

# A Different Perspective on Big Data

Evidence from a Randomized Anti-Piracy Field  
Experiment in the UK

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# Policy Question

- Are anti-piracy efforts effective at changing user behavior?
- Entrenched views on both sides
- Academic work (primarily with observational data)

# Selected Anti-Piracy Studies

- Danaher et al. (2014): Awareness of French notice sending increases music sales by 22-25%
- Danaher and Smith (2014): Megaupload shutdown increases digital movie sales by 6.5-8.5%
- Aguiar et. al. (2016): Shutdown of Kino.to in Germany did not increase legal sales
- Poort et al. (2014): Blocking The Pirate Bay in the Netherlands caused no change in piracy consumption
- Danaher et al. (2018): Blocking The Pirate Bay in the UK caused no change in legal consumption, but subsequent blocks of 19 and 52 sites caused significant increases in legal consumption

# Policy Question

- Are anti-piracy efforts effective at changing user behavior?
  - Entrenched views on both sides
  - Academic work (primarily with observational data)
- Real-world randomized field experiment of copyright policy in cooperation with Creative Content UK

# Research Setting

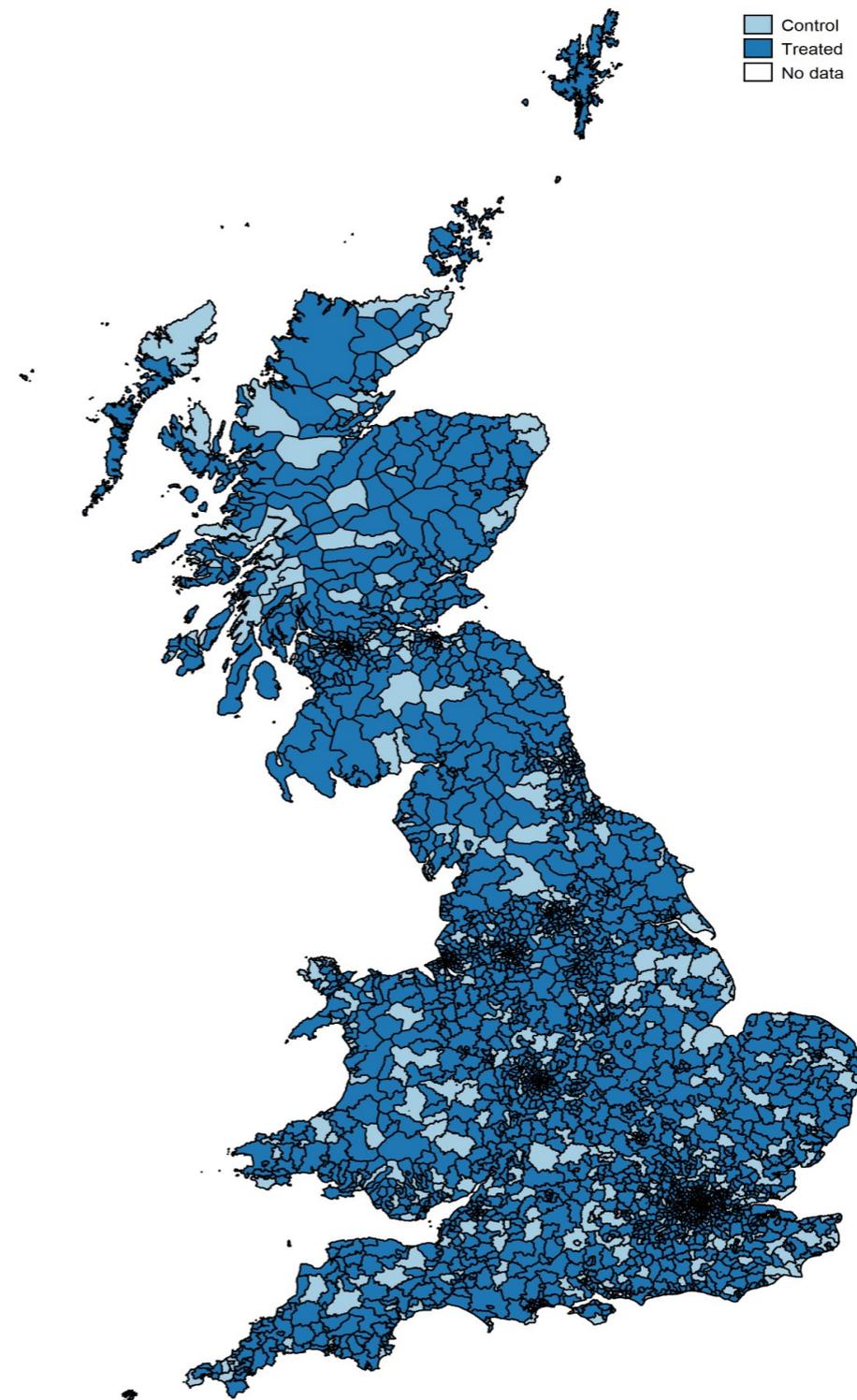
- July 2014: Rightsholders and UK ISPs announce partnership on a 2 pronged IP-protection program
- Nov. 2015: Public education campaign of dangers/harm from piracy and availability of legal alternatives
- Jan. 2017: Notices sent to households that are observed sharing copyrighted material (ongoing)
  - 1st notice: information, 2nd: legal alternatives, 3rd: possible penalties from ISP/rightsholder

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- **Notices confounded with country-wide site blocking in the UK: October 2016, March 2017, July 2017, November 2017**

# Experimental Design

- Control/Treatment Design
- 3-digit postcode (~21,000 population/postcode)
- Postcode districts randomly assigned to:
  - Treatment group (receive notices, 80%)
  - Control group (no notices, 20%)

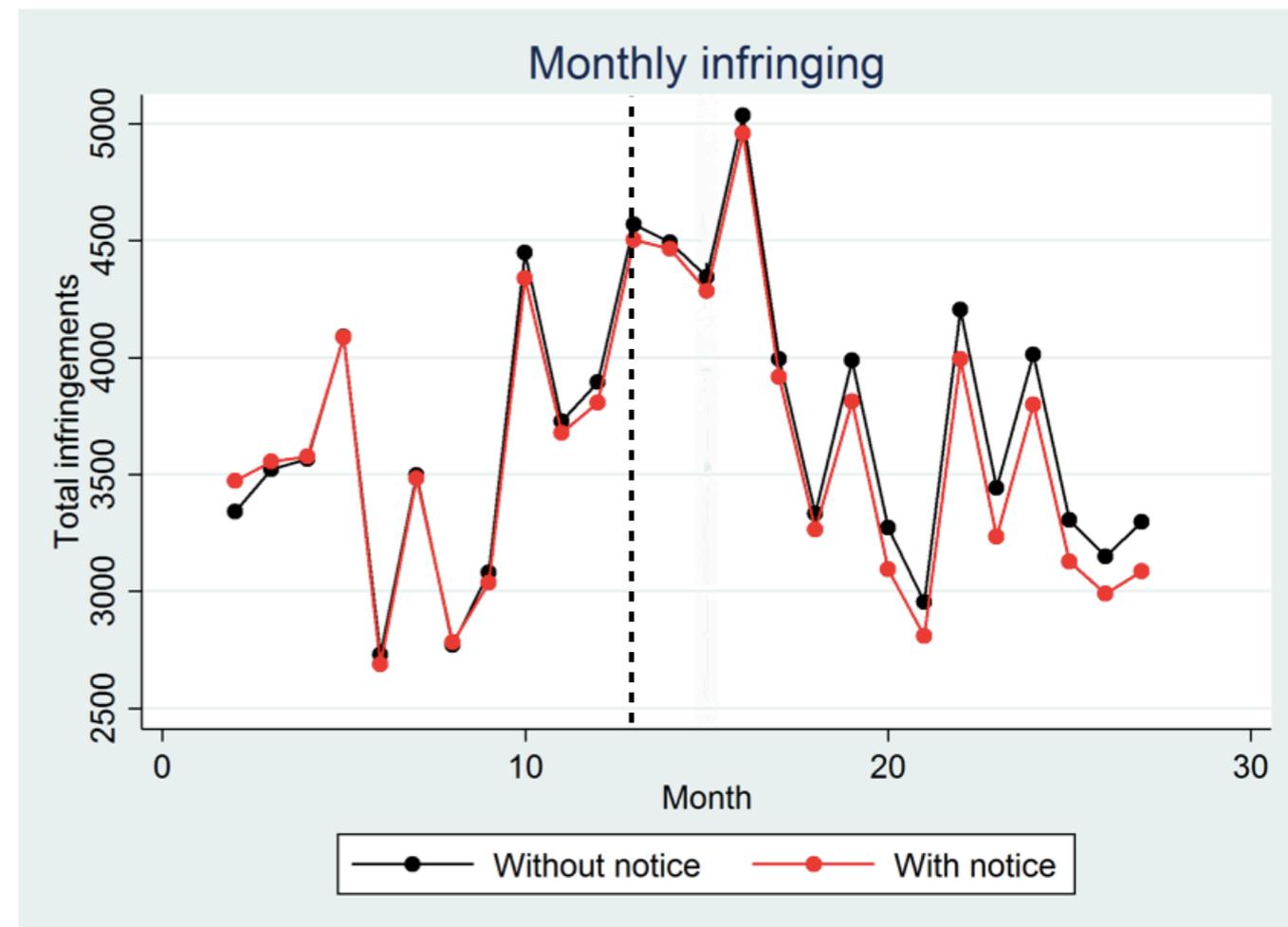


# Data

- Copyright infringements: Total observed (P2P) infringements at postcode level (Jan 2016 – Present)
- Consumer infringement reports (CIR): Rightsholder reports that can lead to an email notice.
- Email Notices: Number of emails sent by ISPs to users by postcode.
- Legal Consumption Data: Sales data received in past month. (Analysis in process.)

# Piracy Results

- Pre-trends well balanced
- Reduction in piracy in treated postcodes starts in month 13, but initially small
- Impact increases over time and becomes statistically significant



# Empirical Approach

- Difference-in-difference
- How did infringements change in the treated postcodes relative to the control postcodes?
- Did the strength of the effect vary over time?  
(in the 5 quarters after notices started)

# Preliminary Results

- Results directionally negative in each quarter.
- Statistically significant in 3rd, 4th, and 5th quarter
- Notices caused 161 (Q3), 205 (Q4), and 177 (Q5) fewer infringements per month per postcode.
- Corresponds to 4.7-5.4% drop in infringements

(1)	
VARIABLES	month_infr
did_Q1	-44.52 (193.3)
did_Q2	-68.33 (132.0)
did_Q3	-160.9** (68.95)
did_Q4	-205.2* (109.4)
did_Q5	-176.7** (83.57)
Observations	70,028
Number of post_id	2,501
R-squared	0.072
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Quarter	DID Change in infringements	Baseline Infringements
3	160.9 (4.7%)	3,450
4	205.2 (5.2%)	3,911
5	176.7 (5.4%)	3,250

# Interpretation

- {161, 205} drop in infringements/postcode-month \*  
2,106 postcodes =  
*2.21 million fewer total infringements in Q3-Q4*
- 2.21 million fewer infringements / 383,525 emails  
sent = *each email causes 5.8 fewer infringements*

# Discussion

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- Notices lead to a large decrease in observed infringements...
- ...over and above any impact of education/awareness.

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- First country-wide anti-piracy randomized experiment we are aware of in the literature.
- Notices lead to a large decrease in observed infringements...
  - ...over and above any impact of education/awareness.
- Policy implications: Opportunities for partnerships between policymakers and academia to measure effectiveness of policy interventions at country-scale