

Producing Energy, Protecting Food

DOES SHALE ENERGY DEVELOPMENT AFFECT RETAIL
FOOD OPTIONS IN RURAL COMMUNITIES?

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Poll:
How familiar are you with
the concept of healthy
food access?

Healthy Food Access

**The physical and economic ability to
obtain culturally acceptable and
nutritionally adequate food**



Retail Food Environment



The impact of food environments

1. Diet-related illnesses (e.g., obesity and diabetes) may be more pronounced in some poor and rural American communities because there is limited access to affordable and nutritious foods
2. Poor food environments matter more than healthy food environments

Retail follows people.

AND RETAIL FOLLOWS MONEY.

Shale Energy Development

- US passed Saudi Arabia in oil production
- Oil and gas employment increased 86% between 2006-2015
- Over 750 US counties sit above shale oil and gas reserves



Poll:
Do you work in an area impacted by shale energy development?

Two Waves of Employment

Employment

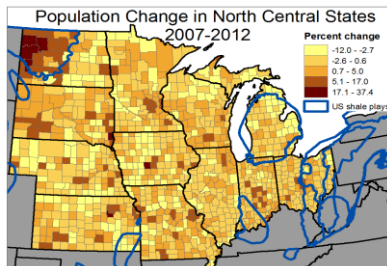
1. Drilling: about **13** jobs per well required
2. Producing: **0.2 to 0.4** full-time equivalent jobs required

Housing demands/Living conditions

1. Drilling: hotels, temporary residential facilities ("man camps"), campgrounds, and existing rental housing stock
2. Producing: permanent housing

Wealth and Shale Energy Development

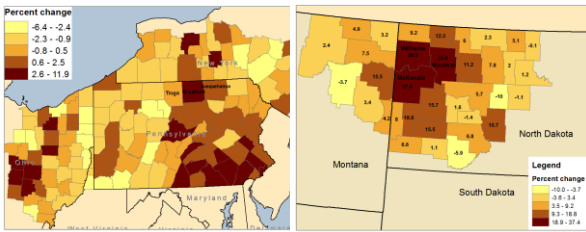
- Payments come in two parts
- Payments to individual landowners can be significant
- Income flows often short-term



Research Questions

Has the influx of workers and wealth associated with shale oil and gas development changed retail food options available to original residents?

Sample



Number of Retail Food Establishments

- 1. NAICS=445110 **Supermarkets and Other Grocery Stores**
- 2. NAICS=447110 **Convenience Stores attached to Gas Stations**
- 3. NAICS=452910 **Warehouse Stores and Supercenters**
- 4. NAICS=722513 **Limited-Service Restaurants**

Explanatory Variables

Key Explanatory Variable

1. Number of Oil and Gas workers NAICS=2111 (EMSI)

Control Variables

1. Log population density (BEA and USGS land area)
2. Log per capita income (BEA)
3. Poverty rate (SAIPE)
4. Industry mix (EMSI)

Method: Triple Differences

$$\# Stores_{DD} =$$

$$(\# Stores_{2012} - \# Stores_{2007}) - (\# Stores_{2007} - \# Stores_{2002})$$

First difference: The difference between the boom and preboom periods

Second difference: The change between the beginning and end points of each period

Third difference: The difference between shale and non-shale

Findings: Fast Food Establishments

- Widespread growth over past decade
- Typically in places with lower incomes
- Conflicting evidence on connection with obesity
- **Positive statistical relationship with O&G employment**
- Shale workers have higher incomes, but higher value of convenience

Findings: Grocery Stores

- Proximity to grocery stores associated with BMI
- Longer-term trend of grocery consolidation
- Location usually associated with incomes and minorities
- **No statistically significant relationship to O&G employment**
- May be countervailing forces of income and minorities



Findings: Supercenters

- Supercenters have steadily increased their grocery offerings
- Some evidence connecting supercenters and BMI
- **Inverse relationship with O&G employment**
- Only counties with large booms experience small declines
- Could be from local labor costs



Findings: Convenience Stores

- Usually limited food offerings, though recently increased
- Often less healthy and more expensive
- **No relationship with O&G employment**



Local Policy Interventions

Focused on food environment

- Retail
 - Existing retail
 - New retail (encouraging healthy and discouraging unhealthy)
 - Mobile retail
- Transportation
- Policy types (zoning, grants, public programs/projects, plans)

Focused on the community

Conclusions

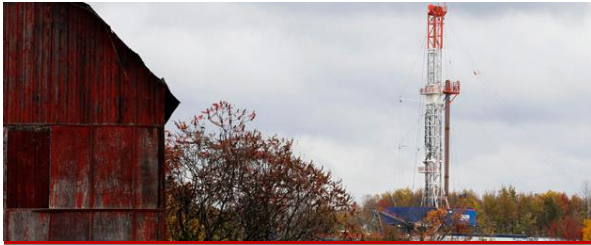
Shale oil and gas activity is changing food environments in local communities

In particular, activity is increasing fast food options but has little effect on grocery stores

Local officials should consider policy options

What are the implications for communities?

ENTER YOUR RESPONSE IN THE CHAT BOX.



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Oil and Gas Employment's Impact on Retail Food Establishments

	Fast Food	Grocery Stores	Supercenters	Convenience Stores
Differenced oil and gas employment	0.053** (2.60)	-0.0043 (-0.34)	-0.0029* (-1.67)	-0.0040 (-0.55)
Differenced logged population density	-2.66 (-0.17)	30.61 (1.25)	2.12 (1.49)	11.81 (0.86)
Differenced logged per capita income	-8.66 (-1.00)	2.40 (0.22)	0.07 (0.11)	-0.24 (-0.06)
Differenced poverty rate	-0.15 (-0.48)	0.28 (0.67)	-0.07** (-2.27)	0.13 (0.71)
Differenced industry mix growth	-0.21 (-0.38)	0.63 (0.98)	-0.05 (-1.00)	0.12 (0.46)
2002 log of population density	1.38 (0.84)	8.91* (1.96)	0.09 (0.82)	2.74*** (2.74)
2002 log of per capita income	-19.78 (-1.42)	2.13 (0.18)	0.36 (0.36)	8.78 (1.47)
2002 poverty rate	0.43 (1.09)	1.65* (1.76)	0.03 (1.32)	0.44 (1.52)
N	178	178	178	178
R-squared	0.204	0.411	0.112	0.246
