BECAUSE THE INTERNET: THE EFFECTS OF HIGH SPEED INTERNET ON EMPLOYMENT

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RESEARCH QUESTION

Does increasing a metropolitan area's high-speed internet coverage affect local employment levels?

MOTIVATION

- Boosting internet speeds via fiber optic cables may have positive impacts on the economy. The paper will attempt to elucidate the effects of fiber optic development on:
  - Total employment and employment amongst *specific* kinds of workers

Why is it in the best interests of policy makers to consider upgrading to faster internet speeds?

- Firm-level power of utility companies
- The returns and viability of internet speed
- How fast is too fast?

LITERATURE REVIEW

- Literature on high-speed internet's affect on employment have taken place at county, state, and national levels
  - These studies have approached the effects of availability and adoption (Jayakar & Park, 2013)
  - Overall, studies range in range results (little definitive answers) (Bai, 2016) (Lapointe, 2015)
  - However, incremental adoption has become an important aspect to consider (Lapointe, 2015)
  - On productivity within workers: high-speed internet was said to have increased productivity by 7-10% after controlling for other factors (Grimes, Ren, & Stevens, 2014)

- This study will focusing on changes in employment levels at the metropolitan area, as opposed to national and county level employment.

- "The Need for Speed: Impacts of Internet Connectivity on Firm Level Productivity" (Grimes, Ren, & Stevens, 2014)
- "The faster, the better? The Impact of Internet Speed on Employment" (Bai, 2016)
- "Does Speed Matter? The Employment Impact of Increasing Access to Fiber Internet" (Lapointe, 2015)
- "Broadband Availability and Employment: An Analysis of County-Level Data from the National Broadband Map" (Jayakar & Park, 2013)

ECONOMETRIC MODEL

$$employment = \beta_0 + \delta_{rDD} highspeed + \sum_{k=2014}^{2016} \beta_k post_{ki} + \beta_1 fiberop_{it} + \beta_2 female_{it} + \beta_3 \text{citizen}_{it} + \beta_4 \text{pov}_{it} + \beta_5 lnincome_{it} + \mu$$

Name	Definition
employment	dependent variable representing average employment
highspeed	interaction term measuring treatment effect generated by investment in high speed internet
post	dummy variable variable for time after treatment
fiberop	dummy variable for receiving high speed internet
female	dummy variable for gender
citizen	dummy variable for whether worker is a citizen
povpip	continuous variable represening income to poverty ratio
ln(income)	continuous variable for natural log of total household income

- Utilizing: differences in differences model to estimate the difference between the Austin, TX metropolitan area and the For Worth, TX metropolitan area
- Base model measures the effects of fiber optic proliferation (treatment) on total employment.
- Model accounts for several other controls that may affect employment

DESCRIPTIVE STATISTICS

Means in 2014

	Austin	Ft. Worth	t-statistic
employment	0.6722 (0.00510)**	0.6393 (0.00625)**	4.072
fiberop	0.0880 (0.00308)**	0.1976 (0.00518)**	-18.180
female	0.5098 (0.00543)**	0.5351 (0.00649)**	-2.990
citizen	0.9020 (0.00323)**	0.9136 (0.00366)**	-2.378
pov	3.612 (0.01726)**	3.388 (0.02024)**	8.406
ln(income)	11.330 (0.00996)**	11.157 (0.01088)**	11.728

Number of observations	8,486	5,900

Means in 2015

	Austin	Ft. Worth	t-statistic
employment	0.6761 (0.00492)**	0.6477 (0.00619)**	4.072
fiberop	0.1024 (0.00319)**	0.1684 (0.00485)**	-18.180
female	0.5109 (0.00526)**	0.5313 (0.00647)**	-2.990
citizen	0.8986 (0.00317)**	0.9216 (0.00348)**	-2.378
pov	3.6630 (0.01645)**	3.4511 (0.02010)**	8.406
ln(income)	11.3755 (0.00979)**	11.1923 (0.01124)**	11.728

Number of observations	9,049	5,955

MEASURING MEANS

	Austin	Ft. Worth	Austin - Ft. Worth
High speed internet usage in 2014	0.0880 (0.00308)**	0.1976 (0.00518)**	-0.1096 (0.00603)**
High speed internet usage in 2015	0.1024 (0.00319)**	0.1684 (0.00485)**	-0.0660 (0.00580)**
Change in high speed internet usage between 2014 and 2015	0.0144 (0.00247)**	-0.0292 (0.00151)**	0.0436 (0.00290)**

- Potential problems?

PRELIMINARY REGRESSION RESULTS

	(i)	(ii)	(iii)	(iv)
highspeed	0.02359 (0.01275)*	0.02343 (0.01263)*	0.02807 (0.01248)**	0.02742 (0.01237)**
post	-0.0075 (0.00567)	-0.0073 (0.00561)	-0.0024 (0.00556)	-0.0029 (0.00551)
fiberop	0.0114 (0.01159)	0.0100 (0.01148)	0.0057 (0.01135)	-0.0121 (0.01125)
female		-0.1310 (0.00437)**		-0.1206 (0.00429)**
citizen		0.0111 (0.00742)**		-0.0431 (0.00747)**
pov			0.0265 (0.00219)**	0.0282 (0.00221)**
lnincome			0.0634 (0.00375)**	0.0590 (0.03756)**

- i: naïve regression
- ii: regression with social controls
- iii: regression with financial controls
- iv: regression with all socioeconomic controls

- effect at metropolitan level are positive, statistically significant
- ire statistically insignificant throughout
- fluctuating OVB throughout