Question 1g, Response by Group. The proposed Vermillion National Monument should be created.

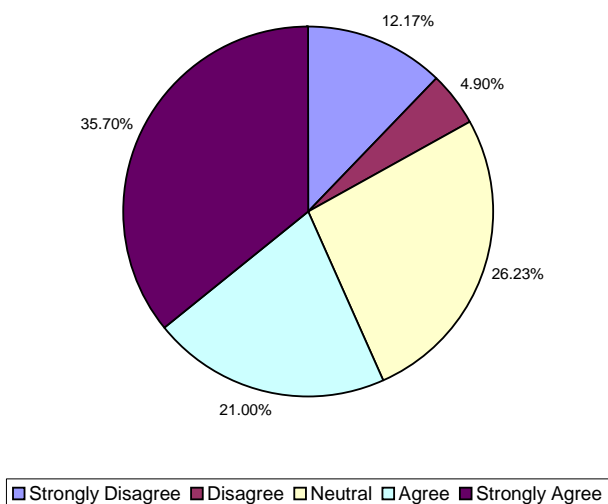
**Table 9:** Question 1g, The proposed Vermillion National Monument should be created.

Response	Group				Total	Weighted Avg	
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	145	81	405	33	664	1474.3
	% of Total	11.71	6.54	32.71	2.67	53.63	52.60
	% of Subsample	78.80	38.94	60.45	18.75		
<b>Disagree</b>	Frequency	12	21	62	12	107	243.9
	% of Total	0.97	1.70	5.01	0.97	8.64	8.70
	% of Subsample	6.52	10.10	9.25	6.82		
<b>Neutral</b>	Frequency	16	84	116	95	311	701.35
	% of Total	1.29	6.79	9.37	7.67	25.12	25.02
	% of Subsample	8.70	40.38	17.31	53.98		
<b>Agree</b>	Frequency	4	8	43	21	76	194.4
	% of Total	0.32	0.65	3.47	1.70	6.14	6.94
	% of Subsample	2.17	3.85	6.42	11.93		
<b>Strongly Agree</b>	Frequency	7	14	44	15	80	189.15
	% of Total	0.57	1.13	3.55	1.21	6.46	6.75
	% of Subsample	3.80	6.73	6.57	8.52		
<b>Total</b>	Frequency	184	208	670	176	1238	2803.1
	% of Total	14.86	16.80	54.12	14.22	100	100
<b>Family Mean</b>	a	b	c	d			
<b>Std. Dev.</b>							
<b>Paired T-Test</b>	<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>	
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-7.533*	-5.012*	-12.423*	4.096*	-4.634*	-9.730*	

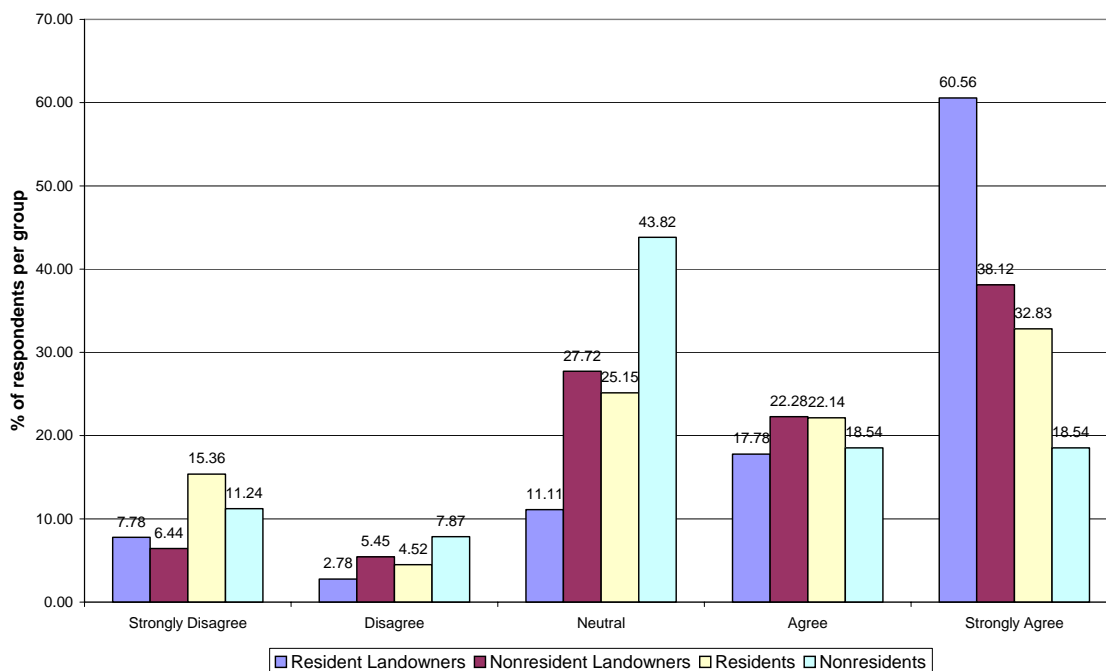
Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.



**1H. The proposed Vermillion Monument should permit grazing.**



**Figure 15:** Question 1h, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



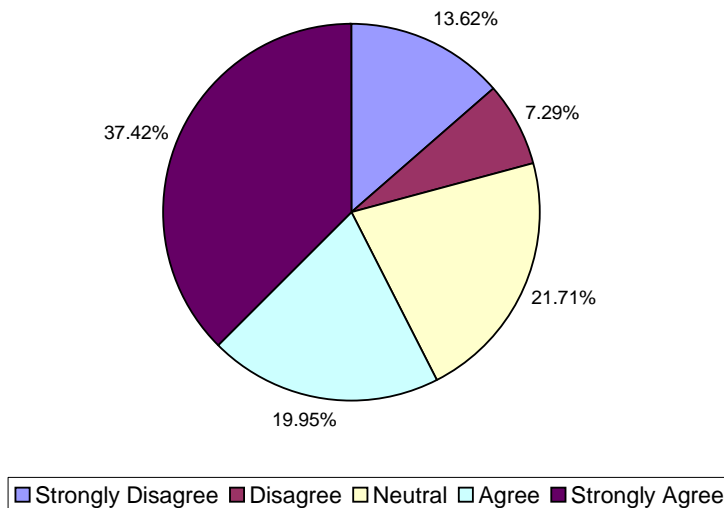
**Figure 16:** Question 1h, Response by Group. The proposed Vermillion National Monument should permit grazing.

**Table 10:** Question 1h, The proposed Vermillion National Monument should permit grazing.

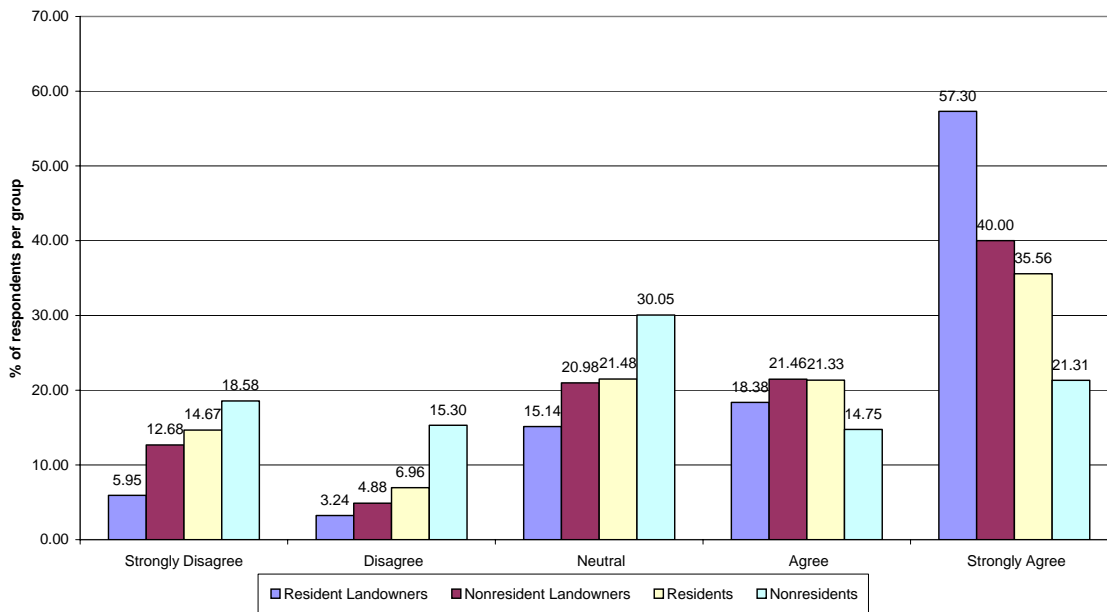
Response	Group	Group				Weighted	
		RL	NRL	R	NR	Total	Avg
<b>Strongly Disagree</b>	Frequency	14	13	102	20	149	374.7
	% of Total	1.14	1.06	8.33	1.63	12.17	13.47
	% of Subsample	7.78	6.44	15.36	11.24		
<b>Disagree</b>	Frequency	5	11	30	14	60	141.4
	% of Total	0.41	0.90	2.45	1.14	4.90	5.08
	% of Subsample	2.78	5.45	4.52	7.87		
<b>Neutral</b>	Frequency	20	56	167	78	321	774.25
	% of Total	1.63	4.58	13.64	6.37	26.23	27.83
	% of Subsample	11.11	27.72	25.15	43.82		
<b>Agree</b>	Frequency	32	45	147	33	257	590
	% of Total	2.61	3.68	12.01	2.70	21.00	21.21
	% of Subsample	17.78	22.28	22.14	18.54		
<b>Strongly Agree</b>	Frequency	109	77	218	33	437	901.35
	% of Total	8.91	6.29	17.81	2.70	35.70	32.40
	% of Subsample	60.56	38.12	32.83	18.54		
<b>Total</b>	Frequency	180	202	664	178	1224	2781.70
	% of Total	14.71	16.50	54.25	14.54	100	100
<b>Family</b>		a	b	c	d		
<b>Mean</b>		4.21	3.80	3.53	3.25	3.63	3.54
<b>Std. Dev.</b>		1.222	1.193	1.386	1.183	1.333	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		3.258*	6.427*	7.495*	2.772*	4.498*	2.631*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**11. The proposed Vermillion Monument should permit gas/oil/mineral exploration and production.**



**Figure 17:** Question 1i, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 18:** Question 1i, Response by Group. The proposed Vermillion National Monument should permit Gas/oil/mineral exploration and production.

**Table 11:** Question 1i, The proposed Vermillion National Monument should permit gas/oil/mineral exploration and production.

Response	Group				Total	Weighted Avg	
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	11	26	99	34	170	416.05
	% of Total	0.88	2.08	7.93	2.72	13.62	8.14
	% of Subsample	5.95	12.68	14.67	18.58		
<b>Disagree</b>	Frequency	6	10	47	28	91	229.75
	% of Total	0.48	0.80	3.77	2.24	7.29	5.59
	% of Subsample	3.24	4.88	6.96	15.30		
<b>Neutral</b>	Frequency	28	43	145	55	271	641
	% of Total	2.24	3.45	11.62	4.41	21.71	16.53
	% of Subsample	15.14	20.98	21.48	30.05		
<b>Agree</b>	Frequency	34	44	144	27	249	565.35
	% of Total	2.72	3.53	11.54	2.16	19.95	28.95
	% of Subsample	18.38	21.46	21.33	14.75		
<b>Strongly Agree</b>	Frequency	106	82	240	39	467	983.15
	% of Total	8.49	6.57	19.23	3.13	37.42	40.79
	% of Subsample	57.30	40.00	35.56	21.31		
<b>Total</b>	Frequency	185	205	675	183	1248	2835.3
	% of Total	14.82	16.43	54.09	14.66	100	100
<b>Family</b>	a	b	B	c			
<b>Mean</b>	4.18	3.71	3.56	3.05	3.60	3.52	
<b>Std. Dev.</b>	1.168	1.368	1.407	1.380	1.397		
<b>Paired T-Test</b>	<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>	
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	3.628*	6.076*	8.468*	1.372	4.743*	4.436*	

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

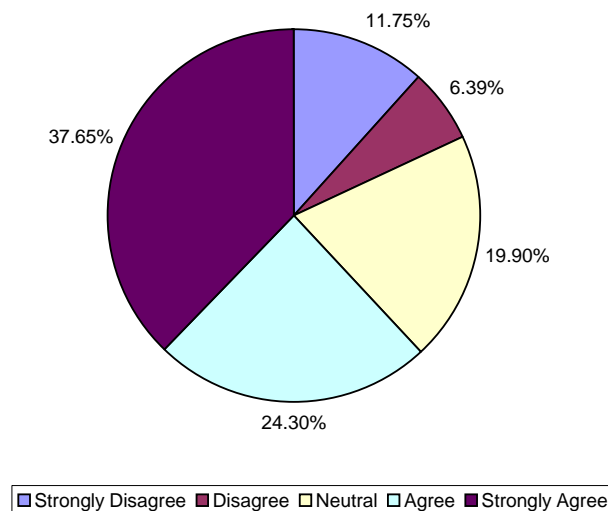
groups or families of responses to this question. Resident landowners comprise the first group, relatively strongly in support of the proposition, nonresident landowners and resident nonlandowners comprise the second, slightly in favor, and nonresident nonlandowners constitute the third and neutral group of responses. Due to the relatively strong support of resident nonlandowners, the weighted average predicts that almost 70% of all stakeholders would support oil and gas exploration and production in Vermillion National Monument. Since the distinctions among these groups do not straddle the neutral response, their statistical differences are not likely to be policy relevant.

Question 1j states "Additions to Dinosaur National Monument should permit grazing". Figure 19 indicates that approximately 62% of all respondents agree or strongly agree with this statement, while 18% do not want additions to the monument to permit grazing. Figure 20 shows that this opinion is fairly consistent across stakeholder subgroups. Table 12 demonstrates that the two nonlandowner groups feel differently from the two landowner groups, and the landowner groups feel differently from each other, statistically speaking. However, both landowner groups and resident

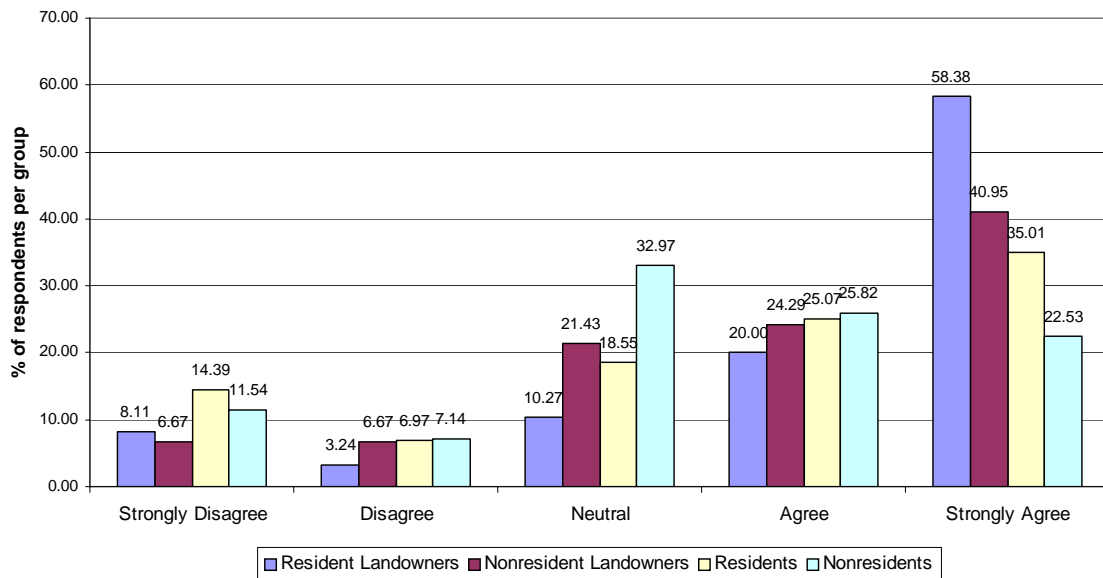
nonlandowners favor the proposal on average, while the nonresident nonlandowner subcategory falls more on the favorable side of neutral. When weighting is included to project potential policy implications of the distinctions among the different parts of the public, the likely number of people opposed to grazing in Dinosaur jumps by about 1.5% and the number of people likely to be in favor of such a proposal drops by a similar amount, insufficient to be of consequence in the likely final outcome to support grazing at the Monument.

Question 1k states "Additions to Dinosaur Monument should permit gas/oil/mineral exploration and production". Figure 21 indicates that approximately 56% of all respondents agree or strongly agree with this statement, while 25% do not want any additions to the monument to permit gas/oil/mineral exploration and production. Figure 22 shows that this opinion is consistent across stakeholder subgroups and is consistent with observed trends in the responses to other parts of Question 1. Table 12 demonstrates that resident landowners are more in agreement, nonresident landowners are in milder agreement, resident nonlandowners are on the positive side of neutral and nonresident

1J. Additions to Dinosaur Monument should permit grazing.



**Figure 19:** Question 1j, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 20:** Question 1j, Response by Group. Additions to Dinosaur Monument should permit grazing.

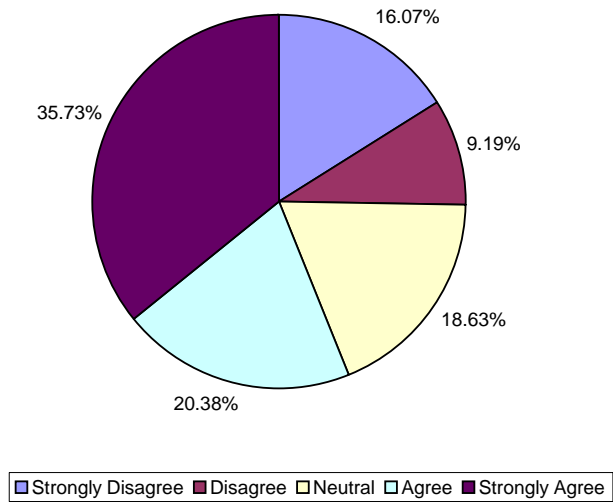
**Table 12:** Question 1j, Additions to Dinosaur National Monument should permit grazing.

Response	Group				Weighted		
	RL	NRL	R	NR	Total	Avg	
<b>Strongly Disagree</b>	Frequency	15	14	97	21	147	365.30
	% of Total	1.20	1.12	7.75	1.68	11.75	12.89
	% of Subsample	8.11	6.67	14.39	11.54		
<b>Disagree</b>	Frequency	6	14	47	13	80	191.00
	% of Total	0.48	1.12	3.76	1.04	6.39	6.74
	% of Subsample	3.24	6.67	6.97	7.14		
<b>Neutral</b>	Frequency	19	45	125	60	249	591.25
	% of Total	1.52	3.60	9.99	4.80	19.90	20.86
	% of Subsample	10.27	21.43	18.55	32.97		
<b>Agree</b>	Frequency	37	51	169	47	304	703.60
	% of Total	2.96	4.08	13.51	3.76	24.30	24.82
	% of Subsample	20.00	24.29	25.07	25.82		
<b>Strongly Agree</b>	Frequency	108	86	236	41	471	983.45
	% of Total	8.63	6.87	18.86	3.28	37.65	34.69
	% of Subsample	58.38	40.95	35.01	22.53		
<b>Total</b>	Frequency	185	210	674	182	1251	2834.6
	% of Total	14.79	16.79	53.88	14.55	100	100
<b>Family</b>		a	b	c	c		
<b>Mean</b>		4.17	3.86	3.59	3.41	3.70	3.62
<b>Std. Dev.</b>		1.235	1.216	1.395	1.239	1.341	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
		2.517*	5.493*	5.935*	2.694*	3.660*	1.756

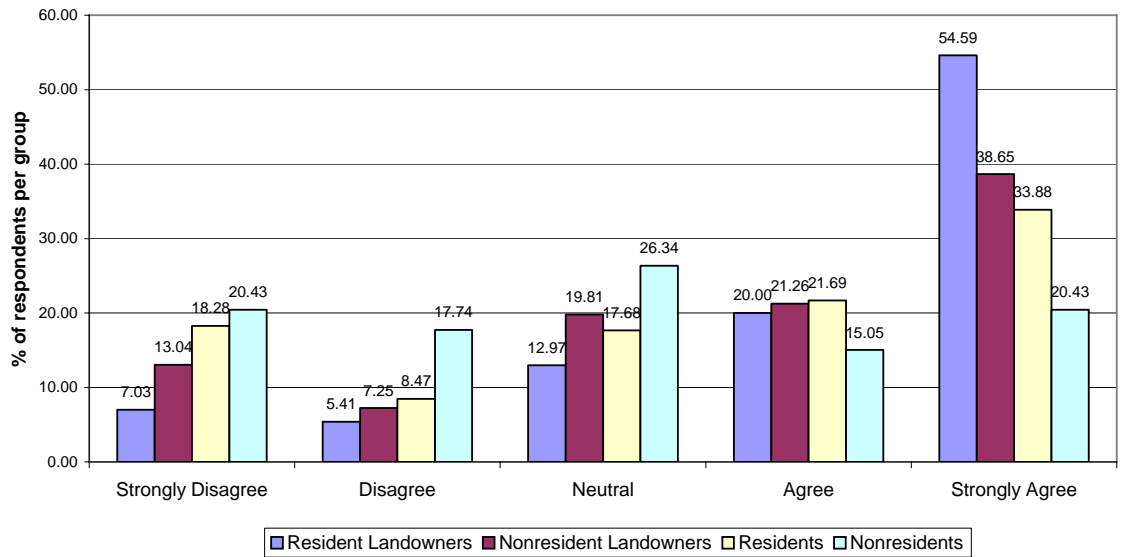
Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.



**1K. Additions to Dinosaur Monument should permit gas/oil/mineral exploration and production.**



**Figure 21:** Question 1k, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 22:** Question 1k, Response by Group. Additions to Dinosaur National Monument should permit Gas/oil/mineral exploration and production.

**Table 12:** Question 1k, Additions to Dinosaur National Monument should permit gas/oil/mineral exploration and production.

Response	Group						Weighted Avg
	RL	NRL	R	NR	Total		
<b>Strongly Disagree</b>	Frequency	13	27	123	38	201	498.85
	% of Total	1.04	2.16	9.83	3.04	16.07	17.56
	% of Subsample	7.03	13.04	18.28	20.43		
<b>Disagree</b>	Frequency	10	15	57	33	115	281.50
	% of Total	0.80	1.20	4.56	2.64	9.19	9.91
	% of Subsample	5.41	7.25	8.47	17.74		
<b>Neutral</b>	Frequency	24	41	119	49	233	543.8
	% of Total	1.92	3.28	9.51	3.92	18.63	19.15
	% of Subsample	12.97	19.81	17.68	26.34		
<b>Agree</b>	Frequency	37	44	146	28	255	576.90
	% of Total	2.96	3.52	11.67	2.24	20.38	20.31
	% of Subsample	20.00	21.26	21.69	15.05		
<b>Strongly Agree</b>	Frequency	101	80	228	38	447	939.1
	% of Total	8.07	6.39	18.23	3.04	35.73	33.07
	% of Subsample	54.59	38.65	33.88	20.43		
<b>Total</b>	Frequency	185	207	673	186	1251	2840.15
	% of Total	14.79	16.55	53.80	14.87	100	100
<b>Family</b>		a	b	b	c		
<b>Mean</b>		4.10	3.65	3.44	2.97	3.51	3.41
<b>Std. Dev.</b>		1.234	1.392	1.481	1.404	1.454	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		3.356*	6.091*	8.191*	1.851	4.807*	4.002*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

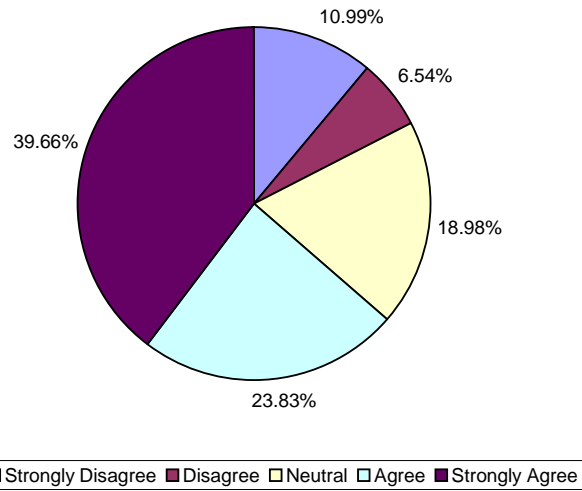
nonlandowners fall slightly on the negative side of neutral. However, average responses from nonresident landowners and resident nonlandowners were statistically indistinct from one another. Since the distinctions among these groups do not meaningfully straddle the neutral response, and the nonresident nonlandowner group is not sufficiently sizeable to sway a referendum on its own, it is not likely that the statistical differences would be policy relevant.

Question 11 states "Additional BLM wilderness areas should permit grazing". Figure 23 indicates that approximately 63% of all respondent agree with the statement, while almost 18% disagree and do not think additional BLM wilderness should permit grazing. Figure 24 shows that this opinion is consistent across stakeholder subgroups if typically more pronounced among resident landowners. Table 13 demon-

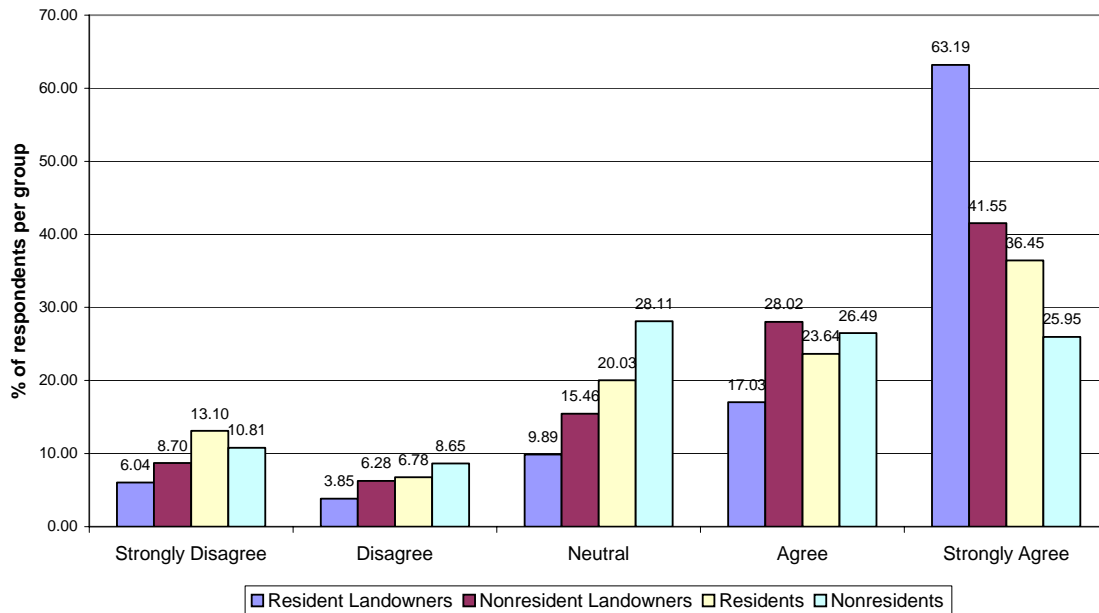
strates that resident landowners and nonresident landowners differ in the strength of their response to this question, statistically speaking. Resident landowners feel more strongly in agreement, while nonresident landowners are also in agreement, but more toward a neutral mean response. Resident nonlandowners are similarly mildly in agreement with the proposal, but statistically less positive than nonresident landowners. Nonresident nonlandowners fall slightly on the neutral side of positive in response to the proposal, but are statistically similar to the mean responses of resident nonlandowners. Since the distinctions among these groups do not straddle the neutral response, the statistical differences are not policy relevant, and a weighted average does nothing to change this contention.

Question 1m states "No new roads should be developed on federal lands in Moffat County." Figure 25

**1L. Additional BLM wilderness areas should permit grazing.**



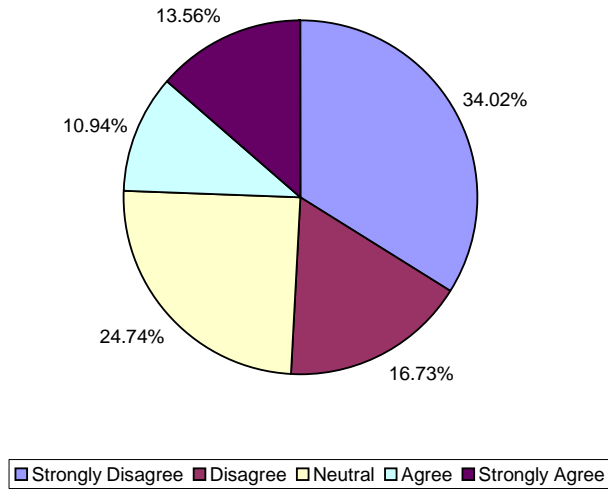
**Figure 23:** Question 11, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



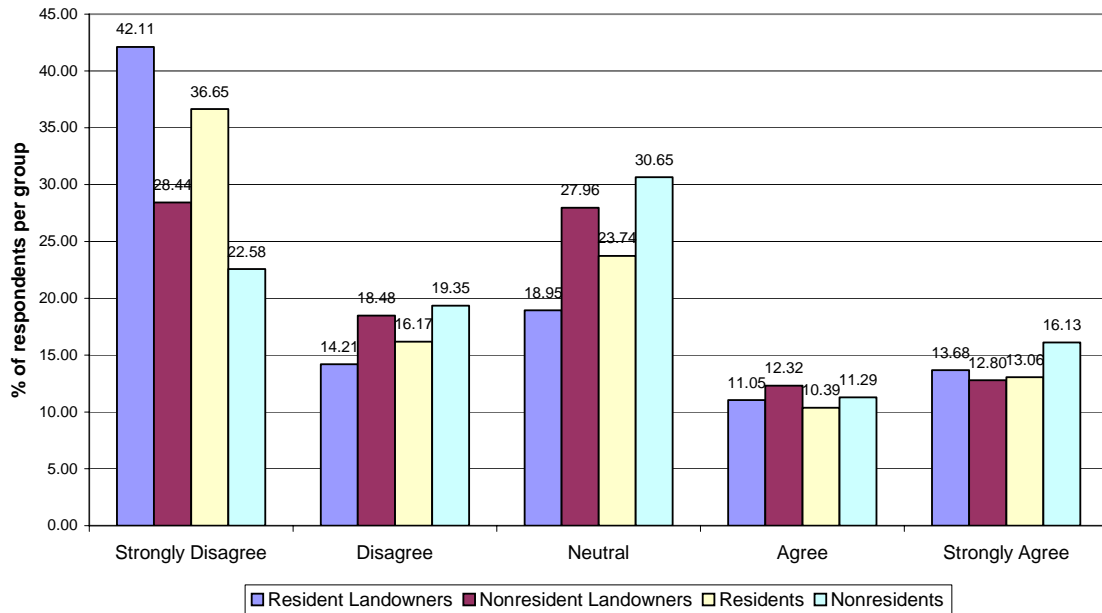
**Figure 24:** Question 11, Response by Group. Additional BLM wilderness areas should permit grazing.



**1M. No new roads should be developed on federal lands in Moffat County.**



**Figure 25:** Question 1m, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 26:** Question 1m, Response by Group. No new roads should be developed on federal lands in Moffat County.

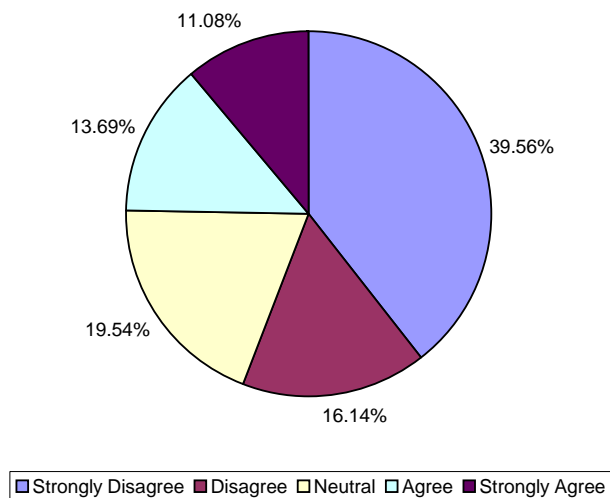


**Table 14:** Question 1m, No new roads should be developed on federal lands in Moffat County.

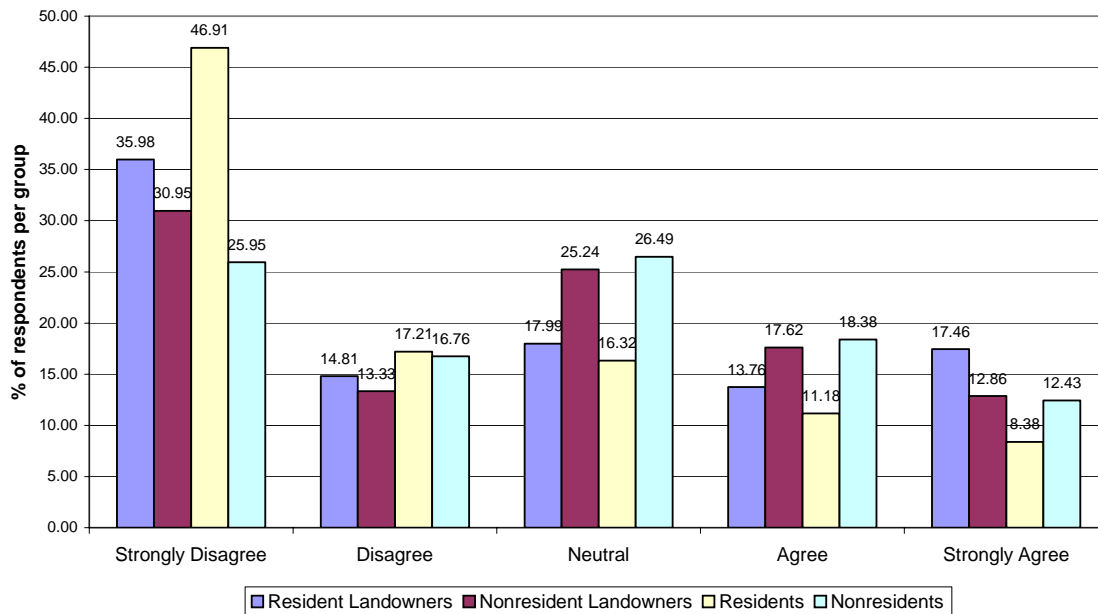
Response		Group				Total	Weighted Avg
		RL	NRL	R	NR		
<b>Strongly Disagree</b>	Frequency	80	60	247	42	429	963.65
	% of Total	6.34	4.76	19.59	3.33	34.02	33.79
	% of Subsample	42.11	28.44	36.65	22.58		
<b>Disagree</b>	Frequency	27	39	109	36	211	479.25
	% of Total	2.14	3.09	8.64	2.85	16.73	16.80
	% of Subsample	14.21	18.48	16.17	19.35		
<b>Neutral</b>	Frequency	36	59	160	57	312	713.45
	% of Total	2.85	4.68	12.69	4.52	24.74	25.02
	% of Subsample	18.95	27.96	23.74	30.65		
<b>Agree</b>	Frequency	21	26	70	21	138	306.35
	% of Total	1.67	2.06	5.55	1.67	10.94	10.74
	% of Subsample	11.05	12.32	10.39	11.29		
<b>Strongly Agree</b>	Frequency	26	27	88	30	171	389.30
	% of Total	2.06	2.14	6.98	2.38	13.56	13.65
	% of Subsample	13.68	12.80	13.06	16.13		
<b>Total</b>	Frequency	190	211	674	186	1261	2852
	% of Total	15.07	16.73	53.45	14.75	100	100
<b>Family</b>		a	a,b	a	b		
<b>Mean</b>		2.40	2.63	2.47	2.79	2.53	2.54
<b>Std. Dev.</b>		1.461	1.351	1.406	1.349	1.401	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		-1.599	-0.591	-2.692*	1.443	-1.213	-2.837*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**1N. Public and non-commercial recreation should require permitting and payment of fees on federal lands.**



**Figure 27:** Question 1n, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Figure 28:** Question 1n, Response by Group. Public and noncommercial recreation should require permitting and payment of fees on federal lands.

**Table 15:** Question 1n, Public and non-commercial recreation should require permitting and payment of fees on federal lands.

Response	Group					Total	Weighted Avg
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	68	65	319	48	500	1178.95
	% of Total	5.38	5.14	25.24	3.80	39.56	41.16
	% of Subsample	35.98	30.95	46.91	25.95		
<b>Disagree</b>	Frequency	28	28	117	31	204	477.80
	% of Total	2.22	2.22	9.26	2.45	16.14	16.88
	% of Subsample	14.81	13.33	17.21	16.76		
<b>Neutral</b>	Frequency	34	53	111	49	247	543
	% of Total	2.69	4.19	8.78	3.88	19.54	18.96
	% of Subsample	17.99	25.24	16.32	26.49		
<b>Agree</b>	Frequency	26	37	76	34	173	376.50
	% of Total	2.06	2.93	6.01	2.69	13.69	13.14
	% of Subsample	13.76	17.62	11.18	18.38		
<b>Strongly Agree</b>	Frequency	33	27	57	23	140	288
	% of Total	2.61	2.14	4.51	1.82	11.08	10.05
	% of Subsample	17.46	12.86	8.38	12.43		
<b>Total</b>	Frequency	189	210	680	185	1264	2864.25
	% of Total	14.95	16.61	53.80	14.64	100	100
<b>Family</b>		a	a	b	a		
<b>Mean</b>		2.62	2.68	2.17	2.75	2.41	2.34
<b>Std. Dev.</b>		1.513	1.403	1.345	1.353	1.404	
<b>Paired T-Test</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		-0.422	3.701*	-0.855	4.665*	-0.468	-5.147*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

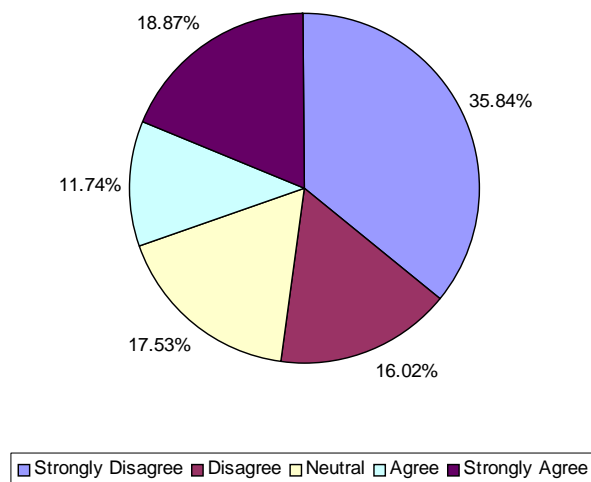
Question 1o states "Off-road recreation on federal lands should be non-motorized". Figure 29 indicates that almost 52% of all respondents disagree with the statement, while almost 31% agree that off-road recreation on federal lands should be non-motorized. Figure 30 shows that this opinion is inconsistent across stakeholder subgroups, potentially raising important differences between residents and nonresidents. Table 16 demonstrates that the two resident groups feel differently from the two nonresident groups, statistically speaking. The resident groups disagree more strongly, while the nonresidents are more neutral about this issue. Since the nonresident nonlandowners responded on the positive side of neutral, though statistically neutral, to this proposal, there may be important policy implications of the distinction among responses to a proposal affecting the type of off-road recreation to be permitted on federal lands. However, a weighted average of respondent categories reveals that approximately 53% of all stakeholders would be likely to be opposed to such a recreation policy, 17% neutral, and 30% in support of a non-motorized recreation requirement on federal lands, identical to the unweighted responses from a policy perspective.

Fishing and/or hunting, a consumptive use of the natural resource base, was the most commonly cited impor-

tant leisure use of federal lands within Moffat County across groups. Some 70% of resident landowners, 63% of nonresident landowners, 69% of residents, and 64% of nonresident landowners claimed it as one of their three most important leisure uses of federal lands. Camping, arguably a nonconsumptive use of the resource base, was the second most common choice across groups, with 43 % of resident landowners, 52 % of residents, and 52% of nonresidents. Driving for pleasure, another nonconsumptive use, was the next most common response.

Livestock grazing, gas, oil and/or mineral exploration and extraction, and recreational uses were the most popular commercial uses of federal lands cited across all four subcategories of respondents. Livestock grazing was the most popular response from both landowner groups and the second most popular response in both nonlandowner groups. Recreation and tourism was the most cited response in both nonlandowner groups, was second among nonresident landowners and third among resident landowners. Gas and oil exploration and extraction was third in both nonlandowner subcategories and nonresident landowners, but second among resident landowners.

10. Off-road recreation on federal lands should be non-motorized



**Figure 29:** Question 1o, Overall Response. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. What do you think about federal land use in Moffat County?



**Table 17:** Question 2, Which are the three most important of YOUR leisure uses on federal lands in Moffat County?

Activity	Respondent Group	# of Respondents			Total	% of N
	RL (N=195)	Choice 1	Choice 2	Choice 3		
Camping		83	0	0	83	42.56
Driving for Pleasure		63	37	0	100	51.28
Fishing/Hunting		33	78	25	136	69.74
Ed. Opportunities/Activities		4	19	17	40	20.51
Picnicking Activities		0	13	15	28	14.36
Trail Related Activities		0	13	27	40	20.51
Winter Activities		1	17	36	54	27.69
Misc. Land Activities		0	4	24	28	14.36
Specialized Land Sports		0	0	2	2	1.03
Misc. Water Activities		0	0	26	26	13.33
Other		0	1	5	6	3.08
	<b>NRL (N=224)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Camping		86	0	0	86	38.39
Driving for Pleasure		63	24	0	87	38.84
Fishing/Hunting		32	98	12	142	63.39
Ed. Opportunities/Activities		7	19	25	51	22.77
Picnicking Activities		0	16	31	47	20.98
Trail Related Activities		2	15	33	50	22.32
Winter Activities		1	11	14	26	11.61
Misc. Land Activities		0	5	34	39	17.41
Specialized Land Sports		2	1	3	6	2.68
Misc. Water Activities		0	1	30	31	13.84
Other		4	0	6	10	4.46
	<b>R (N=697)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Camping		364	0	0	364	52.22
Driving for Pleasure		166	111	0	277	39.74
Fishing/Hunting		109	306	67	482	69.15
Ed. Opportunities/Activities		13	52	43	108	15.49
Picnicking Activities		6	54	89	149	21.38
Trail Related Activities		5	65	79	149	21.38
Winter Activities		4	49	93	146	20.95
Misc. Land Activities		0	18	135	153	21.95
Specialized Land Sports		2	4	12	18	2.58
Misc. Water Activities		1	4	128	133	19.08
Other		3	1	5	9	1.29
	<b>NR (N=196)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Camping		101	0	0	101	51.53
Driving for Pleasure		41	40	0	81	41.33
Fishing/Hunting		26	75	24	125	63.78
Ed. Opportunities/Activities		7	18	12	37	18.88
Picnicking Activities		2	10	22	34	17.35
Trail Related Activities		3	25	40	68	34.69
Winter Activities		0	9	19	28	14.29
Misc. Land Activities		0	2	27	29	14.80
Specialized Land Sports		0	0	0	0	0.00
Misc. Water Activities		0	0	31	31	15.82
Other		2	0	0	2	1.02

**Table 18:** Question 3, What are the three most important of YOUR commercial uses on federal lands in Moffat County?

Activity	Respondent Group RL (N=195)	# of Respondents			Total	%of N
		Choice 1	Choice 2	Choice 3		
Timber Harvest/Hauling		36	0	0	36	18.46
Outfitting		40	4	0	44	22.56
Public Agency Consulting		1	0	0	1	0.51
Recreation/Tourism		43	29	1	73	37.44
Livestock Grazing		22	76	23	121	62.05
Gas/Oil/Mineral Exploration/Extraction		0	15	65	80	41.03
Public Lands Management		0	1	17	18	9.23
Other		2	1	2	5	2.56
	<b>NRL (N=224)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Timber Harvest/Hauling		27	1	0	28	12.50
Outfitting		60	3	0	63	28.13
Public Agency Consulting		5	2	0	7	3.13
Recreation/Tourism		49	38	2	89	39.73
Livestock Grazing		26	81	24	131	58.48
Gas/Oil/Mineral Exploration/Extraction		6	24	64	94	41.96
Public Lands Management		1	5	31	37	16.52
Other		3	1	6	10	4.46
	<b>R (N=697)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Timber Harvest/Hauling		166	0	0	166	23.82
Outfitting		114	26	0	140	20.09
Public Agency Consulting		14	1	0	15	2.15
Recreation/Tourism		211	187	17	415	59.54
Livestock Grazing		20	188	64	272	39.02
Gas/Oil/Mineral Exploration/Extraction		5	52	212	269	38.59
Public Lands Management		3	13	112	128	18.36
Other		6	4	14	24	3.44
	<b>NR (N=196)</b>	<b>Choice 1</b>	<b>Choice 2</b>	<b>Choice 3</b>		
Timber Harvest/Hauling		33	0	0	33	16.84
Outfitting		27	2	0	29	14.80
Public Agency Consulting		4	0	0	4	2.04
Recreation/Tourism		59	44	0	103	52.55
Livestock Grazing		6	59	17	82	41.84
Gas/Oil/Mineral Exploration/Extraction		1	12	43	56	28.57
Public Lands Management		0	6	49	55	28.06
Other		8	0	0	8	4.08

Question 4 states "Do you graze livestock on federal land?" Table 19 indicates that almost 9% of all respondents graze livestock on federal land, while the remaining 91% do not. Taking the relative weights of their total population and the sample frame into account, less than 5% of all local stakeholders graze livestock on federal lands. The groups that do are the resident landowners and nonresident landowners. However, it is only about one quarter of each of the landowning groups who do graze public lands.

Question 5 states "What percent of your livestock grazing needs come from Moffat County federal lands?" Table 20 shows that among those who satisfy some of their grazing needs on federal lands, on average, resident and nonresident landowners indicated the highest percentage and that these percentages were statistically similar across the landowner groups. These results imply that ¾ of landowners' grazing needs are met on private lands or through feeding. Resident nonlandowners gain a smaller proportion of the grazing needs

**Table 19:** Question 4, Do you graze livestock on federal land?

	Response	Group				Total	Weighted Avg
		RL	NRL	R	NR		
No	Frequency	135	169	676	188	1168	2766.4
	% of Total	10.56	13.21	52.85	14.7	91.32	95.35
	% of Subsample	73.37	77.52	98.40	98.95		
Yes	Frequency	49	49	11	2	111	135.05
	% of Total	3.83	3.83	0.86	0.16	8.68	4.65
	% of Subsample	26.63	22.48	1.60	1.05		
Total	Frequency	184	218	687	190	1279	2901.45
	% of Total	14.39	17.04	53.71	14.86	100	100

**Table 20:** Question 5, What percent of your livestock grazing needs come from Moffat County federal lands?

	Group					Weighted Average
	RL (n=69)	NRL (n=58)	R (n=37)	NR (n=7)	Total (N=171)	
Family	a	a	b	c		
Mean	24	26	10	2	21	17
Pairwise t-test	RL to NRL	RL to R	RL to NR	NRL to R	NRL to NR	R to NR
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-0.482	2.847*	5.746*	3.133*	5.738*	2.028*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

from federal lands relative to the landowner groups and nonresident nonlandowners glean a still lower proportion of their grazing needs from federal lands on average. The overall weighted average implies that of those who access public lands for grazing purposes more than 80% of their needs are met by grazing private lands or feeding.

Question 6 states "Suppose your access to public lands grazing is going to be eliminated because of changes in your livestock grazing practices such as finding other grazing out of county, as leasing private lands or as increased feeding. By what percent would the loss of Moffat County federal grazing raise your production costs?" Table 21 shows on average respondents predicted a 26% increase in production costs due the elimination of access to public lands. Resident landowners and nonresident landowners would be affected considerably more, and statistically differently, than the two nonlandowning groups. One interpretation of the data in Tables 20 and 21 is if production costs increase an average of 30- 40% for groups that satisfy

about ¼ of their grazing needs on federal lands, this implies that a vast proportion of cattle production costs are found in feeding cattle.

Question 7a asks if people would be willing to pursue rural lands recreation as an alternative land enterprise to generate or increase income from their rural property in Moffat County. Figure 31 indicates that approximately 41% of all respondents agree or strongly agree to consider rural land recreation, while 28% would not consider it. Figure 32 shows that this opinion appears to be consistent across stakeholder subgroups. Table 22 demonstrates that all subgroups feel similarly to one another, statistically speaking, and those respondents were neutral on average to this potential alternative economic activity. However, Figure 32 clearly demonstrates that neutrality on average does not imply a lack of strong individual opinion when it comes to economic activities on their own private lands. A weighted average of representative responses does nothing to dispel this notion.

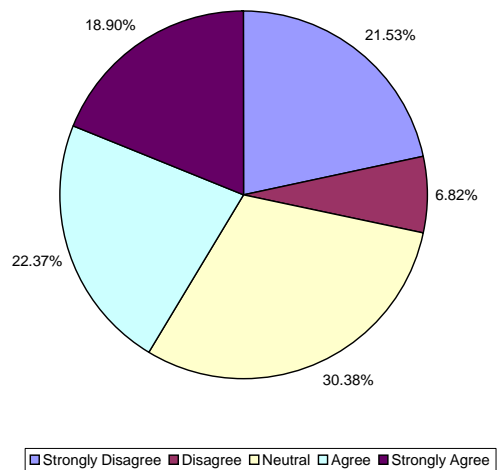


**Table 21:** Question 6, Suppose your access to public lands grazing is going to be eliminated because of changes in your livestock grazing practices such as finding other grazing out of county, as leasing private lands or as increased feeding. By what percent would the loss of Moffat County federal grazing raise your production costs?

	<u>Group</u>					<u>Weighted Average</u>
	<u>RL (n=59)</u>	<u>NRL (n=54)</u>	<u>R (n=28)</u>	<u>NR (n=6)</u>	<u>Total (N=147)</u>	
<b>Family</b>	a	a	b	b		
<b>Mean</b>	44	31	14	4	32	26
<b>Pairwise t-test</b>	<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	1.104	2.417*	3.466*	2.283*	4.482*	1.499

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**7a. Rural lands recreation**



**Figure 31:** Question 7a, Overall Response. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?

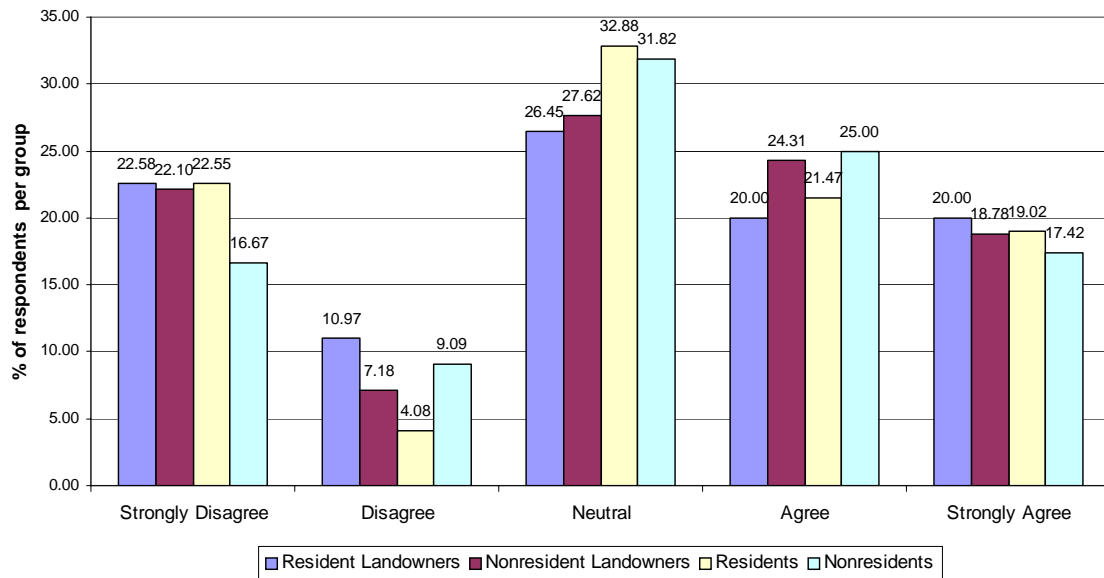


Figure 32: Question 7a, Response by Group. Rural lands recreation.

Table 22: Question 7a, Rural lands recreation.

Response	Group				Weighted		
	RL	NRL	R	NR	Total	Avg	
<b>Strongly Disagree</b>	Frequency	35	40	83	22	180	374.25
	% of Total	4.19	4.78	9.93	2.63	21.53	21.25
	% of Subsample	22.58	22.10	22.55	16.67		
<b>Disagree</b>	Frequency	17	13	15	12	57	106.95
	% of Total	2.03	1.56	1.79	1.44	6.82	6.07
	% of Subsample	10.97	7.18	4.08	9.09		
<b>Neutral</b>	Frequency	41	50	121	42	254	555.55
	% of Total	4.90	5.98	14.47	5.02	30.38	31.55
	% of Subsample	26.45	27.62	32.88	31.82		
<b>Agree</b>	Frequency	31	44	79	33	187	394.20
	% of Total	3.71	5.26	9.45	3.95	22.37	22.39
	% of Subsample	20.00	24.31	21.47	25.00		
<b>Strongly Agree</b>	Frequency	31	34	70	23	158	330.05
	% of Total	3.71	4.07	8.37	2.75	18.90	18.74
	% of Subsample	20.00	18.78	19.02	17.42		
<b>Total</b>	Frequency	155	181	368	132	836	1761
	% of Total	18.54	21.65	44.02	15.79	100	100
<b>Family Mean</b>	a	a	a	a			
	3.04	3.10	3.10	3.17	3.10	3.11	
<b>Std. Dev.</b>	1.423	1.396	1.383	1.299	1.379		
<b>Paired t-tests</b>	<b>RL to NRL</b>	<b>RL to R</b>	<b>R to NR</b>	<b>NRL to NR</b>	<b>R to NR</b>		
	-0.429	-0.478	-0.843	0.014	-0.451	-0.529	

$$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$$

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

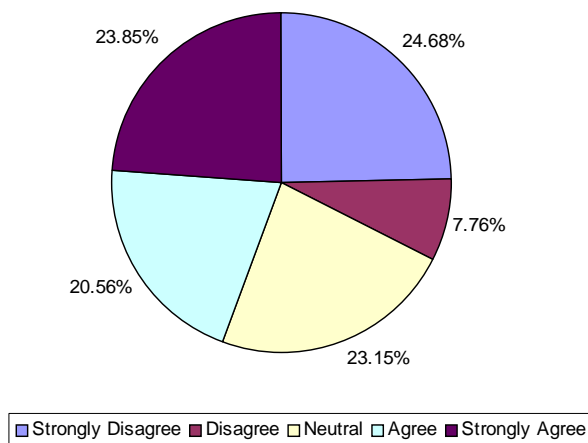
Question 7b asks whether respondents would pursue fee hunting as an alternative land enterprise to generate or increase income from their rural property in Moffat County. Figure 33 indicates that almost 44% of all respondents agree or strongly agree to consider fee hunting as an alternative land enterprise, while approximately 32% would not consider it. Figure 34 shows that this opinion appears to vary across stakeholder subgroups. Table 22 demonstrates that the nonlandowning groups are less supportive of this alternative than are landowning groups, statistically speaking; Nonlandowners are mildly against the alternative and landowners are mildly in favor on average. As a result, incorporation of the relative sizes of each subgroup within the general population through a weighted average results in the overall average response moving from slightly positive to slightly negative (and a relatively more even distribution across the spectrum of responses) regarding fee hunting as an economic alternative.

Question 7c asks respondents if they would pursue fee fishing as an alternative land enterprise to generate or increase income from their rural property in Moffat County. Figure 35 indicates that approximately 38% of all respondents would consider fee fishing, but almost 30% would not consider it as an alternative economic enterprise. Figure 36 shows that this opinion appears to

be consistent across stakeholder subgroups. Table 24 demonstrates that all groups feel similarly about this issue, statistically speaking, all falling on the negative side of neutral in their average response. A weighted average does nothing to dispel this notion.

Question 7d asks respondents whether they would pursue wildlife habitat improvement as an alternative land enterprise to generate or increase income from their rural property in Moffat County. Figure 37 indicates that 59% of all respondents would consider wildlife habitat improvement, while approximately 17% would not. Figure 38 shows that this opinion is consistent across stakeholder subgroups. Table 25 demonstrates that all four groups feel similarly about this issue, statistically speaking. All groups are supportive of wildlife habitat improvement as an economic development strategy on private lands and weighting by represented population does not change these impressions markedly. This response could be driven by the importance of outfitting to the economy, but then we would have expected the response to fee hunting to parallel responses to this question. Alternatively, these responses may tap a demand for the wildlife viewing activities shown in Question 3, rather than hunting, or reflect knowledge of the federal Wildlife Habitat Improvement Program (WHIP), providing financial support for such efforts.

### 7B. Fee Hunting



**Figure 33:** Question 7b, Overall Response. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?

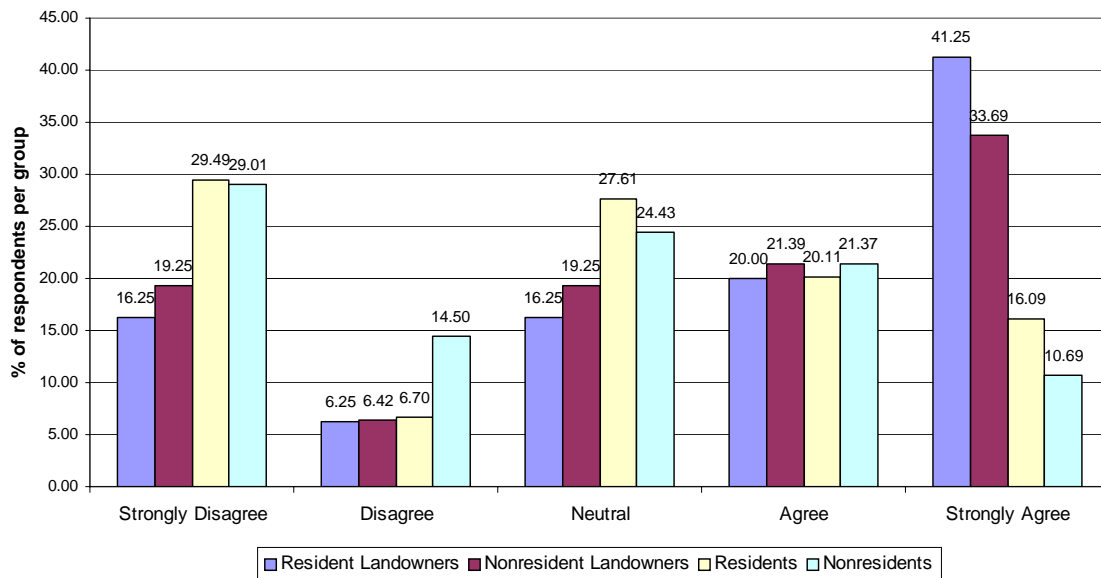


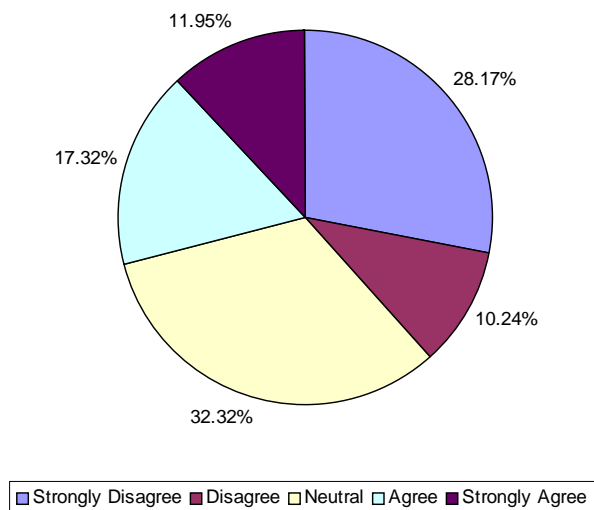
Figure 34: Question 7b, Response by Group. Fee Hunting.

Table 23: Question 7b, Fee hunting.

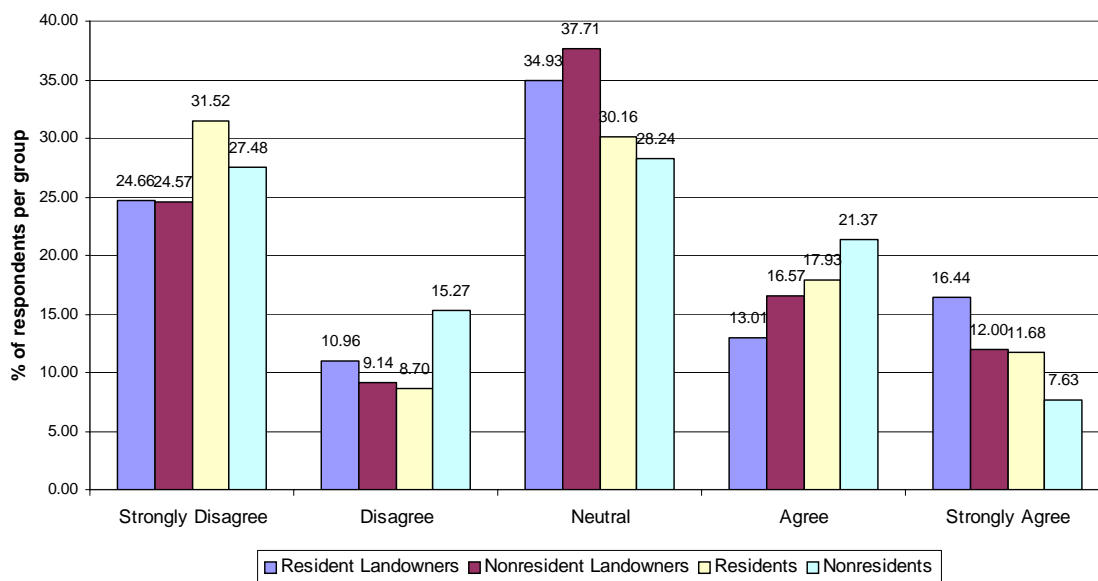
Response	Group				Total	Weighted Avg	
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	26	36	110	38	210	483.8
	% of Total	3.06	4.23	12.93	4.47	24.68	27.13
	% of Subsample	16.25	19.25	29.49	29.01		
<b>Disagree</b>	Frequency	10	12	25	19	66	147.4
	% of Total	1.18	1.41	2.94	2.23	7.76	8.27
	% of Subsample	6.25	6.42	6.70	14.50		
<b>Neutral</b>	Frequency	26	36	103	32	197	446.75
	% of Total	3.06	4.23	12.10	3.76	23.15	25.05
	% of Subsample	16.25	19.25	27.61	24.43		
<b>Agree</b>	Frequency	32	40	75	28	175	365.55
	% of Total	3.76	4.70	8.81	3.29	20.56	20.50
	% of Subsample	20.00	21.39	20.11	21.37		
<b>Strongly Agree</b>	Frequency	66	63	60	14	203	339.90
	% of Total	7.76	7.40	7.05	1.65	23.85	19.06
	% of Subsample	41.25	33.69	16.09	10.69		
<b>Total</b>	Frequency	160	187	373	131	851	1783.4
	% of Total	18.80	21.97	43.83	15.39	100	100
<b>Family</b>		a	a	b	b		
<b>Mean</b>		3.64	3.44	2.87	2.70	3.11	2.96
<b>Std. Dev.</b>		1.473	1.488	1.442	1.368	1.488	
<b>Paired t-tests</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>	
		$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$					
		1.248	5.578*	5.604*	4.338*	4.554*	1.161

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

### 7C. Fee Fishing



**Figure 35:** Question 7c, Overall Response. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?



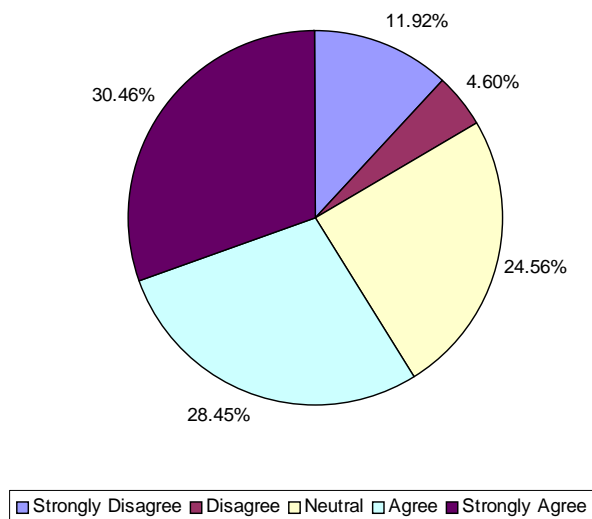
**Figure 36:** Question 7c, Response by Group. Fee Fishing.

**Table 24:** Question 7c, Fee fishing.

Response	Group				Total	Weighted Avg	
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	36	43	116	36	231	512.2
	% of Total	4.39	5.24	14.15	4.39	28.17	29.38
	% of Subsample	24.66	24.57	31.52	27.48		
<b>Disagree</b>	Frequency	16	16	32	20	84	180.20
	% of Total	1.95	1.95	3.90	2.44	10.24	10.34
	% of Subsample	10.96	9.14	8.70	15.27		
<b>Neutral</b>	Frequency	51	66	111	37	265	538.80
	% of Total	6.22	8.05	13.54	4.51	32.32	30.91
	% of Subsample	34.93	37.71	30.16	28.24		
<b>Agree</b>	Frequency	19	29	66	28	142	315.90
	% of Total	2.32	3.54	8.05	3.41	17.32	18.12
	% of Subsample	13.01	16.57	17.93	21.37		
<b>Strongly Agree</b>	Frequency	24	21	43	10	98	196.05
	% of Total	2.93	2.56	5.24	1.22	11.95	11.25
	% of Subsample	16.44	12.00	11.68	7.63		
<b>Total</b>	Frequency	146	175	368	131	820	1743.15
	% of Total	17.80	21.34	44.88	15.98	100	100
<b>Family Mean</b>		a	a	a	a		
<b>Std. Dev.</b>		2.86	2.82	2.70	2.66	2.75	2.72
<b>Paired t-tests</b>							
		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		0.222	1.195	1.200	1.043	1.059	0.235

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**7D. Wildlife habitat improvement**



**Figure 37:** Question 7d, Overall Response. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?

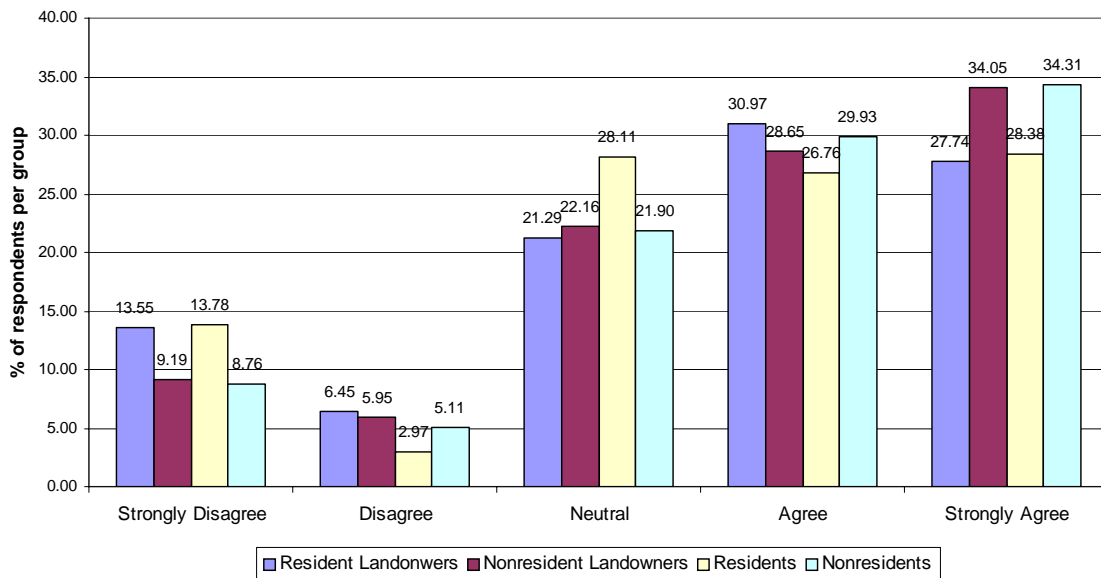


Figure 38: Question 7d, Response by Group. Wildlife habitat improvement.

Table 25: Question 7d, Wildlife habitat improvement.

Response	Group				Total	Weighted Avg														
	RL	NRL	R	NR																
<b>Strongly Disagree</b>	Frequency	21	17	51	12	101	217.55													
	% of Total	2.48	2.01	6.02	1.42	11.92	12.19													
	% of Subsample	13.55	9.19	13.78	8.76															
<b>Disagree</b>	Frequency	10	11	11	7	39	72.3													
	% of Total	1.18	1.30	1.30	0.83	4.60	4.05													
	% of Subsample	6.45	5.95	2.97	5.11															
<b>Neutral</b>	Frequency	33	41	104	30	208	455.9													
	% of Total	3.90	4.84	12.28	3.54	24.56	25.54													
	% of Subsample	21.29	22.16	28.11	21.90															
<b>Agree</b>	Frequency	48	53	99	41	241	500													
	% of Total	5.67	6.26	11.69	4.84	28.45	28.01													
	% of Subsample	30.97	28.65	26.76	29.93															
<b>Strongly Agree</b>	Frequency	43	63	105	47	258	539.2													
	% of Total	5.08	7.44	12.40	5.55	30.46	30.21													
	% of Subsample	27.74	34.05	28.38	34.31															
<b>Total</b>	Frequency	155	185	370	137	847	1784.95													
	% of Total	18.30	21.84	43.68	16.17	100	100													
<b>Family</b>	a	a	a	a																
<b>Mean</b>	3.53	3.72	3.53	3.76	3.61	3.60														
<b>Std. Dev.</b>	1.326	1.249	1.307	1.228	1.287															
<b>Paired t-tests</b>	<table border="1"> <thead> <tr> <th></th> <th>RL to NRL</th> <th>RL to R</th> <th>RL to NR</th> <th>NRL to R</th> <th>NRL to NR</th> <th>R to NR</th> </tr> </thead> <tbody> <tr> <td><math>t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}</math></td> <td>-1.389</td> <td>-0.006</td> <td>-1.539</td> <td>1.704</td> <td>-0.250</td> <td>-1.835</td> </tr> </tbody> </table>							RL to NRL	RL to R	RL to NR	NRL to R	NRL to NR	R to NR	$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-1.389	-0.006	-1.539	1.704	-0.250	-1.835
	RL to NRL	RL to R	RL to NR	NRL to R	NRL to NR	R to NR														
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-1.389	-0.006	-1.539	1.704	-0.250	-1.835														

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.



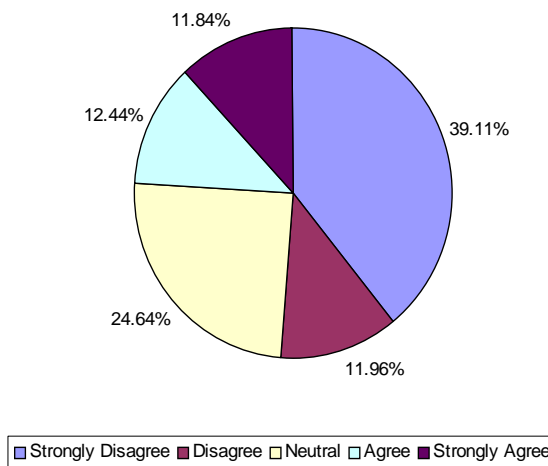
Question 7e asks respondents whether they would pursue residential development as an alternative land enterprise to generate or increase income from their rural property in Moffat County. Figure 39 indicates that 51% of all respondents disagree or strongly disagree to considering residential development, while approximately 24% would consider it an option. Figure 40 shows that this opinion is broadly consistent across stakeholder groups, indicating mild opposition to the proposal. However, Table 26 demonstrates that on average the resident groups are more strongly opposed to exploring this alternative than is the nonresident nonlandowner group, statistically speaking. Weighting proportional to representation in the population does not change these conclusions, except to reduce resistance to the option to a very thin majority, which may have implications for the politically feasible planning tools potentially available to local leaders.

Question 8a asks respondents whether they feel allowing residential development that would still maintain the productive function of the land, so the landowner would still maintain some agricultural or low level of built infrastructure land use, is a good county development strategy. Figure 41 indicates that almost 37% of all respondents disagree or strongly disagree, while 33% agree that this sort of clustered or otherwise planned rural residential development would be a good county development strategy. However, almost one third of all respondents are neutral. Figure 42 shows that this mixed opinion is consistent across stakeholder subgroups. Table 27 demonstrates that only nonresident nonlandowners differ in the strength of their

response to this question, statistically speaking. Non-resident nonlandowners provided a mean response on the positive side of neutral, whereas the mean responses of the other three categories were on the negative side of neutral. The weighted average of responses by representation I in the general population shows relatively equal distribution across response alternatives. This distribution in response could be relevant regarding local land use planning and policy.

Question 8b asks respondents whether they feel that some benefit should be given to landowners who maintain some land use of their land but allow residential development that maintains the productive function of the land, potentially a purchase of development rights (PDR) or agricultural conservation easement (PACE) program. Figure 43 indicates that 46% of all respondents agree or strongly agree that landowners who do this should receive some benefit, while almost 25% disagree or strongly disagree. Figure 44 shows that this opinion is fairly consistent across stakeholder subgroups. Table 28 demonstrates that resident nonlandowners are less enamored of this local policy option than are nonresident nonlandowners on average, statistically speaking, though both fall to the positive side of neutral. Taking the responses to 8a and b together, although private land use planning does not appear to be a popular local policy option, if there were such planning, respondents would be likely to support some sort of incentive based program to encourage individuals to facilitate the achievement of community land use objectives.

7E. Residential development



**Figure 39:** Question 7e, Overall Response. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?

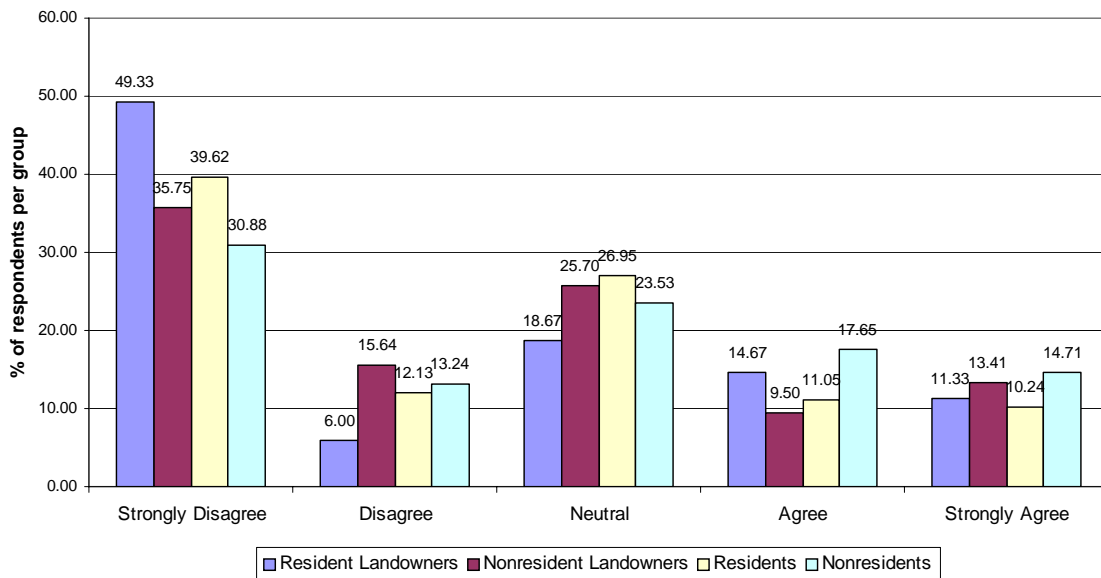


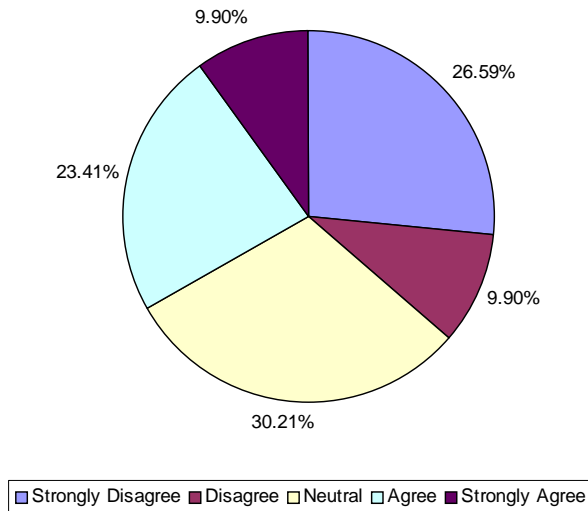
Figure 40: Question 7e, Response by Group. Residential development.

Table 26: Question 7e, Residential development.

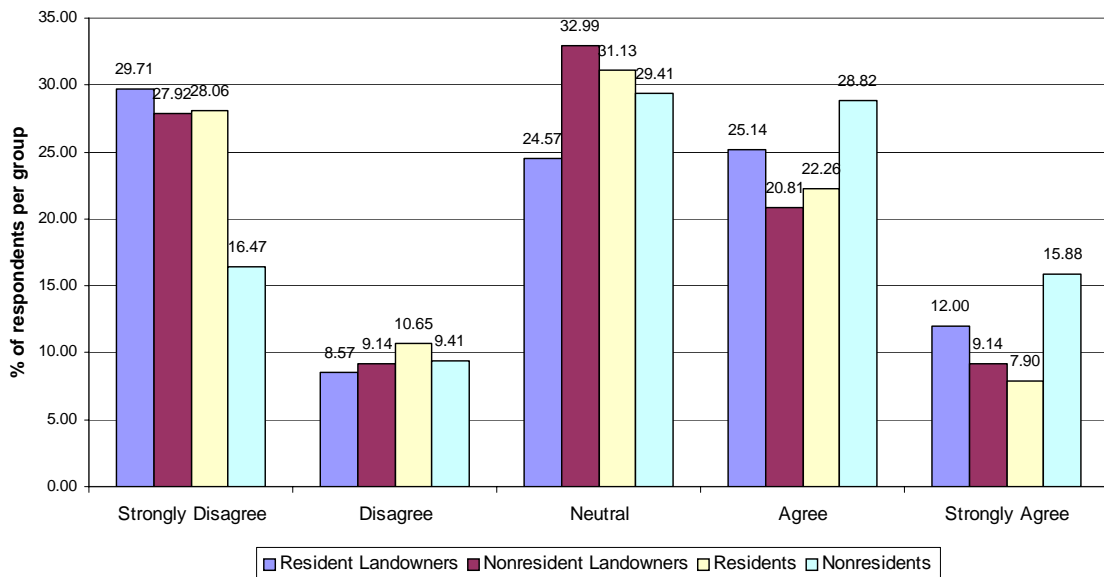
Response	Group				Total	Weighted Avg
	RL	NRL	R	NR		
<b>Strongly Disagree</b>						
Frequency	74	64	147	42	327	676.65
% of Total	8.85	7.66	17.58	5.02	39.11	38.14
% of Subsample	49.33	35.75	39.62	30.88		
<b>Disagree</b>						
Frequency	9	28	45	18	100	216.55
% of Total	1.08	3.35	5.38	2.15	11.96	12.21
% of Subsample	6.00	15.64	12.13	13.24		
<b>Neutral</b>						
Frequency	28	46	100	32	206	450.20
% of Total	3.35	5.50	11.96	3.83	24.64	25.38
% of Subsample	18.67	25.70	26.95	23.53		
<b>Agree</b>						
Frequency	22	17	41	24	104	224.25
% of Total	2.63	2.03	4.90	2.87	12.44	12.64
% of Subsample	14.67	9.50	11.05	17.65		
<b>Strongly Agree</b>						
Frequency	17	24	38	20	99	206.30
% of Total	2.03	2.87	4.55	2.39	11.84	11.63
% of Subsample	11.33	13.41	10.24	14.71		
<b>Total</b>						
Frequency	150	179	371	136	836	1173.95
% of Total	17.94	21.41	44.38	16.27	100	100
<b>Family Mean</b>	a	a,b	a	b		
Std. Dev.	2.33	2.49	2.40	2.72	2.46	2.47
<b>Paired t-tests</b>						
	<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-1.030	-0.534	-2.280	0.710	-1.414	-2.241

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**8A. Is this a good County development strategy?**



**Figure 41:** Question 8a, Overall Response. Suppose residential development was available that maintained the productive function of the land (grazing, timbering, wildlife, and/or streamside). Home sites would be selected to minimize impacts on productive functions and on scenery/view. Parcels would be large but fencing would only be allowed on a fraction of each parcel around the house. Most of the parcel could be available for productive functions mentioned above by lease or contract. The original landowner would receive payment and maintain some land use while new homeowners would be surrounded by open space. What do you think about the following?



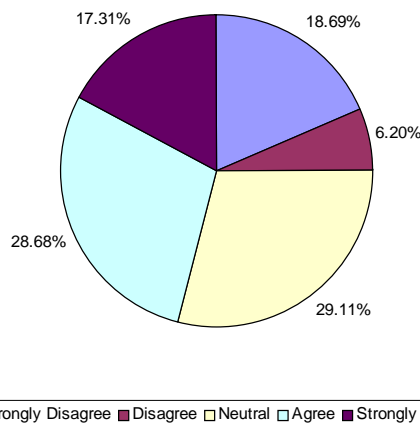
**Figure 42:** Question 8a, Response by group. Is this a good county development strategy?

**Table 27: Question 8a, Is this a good county development strategy?**

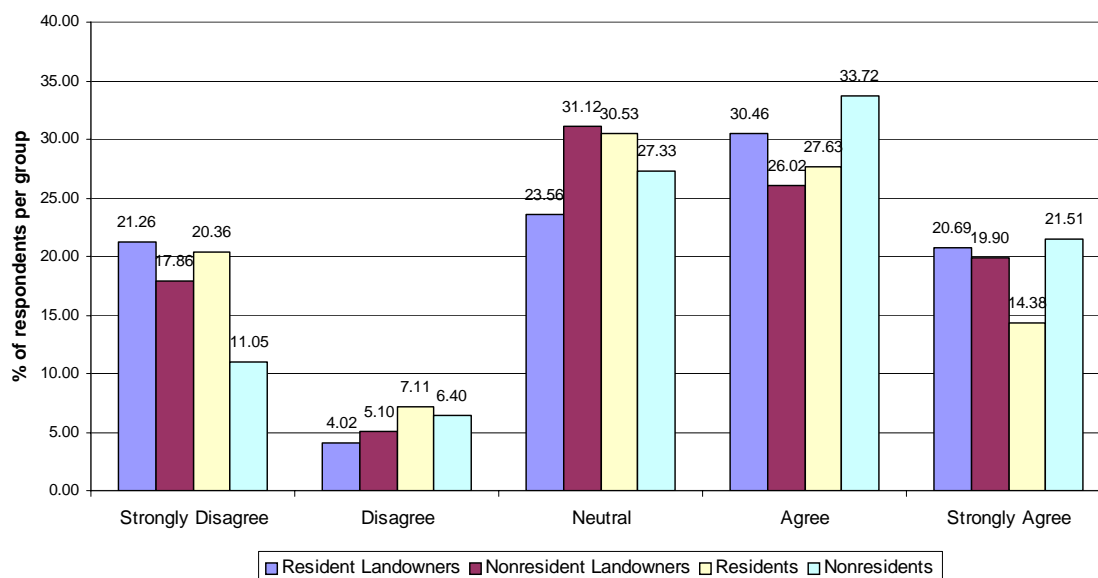
Response	Group				Total	Weighted Avg	
	RL	NRL	R	NR			
<b>Strongly Disagree</b>	Frequency	52	55	174	28	309	682.7
	% of Total	4.48	4.73	14.97	2.41	26.59	26.02
<b>Disagree</b>	Frequency	15	18	66	16	115	266.7
	% of Total	1.29	1.55	5.68	1.38	9.90	10.17
<b>Neutral</b>	Frequency	43	65	193	50	351	800.55
	% of Total	3.70	5.59	16.61	4.30	30.21	30.51
<b>Agree</b>	Frequency	44	41	138	49	272	617.95
	% of Total	3.79	3.53	11.88	4.22	23.41	23.55
<b>Strongly Agree</b>	Frequency	21	18	49	27	115	255.60
	% of Total	1.81	1.55	4.22	2.32	9.90	9.79
<b>Total</b>	Frequency	175	197	620	170	1162	2623.50
	% of Total	15.06	16.95	53.36	14.63	100	100
<b>Family Mean</b>		a	a	a	b		
<b>Std. Dev.</b>		2.81	2.74	2.71	3.18	2.80	2.81
		1.408	1.313	1.299	1.286	1.325	
<b>Paired t-tests</b>		<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$		0.496	0.831	-2.557*	0.263	-3.247*	-4.208*

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

**8B. Should some benefit be given to landowner who do this?**



**Figure 43:** Question 8b, Overall Response. Suppose residential development was available that maintained the productive function of the land (grazing, timbering, wildlife, and/or streamside). Home sites would be selected to minimize impacts on productive functions and on scenery/view. Parcels would be large but fencing would only be allowed on a fraction of each parcel around the house. Most of the parcel could be available for productive functions mentioned above by lease or contract. The original landowner would receive payment and maintain some land use while new homeowners would be surrounded by open space. What do you think about the following?



**Figure 44:** Question 8b, Response by group. Should some benefit be given to landowners who do this?

**Table 28:** Question 8b, Should some benefit be given to landowners who do this?

Response	Group				Weighted		
	RL	NRL	R	NR	Total	Avg	
<b>Strongly Disagree</b>	Frequency	37	35	126	19	217	485.25
	% of Total	3.19	3.01	10.85	1.64	18.69	18.49
	% of Subsample	21.26	17.86	20.36	11.05		
<b>Disagree</b>	Frequency	7	10	44	11	72	173.75
	% of Total	0.60	0.86	3.79	0.95	6.20	6.62
	% of Subsample	4.02	5.10	7.11	6.40		
<b>Neutral</b>	Frequency	41	61	189	47	338	774.60
	% of Total	3.53	5.25	16.28	4.05	29.11	29.52
	% of Subsample	23.56	31.12	30.53	27.33		
<b>Agree</b>	Frequency	53	51	171	58	333	756.65
	% of Total	4.57	4.39	14.73	5.00	28.68	28.83
	% of Subsample	30.46	26.02	27.63	33.72		
<b>Strongly Agree</b>	Frequency	36	39	89	37	201	434.10
	% of Total	3.10	3.36	7.67	3.19	17.31	16.54
	% of Subsample	20.69	19.90	14.38	21.51		
<b>Total</b>	Frequency	174	196	619	172	1161	2624.35
	% of Total	14.99	16.88	53.32	14.81	100	100
<b>Family Mean</b>	a,b	a,b	a	b			
<b>Std. Dev.</b>	3.25	3.25	3.09	3.48	3.20	3.18	
<b>Paired t-tests</b>	<b>RL to NRL</b>	<b>RL to R</b>	<b>RL to NR</b>	<b>NRL to R</b>	<b>NRL to NR</b>	<b>R to NR</b>	
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	0.020	1.407	-1.627	1.512	-1.752	-3.718*	

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.

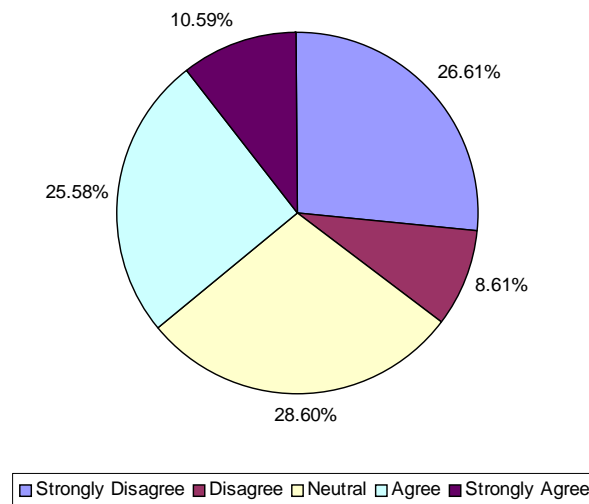
Question 8c asks respondents if they would consider allowing residential development on their land that maintained the productive function of the land while they could receive payment and maintain some land use. Reminiscent of the responses to fee hunting and fishing as complementary land use opportunities, Figure 45 indicates that approximately 35% of all respondents disagree or strongly disagree to doing this themselves, while approximately 36% would consider it. Figure 46 shows that this opinion is consistent across stakeholder subgroups. Table 29 demonstrates that only nonresident nonlandowners differ in the strength of their response to this question, statistically speaking, falling to the positive side of neutral, whereas all other categories mean responses fell to the negative side of neutral. This is an interesting and unexpected result because it can be expected that only landowners could be direct beneficiaries of this program, yet both categories of landowners were against receiving such compensation on average. However, this also points to a problem with using mean responses to characterize the potential popularity of a policy, since 130 of 400 landowners were supportive of such a potential compensation plan and an additional 100 were neutral to the policy.

### Summary and conclusions

Overall, a majority of respondents see federal lands as important the Moffat County economy and tax base. That said, they feel the best way to make use of these federal lands is with a multiple use management strategy. While the survey respondents do not generally want to see expansions to Dinosaur National Monument, creation of Vermillion National Monument, or designation of any additional BLM wilderness areas, if any of these proposals were to go through the respondents would like them to allow for multiple use activities such as grazing and oil/gas/mineral exploration and production. The desire for lands to permit grazing on federal lands goes hand in hand with the prominent role ranching plays in the county economy. Overall, there is no desire for any new land designations that would take away current land use practices.

Most statistical differences between means of the various respondent subgroups were not policy relevant. However, the few cases where it was important for policy were for both questions involving gas/oil/mineral exploration and production. There is potential for nonresident nonlandowners to switch from neutral to disagree for policies addressing gas/oil/mineral

8C. Would you consider doing this if you were going to develop land?



**Figure 45:** Question 8c, Overall Response. Suppose residential development was available that maintained the productive function of the land (grazing, timbering, wildlife, and/or streamside). Home sites would be selected to minimize impacts on productive functions and on scenery/view. Parcels would be large but fencing would only be allowed on a fraction of each parcel around the house. Most of the parcel could be available for productive functions mentioned above by lease or contract. The original landowner would receive payment and maintain some land use while new homeowners would be surrounded by open space. What do you think about the following?

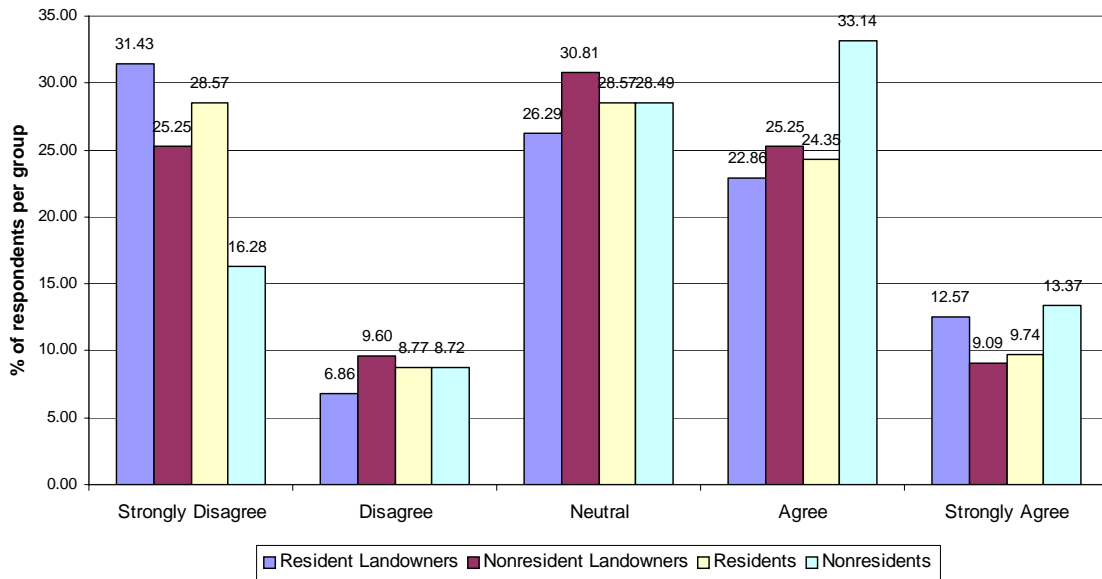


Figure 46: Question 8c, Response by Group. Would you consider doing this if you were going to develop land?

**Table 29:** Question 8c, Would you consider doing this if you were going to develop land?

Response	Group				Weighted		
	RL	NRL	R	NRTotal	Avg		
<b>Strongly Disagree</b>	Frequency	55	50	176	28	309	686.4
	% of Total	4.74	4.31	15.16	2.41	26.61	26.21
	% of Subsample	31.43	25.25	28.57	16.28		
<b>Disagree</b>	Frequency	12	19	54	15	100	227.65
	% of Total	1.03	1.64	4.65	1.29	8.61	8.69
	% of Subsample	6.86	9.60	8.77	8.72		
<b>Neutral</b>	Frequency	46	61	176	49	332	748.25
	% of Total	3.96	5.25	15.16	4.22	28.60	28.57
	% of Subsample	26.29	30.81	28.57	28.49		
<b>Agree</b>	Frequency	40	50	150	57	297	679.95
	% of Total	3.45	4.31	12.92	4.91	25.58	25.96
	% of Subsample	22.86	25.25	24.35	33.14		
<b>Strongly Agree</b>	Frequency	22	18	60	23	123	276.55
	% of Total	1.89	1.55	5.17	1.98	10.59	10.56
	% of Subsample	12.57	9.09	9.74	13.37		
<b>Total</b>	Frequency	175	198	616	172	1161	2618.80
	% of Total	15.07	17.05	53.06	14.81	100	100
<b>Family</b>	a	a	a	b			
<b>Mean</b>	2.78	2.83	2.78	3.19	2.85	2.86	
<b>Std. Dev.</b>	1.422	1.305	1.348	1.257	1.345		
<b>Paired t-tests</b>	<b>RL to NRL RL to R NRL to R NRL to NR R to NR</b>						
$t = \frac{m_1 - m_2}{\sqrt{\frac{s_1}{n_1} + \frac{s_2}{n_2}}}$	-0.356	0.030	-2.800	0.503	-2.645*	-3.693*	

Note: T-stats denoted with an asterisk are statistically significant at 95% confidence or better.



exploration and production in the proposed Vermillion National Monument, and for resident nonlandowners and nonresident landowners to switch from neutral to either disagree or agree for gas/oil/mineral exploration and production in additions to Dinosaur National Monument. This makes the case that multiple use is the preferred land planning strategy when it includes grazing and motorized recreation, but opinions diverge when it comes to multiple use involving gas/oil/mineral exploration and production. This issue is potentially more controversial.

In terms of public policy implications, particular attention must be paid to the relationship between landowners and nonlandowners. Landowners control the private land resources in the county and arguably have the most to gain or lose financially from policies affecting land use. Nonlandowners constitute the vast majority of local taxpayers and, probably, voters. As a result, local policy is likely to be driven by nonlandowners. When the preferences of these two groups are at cross purposes, local public policy concerns can be expected. However, as a group, resident nonlandowners were rarely in opposition to resident landowners on matters of land use covered in this survey, if perhaps less vociferous in their support or opposition to the various measures proposed. It would be wise to take the stances of the various stakeholder groups into consideration when evaluating the efficacy of potential incentive based or regulatory measures to guide local land use and economic development.

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**Appendix 1: Moffat County Public Lands Preferences Survey**

**MOFFAT COUNTY PUBLIC/PRIVATE LANDS SURVEY**

1. Federal lands in Moffat County are currently being considered for a change in use designation from multiple use to monument or wilderness status. **What do you think about federal land use in Moffat County?**  
 (Circle one for each. #1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.)

	Strongly disagree		Neutral		Strongly agree
a. Federal lands activities are important to the County economy	1	2	3	4	5
b. Federal lands activities are important to the County tax base	1	2	3	4	5
c. Multiple use should predominate on Moffat County federal lands	1	2	3	4	5
d. The Yampa River should be designated as a Wild & Scenic River	1	2	3	4	5
e. Additional BLM wilderness areas should be designated on federal lands in Moffat County	1	2	3	4	5
f. Dinosaur Monument should be expanded	1	2	3	4	5
g. The proposed Vermillion Monument should be created	1	2	3	4	5
h. The proposed Vermillion Monument should permit grazing	1	2	3	4	5
i. The proposed Vermillion Monument should permit Gas/oil/mineral exploration & production	1	2	3	4	5
j. Additions to Dinosaur Monument should permit grazing	1	2	3	4	5
k. Additions to Dinosaur Monument should permit Gas/oil/mineral exploration & production	1	2	3	4	5
l. Additional BLM wilderness areas should permit grazing	1	2	3	4	5
m. No new roads should be developed on federal lands in Moffat County	1	2	3	4	5
n. Public & noncommercial recreation should require permitting and payment of fees on federal lands	1	2	3	4	5
o. Off-road recreation on federal lands should be non-motorized	1	2	3	4	5
m. Other _____	1	2	3	4	5

2. **Which are the three (3) most important of YOUR leisure uses on federal lands in Moffat County?**  
 (Circle three please)

- a. Camping (developed or primitive)
- b. Driving on roads for Pleasure
- c. Fishing/Hunting
- d. Educational Opportunities/Activities (historical, wildlife, geological, cultural)
- e. Picnicking Activities (day use)
- f. Trail related activities (hiking, backpacking, horsepacking, mountain biking)
- g. Winter Activities (skiing, snowshoeing, snowmobiling)
- h. Miscellaneous Land Activities (off-road driving, four wheeling, ATV riding)
- i. Specialized Land Sports (climbing, hang gliding)
- j. Miscellaneous Water Activities (boating, rafting, kayaking, swimming)
- k. Other: \_\_\_\_\_

3. Which are the three (3) most important of YOUR commercial uses on federal lands in Moffat County? (Circle three please)

- a. Timber Harvest/Hauling
- b. Outfitting
- c. Public Agency Consulting
- d. Recreation/Tourism
- e. Livestock Grazing
- f. Gas/Oil/Mineral Exploration/Extraction
- g. Public Lands Management
- h. Other (write out): \_\_\_\_\_

4. Do you graze livestock on federal land? (circle one please)

YES / NO (IF NO GO TO QUESTION 7)

5. What percent of your livestock grazing needs comes from Moffat County federal lands? (Please write %)

\_\_\_\_\_ %

6. Suppose your access to public lands grazing is going to be eliminated because of changes in public lands use rules. This would require changes in your grazing practices such as finding other grazing out of county, as leasing private lands or as increased livestock feeding.

By what percent would the loss of Moffat County federal grazing raise your production costs?

\_\_\_\_\_ %

7. If you own rural land in Moffat County, what alternative land enterprises would you pursue to generate or increase income from your property?

(Circle one for each. #1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.)

	Strongly disagree	2	Neutral	4	Strongly agree
a. Rural lands recreation	1	2	3	4	5
b. Fee hunting	1	2	3	4	5
c. Fee fishing	1	2	3	4	5
d. Wildlife habitat improvement	1	2	3	4	5
e. Residential development	1	2	3	4	5
f. Other _____	1	2	3	4	5

8. Suppose residential development was available that maintained the productive function of the land (grazing, timbering, wildlife, and/or streamside). Home sites would be selected to minimize impacts on productive functions and on scenery/view. Parcels would be large but fencing would only be allowed on a fraction of each parcel around the house. Most of the parcel could be available for productive functions mentioned above by lease or contract. The original landowner would receive payment and maintain some land use while new homeowners would be surrounded by open space.

What do you think about the following?

(Circle one for each. #1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.)

	Strongly disagree	2	Neutral	4	Strongly agree
a. Is this a good County development strategy?	1	2	3	4	5
b. Should some benefit be given to landowners who do this?	1	2	3	4	5
c. Would you consider doing this if you were going to develop land?	1	2	3	4	5