Public Perceptions of Oil and Natural Gas Development in Karnes County, Texas: A Summary Report

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We wish to express our gratitude to the citizens of Karnes County, Texas. We also want to extend a special thanks to Kristen Koci and Ashley Volkmer for helping collect, code, and clean the data.

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Introduction

This report provides a summary of the results obtained from a 2015 survey of residents and absentee landowners in Karnes County, Texas.

The purpose of this document is to provide insights into the public's perception of the energy industry. Moreover, the report includes information on their reported knowledge, attitudes and behaviors related to natural gas development, including their views about hydraulic fracturing and possible uses of treated wastewater from these operations. Figures and tables are used to simplify presentation of the data.[1] No conclusions or inferences are made. Individuals interested in statistical analyses and more detailed information should contact Dr. Gene L. Theodori at:

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[1] Percentages in figures and tables may not add to 100 due to rounding error.

Methodology

Following a modified tailored design method, data were gathered using mail survey techniques. In February 2015, an informational letter was first mailed to a random sample of 525 residents and absentee landowners in Karnes County, Texas. The informational letter informed sampled individuals that their household was randomly selected for participation in an upcoming study on public perceptions of oil and natural gas development in the Eagle Ford Shale region of Texas. Six sampled individuals contacted the researchers at SHSU and requested not to participate in the study, reducing the sample size to 519.

In March 2015, a survey questionnaire was mailed to the sampled individuals. To obtain a representative sample of individuals within residences, a response from the adult who most recently his/her birthday was requested in the cover letter. The survey questionnaire, organized as a self-completion booklet, contained 39 questions and required approximately 50 minutes to complete. After the initial survey mailing and two follow-up mailings during April and May of 2015, a total of 71 questionnaires were returned.

Section I

Public Perspectives

Figures 1a through 1u illustrate respondents' perspectives on various issues related to oil and natural gas development in the Eagle Ford Shale.

Figure 1a

The oil and gas industry is important to the local economy.

(n = 71)

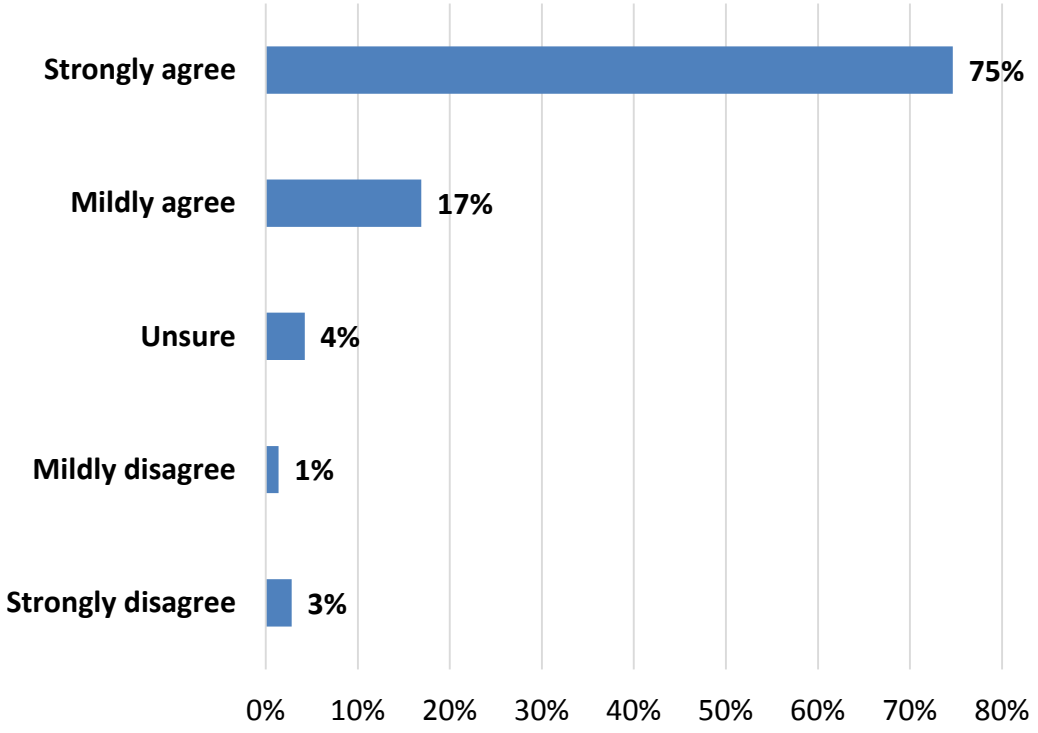


Figure 1b

Not enough information concerning oil and gas development in the Eagle Ford Shale is being made available to the general public.

(n = 71)

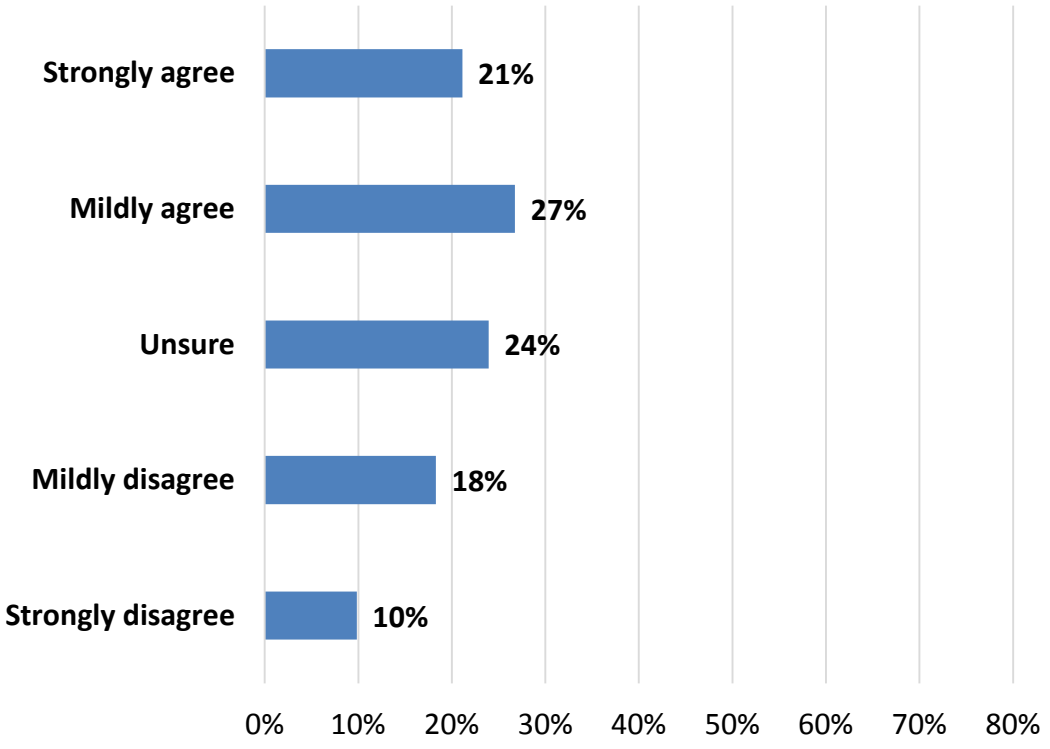


Figure 1c

Even when carefully controlled, oil and gas development is likely to upset the quality of life in a local area.

(n = 71)

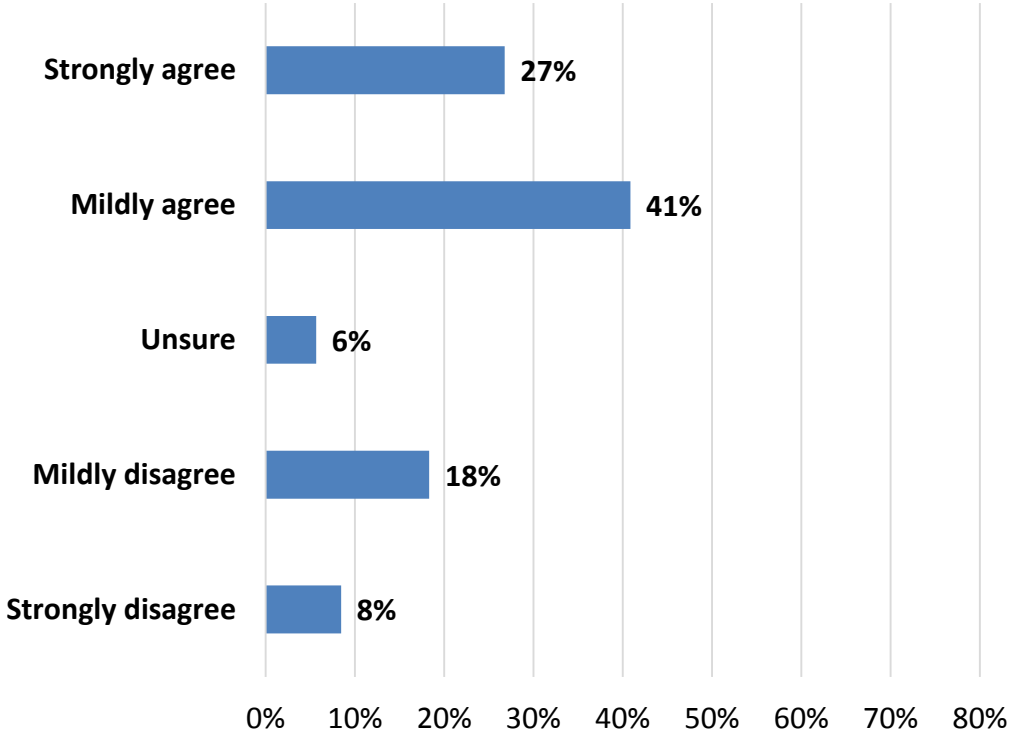


Figure 1d

Because industry has to be competitive, it is unfair to expect oil and gas companies to tell the public about their plans.

(n = 71)

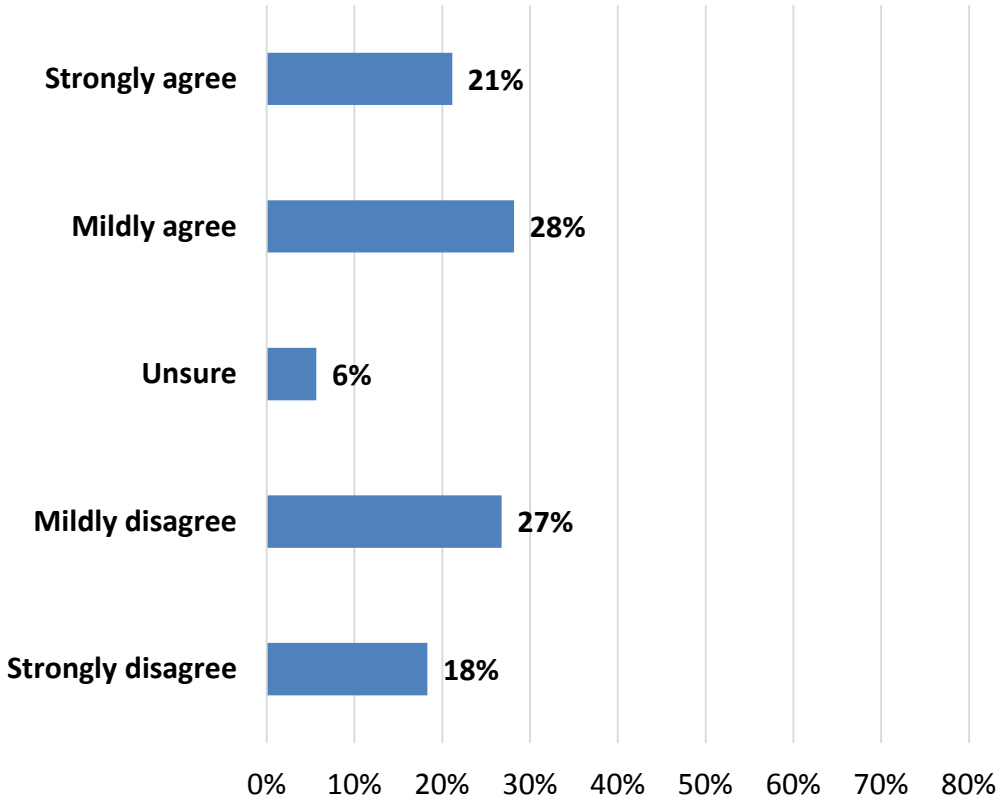


Figure 1e

All in all, the benefits of oil and gas development in the Eagle Ford Shale are greater than the costs.

(n = 71)

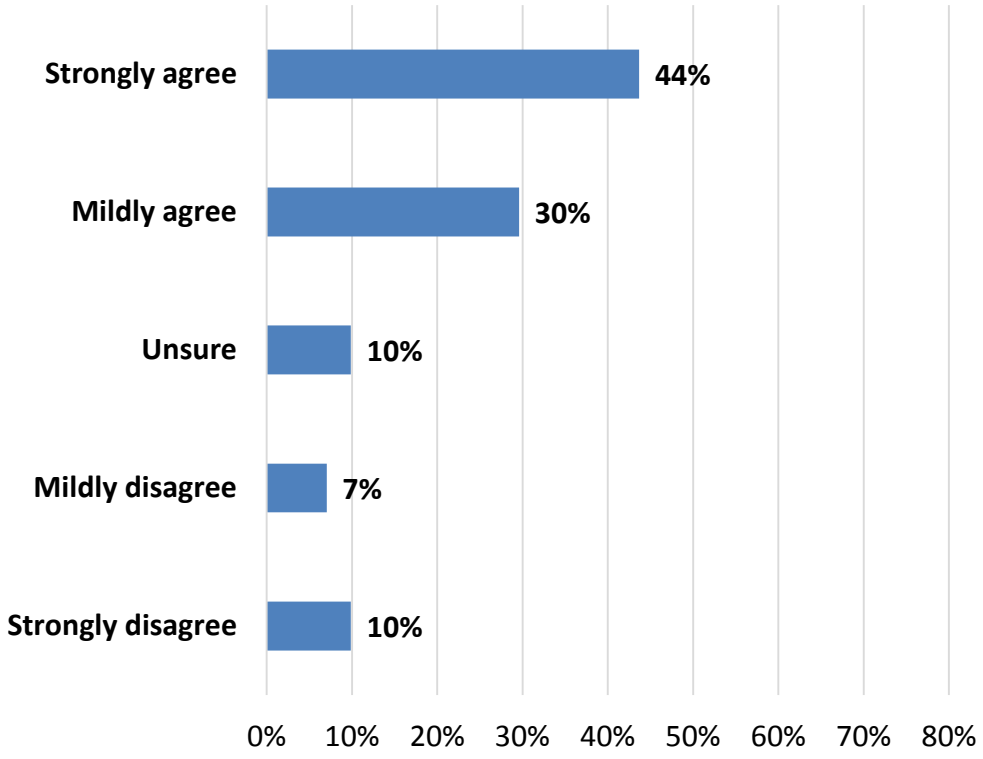


Figure 1f

The oil and gas industry must adopt and use more environmentally-friendly drilling practices in the Eagle Ford Shale.

(n = 71)

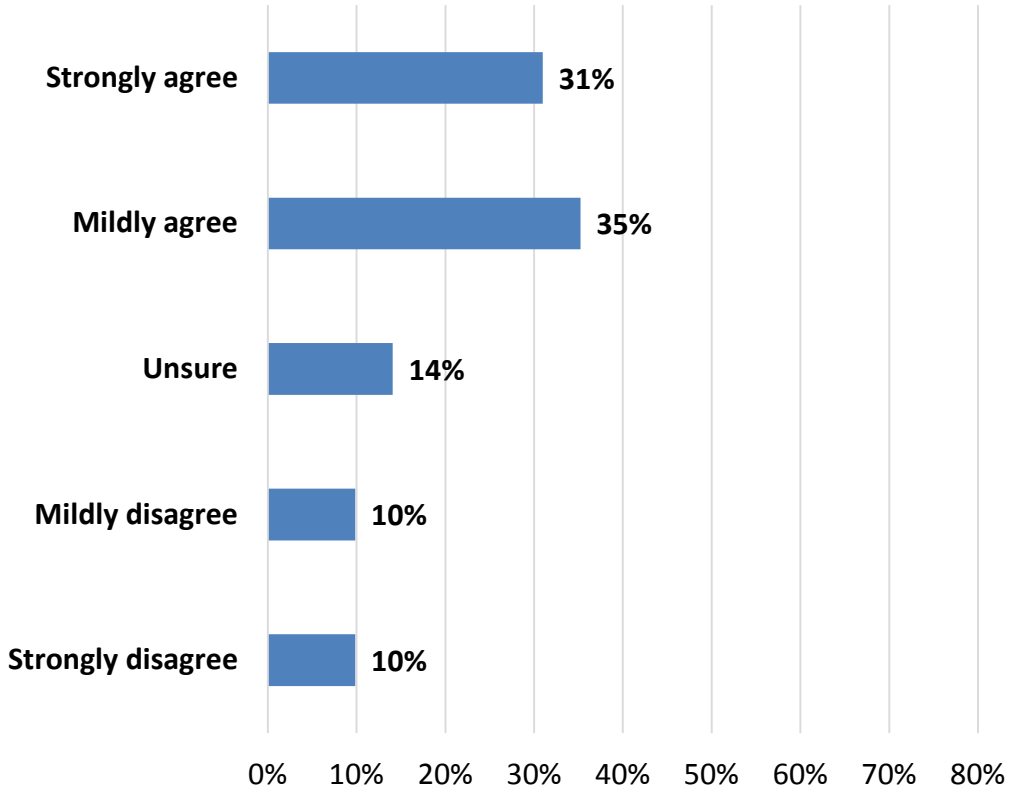


Figure 1g

Too little attention is being paid to the social costs of oil and gas development in the Eagle Ford Shale.

(n = 71)

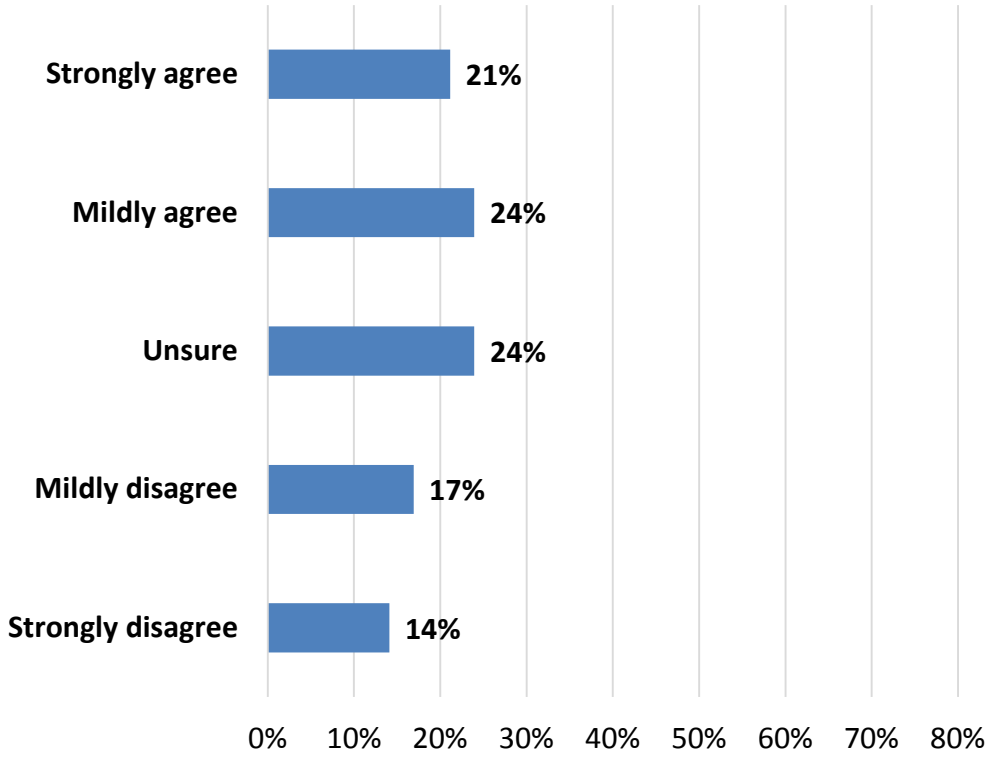


Figure 1h

The oil and gas industry has little interest in our natural environment.

(n = 71)

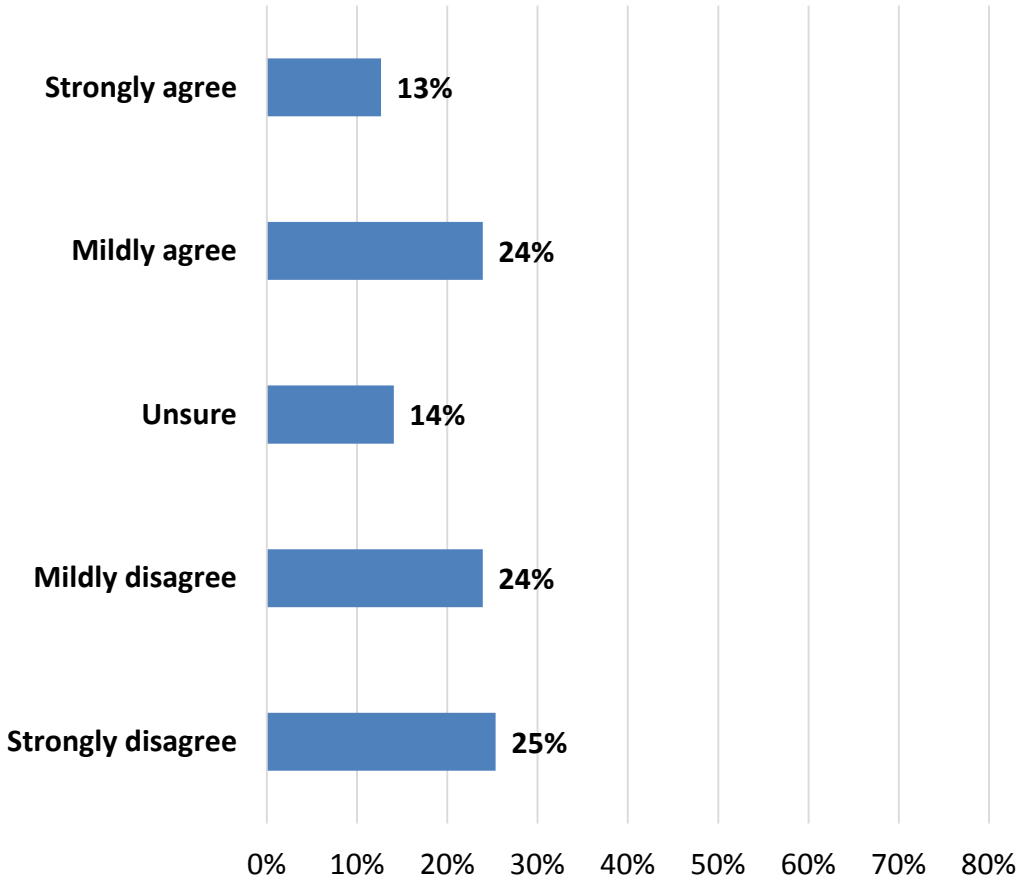


Figure 1i

Oil and gas companies in the Eagle Ford Shale will do only what's required by law.

(n = 71)

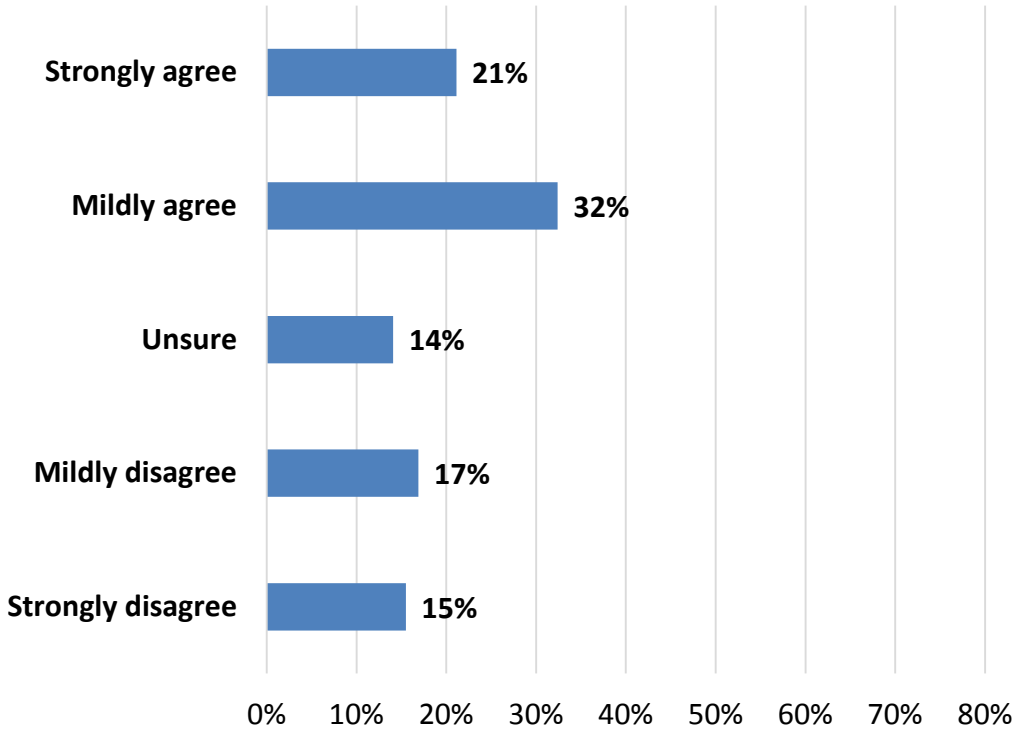


Figure 1j

In the long run, I'm sure that people in the Eagle Ford Shale will be better off if our energy resources are developed.

(n = 70)

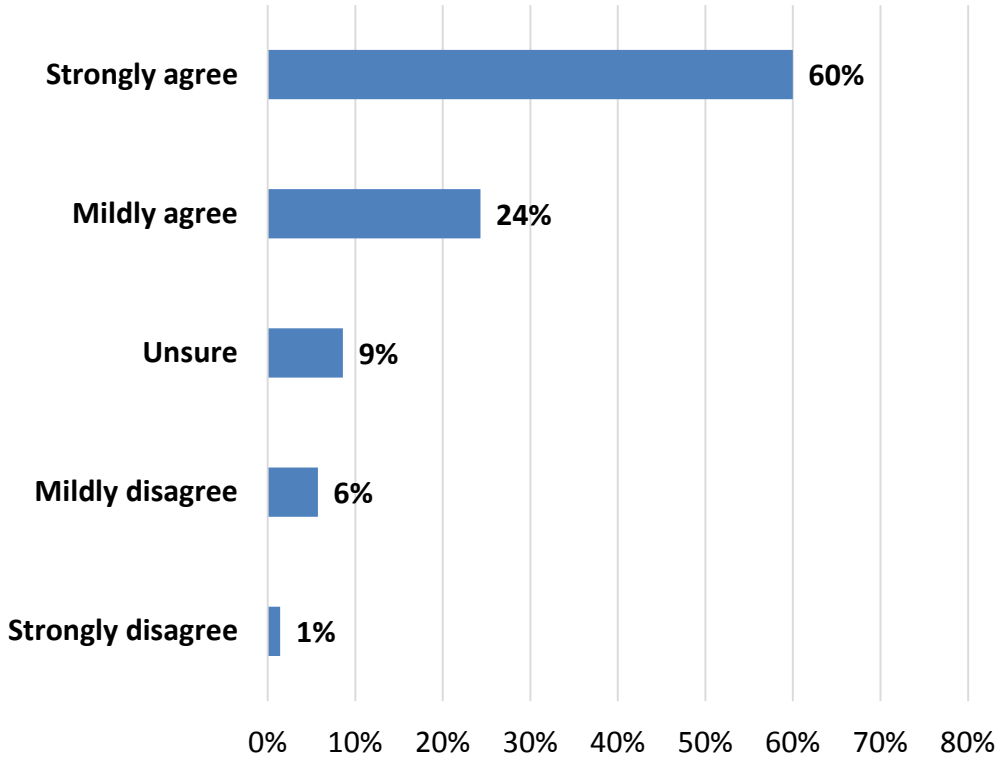


Figure 1k

People who object to oil and gas development in the Eagle Ford Shale should move someplace else.

(n = 69)

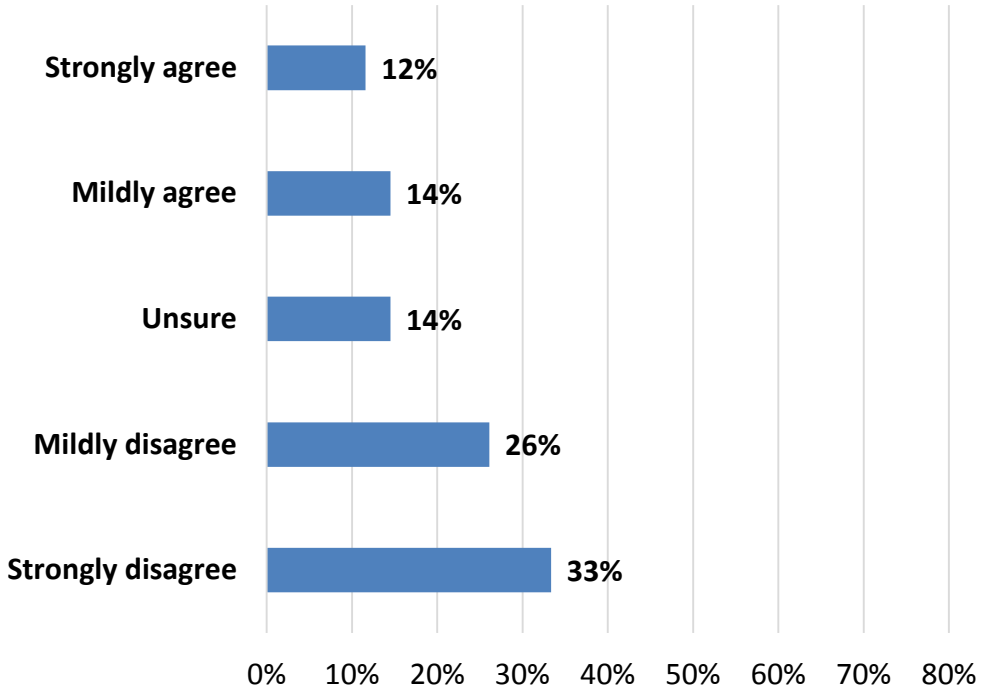


Figure 1l

Oil and gas industry operators in the Eagle Ford Shale are too politically powerful.

(n = 70)

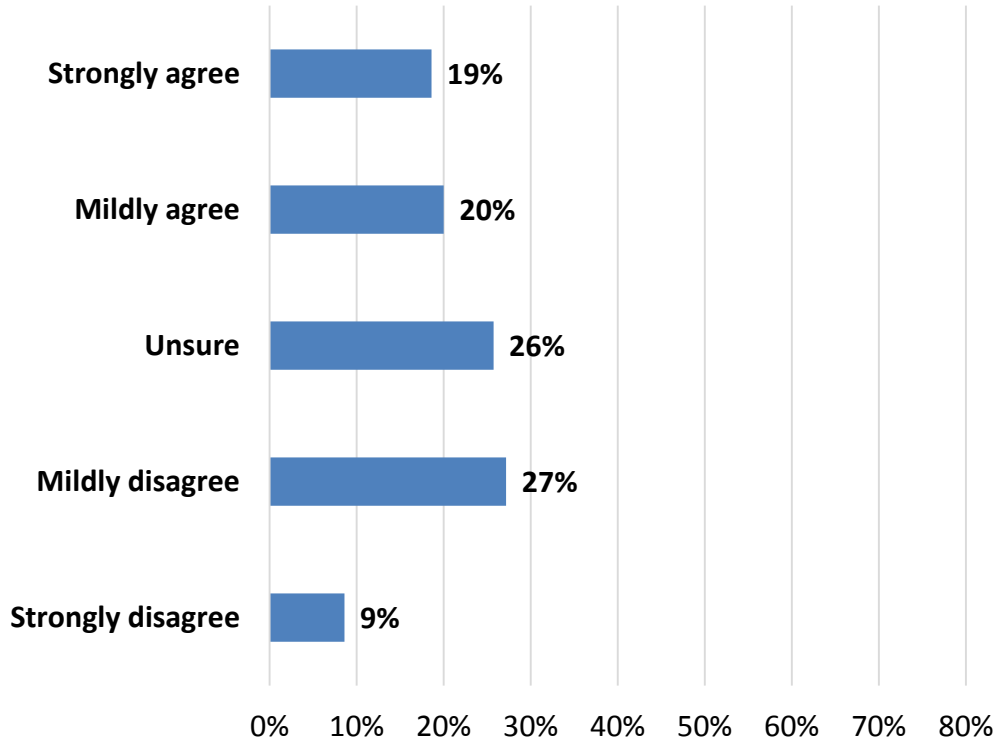


Figure 1m

Decisions about oil and gas-related development should be made solely on economic grounds.

(n = 70)

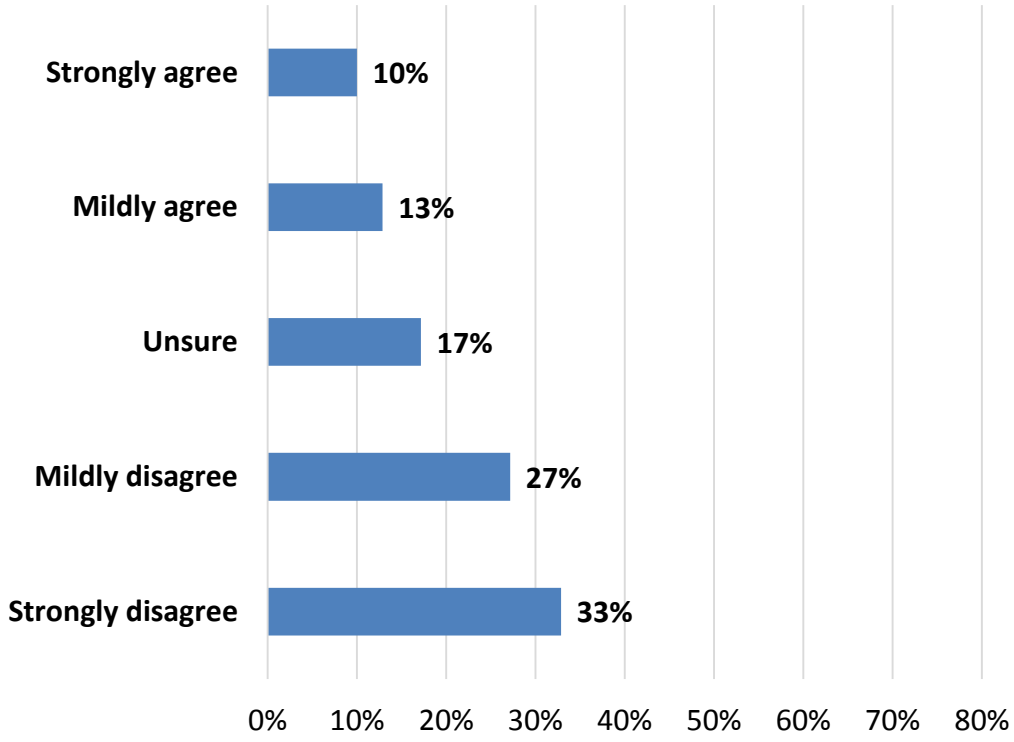


Figure 1n

We already know enough about the potential impacts of oil and natural gas extraction to speed up development in the Eagle Ford Shale.

(n = 68)

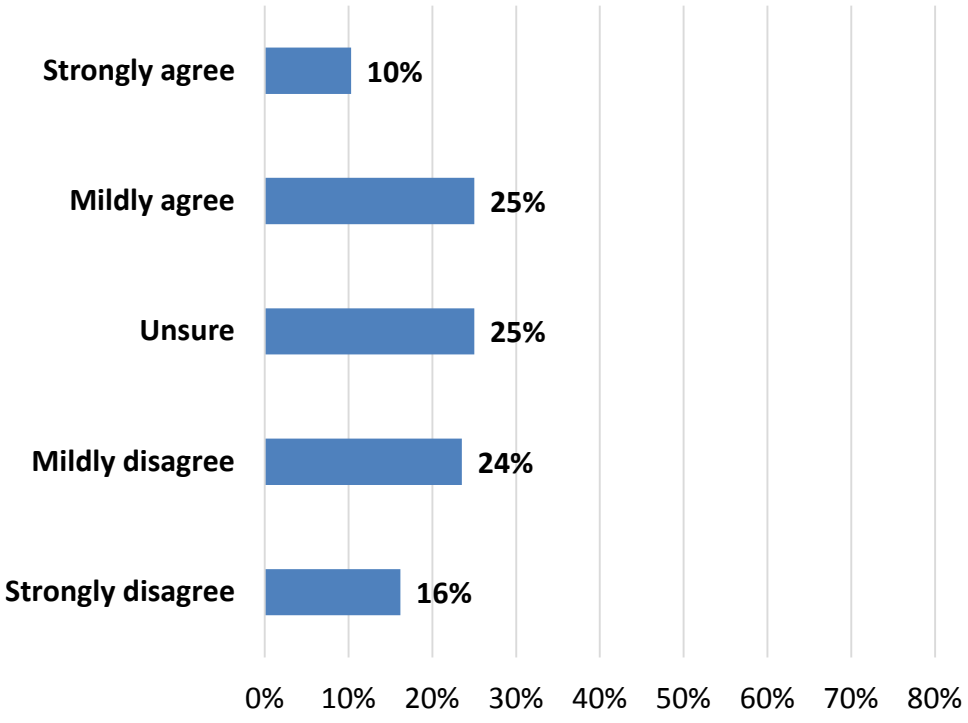


Figure 1o

I worry that there will be some sort of catastrophic accident involving oil and natural gas extraction in the Eagle Ford Shale.

(n = 68)

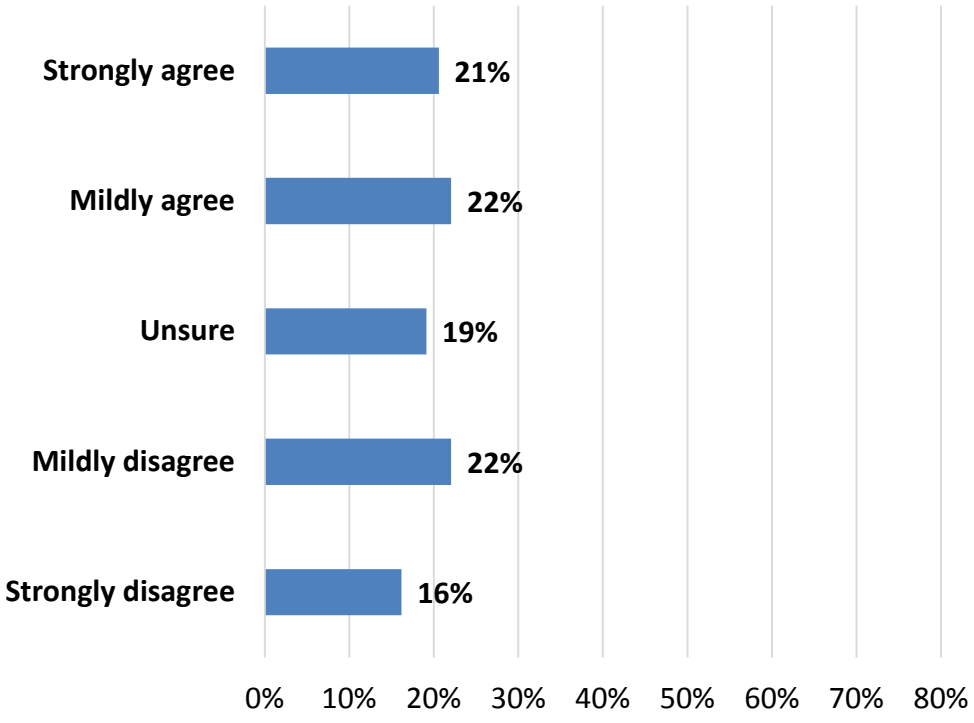


Figure 1p

Any negative impacts of oil and natural gas extraction in the Eagle Ford Shale can be fixed.

(n = 65)

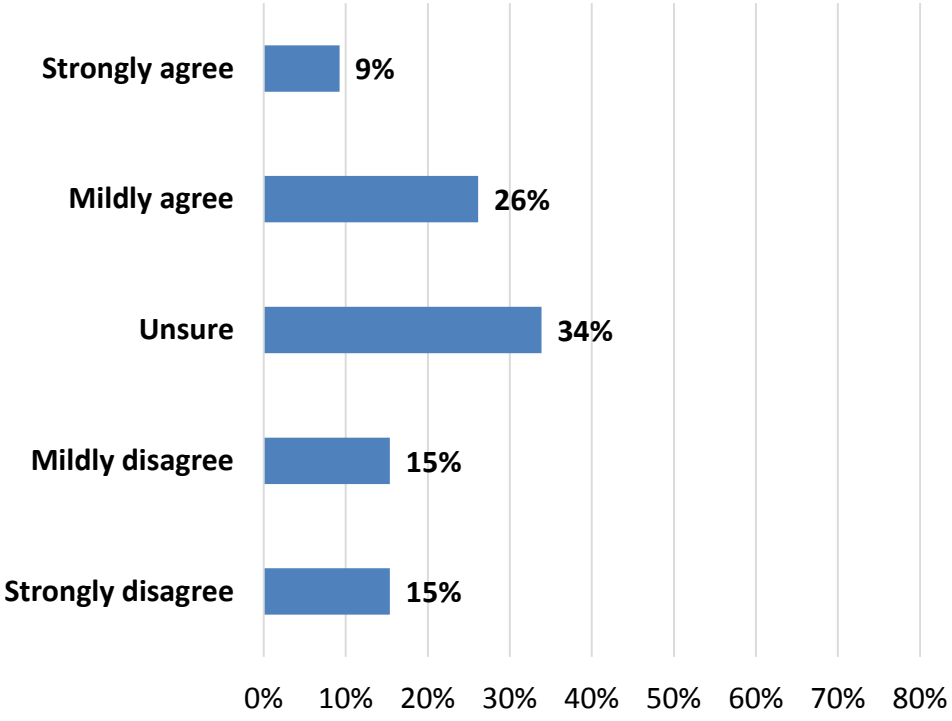


Figure 1q

Continued development of oil and natural gas in the Eagle Ford Shale will create long lasting environmental problems.

(n = 68)

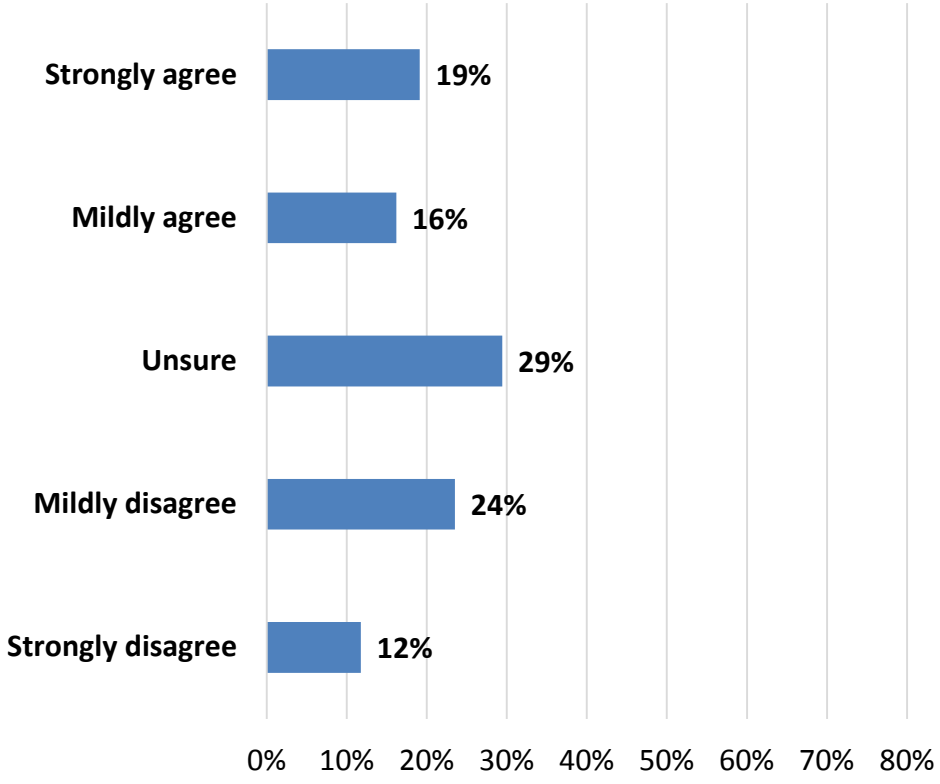


Figure 1r

Extraction of oil and gas from shale reservoirs, such as in the Eagle Ford, should be encouraged to decrease our reliance on imported energy sources.

(n = 68)

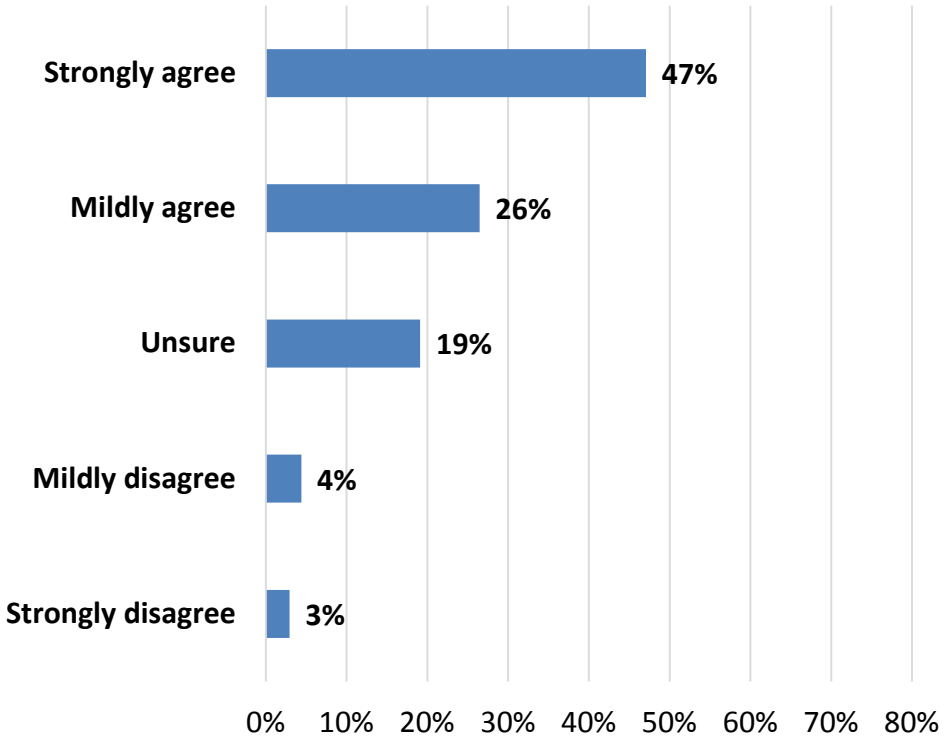


Figure 1s

Continued development of oil and natural gas in the Eagle Ford Shale will create long lasting social problems.

(n = 68)

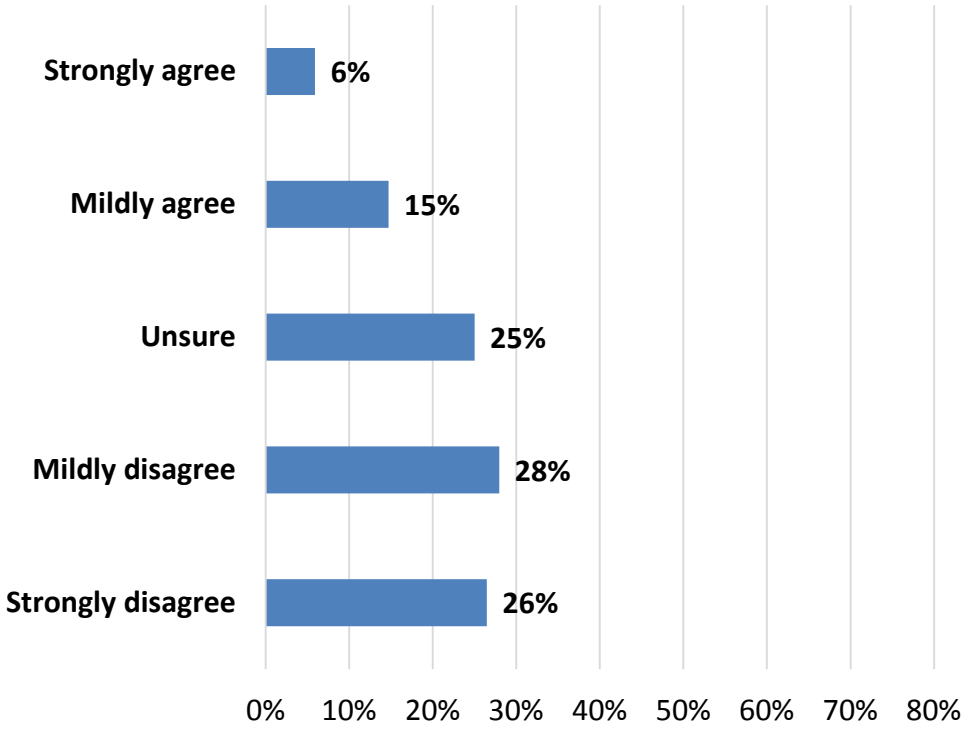


Figure 1t

The oil and gas industry will provide economic opportunities that will help keep our children in south Texas.

(n = 68)

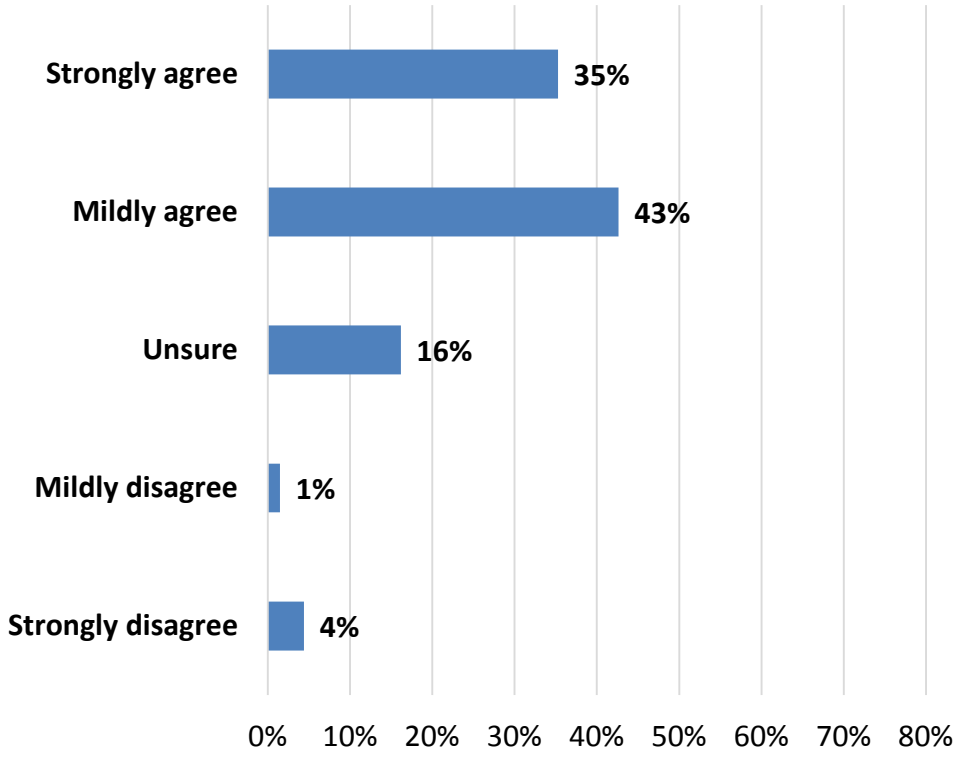
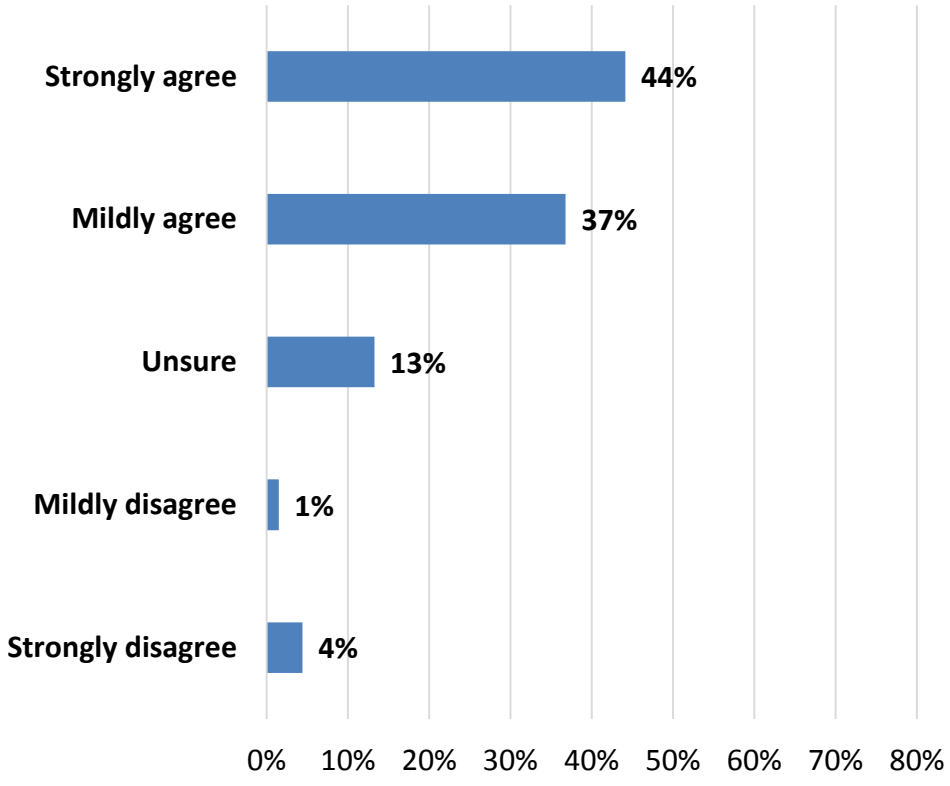


Figure 1u

Continued development of oil and gas in the Eagle Ford Shale makes me optimistic about the future of south Texas.

(n = 68)



Section II

Potential Problems in Karnes County

This section deals with respondents' perceptions of the potential problems in Karnes County which may or may not be associated with the continued development of oil and natural gas. Survey respondents were presented with 24 issues which may or may not be problems in Karnes County. Respondents were asked to indicate whether they believed each issue currently is "no problem at all," a "slight problem," a "moderate problem," or a "serious problem." Respondents were then asked to indicate whether the seriousness of the problem is "getting better," "staying the same," or "getting worse" with the continued development of oil and natural gas. The results are summarized below.

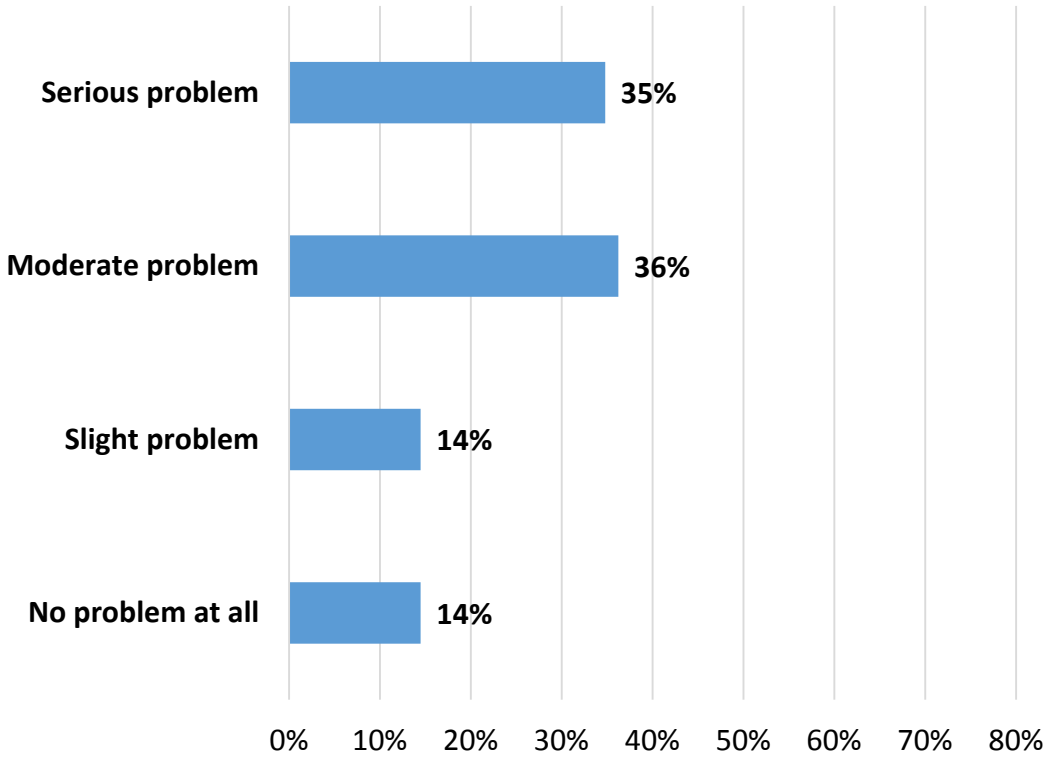
Figures 2a through 25a illustrate the perceived problematic extent of the issue today. Figures 2b to 25b illustrate the perceived seriousness of the problem with the continued development of oil and natural gas.

For purposes of presentation, the issues were ranked from the perceived "most serious" to the "least serious" (see the reported mean scores and coding notation).

Figure 2a

Issue: Availability of good jobs

(n = 69)



Mean	**2.91**
Standard deviation	**1.04**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 2b

Because of the development of natural gas, availability of good jobs is:
(n = 67)

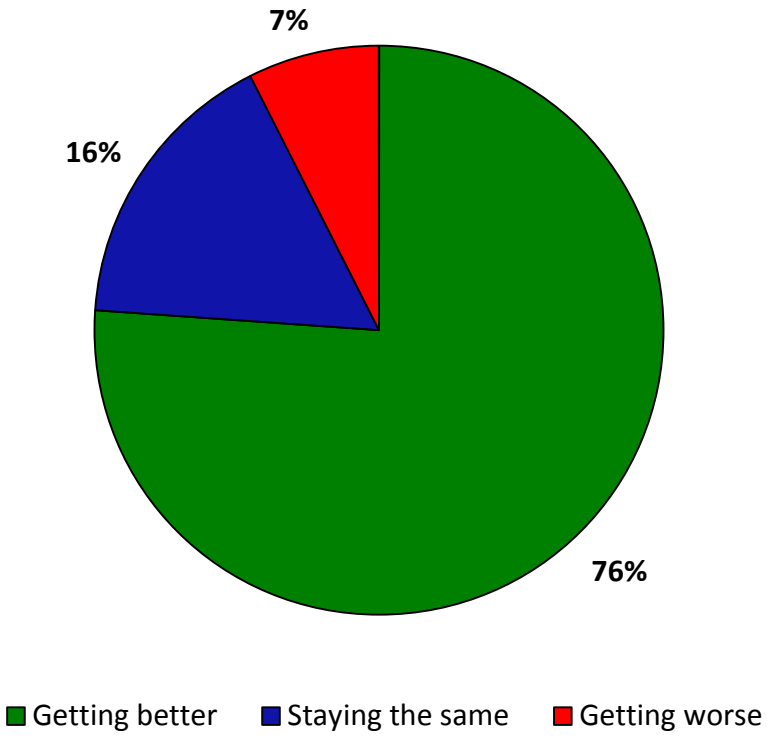
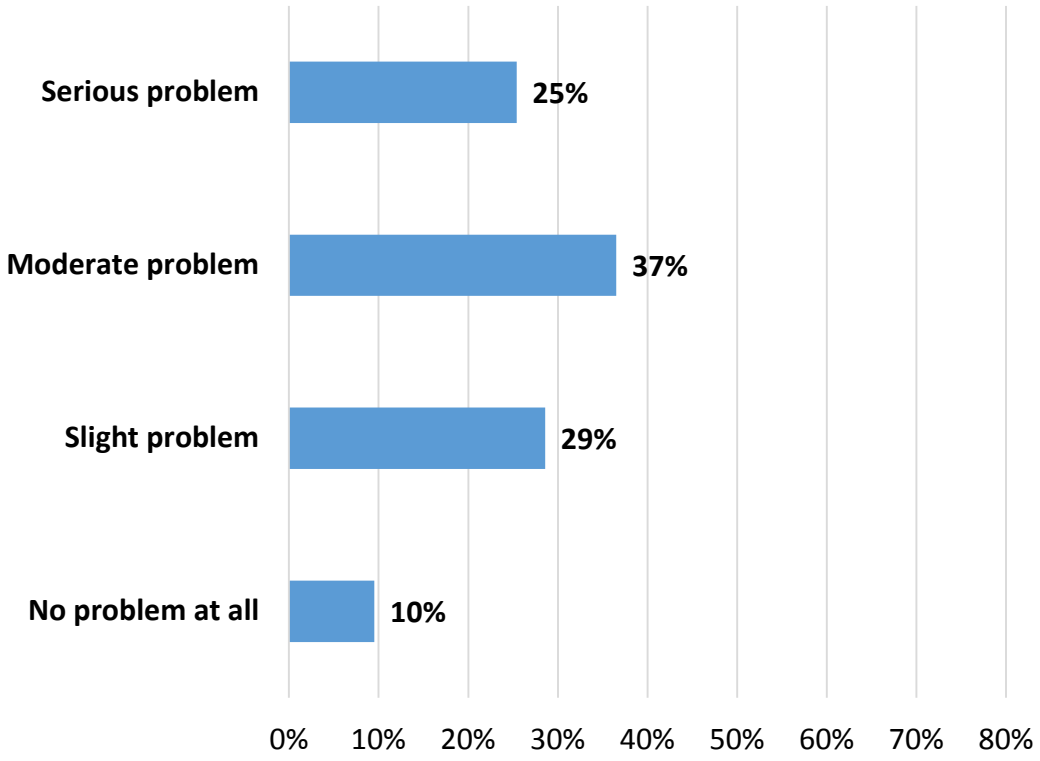


Figure 3a

Issue: Illegal drugs

(n = 63)



Mean	**2.78**
Standard deviation	**0.94**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 3b

Because of the development of natural gas, <u>Illegal drugs</u> are:

(n = 62)

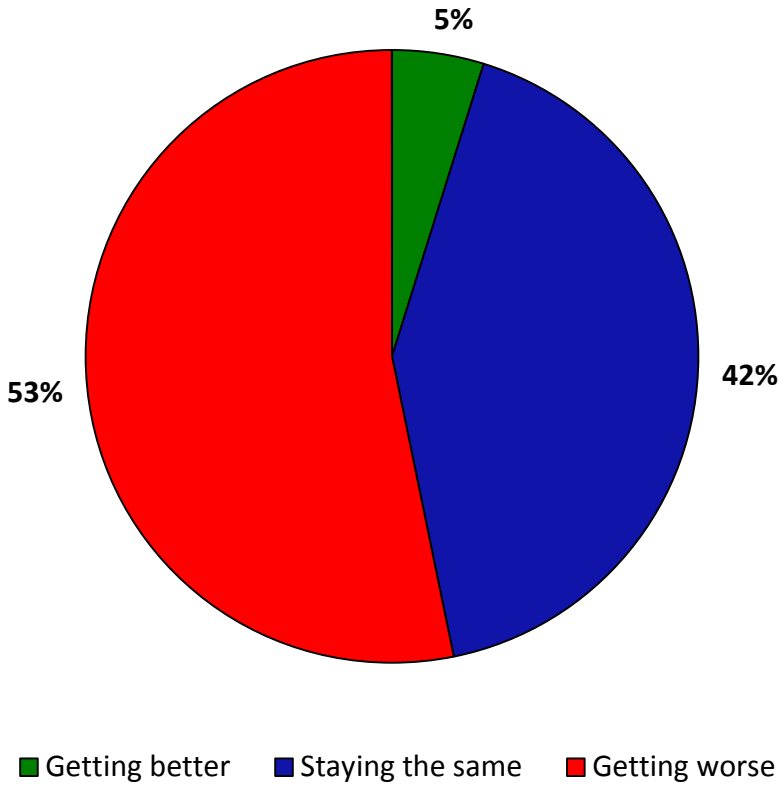
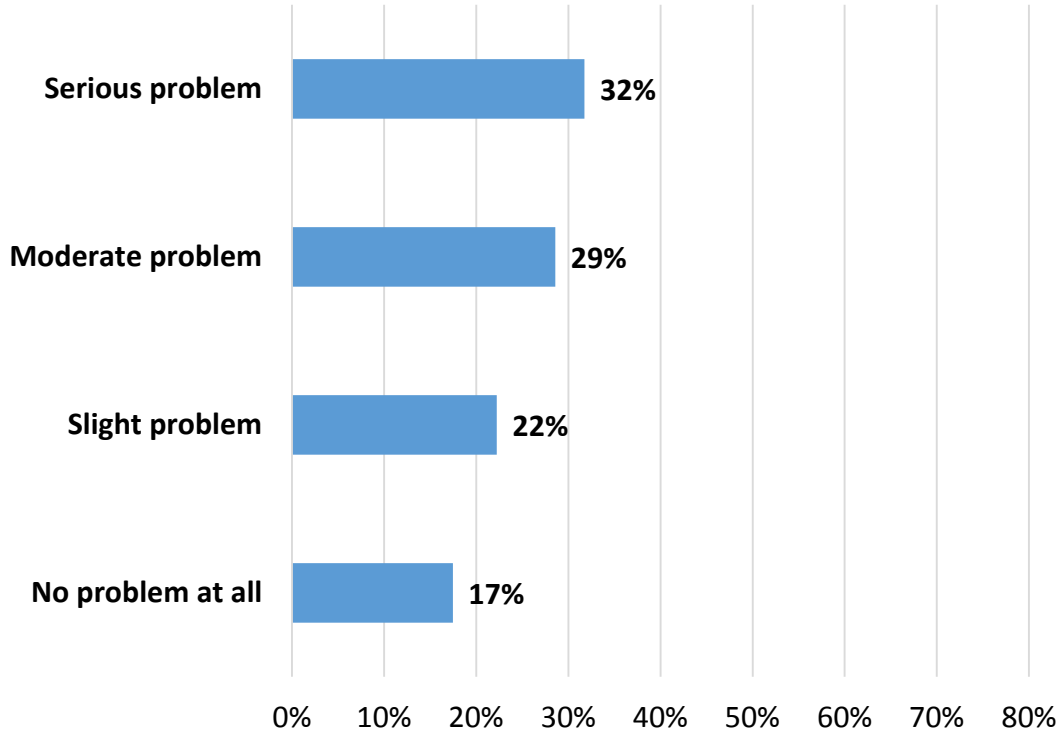


Figure 4a

Issue: Young people leaving community after high school

(n = 63)



Mean	**2.75**
Standard deviation	**1.09**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 4b

Because of the development of natural gas, young people leaving community after high school is:

(n = 60)

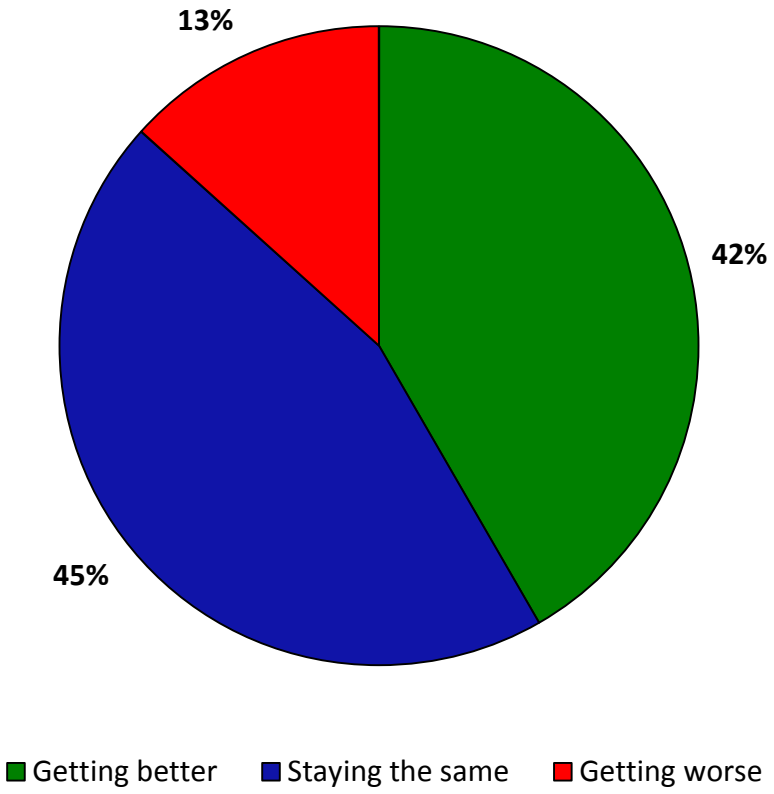
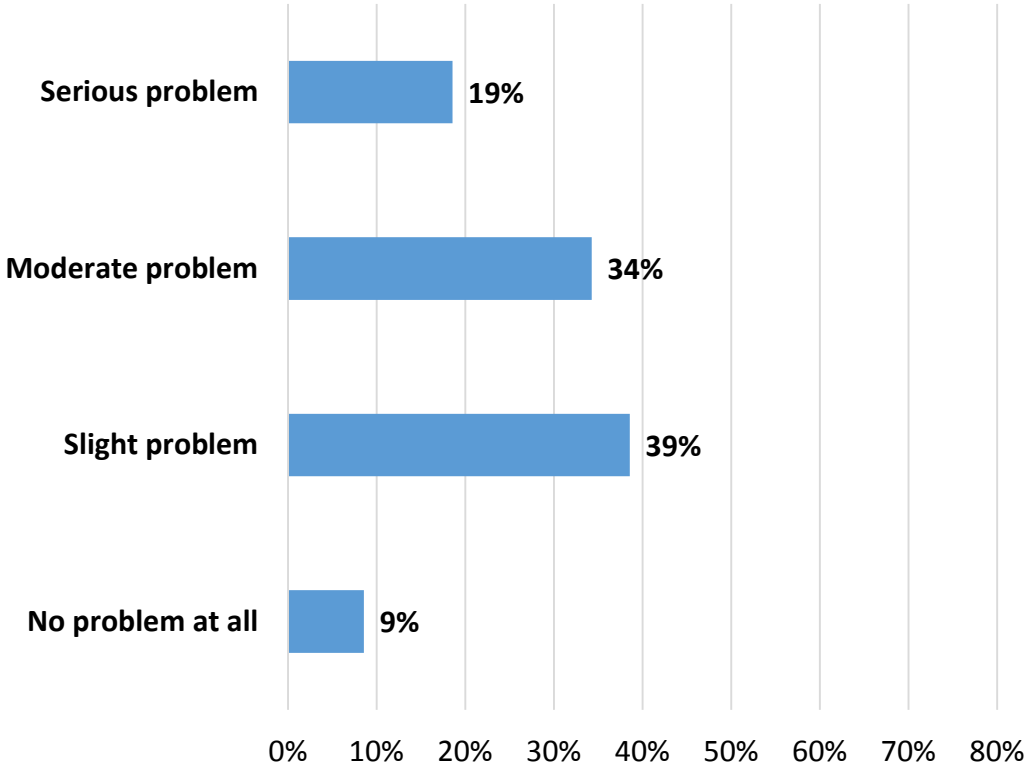


Figure 5a

Issue: Trash on roadsides

(n = 70)



Mean	**2.63**
Standard deviation	**0.89**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 5b

Because of the development of natural gas, <u>trash on roadsides</u> is:

(n = 68)

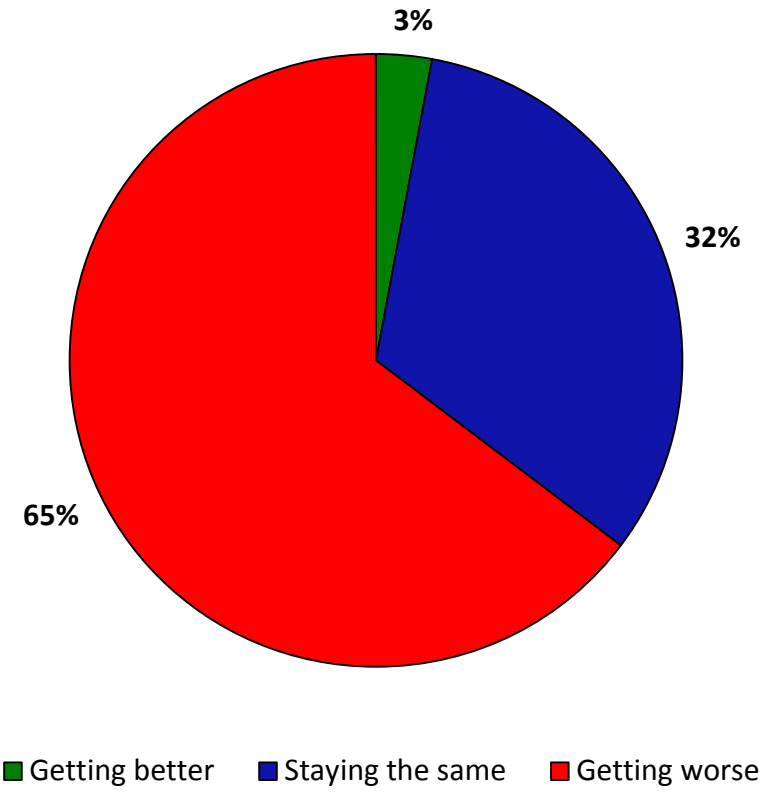
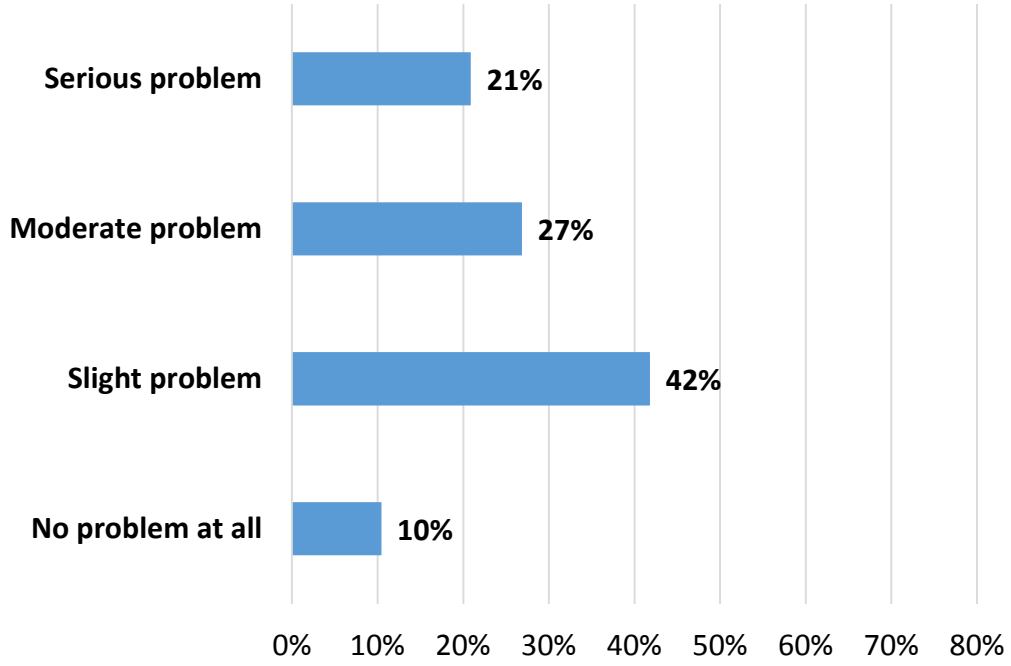


Figure 6a

Issue: Illegal dumping

(n = 67)



Mean	**2.58**
Standard deviation	**0.94**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 6b

Because of the development of natural gas, illegal dumping is:

(n = 65)

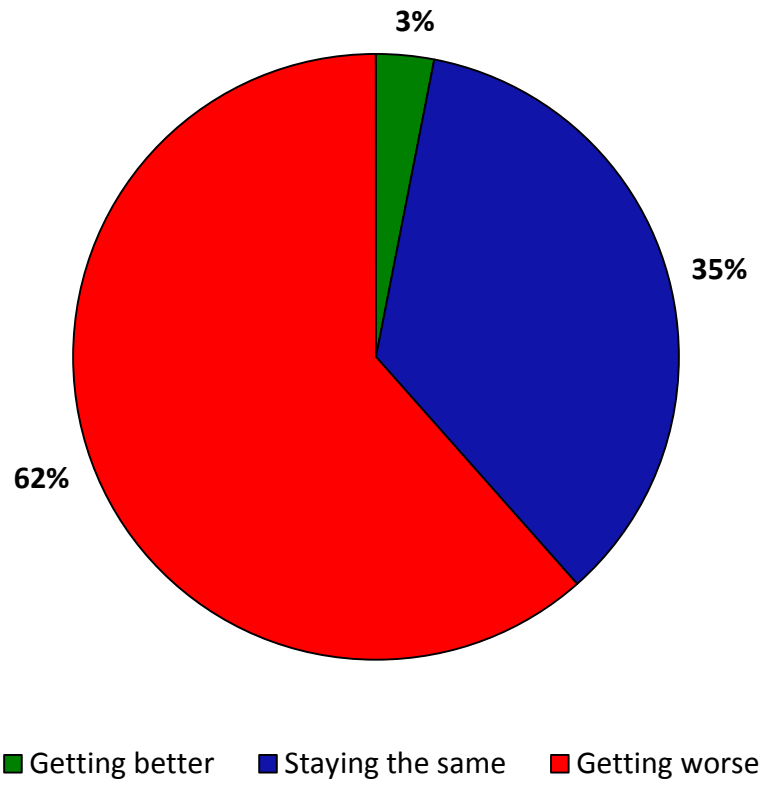
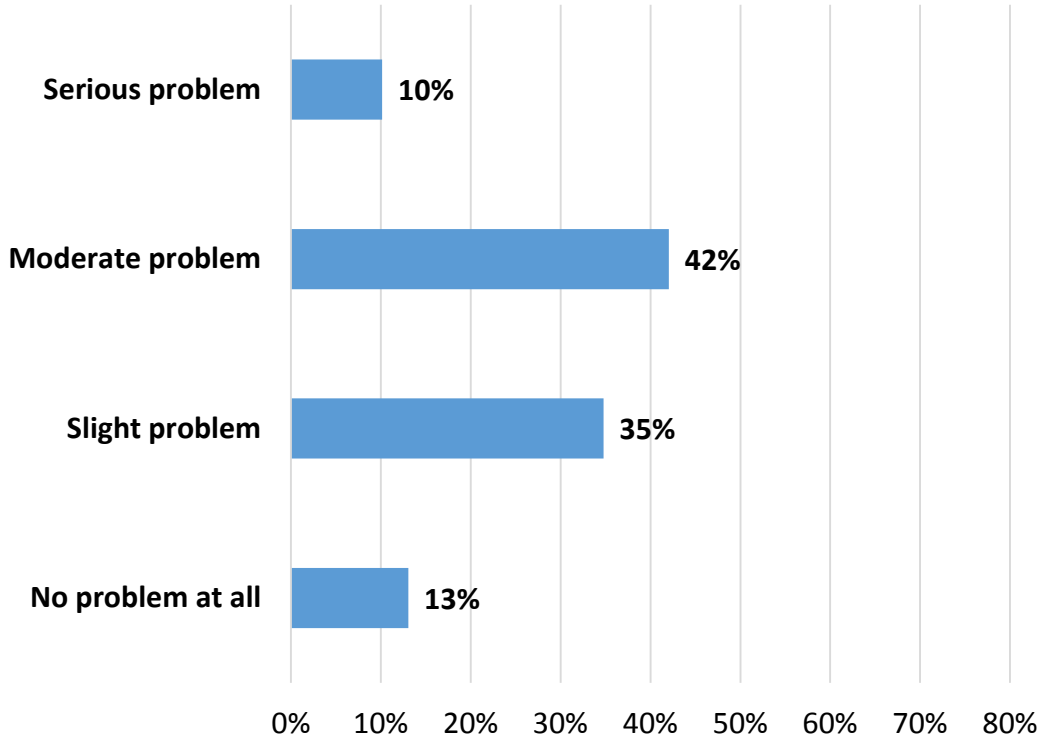


Figure 7a

Issue: Property crimes such as vandalism or theft
(n = 69)



Mean	**2.49**
Standard deviation	**0.85**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 7b

Because of the development of natural gas, property crimes such as vandalism or theft are:

(n = 68)

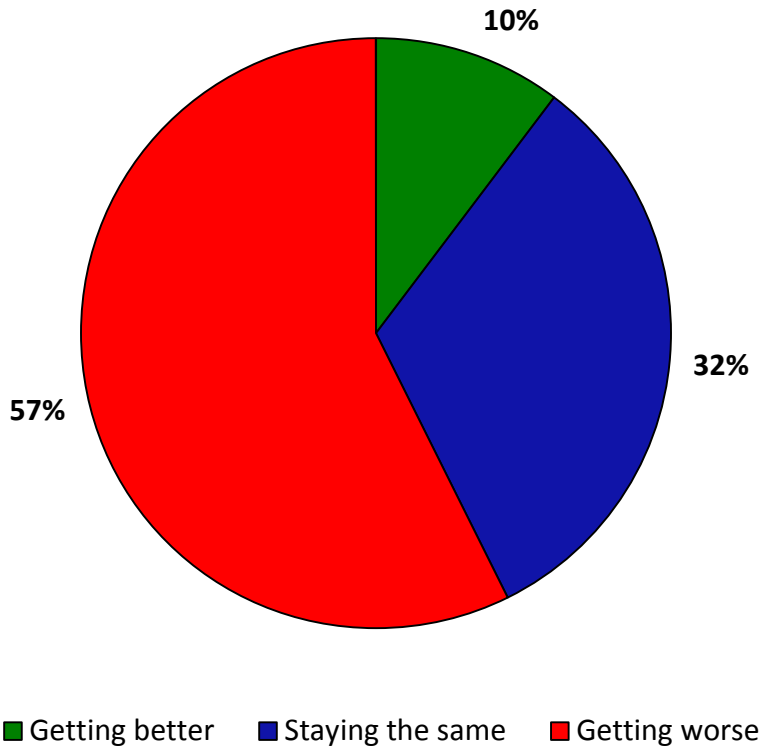
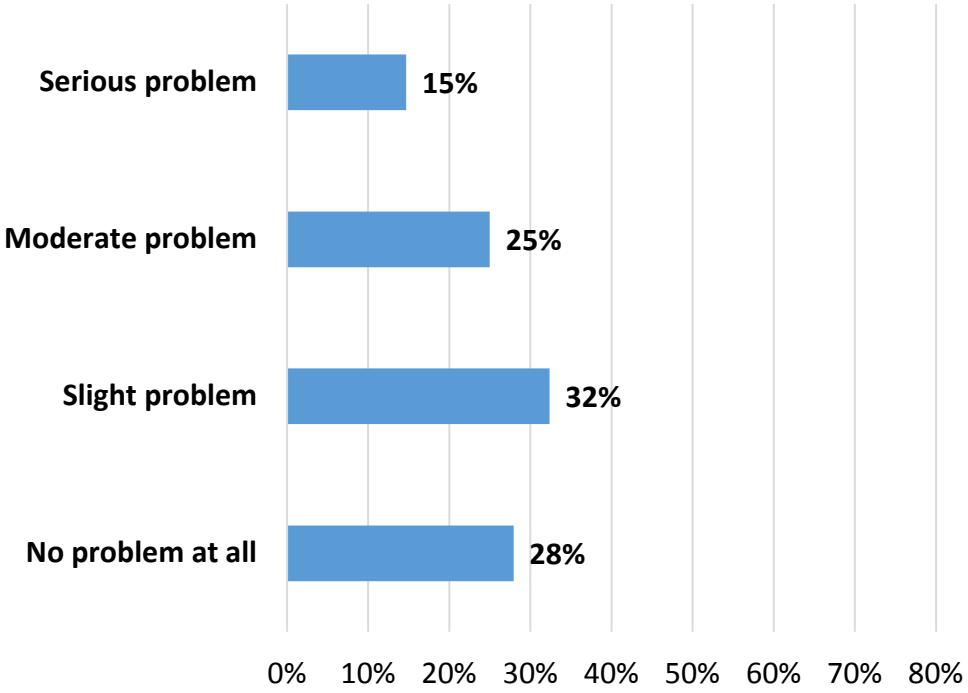


Figure 8a

Issue: Local tax rates

(n = 68)



Mean	**2.26**
Standard deviation	**1.03**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 8b

Because of the development of natural gas, local tax rates are:

(n = 66)

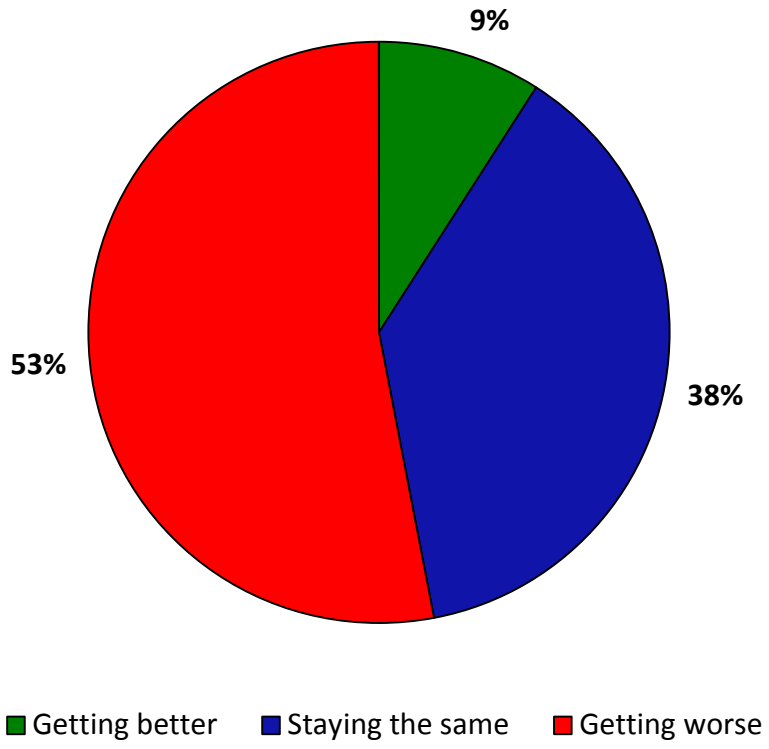
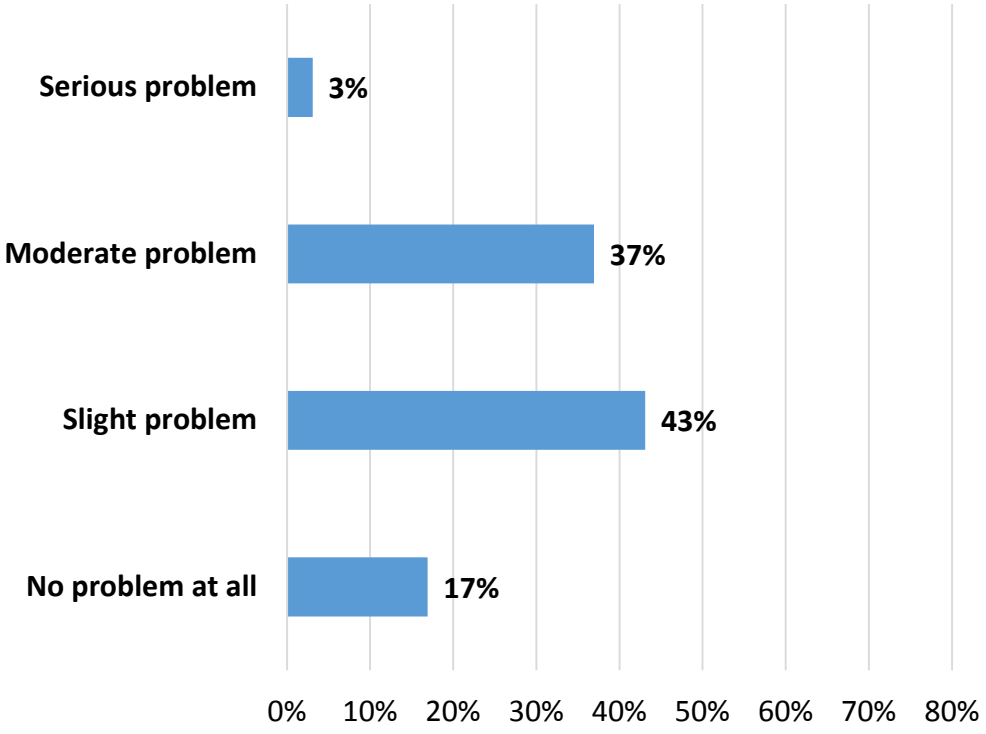


Figure 9a

Issue: Violent crimes such as assault or domestic abuse

(n = 65)



Mean	**2.26**
Standard deviation	**0.78**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 9b

Because of the development of natural gas, violent crimes such as assault or domestic abuse are:

(n = 63)

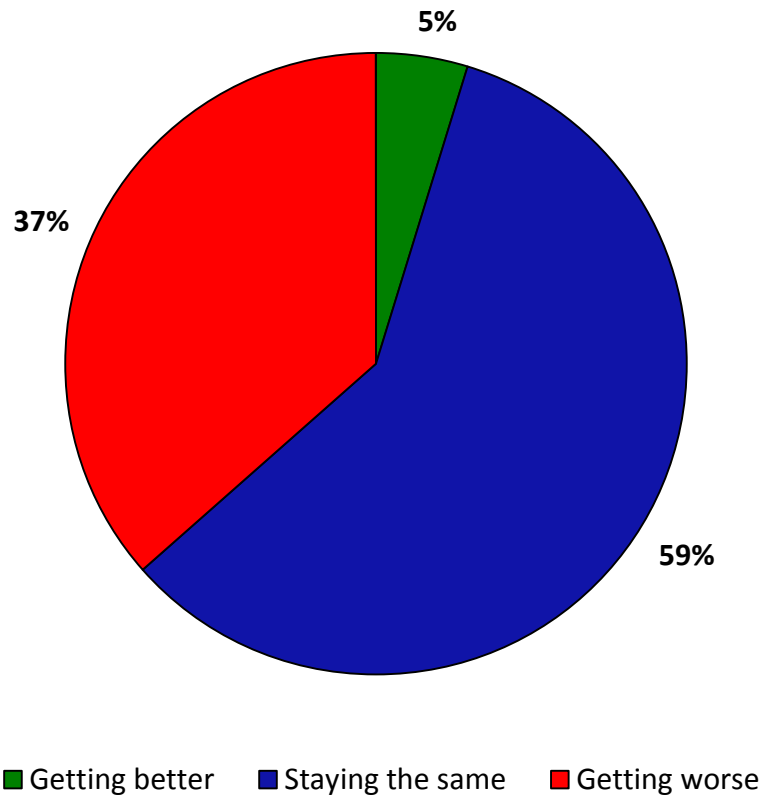
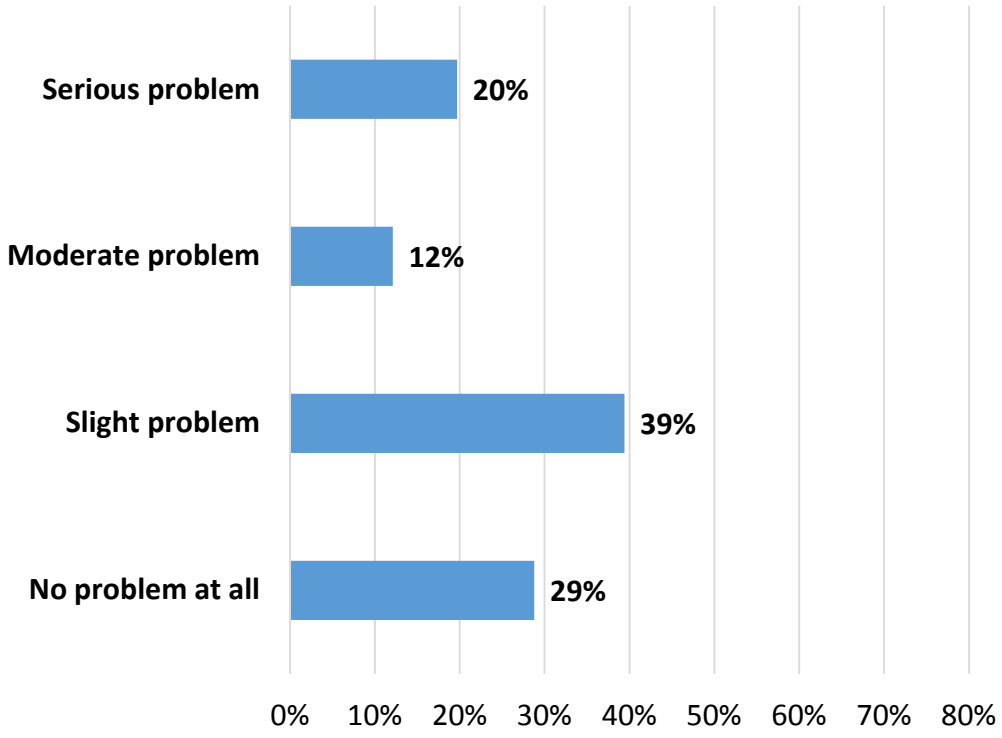


Figure 10a

Issue: Traffic accidents

(n = 66)



Mean	**2.23**
Standard deviation	**1.08**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 10b

Because of the development of natural gas, traffic accidents are:

(n = 65)

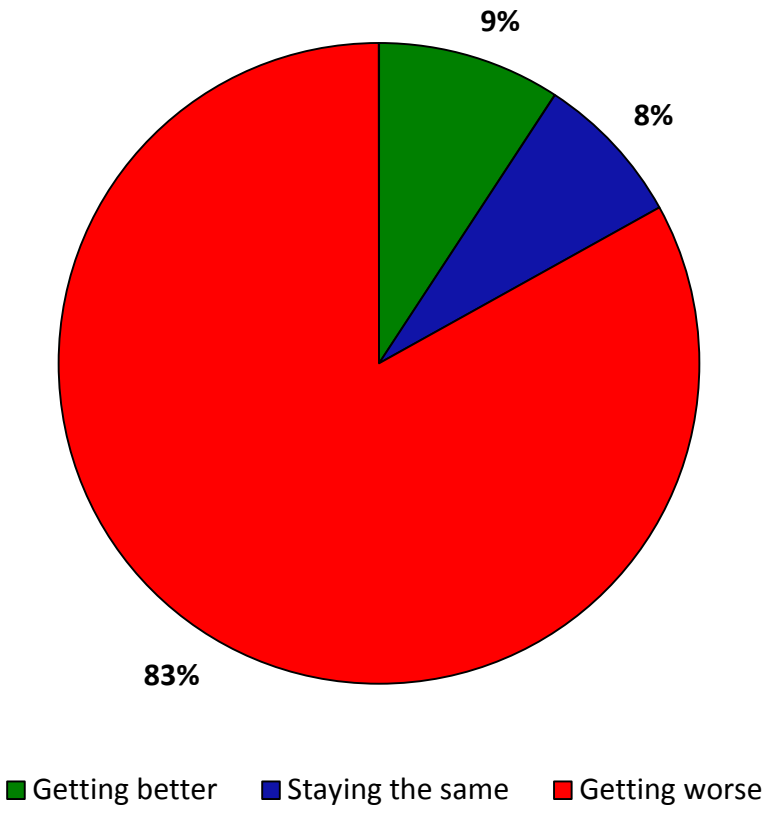
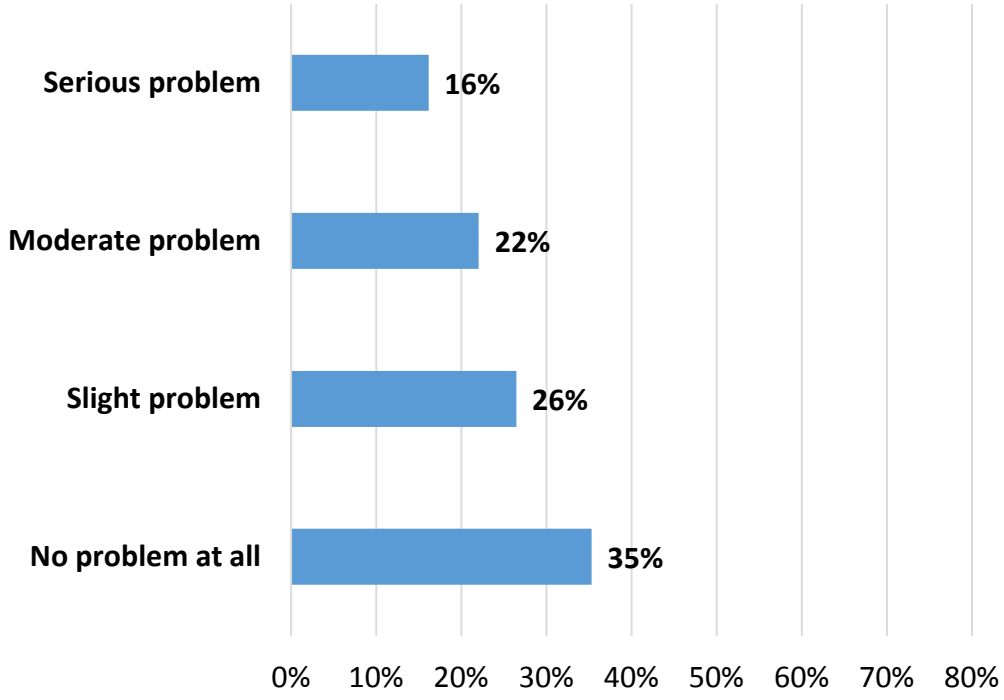


Figure 11a

Issue: Availability of affordable housing

(n = 68)



Mean	**2.19**
Standard deviation	**1.10**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 11b

Because of the development of natural gas, availability of affordable housing is:

(n = 66)

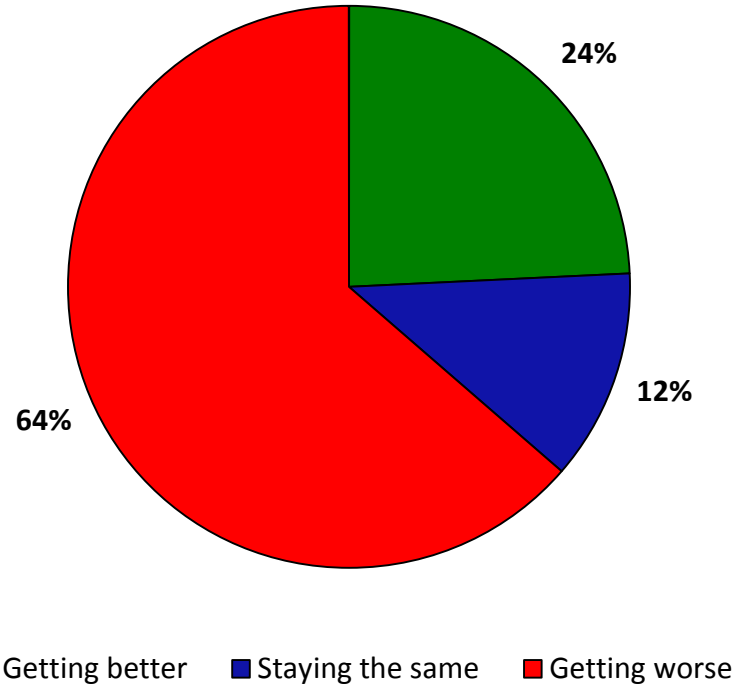
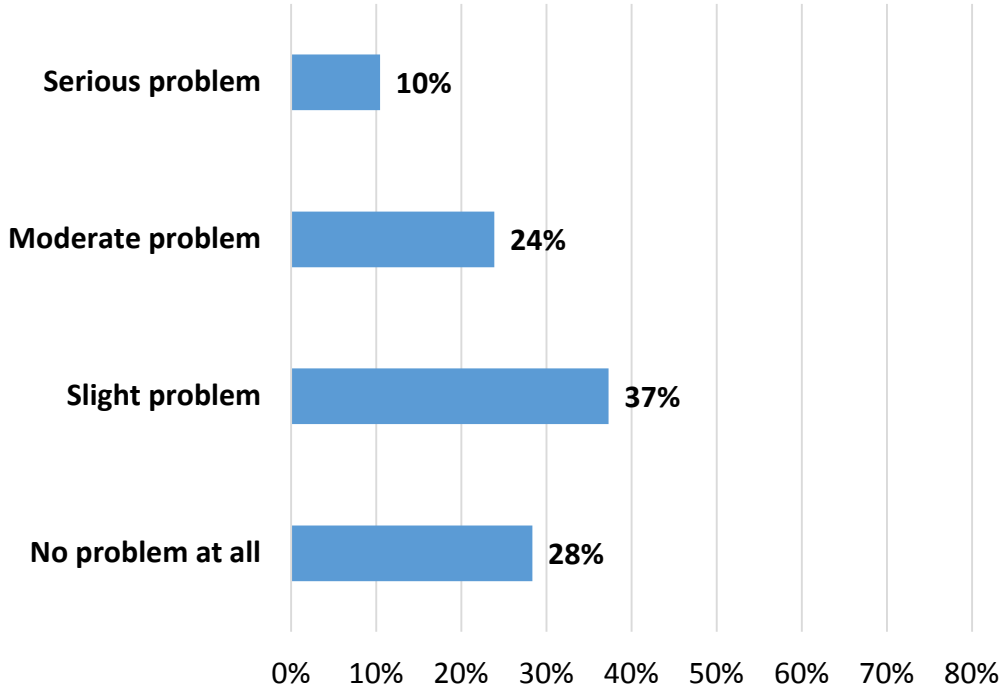


Figure 12a

Issue: Spending in local businesses

(n = 67)



Mean	**2.16**
Standard deviation	**0.96**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 12b

Because of the development of natural gas, spending in local businesses is:

(n = 67)

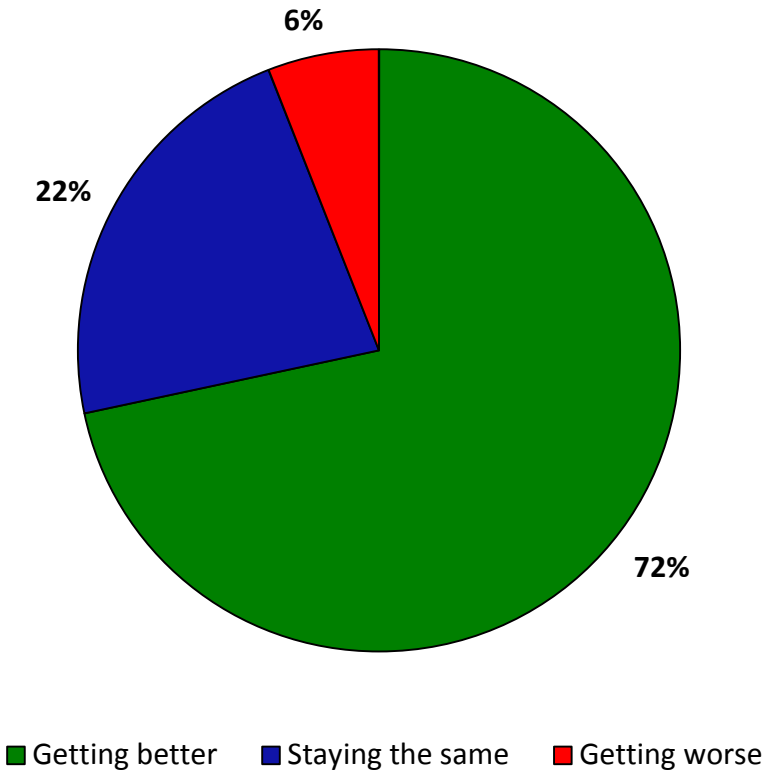
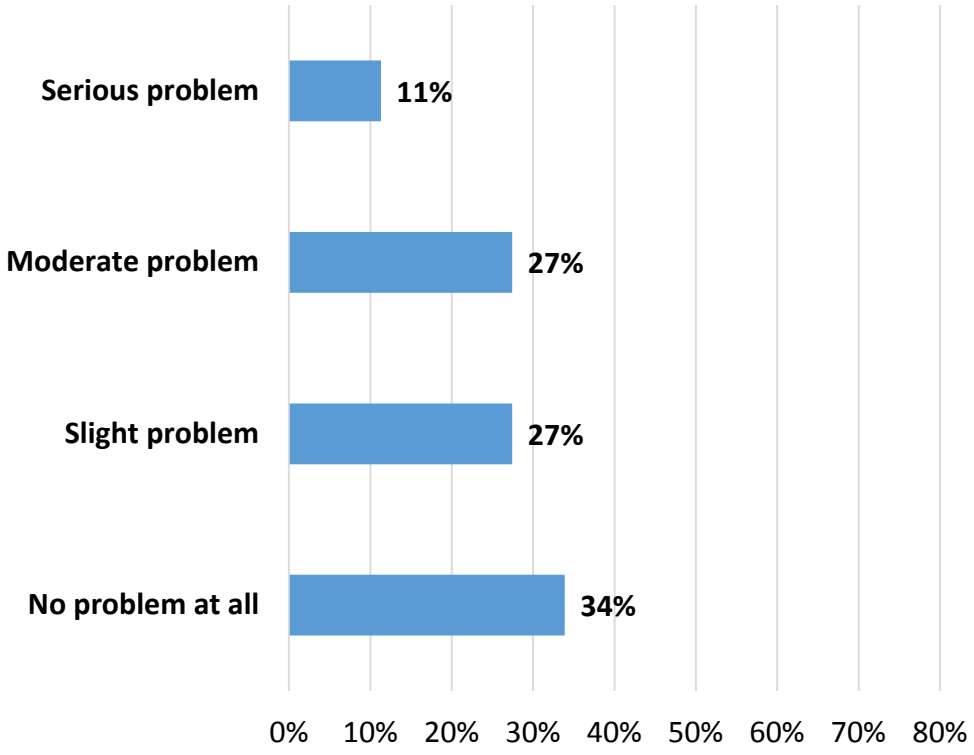


Figure 13a

Issue: Quality of local schools

(n = 62)



Mean	**2.16**
Standard deviation	**1.03**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 13b

Because of the development of natural gas, quality of local schools are:

(n = 64)

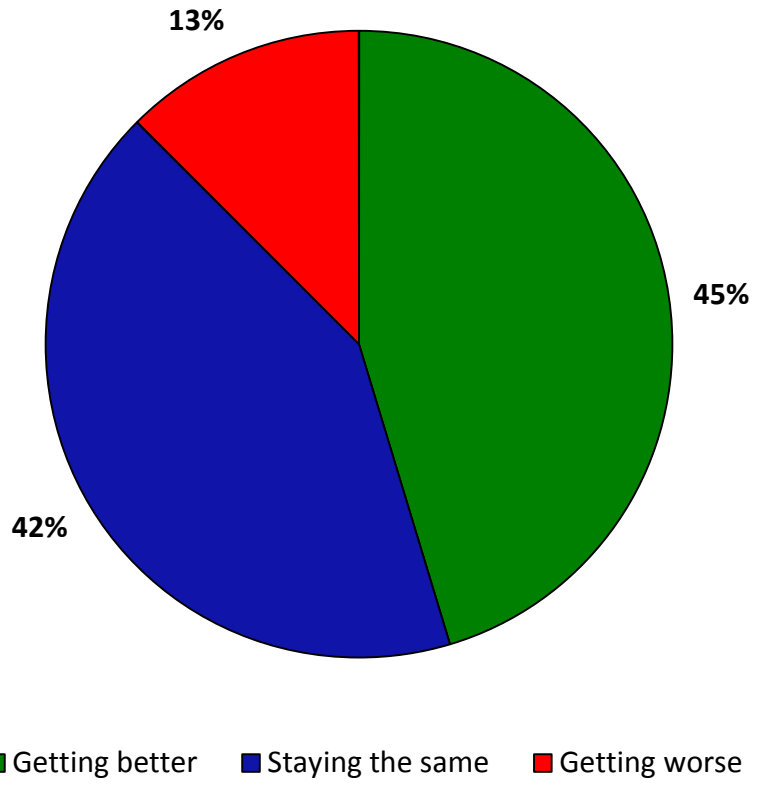
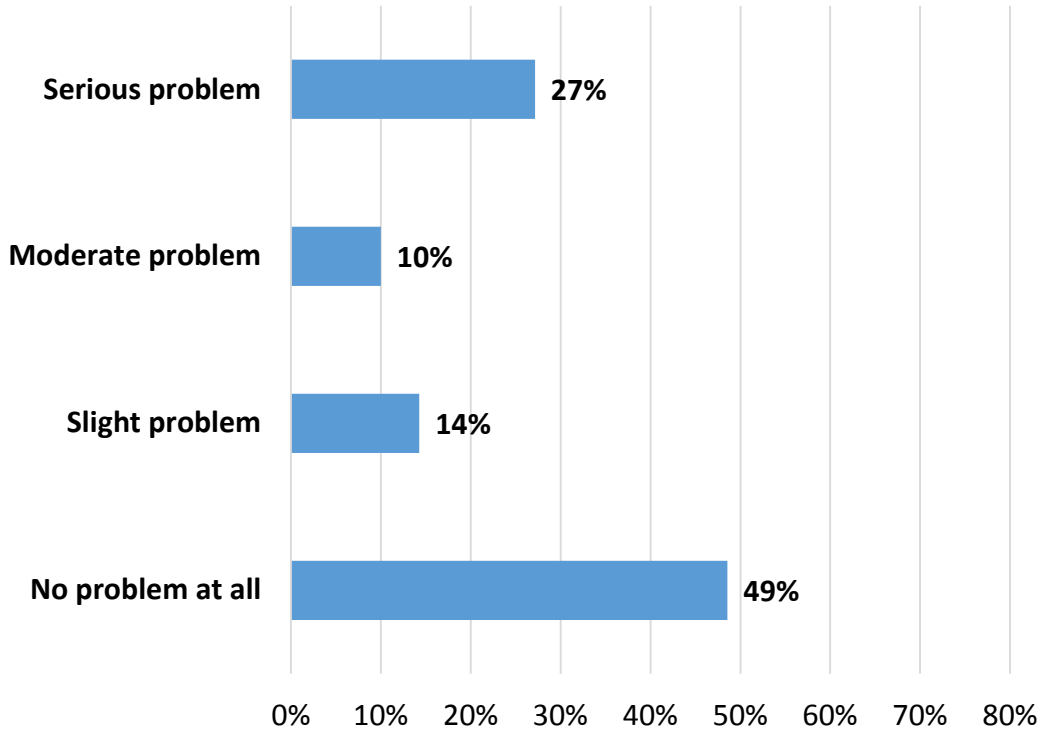


Figure 14a

Issue: Traffic congestion
(n = 70)



Mean	**2.16**
Standard deviation	**1.29**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 14b

Because of the development of natural gas, traffic congestion is:

(n = 67)

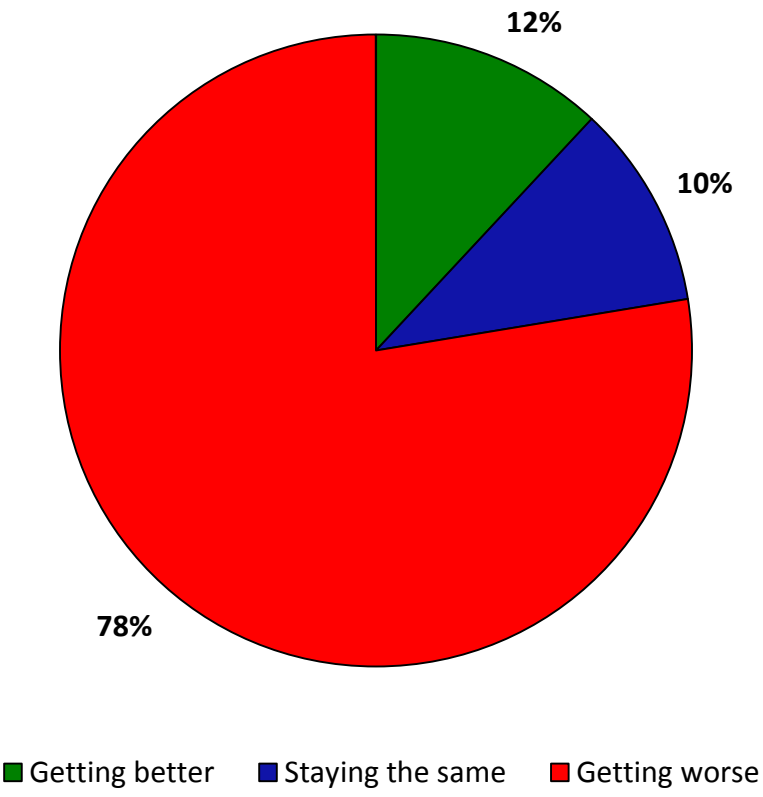
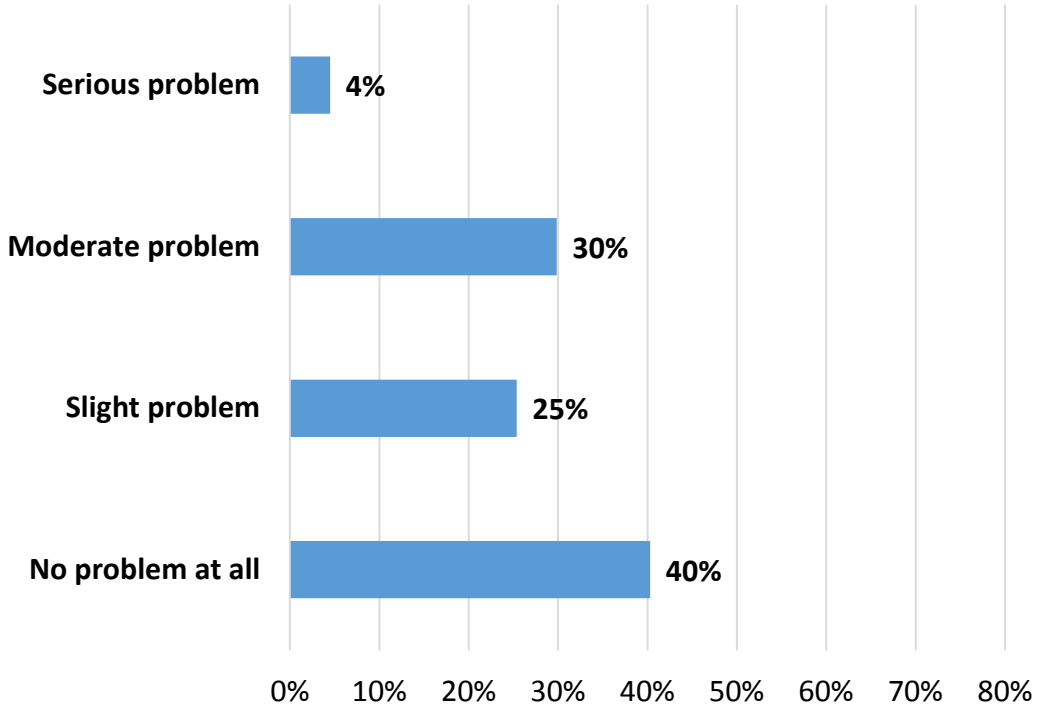


Figure 15a

Issue: Medical and health care services

(n = 67)



Mean	**1.99**
Standard deviation	**0.95**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 15b

Because of the development of natural gas, medical and health care services are:

(n = 65)

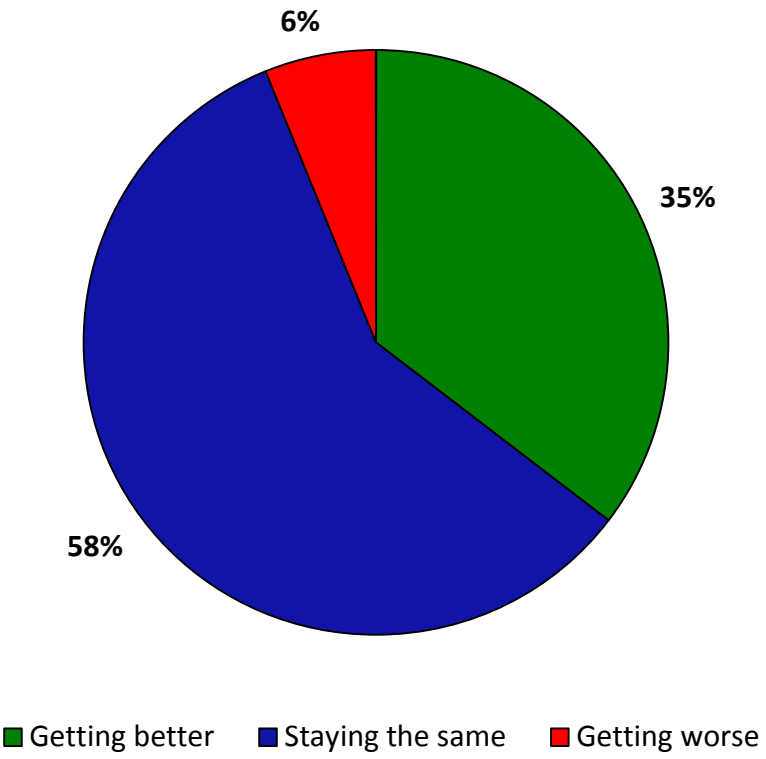
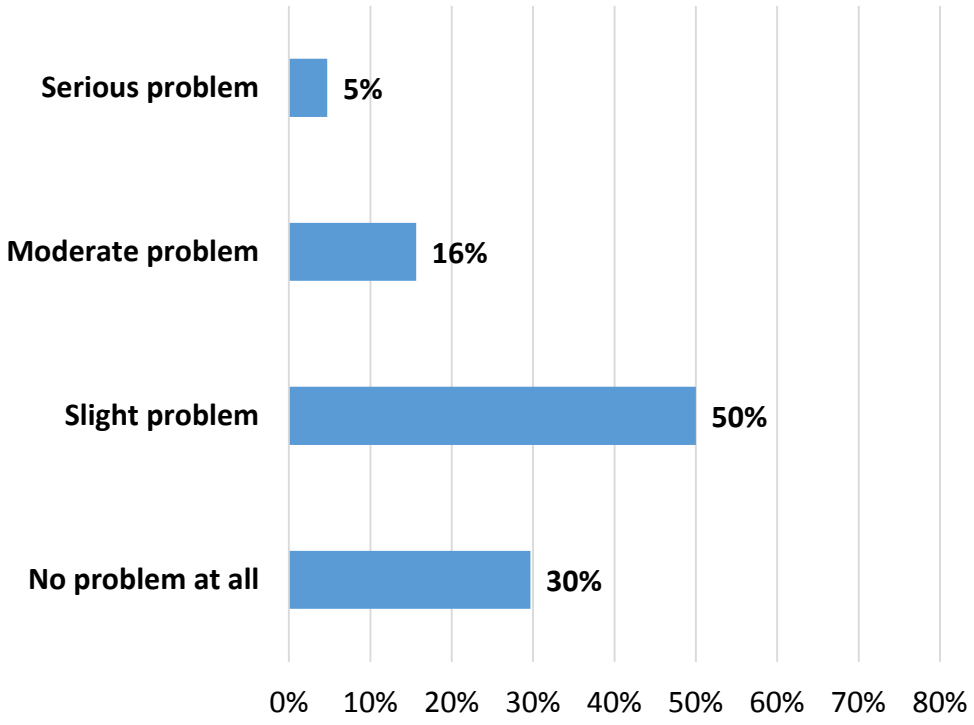


Figure 16a

Issue: Disagreements among local residents

(n = 64)



Mean	**1.95**
Standard deviation	**0.81**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 16b

Because of the development of natural gas, disagreements among local residents are:
(n = 62)

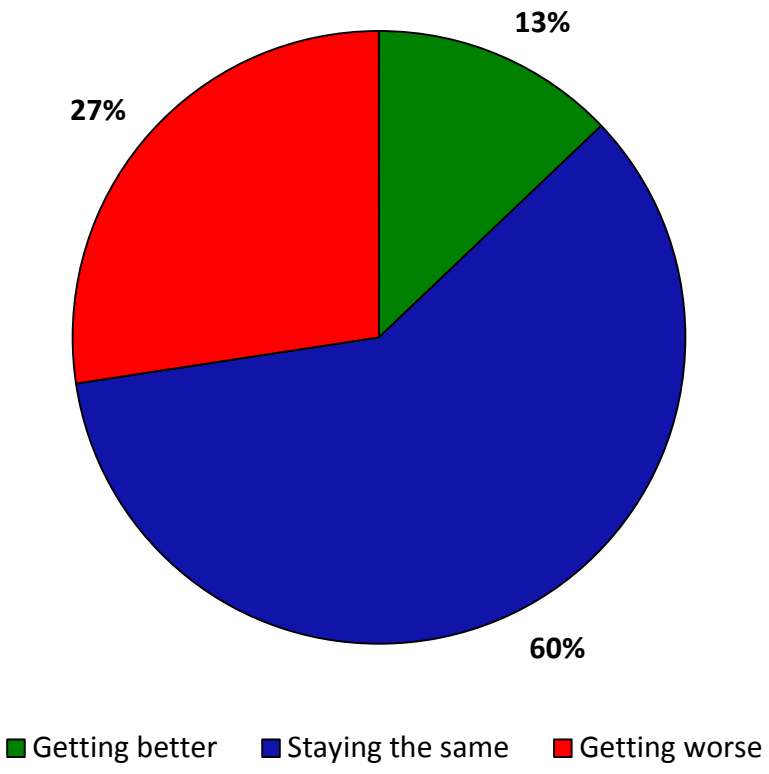
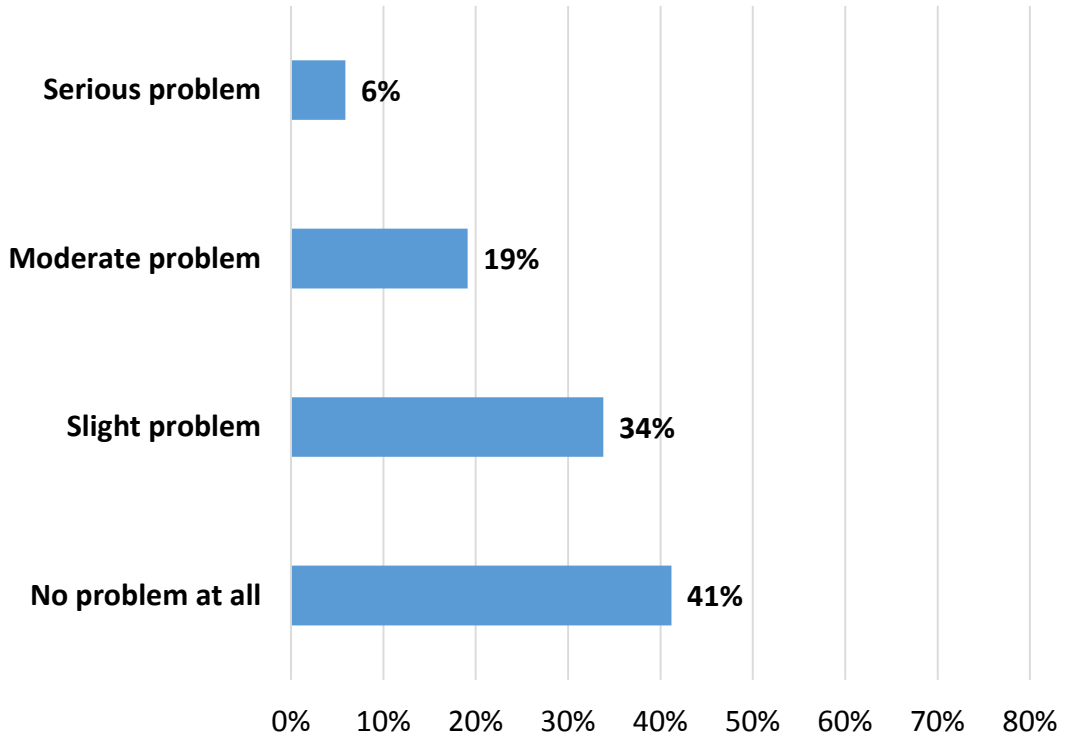


Figure 17a

Issue: Cost of food
(n = 68)



Mean	**1.90**
Standard deviation	**0.92**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 17b

Because of the development of natural gas, cost of food is:

(n = 65)

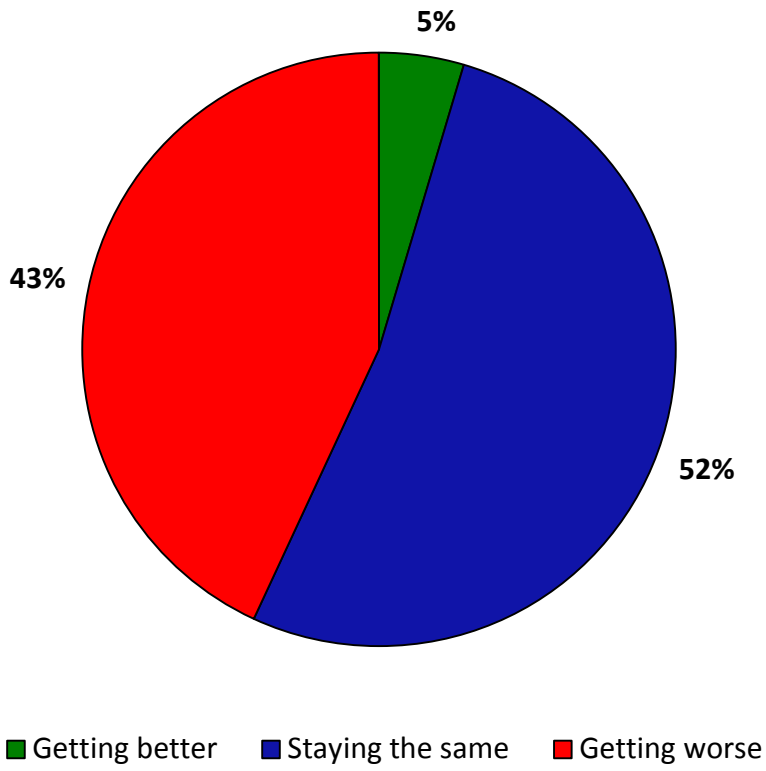
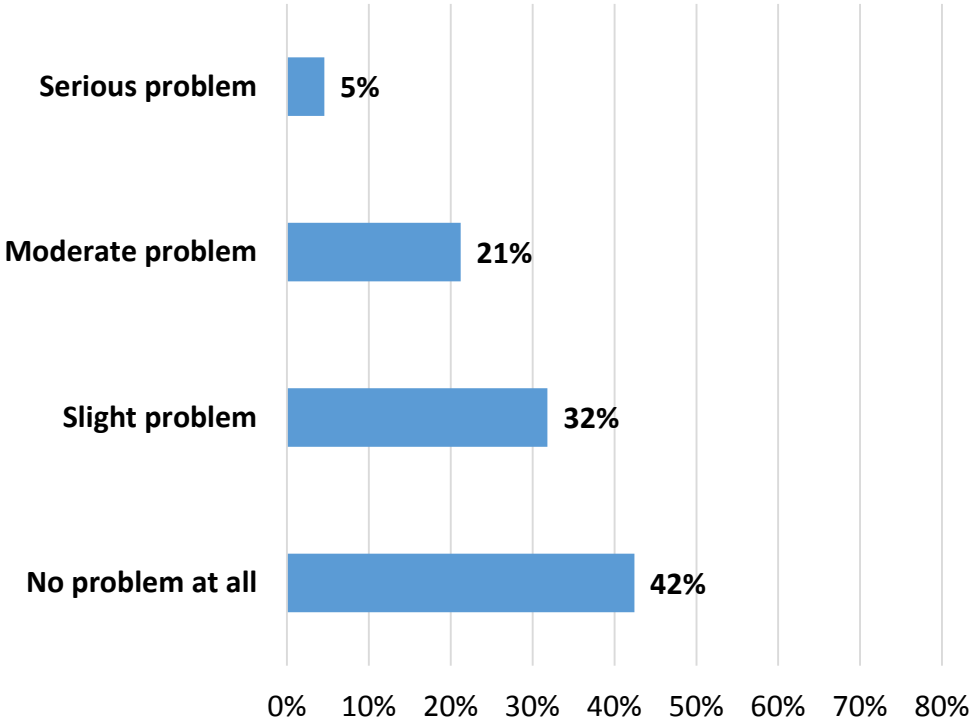


Figure 18a

Issue: Sense of community well-being

(n = 66)



Mean	**1.88**
Standard deviation	**0.90**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 18b

Because of the development of natural gas, sense of community well-being is:

(n = 64)

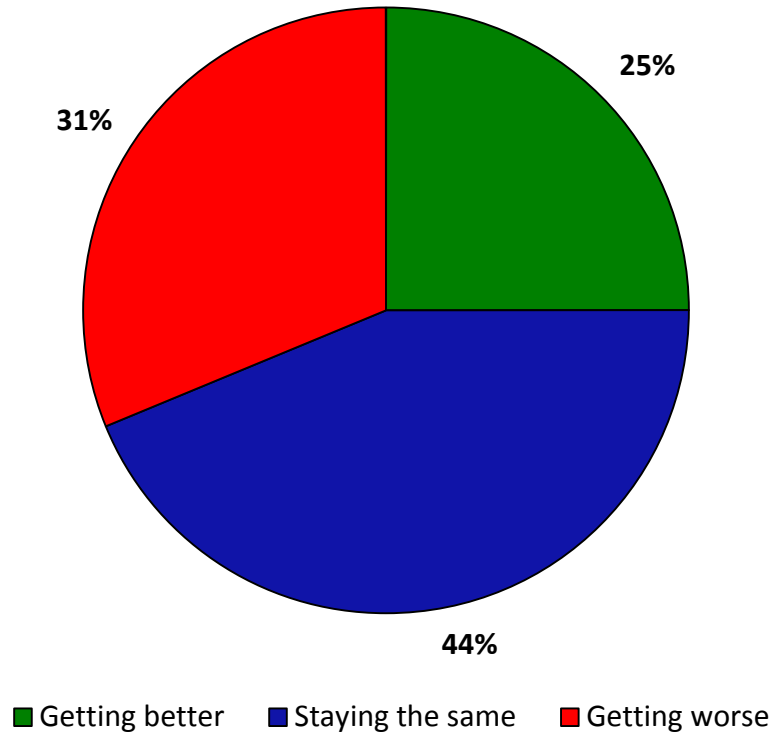
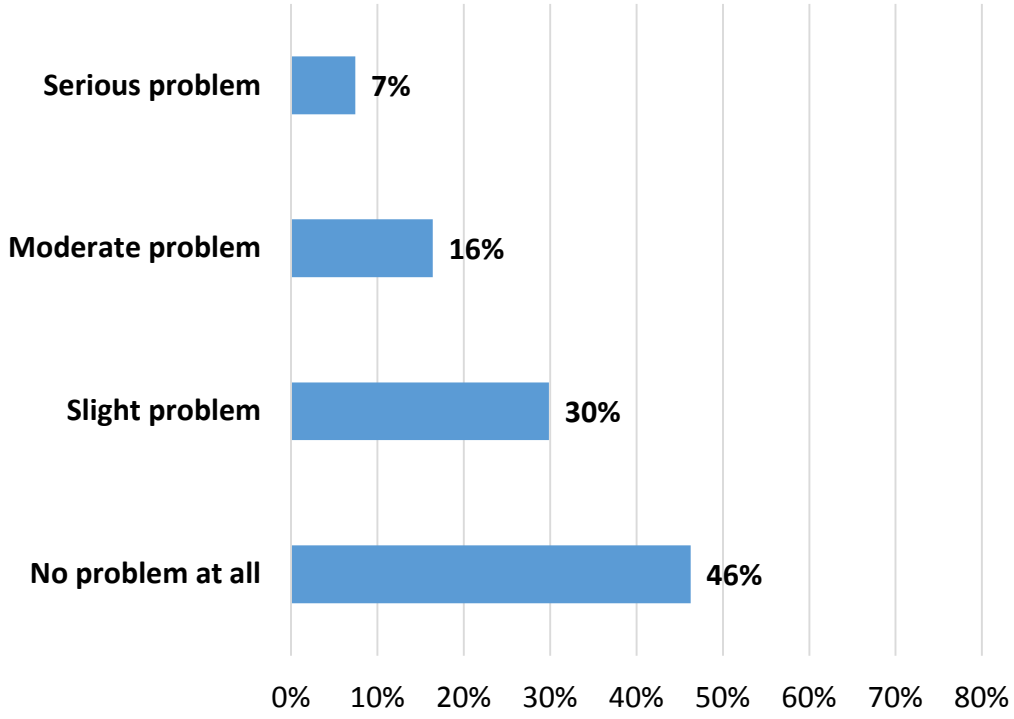


Figure 19a

Issue: Personal safety

(n = 67)



Mean	**1.85**
Standard deviation	**0.96**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 19b

Because of the development of natural gas, personal safety is:

(n = 64)

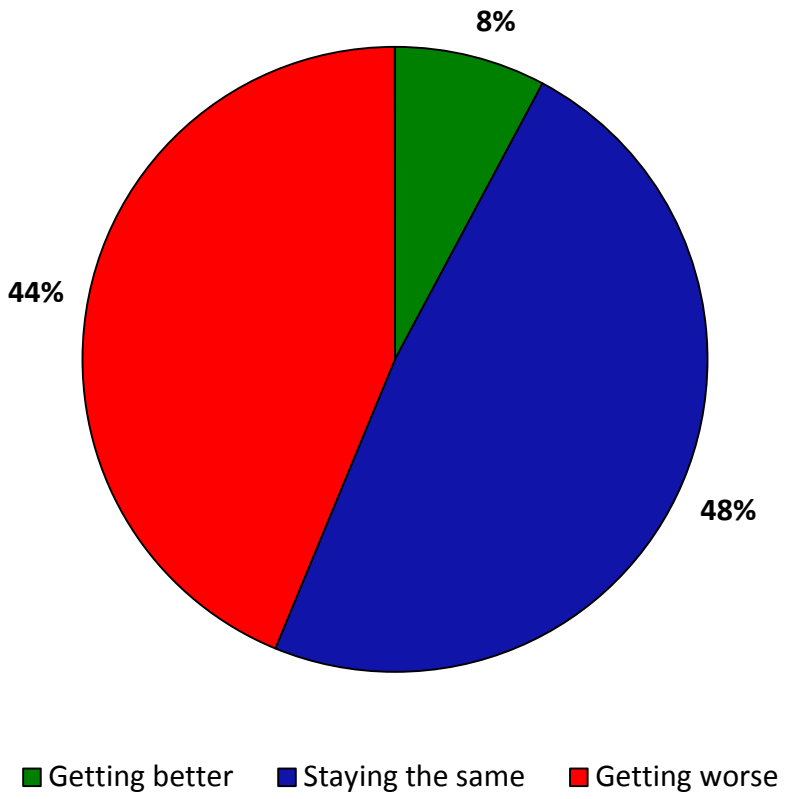
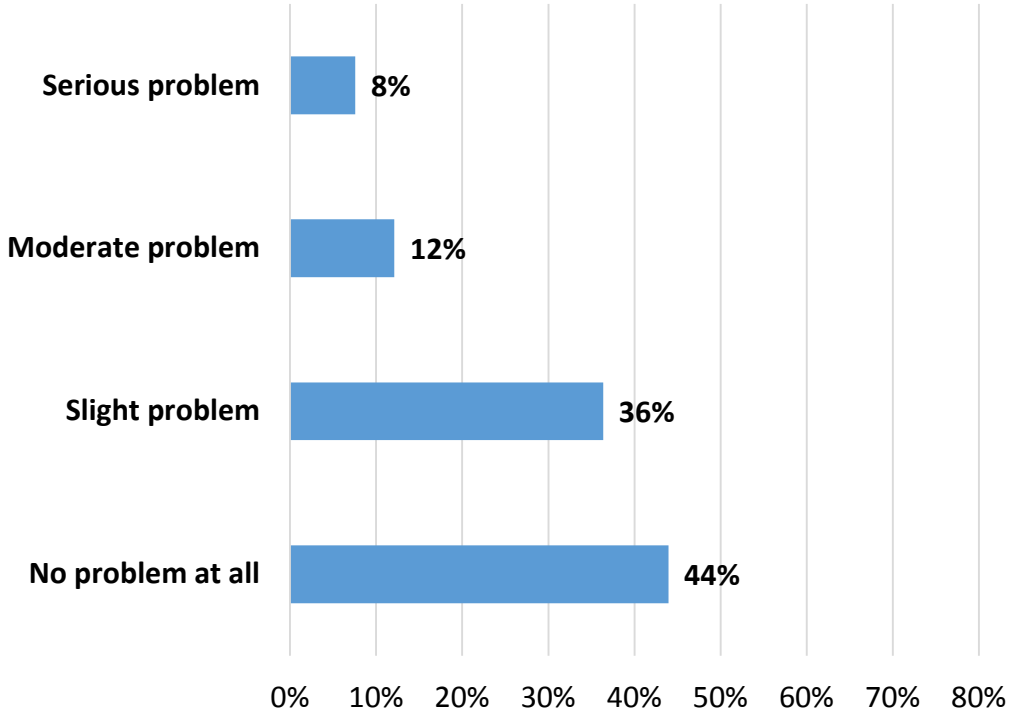


Figure 20a

Issue: Light pollution
(n = 66)



Mean	**1.83**
Standard deviation	**0.92**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 20b

Because of the development of natural gas, light pollution is:

(n = 63)

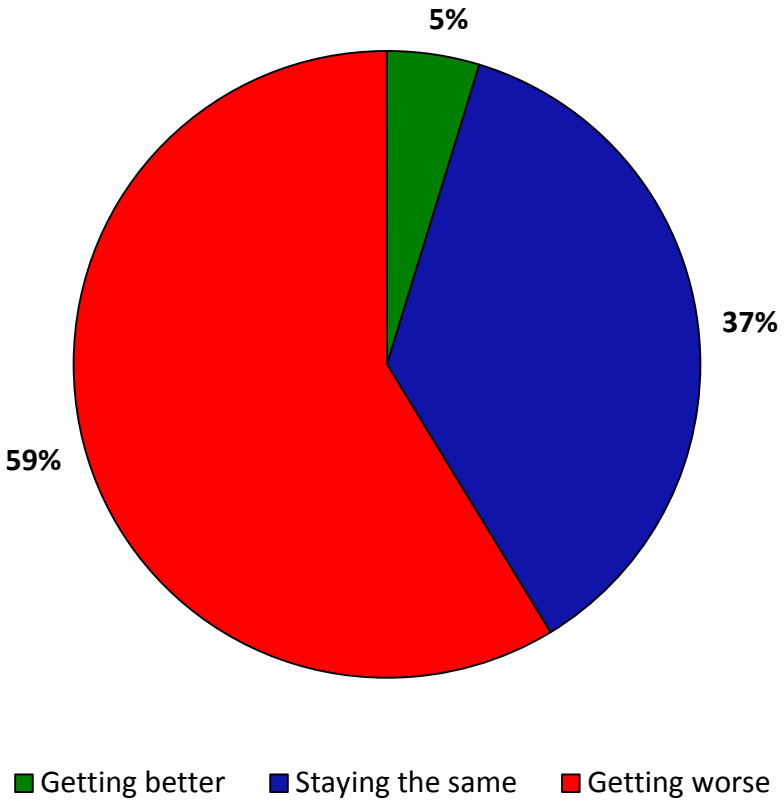
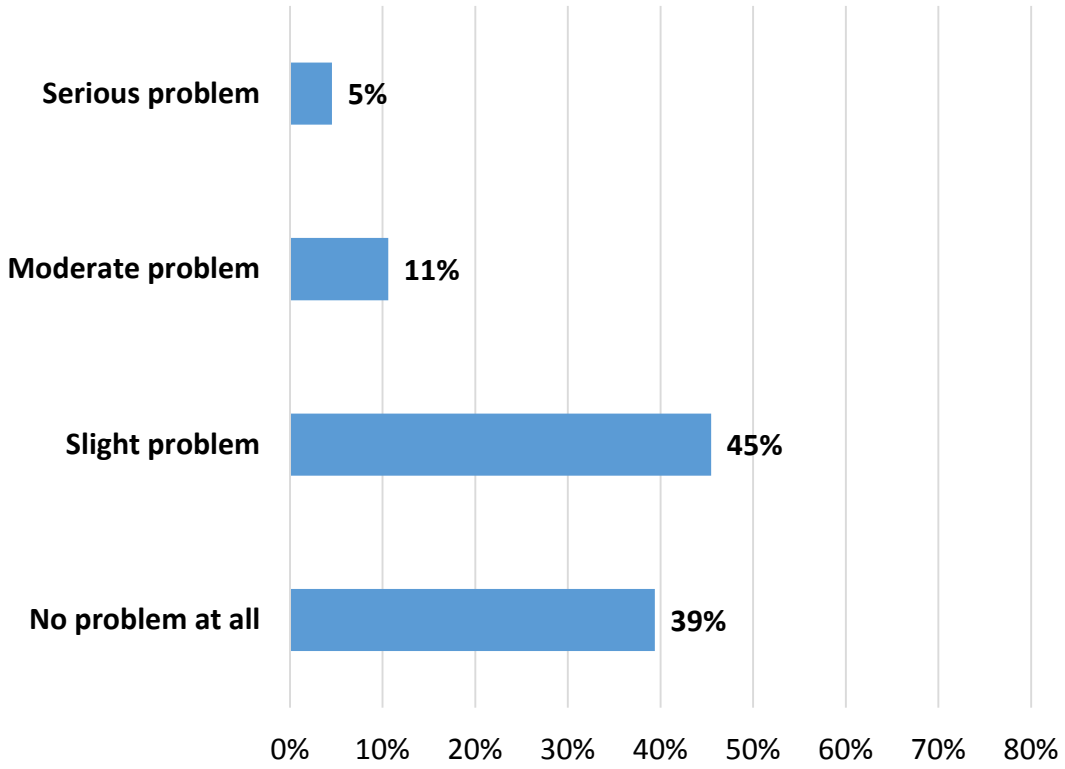


Figure 21a

Issue: Land use conflicts

(n = 66)



Mean	**1.80**
Standard deviation	**0.81**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 21b

Because of the development of natural gas, land use conflicts are:

(n = 64)

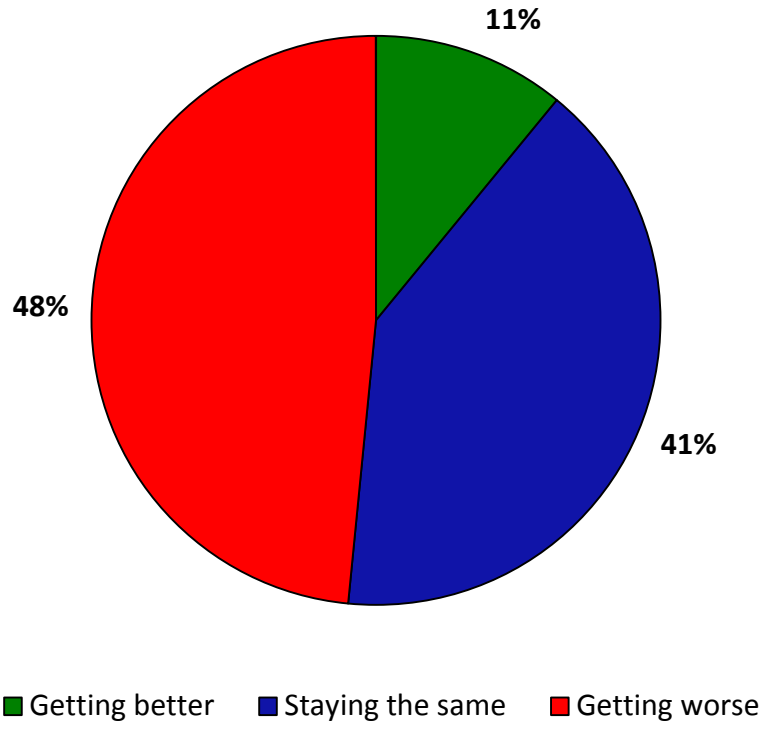
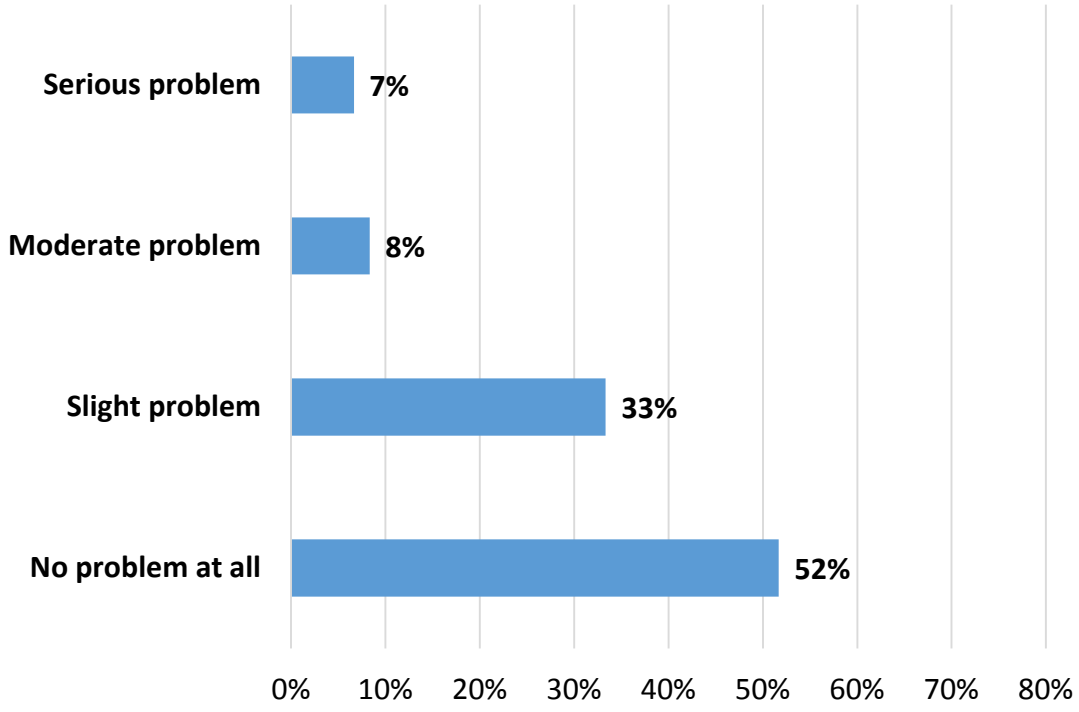


Figure 22a

Issue: Prostitution

(n = 60)



Mean	**1.70**
Standard deviation	**0.89**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 22b

Because of the development of natural gas, prostitution is:
(n = 57)

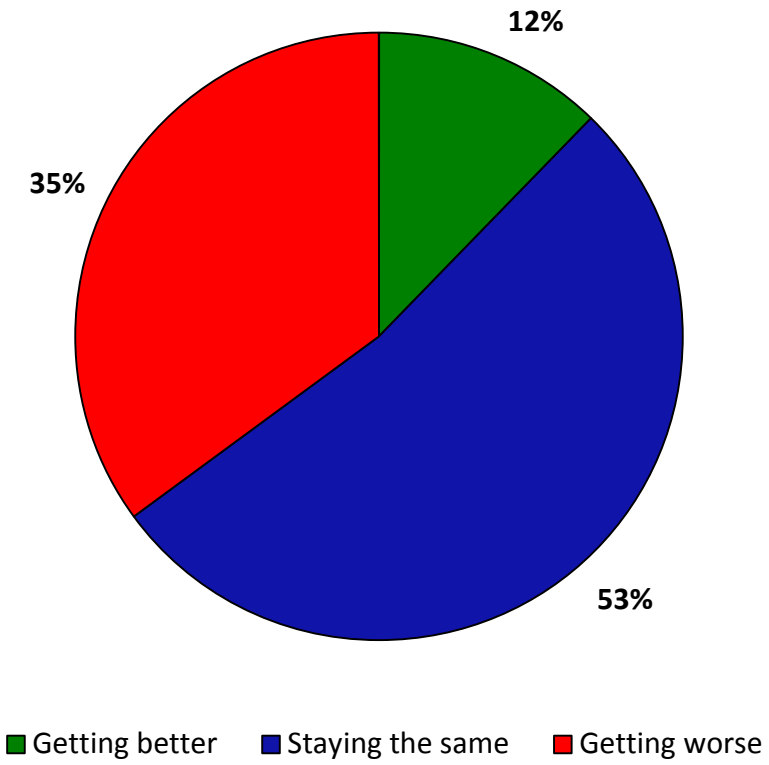
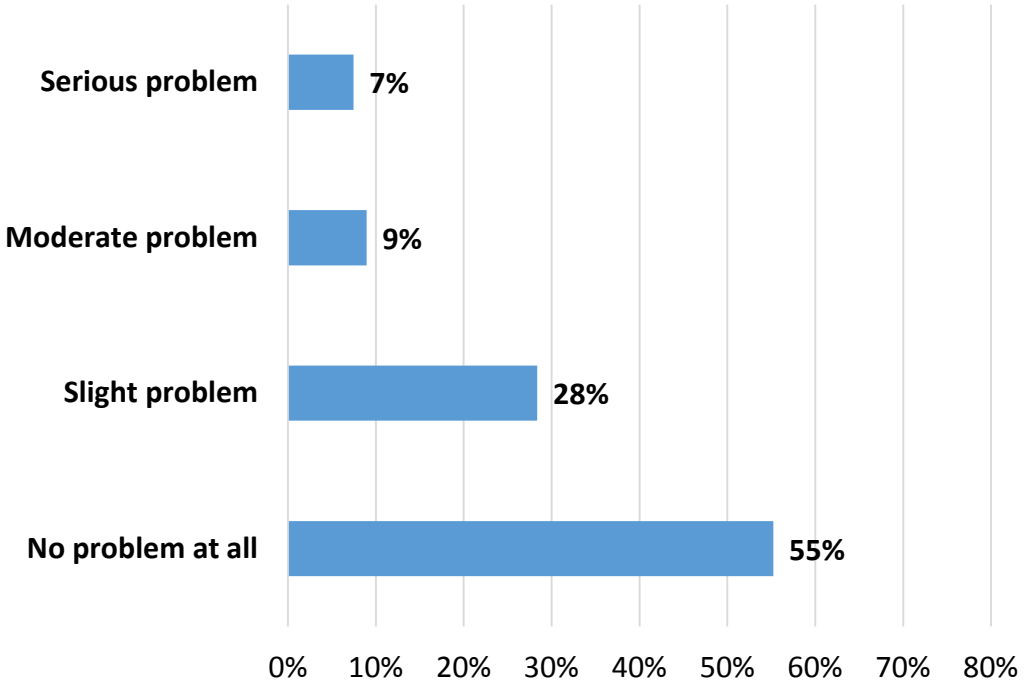


Figure 23a

Issue: Air quality
(n = 67)



Mean	**1.69**
Standard deviation	**0.92**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 23b

Because of the development of natural gas, air quality is:
(n = 66)

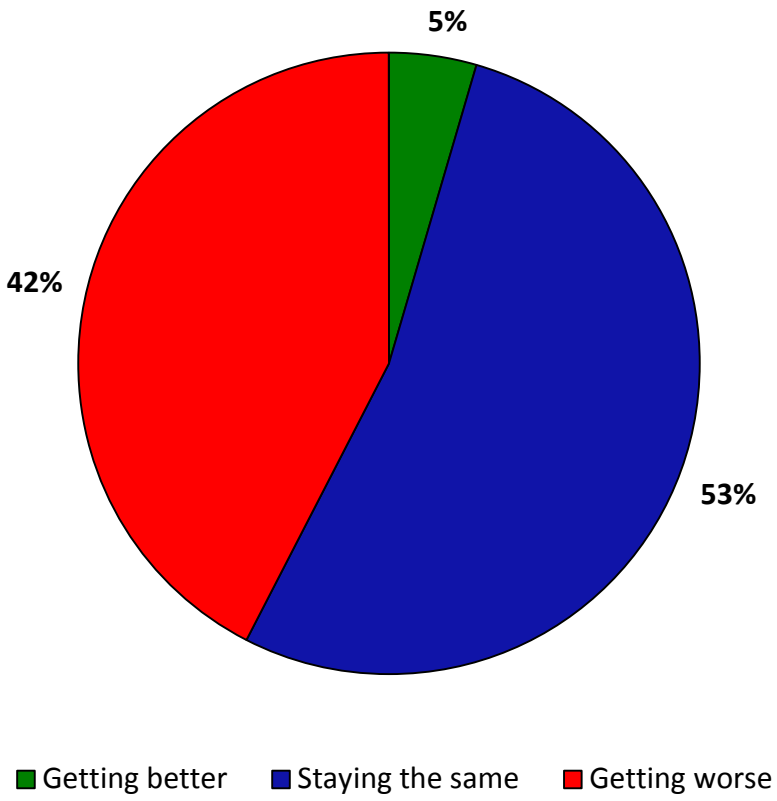
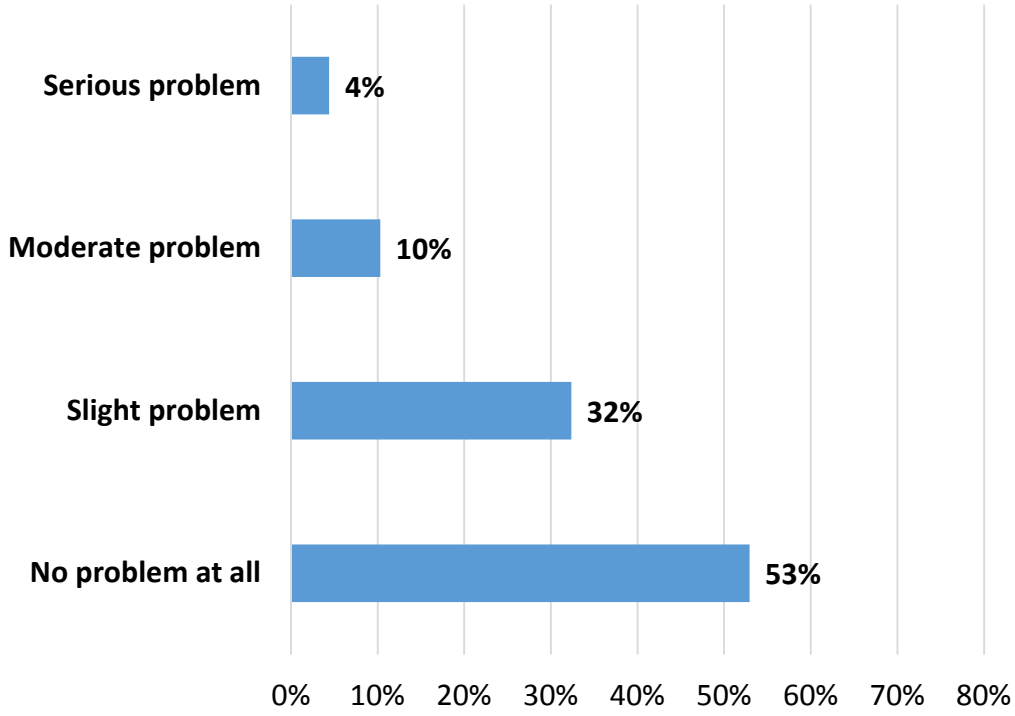


Figure 24a

Issue: Water quality

(n = 68)



Mean	**1.66**
Standard deviation	**0.95**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 24b

Because of the development of natural gas, water quality is:

(n = 65)

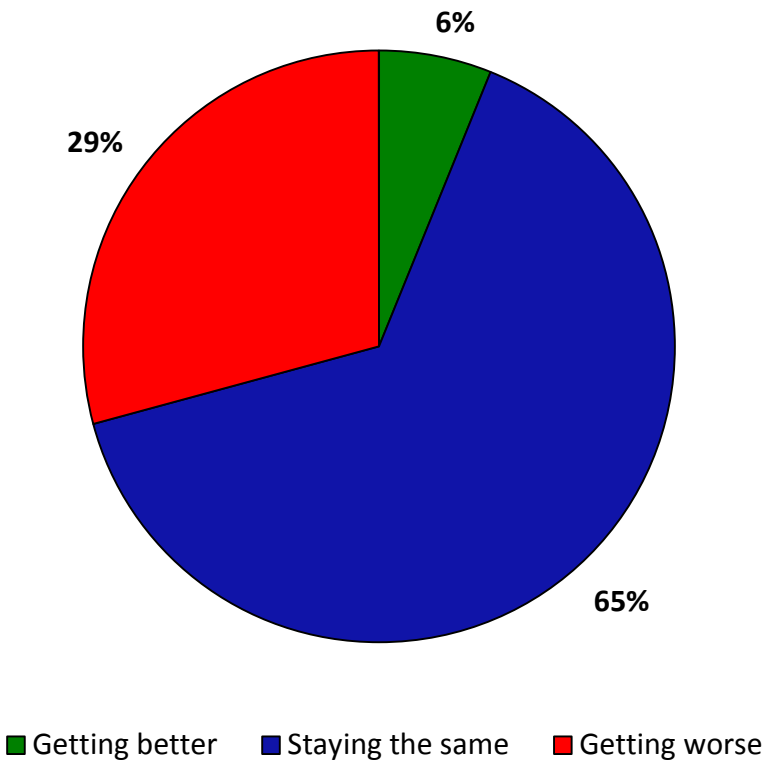
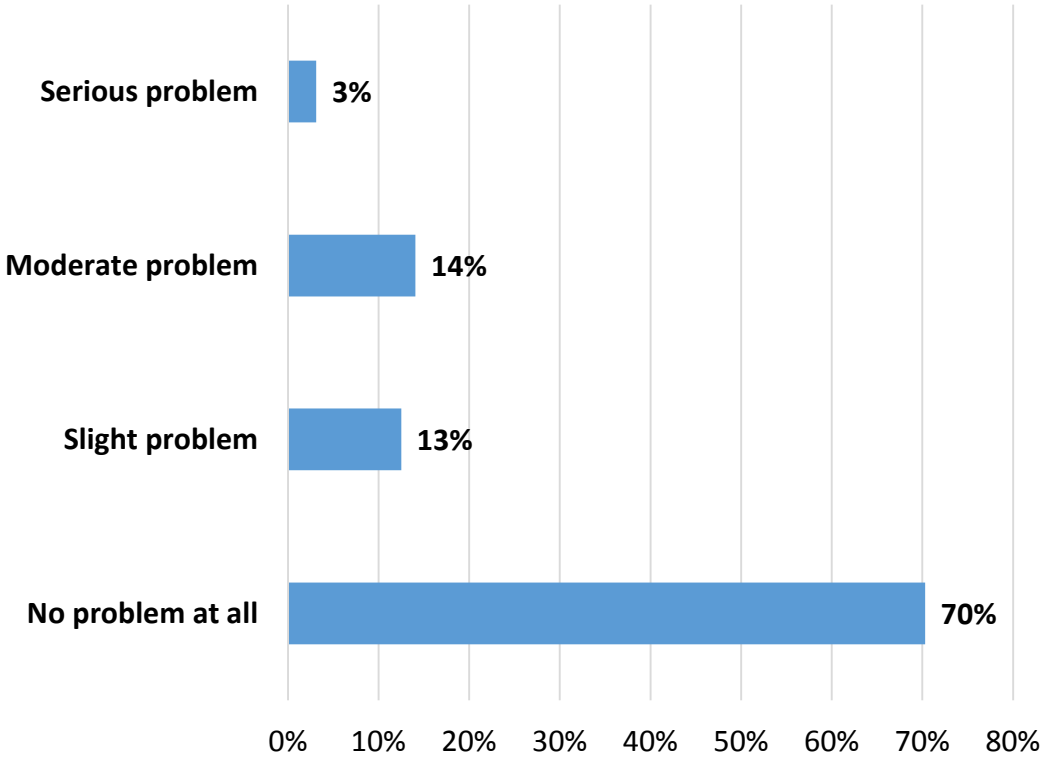


Figure 25a

Issue: Man camps
(n = 64)



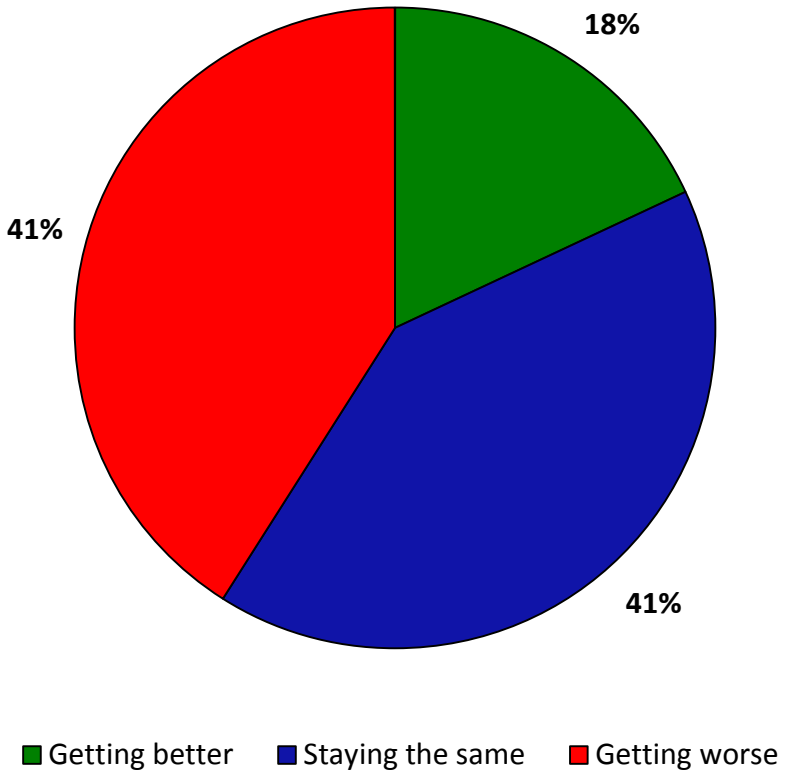
Mean	**1.50**
Standard deviation	**0.85**

(coding: 1 = no problem at all; 2 = slight problem; 3 = moderate problem; 4 = serious problem)

Figure 25b

Because of the development of natural gas, man camps are:

(n = 61)



Section III

Trust

Figures 26a through 26m summarize respondents' levels of trust in selected sources of information on the potential impacts of oil and natural gas extraction in the Eagle Ford Shale. Table 1 ranks the selected sources of information from perceived "most" to "least" trustworthy.

Figure 26a

Level of trust: Oil/natural gas industry

(n = 67)

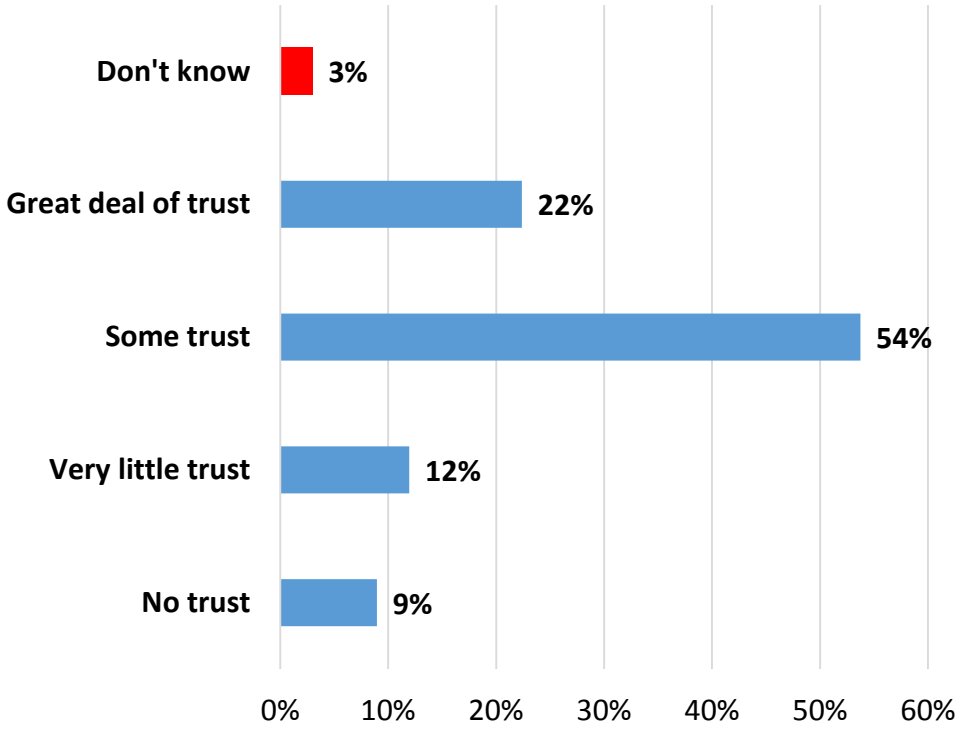


Figure 26b

Level of trust: Texas Railroad Commission

(n = 68)

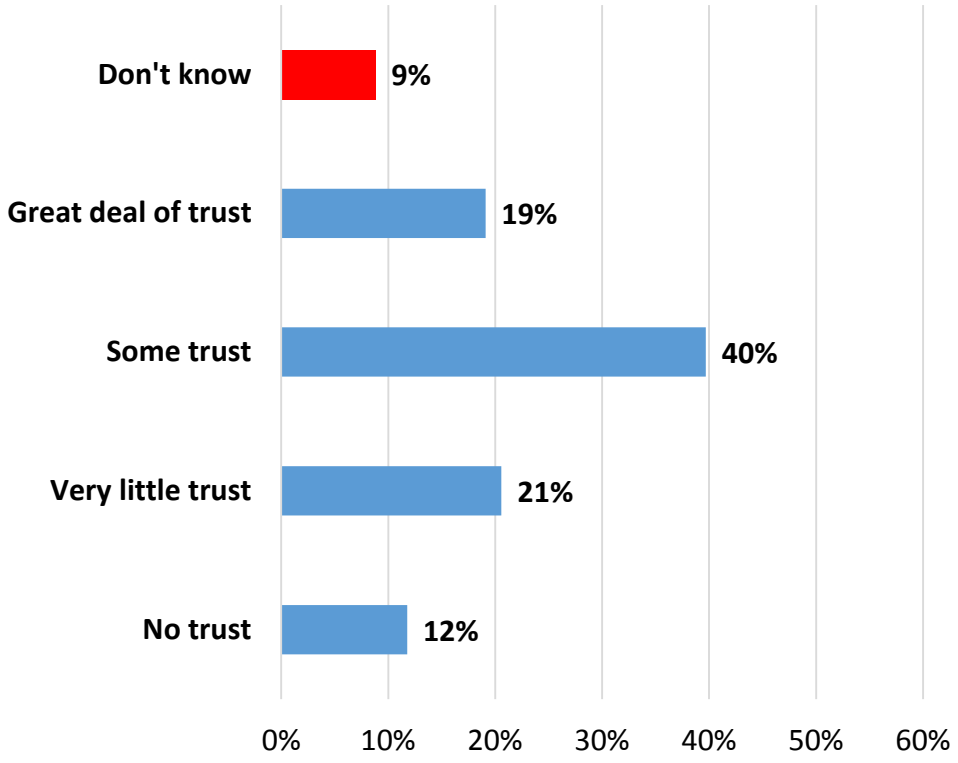


Figure 26c

Level of trust: U.S. Environmental Protection Agency

(n = 68)

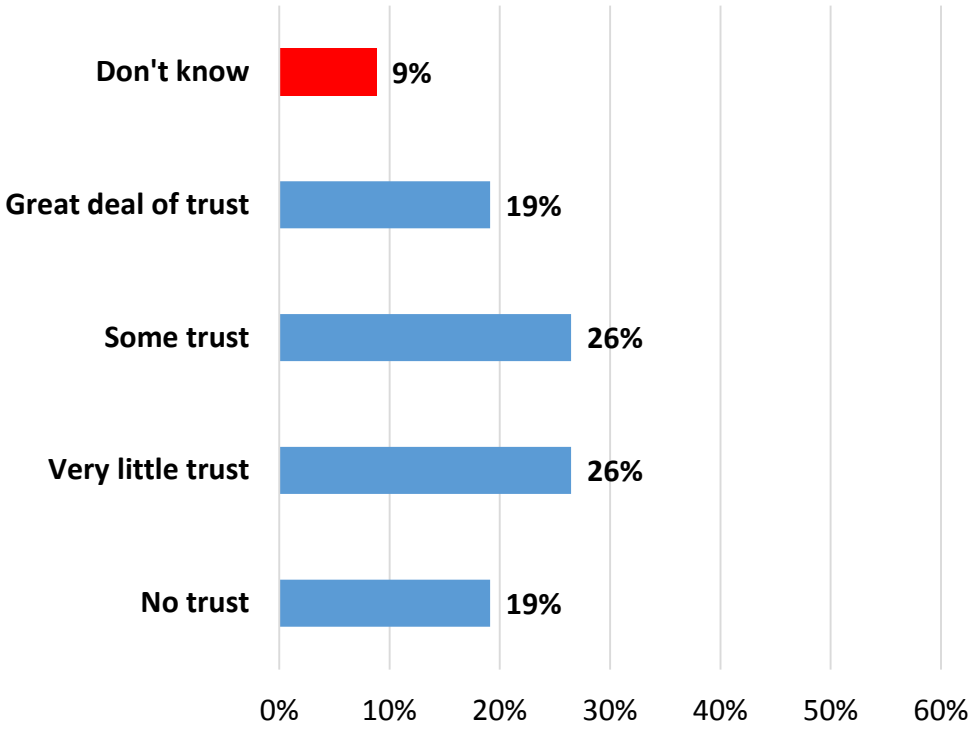


Figure 26d

Level of trust: Texas Commission on Environmental Quality

(n = 67)

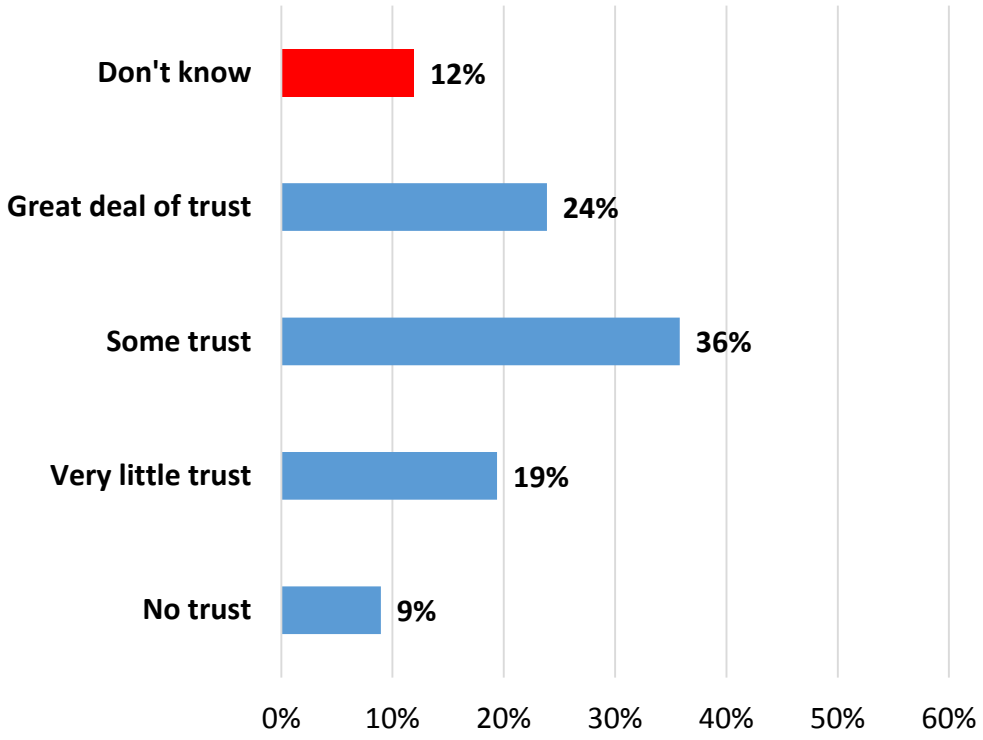


Figure 26e

Level of trust: Texas A&M AgriLife Extension

(n = 67)

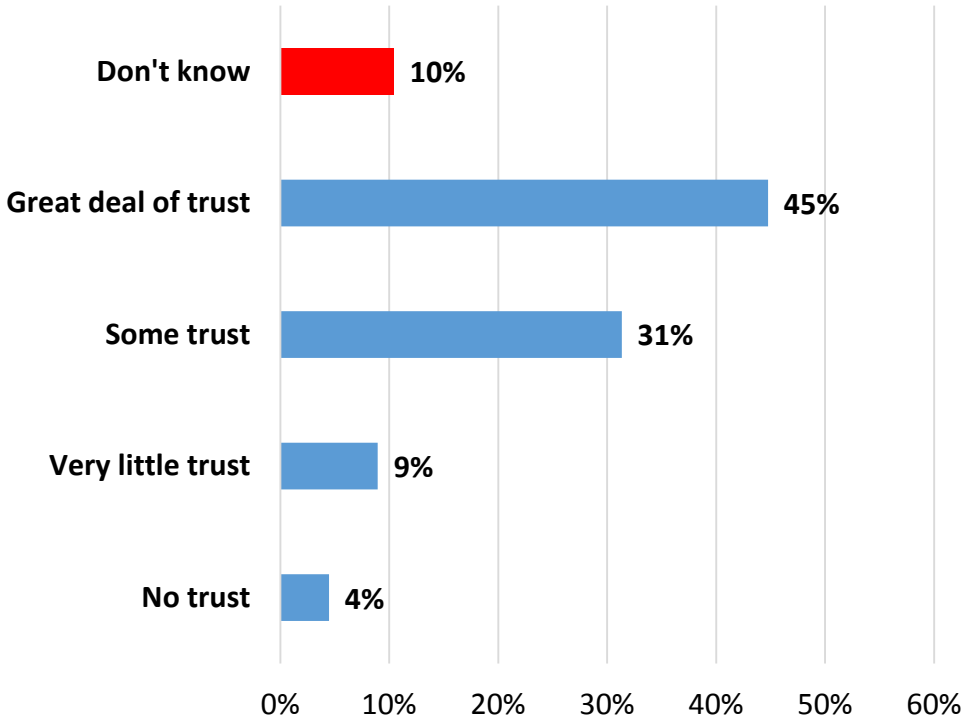


Figure 26f

Level of trust: Environmental groups/organizations

(n = 66)

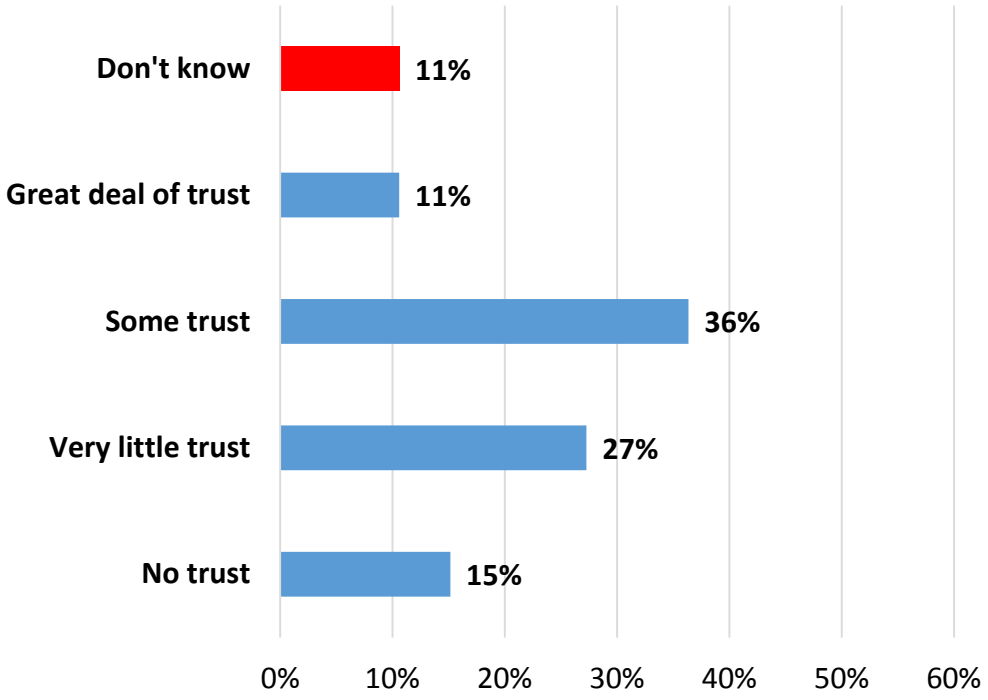


Figure 26g

Level of trust: Scientists/researchers

(n = 68)

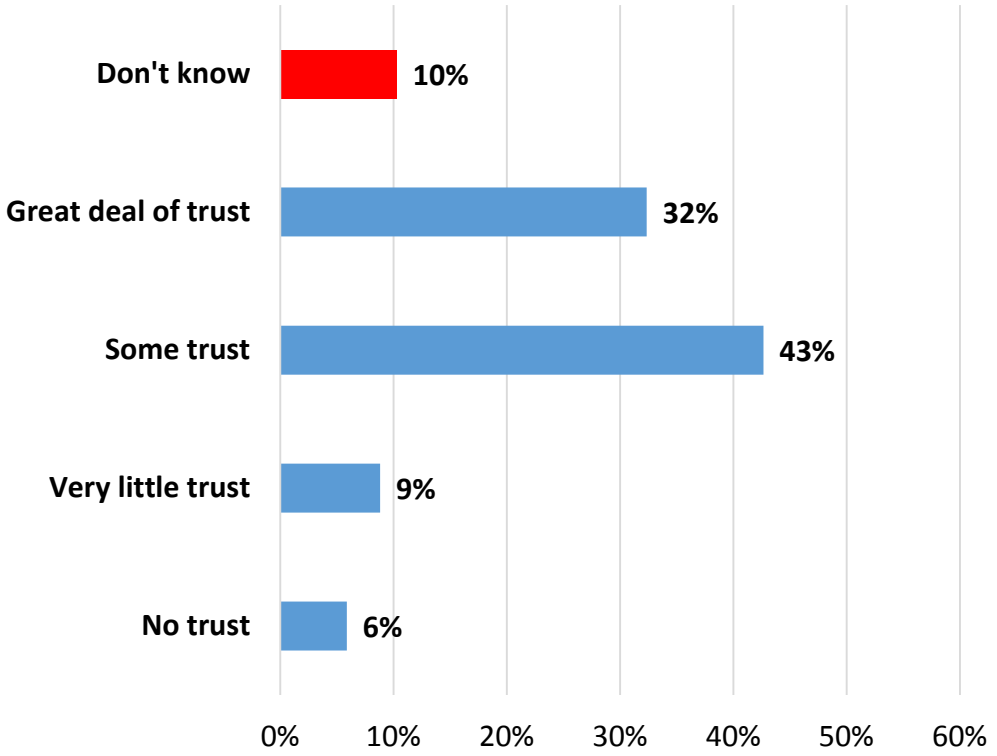


Figure 26h

Level of trust: South Texas Energy & Economic Roundtable (STEER)

(n = 64)

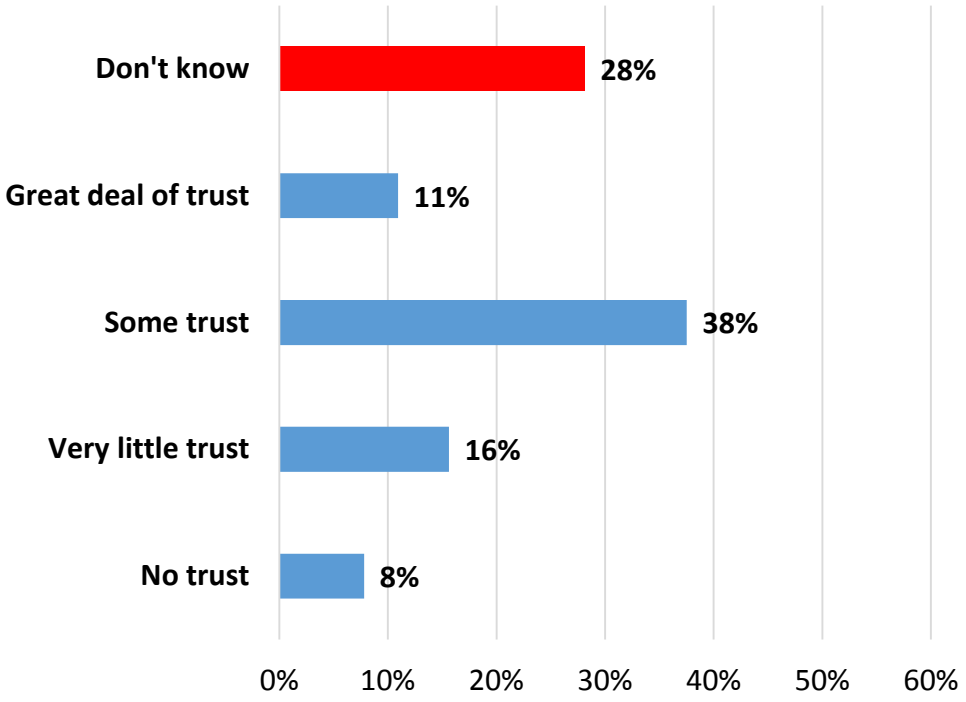


Figure 26i

Level of trust: America's Natural Gas Alliance (ANGA)

(n = 66)

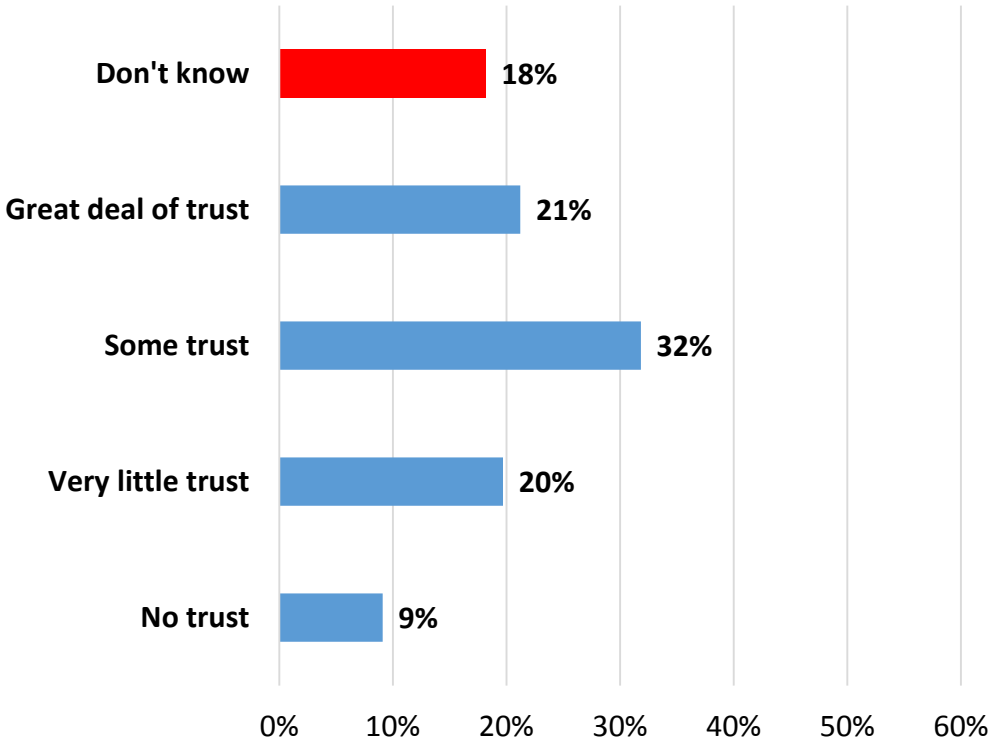


Figure 27j

Level of trust: County government

(n = 68)

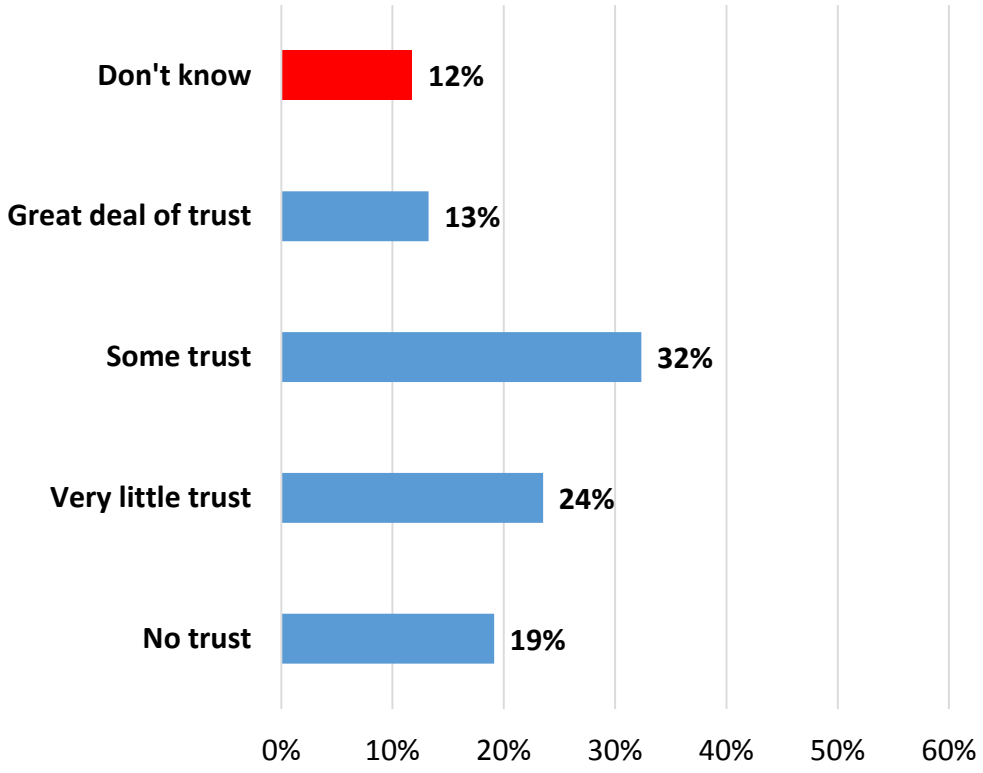


Figure 26k

Level of trust: Local city government

(n = 67)

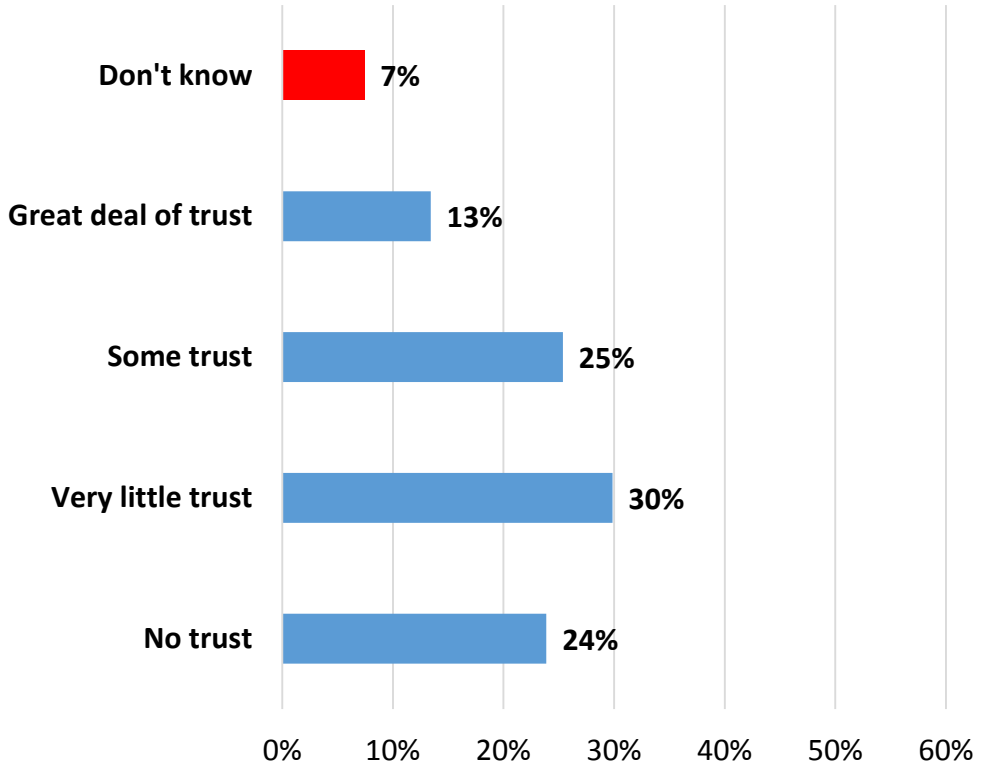


Figure 26l

Level of trust: Texas State Legislature

(n = 68)

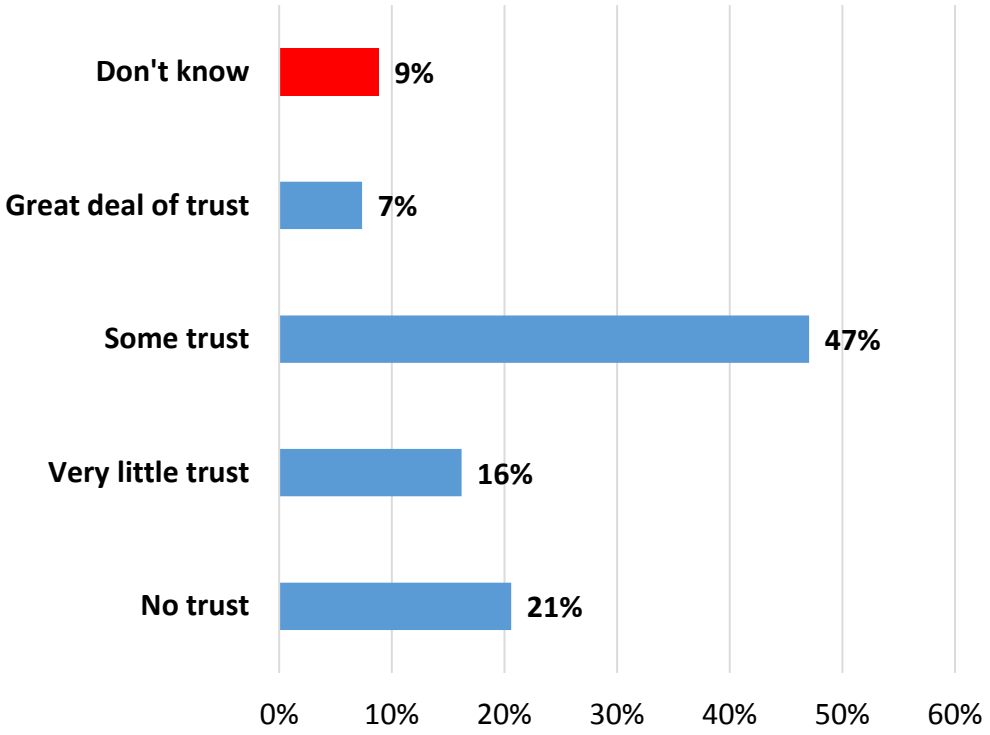


Figure 26m

Level of trust: Eagle Ford Consortium

(n = 68)

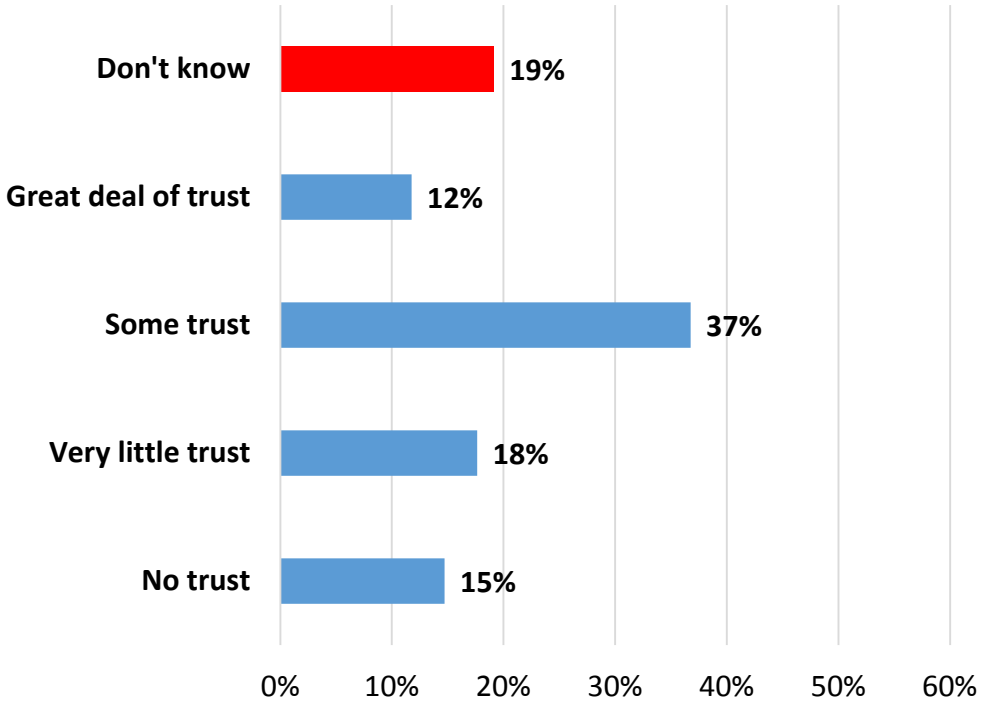


Table 1

Of the groups listed above, which one do you believe is MOST trustworthy?

Groups	n
Texas A&M AgriLife Extension	18
Texas Railroad Commission	10
Scientists/researchers	7
U.S. Environmental Protection Agency	5
Oil/natural gas industry	4
My county government	3
Environmental groups/organizations	2
Eagle Ford Consortium	2
America's Natural Gas Alliance (ANGA)	2
Texas Commission on Environmental Quality	2
Our local government	1
South Texas Energy & Economic Roundtable (STEER)	1
Texas State Legislature	1
None/Not sure	3

Section IV

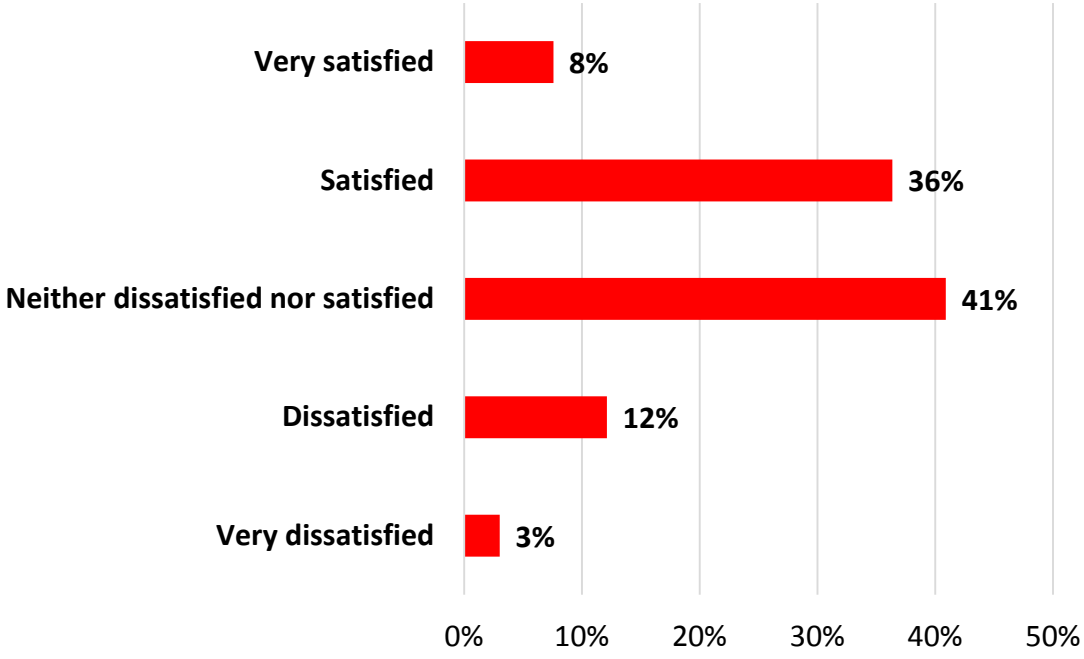
Oil and Gas Industry Performance

Figures 27a through 27l summarize respondents' levels of satisfaction with the oil and natural gas industry's performance in the Eagle Ford Shale.

Figure 27a

Extent to which industry communication practices are adaptable to local emergencies.

(n = 66)



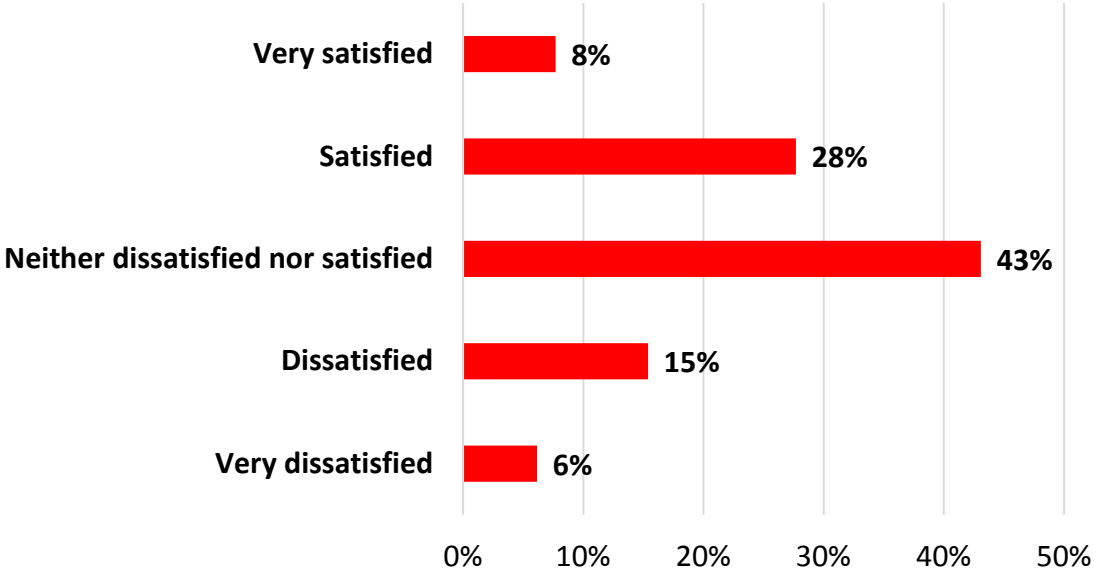
Mean	**3.33**
Standard deviation	**0.90**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27b

Extent to which crises are handled appropriately through communication by the industry.

(n = 65)



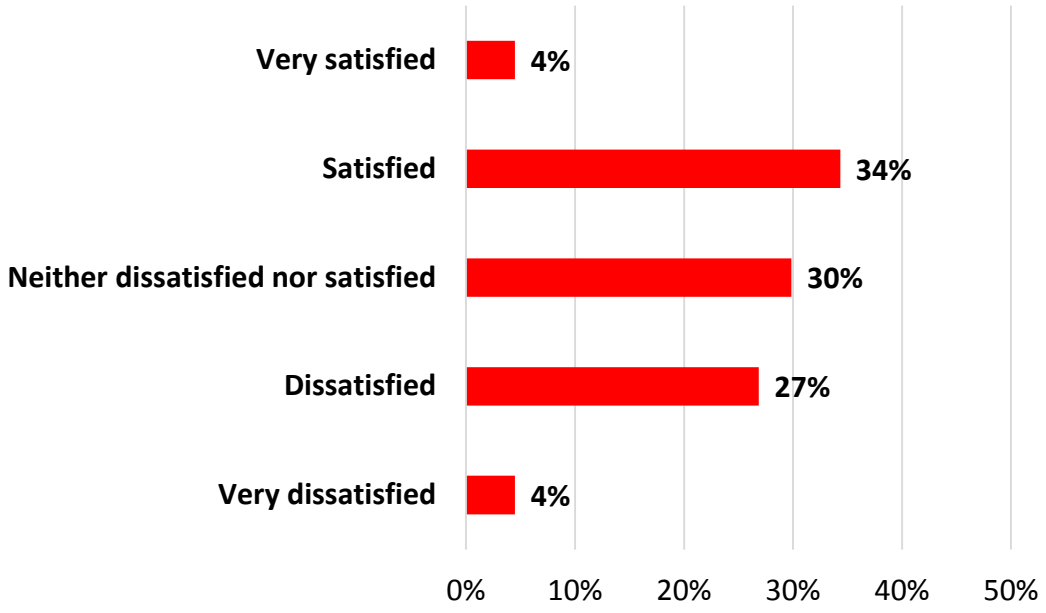
Mean	**3.15**
Standard deviation	**0.99**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27c

Extent to which the industry knows about its impacts on local communities.

(n = 67)



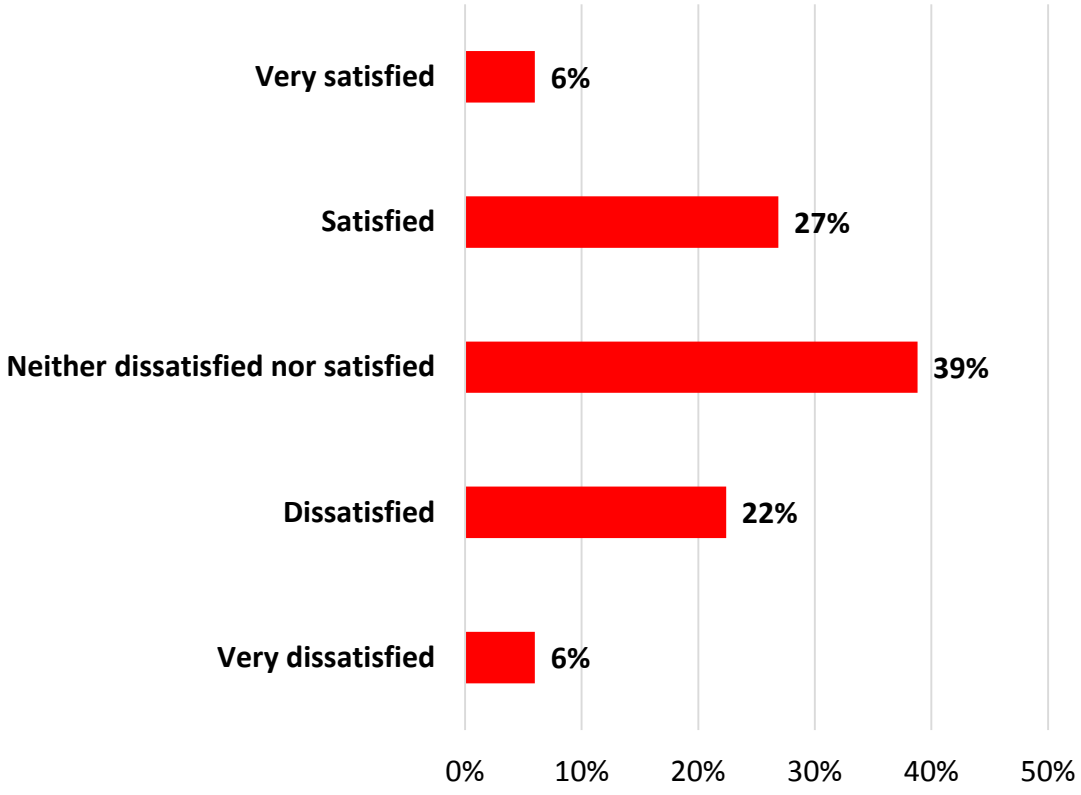
Mean	**3.07**
Standard deviation	**0.99**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27d

Extent to which the industry responds to concerns raised by local community residents.

(n = 67)



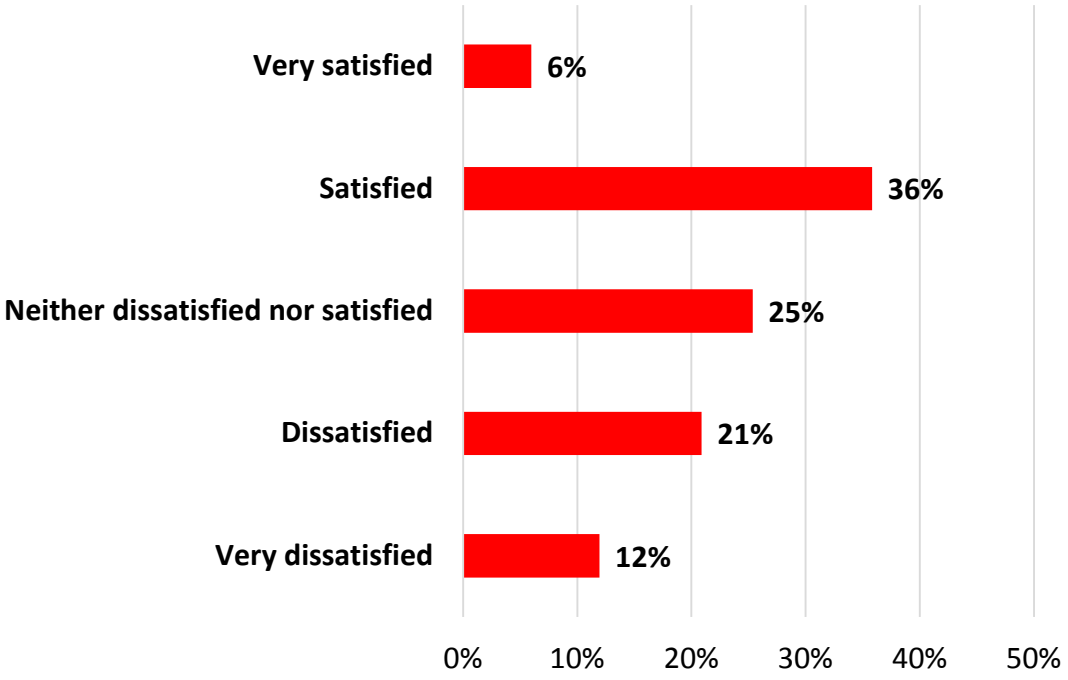
Mean	**3.04**
Standard deviation	**0.99**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27e

Extent to which the industry listens to concerns raised by local community residents.

(n = 67)



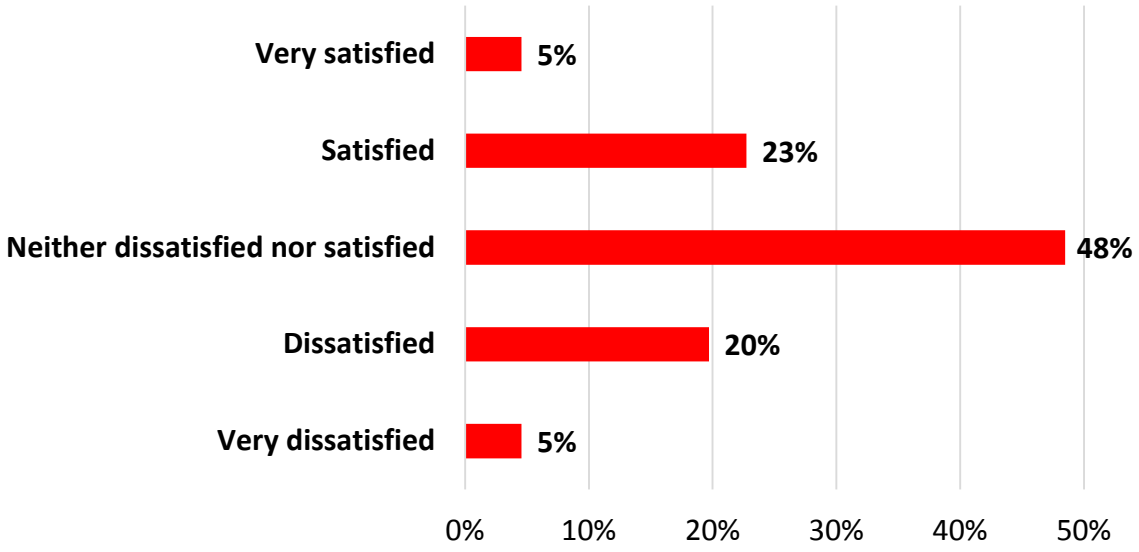
Mean	**3.03**
Standard deviation	**1.14**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27f

Extent to which the industry's communications are interesting and helpful.

(n = 66)



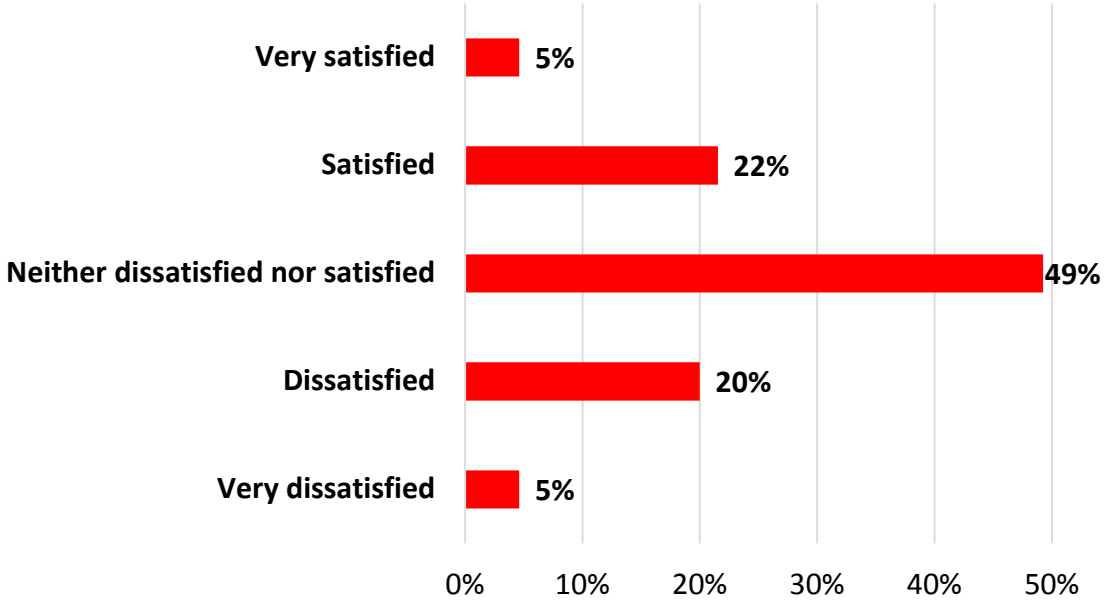
Mean	**3.03**
Standard deviation	**0.89**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27g

Extent to which the industry is open to suggestions from local community leaders.

(n = 65)



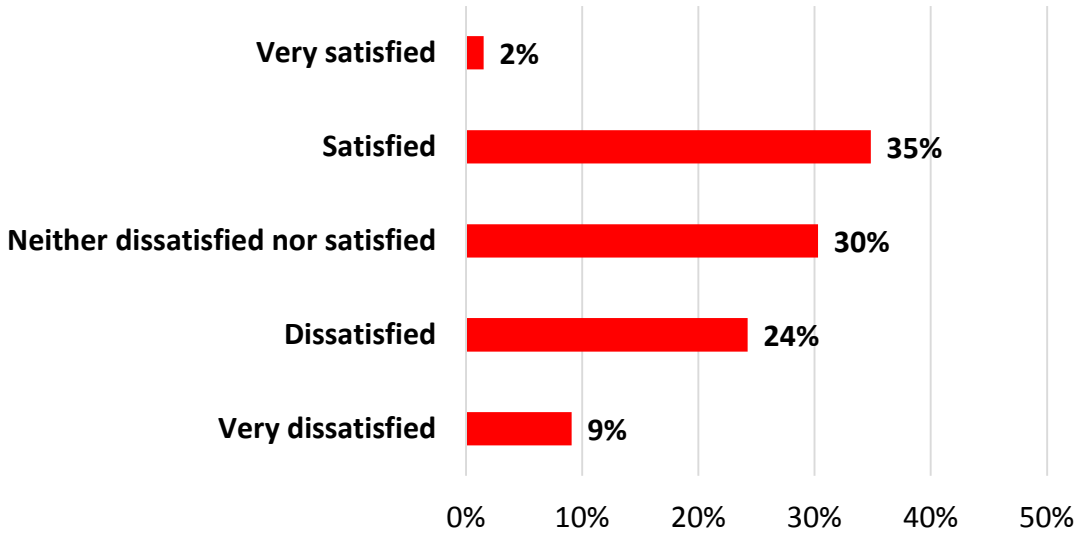
Mean	**3.02**
Standard deviation	**0.89**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27h

Extent to which the industry shares information about its activities with local communities.

(n = 66)



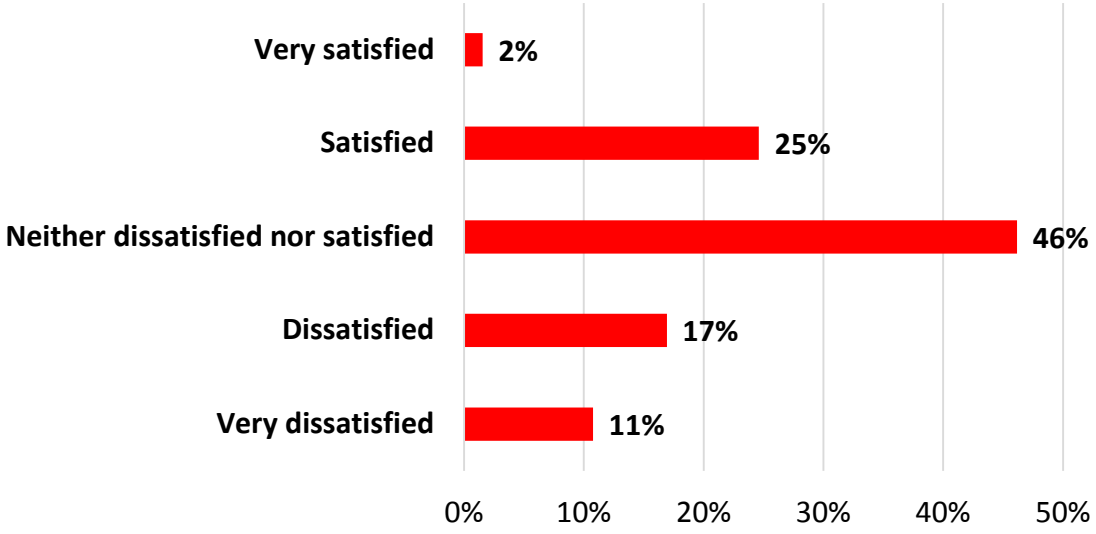
Mean	**2.95**
Standard deviation	**1.01**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27i

Extent to which the trustworthiness of communication by the industry is about right.

(n = 65)



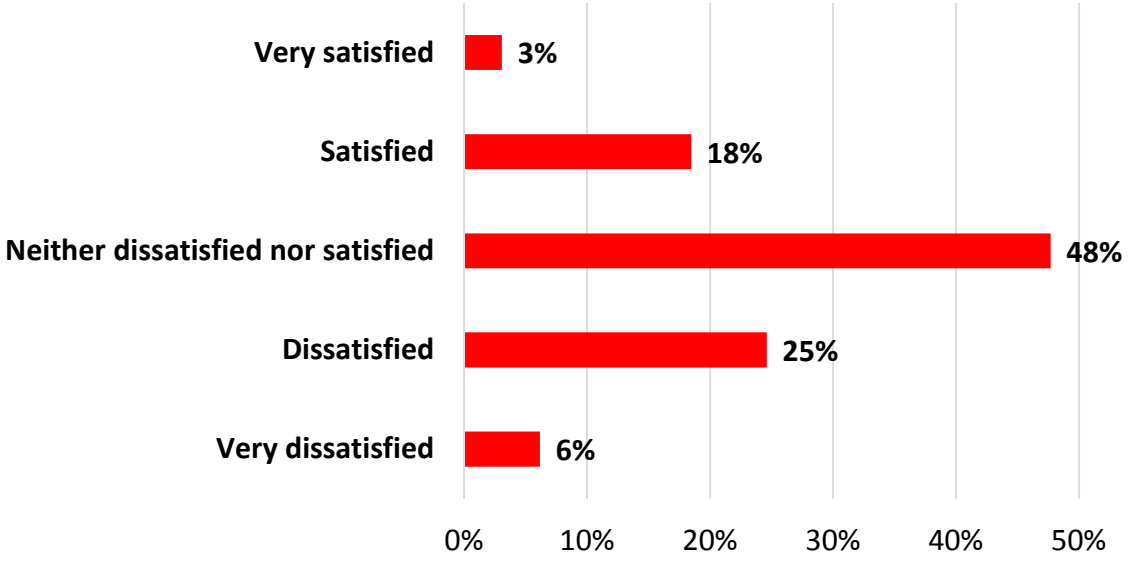
Mean	**2.89**
Standard deviation	**0.95**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27j

Extent to which the amount of communication with local community residents by the industry is about right.

(n = 65)



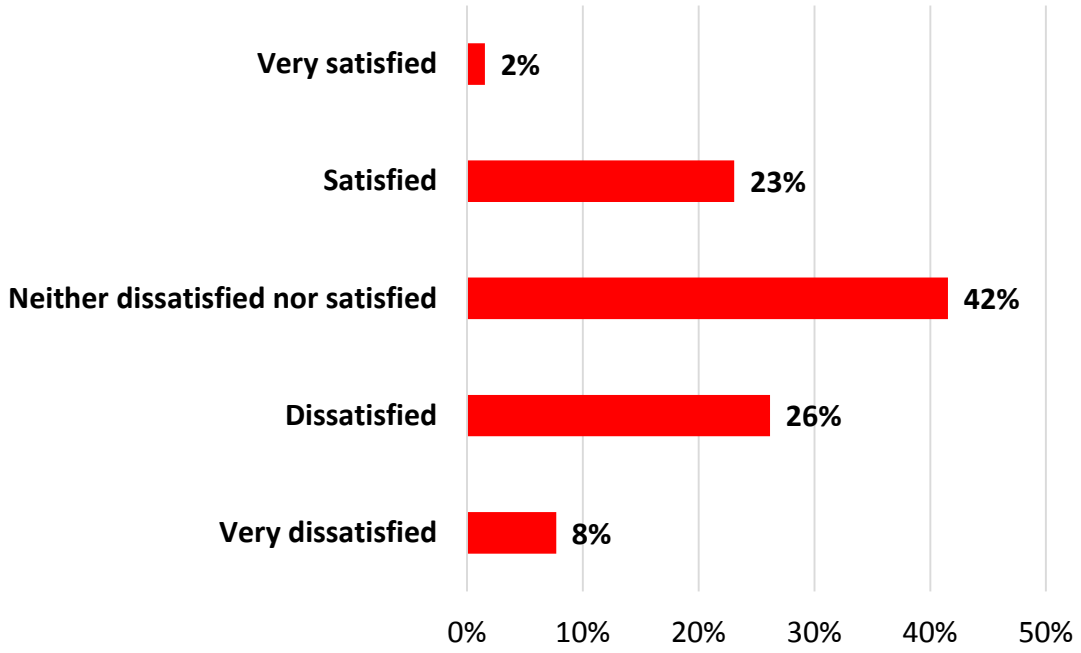
Mean	**2.88**
Standard deviation	**0.89**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27k

Extent to which industry communication with community residents is clear and concise.

(n = 65)



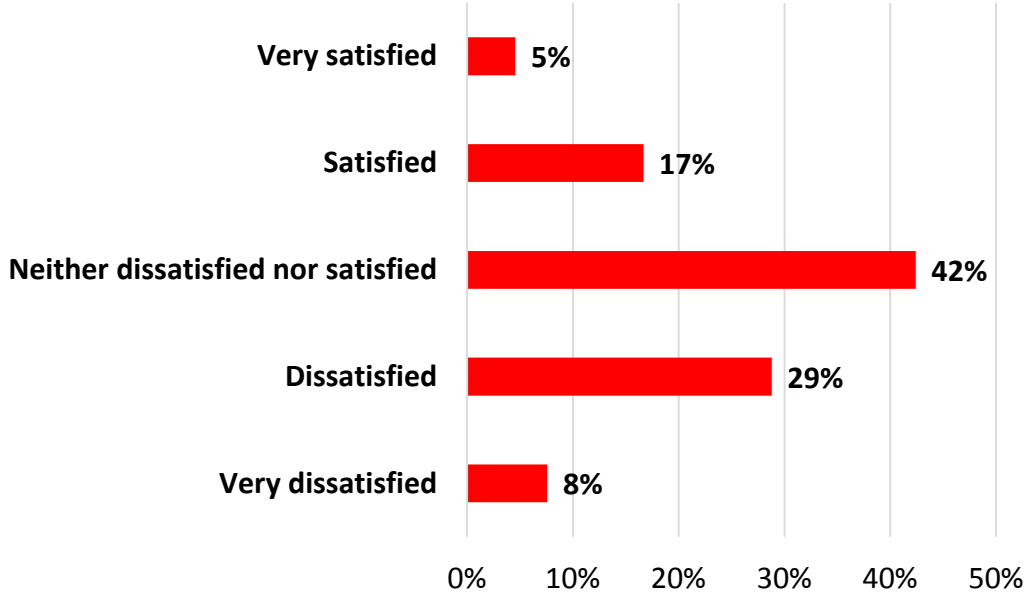
Mean	**2.85**
Standard deviation	**0.92**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Figure 27l

Extent to which the industry anticipates the local community residents' need for information.

(n = 66)



Mean	**2.82**
Standard deviation	**0.96**

coding:
1 = very dissatisfied; 2 = dissatisfied; 3 = neither dissatisfied nor satisfied; 4 = satisfied; 5 = very satisfied

Section V

Actions Which May or May Not Have Been Taken in Response to the Exploration and Production of Oil and Natural Gas

This section deals with eight actions that residents may or may not have taken in response to exploration and production of natural gas in Karnes County. Survey respondents were asked to indicate whether or not they had engaged in such actions. Respondents were then asked to indicate their likelihood of engaging in such actions in the future. The results are summarized below.

Figures 28a through 35a illustrate the extent to which respondents had engaged in such actions. Figures 28b to 35b illustrate the likelihood of engaging in such actions in the future.

Figure 28a

Action: Attended a public meeting to get information and learn more about the drilling and/or production of oil and natural gas.

(n = 67)

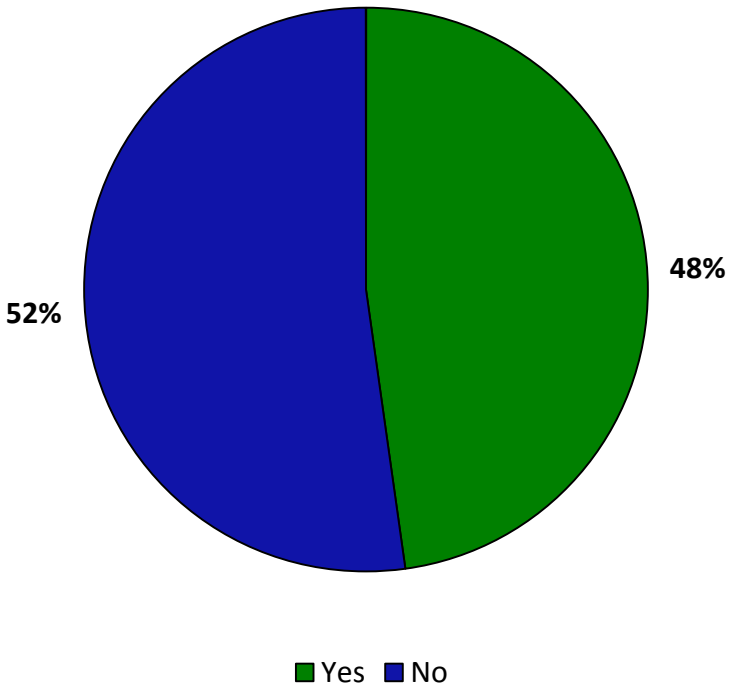


Figure 28b

Likelihood of attending public meeting in the future:
(n = 62)

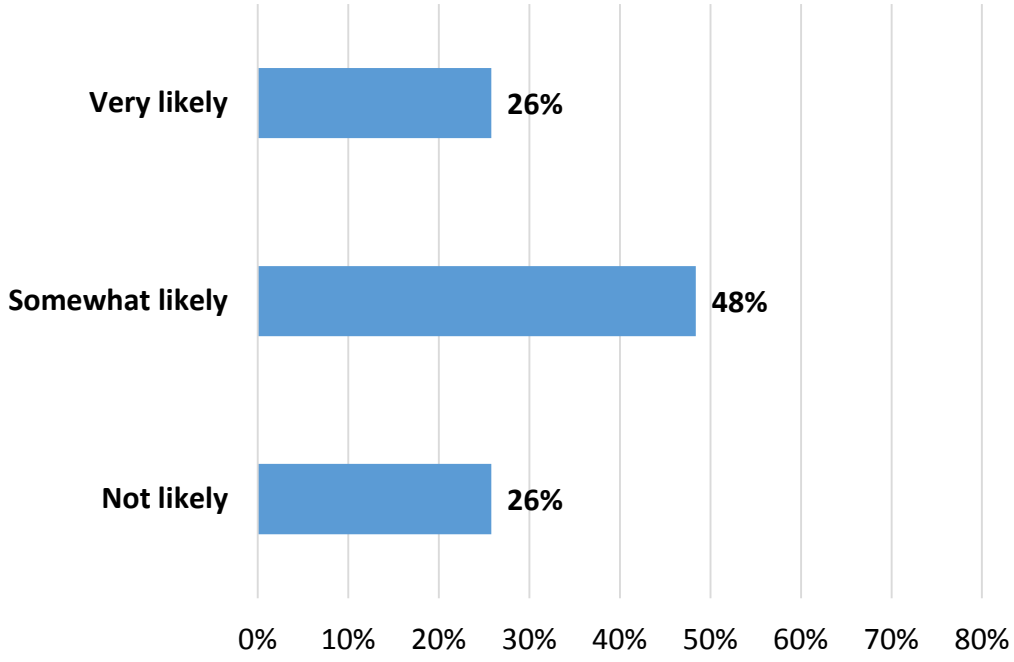


Figure 29a

Action: Contacted a local elected official or governmental agency to complain about an oil and natural gas drilling and/or production issue.

(n = 67)

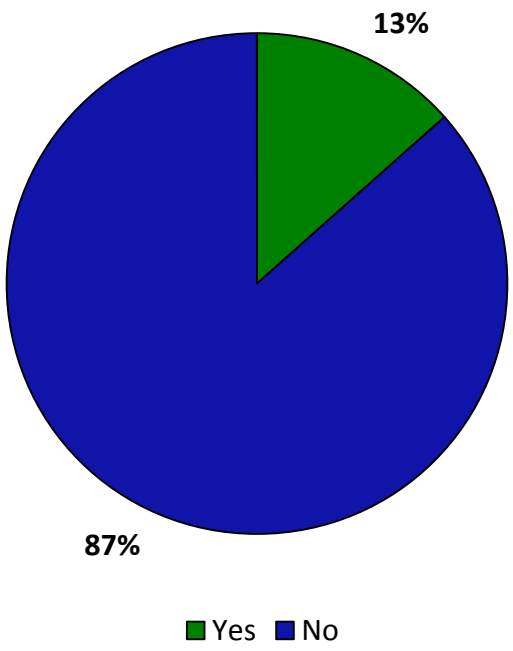


Figure 29b

Likelihood of contacting elected official or government agency in the future:
(n = 59)

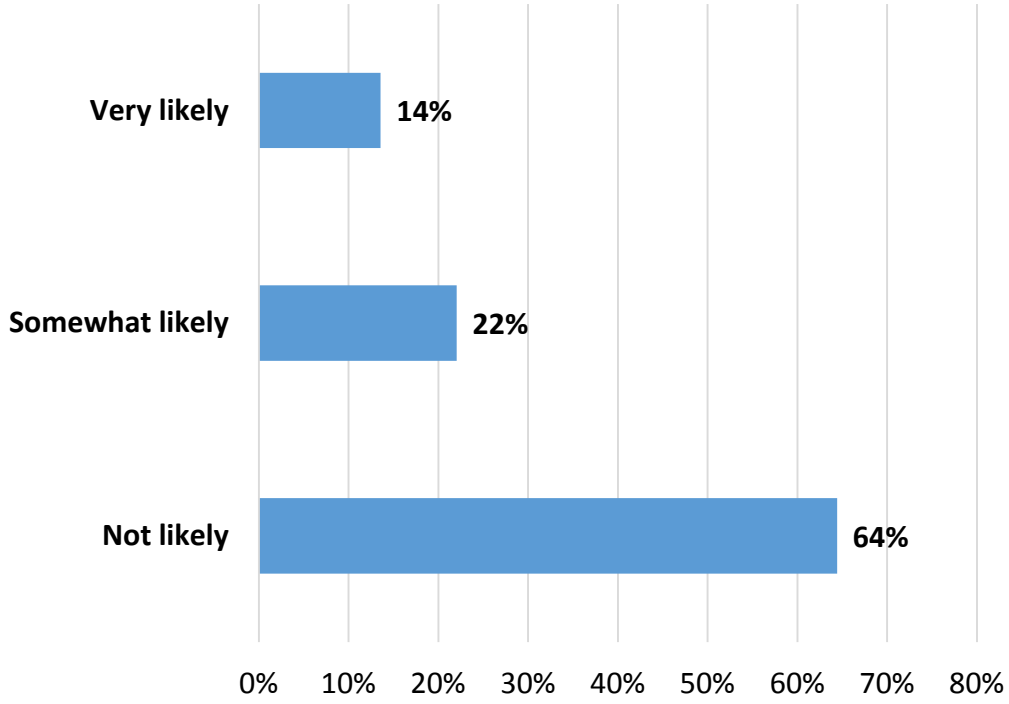


Figure 30a

Action: Voted FOR a political candidate because of his/her position on the drilling and/or production of oil and natural gas.

(n = 66)

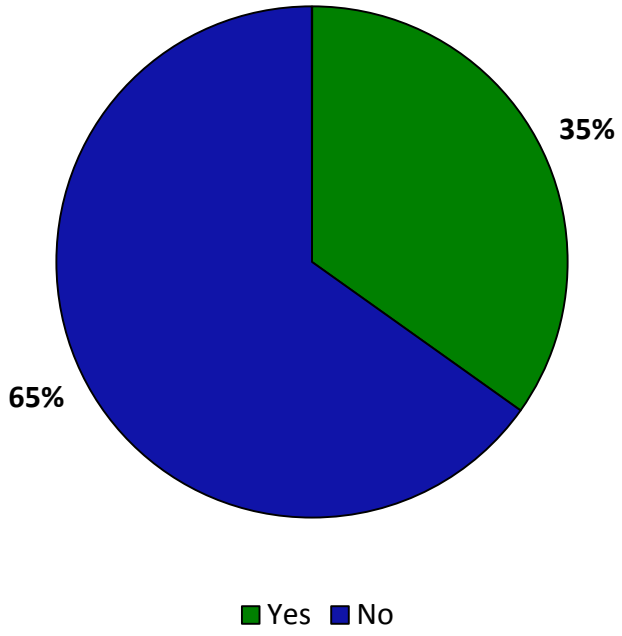


Figure 30b

Likelihood of voting FOR political candidate in the future:

(n = 60)

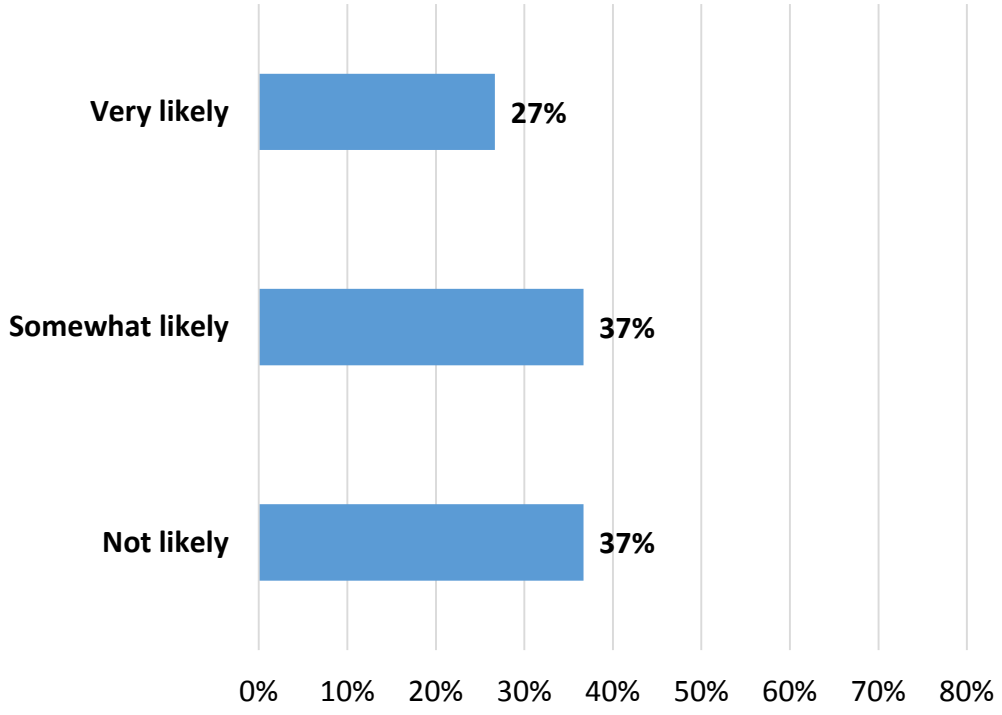


Figure 31a

Action: Voted AGAINST a political candidate because of his/her position on the drilling and/or production of oil and natural gas.

(n = 65)

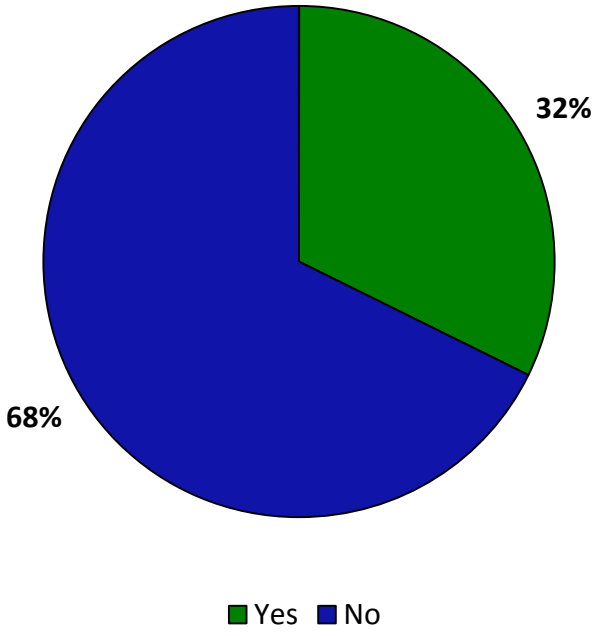


Figure 31b

Likelihood of voting AGAINST political candidate in the future:

(n = 59)

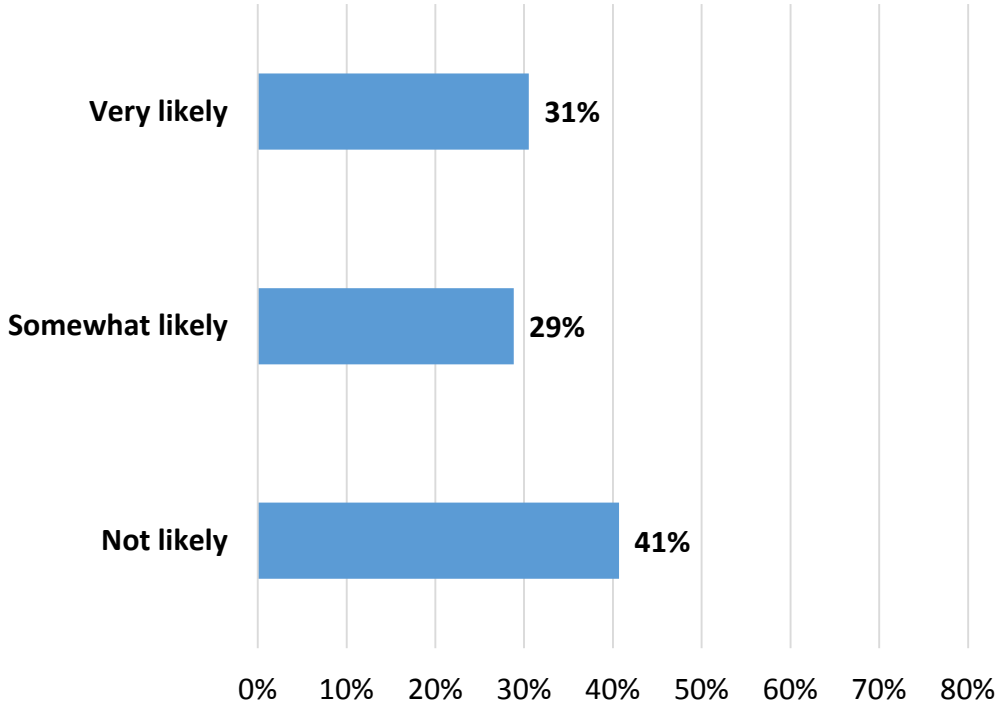


Figure 32a

Action: Attended an energy industry-sponsored meeting to get information and learn more about the exploration and/or production of oil and natural gas.

(n = 65)

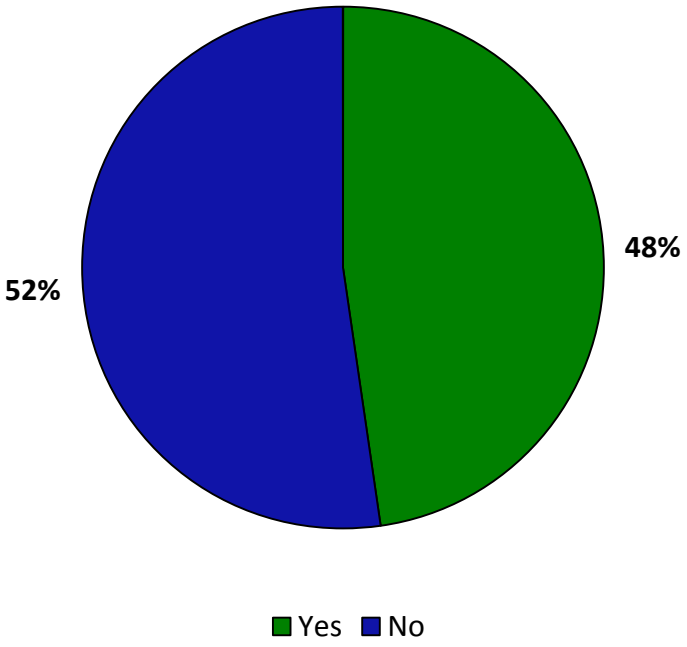


Figure 32b

Likelihood of attending energy industry-sponsored meeting in the future:
(n = 61)

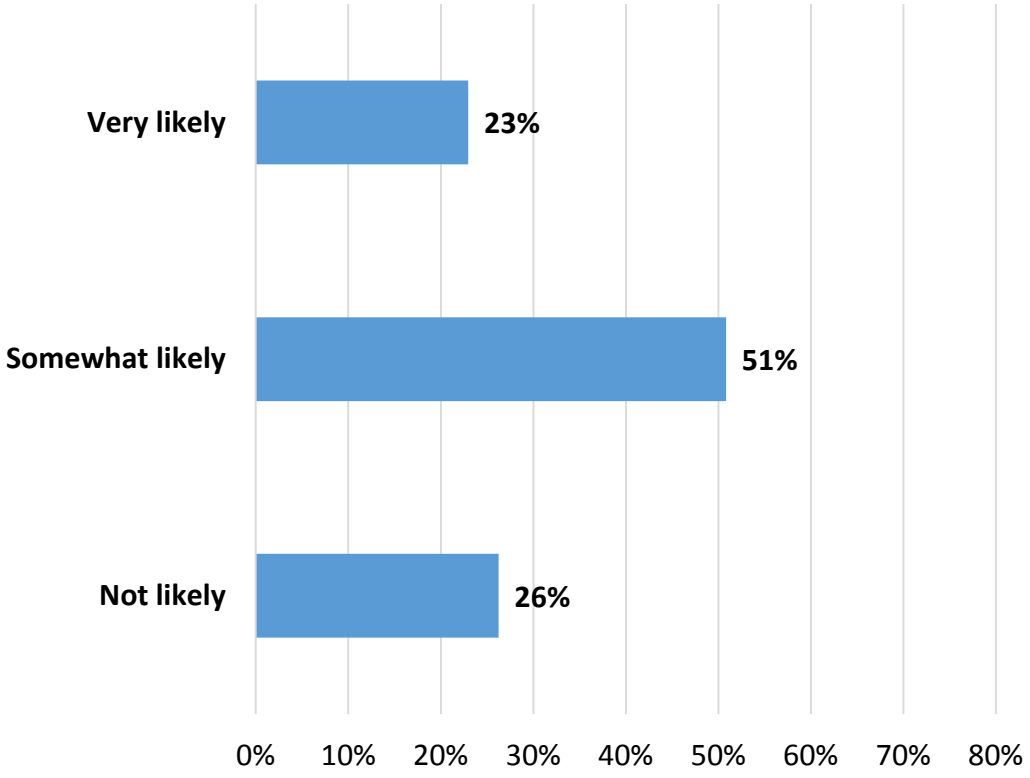


Figure 33a

Action: Attended a public meeting to OPPOSE the exploration and/or production of oil and natural gas.

(n = 65)

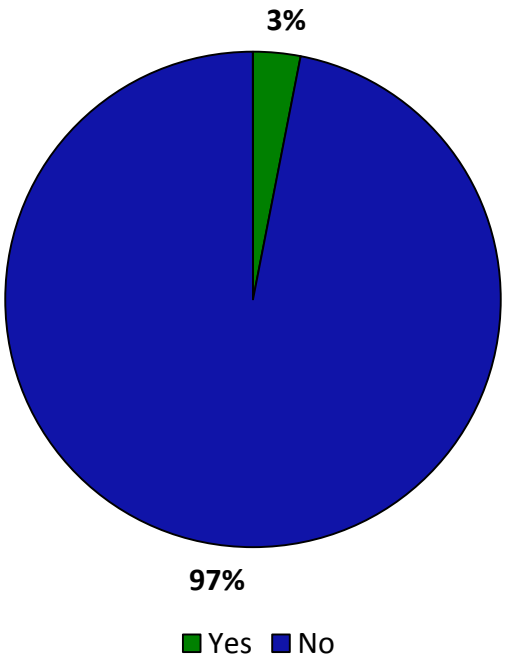


Figure 33b

Likelihood of attending public meeting to OPPOSE oil and gas in the future:
(n = 61)

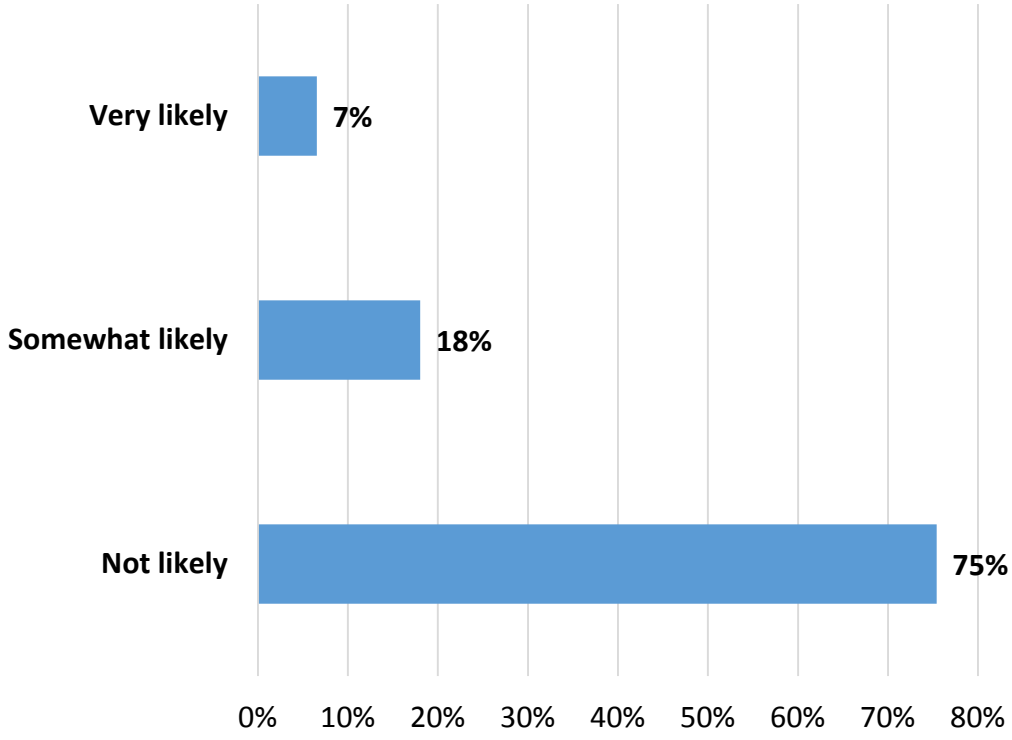


Figure 34a

Action: Attended a public meeting to SUPPORT the exploration and/or production of oil and natural gas.

(n = 65)

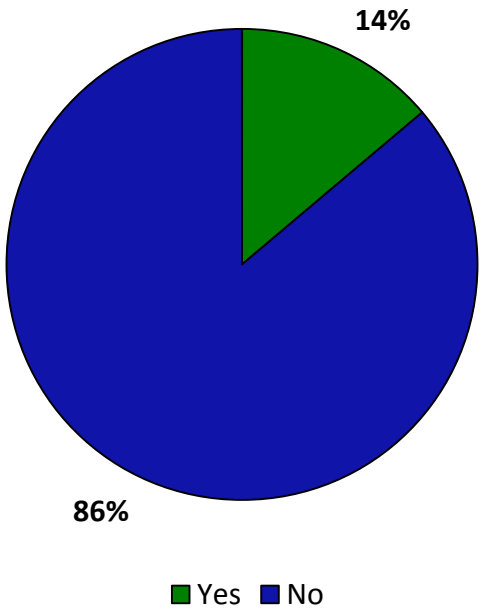


Figure 34b

Likelihood of attending public meeting to SUPPORT oil and gas in the future:
(n = 61)

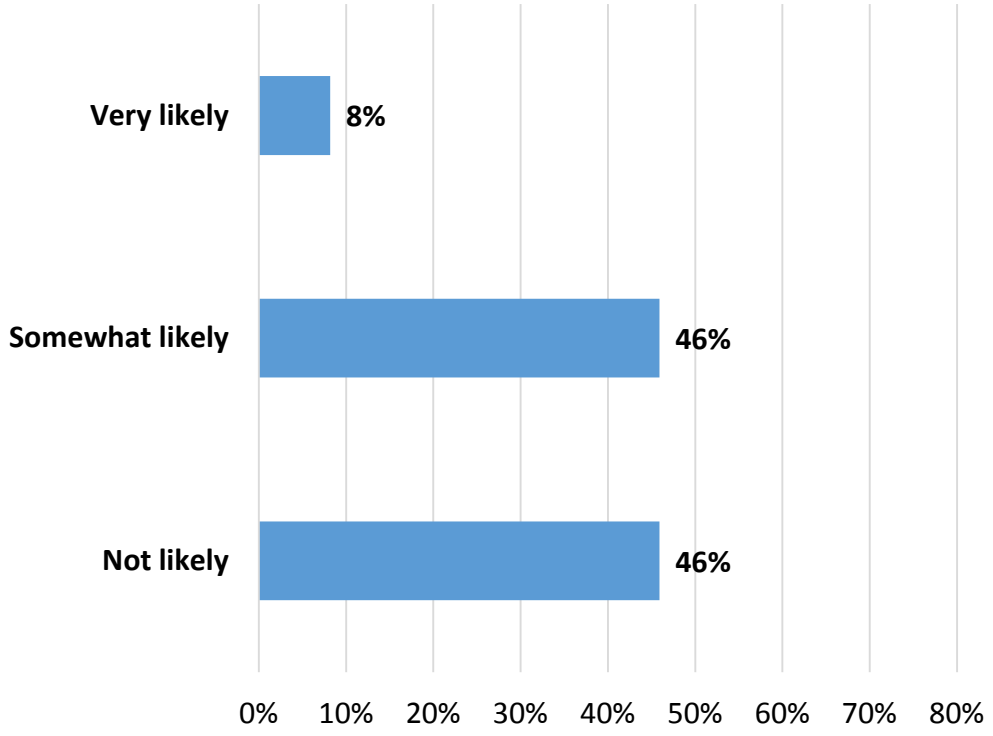


Figure 35a

Action: Wrote and mailed a letter to the editor of your local newspaper OPPOSING the continued exploration and/or production of oil and natural gas.

(n = 65)

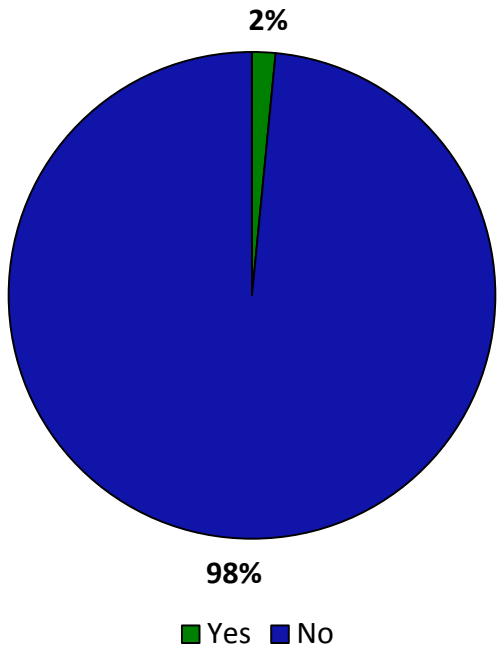
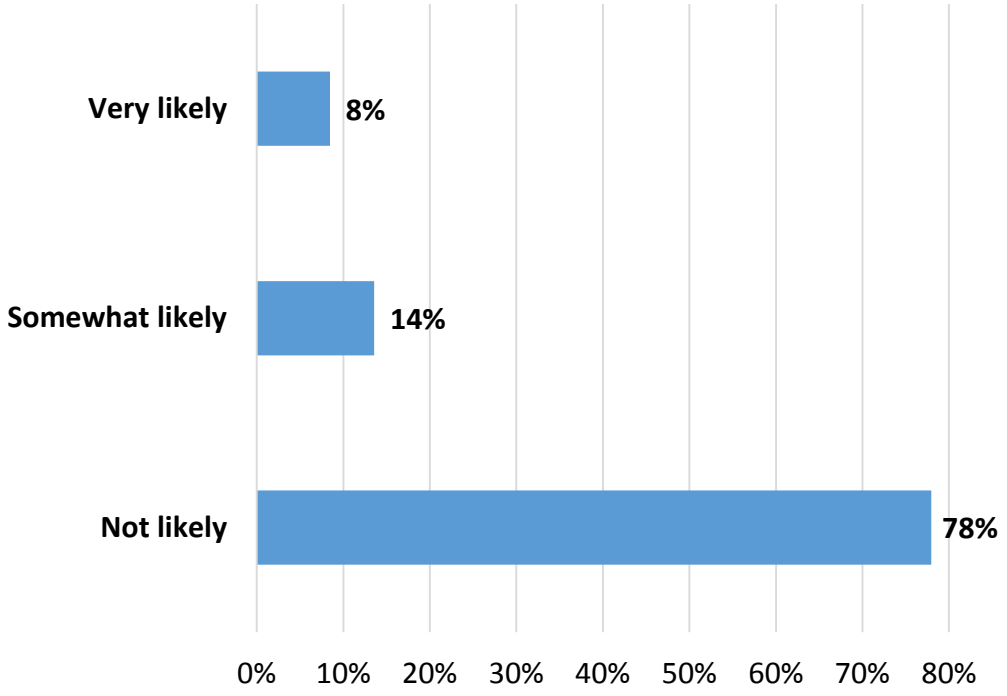


Figure 35b

Likelihood of writing to local newspaper OPPOSING oil and gas in the future:
(n = 59)



Section VI

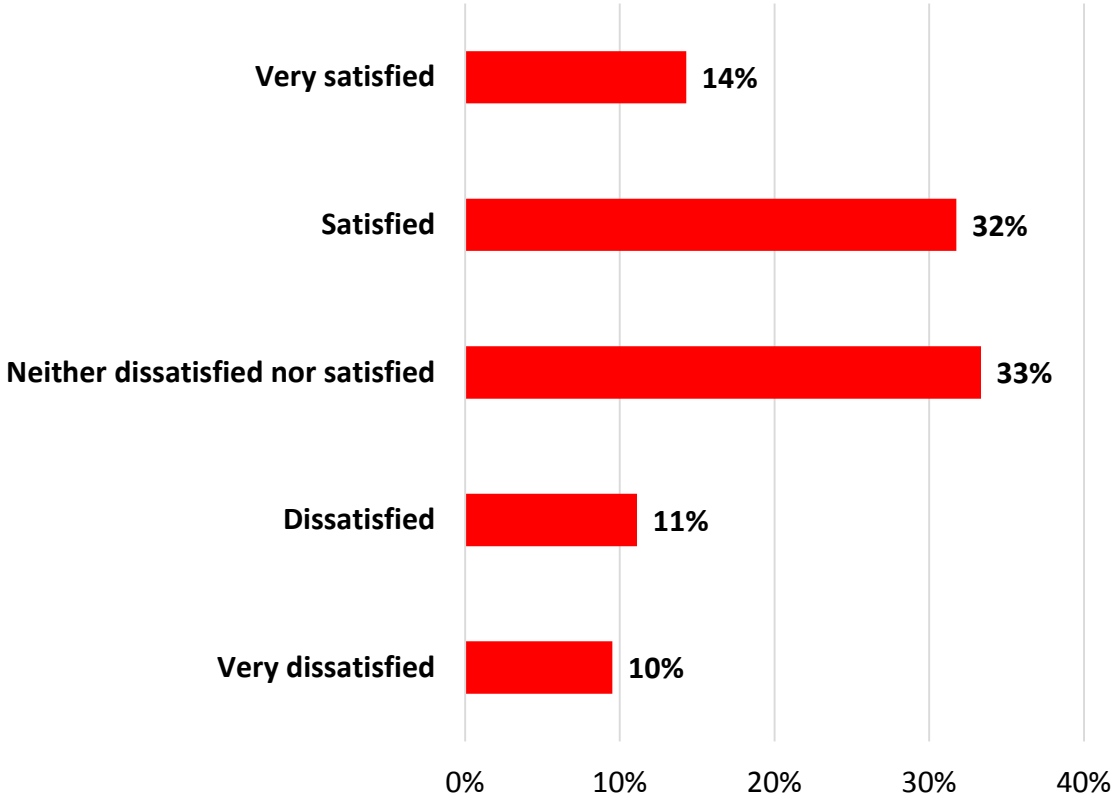
Satisfaction with Communication

Figures 36a through 36g summarize respondents' levels of satisfaction regarding communication involving oil and gas industry activities.

Figure 36a

Level of satisfaction: Freedom to express my opinion about oil and gas development

(n = 63)



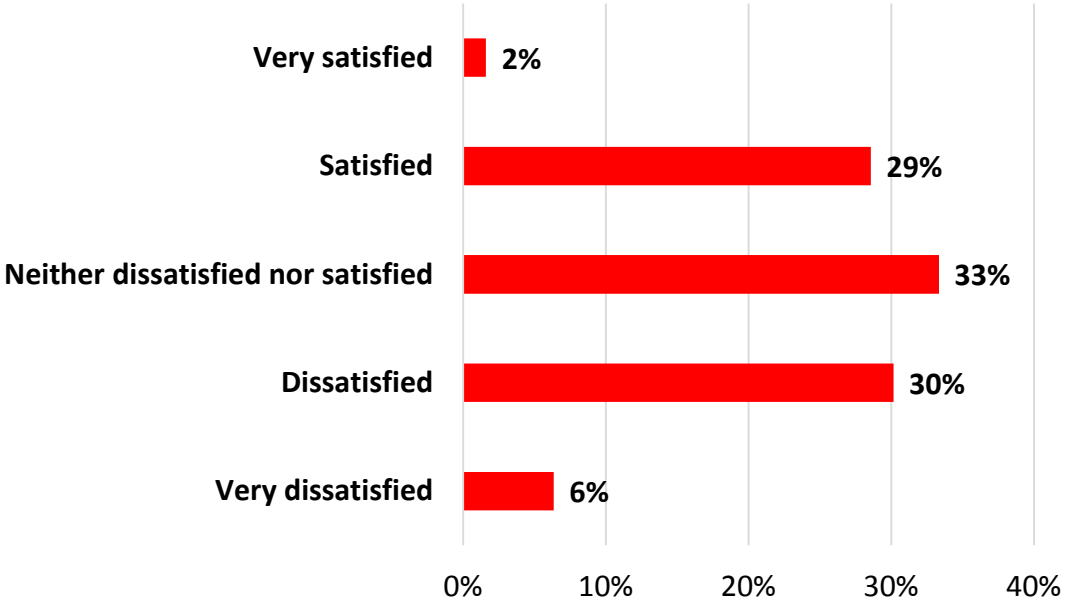
Mean	**3.30**
Standard deviation	**1.14**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36b

Level of satisfaction: Oil and gas industry officials getting information out to the public

(n = 63)



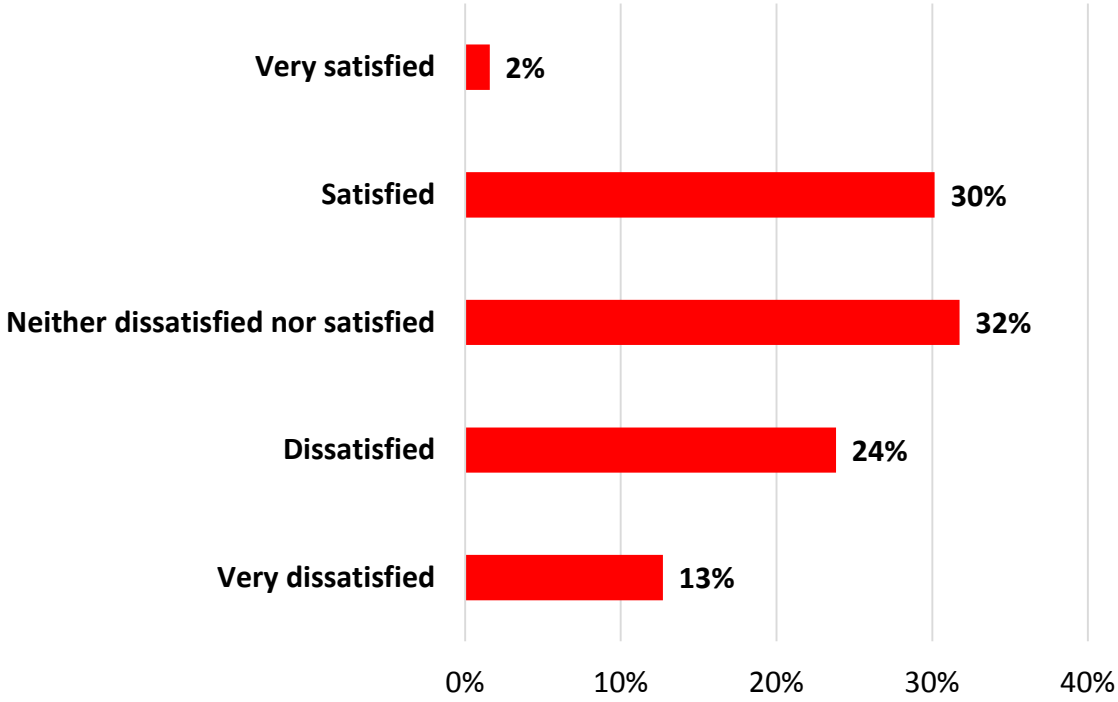
Mean	**2.89**
Standard deviation	**0.95**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36c

Level of satisfaction: Availability of information about oil and gas development

(n = 63)



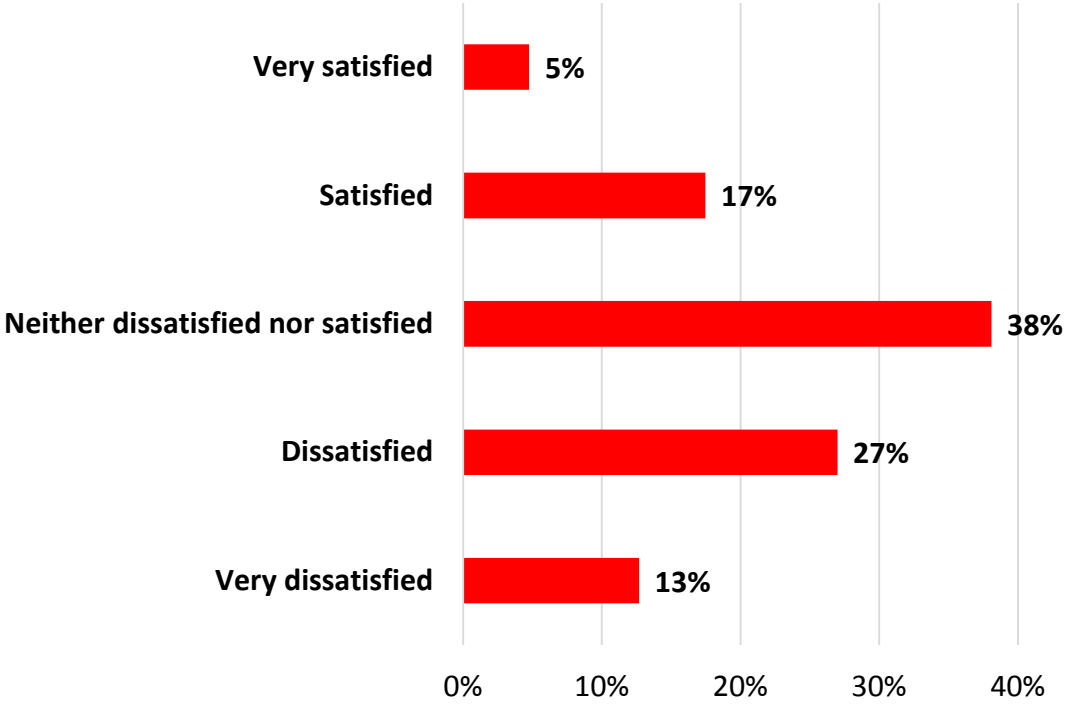
Mean	**2.84**
Standard deviation	**1.05**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36d

Level of satisfaction: Fairness of the communication process *(all citizens' voices and concerns are heard and considered)*

(n = 63)



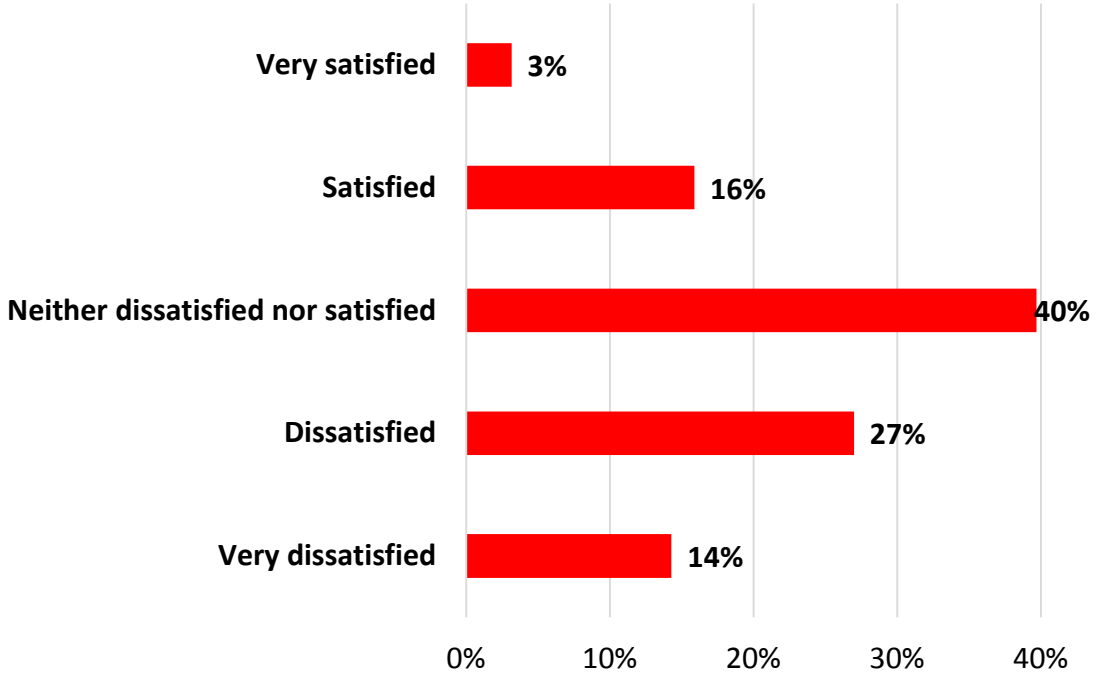
Mean	**2.75**
Standard deviation	**1.05**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36e

Level of satisfaction: Oil and gas industry officials soliciting input from the public

(n = 63)



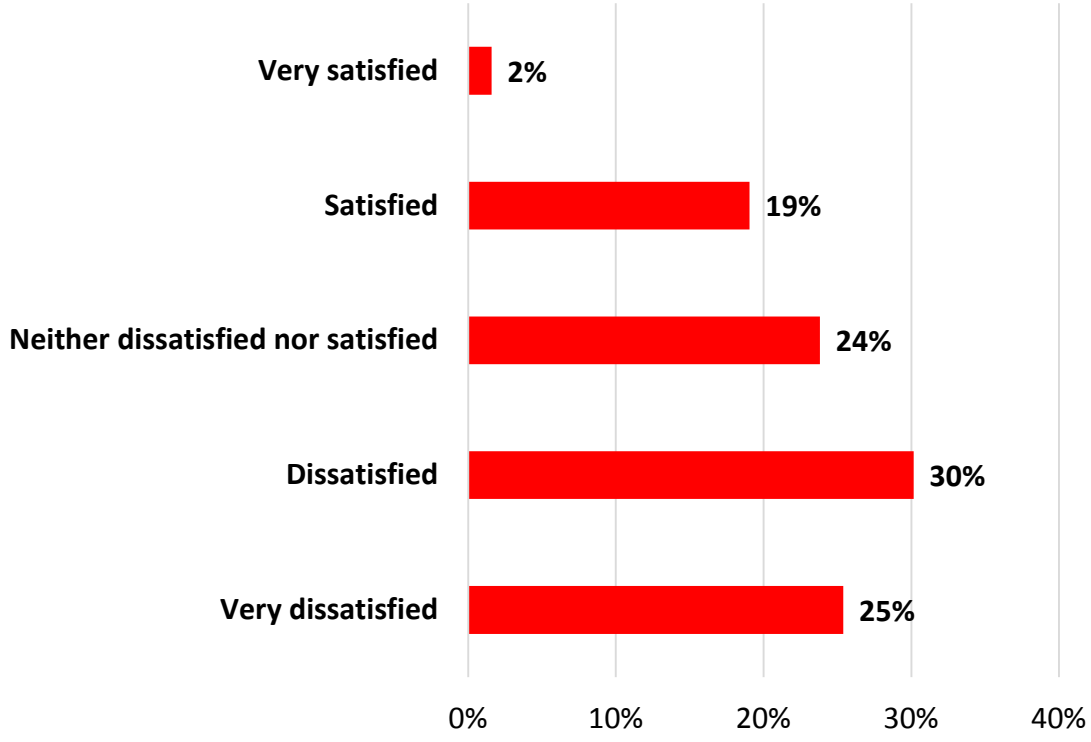
Mean	**2.67**
Standard deviation	**1.02**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36f

Level of satisfaction: Effectiveness of county government in communicating information about oil and gas development

(n = 63)



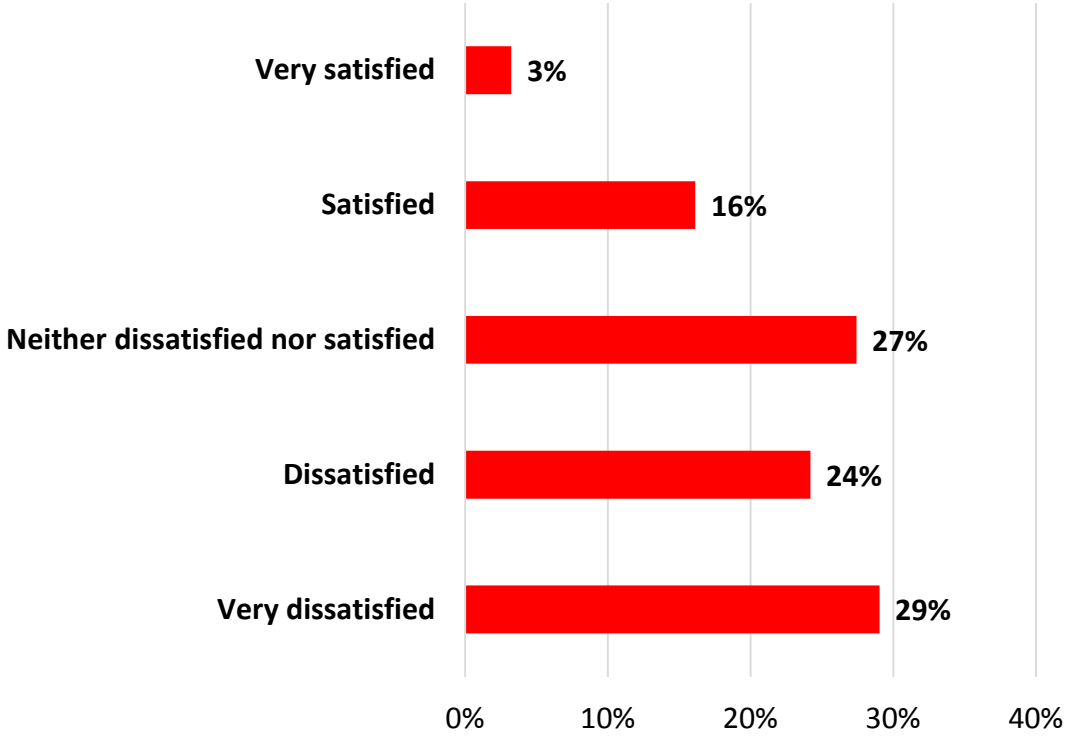
Mean	**2.41**
Standard deviation	**1.12**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Figure 36g

Level of satisfaction: Effectiveness of city government in communicating information about oil and gas development

(n = 62)



Mean	**2.40**
Standard deviation	**1.17**

coding:
1 = Very dissatisfied; 2 = Dissatisfied; 3 = Neither dissatisfied nor satisfied; 4 =Satisfied; 5 = Very satisfied

Section VII

Management Decisions

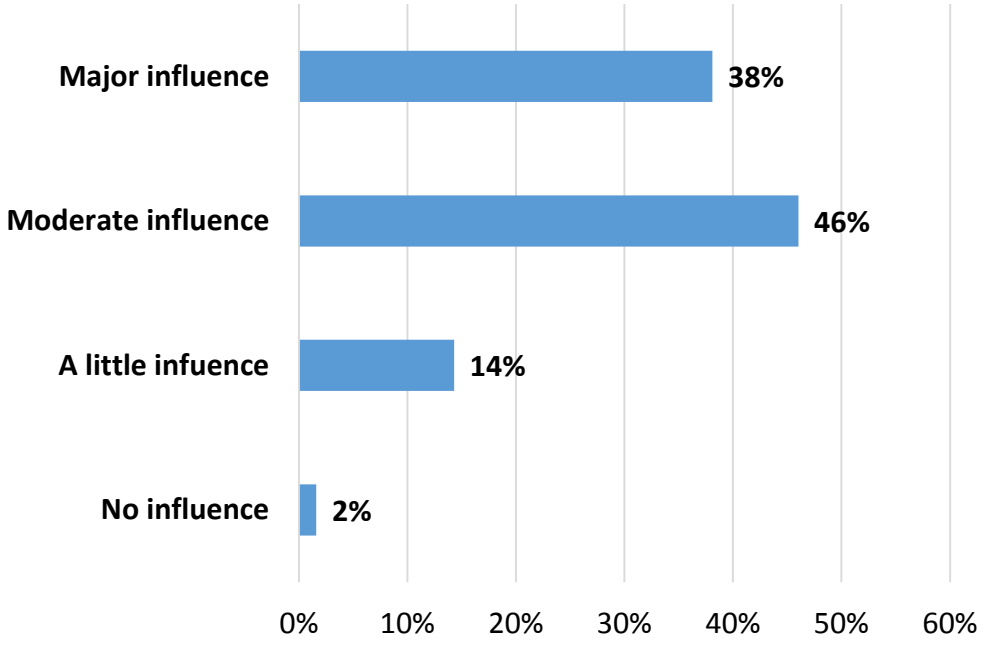
Figures 37a through 46b summarize the amounts of influence respondents believe selected groups/organizations (a) *should have* and (b) *actually have* on the management decisions pertaining to the oil and natural gas development occurring in/near their communities. Figures 37a through 46a illustrate the perceived level of influence each group/organization *should have* on management decisions. Figures 37b through 46b illustrate the perceived level of influence each group/organization *actually has* on management decisions.

Figure 37a

Perceived level of influence should have:

Residents of local affected communities

(n = 63)



Mean	**2.21**
Standard deviation	**0.74**

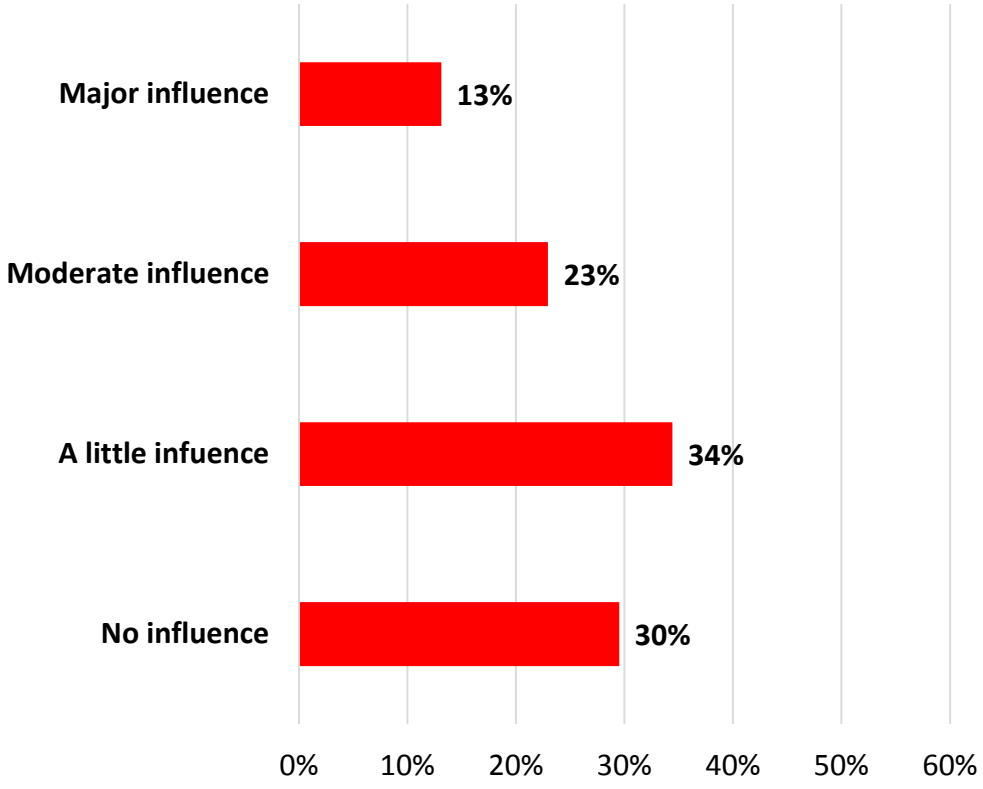
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 37b

Perceived level of influence actually have:

Residents of local affected communities

(n = 61)



Mean	**1.20**
Standard deviation	**1.01**

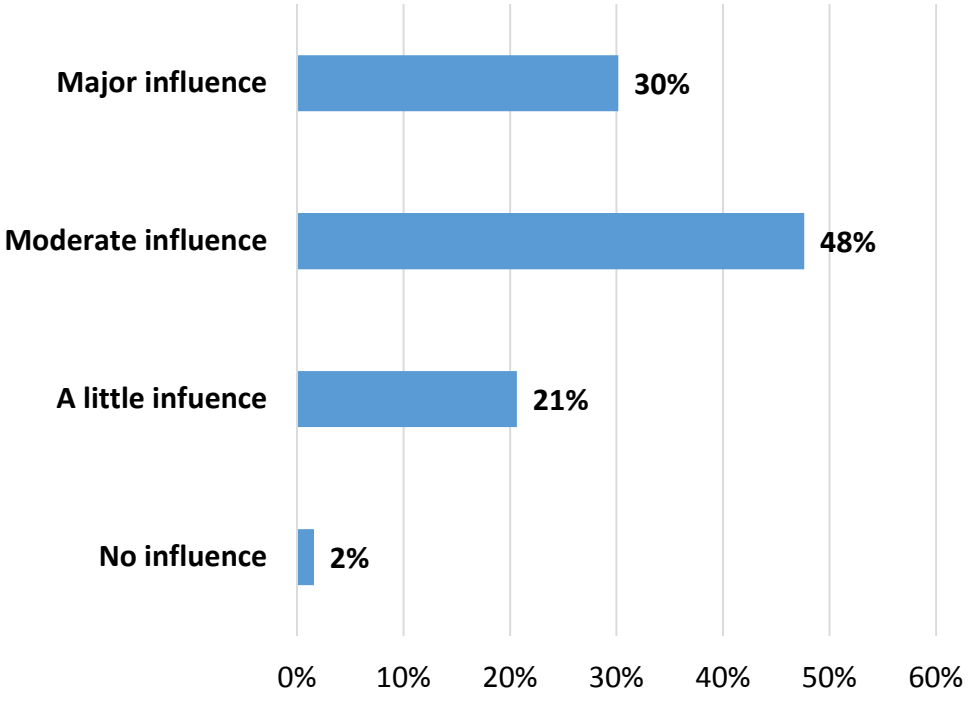
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 38a

Perceived level of influence <u>should have</u>:

Officials of local affected communities

(n = 63)



Mean	**2.06**
Standard deviation	**0.76**

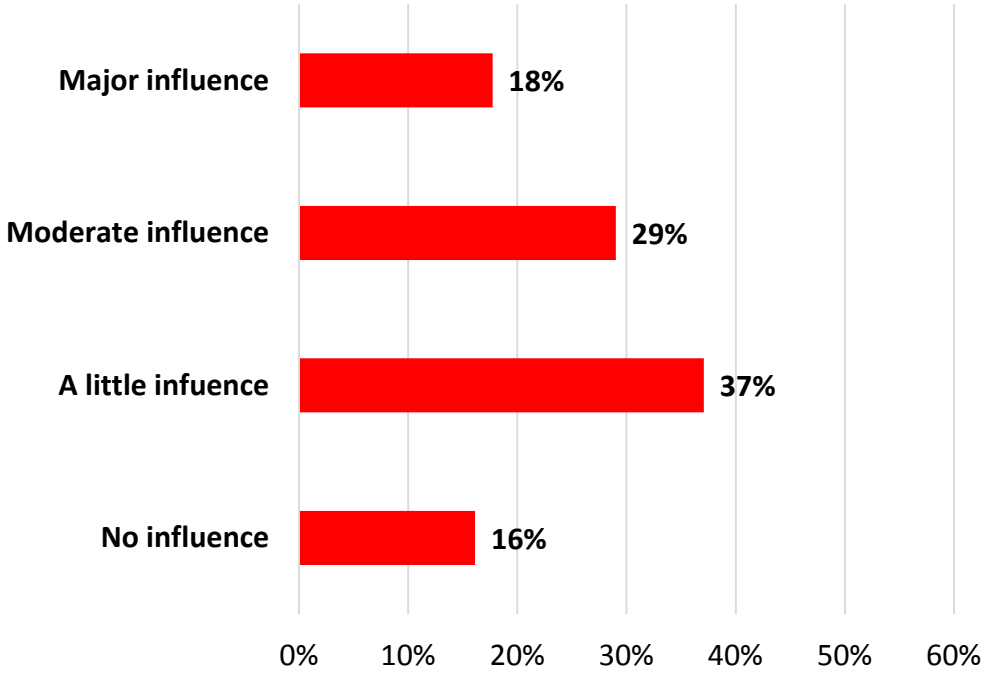
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 38b

Perceived level of influence actually have:

Officials of local affected communities

(n = 62)



Mean	**1.48**
Standard deviation	**0.97**

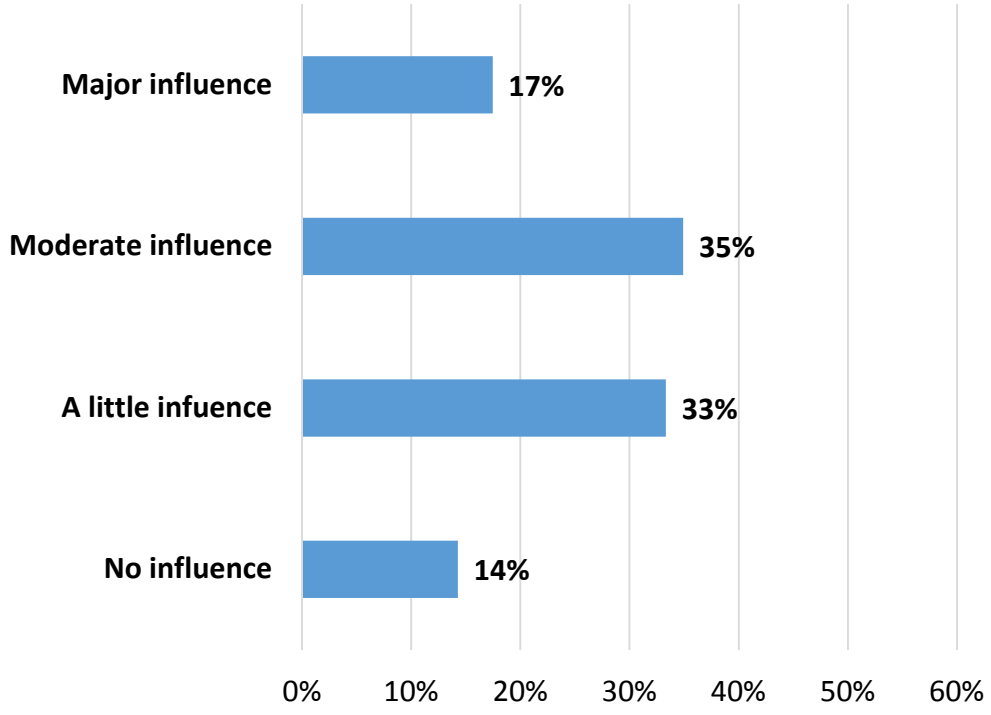
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 39a

Perceived level of influence <u>should have</u>:

Environmental interest groups

(n = 63)



Mean	**1.56**
Standard deviation	**0.95**

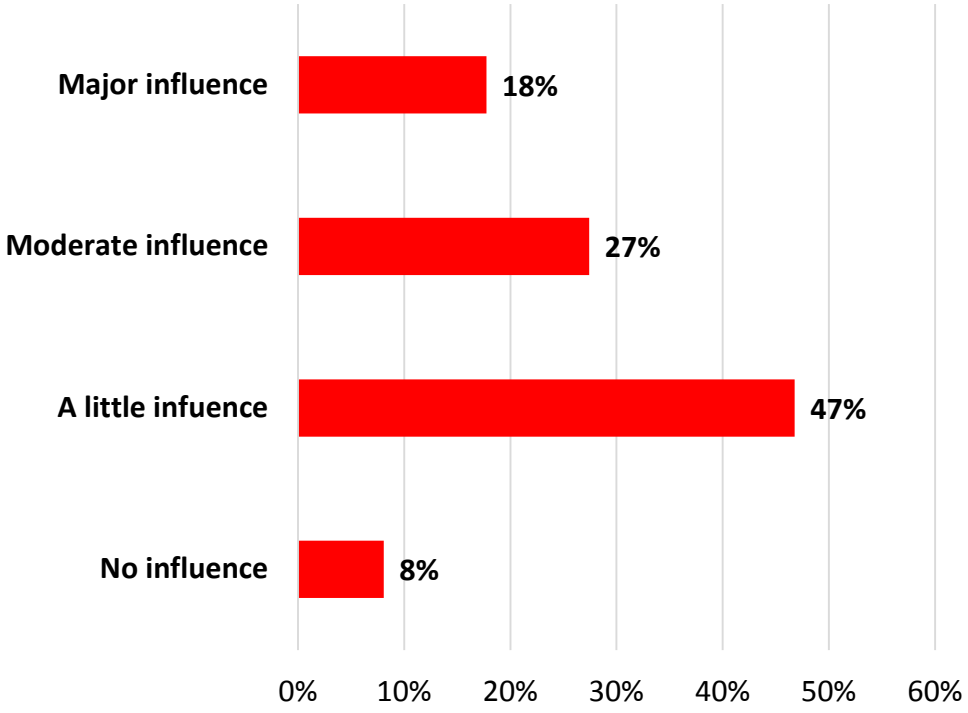
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 39b

Perceived level of influence actually have:

Environmental interest groups

(n = 62)



Mean	**1.55**
Standard deviation	**0.88**

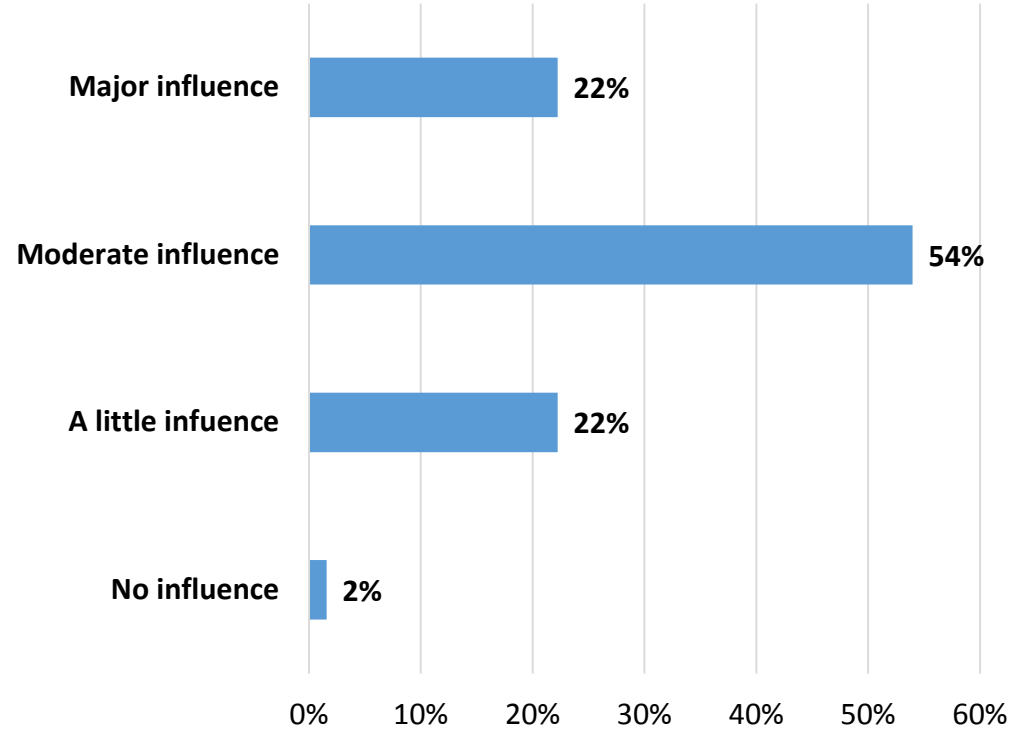
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 40a

Perceived level of influence should have:

Commercial resource industries (agriculture, timber, etc.)

(n = 63)



Mean	**1.97**
Standard deviation	**0.72**

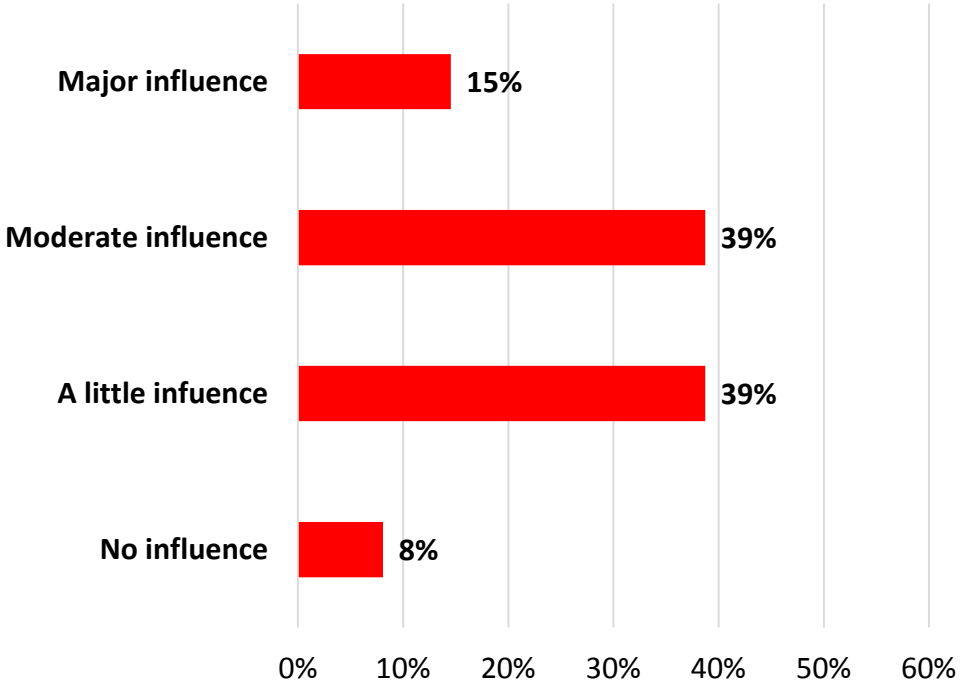
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 40b

Perceived level of influence <u>actually have</u>:

Commercial resource industries (agriculture, timber, etc.)

(n = 62)



Mean	**1.60**
Standard deviation	**0.84**

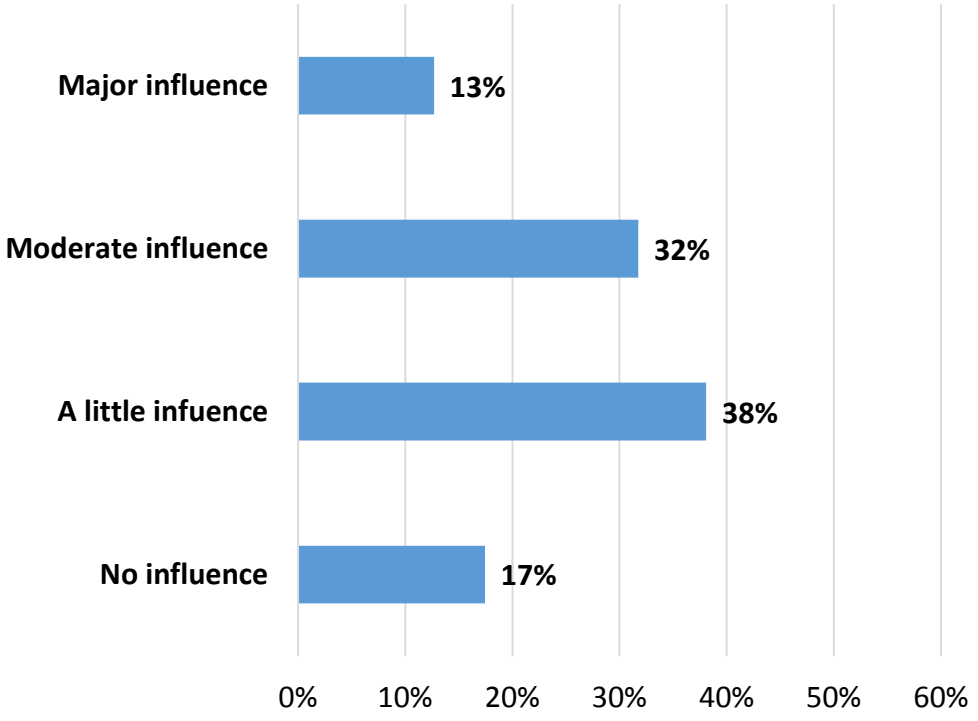
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 41a

Perceived level of influence <u>should have</u>:

Statewide public opinion

(n = 63)



Mean	**1.40**
Standard deviation	**0.93**

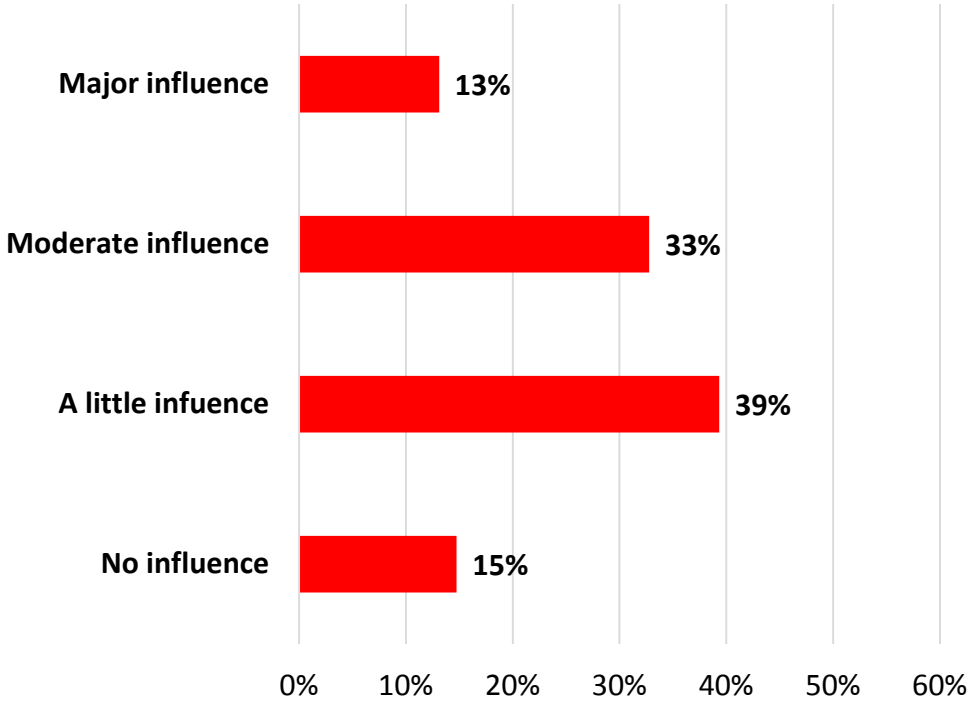
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 41b

Perceived level of influence actually have:

Statewide public opinion

(n = 61)



Mean	**1.44**
Standard deviation	**0.90**

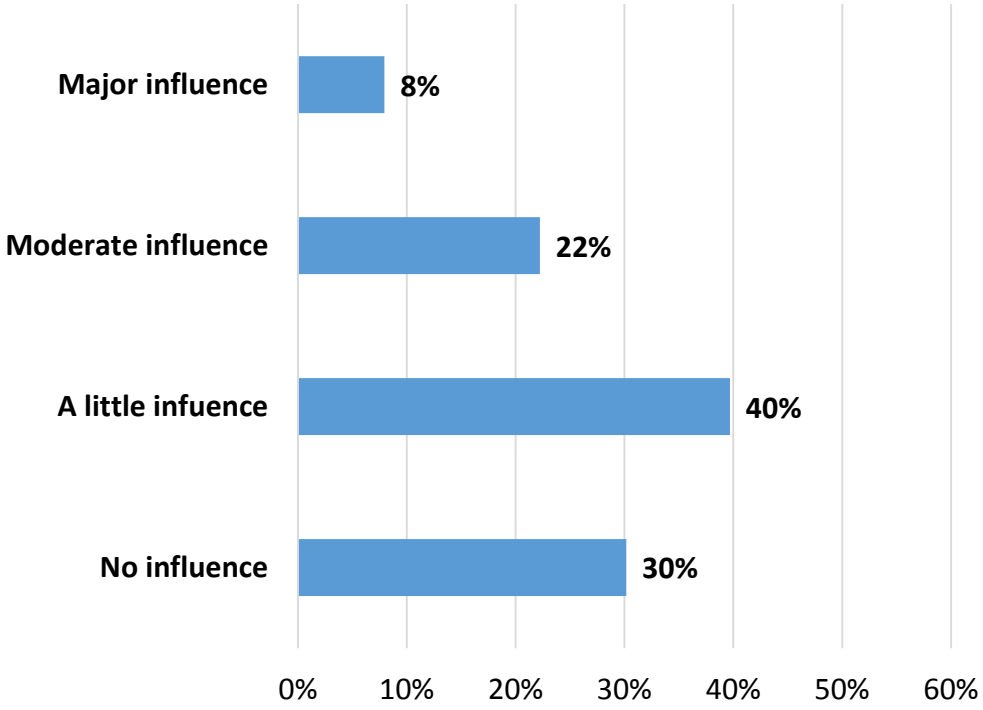
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 42a

Perceived level of influence <u>should have</u>:

National public opinion

(n = 63)



Mean	**1.08**
Standard deviation	**0.92**

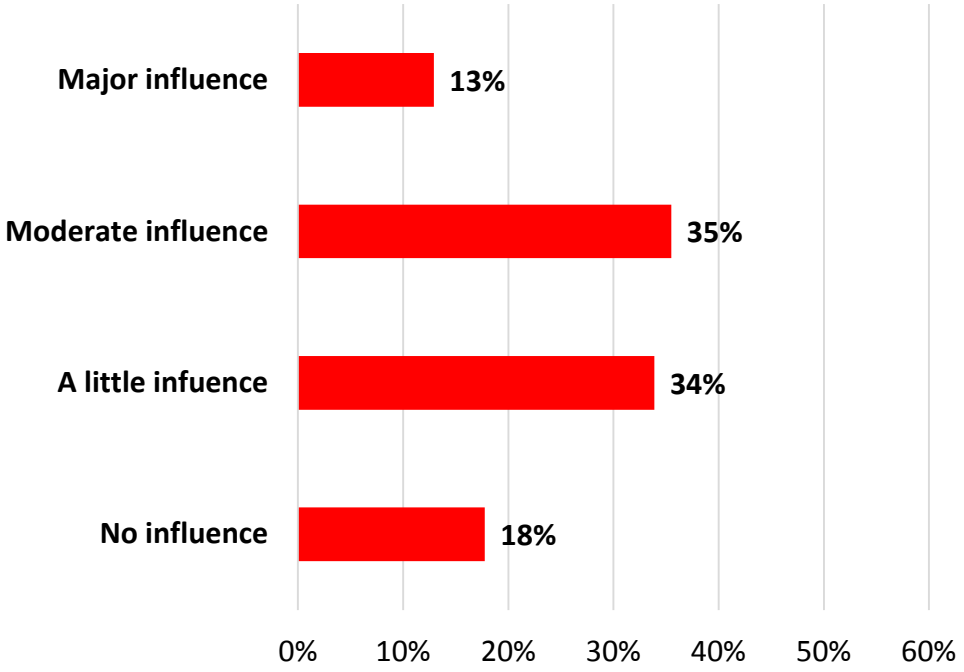
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 42b

Perceived level of influence actually have:

National public opinion

(n = 62)



Mean	**1.44**
Standard deviation	**0.93**

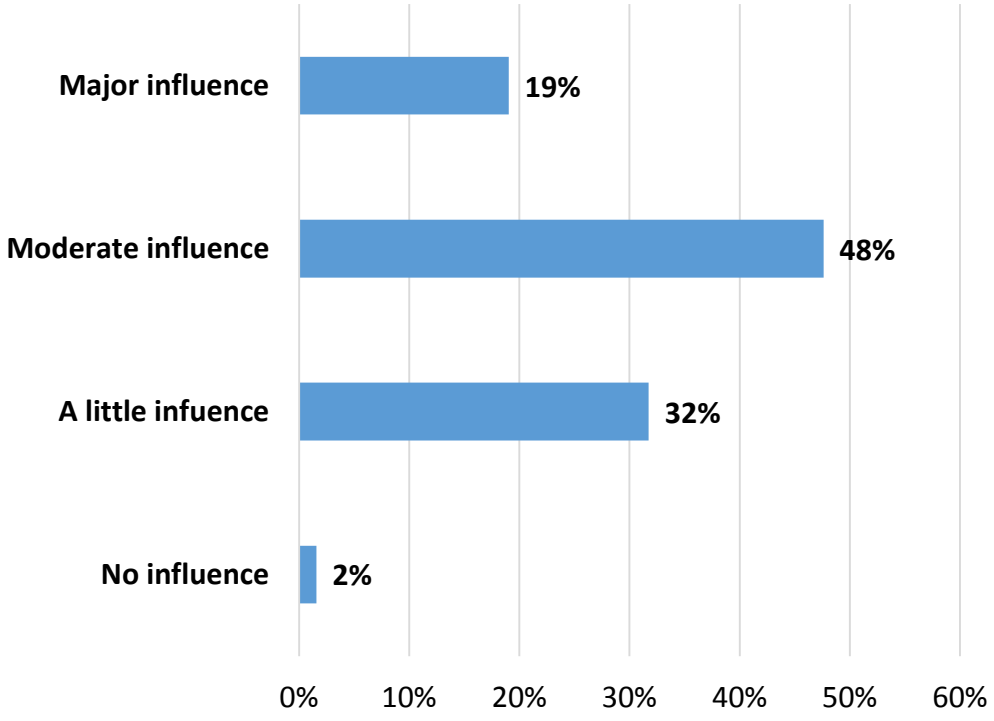
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 43a

Perceived level of influence <u>should have</u>:

State natural resource agencies

(n = 63)

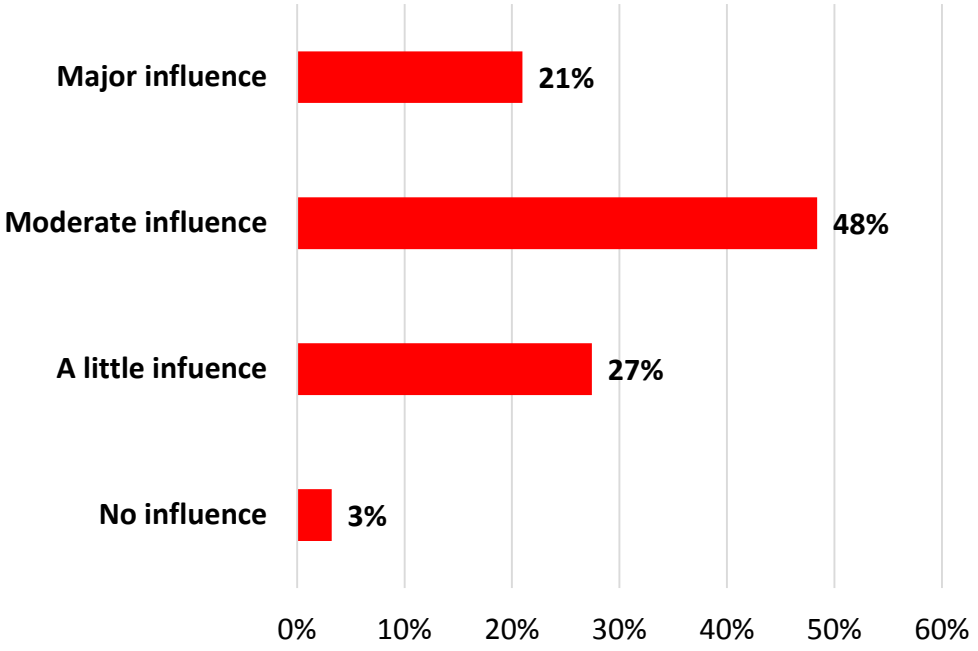


Mean	**1.84**
Standard deviation	**0.75**

coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 43b

Perceived level of influence actually have:
State natural resource agencies
(n = 62)



Mean	**1.87**
Standard deviation	**0.78**

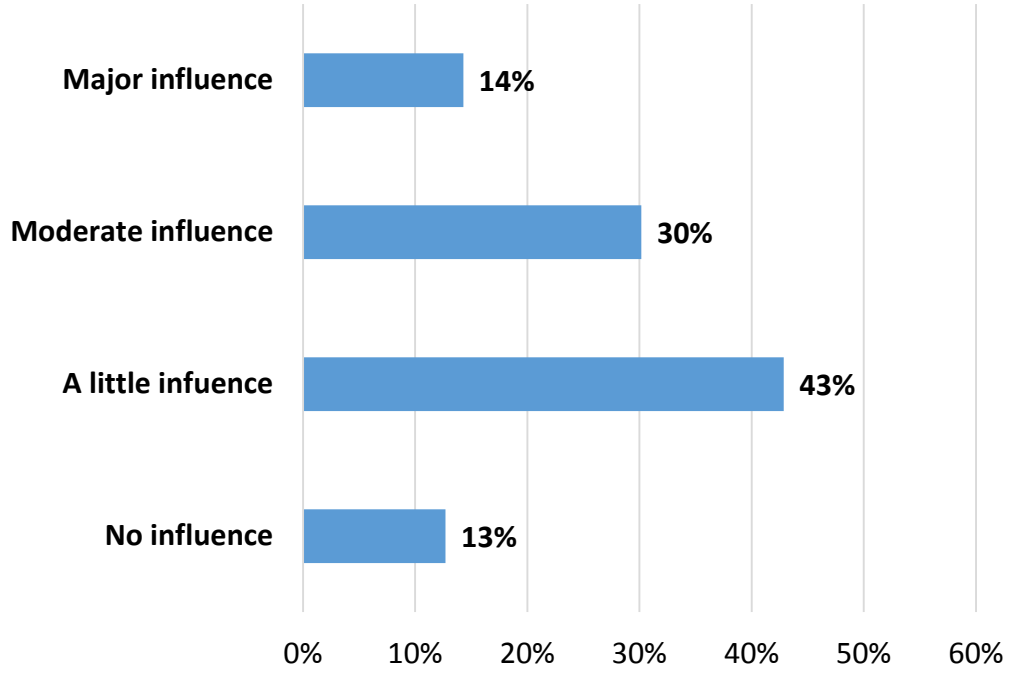
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 44a

Perceived level of influence <u>should have</u>:

Federal natural resource agencies

(n = 63)



Mean	**1.46**
Standard deviation	**0.89**

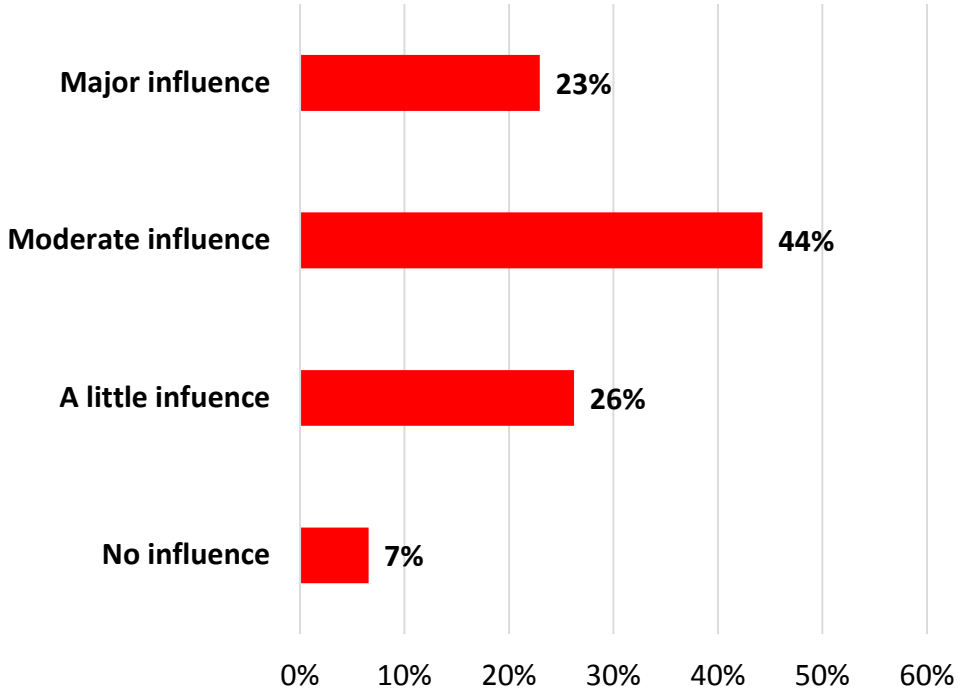
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 44b

Perceived level of influence actually have:

Federal natural resource agencies

(n = 61)



Mean	**1.84**
Standard deviation	**0.86**

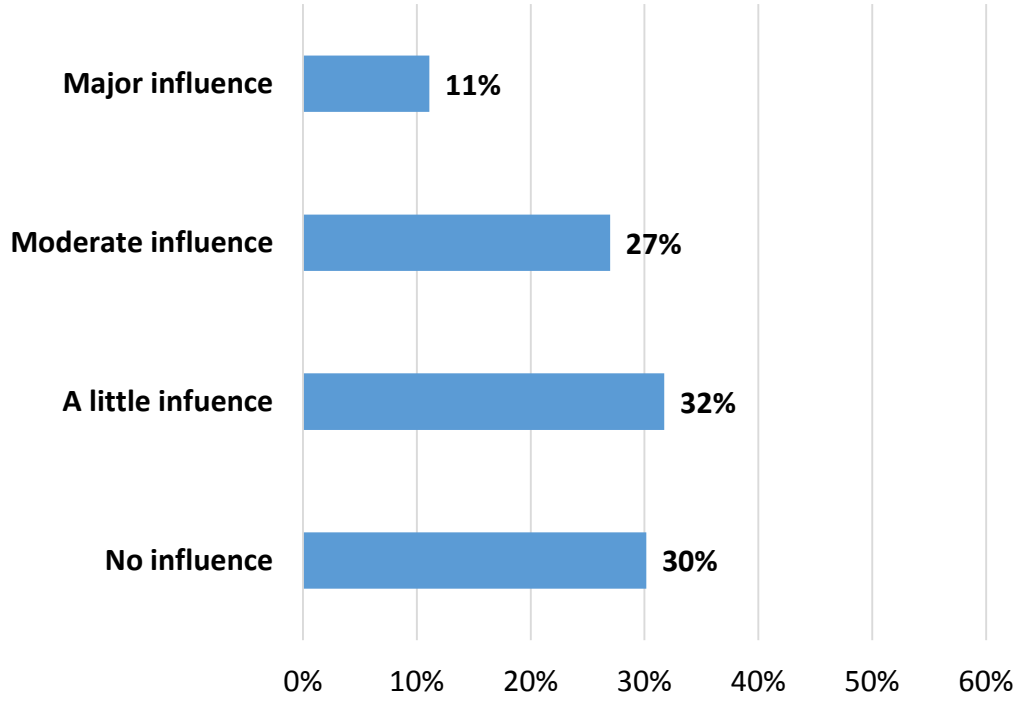
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 45a

Perceived level of influence <u>should have</u>:

U.S. Congress

(n = 63)



Mean	**1.19**
Standard deviation	**1.00**

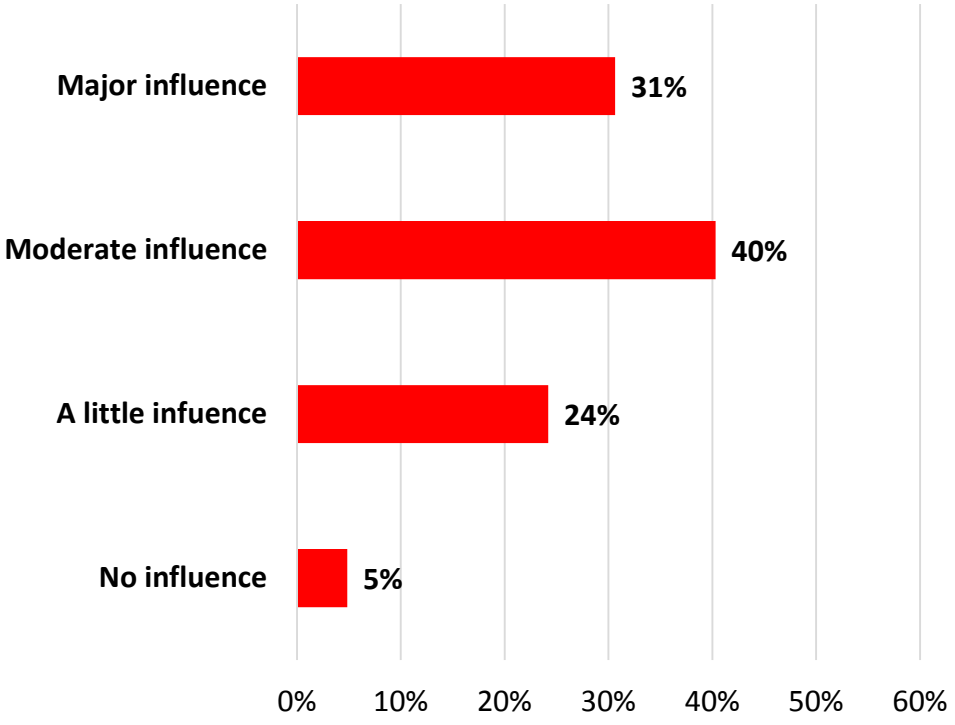
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 45b

Perceived level of influence actually have:

U.S. Congress

(n = 62)



Mean	**1.97**
Standard deviation	**0.87**

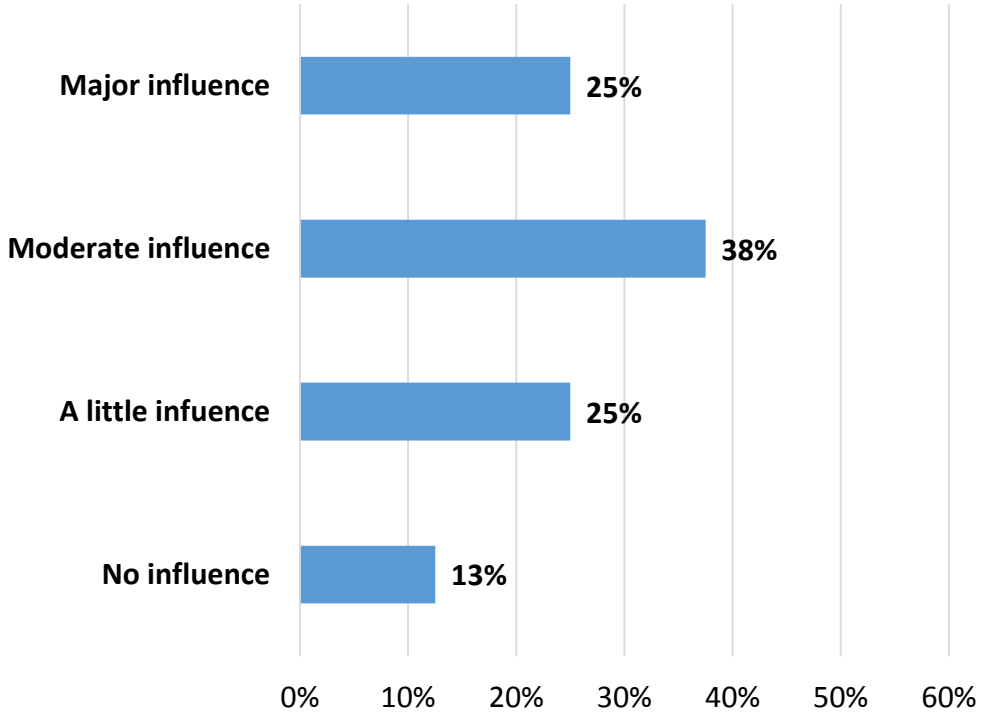
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 46a

Perceived level of influence should have:

Texas State Legislature

(n = 64)



Mean	**1.75**
Standard deviation	**0.98**

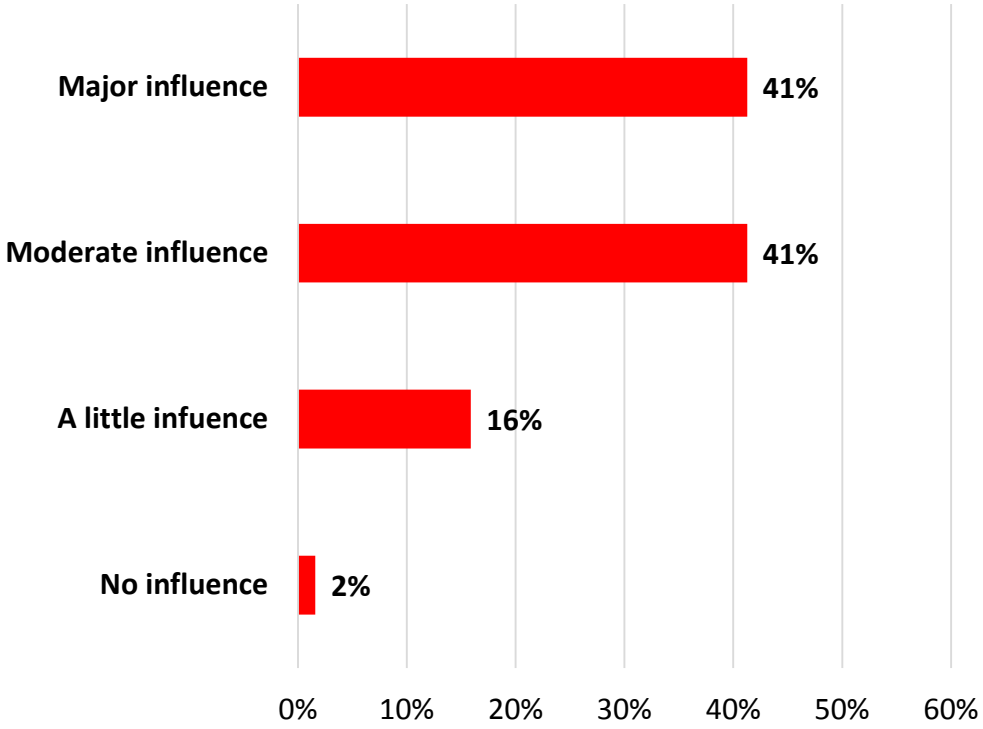
coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Figure 46b

Perceived level of influence actually have:

Texas State Legislature

(n = 63)



Mean	**2.22**
Standard deviation	**0.77**

coding:
0 = No influence; 1 = A little influence; 2 = Moderate influence; 3 = Major influence

Section VIII

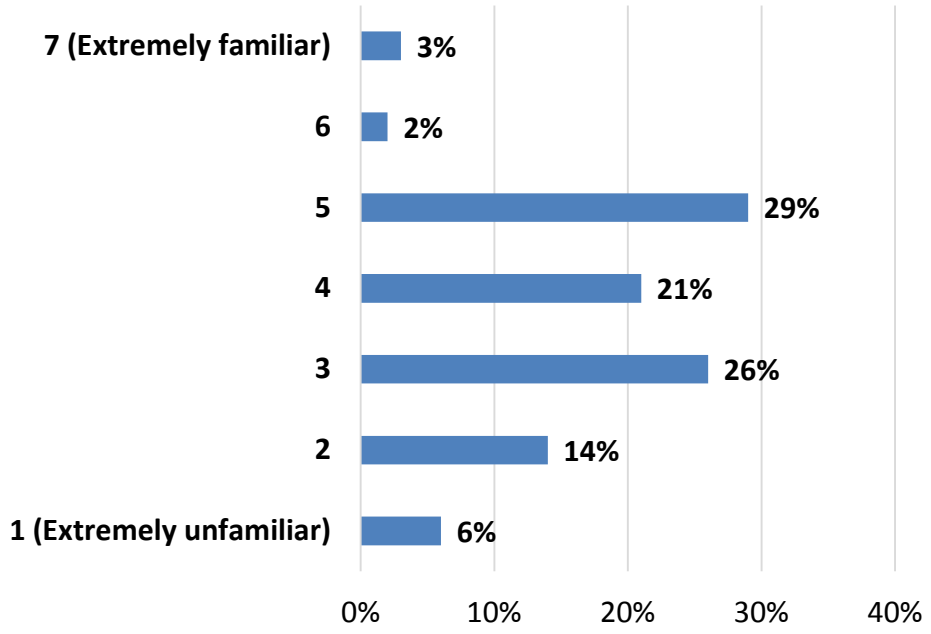
Hydraulic Fracturing

Figures 47 through 49o pertain to the issue of hydraulic fracturing. Figure 47 summarizes respondents' level of familiarity with the process of hydraulic fracturing. Figures 48a through 48o illustrate the contribution to respondents' knowledge about hydraulic fracturing from 15 different sources. And, Figures 49a through 49o represent respondents' overall trust in each of 15 sources to deliver unbiased, factual knowledge on hydraulic fracturing.

Figure 47

Level of familiarity with the process of hydraulic fracturing

(n = 65)



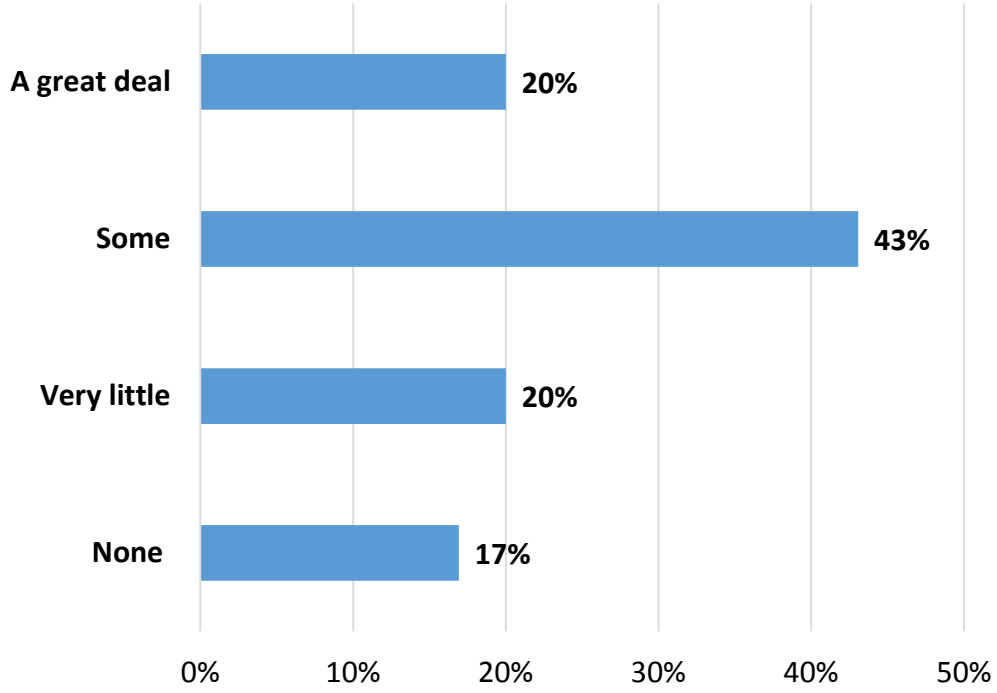
Mean	**4.97**
Standard deviation	**1.37**

Figure 48a

Contributed to knowledge about the process of hydraulic fracturing:

Newspapers

(n = 65)



Mean	**1.66**
Standard deviation	**0.99**

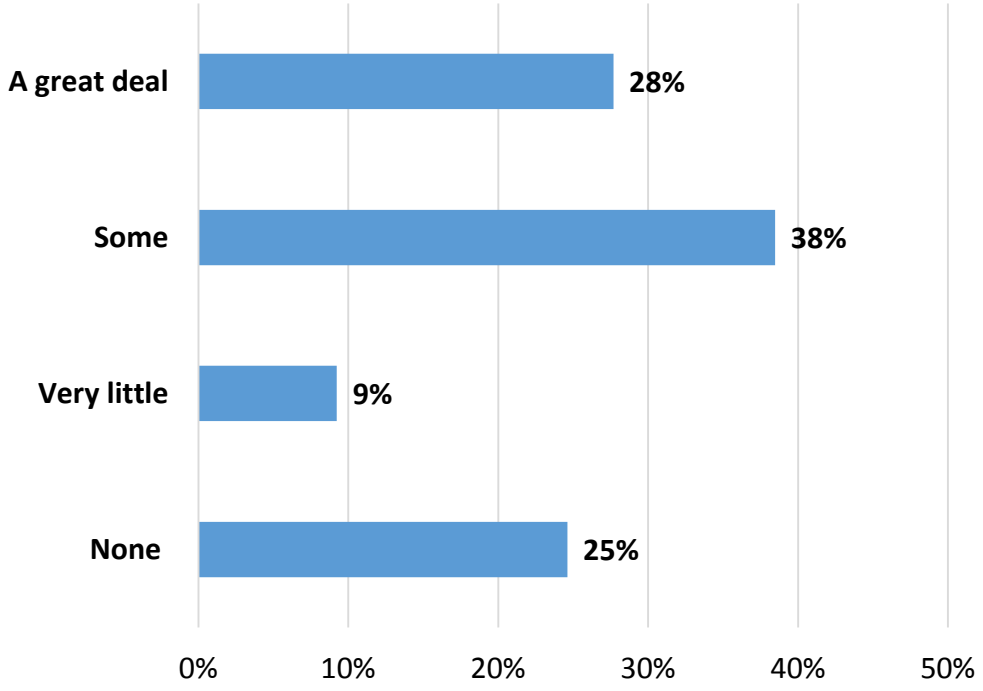
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48b

Contributed to knowledge about the process of hydraulic fracturing:

Internet websites

(n = 65)

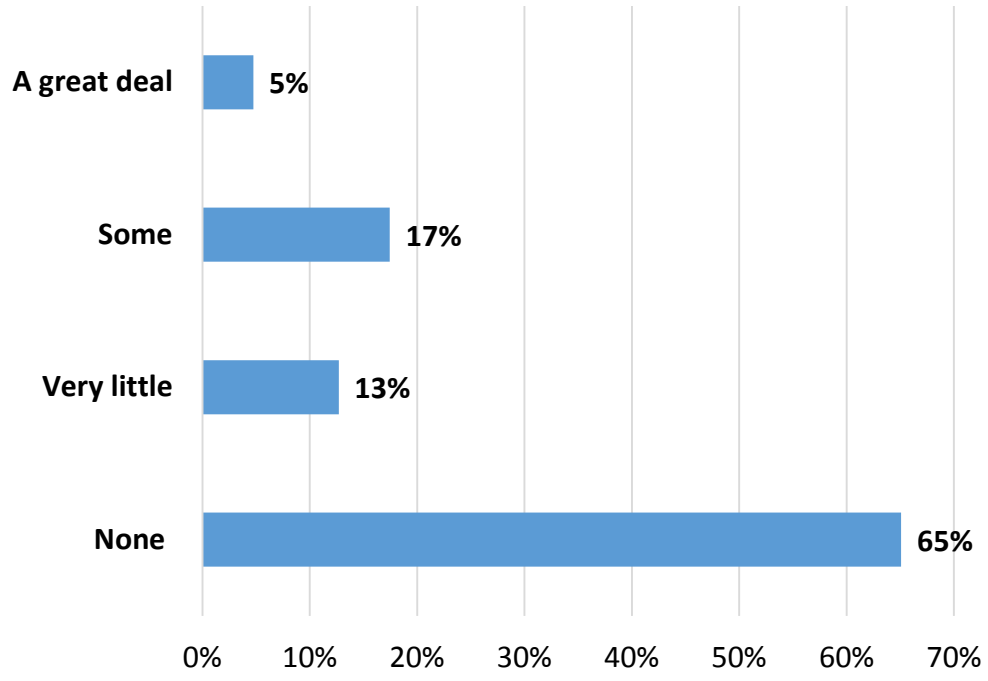


Mean	**1.69**
Standard deviation	**1.13**

coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48c

Contributed to knowledge about the process of hydraulic fracturing:
Gasland and/or *Gasland 2*
(the films by Josh Fox)
(n = 63)



Mean	**0.62**
Standard deviation	**0.94**

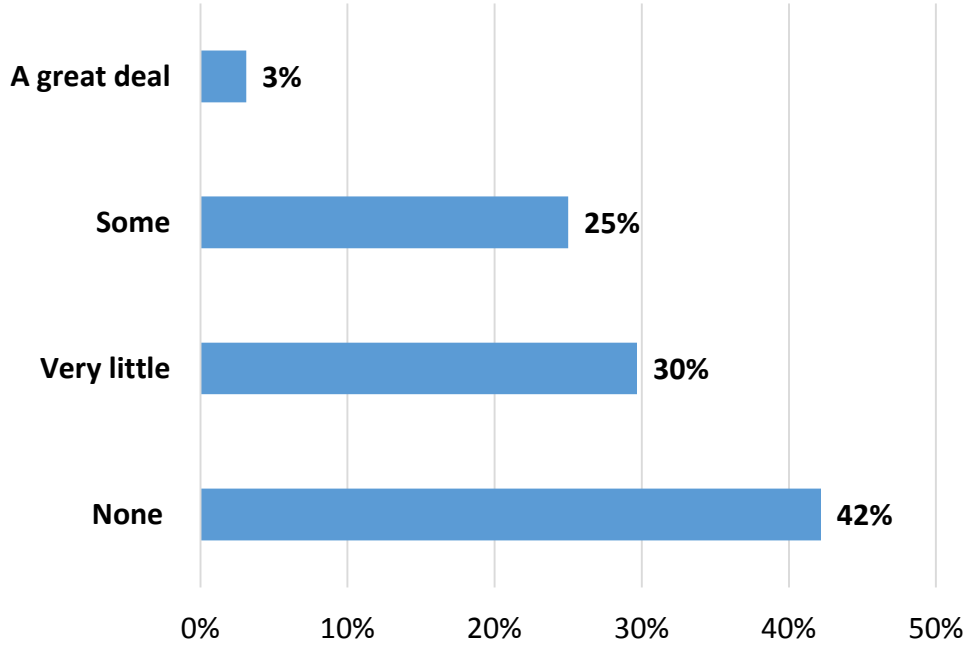
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48d

Contributed to knowledge about the process of hydraulic fracturing:

Texas A&M AgriLife Extension

(n = 64)

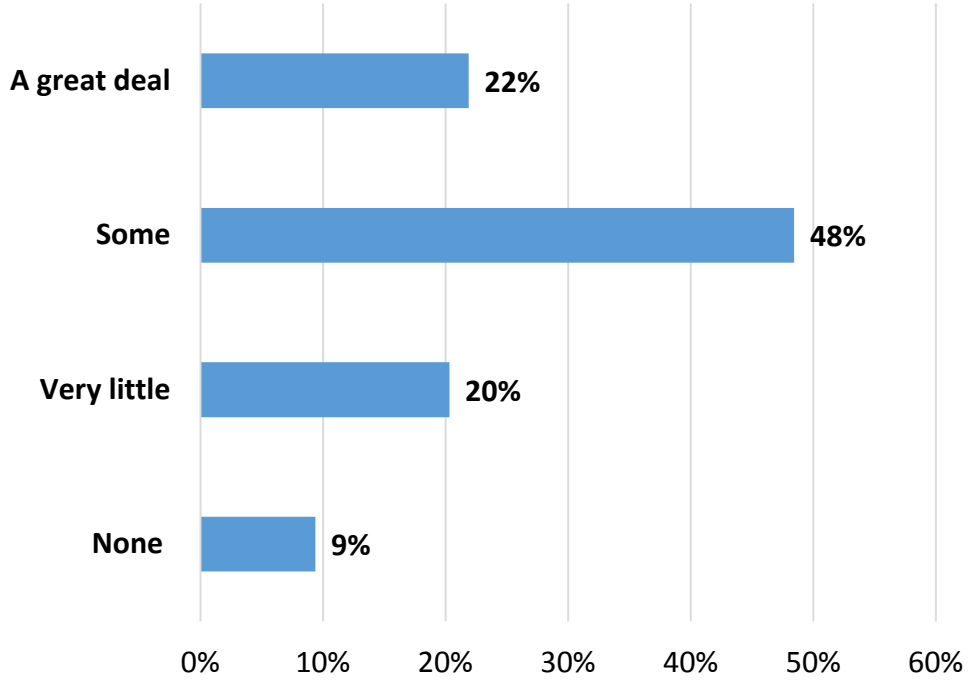


Mean	**0.89**
Standard deviation	**0.89**

coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48e

Contributed to knowledge about the process of hydraulic fracturing:
Oil/natural gas industry
(n = 64)



Mean	**1.83**
Standard deviation	**0.88**

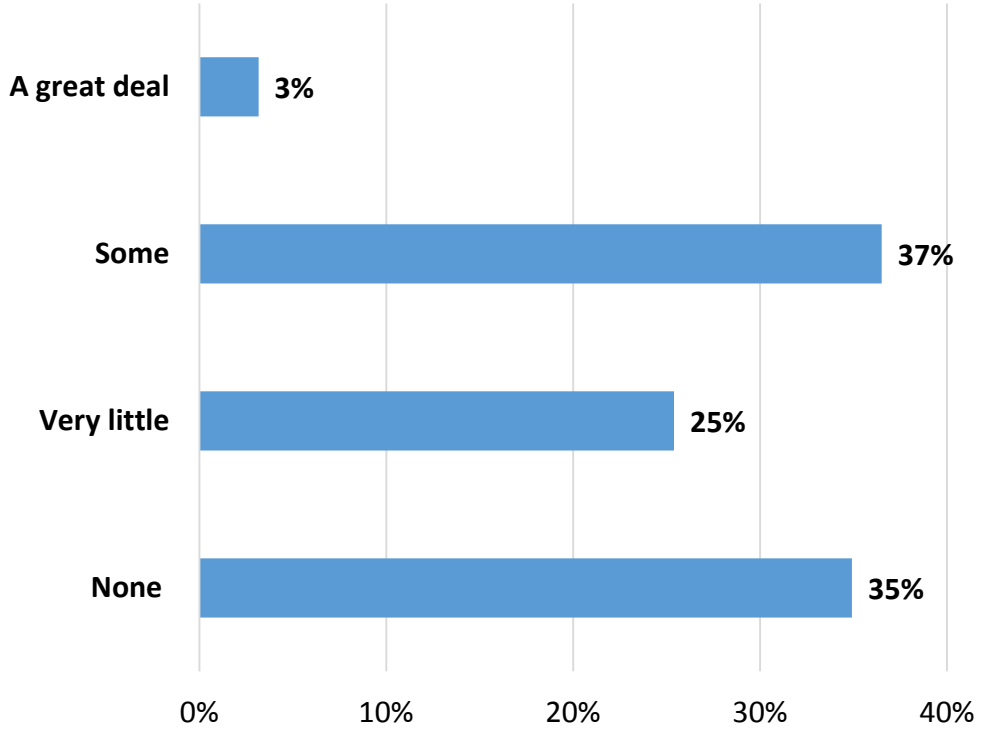
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48f

Contributed to knowledge about the process of hydraulic fracturing:

Regulatory agencies

(n = 63)

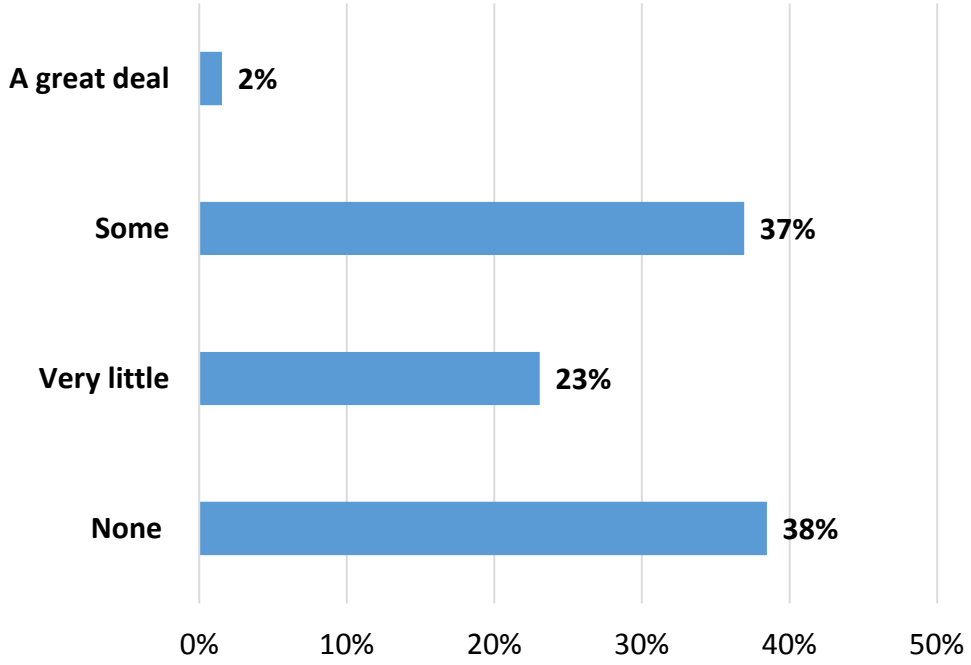


Mean	**1.08**
Standard deviation	**0.92**

coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48g

Contributed to knowledge about the process of hydraulic fracturing:
Conservation/environmental groups
(n = 65)



Mean	**1.02**
Standard deviation	**0.91**

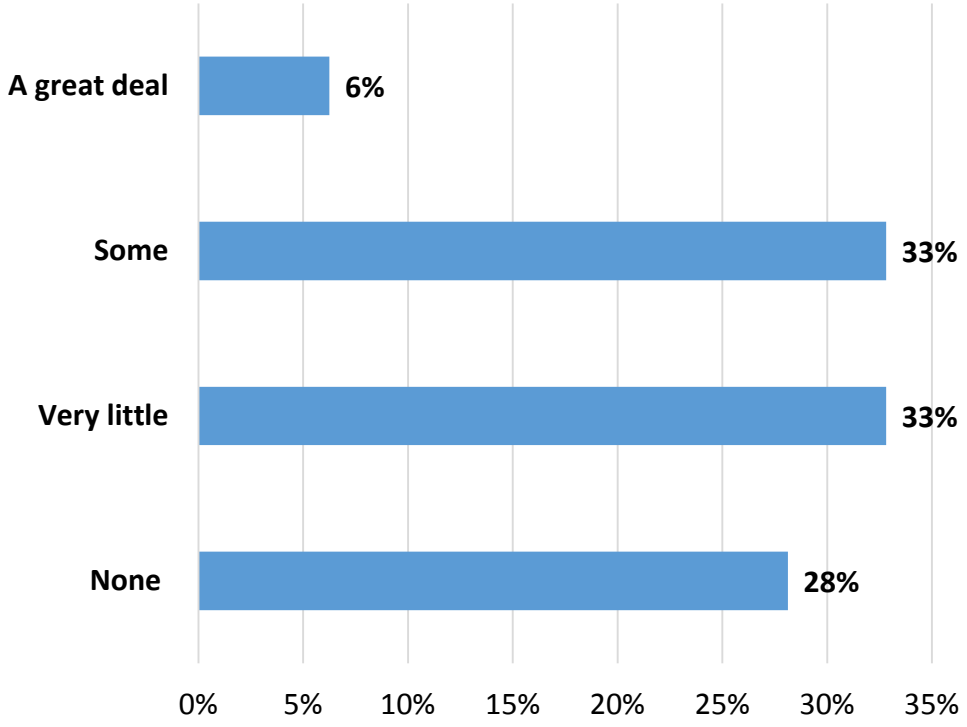
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48h

Contributed to knowledge about the process of hydraulic fracturing:

Social media

(n = 64)



Mean	**1.17**
Standard deviation	**0.92**

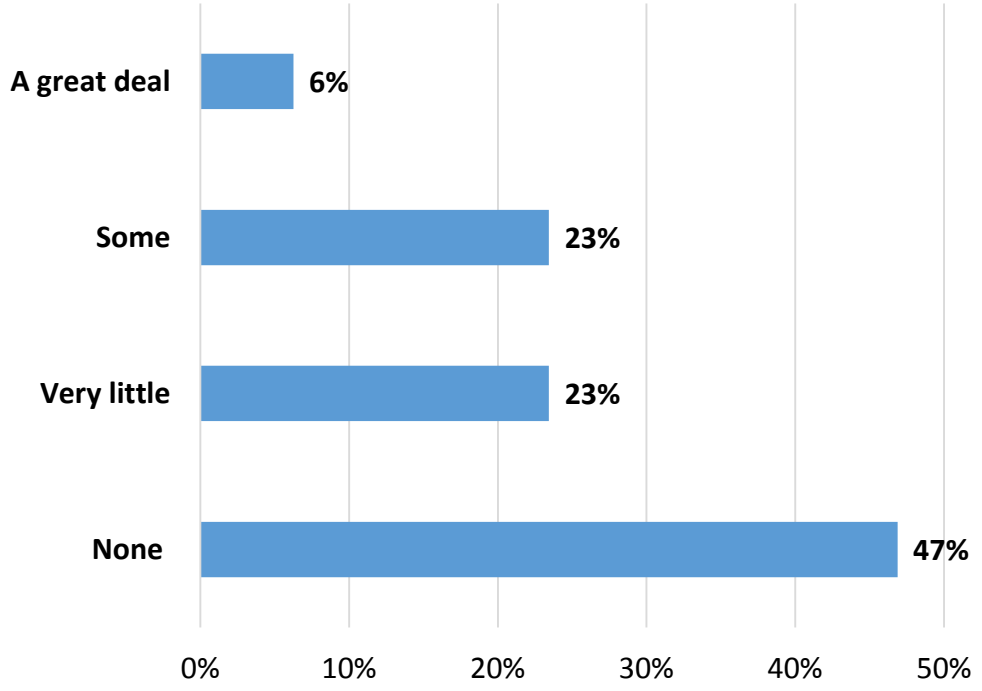
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48i

Contributed to knowledge about the process of hydraulic fracturing:

University professors

(n = 64)



Mean	**0.89**
Standard deviation	**0.98**

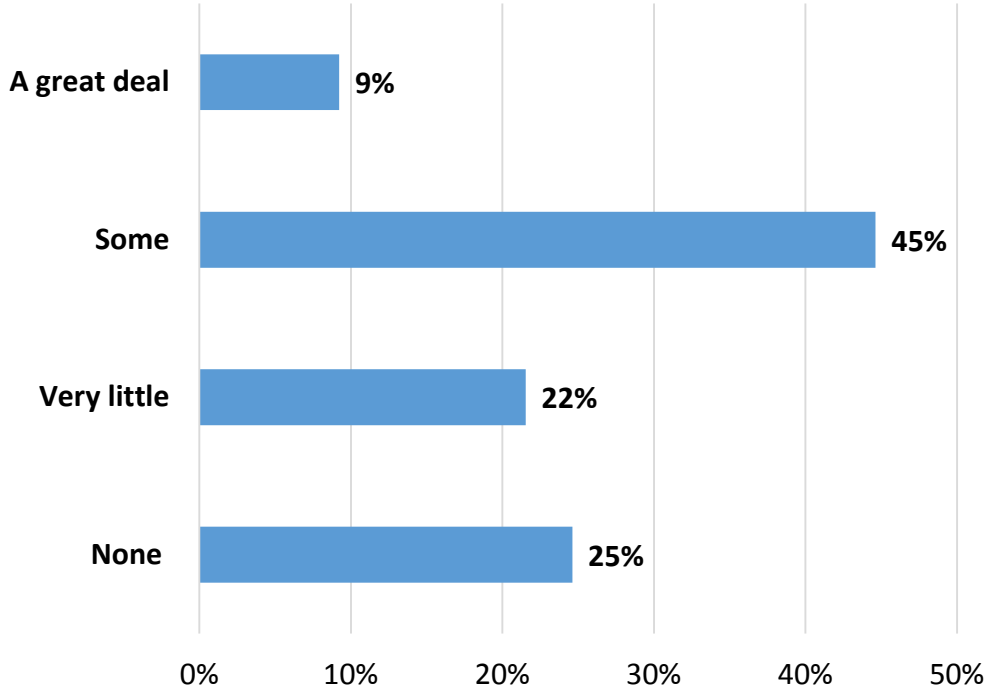
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48j

Contributed to knowledge about the process of hydraulic fracturing:

Landowner groups/coalitions

(n = 65)



Mean	**1.38**
Standard deviation	**0.96**

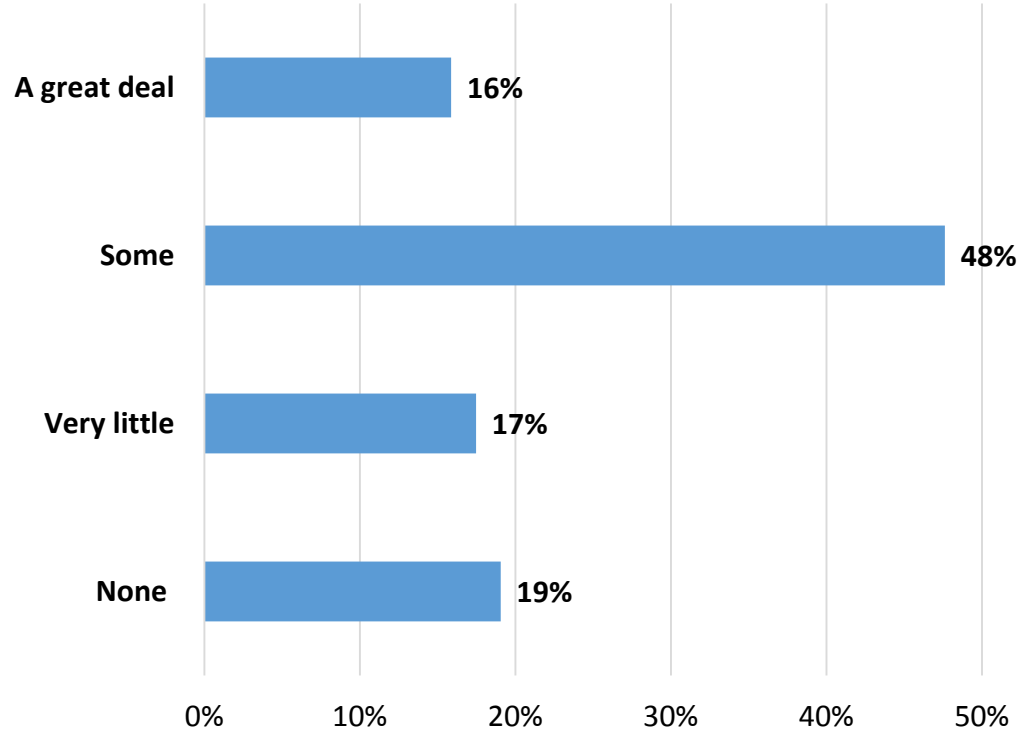
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48k

Contributed to knowledge about the process of hydraulic fracturing:

Neighbors

(n = 63)

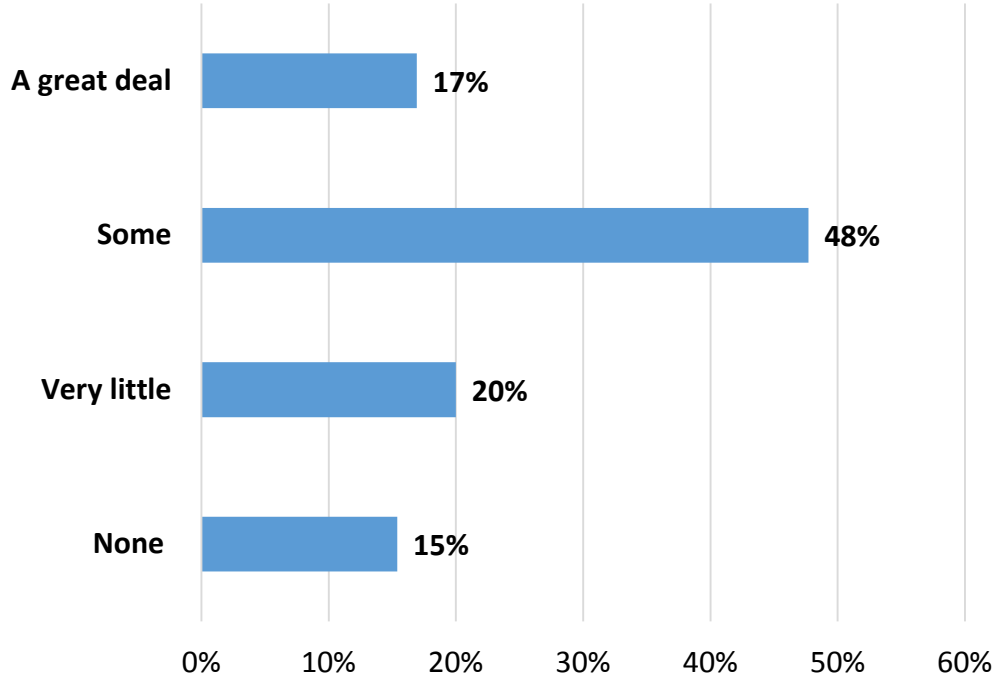


Mean	**1.60**
Standard deviation	**0.98**

coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48l

Contributed to knowledge about the process of hydraulic fracturing:
Friends in community
(n = 65)



Mean	**1.66**
Standard deviation	**0.94**

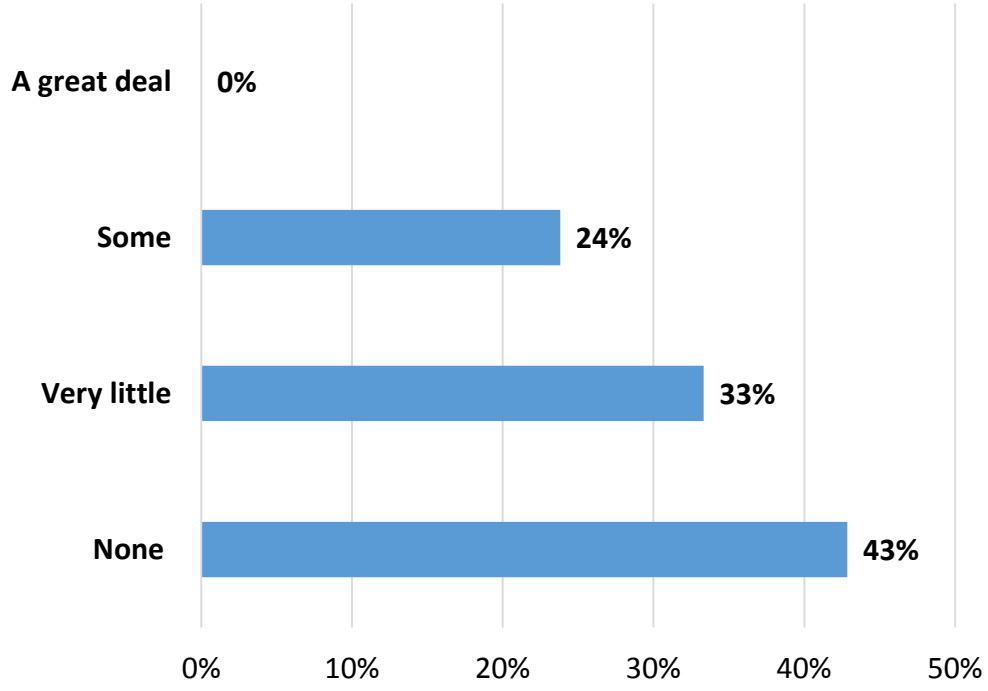
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48m

Contributed to knowledge about the process of hydraulic fracturing:

Elected county officials

(n = 63)



Mean	**0.81**
Standard deviation	**0.80**

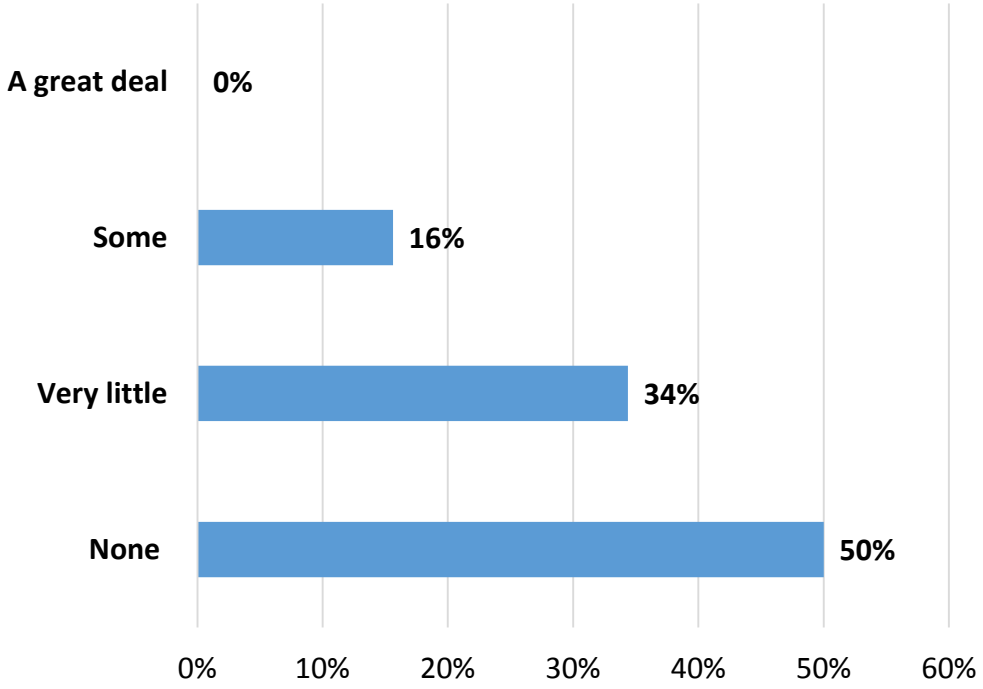
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48n

Contributed to knowledge about the process of hydraulic fracturing:

Elected city officials

(n = 64)



Mean	**0.66**
Standard deviation	**0.74**

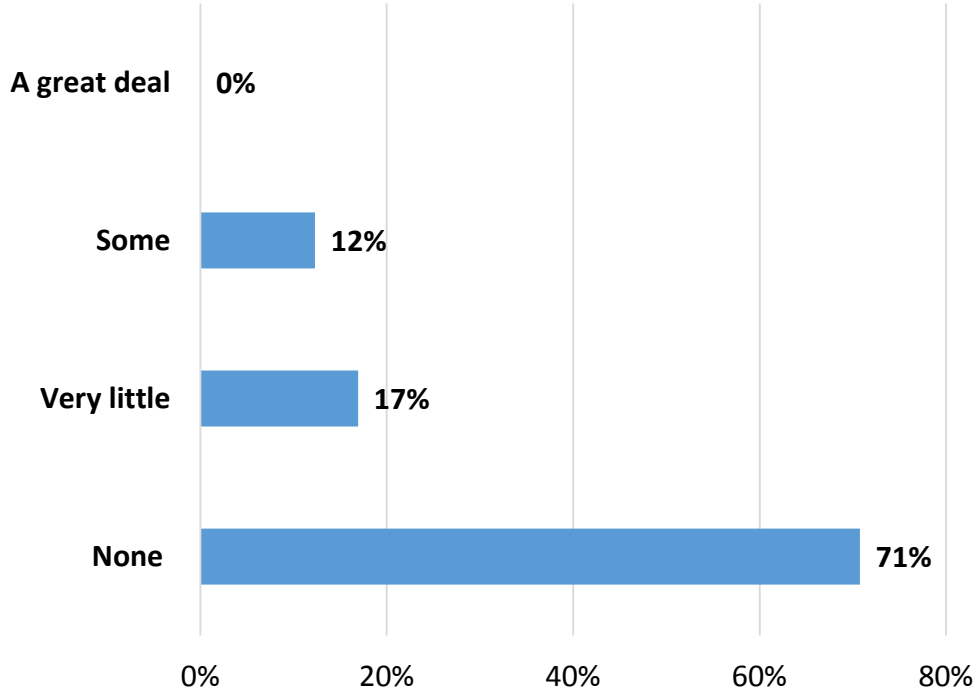
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 48o

Contributed to knowledge about the process of hydraulic fracturing:

Religious leaders

(n = 65)



Mean	**0.42**
Standard deviation	**0.70**

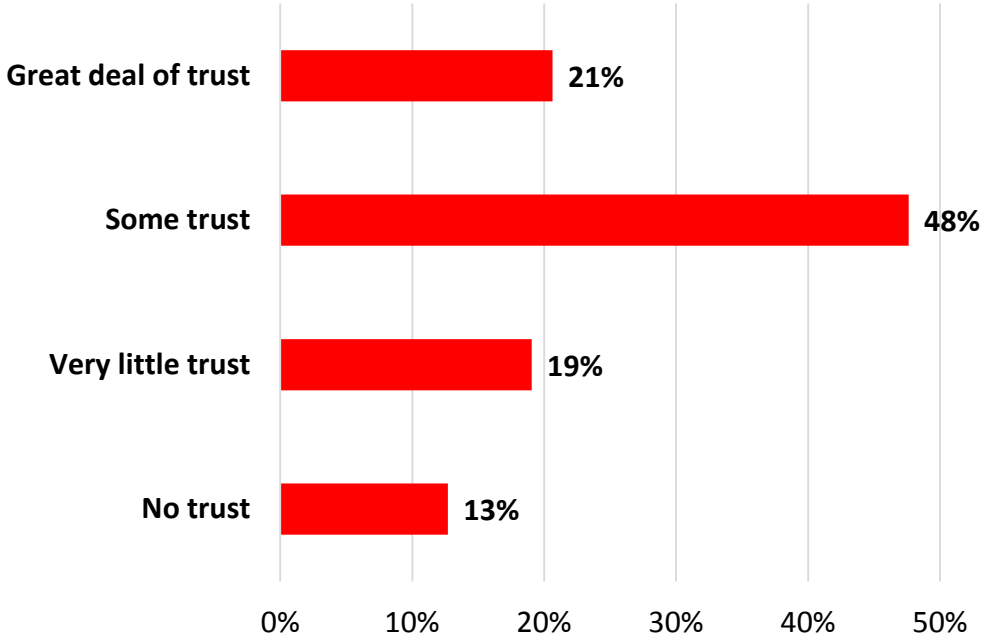
coding:
0 = None; 1 = Very little; 2 = Some; 3 = A great deal

Figure 49a

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Newspapers

(n = 63)



Mean	**1.76**
Standard deviation	**0.93**

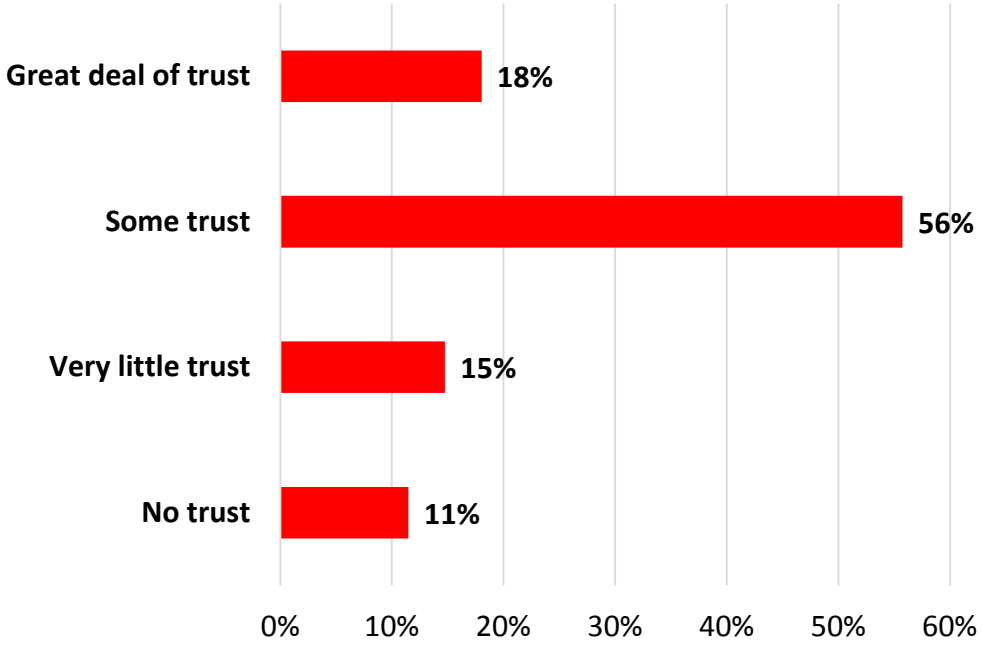
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49b

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Internet websites

(n = 61)

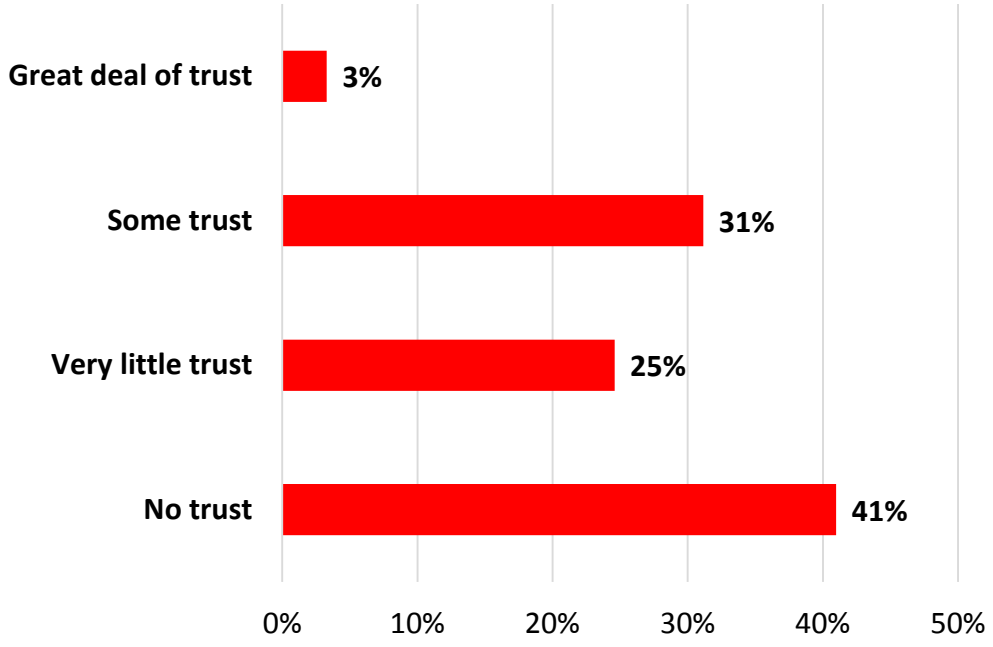


Mean	**1.80**
Standard deviation	**0.87**

coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49c

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:
Gasland and/or *Gasland 2*
(the films by Josh Fox)
(n = 61)



Mean	**0.97**
Standard deviation	**0.93**

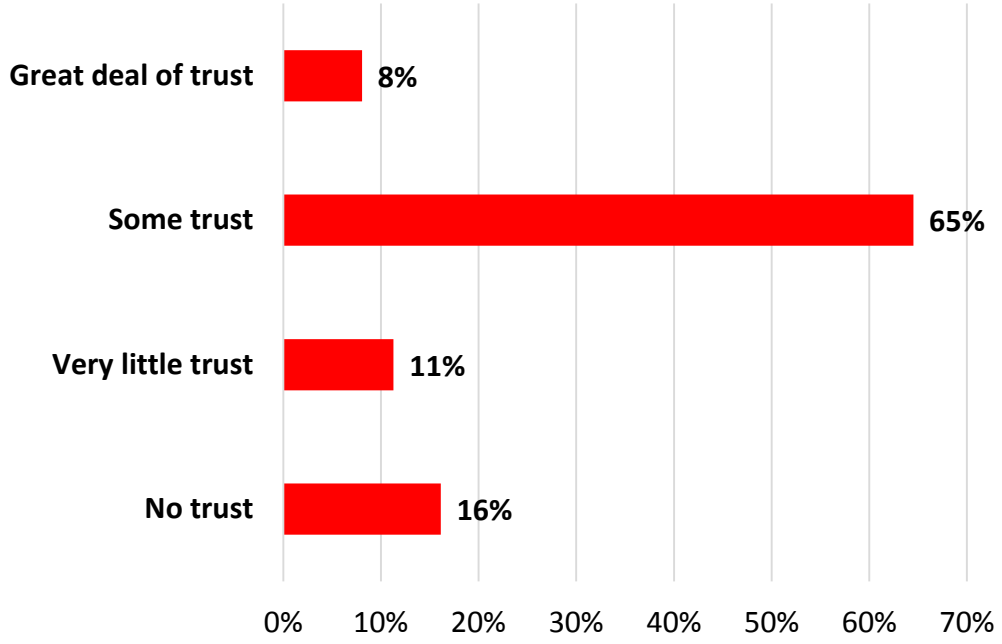
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49d

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Texas A&M AgriLife Extension

(n = 62)

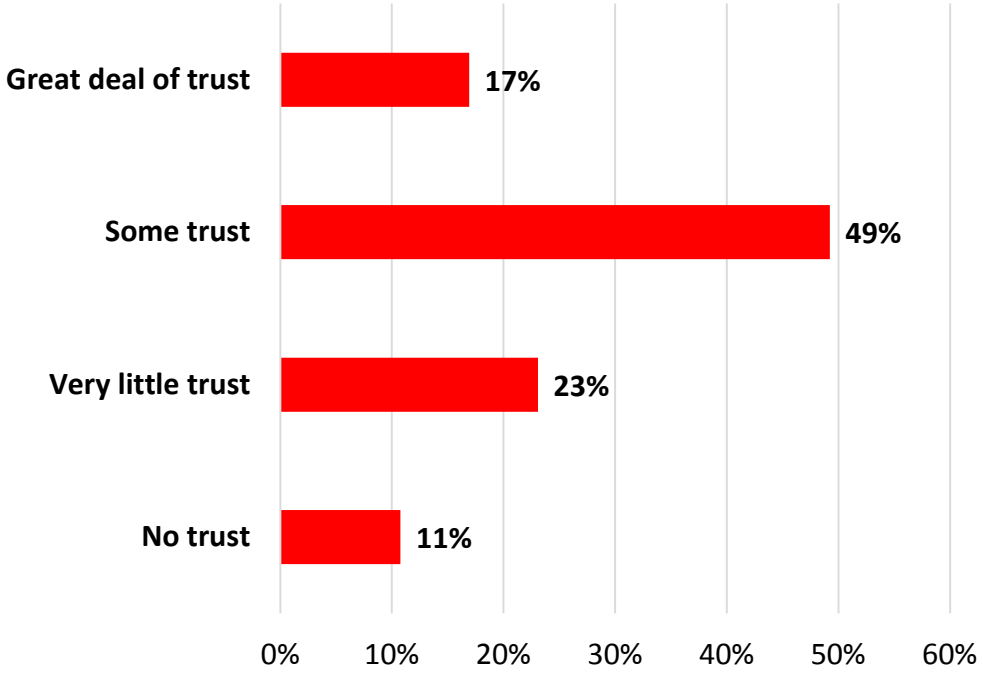


Mean	**1.65**
Standard deviation	**0.85**

coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49e

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:
Oil/natural gas industry
(n = 65)



Mean	**1.72**
Standard deviation	**0.88**

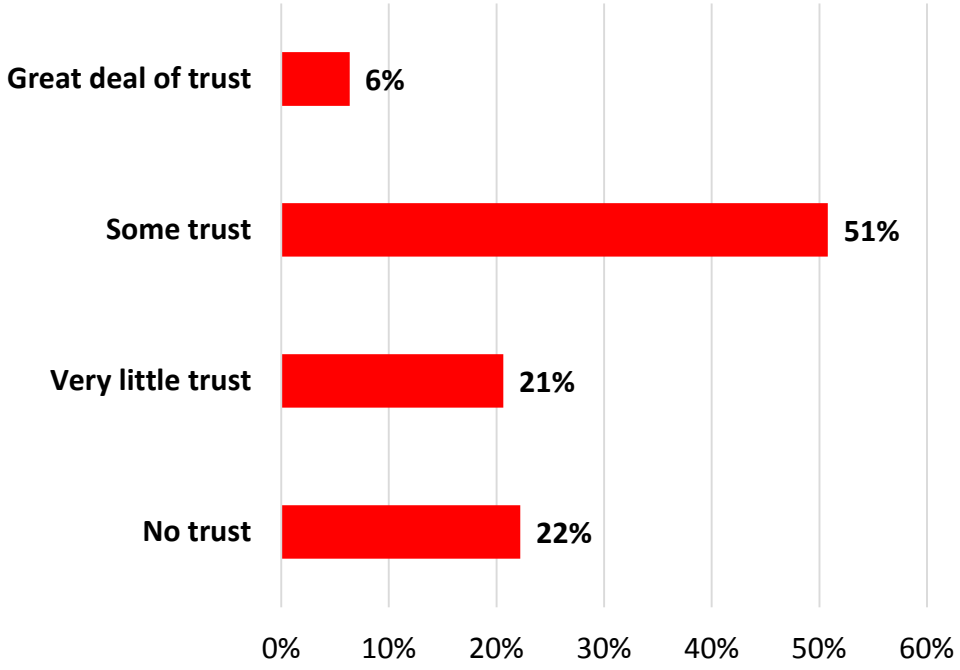
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49f

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Regulatory agencies

(n = 63)

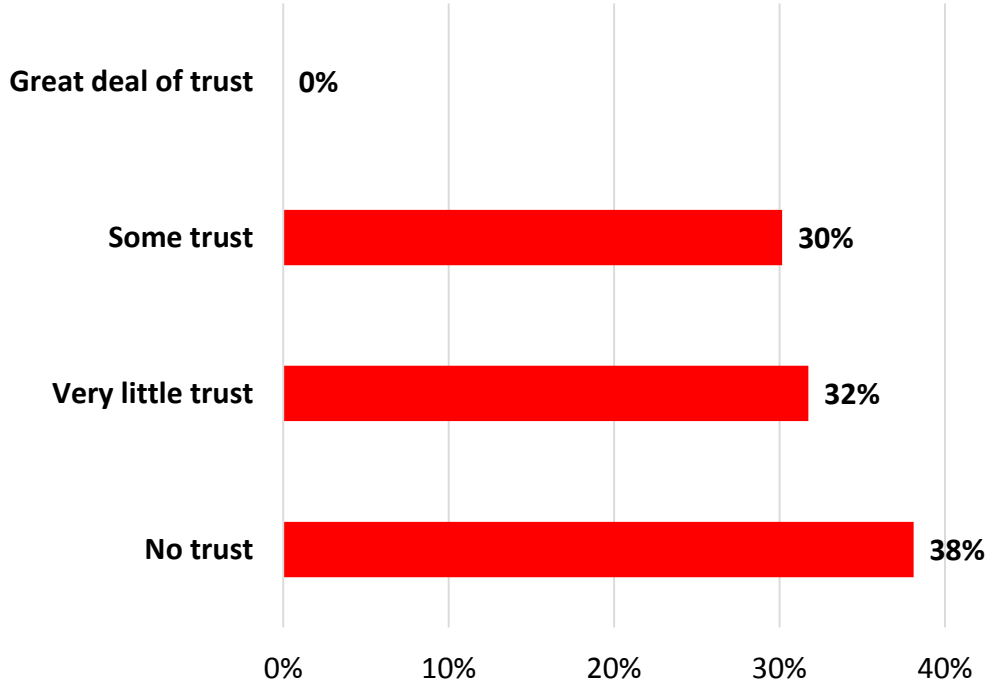


Mean	**1.41**
Standard deviation	**0.91**

coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49g

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:
Conservation/environmental groups
(n = 63)



Mean	**0.92**
Standard deviation	**0.83**

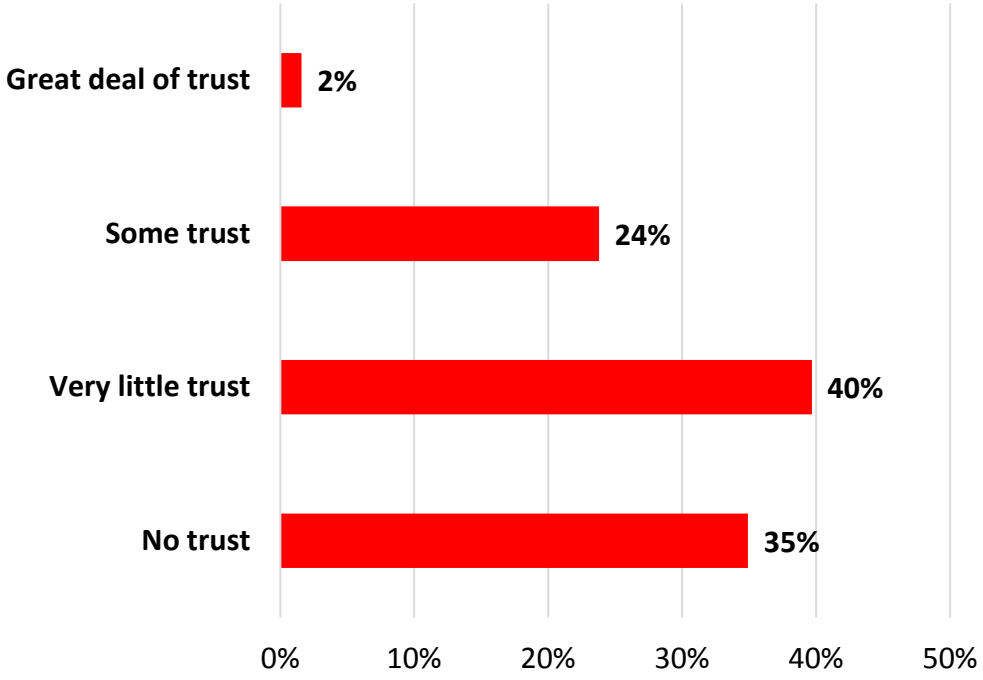
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49h

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Social media

(n = 63)



Mean	**0.92**
Standard deviation	**0.81**

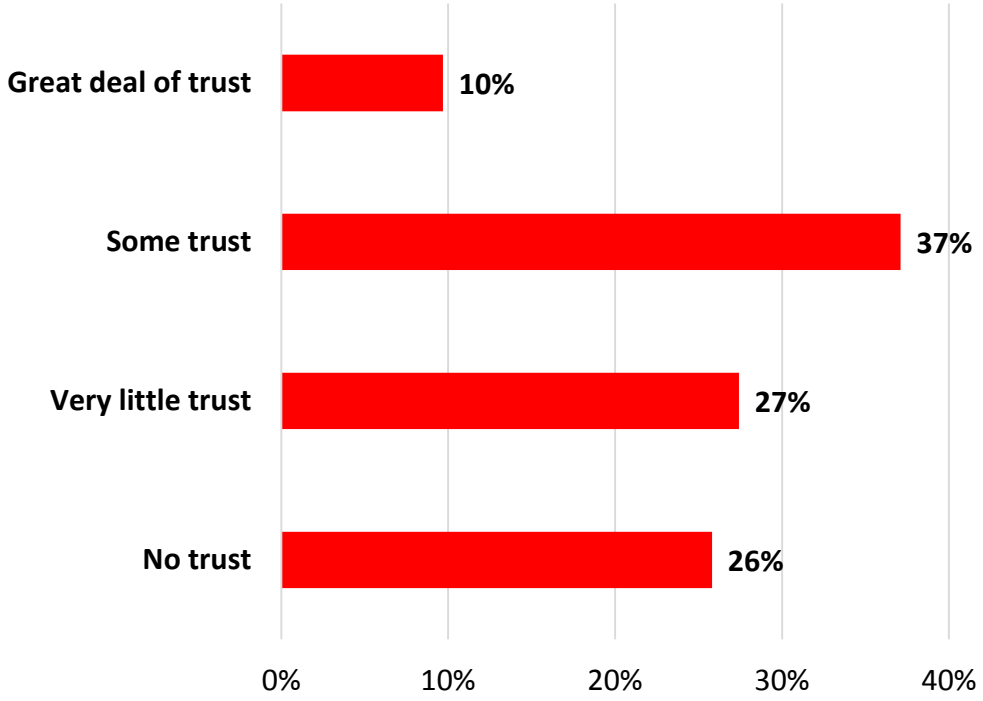
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49i

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

University professors

(n = 62)

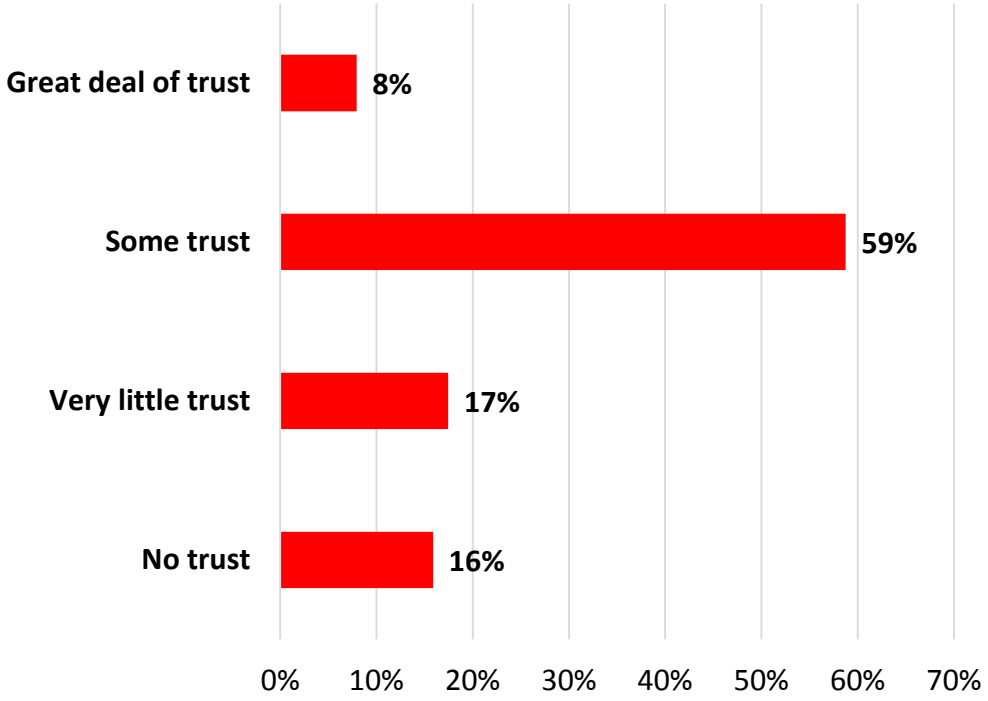


Mean	**1.31**
Standard deviation	**0.97**

coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49j

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:
Landowner groups/coalitions
(n = 63)



Mean	**1.59**
Standard deviation	**0.85**

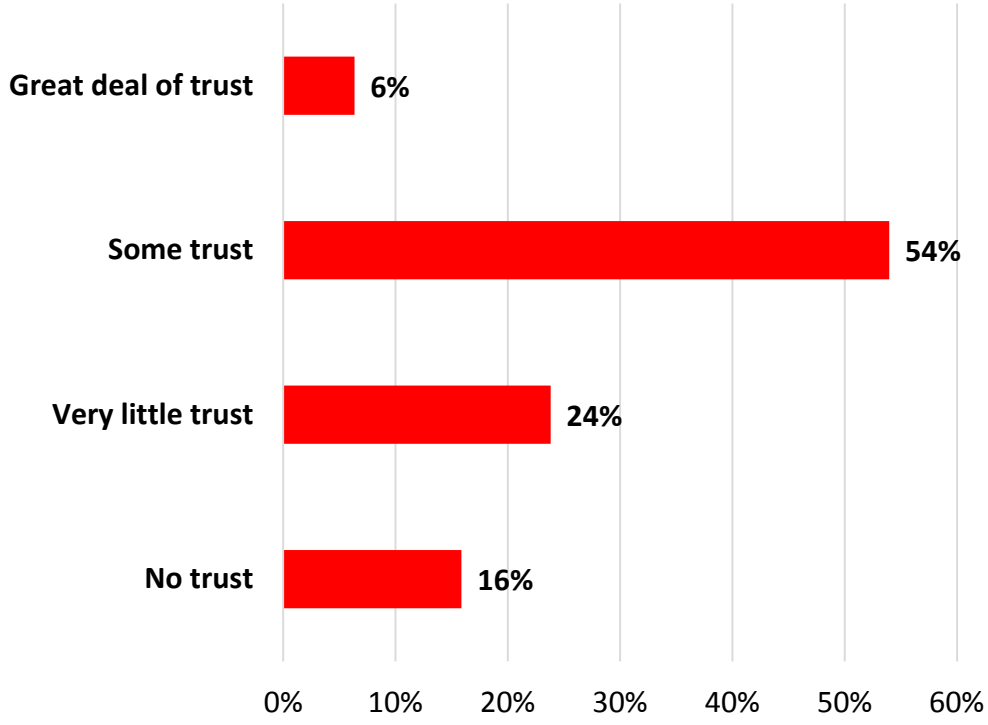
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49k

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Neighbors

(n = 63)



Mean	**1.51**
Standard deviation	**0.84**

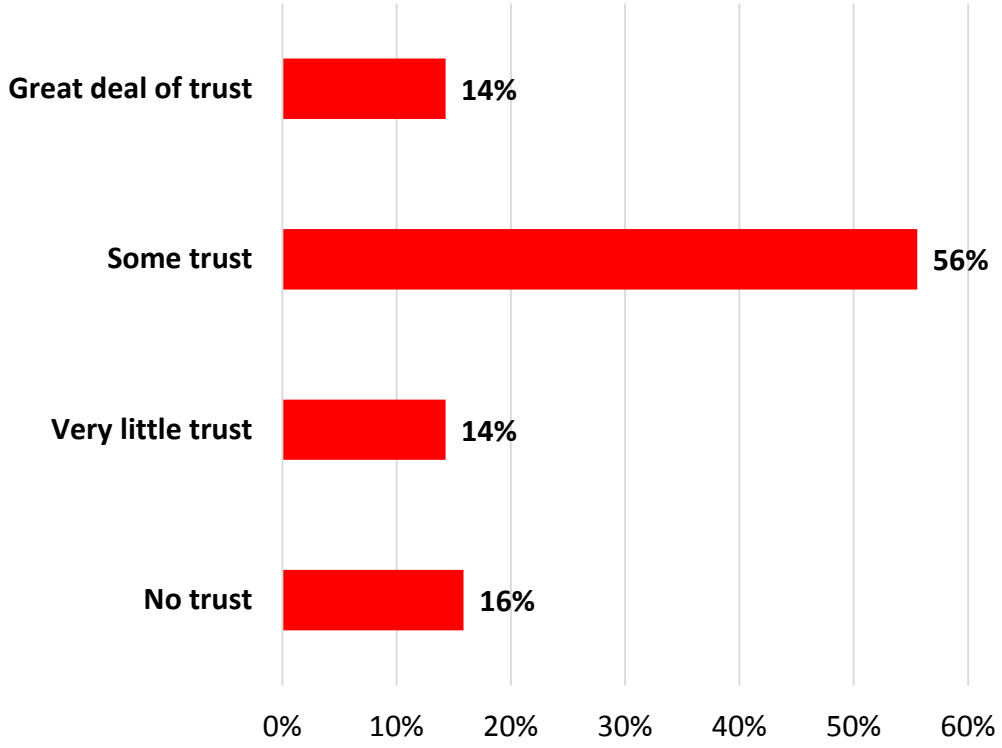
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49l

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Friends in community

(n = 63)



Mean	**1.68**
Standard deviation	**0.91**

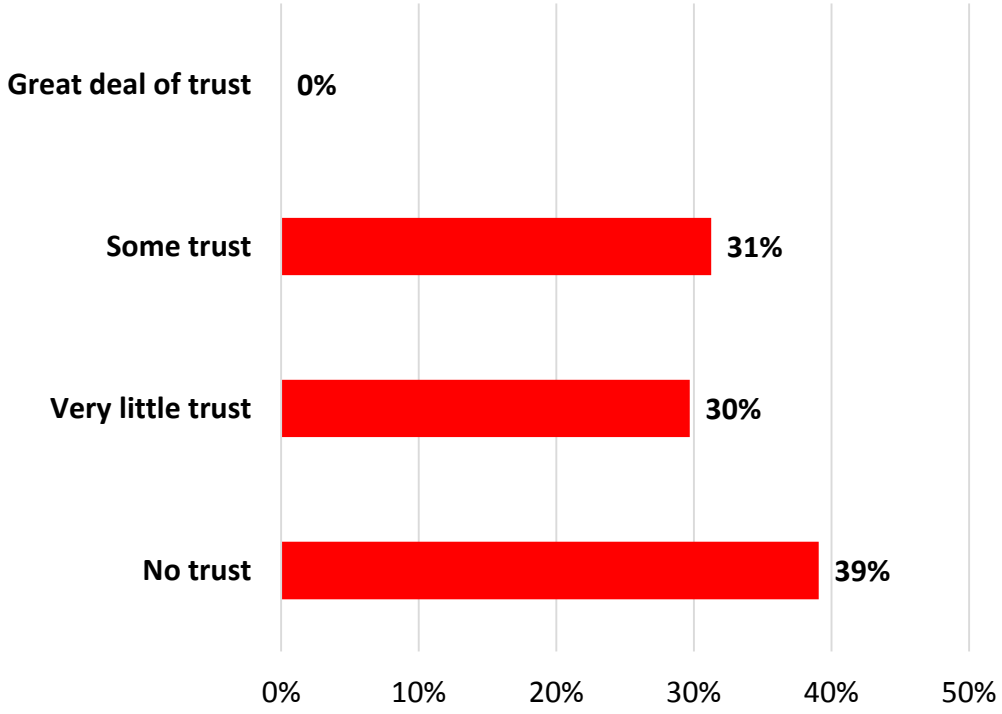
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49m

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Elected county officials

(n = 64)



Mean	**0.92**
Standard deviation	**0.84**

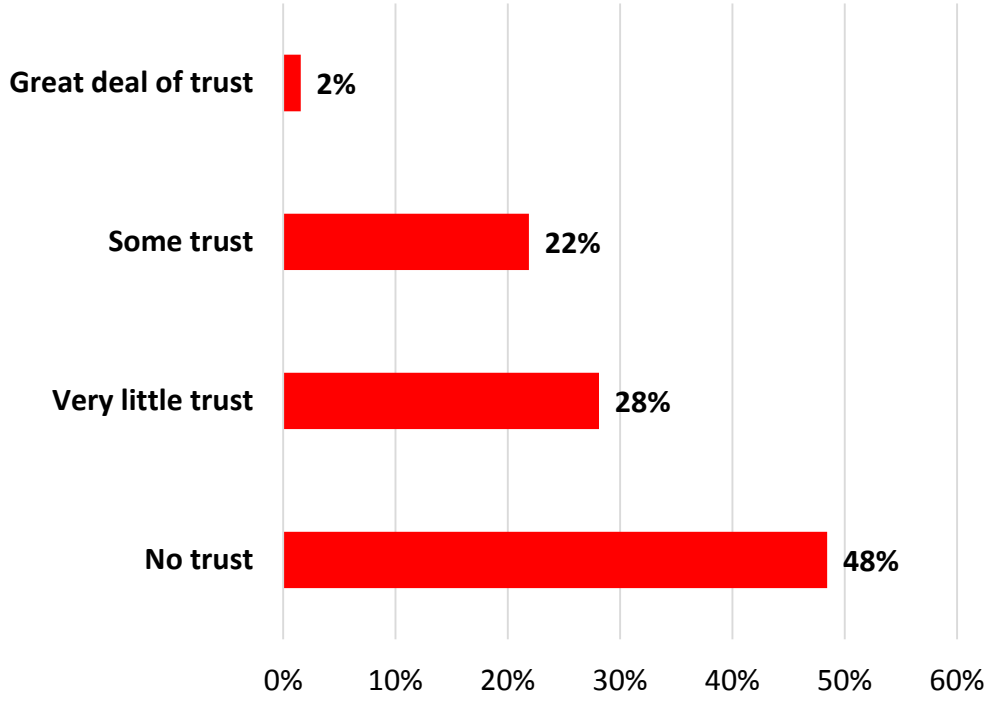
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49n

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Elected city officials

(n = 64)



Mean	**0.77**
Standard deviation	**0.85**

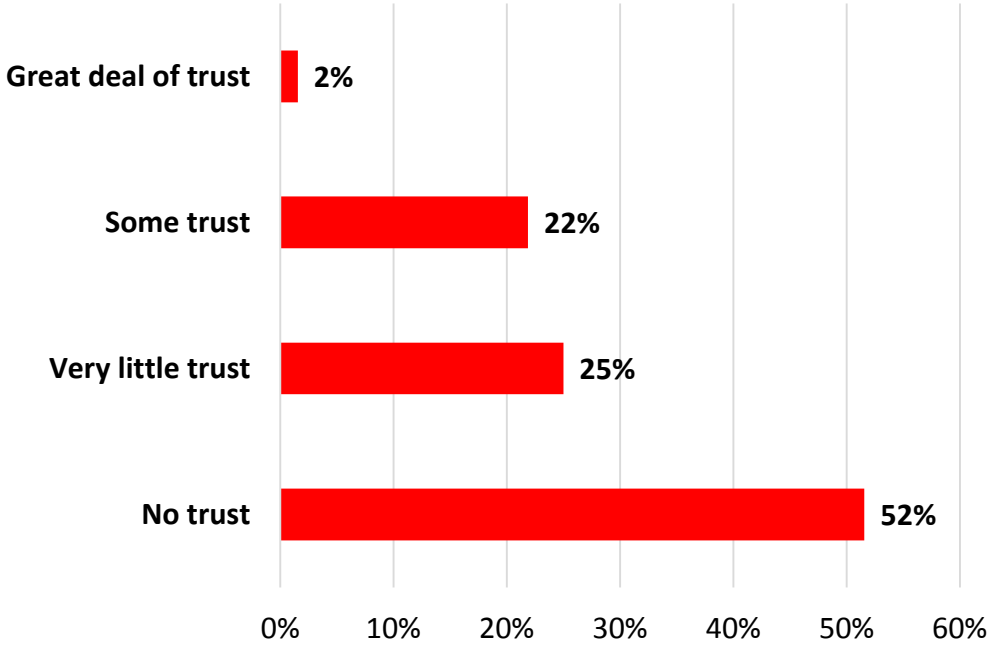
coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Figure 49o

Trust to deliver unbiased, factual knowledge on hydraulic fracturing:

Religious leaders

(n = 64)



Mean	**0.73**
Standard deviation	**0.86**

coding:
0 = No trust; 1 = Very little trust; 2 = Some trust; 3 = Great deal of trust

Section IX

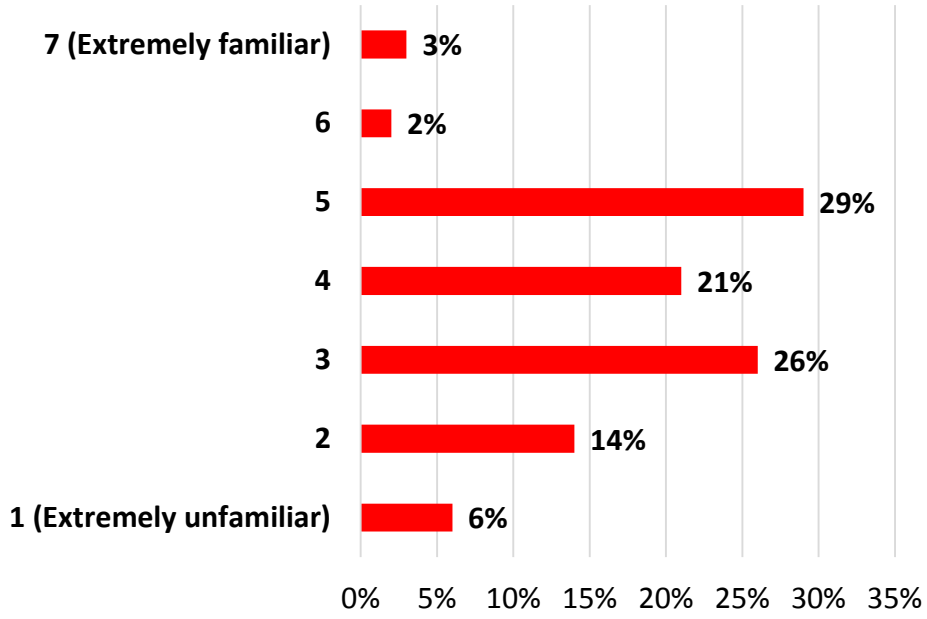
Frac Flowback Water

Figures 50 and 51 and Table 2 involve issues associated with “frac flowback water” (i.e., the water that returns to the surface after a gas well is hydraulically fractured). Figure 50 summarize respondents’ level of familiarity with the management and disposal of frac flowback water in the Eagle Ford Shale. Figure 51 demonstrates respondents’ level of familiarity with frac flowback wastewater treatment technology. And, Table 2 summarizes respondents’ views on the possible safe uses of treated frac flowback waters.

Figure 50

Level of familiarity with the management and disposal of frac flowback water in the Eagle Ford Shale

(n = 67)

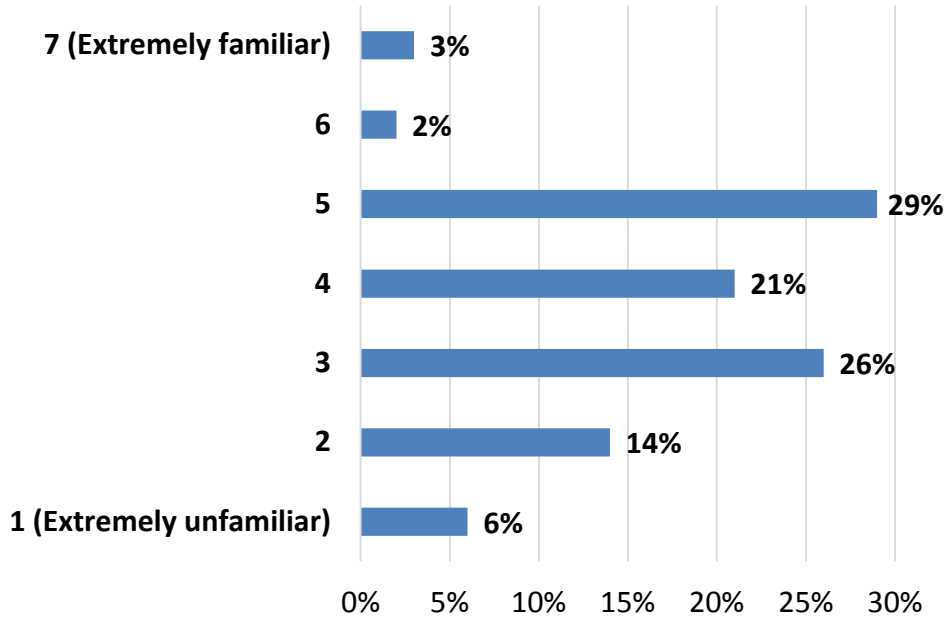


Mean	**4.33**
Standard deviation	**1.60**

Figure 51

Level of familiarity with frac flowback wastewater treatment technology

(n = 66)



Mean	**3.70**
Standard deviation	**1.38**

Table 2

Ranking of ways treated wastewater from hydraulic fracturing operations might be used safely

Ways desalinated water could be safely used	Yes	No
Re-use by gas and oil industry operators (n = 67)	94%	6%
Industrial use (e.g., manufacturing, etc.) (n = 67)	76%	24%
Municipal uses (e.g., watering of golf courses and city parks, etc.) (n = 67)	60%	40%
Home irrigation purposes (e.g., watering lawns and shrubs, etc.) (n = 66)	41%	59%
Irrigation of farmland and/or rangeland (n = 66)	36%	64%
Maintenance of stream flows/reservoir levels (n = 66)	20%	80%
Watering of livestock (n = 67)	10%	89%
People's drinking water (n = 66)	2%	98%

Section X

Individual-Level Characteristics

Figures 52 through 68 summarize selected individual-level traits of the survey respondents.

Figure 52

Land ownership in the Eagle Ford Shale play

(n = 66)

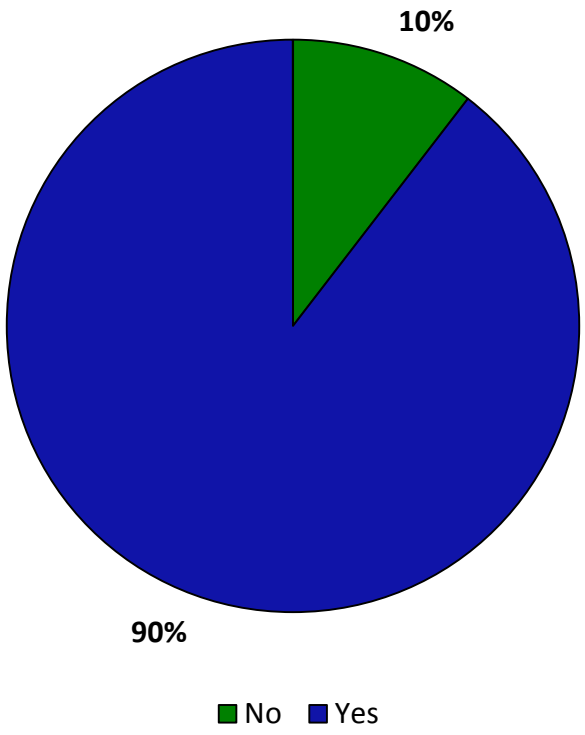


Figure 53

Ownership of mineral rights with land owned in the Eagle Ford Shale play

(n = 66)

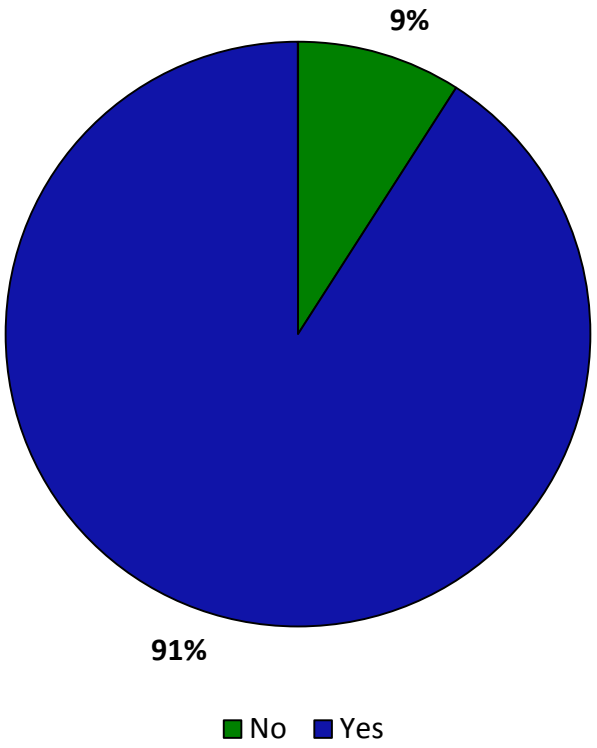


Figure 54

Been approached by landmen seeking to lease any of owned land for oil/gas drilling or for laying pipelines

(n = 66)

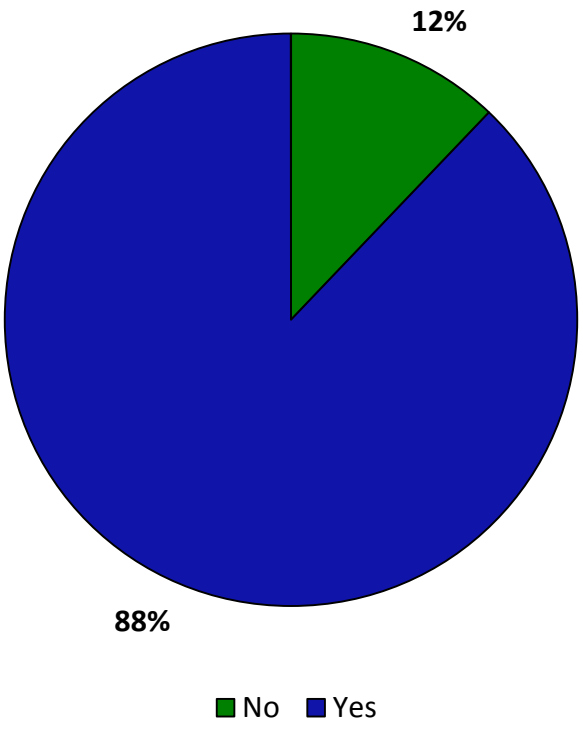


Figure 55

Have signed or will sign an Eagle Ford Shale lease to allow oil/gas drilling or the laying of pipelines on owned land

(n = 66)

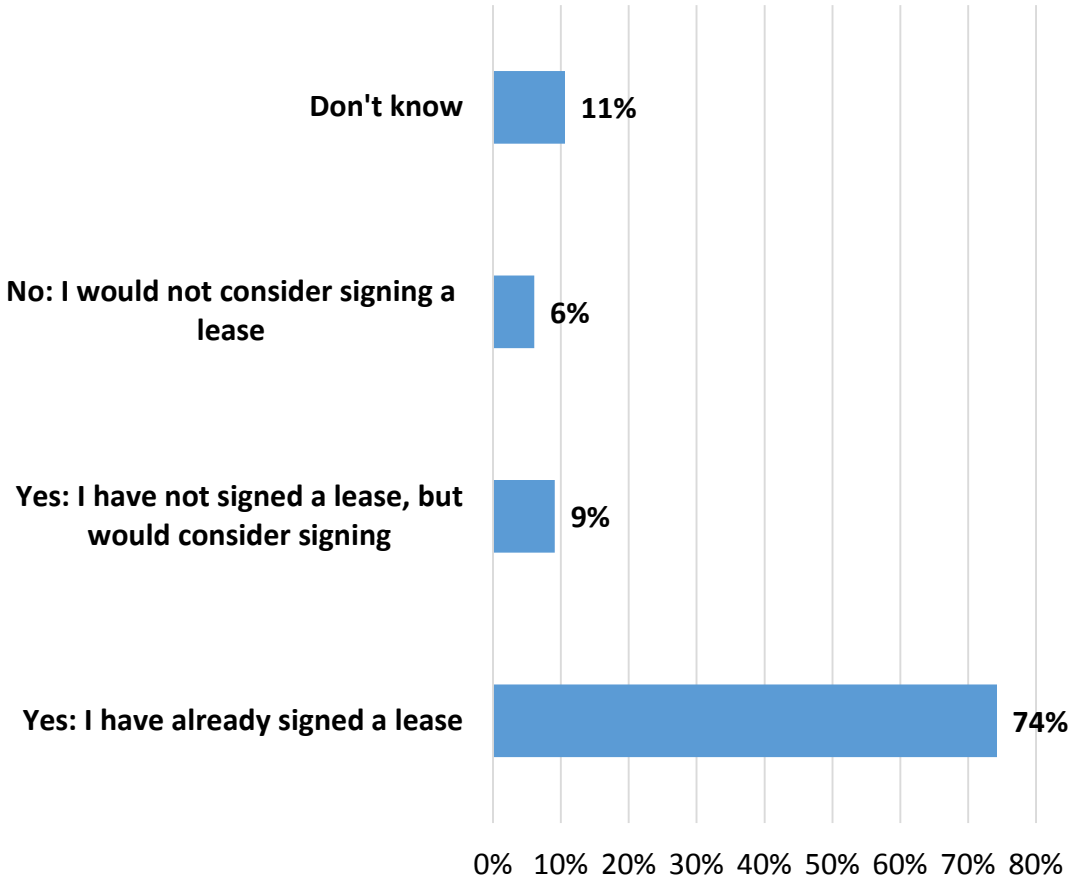


Figure 56

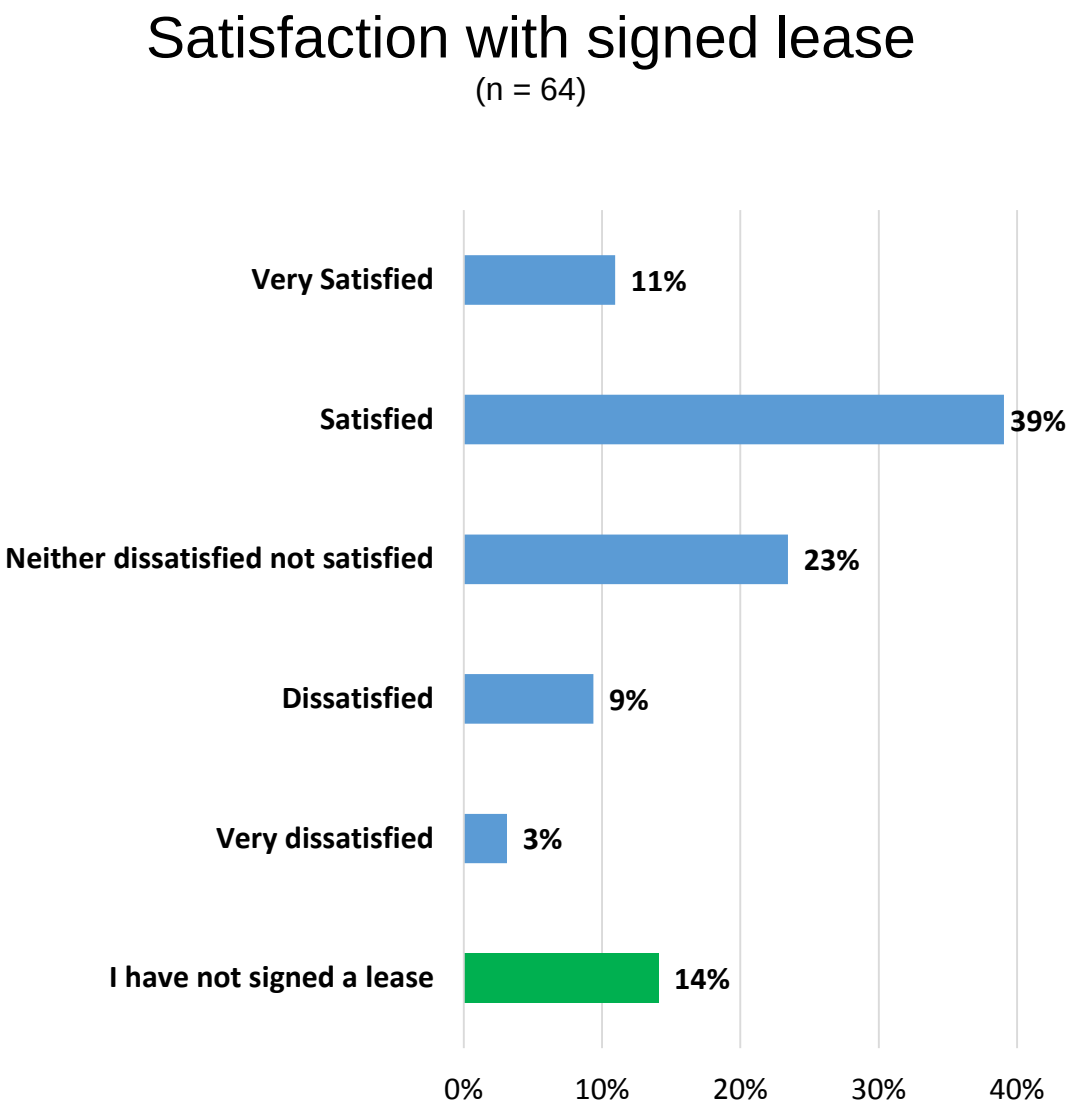

Satisfaction with signed lease
(n = 64)
Very Satisfied
11%
Satisfied
39%
Neither dissatisfied not satisfied
23%
Dissatisfied
9%
Very dissatisfied
3%
I have not signed a lease
14%
0%
10%
20%
30%
40%

Figure 57

Drilling or pipeline development on owned in Eagle Ford Shale play

(n = 67)

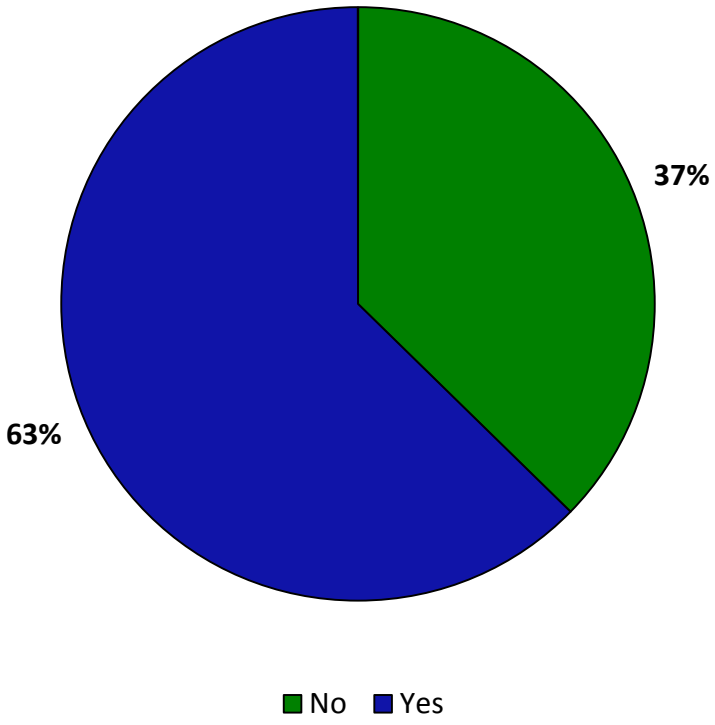


Figure 58

Satisfaction with drilling and/or pipeline development on land (for those who own land in where development has occurred)

(n = 41)

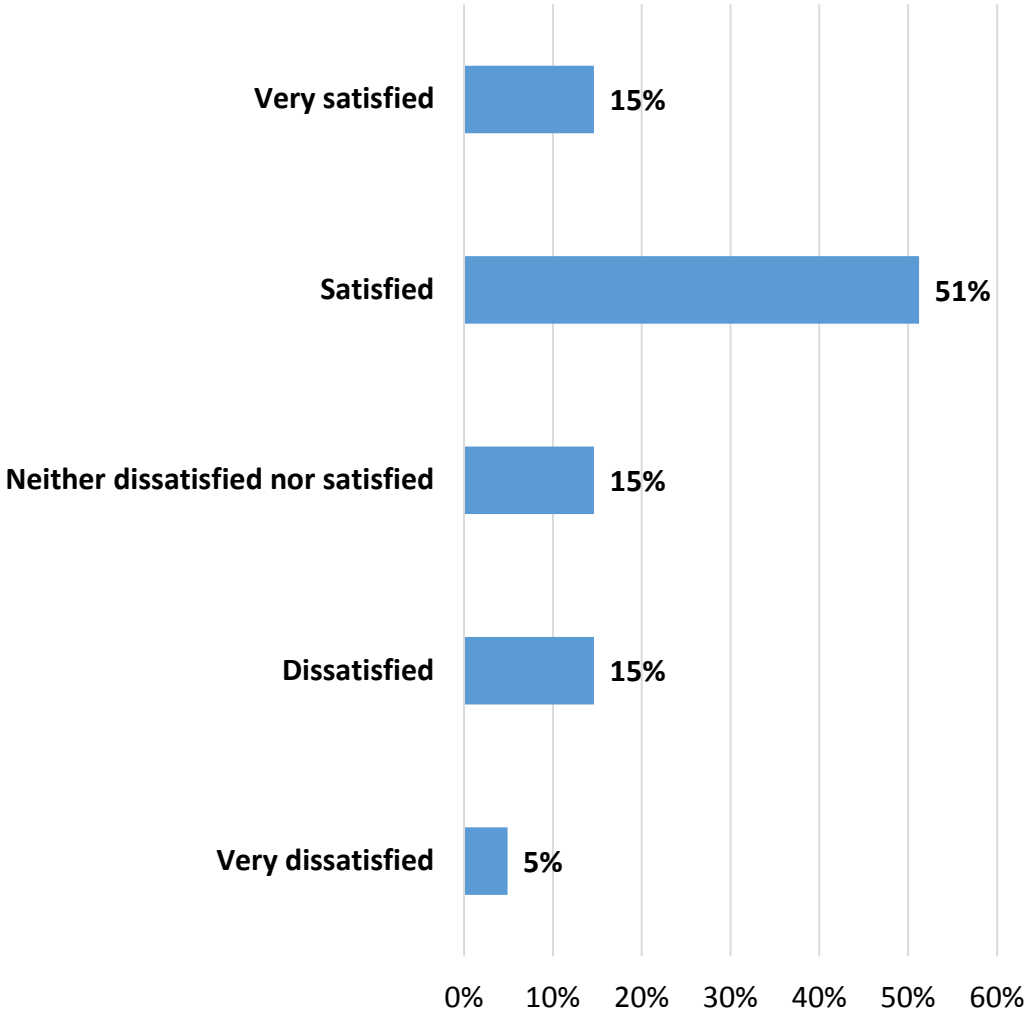


Figure 59

Received any royalties or lease payments for drilling or pipeline development on owned land in the Eagle Ford Shale

(n = 66)

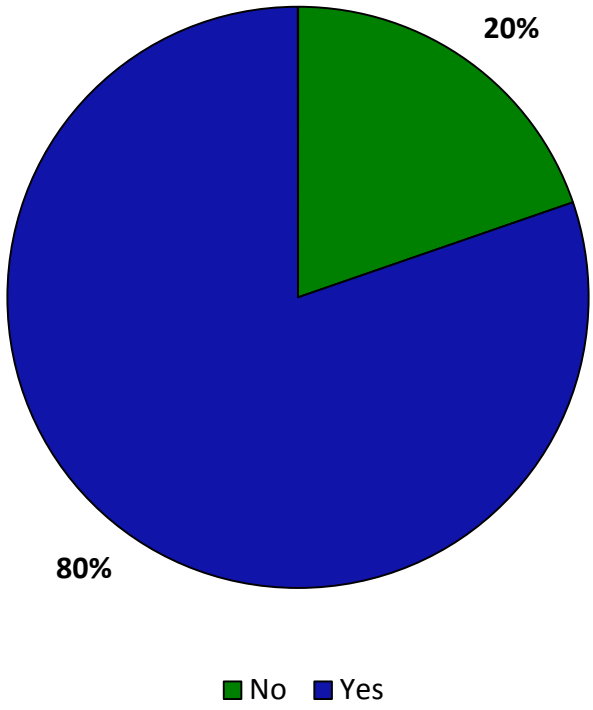


Figure 60

Satisfaction with royalties or lease payments (for those who have received royalties or lease payments)

(n = 53)

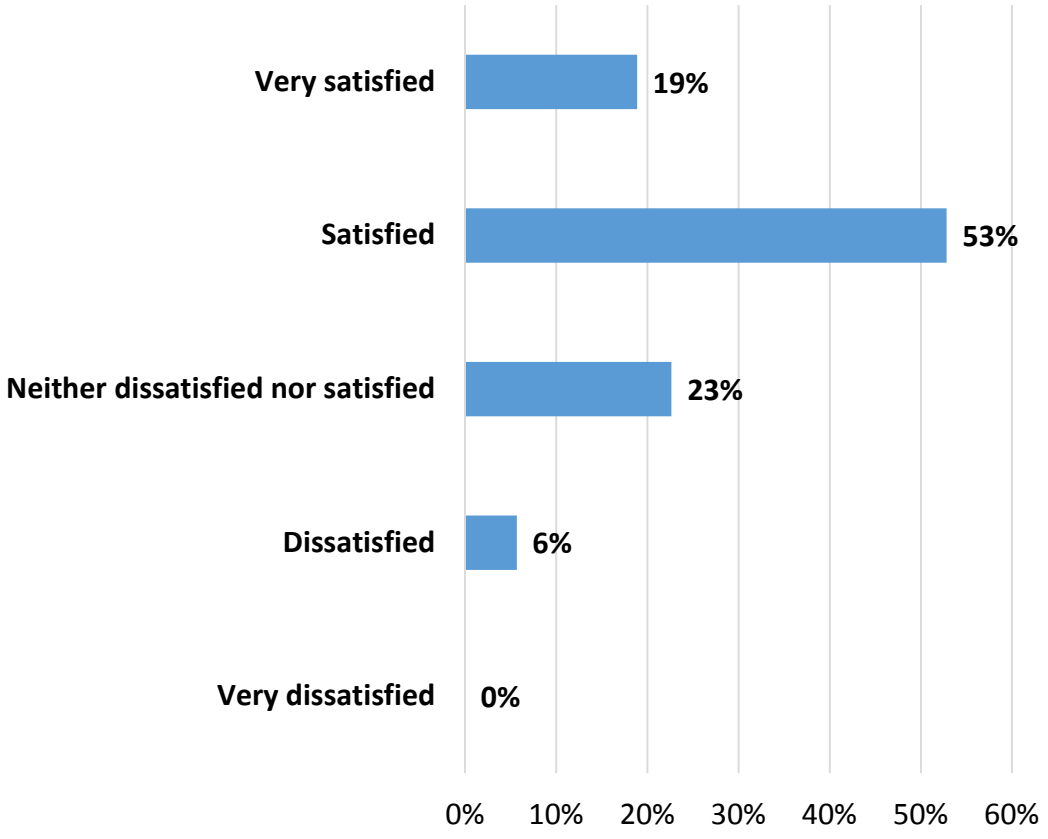


Figure 61

Employed (currently or formerly) in an occupation related to the oil and gas industry

(n = 67)

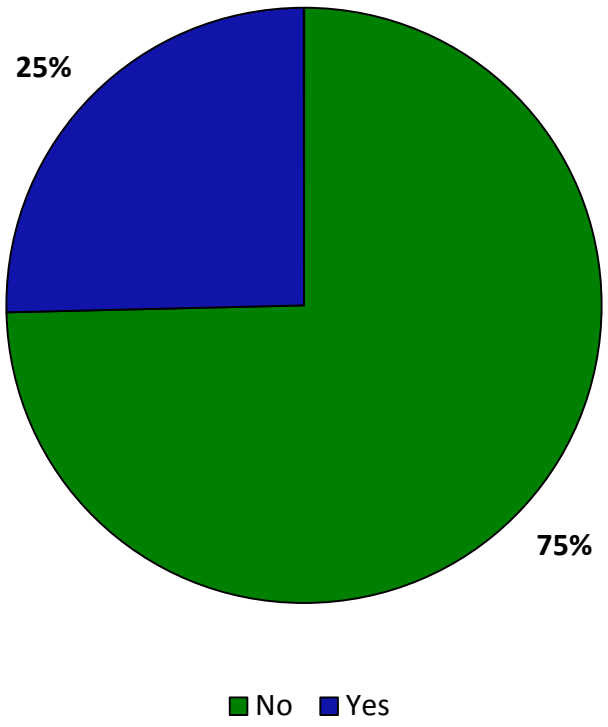


Figure 62

Amount of stress associated with the drilling and production of oil and/or natural gas

(n = 66)

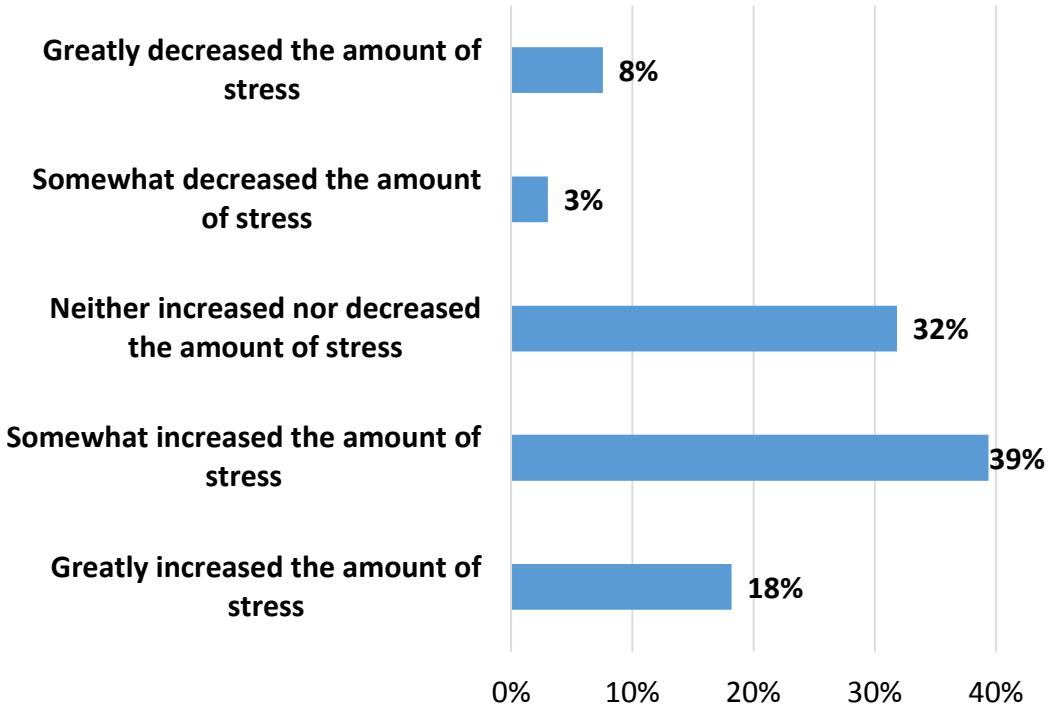


Figure 63

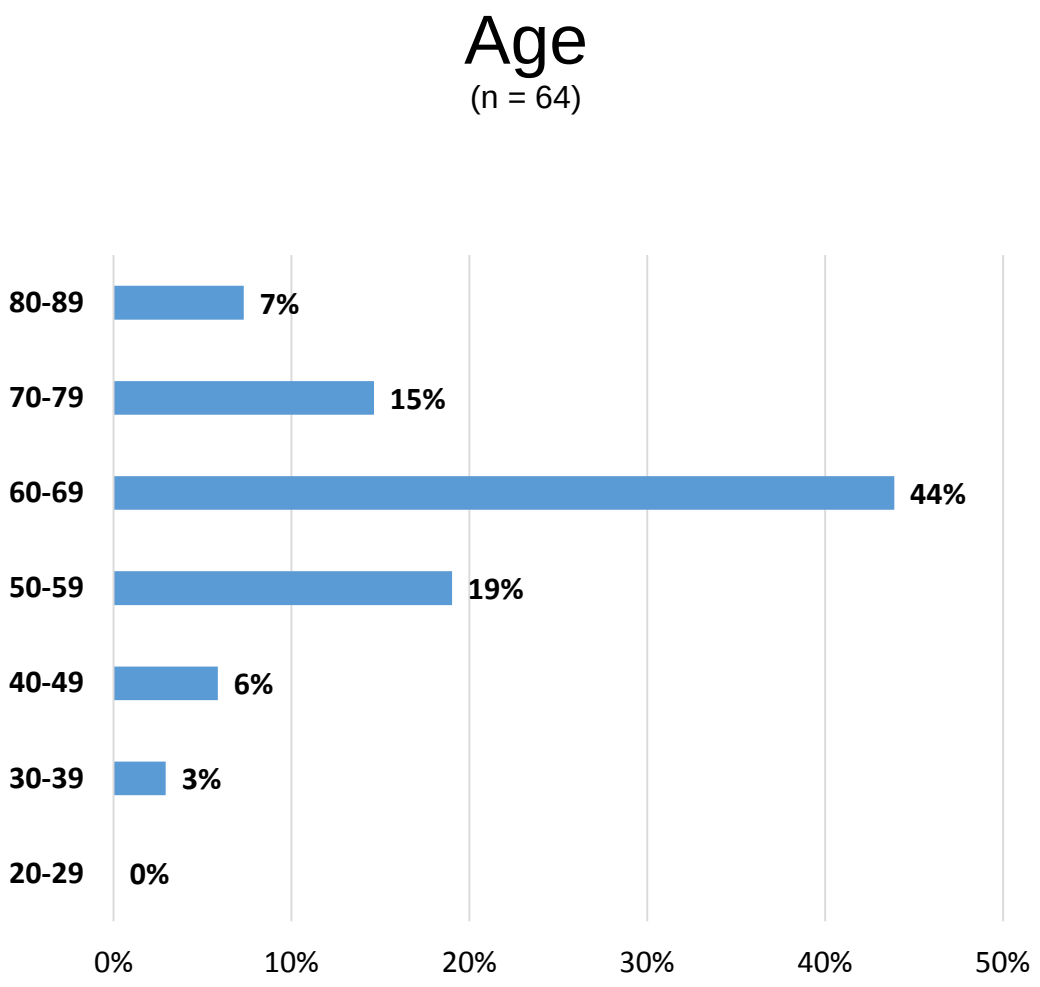

Age
(n = 64)
80-89
7%
70-79
15%
60-69
44%
50-59
19%
40-49
6%
30-39
3%
20-29
0%
0%
10%
20%
30%
40%
50%

Figure 64

Gender

(n = 67)

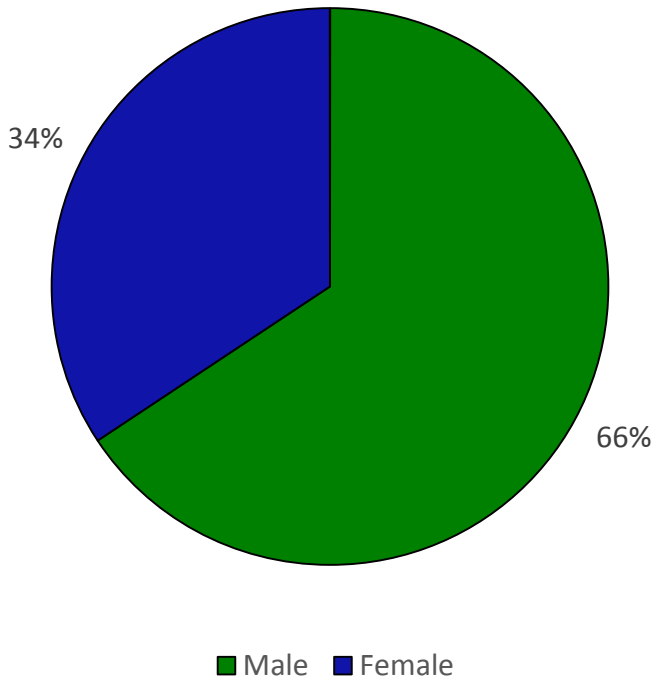


Figure 65

Location of Residence

(n = 68)

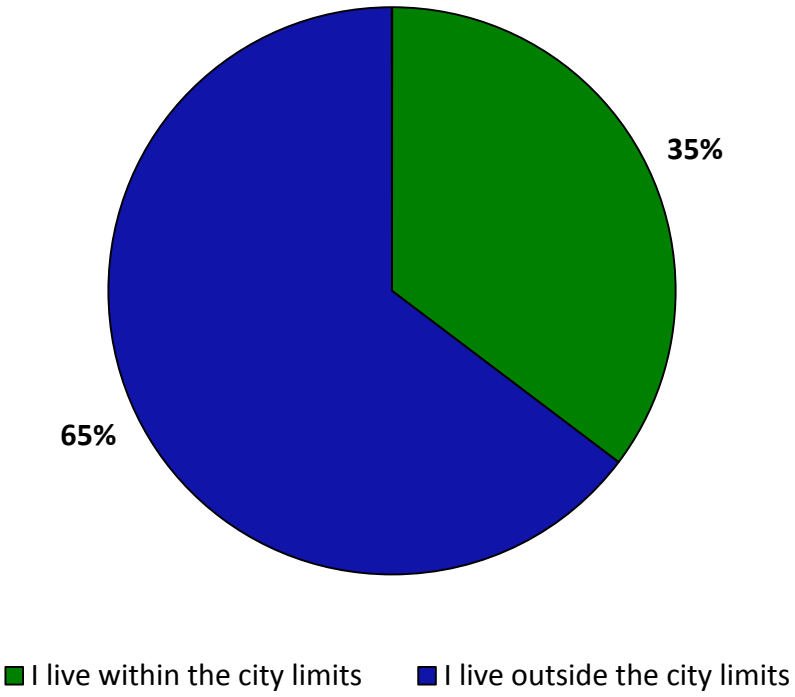


Figure 66

Children under 18 in the home

(n = 68)

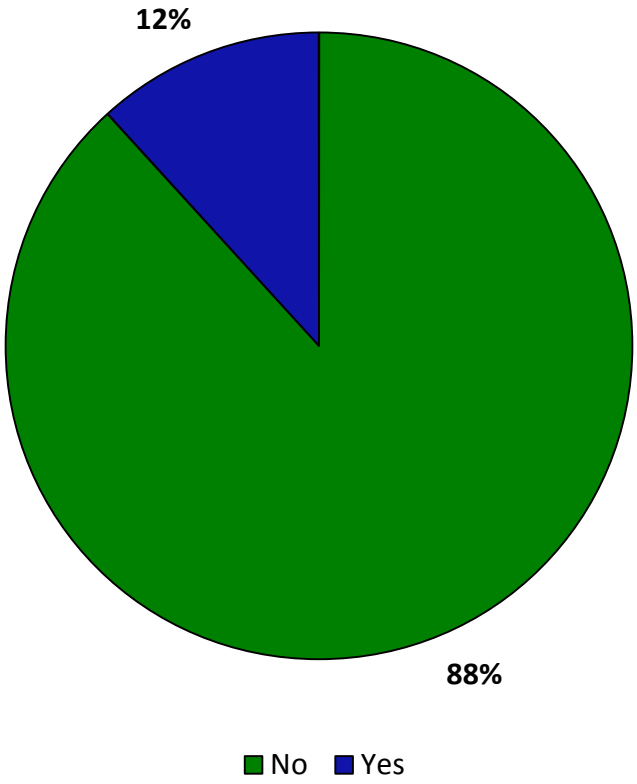


Figure 67

Marital status

(n = 68)

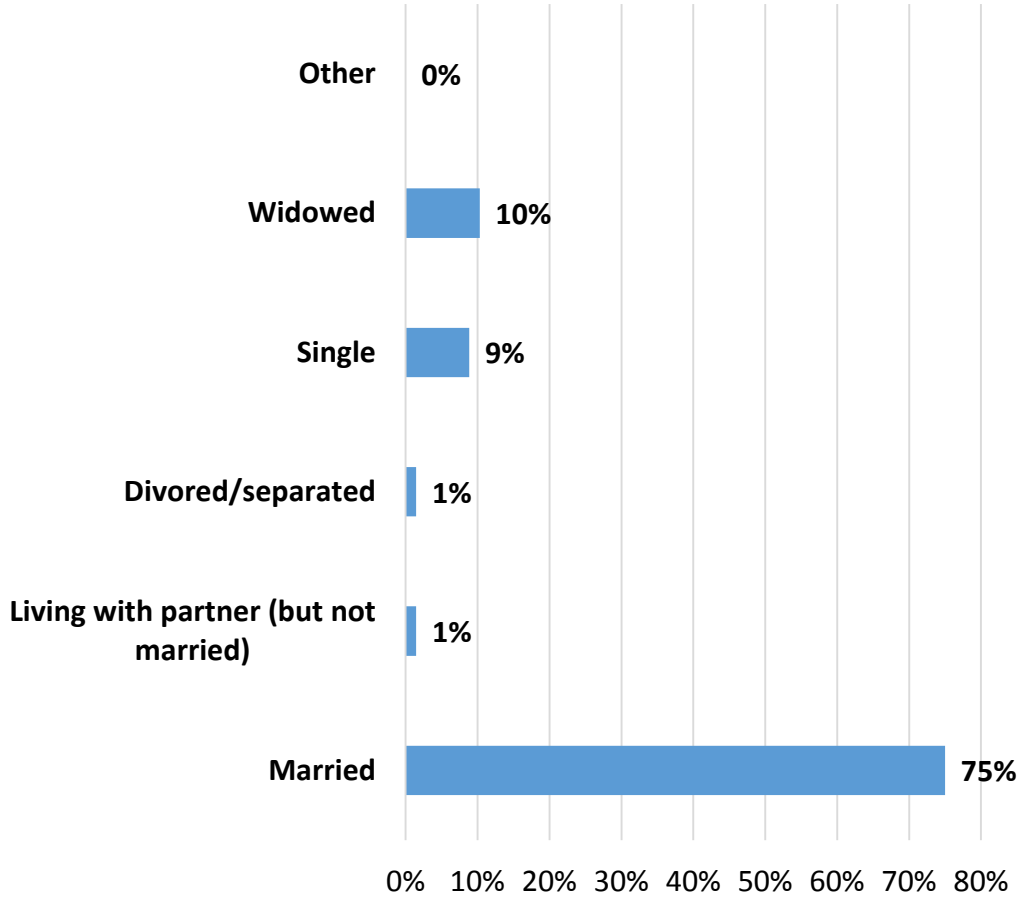


Figure 68

Level of education

(n = 63)

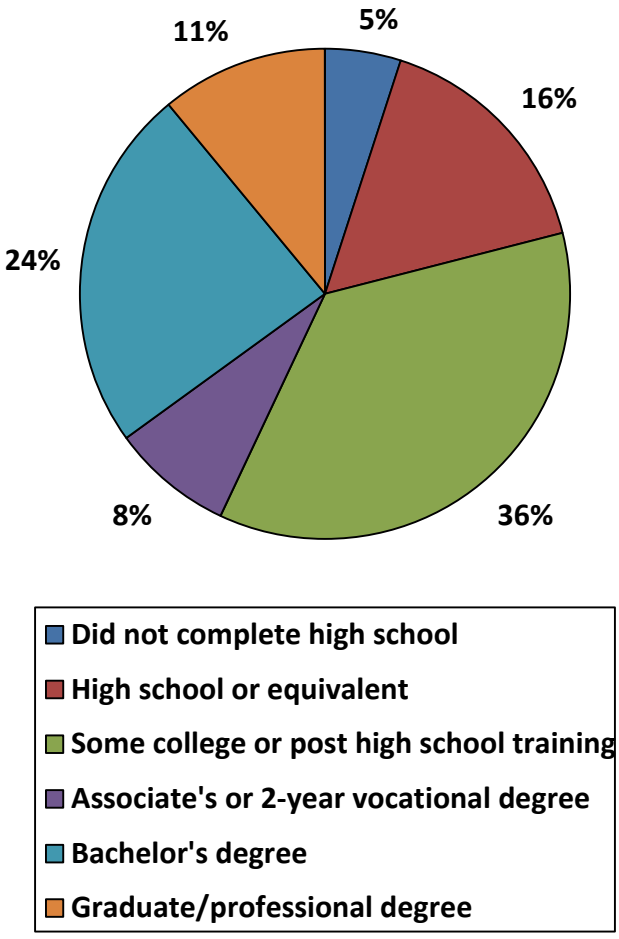


Figure 69

Race

(n = 68)

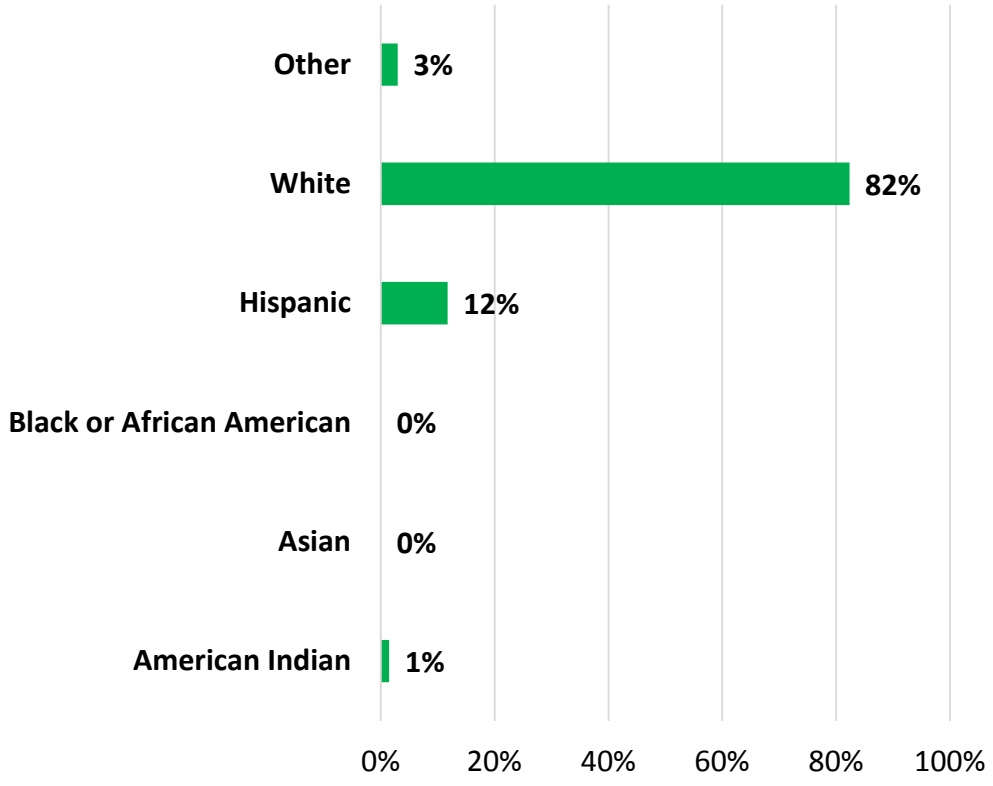


Figure 70

Political views

(n = 54)

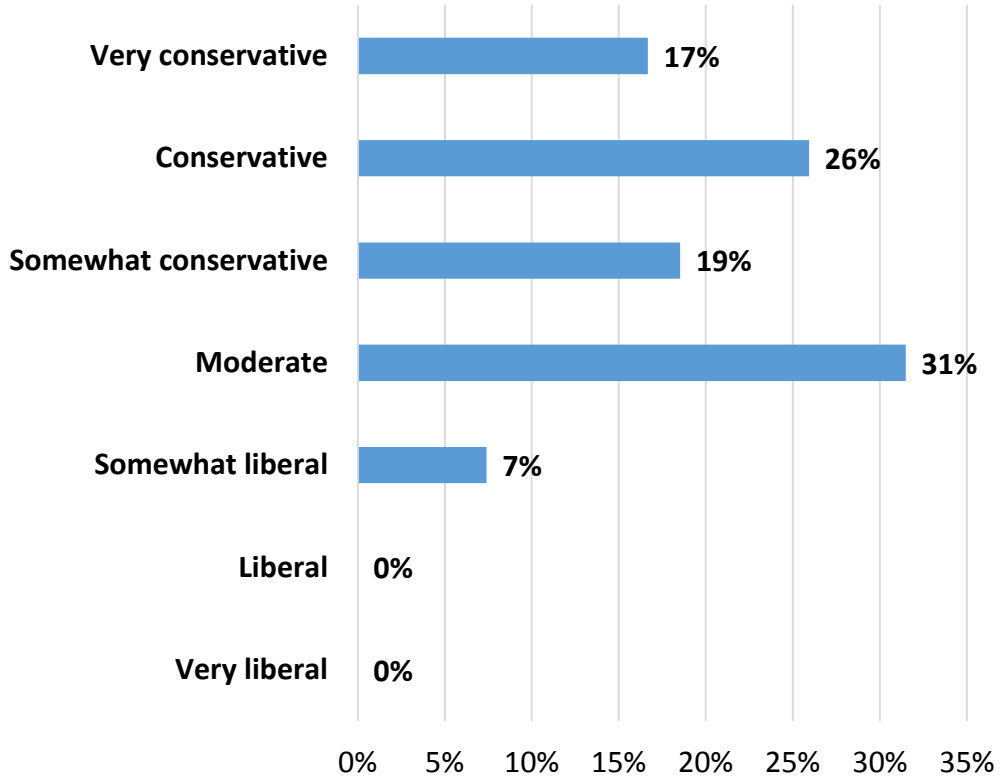


Figure 71

Political party affiliation

(n = 68)

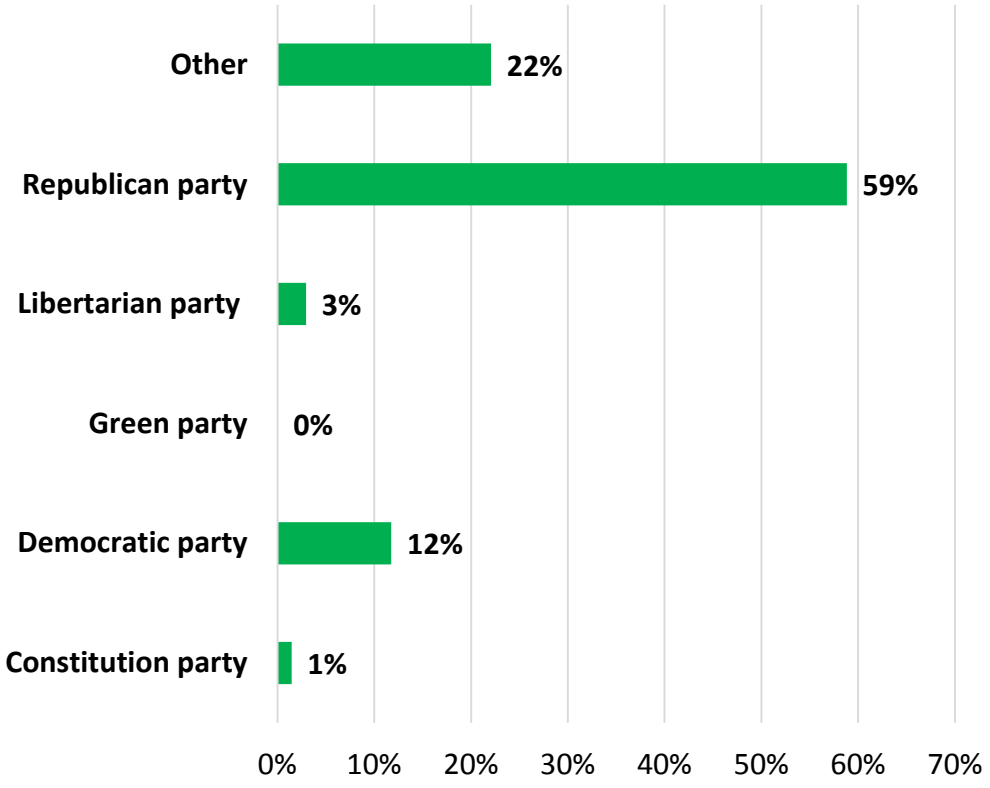


Figure 72

Sources of Income

(n = 68)

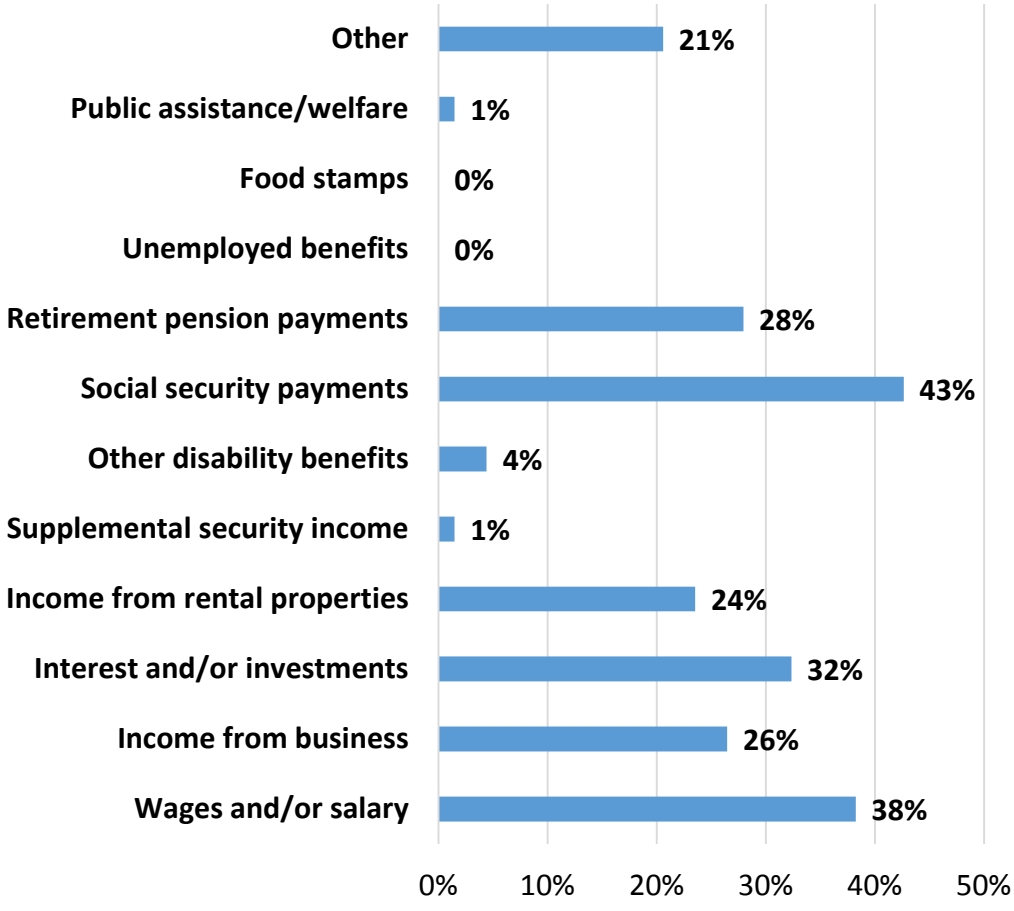
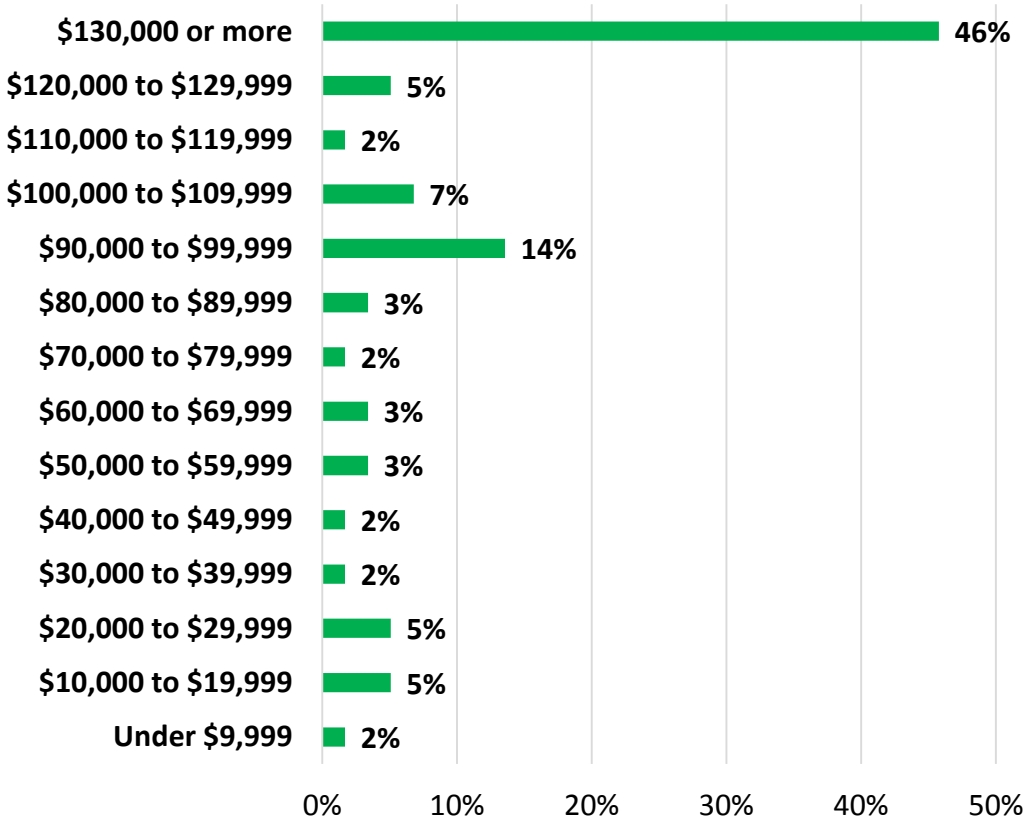


Figure 73

2014 household income (before taxes)

(n = 59)



Note