Tracking Oil Well Drilling Dynamics in the United States

C. Gallemore, Northeastern Illinois University

W. Auch, FrackTracker Alliance and Cleveland State University
Motivation

- New oil and gas boom in US
- Environmental concerns
- Economic concerns
- Political concerns
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- What factors lead to oil and gas well citing decisions?
Assembling Oil and Gas Well Data

- Best source: data on drilling permits
- Held by state governments
- Often very different coding systems
- Questionable data quality
- Challenging to get datasets to play well together
- Some major players (Texas, California, Ohio, Illinois, West Virginia) yet to be acquired
Assembling Oil and Gas Well Data

- Assembling data on oil and gas well permitting at county level, 2000-2014
- Code year of permit application or, when unavailable, SPUD date
- Aggregate to county level (least likely to be incorrect)
- While data are noisy, large-scale, long-run trends should be discernable
Distribution of Permitting over Time
Possible Factors

- Favorable geology
- Contracting
  - Bargaining power
  - Transaction costs
- State and local policy
- Local public opinion
Favorable Geology Cannot Explain Everything

Shale Areas in the United States

The Role of Inequality (Chetty, et al., 2014)
Reflections

- Patterns of drilling activity not just about geology
- Opportunity cost of agriculture
- Bargaining power and alternative opportunities
Further Work

- Complete data collection
- Estimate hierarchical negative binomial model to incorporate state variables and variance
Data Sources

- USDA. 2012 Census of Agriculture.
- USDA. 2007 Census of Agriculture.
- USDA. 2002 Census of Agriculture.