

Protecting copyrighted content: the impact of anti-piracy notice sending on consumer behavior in the UK

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With

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Motivation

- Large evidence that infringement has debilitating impact on firm profits.
 - 26 studies in the literature, 23 finding piracy causes significant harm (Danaher, Smith and Telang, 2017)
 - J. Waldfoegel: “the dust has settled in that literature and most people believe that, indeed, unpaid consumption reduces the ability of sellers to generate revenues.”
- What can be done to control the infringement?

Piracy Enforcement

- what can be done to reduce piracy?
 - Make legal content more available or convenient
 - Prioritizing legal sites in search results
 - Remove illegal content from the web
 - ISPs Block websites
- This paper: (soft) enforcement
 - Warnings to copyright infringers
 - Several countries have some type of enforcement policies: France (HADOPI for example), Sweden, New Zealand, UK etc.
- How effective are warning notices?

Randomized Field experiment

- We had the opportunity to design a field experiment in the UK, within the CCUK initiative, and supported by the major ISPs (BT, Virgin Media, TalkTalk and Sky, 70% of the market)
- Postcodes have been divided into a treated group (i.e., receiving a warning message) and a control group (business as usual)
- We track outcomes before the start of the experiment, during the experiment, and possibly afterwards (dispatch is still in place)
- Goals:
 - Study how online piracy can be influenced by notices about copyright violation.
 - Quantify the short-run response to notices, i.e., violations in the following week(s).
 - Quantify the long-run response to notices, i.e., violations in the following months.
 - Estimate changes in legal consumption as a response to changes in illegal consumption.

Creative Content UK

- The ISPs have agreed to adopt a Voluntary Copyright Alert Program (VC AP), which aims to send millions of educational notices to those detected by copyright owners as in-fringing their content via unlawful Peer-to-Peer (P2P) File-Sharing (e.g. BitTorrent) networks (these networks will often expose your IP address to the public Internet and Rights Holders can spot that).
- Unlike the bullying letters sent by dubious copyright protection firms (aka - speculative invoicing), the "alerts" issued by this new system will NOT contain any threats or demands for money and should only act as a tool for educating customers about the legal alternatives (Netflix and Spotify etc.). The idea is to discourage future infringement, as opposed to punishment.

GET IT RIGHT FROM A GENUINE SITE

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330+ hours planning,
Writing and editing my book
'On The Other Side'
#GetItRight

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WHAT WE'RE DOING

GENUINE SITES

We're here to help you get the music, TV, films, games, books, newspapers, magazines and sport that you love from genuine services and support UK creativity. Every time you watch, listen, read or play, you make a choice, either to support the things you love and help them flourish and grow, or to contribute nothing. By supporting what you love, you invest in creating more of it and the development of new artists and ideas. So, get it right from a genuine site.

Twitter YouTube

The data

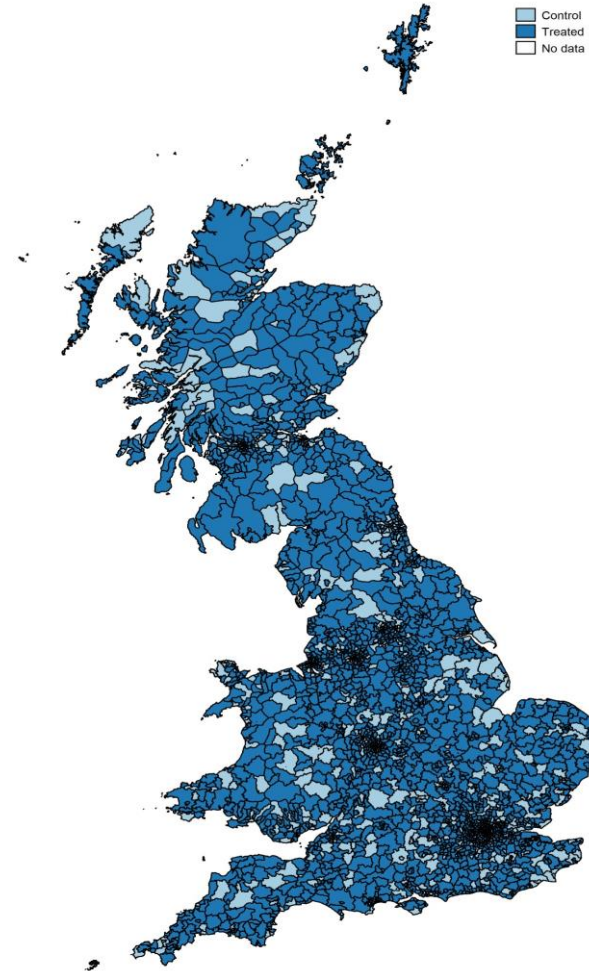
- Time span
 - Jan 2016 - Dec 2016: pre-treatment
 - Jan 2017 - Now: during treatment
- Geographical unit
 - UK postcode district (avg. 20,000 inhabitants)
- Variables
 - Copyright infringements: weekly total number of infringements
 - Consumer infringements reports: reports on the infringements that can lead to a notice
 - Notices: email sent to the internet user with details on the content violation and reminder on the legal consequences of such behavior
 - Sales: sales of legal content, (music and movies), subscriptions. . .

Treatment and control group

| | TREATED POSTCODE | | CONTROL POSTCODE | | Test |
|----------------------------|------------------|-----------|------------------|-----------|-------|
| | (N=2,392) | | (N=599) | | |
| Variable | Mean | Std. dev. | Mean | Std. dev. | P-val |
| Total population | 21314 | 16509.88 | 21393 | 17134 | 0.944 |
| Median age | 33 | 10.19 | 33 | 10 | 0.690 |
| Sh. pop. between 0 and 14 | 0.128 | 0.042 | 0.128 | 0.041 | 0.734 |
| Sh. pop. between 15 and 19 | 0.047 | 0.016 | 0.047 | 0.016 | 0.963 |
| Sh. pop. between 20 and 29 | 0.100 | 0.052 | 0.099 | 0.053 | 0.701 |
| Sh. pop. between 30 and 44 | 0.153 | 0.048 | 0.153 | 0.047 | 0.952 |
| Sh. pop. between 45 and 59 | 0.164 | 0.058 | 0.166 | 0.059 | 0.826 |
| Sh. pop. 60 or older | 0.197 | 0.081 | 0.198 | 0.081 | 0.732 |
| White pop. | 0.708 | 0.227 | 0.712 | 0.226 | 0.758 |
| Black pop. | 0.017 | 0.041 | 0.015 | 0.034 | 0.936 |
| Sh. part time workers | 0.107 | 0.034 | 0.106 | 0.034 | 0.435 |
| Sh. full time workers | 0.294 | 0.089 | 0.293 | 0.088 | 0.852 |
| Sh. students | 0.040 | 0.033 | 0.040 | 0.034 | 0.838 |
| Sh. HS occupations | 0.399 | 0.129 | 0.400 | 0.127 | 0.786 |
| Sh. HS occupation sect. | 0.229 | 0.085 | 0.230 | 0.086 | 0.721 |

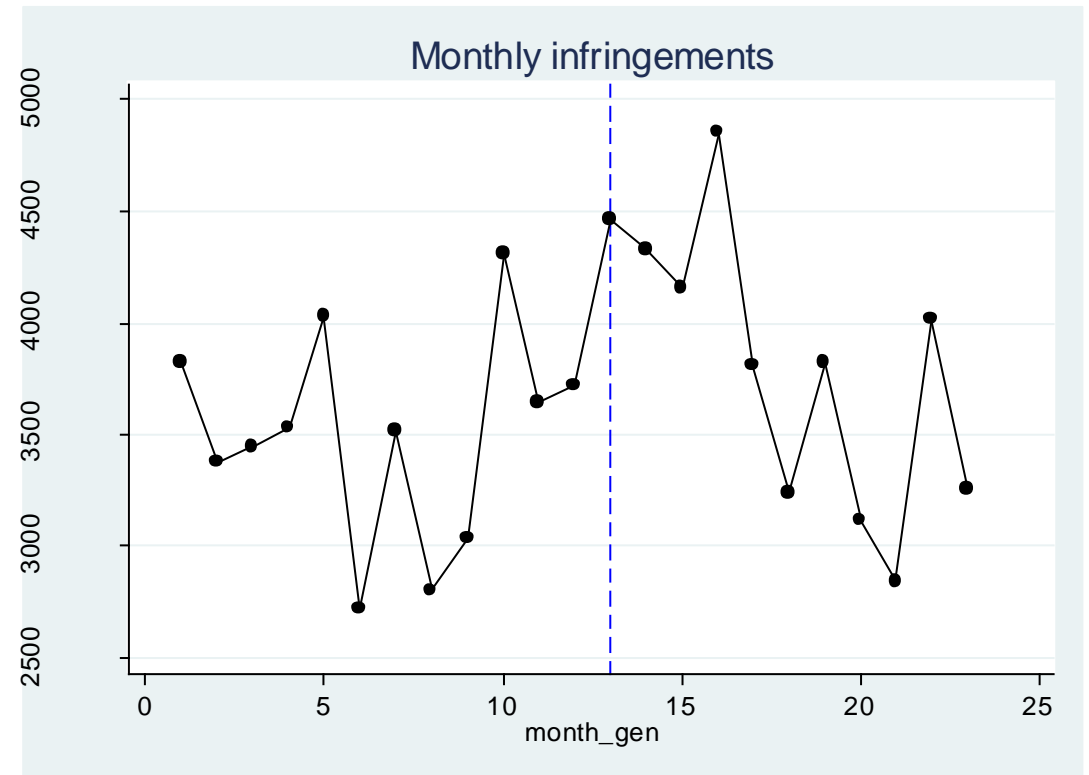
Treatment and control group

- Treated and control postcodes have been randomized with stratification, s.t. their demographic characteristics are balanced.
- They are also “geographically balanced”.



Infringements from MM (all ISPs)

- MM records the number of weekly infringements at the postcode level (avg. population in the postcode is approximately 21,000).



Infringements from MM

- Some statistics on monthly infringements:

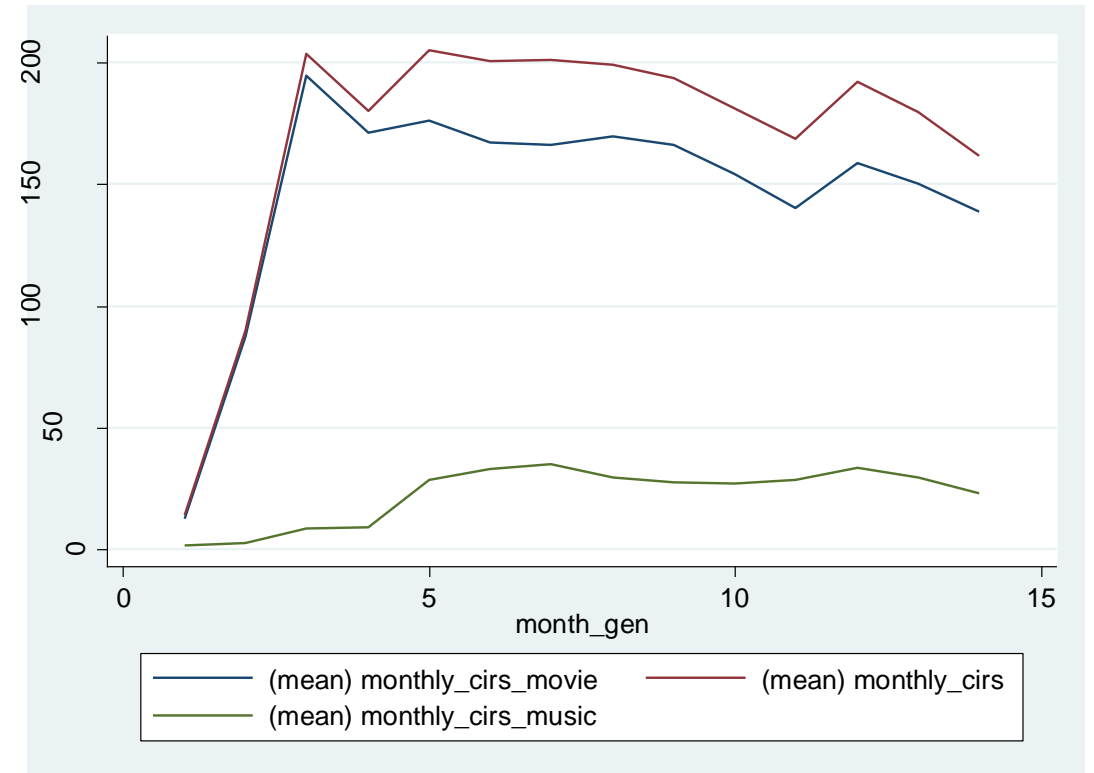
| Variable | Mean | Std. dev. | Min | Median | Max |
|---------------|------|-----------|-----|--------|--------|
| Infringements | 3681 | 10761 | 0 | 946 | 276893 |
| | | | | | |

- Large right tail, dropped all postcodes with weekly per-capita infr>2
- Left with 2520 postcodes, with 504 in control and 2016 in treated.

Infringements and CIRs

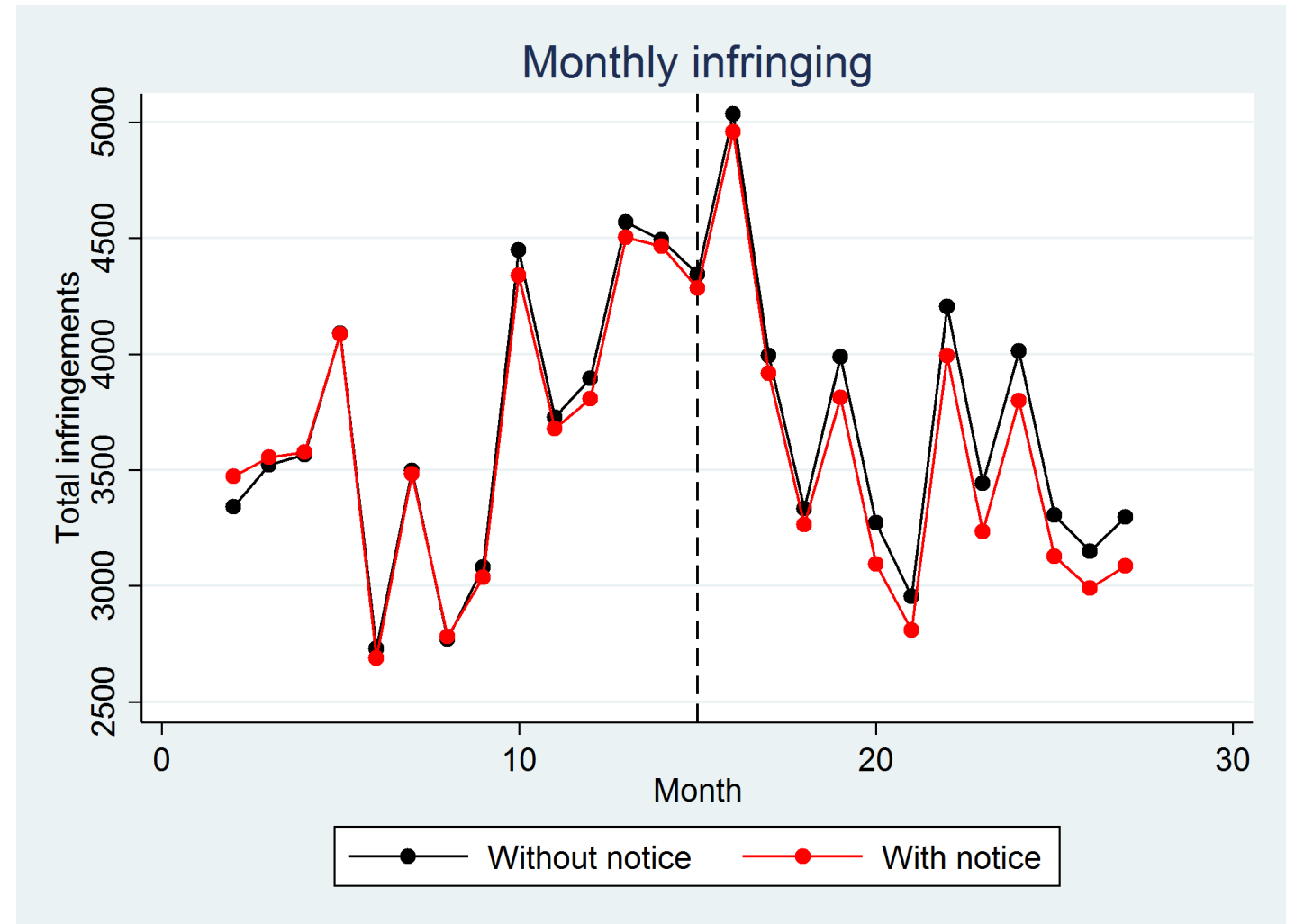
- Consumer infringement reports are a small fraction of the infringements recorded by MM.

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|-----------|-----|------|-----------|------|-----|
| total_cir | 14 | 169 | 61.6 | 8.1 | 194 |
| movie_cir | 14 | 146 | 53.1 | 7.36 | 204 |
| music_cir | 14 | 22 | 12.2 | 0.82 | 34 |



Results

- Pre trends are well balanced.
- You can start seeing reduction starting month 13. But the reductions initially are small (black and red dots overlap).
- As time progresses, the effect is clearly increasing.



Results

| 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

- By Q3, Q4 and Q5 the results become significant.
- They suggest that in Q3, treated postcodes had **160** fewer units of infringement/month than control and in Q4 this number increased to **205 and then 177 in Q5**.
- Over the period July 2017 to March 2018, across the full treatment area this translates into 3.3 million piracy infringements that did not occur as a result of the e-mail program.

| Quarter | Months | Estimated reduction in infringements |
|---------|--------------|--------------------------------------|
| Q1 | Jan-Mar 2017 | - |
| Q2 | Apr-Jun 2017 | -1.6% |
| Q3 | Jul-Sep 2017 | -4.7%* |
| Q4 | Oct-Dec 2017 | -5.2%* |
| Q5 | Jan-Mar 2018 | -5.4%* |

Effectiveness of Email Alerts

- 5% decline in piracy does not capture the true effect of the program.
- We should normalize the effect by the number of CIR (email) alerts actually sent.
 - Average number of CIRs were about 146 per month per postcode. Email alerts were a fraction of these.
- Based on average number of piracy removed and CIRs sent, we find that each CIR removed about 1.3 units of piracy. And each email alert removed about 5 units of piracy.
 - In short, each alert contributed to a very large reduction in piracy.
- Simply doubling the number of email alerts (which would still be a small number relative to piracy) would have doubled the effectiveness the program and would have led to almost 10% reduction in piracy.
 - In fact, if we focus on top quartiles of CIRs, then the piracy reduction is almost 10%.

Effect of CCUK alerts on Sale

- We were able to get data on transaction sale from a large digital platform for year 2016 and 2017.
- Preliminary results suggest that
 - Power of notice sending on sale is small (too few notices being sent).
 - Average effect on sale is small (1-2%) but not statistically significant.
 - Top CIRs receiving postcodes (top quartile) show the largest growth in sale. By 3rd quarter, the sale growth to almost 3% (and statistically significant).
- Work is still ongoing.

Summary

- Very large effect on infringement due to CCUK (anywhere from 5-10% reduction in piracy). Each email replaces almost 5 units of infringing content.
- We also know the number of unique users.
 - Very small change in number of infringing users.
 - working to exploring more heterogeneity.
- Sale shows positive movement.
 - But sale data is still limited reducing the power somewhat.
- In the process of gathering streaming data.