

Reverse-Engineering Censorship in China¹

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(Talk at Stanford University, Computer Science, Data Science 1/16/2016)

¹Based on joint work with Jennifer Pan and Margaret Roberts

²GaryKing.org

Papers

- An Observational Study:

How Censorship in China Allows Government Criticism but Silences Collective Expression (*American Political Science Review*, 2013)

- Experimental and Participatory Studies:

Reverse Engineering Chinese Censorship (*Science*, 2014)

- Methods:

- *General Purpose Computer-Assisted Clustering and Conceptualization* (*PNAS*, 2011)
- *A Method of Automated Nonparametric Content Analysis for Social Science* (*AJPS*, 2010)
- *Computer-Assisted Keyword and Document Set Discovery from Unstructured Text*

Copies at GaryKing.org

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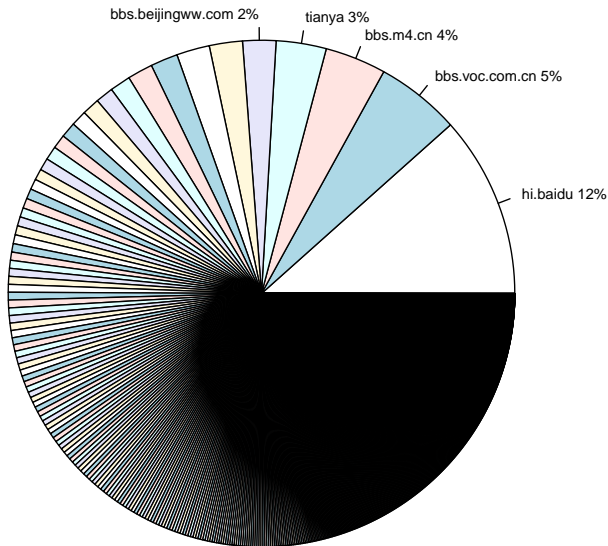
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 - (paradoxically) very revealing about the goals, intentions, and actions of the Chinese leadership

Chinese Social Media: Fractured over 1,400+ sites



(Plus 59% from Sina Blog)

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- ↪ A big prize, but payable only if we have the goals right

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- 5 **Analyze** with new methods of computer-assisted text analysis

Censorship is not Ambiguous: Example Error Page



The image shows a screenshot of a Chinese forum website, '金羊社区' (Golden Sheep Community), with the URL 'bbs.ycwb.com'. The page features a blue header with navigation links like '首页', '论坛', '博客', '家园', and '排行榜'. A search bar is present with the text '请输入搜索内容'. In the center, a white error message box contains the text: '抱歉, 指定的主题不存在或已被删除或正在被审核' (Sorry, the specified topic does not exist or has been deleted or is being investigated) and a link: '【点击这里返回上一页】' (Click here to return to the previous page). A red arrow points from the English text below to this error message box.

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Censorship is not Ambiguous: BBS Error Page

404 ERROR

The page you requested is temporarily down. How about you go look at another page.



你访问的页面暂时找不到了哦，去看看别的页面吧。

[返回首页](#)

[反馈错误](#)

Jingjing, one of China's cartoon internet police

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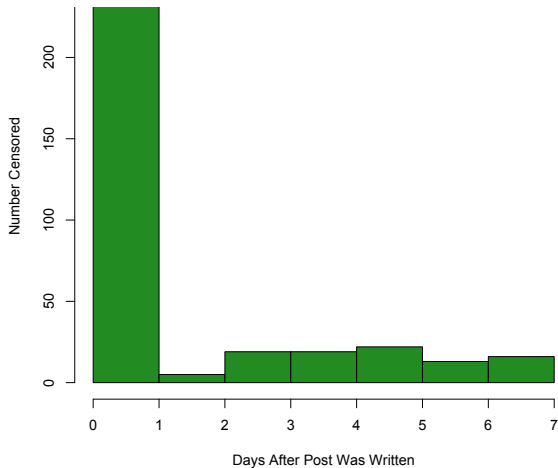
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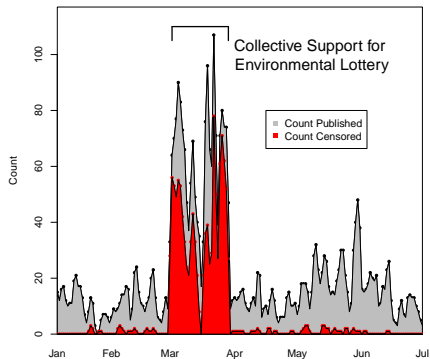
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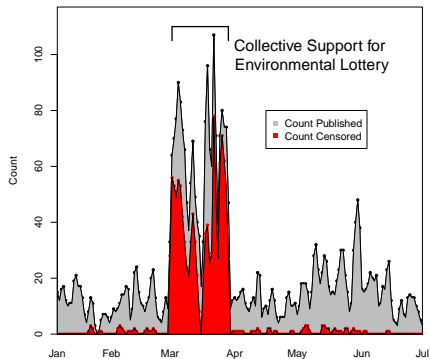


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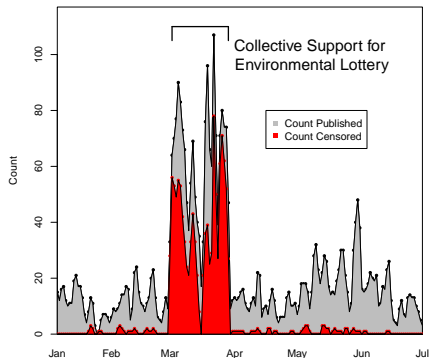


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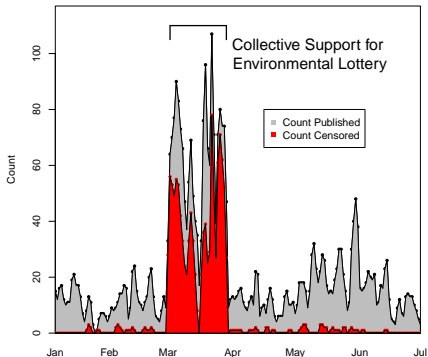
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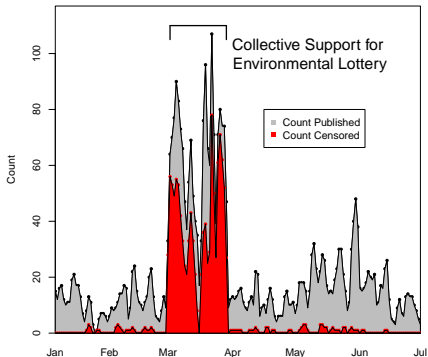
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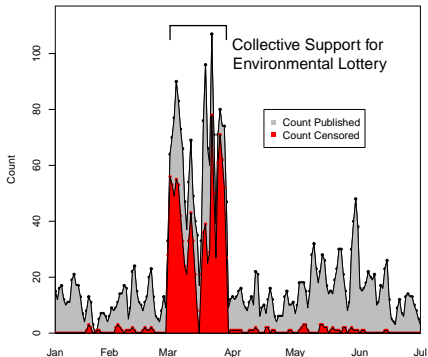
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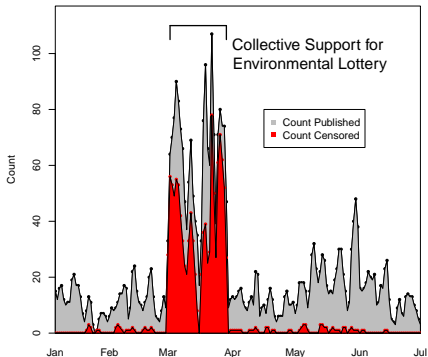
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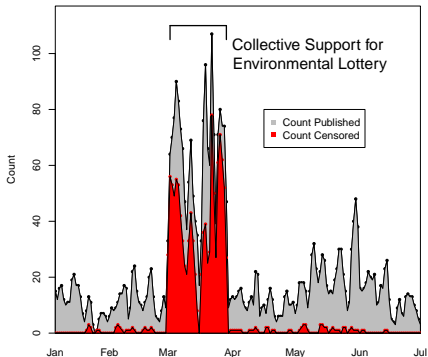
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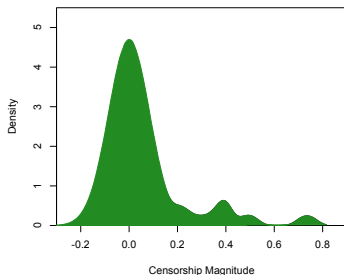
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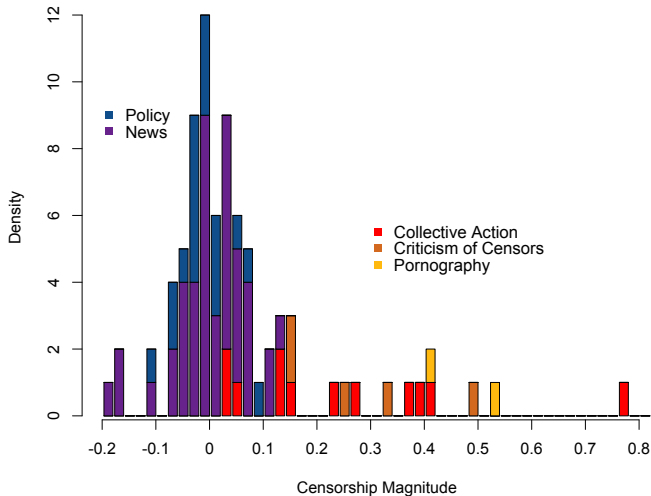
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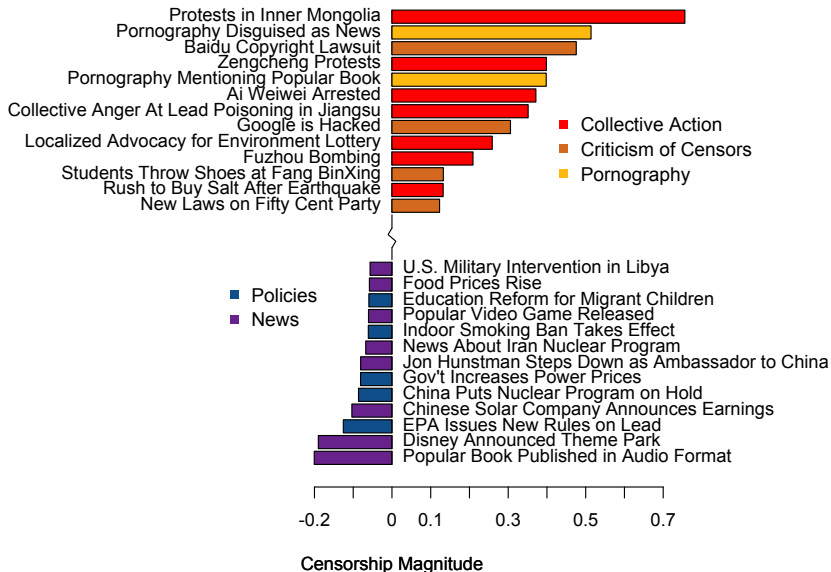
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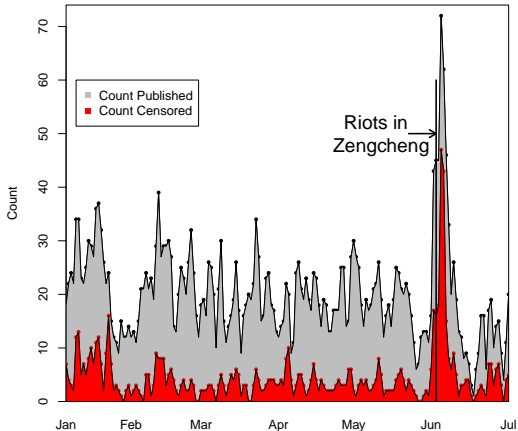
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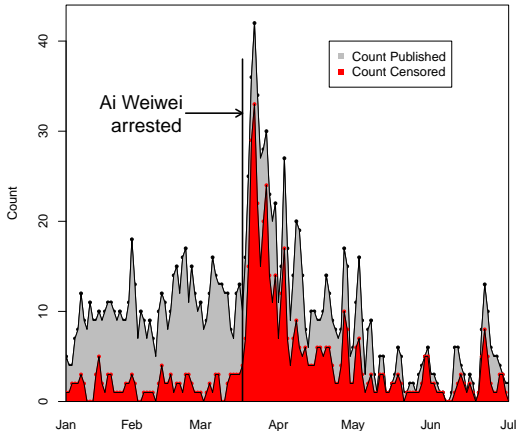
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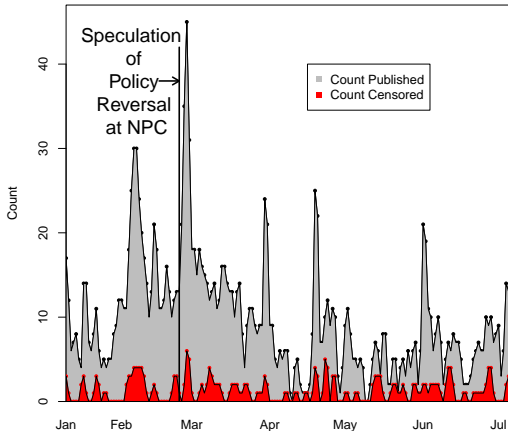
Censoring Collective Action: Riots in Zengcheng



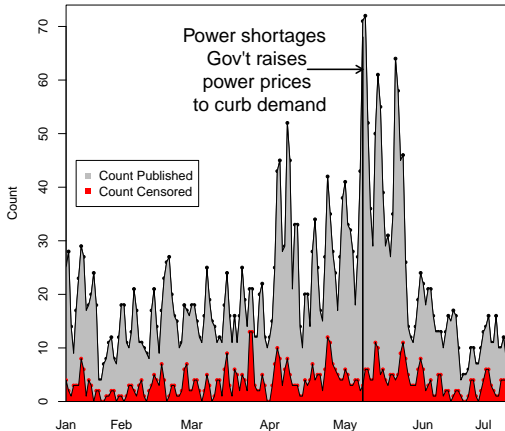
Censoring Collective Action: Ai Weiwei's Arrest



Low Censorship on Policy: One Child



Low Censorship on News: Power Prices



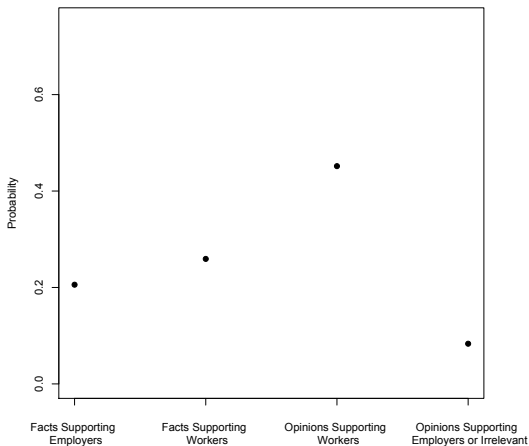
“ReadMe” Algorithm Validated in Chinese

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Example: Labor Strikes, 2010 (Training set: 100; Test set: 900)

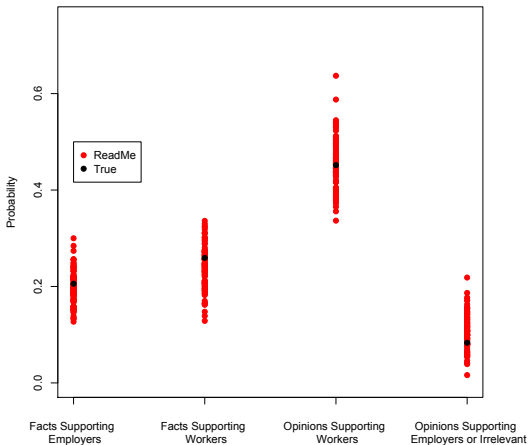
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Example: Labor Strikes, 2010 (Training set: 100; Test set: 900)



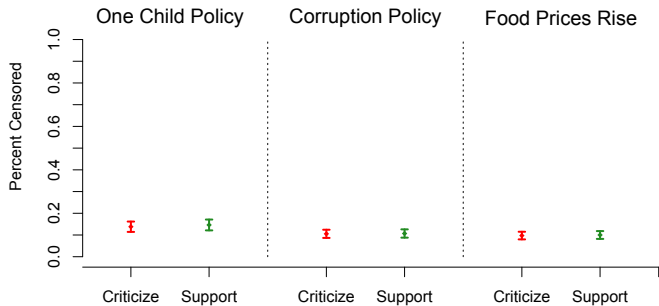
Uncensored: Non-Collective Action Posts

Uncensored: Non-Collective Action Posts

Regardless of whether Supportive *or* Critical

Uncensored: Non-Collective Action Posts

Regardless of whether Supportive or Critical



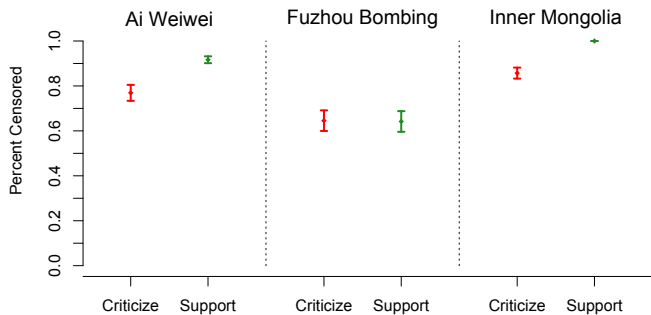
Censored: Collective Action Posts

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Additional Research Designs

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- 1 Randomized Experiment (for causal inferences)

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- 2 Participatory Study (for descriptive inferences)

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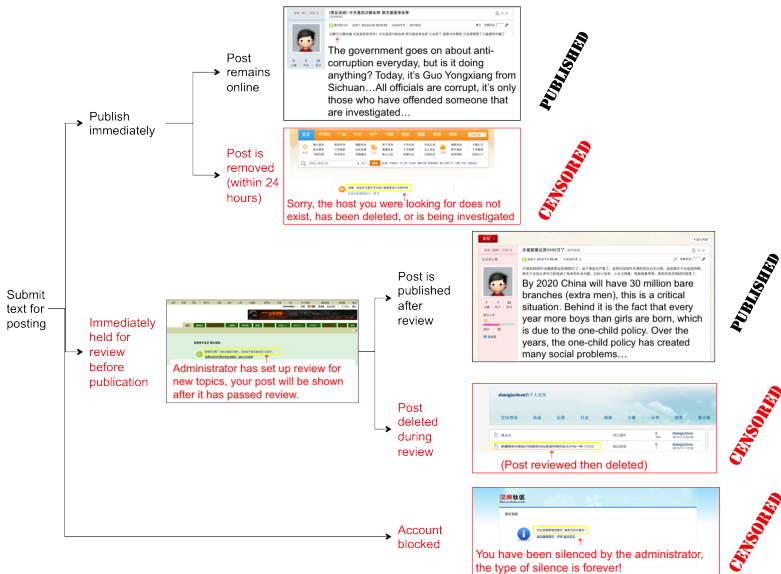
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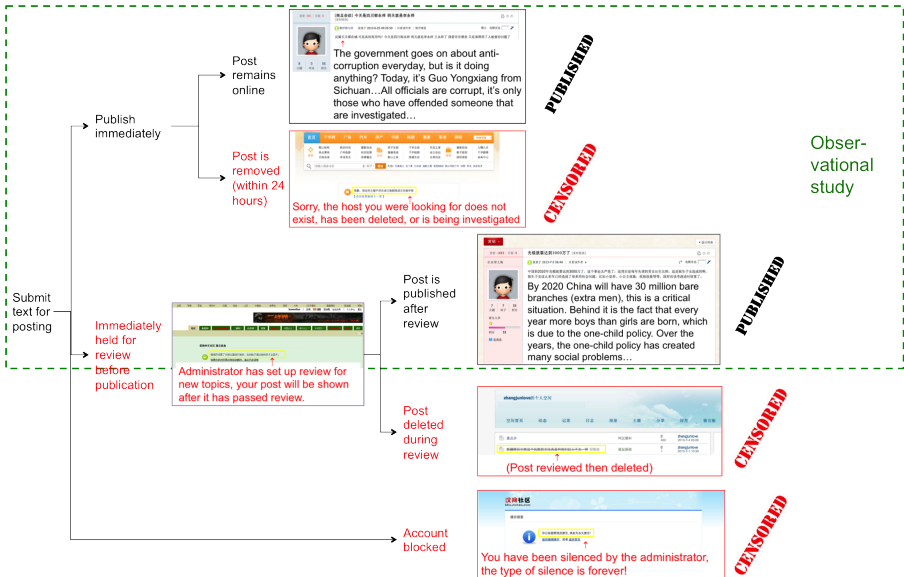
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- To learn: we tried every software option, read the documentation, and called customer support(!)

Mechanisms of Censorship

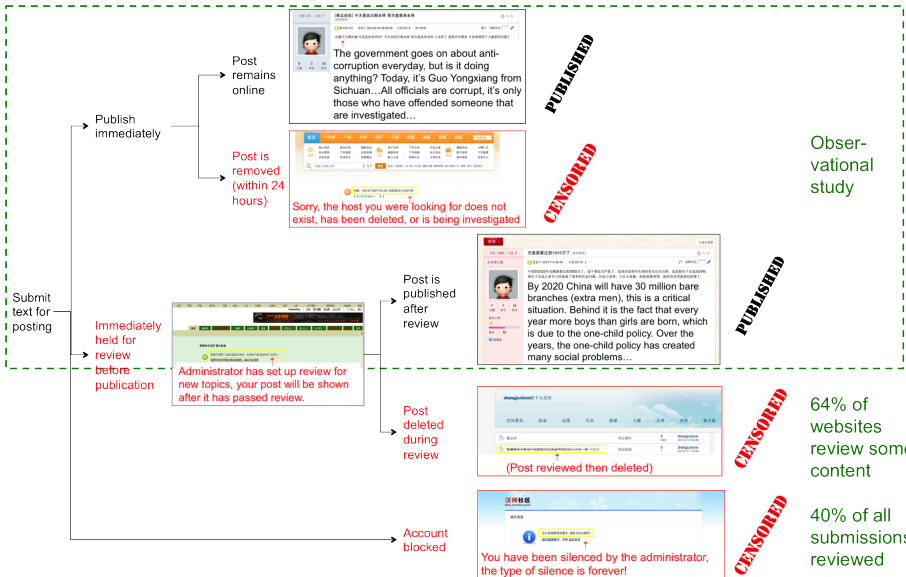
Mechanisms of Censorship



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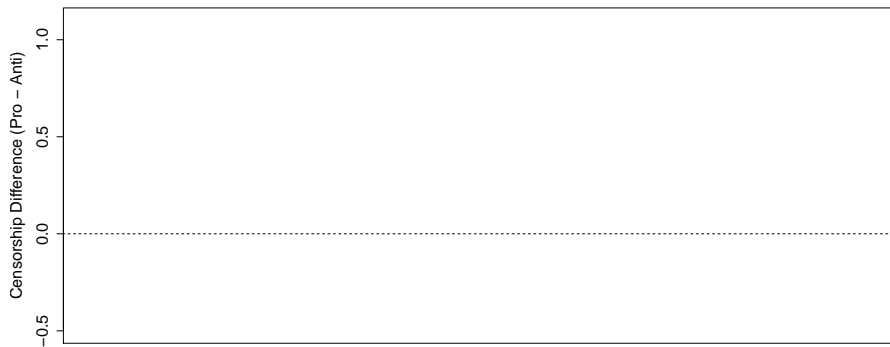


Mechanisms of Censorship

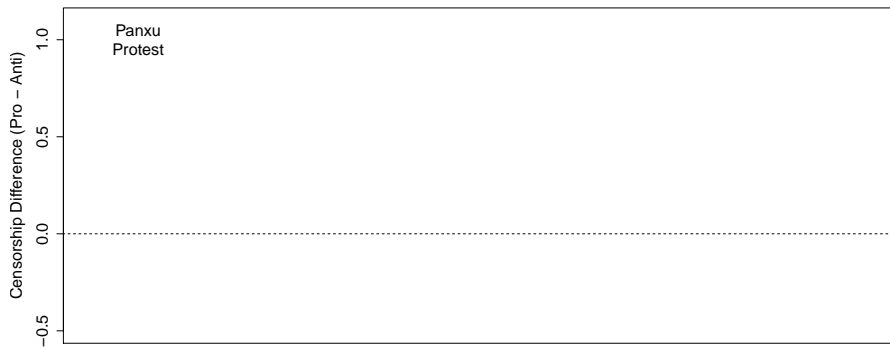


Posts For v. Against Government: Zero Causal Effect

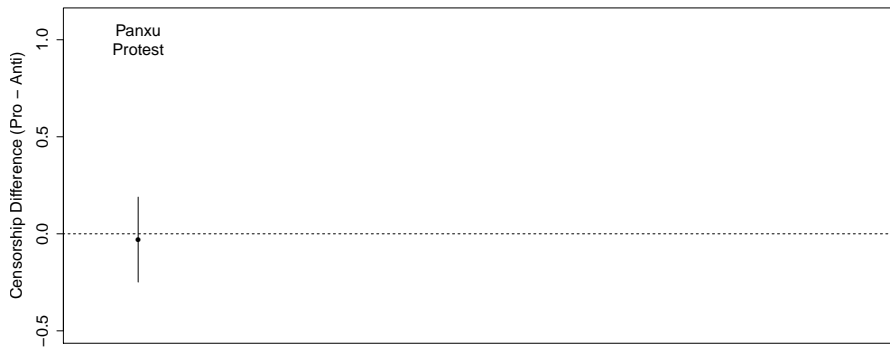
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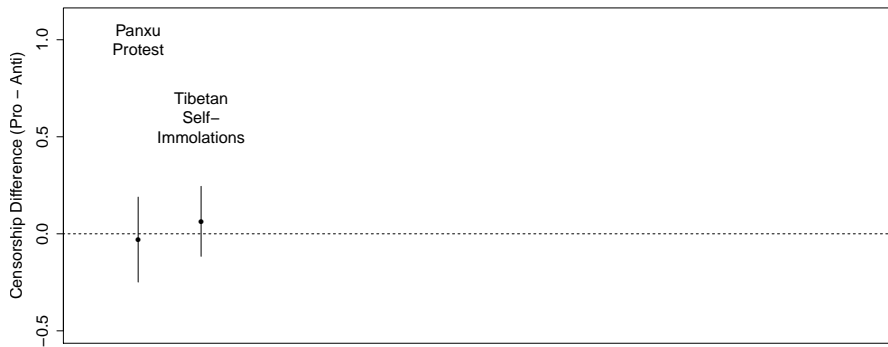
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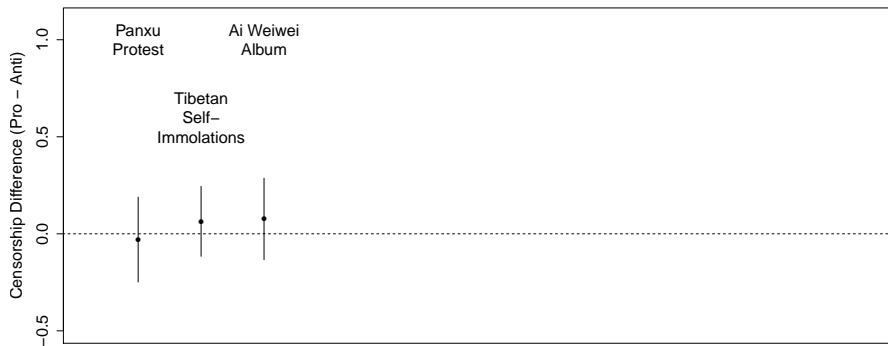
Posts For v. Against Government: Zero Causal Effect



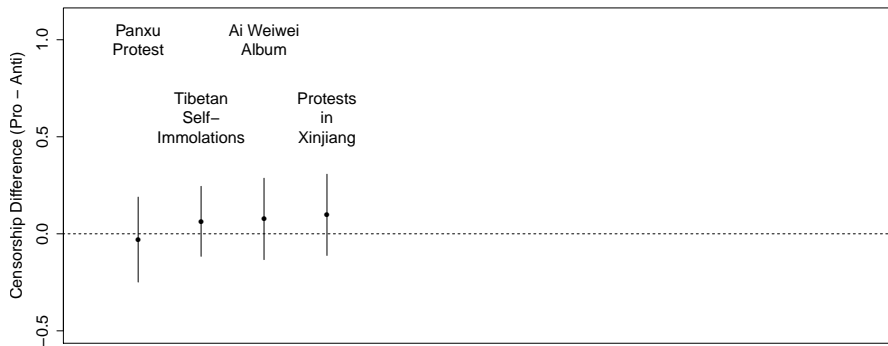
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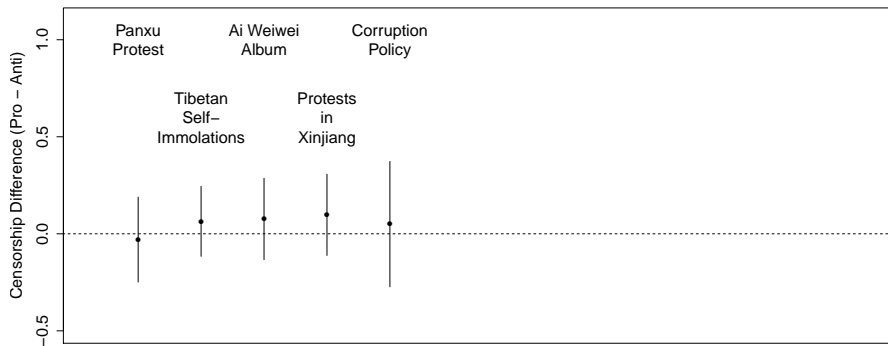
Posts For v. Against Government: Zero Causal Effect



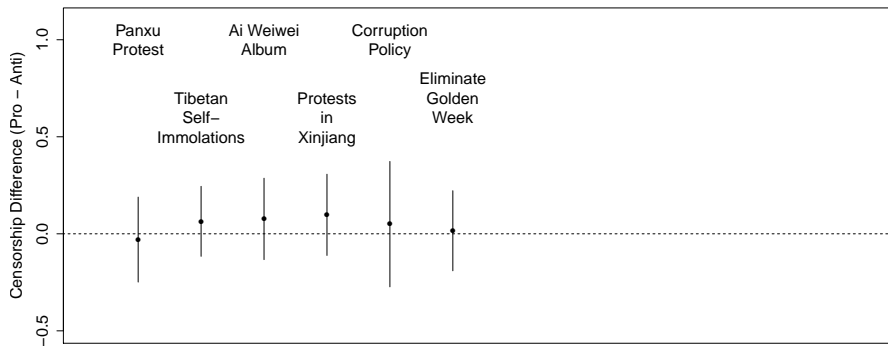
Posts For v. Against Government: Zero Causal Effect



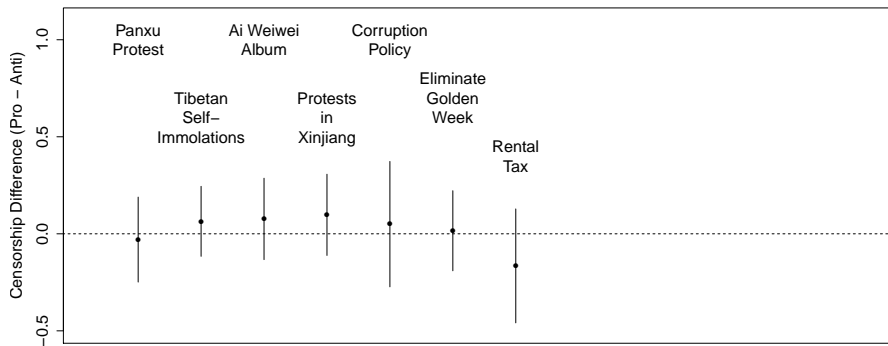
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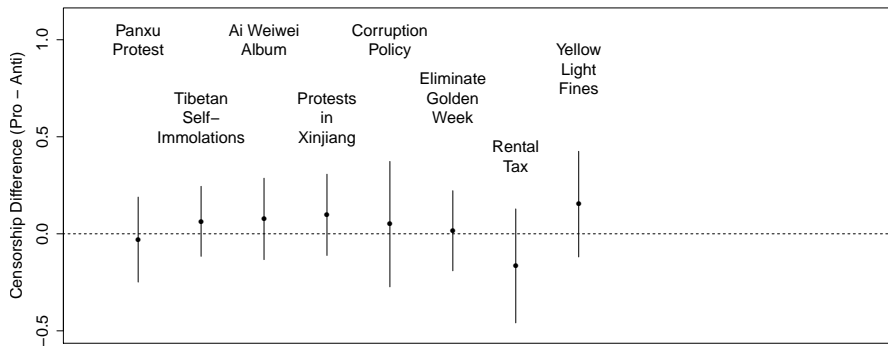
Posts For v. Against Government: Zero Causal Effect



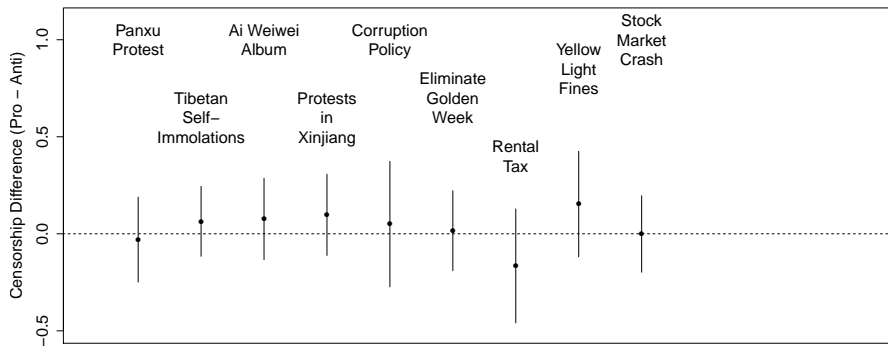
Posts For v. Against Government: Zero Causal Effect



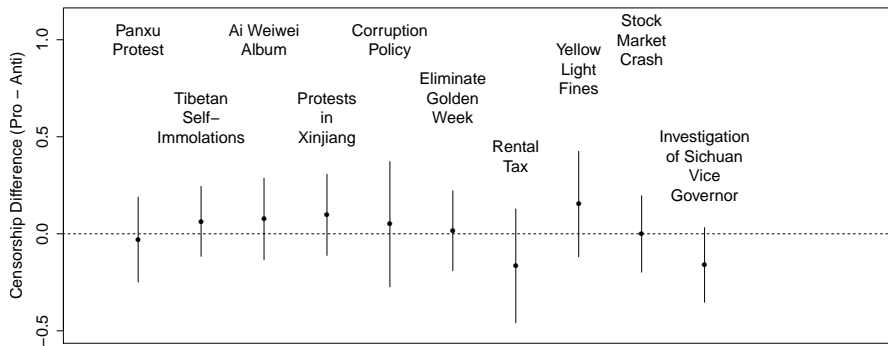
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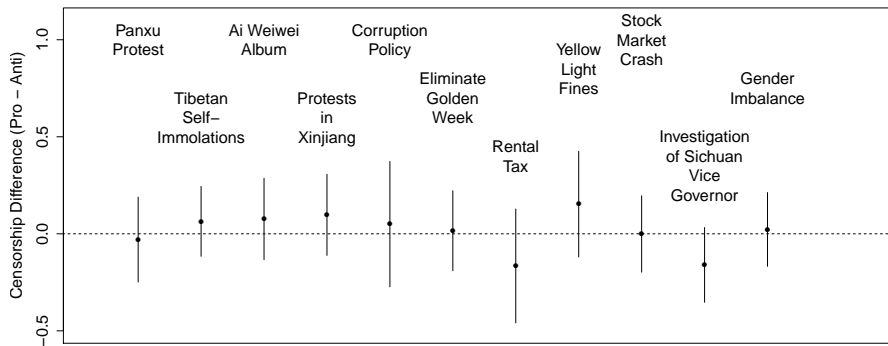
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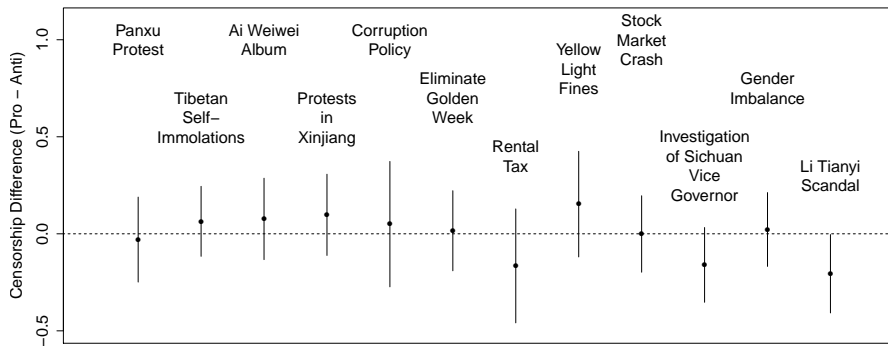
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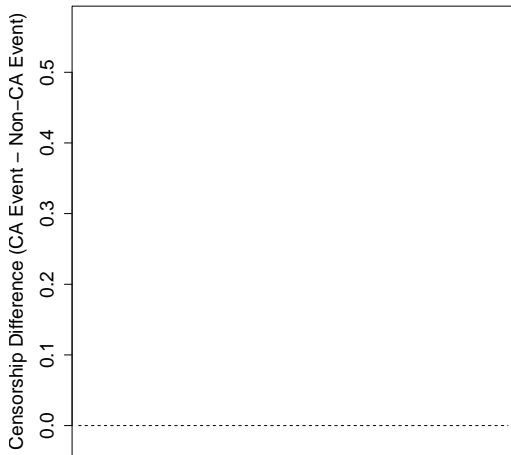


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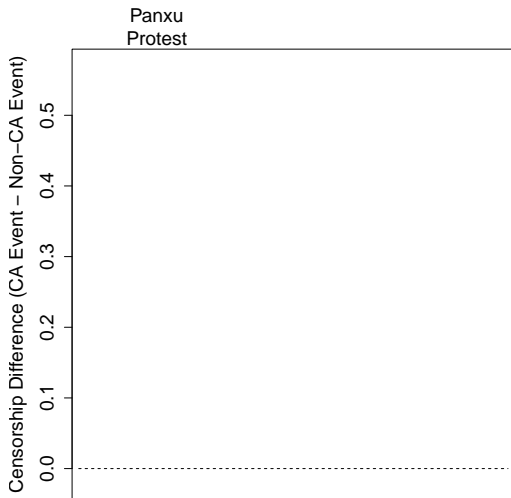


Collective Action Events: Large Causal Effect

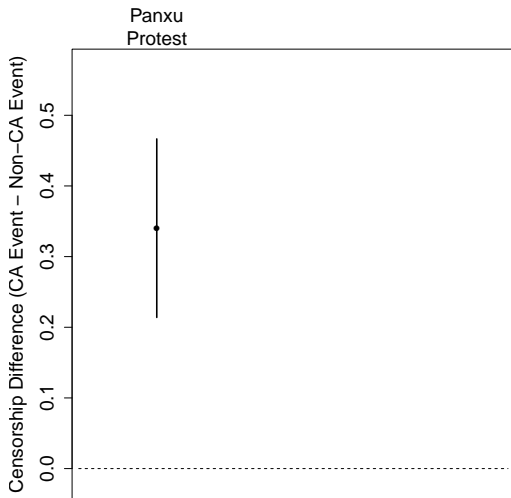
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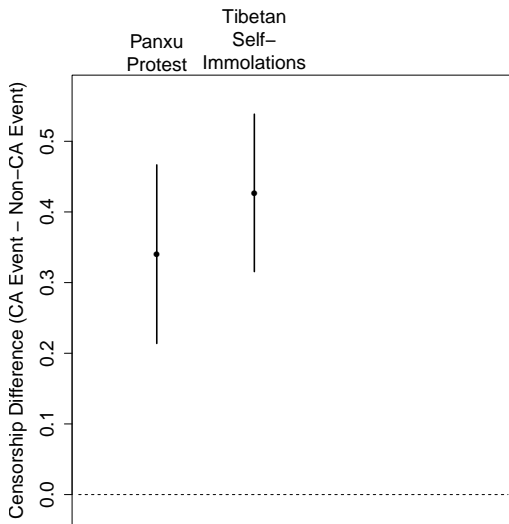
Collective Action Events: Large Causal Effect



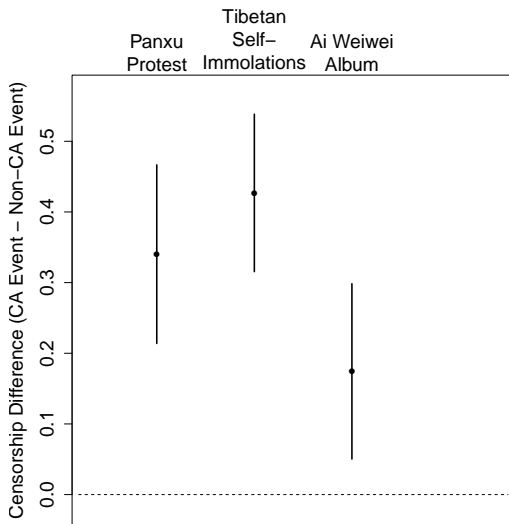
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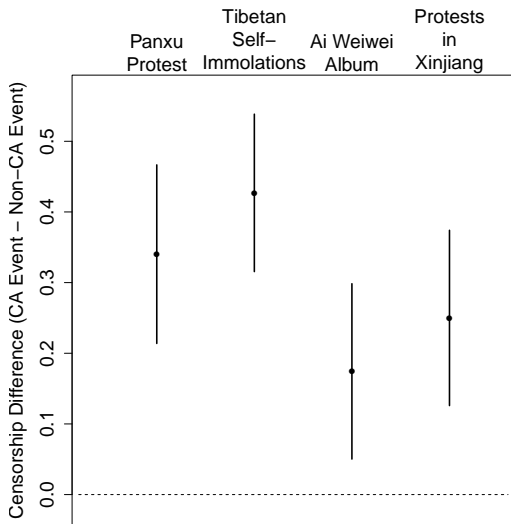
Collective Action Events: Large Causal Effect



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Evading Automated Review

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Example Substitution 1:

Evading Automated Review

Example Substitution 1:

自由

Evading Automated Review

Example Substitution 1:

自由 “Freedom”

Evading Automated Review

Example Substitution 1:

自由

“Freedom”

GENSORED

Evading Automated Review

Example Substitution 1:

自由
自由

“Freedom”

GENSORED

Evading Automated Review

Example Substitution 1:

自由
目田

“Freedom”

“Eye field”

GENSORED

Evading Automated Review

Example Substitution 1:

自由
目田

“Freedom”

GENSORED

“Eye field” (nonsensical)

Evading Automated Review

Example Substitution 1: Homograph

自由
目田

“Freedom”

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自由
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Example Substitution 1: Homograph

自由
目田

“Freedom”

GENSORED

“Eye field” (nonsensical)

Example Substitution 2:

Evading Automated Review

Example Substitution 1: Homograph

自由
目田

“Freedom”

GENSORED

“Eye field” (nonsensical)

Example Substitution 2:

和谐

Evading Automated Review

Example Substitution 1: Homograph

自由
目田

“Freedom”

GENSORED

“Eye field” (nonsensical)

Example Substitution 2:

和谐

“Harmonious [Society]” (official slogan)

Evading Automated Review

Example Substitution 1: Homograph

自由
目田

“Freedom”

CENSORED

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CENSORED

Evading Automated Review

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“Eye field” (nonsensical)

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自由
目田

“Freedom”

GENSOED

“Eye field” (nonsensical)

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和谐
河蟹

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GENSOED

“River crab” (irrelevant)

Evading Automated Review

Example Substitution 1: Homograph

自由
目田

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CENSORED

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Example Substitution 2: Homophone (both sound like “hexie”)

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text analysis

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 - Applications to brand monitoring, government analysis, sentiment analysis, investments, news, advertising, etc.

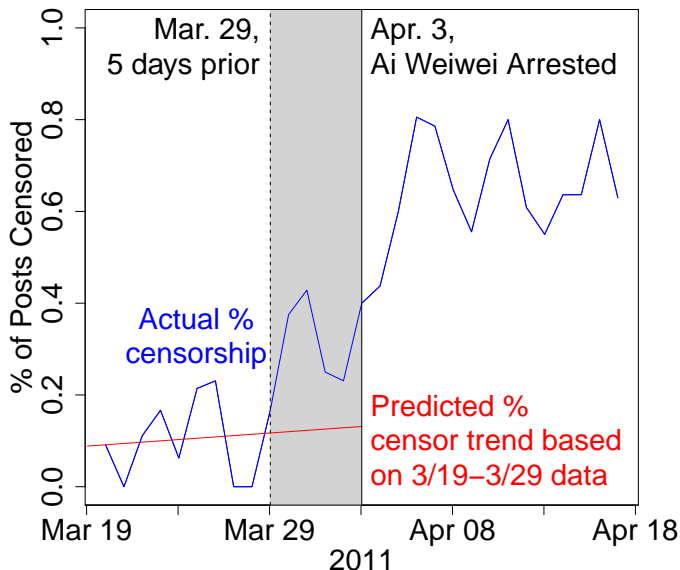
For more information

GaryKing.org

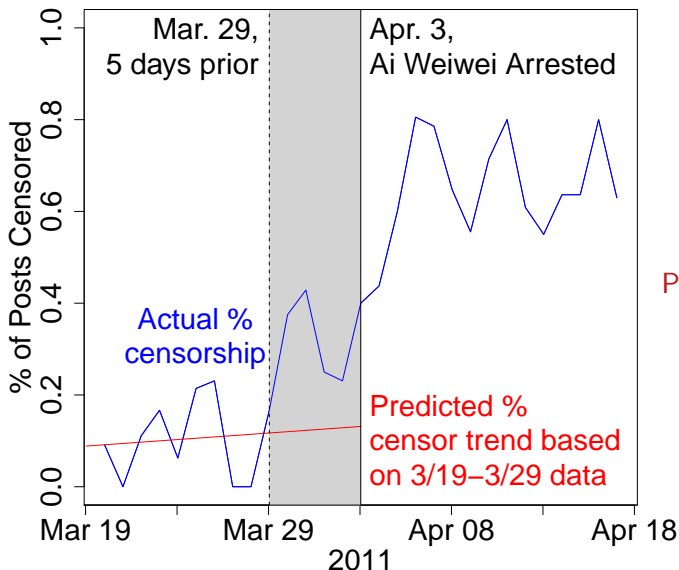
Appendix

Censorship to Preempt Collective Action: Ai Weiwei's Arrest

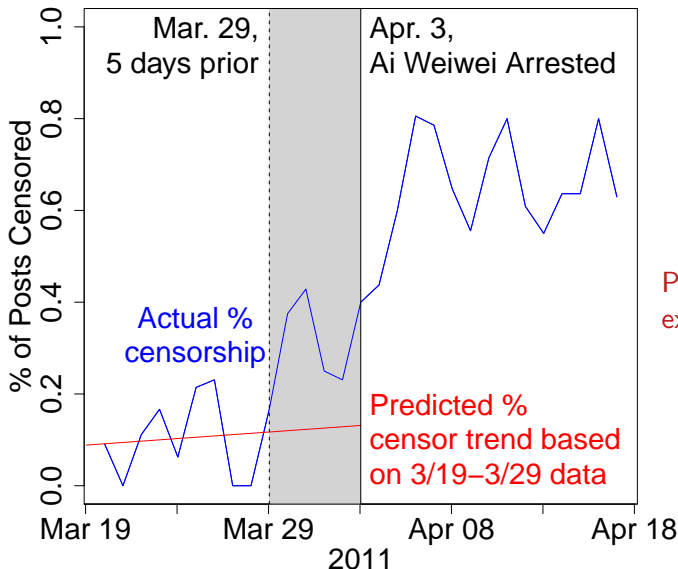
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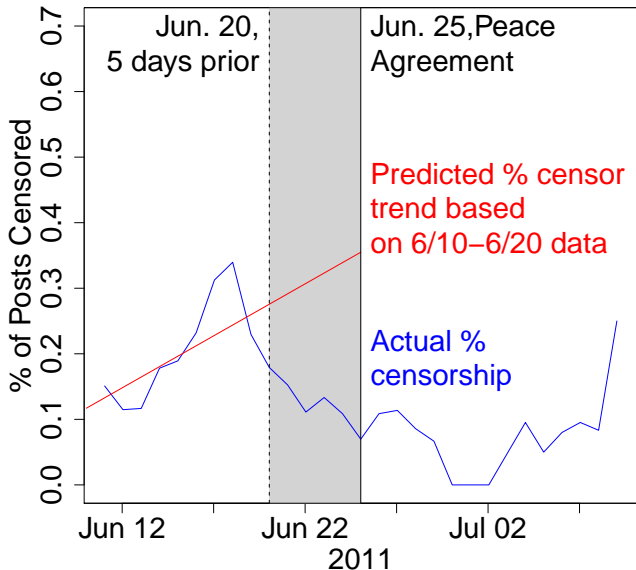
Censorship to Preempt Collective Action: Ai Weiwei's Arrest



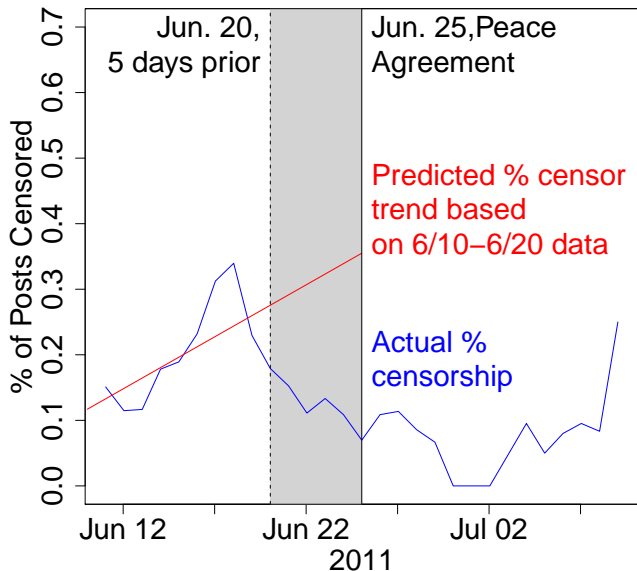
Placebo Test: Most extreme of all effects

Predicting the South China Sea Peace Agreement

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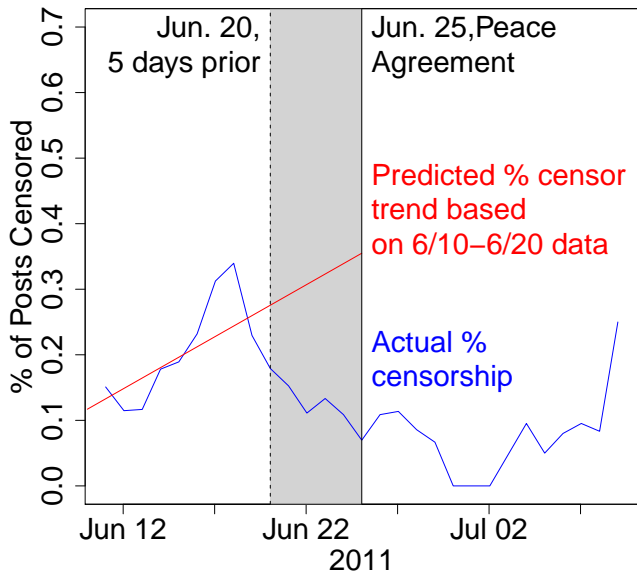


Predicting the South China Sea Peace Agreement



Placebo Test:

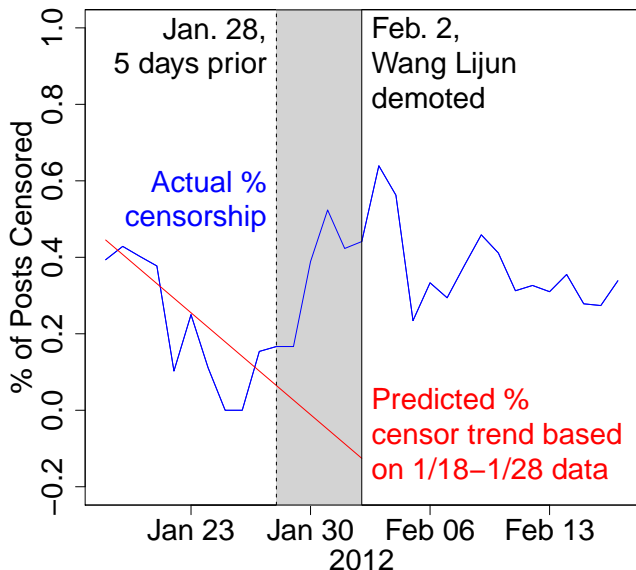
Predicting the South China Sea Peace Agreement



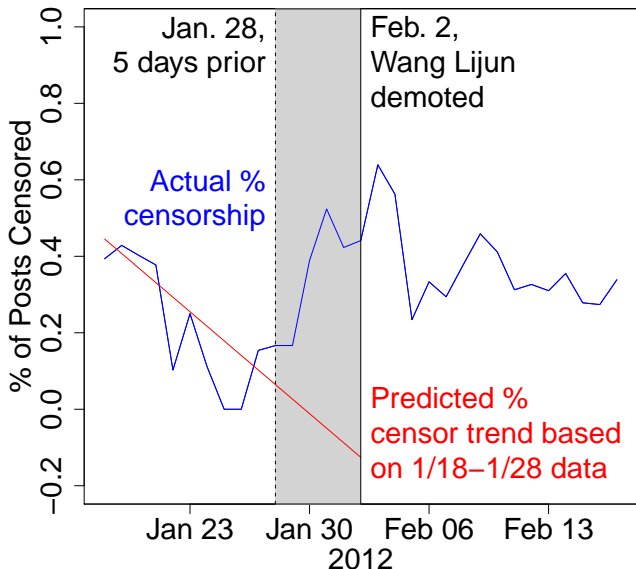
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Censorship Pre-empting Collective Action: Wang Lijun's Demotion

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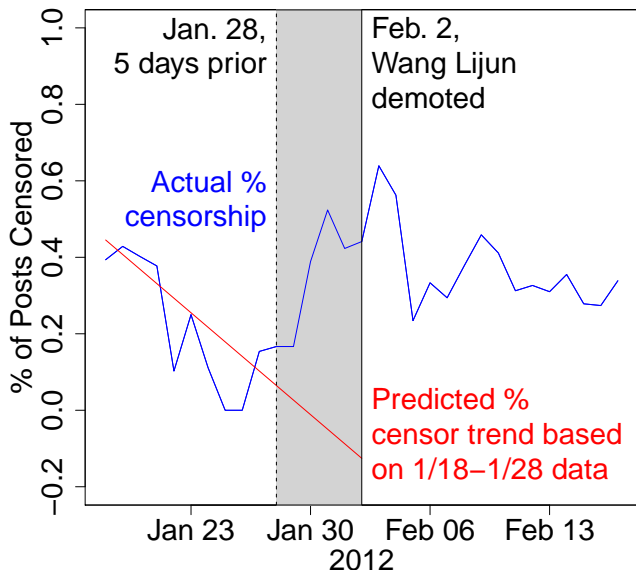


Censorship Pre-empting Collective Action: Wang Lijun's Demotion



Placebo Test:

Censorship Pre-empting Collective Action: Wang Lijun's Demotion



Placebo Test: Most extreme of all effects

Uncensored Posts (w/o Collective Action Potential) Critical of the State

Uncensored Posts (w/o Collective Action Potential) Critical of the State

		Collective Action	
		yes	no
State Critique	yes	CENSORED	Free
	no	CENSORED	Free

Uncensored Posts (w/o Collective Action Potential) Critical of the State

This is a city government [Yulin City, Shaanxi] that treats life with contempt, this is government officials run amuck, a city government without justice, a city government that delights in that which is vulgar, a place where officials all have mistresses, a city government that is shameless with greed, a government that trades dignity for power, a government without humanity, a government that has no limits on immorality, a government that goes back on its word, a government that treats kindness with ingratitude, a government that cares nothing for posterity. . .

这是一个漠视生命的市政府[陕西省榆林市]、一个官员横行的市政府、一个没有公正的市政府，一个低级趣味的市政府，一个包二奶的市政府，一个为钱不要脸的市政府，一个为个权不要人格的市政府，一个没有血性的市政府，一个没有道德低线的市政府，一个出尔反尔的市政府，一个忘恩负义的市政府，一个不要子孙后代的市政府，一个什么怪事都出的市政府，一个什么的市政府，只要你想到的就有…

Censored Post (with Collective Action Potential) Supporting the State

Censored Post (with Collective Action Potential) Supporting the State

		Collective Action	
		yes	no
State Critique	yes		Free
	no		Free

Censored Post (with Collective Action Potential) Supporting the State

The bombing led not only to the tragedy of his death but the death of many government workers. Even if we can verify what Qian Mingqi said on Weibo that the building demolition caused a great deal of personal damage, we should still condemn his extreme act of retribution. . . . The government has continually put forth measures and laws to protect the interests of citizens in building demolition. And the media has called attention to the plight of those experiencing housing demolition. The rate at which compensation for housing demolition has increased exceeds inflation. In many places, this compensation can change the fate of an entire family.

爆炸案造成他本人和多名政府工作人员死伤的悲剧，即使钱明奇在微博里所称拆迁造成的个人损失是属实的，我们也应谴责他的极端报复行为. . . . 政府在连续出台保护被拆迁者利益的政策法规，媒体也在为公平对待被拆迁者大声疾呼，各地拆迁补偿款的上升速度，大多高于商品房售价上升的速度，在不少地方，补偿款已经足以改变一个家庭的命运。