

Coal Mines and Property Values

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Coal mining disamenties of interest to homeowners



WV DEP

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Motivation

- Coal mines pose threats to the environment, health, and structures
- Problems remain after productive life ends
- OSMRE: regulate active mines, distribute funds for AML cleanup
- \$4 billion coal-related cleanup remains (excluding self-bonded mines)
- Few studies quantify price impacts in local housing markets
 - Williamson, Thurston, Heberling (2008); Williams (2011)

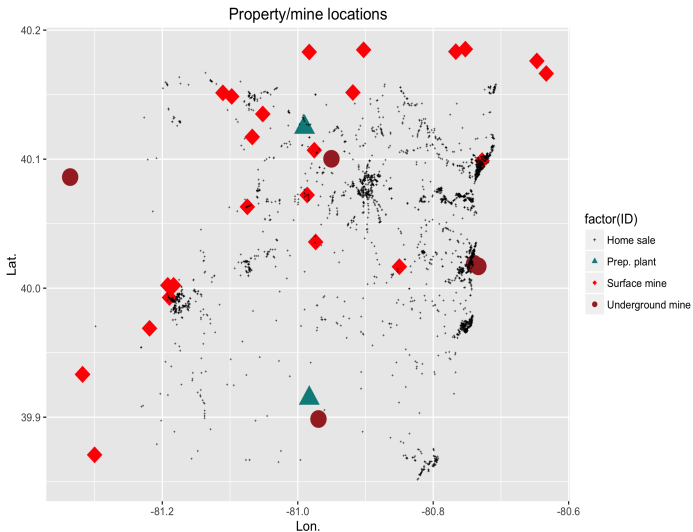
Research questions

- 1 Do active and abandoned mining operations affect property values?
- 2 Which properties are treated by their presence?
- 3 Do property owners benefit from reclamation projects?

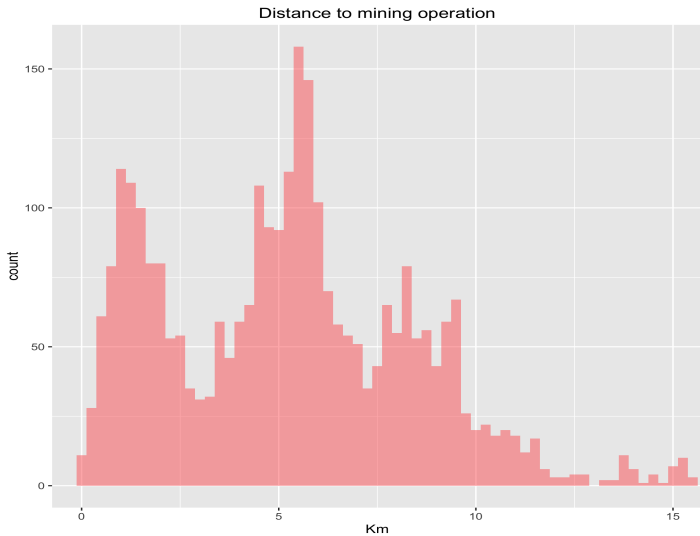
This paper

- Use hedonics to value a LULU that's received little attention thus far
- Sales of single family homes in three Appalachian counties over 7 years
- Sub-unit level coal mine production data from MSHA
- Applied new method of coding which sales are treated

Belmont County, Ohio



Belmont County, Ohio



Key: within what distance are disamenities felt?

- Pre-specify distance used before, or use repeat sales (which we lack)
- Shale wells, Superfund sites, wind turbines: all < 3 miles
- Problem: sign and magnitude can be unstable when varying buffer size
 - For several reasons, not obvious what the “correct” buffer is

Price impacts are sensitive to buffer size

$$\ln P_{ijt} = \beta_0 + X_{ijt}\beta_1 + \mathbb{1}(d_{ijt} < w)\gamma + tract_j + year_t + \epsilon_{ijt} \quad (1)$$

Buffer (w km)	Belmont, OH	Fayette, PA	Monongalia, WV
1	-0.03 (.05)	-0.13 (.05)	0.01 (.07)
3	-0.04 (.04)	0.03 (.03)	-0.08 (.04)
5	0.04 (.03)	-0.00 (.03)	-0.13 (.04)

Leave-one-out cross validation

Use distribution of distance-to-nearest-mine

$$\ln P_{ijt} = \beta_0 + X_{ijt}\beta_1 + \mathbb{1}(d_{ijt} < w_b)\gamma + tract_j + year_t + \epsilon_{ijt} \quad (2)$$

- 1 Estimate model 2 omitting sale k
- 2 Predict log price of k using estimated coefficients
- 3 Repeat 1-2 for all sales
- 4 Repeat 1-3 for all buffers
- 5 Define treatment using buffer that minimizes SSE

Preliminary results

- 2 of 3 counties demonstrate similar treatment buffers (6.5 – 7.5km)
- “Treated” properties sell at discounts of around 12%
- Discounts driven primarily by surface mines
- Third county: large discounts for homes near prep. plants
- Next: individual disamenities, synthesize reclamation spending