



## Motivation: Is Cost of College a Barrier to Access?

Average Student Debt for bachelor's degree:

- U.S.: \$28,400
- Sweden: \$21,000
- Australia: \$23,500

Cost may be a barrier to entry (Dynarski 2000 and 2003, Cornwell, Mustard, and Sridhar 2006; Dynarski, Michelmore, Libassi, Owen 2018)

12% of college students are from bottom quintile of family income distribution; 28% from top quintile (Chetty, [2017])

- Policy debates on "free" tuition at public universities
  - Michigan, Texas - free tuition to in-state residents if HH income < \$65K (roughly median income)
  - New York - no in-state tuition for HH income up to \$125K
  - Tennessee, Oregon - free tuition at community colleges
  - Debt forgiveness (perhaps means tested)

Is this incentivizing students to attend or just subsidizing inframarginal families?

## Education in Rural America

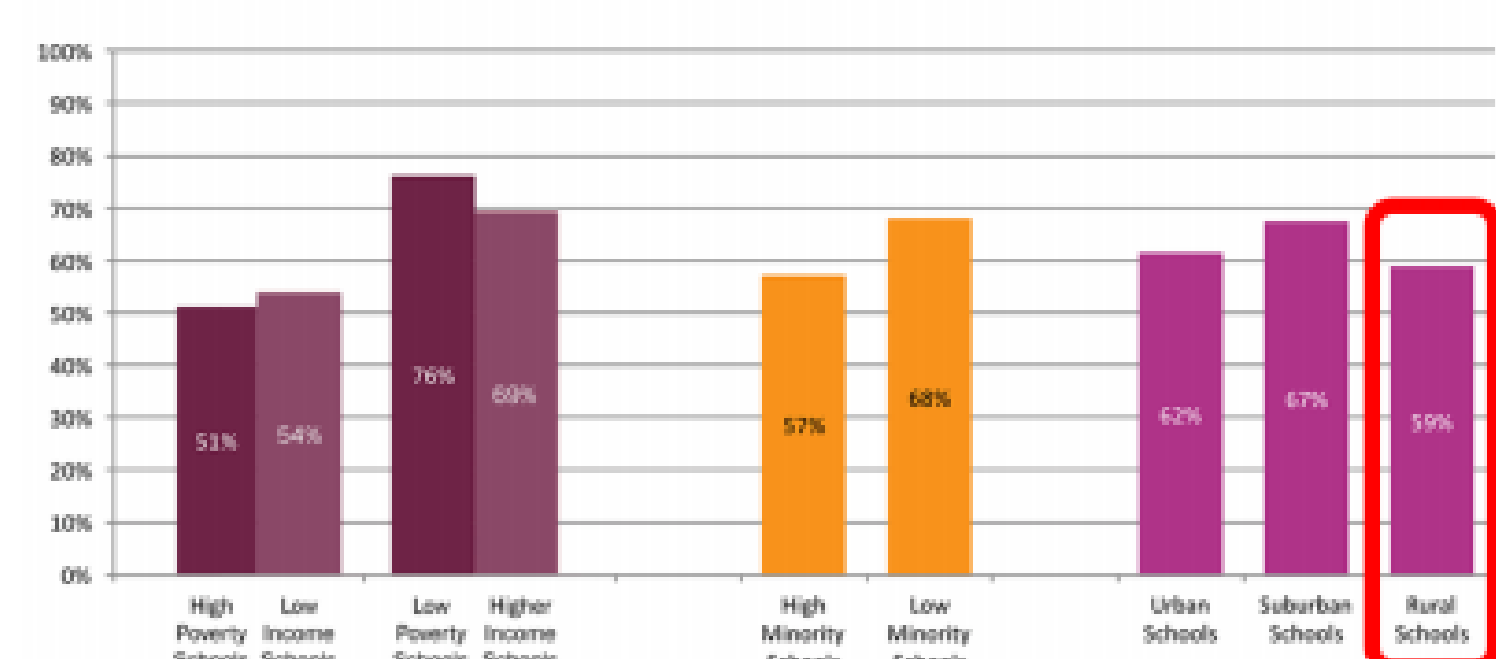
Rural America faces challenges in economic development and education attainment

### RURAL AMERICA IS THE NEW 'INNER CITY'

A Wall Street Journal analysis shows that since the 1990s, sparsely populated counties have replaced large cities as America's most troubled areas by key measures of socioeconomic well-being – a decline that's accelerating

Source: WSJ, 5/2/2017

College Enrollment Rates, Class of 2015, Public Schools



National Student Clearinghouse [2016]

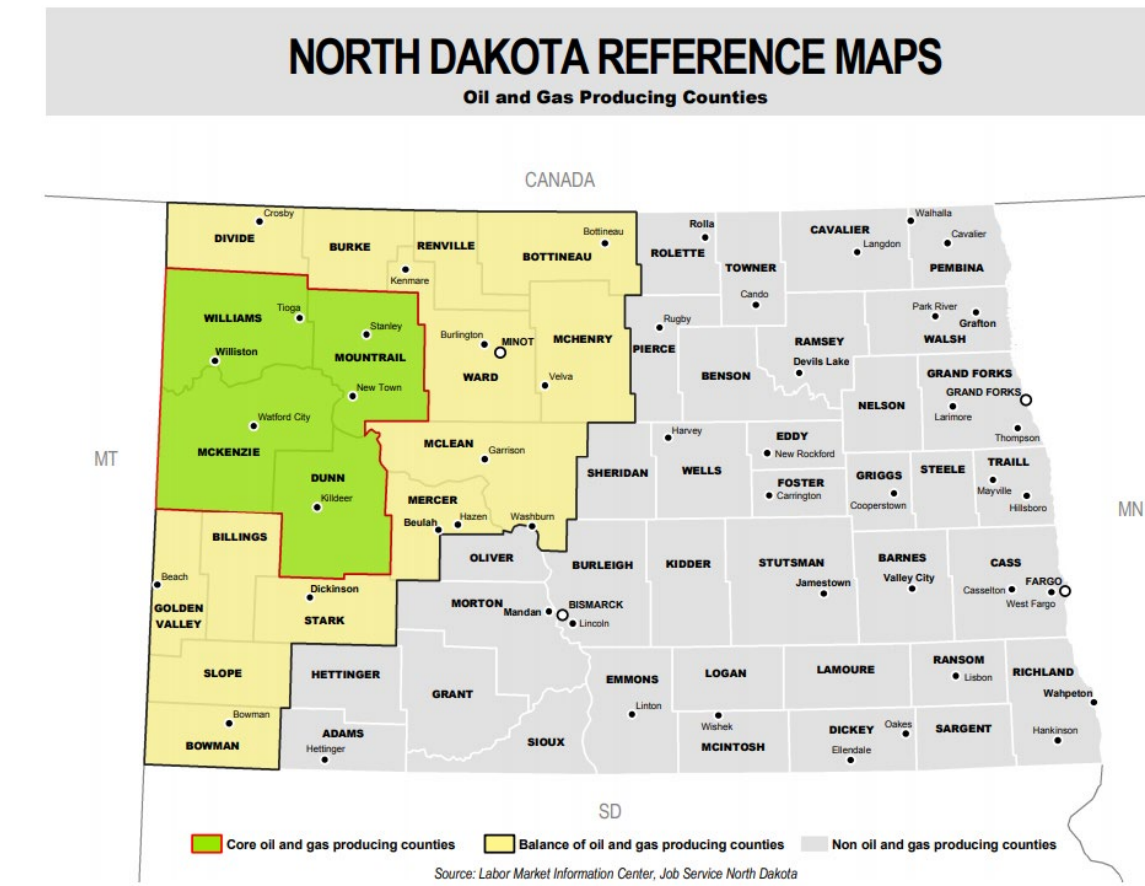
## Research Question

How does household wealth affect children's college-going?

**Empirical Challenge:** Household income correlated with unobserved family-level determinants of education

**Research Strategy:** Use data on household-level royalty payments as wealth shock to residents

## Data



Sample:

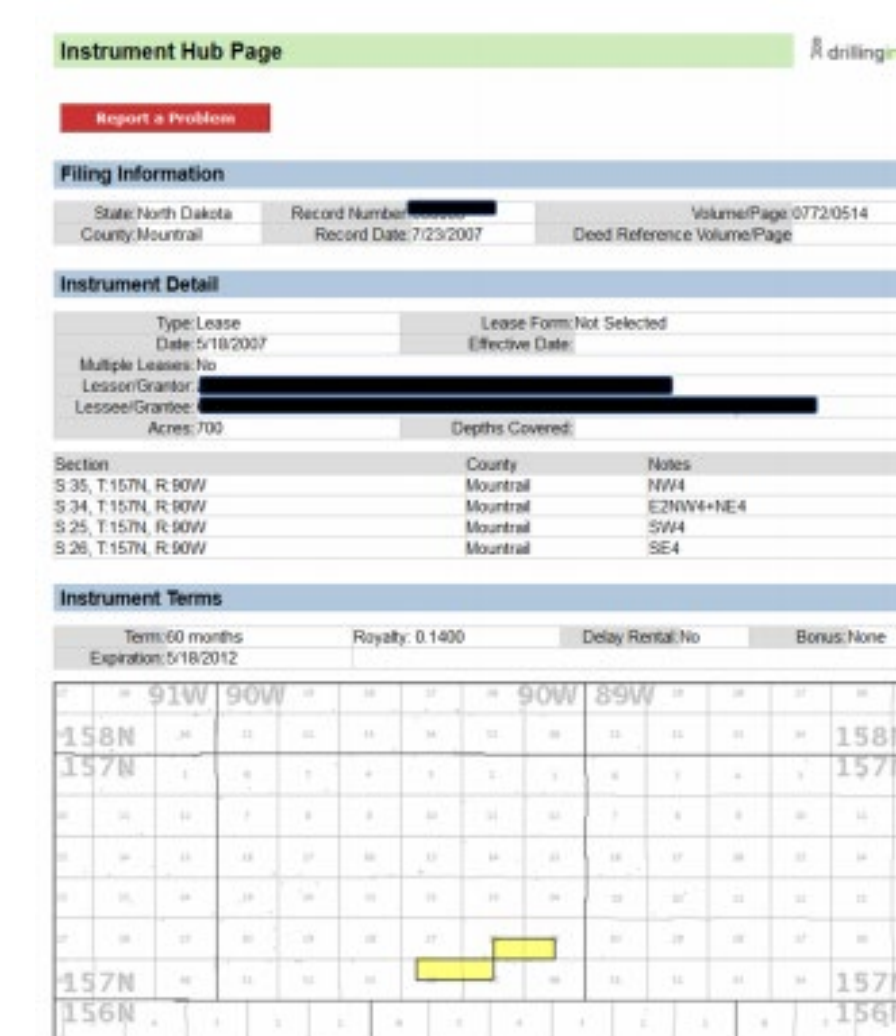
Students in cohorts graduating from high school from 2008-2013 whose parents were North Dakota rural residents prior to the fracking boom and live in the core fracking counties

**Treatment** ≡ Resident signed a mineral rights lease

Post-2008 residents who lived in ND in early 2000s did not select into location in anticipation of fracking boom

Census of rural landowners from Great Plains Directory Service

Linked by name/address to data on all mineral leases from DrillingInfo



**Outcomes:**

Linked to K-12 & post-secondary data for children of residents (North Dakota State Longitudinal Data System)

Post-Secondary students linked to in-state public university data and the National Student Clearinghouse

	All	Fracking County	Non-Fracking County	Lease Holder	Non-Lease Holder
Leaseholder	0.38	0.74	0.13	1.00	0.00
Year lease was signed	2007.73	2007.45	2008.91	2007.73	.
Male	0.52	0.52	0.53	0.52	0.53
Free/Reduced Price Lunch	0.26	0.25	0.27	0.24	0.27
White	0.98	0.97	0.99	0.97	0.99
ACT test score	21.19	21.67	20.82	21.70	20.85
Graduated from High School	0.99	0.99	0.98	0.99	0.99
Immediately enroll in Post-secondary	0.65	0.65	0.66	0.65	0.66
Immediately enrolled In-state	0.57	0.58	0.55	0.58	0.56
Immediately enrolled Out-of-state	0.09	0.07	0.11	0.07	0.10
Observations	5277	2233	3044	2030	3247

## Empirical Method

Regression on our repeated cross section of high school seniors:

$$Outcome_{it} = \gamma Lease_i + \beta GradAfterLease_{it} + \lambda_t + \theta X_i + \epsilon_{it}$$

$GradAfterLease_{it} \equiv$  student  $i$ 's HS Grad Year  $\geq$  Lease Sign Year

This isolates the effect that the timing of a wealth shock has on our educational outcomes ( $\beta$ ) after controlling for whether the household ever signs a lease and local labor market conditions

We control for the effect of whether an individual has ever signed a mineral rights lease ( $\gamma$ )

We also control for other factors that might affect a high school senior's decision to attend college. These include:

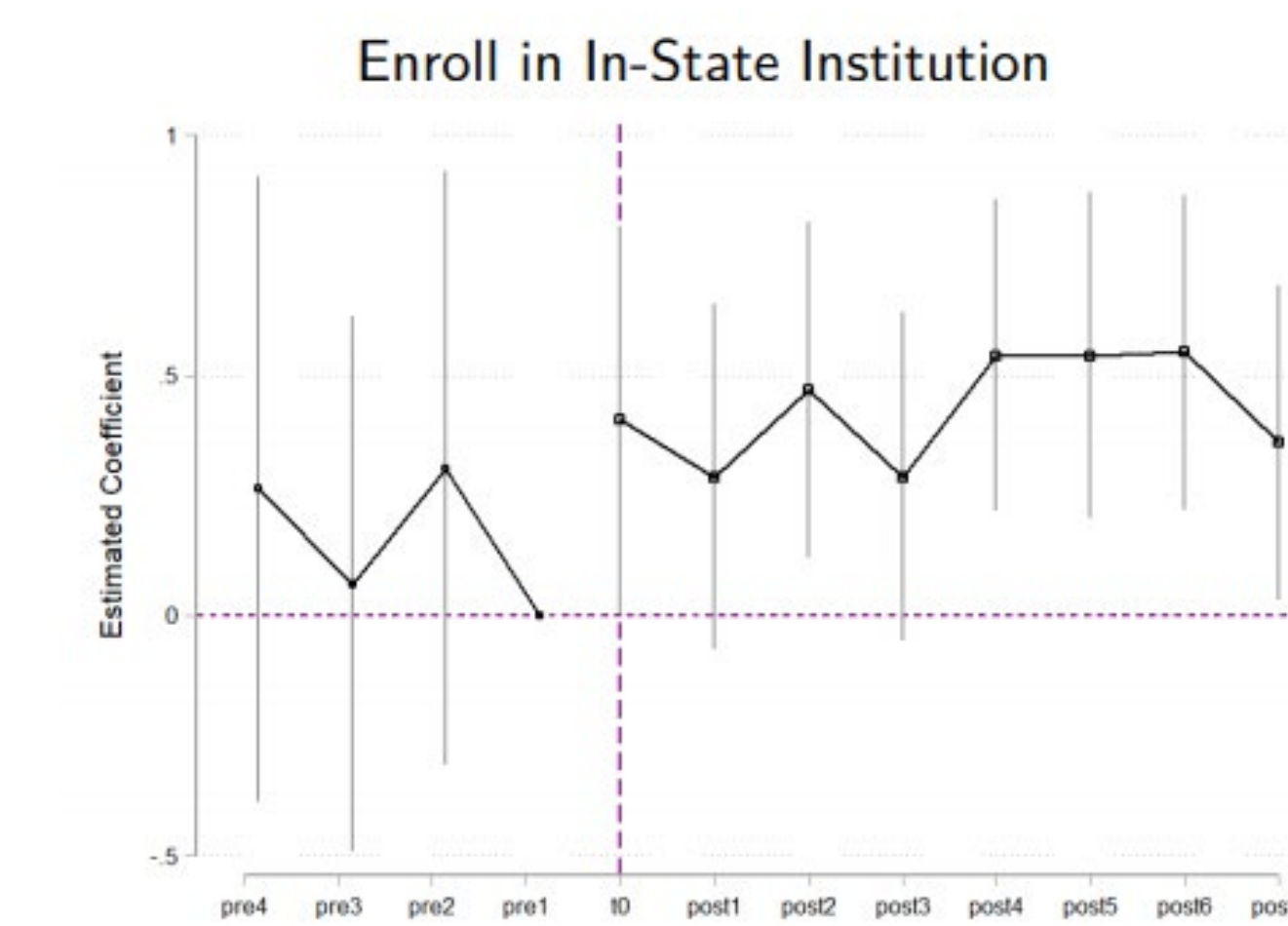
Local labor market conditions ( $\lambda$ ). For example, if a local fracking boom provides high-income, low-skilled jobs, this might affect whether a high school senior attends college

Student controls ( $X$ ). These include ACT score, gender, poverty, and other controls that may affect whether a student attends college.

## Results & Conclusions

For a rural population with some poverty, college attendance is responsive to wealth shocks

Estimates are large (but noisy), however we can rule out zero and modest-sized effects



	1	2	3	4	5
<b>Panel 1: Enroll Post-Secondary</b>					
Graduated after signing lease	0.3022** (0.1172)	0.3155*** (0.1127)	0.2838** (0.1243)	0.2510 (0.1551)	0.3408*** (0.1230)
lead				-0.0997 (0.2482)	
Observations	283	283	283	283	247
<b>Panel 2: Enroll In State</b>					
Graduated after signing lease	0.3280*** (0.1104)	0.3527*** (0.1083)	0.2965** (0.1228)	0.2275 (0.1622)	0.3741*** (0.1243)
lead				-0.2102 (0.2171)	
Observations	283	283	283	283	247
Leaseholder and Cohort FE	Y	Y	Y	Y	Y
County Linear Trends	N	Y	N	N	N
CountyXYear FE	N	N	Y	Y	Y
Lead	N	N	N	Y	N
Student Controls	N	N	N	N	Y