

Partners for a Healthy Community and Environment (PaCE) Project: Exploring Health Literacy, Attitudes, and Behaviors Associated with Environmental Health in the Eagle Ford Shale

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Background

- Given the rapid expansion of unconventional oil and gas development in the Eagle Ford Shale (see Figure 1), it is important to address community perceptions, attitudes, and beliefs of related environmental health issues.
- The PaCE project is a community engagement pilot project conducted in partnership with the Frio County Translational Advisory Board and the Karnes County Community Advisory Board.
- The goal of PaCE is to examine perceptions of the impact of oil and gas development in Atascosa, Frio, and Karnes counties.

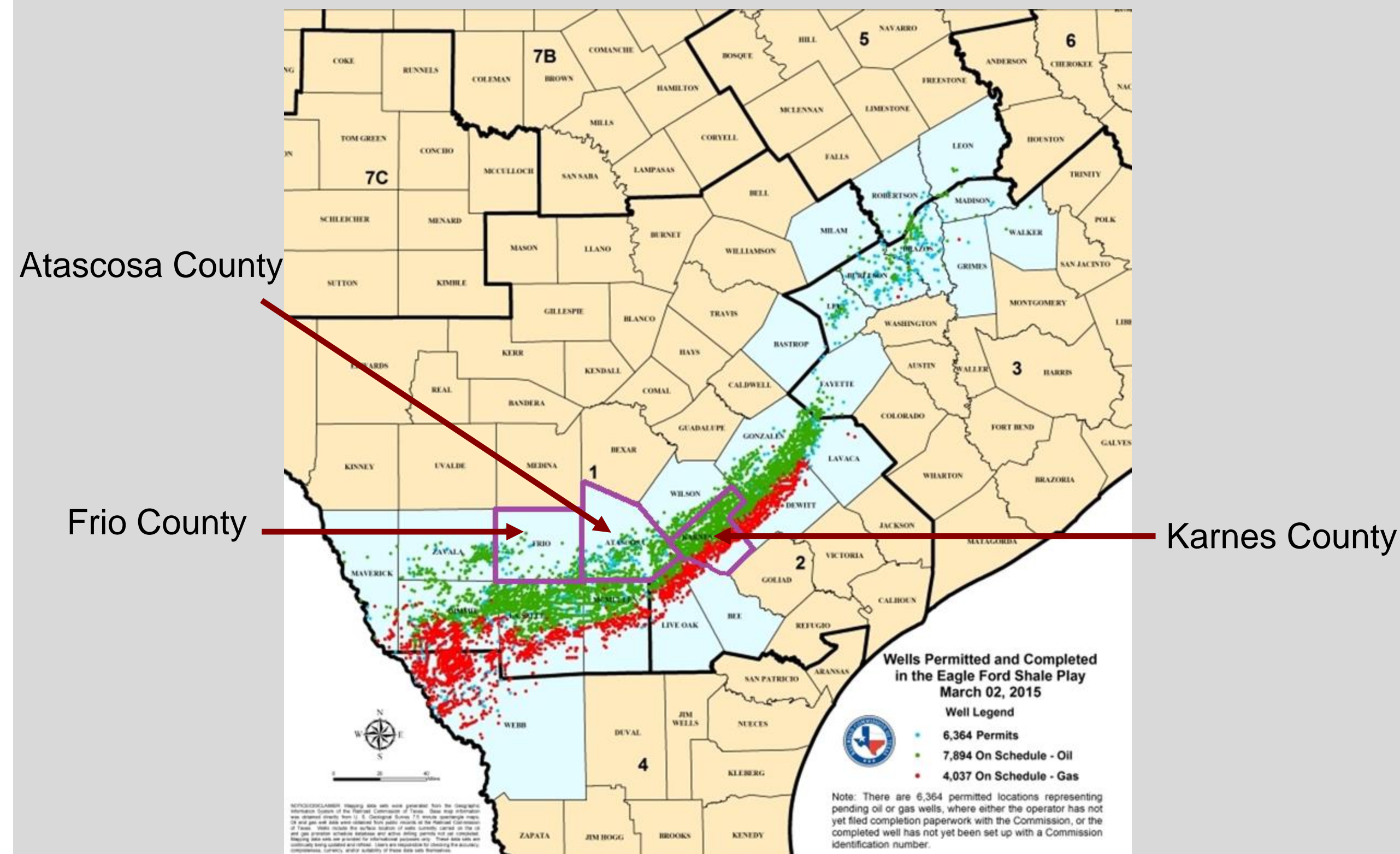


Figure 1. Wells Permitted and Completed in the Eagle Ford Shale Play February 03, 2015 (Source: Railroad Commission of Texas, <http://www.rrc.state.tx.us/media/26914/eaglefordshaleplay2015-02-ig.jpg>)

Results

TABLE 1. PaCE participant study characteristics (%), by county, November 2013-February 2015 (n=162)

	ATASCOSA (n=43)	FRIO (n=82)	KARNES (n=37)	TOTAL (n=162)
AGE (MEDIAN [IQR])	40 (23, 48)	52.5 (36, 65)	55 (44,62)	50 (35,60)
GENDER				
Female	67.4	46.3	78.4	60.3
RACE ¹				
White	74.4	79.3	73.0	76.5
ETHNICITY ¹				
Hispanic	51.2	64.6	64.9	61.1
EDUCATION ¹				
Less than High School	18.6	14.6	16.2	16.0
High School/GED	32.6	26.8	37.8	30.9
Some College/Technical	25.6	28.0	18.9	25.3
College Graduate	18.6	30.5	24.3	25.9
INCOME ¹				
≤\$39,999	44.2	42.7	59.5	46.9
\$40,000-59,999	11.6	18.3	5.4	13.6
≥\$60,000	25.6	34.1	16.2	27.8
LAND OWNERSHIP ^{1,2}				
Yes	48.8	50	62.2	52.5
No	51.2	48.8	35.1	46.3
MILES FROM CLOSEST DRILLING SITE ¹				
≤1	7.0	12.2	35.1	16.1
2-5	11.6	18.3	18.9	16.7
6-15	16.3	14.6	0.0	11.7
≥16	9.3	9.8	0.0	7.4
Uncertain	55.8	42.7	43.2	46.3
YEARS LIVED IN COUNTY ¹				
0-5	32.6	17	13.5	20.3
6-20	20.9	21.9	21.6	21.6
≥21	39.5	61.0	62.2	55.6

¹2 people missing race, ethnicity, and land ownership; 3 people missing education and closest drilling site; 4 people missing years lived in county; 19 people missing income.

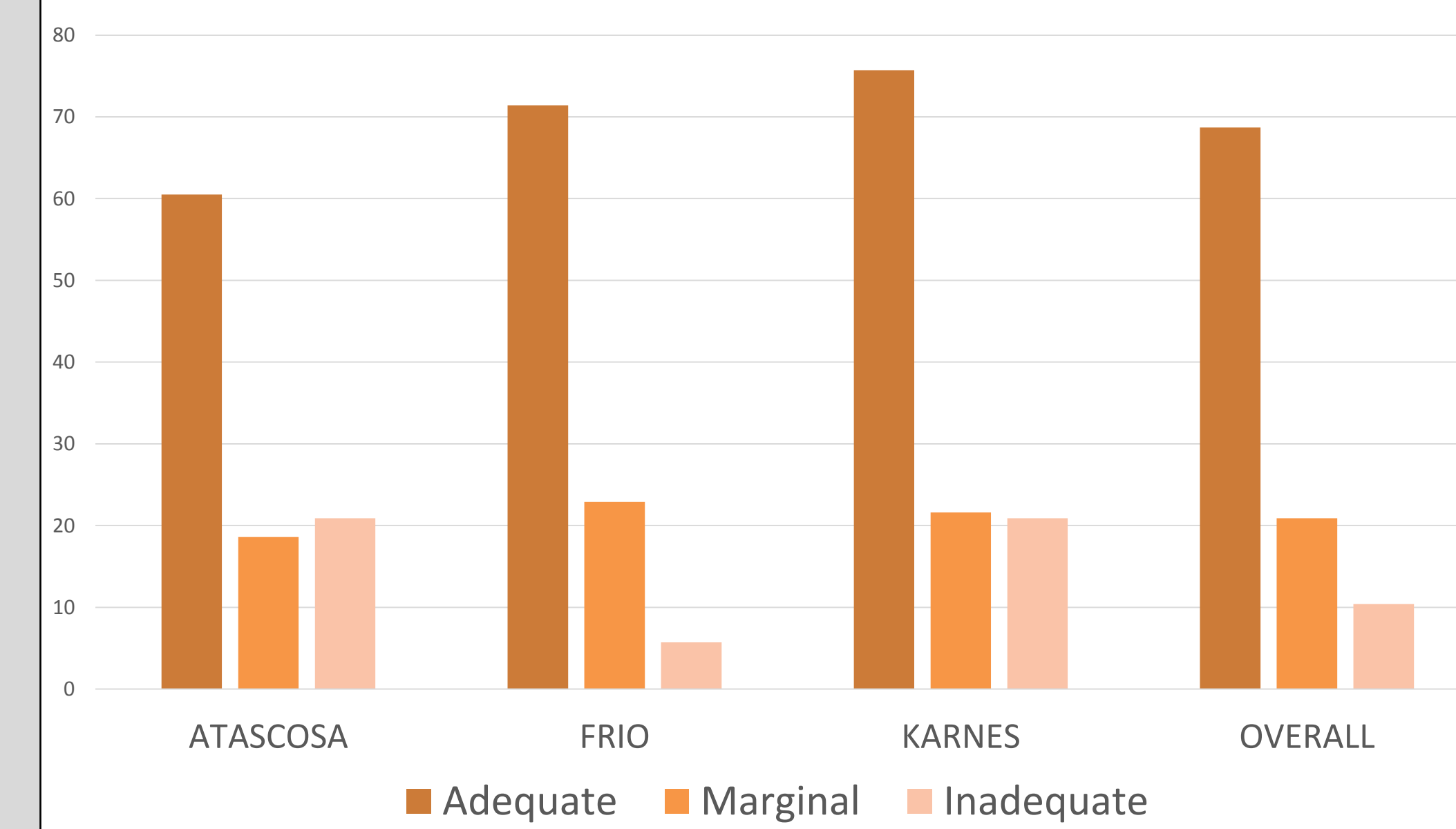
²Of the 85 landowners, 37 participants (43.5%) were approached by a drilling company to lease their land. Of the 37 participants approached to lease their land, 30 participants (81.1%) accepted the lease.

TABLE 2. Average scores for BRIEF items among PaCE participants in the three counties (n=115)

BRIEF ITEM	Average Score			
	ATASCOSA	FRIO	KARNES	OVERALL
How often do you have someone help you read health materials?	4.33	4.49	4.49	4.43
How confident are you filling out medical forms by yourself?	3.79	4.37	4.16	4.09
How often do you have problems learning about your medical condition because of difficulty understanding written information?	4.16	4.43	4.38	4.31
How often do you have a problem understanding what is told to you about your medical condition?	4.21	4.63	4.57	4.45

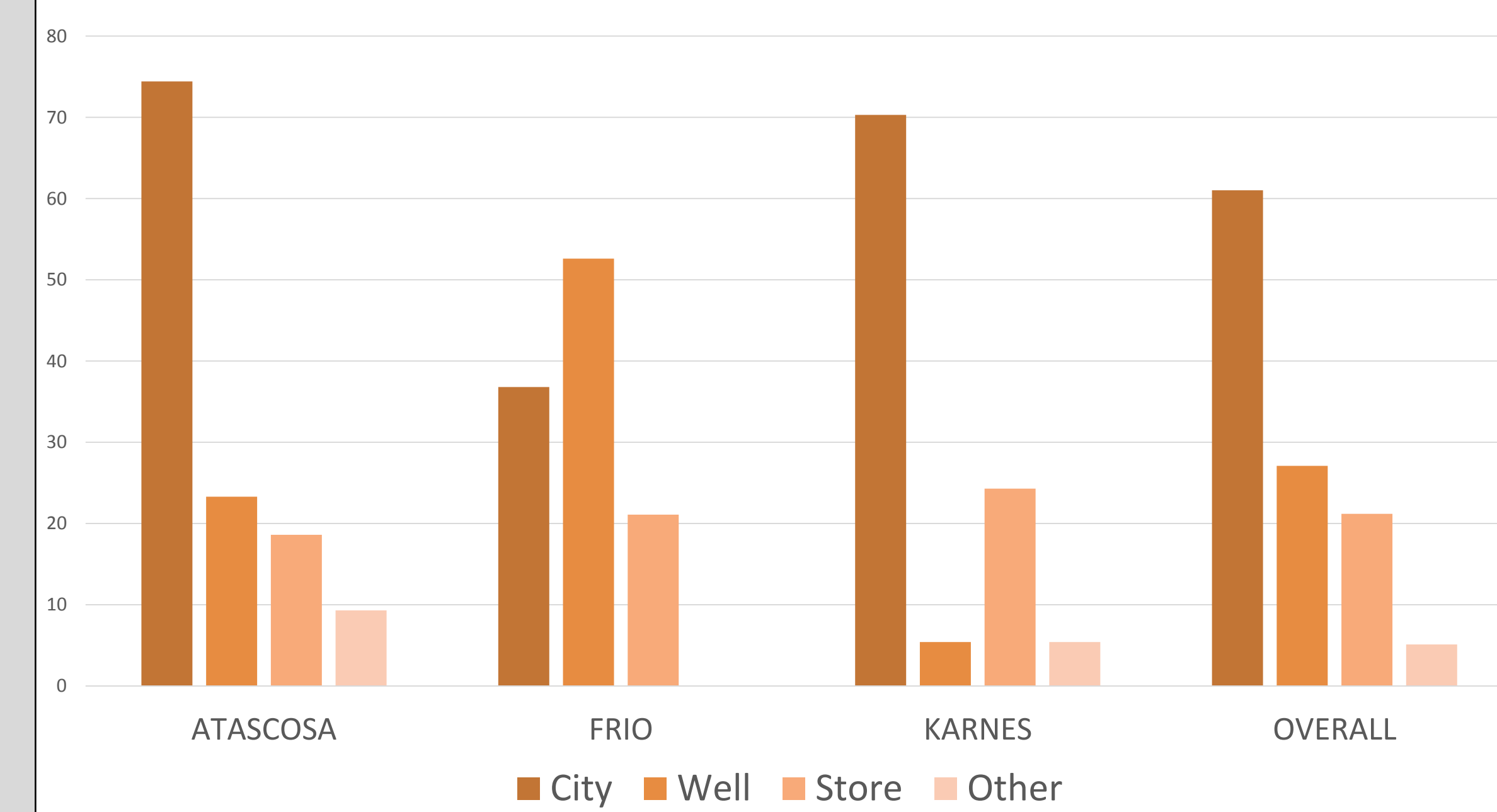
Note: BRIEF items were graded on a scale of 1 to 5, where 1 refers to low self-reported health literacy and 5 refers to high self-reported health literacy

Figure 2. Health Literacy Among PaCE Participants (%) in the three counties (n=115)



Note: Individuals who did not answer all health literacy questions were removed. Additionally the first 44 surveys did not include this component.

Figure 3. Reported Drinking Water source among PaCE participants (%) (n=118)



Note: The first 44 surveys did not include this component.

TABLE 5. Fracking-related knowledge among PaCE participants (%) (n=163)

Statement	"True" Responses			
	ATASCOSA	FRIO	KARNES	OVERALL
I have heard of fracking.	90.7	79.3	94.6	85.3
I am not aware of any potential environmental effects of fracking.	30.2	40.2	51.4	39.9
I feel that I understand the process of fracking.	55.8	56.1	46.0	53.4
I am not aware of any potential adult health effects of fracking.	37.2	57.3	56.8	51.5
I am not aware of any potential infant or child health effect of fracking.	51.2	65.9	59.5	60.1

Note: These statements were presented in true/false format

Methods

- Research protocol and survey reviewed by PaCE partners
- Cross-sectional pilot study (Nov '13 - Feb '15)
- 162 participants
 - 43 in Atascosa
 - 82 in Frio
 - 37 in Karnes
- 46 questions created with input from community partners focused on:
 - Demographics
 - 4-item BRIEF measure of health literacy
 - Water use
 - Environmental Health
 - Knowledge and perceptions
- Protocol approved by the UT Health IRB

Summary & Conclusions

- Lowest health literacy scores were related to the confidence in filling out medical forms
- Highest health literacy scores were related to the ability to read health materials without any help
- Overall, city water was the main source of water although well water was the primary source in Frio County
- 85.3% of the participants reported having heard of fracking while only 53.4% of participants reported they understand the process of fracking
- Overall, more than half of the participants were not aware of any potential health effects of fracking

Future Directions

- Respond to funding opportunity with PaCE partners to design and implement a community-wide campaign to address priority environmental health concerns.
- Work with partners to design messages and programs to increase environmental health literacy.
- Collect baseline community-level quantitative exposure measurements to identify exposure levels.

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