

Supplementary Material

Table S1. Demographic Information

Panel A

	2012		2017	
	Frequency	Percent	Frequency	Percent
1. Distance residing from Susquehanna River, unit: mile				
<1	20	14.1	13	12.62
1-5	85	59.4	43	41.75
6-10	15	10.5	15	14.56
11-15	4	2.7	8	7.77
16-20	5	3	6	5.83
>20	14	10.3	18	17.48
	2012		2017	
	Frequency	Percent	Frequency	Percent
2. Distance work is from Susquehanna River (unit: mile)				
(Retired or unemployed)	53	28.4	17	16.50
<1	27	14.5	22	21.36
1-5	67	36.1	29	28.16
6-10	14	7.7	7	6.80
11-15	7	3.5	7	6.80
16-20	4	2.1	3	2.91
>20	14	7.7	18	17.48
3. Property ownership status				
Home owner	113	60.8	75	56.39
Land owner	19	10.2	20	15.04
Renter	14	7.5	9	6.77
N/A	40	21.5	29	21.80
4. How often do you and/or your family personally visit the waterways in the Susquehanna River Basin?				
N/A	40	21.5	31	23.31
Never	7	3.8	4	3.01
> 2x/ month	54	29	31	23.31
Once a month	40	21.5	36	27.07
1-2 times a year	45	24.2	31	23.31
5. If use of the Susquehanna River Ecosystem were to be limited, it would affect me how?				
Financially	24	13.4	13	9.77
Quality of life (recreation)	91	48.8	90	67.67
Existentially (access to clean water)	71	37.8	52	39.10
6. Based on current usage, the Susquehanna River Ecosystem will be available to future generations in a condition similar to today.				
Yes	42	22.6	24	18.05
No	43	23.1	34	25.56
Uncertain	60	32.3	45	33.83
Missing	41	22	30	22.56
	2012		2017	
	Mean	Rank	Mean	Rank
7. Prioritize the four categories in this survey in terms of greatest concern (with 1 being the highest priority)				

Economic opportunity	2.64	3.00	2.87	3.00
Health and safety	1.5	1.00	1.43	1.00
Communities	2.62	2.00	2.59	2.00
Energy security	3.22	4.00	3.01	4.00

Panel B

	2017	
	Frequency	Percent
8. Highest level of education		
High school	3	2.94
1 year of college	4	3.92
2 years of college	4	3.92
3 years of college	2	1.96
Graduated from college	41	40.20
Some graduate school	12	11.76
Completed graduate school	36	35.29
9. Gender		
Female	43	42.57
Male	58	57.43
10. Age		
18-24	3	2.91
25-34	10	9.71
35-44	16	15.53
45-54	15	14.56
55-64	26	25.24
65-74	22	21.36
75 and above	11	10.68
11. Employment status		
Employed, full time	64	60.95
Employed, part time	8	7.62
retired	28	26.67
other	5	4.76
12. Salary (hourly)		
< \$8	2	2.94
\$8-\$20	12	17.65
\$20-\$30	23	33.82
\$30-\$40	13	19.12
\$40-\$50	5	7.35
> \$50	13	19.12

Survey Questions

Economic Opportunity

Q1: Streamlining government regulations and oversight in order to expedite natural gas development and enable Pennsylvania to be competitive with other gas-producing states.

Q2: Providing incentives to develop and expand local businesses that support the gas industry (e.g., hotels, restaurants, financial services).

Q3: Expanding education and training in gas-related occupations to enable local residents to take advantage of the new jobs created.

Q4: Creating longer-term economic benefit by taxing gas production and earmarking it specifically for rebuilding local infrastructure adversely affected by the gas production.

Q5: Recognizing that good stewardship means the gas industry funds local communities in the way the communities want, to improve the quality of life.

Economic Opportunity Regression Results

Variables	q01	q02	q03	q04	q05
Homeownership	-0.0387 (0.407)	-0.00967 (0.371)	0.178 (0.313)	-0.0581 (0.308)	0.124 (0.251)
River visit	-0.00107 (0.0150)	0.0170 (0.0147)	0.0106 (0.0129)	0.0171 (0.0117)	0.0127 (0.00924)
Education	-0.129** (0.0594)	-0.121** (0.0533)	-0.102** (0.0440)	0.106** (0.0422)	0.0815** (0.0322)
Gender	0.793*** (0.268)	0.519* (0.270)	0.542** (0.239)	-0.641*** (0.230)	-0.438*** (0.162)
Age	-8.41e-05 (0.00898)	-0.00258 (0.00937)	0.0103 (0.00766)	0.00946 (0.00727)	0.00892 (0.00620)
Marital Status	-0.155 (0.311)	0.0662 (0.369)	0.370 (0.289)	-0.0926 (0.271)	-0.148 (0.174)
Employment	-0.310 (0.389)	-0.510 (0.404)	-0.684* (0.376)	-0.595* (0.328)	0.00836 (0.223)
Salary	0.0329*** (0.00870)	0.0184** (0.00879)	0.0283*** (0.00803)	0.00389 (0.00855)	-0.00694 (0.00663)
Constant t	3.888*** (1.074)	4.045*** (1.026)	3.283*** (0.850)	2.370*** (0.798)	2.576*** (0.614)
Observations	132	131	131	131	131
R-squared	0.192	0.109	0.188	0.116	0.108

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Health & Safety

Q7: Slowing down or halting new development while we learn more from existing Marcellus wells capable of affecting the Susquehanna River ecosystem.

Q8: Regularly educating/informing stakeholders of the general public of the safeguards already implemented in gas production, which protect the Susquehanna River ecosystem.

Q9: Regularly monitoring and testing the treated wastewater for the chemicals used in gas production to ensure those chemicals are not released into the Susquehanna River ecosystem.

Q10: Requiring gas companies to filter out the chemicals use during gas production and properly dispose of them.

Q11: Creating county councils to coordinate efforts, share and review data, and recommend improvements to preserve the Susquehanna River ecosystem.

Q12: Ensuring emergency response preparedness, including training of first responders, wherever drilling occurs in or near the Susquehanna River ecosystem.

Q13: Ensuring a transparent process for monitoring, investigating, and treating cases of environmental contamination in or near the Susquehanna River ecosystem.

Health and Safety Regression Results

VARIABLES	Q07	Q08	Q09	Q10	Q11	Q12	Q13
Homeownership	0.0104 (0.320)	0.340 (0.389)	0.0508 (0.158)	-0.0291 (0.230)	0.0580 (0.297)	0.215 (0.257)	0.151 (0.207)
River visit	0.00253 (0.0136)	-0.00516 (0.0123)	0.000507 (0.00652)	-0.00215 (0.00782)	-0.00630 (0.0120)	-0.00595 (0.00872)	0.00695 (0.00821)
Education	0.157*** (0.0417)	-0.0220 (0.0560)	0.0439** (0.0189)	0.0169 (0.0306)	0.0565 (0.0459)	0.0326 (0.0301)	0.0235 (0.0290)

Gender	-1.112*** (0.250) (0.250)	-0.240 (0.215) (0.215)	-0.279** (0.128) (0.128)	-0.119 (0.167) (0.167)	0.805*** (0.225) (0.225)	-0.388** (0.151) (0.151)	0.412*** (0.144) (0.144)
Age	0.00675 (0.00828)	0.00678 (0.00773)	0.0113** (0.00499)	0.00488 (0.00594)	-0.00112 (0.00720)	0.000501 (0.00513)	0.000449 (0.00540)
Marital Status	-0.321 (0.268)	0.391 (0.311)	0.261 (0.198)	0.295 (0.257)	0.0123 (0.309)	-0.136 (0.218)	0.0103 (0.156)
Employment	0.0225 (0.368)	-0.0434 (0.319)	0.107 (0.114)	0.0639 (0.194)	-0.178 (0.321)	0.164 (0.220)	-0.272 (0.171)
Salary	-0.0277*** (0.00882)	-0.000245 (0.00729)	-0.00887** (0.00388)	-0.00651 (0.00480)	-0.0108 (0.00838)	-0.00634 (0.00653)	-0.00631 (0.00565)
Constant	2.172** (0.853)	3.461*** (0.942)	3.404*** (0.497)	3.981*** (0.639)	3.666*** (0.829)	4.001*** (0.558)	4.379*** (0.611)
Observations	115	115	116	116	116	115	115

Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Community

Q16: Finding equitable ways to tax specifically industry and landowners who benefit from local gas drilling to pay for specific needs identified by the local government.

Q17: Helping local governments strengthen their capacity to plan for, and respond to, Marcellus shale development in the Susquehanna River ecosystem.

Q18: Requiring gas industry human resources management and local community groups to meet regularly to address the gas employees' and local residents' needs to improve the quality of life during gas production.

Q19: Requiring gas companies to leave the site as good as, or better than, they found it (water quality, runoff, wildlife habitat, forest and farmland quality).

Regression Results for Community

Variables	q16	q17	q18	q19
Homeownership	0.00793 (0.475)	-0.223 (0.309)	0.306 (0.291)	0.128 (0.185)
River visit	-0.00477 (0.0125)	0.00586 (0.00935)	-0.000537 (0.0101)	0.0103 (0.00734)
Education	0.132*** (0.0491)	0.0698** (0.0311)	0.0516 (0.0341)	0.0255 (0.0237)
Gender	-0.372 (0.234)	-0.179 (0.171)	-0.720*** (0.182)	-0.394*** (0.133)
Age	0.00349 (0.00687)	0.0132* (0.00711)	0.00542 (0.00624)	0.00436 (0.00484)
Marital Status	0.143 (0.273)	0.273 (0.209)	0.0354 (0.235)	0.166 (0.133)
Employment	-0.540* (0.315)	0.204 (0.264)	0.0798 (0.276)	-0.139 (0.132)
Salary	-0.0175** (0.00880)	-0.00465 (0.00611)	-0.0134* (0.00746)	-0.00543 (0.00582)
Constant	2.182*** (0.812)	2.161*** (0.699)	2.809*** (0.728)	4.184*** (0.538)
Observations	112	112	112	112
R-squared	0.215	0.112	0.191	0.175

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Energy and Security

Q21: Directing federal and state government investment to track the development of renewable energy sources.

Q22: Subsidizing the access of gas-producing communities to locally produced gas.

Q23: Prohibiting the export of U.S. natural gas to other countries.

Q24: Mandating local, state, and federal governments to require energy conservation measures in all government-operated buildings.

Q25: Government funding of peer review Life Cycle Analysis of different energy sources to include educating/informing the general public of the results, in order to make known the true costs of energy resources on health, economy, and natural environment, especially the Susquehanna River ecosystem.

Regression Results for Energy and Security

Variables	q21	q22	q23	q24	q25
Homeownership	0.173 (0.411)	0.416 (0.308)	0.394 (0.523)	0.210 (0.374)	-0.226 (0.302)
River visit	0.0114 (0.0130)	-0.00367 (0.0141)	0.00875 (0.0155)	-0.00396 (0.0129)	0.00394 (0.0114)
Education	0.0840 (0.0560)	-0.108* (0.0584)	-0.0142 (0.0593)	0.0855* (0.0450)	0.183*** (0.0406)
Gender	-0.741*** (0.237)	0.0983 (0.276)	-0.807** (0.312)	-0.834*** (0.243)	-1.097*** (0.210)
Age	-0.00289 (0.00717)	0.00664 (0.00868)	-0.00341 (0.0107)	0.00916 (0.00849)	-0.00268 (0.00756)
Marital Status	-0.131 (0.275)	-0.248 (0.350)	-0.342 (0.362)	-0.0395 (0.285)	-0.0315 (0.278)
Employment	0.0866 (0.297)	-0.278 (0.349)	0.374 (0.443)	-0.128 (0.359)	-0.539 (0.329)
Salary	-0.0214*** (0.00747)	0.0345*** (0.00947)	-0.0243** (0.00957)	-0.0112 (0.00937)	-0.0138 (0.00860)
Constant	3.276*** (0.975)	3.247*** (1.033)	3.751*** (1.150)	2.359** (0.941)	2.282** (0.870)
Observations	108	108	107	108	107
R-squared	0.205	0.220	0.156	0.198	0.367

Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$