

# The Digital Privacy Paradox: Small Money, Small Costs, Small Talk

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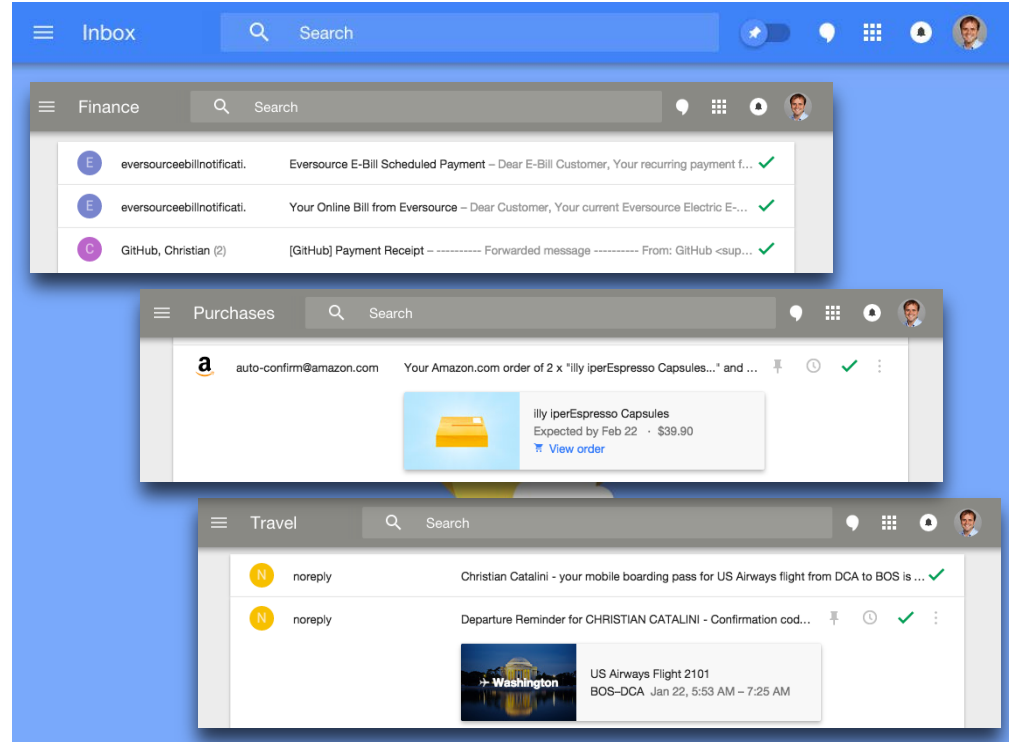
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MIT

PrivacyCon  
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# Why Do People Say They Care About Privacy and Government Surveillance...



# But Then Share Personal Data with Firms...





# ...and Knowingly Use Technologies That Do Not Safeguard their Privacy



Categories **Social Networking** 

Paid **Free** Top Grossing

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1  **Messenger**  
Social Networking  
★★★★☆ (903) 

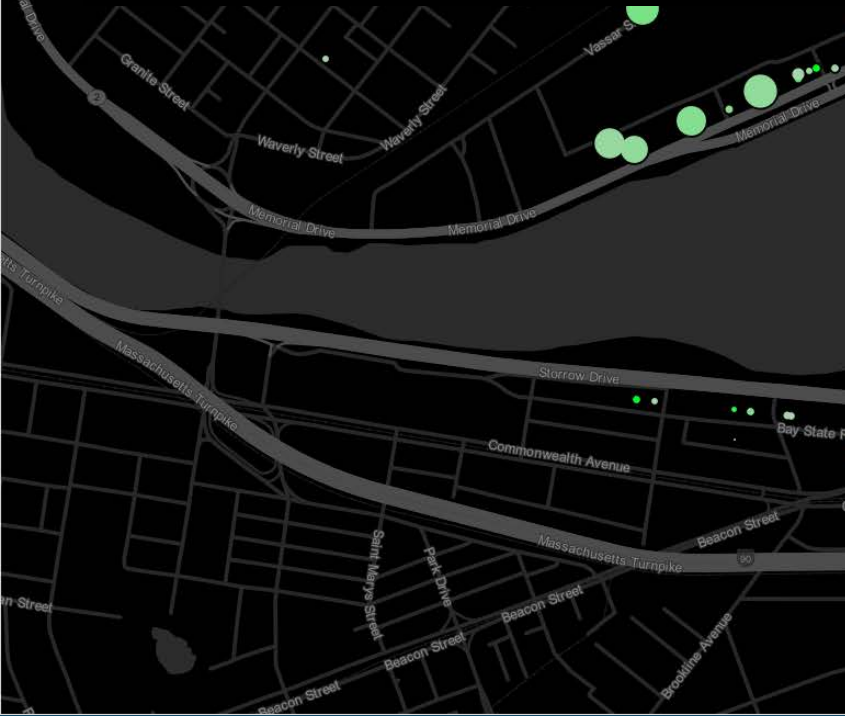
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83  **Signal - Private Messenger**  
Social Networking  
★★★★☆ (166) 

# Unpacking The Privacy Paradox

- What can we learn from the MIT Digital Currency Experiment about these apparent privacy paradoxes?
- This is not a paper about digital currency per se... although a key promise of blockchain and cryptocurrencies is improved digital privacy!
- Surprisingly little economics work on the malleability of privacy preferences (Acquisti is the exception)
- Background policy question:
  - What are we trying to regulate?
  - What are we trying to protect consumers from?

# The MIT Digital Currency Experiment



- ~5,000 students eligible. Survey on privacy preferences, digital payments etc
- 3 randomizations and related privacy choices and outcomes. Students had to select/generate a digital wallet, learn about encryption
- Key Findings: small incentives, small costs and small talk lead participants to ignore their privacy preferences (both stated, and past revealed)

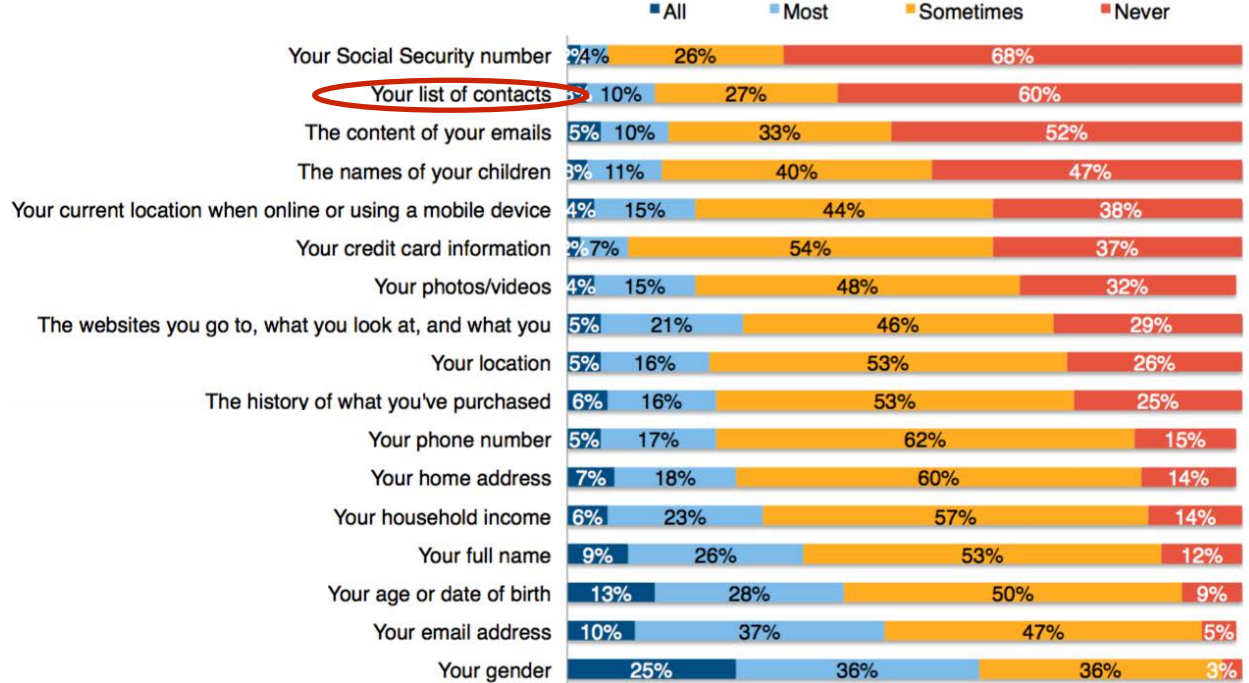
# 1. Small Money

Whereas people say they care about privacy, they are willing to relinquish private data quite easily...

**We asked for the emails of the students' closest friends. However, it turns out that this is some of the personal data that is considered most private...**



# At Least in Surveys...



Source: National Cyber Security Alliance (2014),  
N=493

# ... in Print and Lawsuits



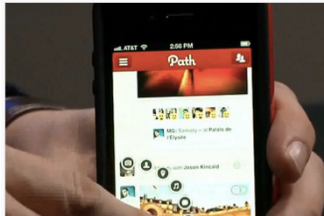
Apps path

## The Wrong Way: Path Uploads iOS Users' Address Books Without Permission

Posted Feb 7, 2012 by [Chris Velazco](#) (@chrivelazco)

1,288 SHARES

Next Story >



What started as a bit of aimless tinkering for developer [Arun Thampi](#) ultimately unearthed something very surprising about personal life-sharing service Path. As a fan of the app, Thampi took it upon himself to look at the API calls that the app made to Path's service and found that his "entire address book (including full names, emails and phone numbers) was being sent as a plist to Path."

## LinkedIn will pay \$13M for sending those awful emails

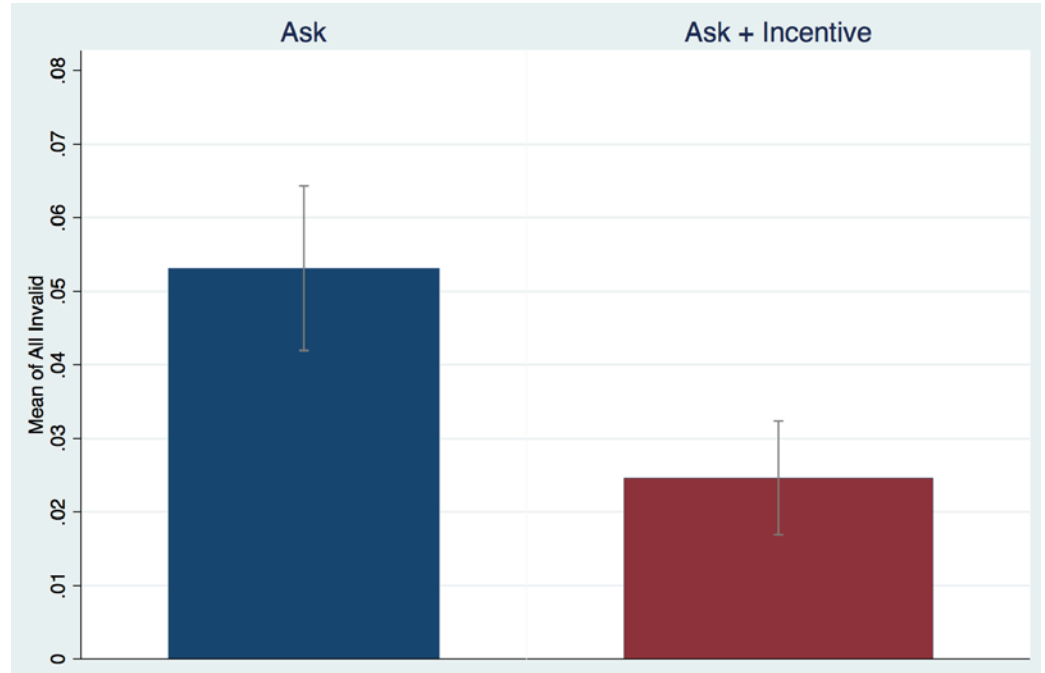
by [Jeff John Roberts](#) @jeffjohnroberts OCTOBER 5, 2015, 8:23 AM EDT



# Random 50% of the Sample: Pizza In Exchange For Their Closest Friends' Emails



# Do You Protect the Privacy of Your Friends?

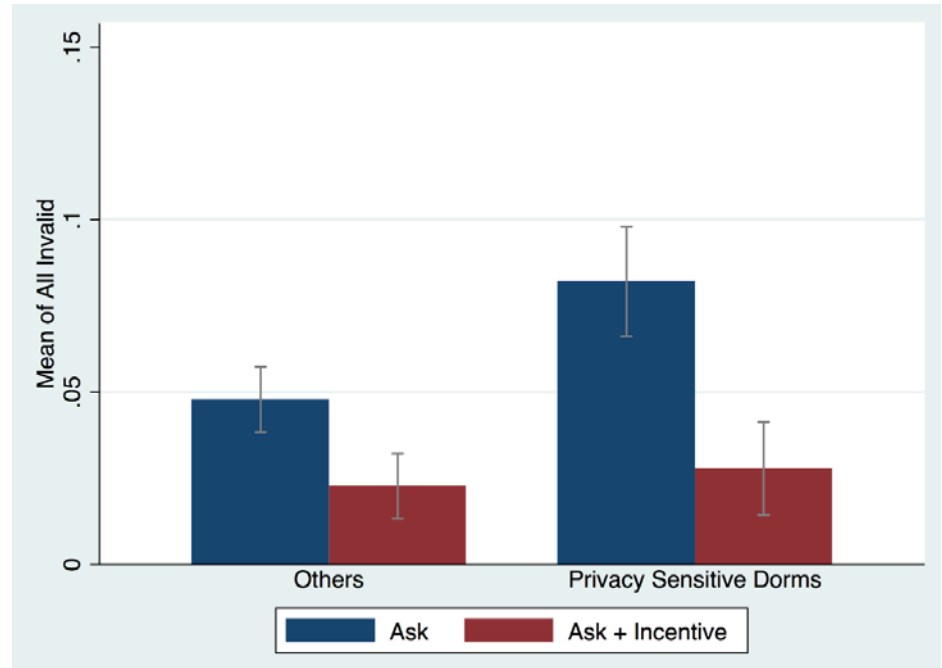


# 54% decrease

VARIABLES	(1) All Invalid	(2) All Invalid	(3) All Invalid	(4) All Invalid	(5) All Invalid	(6) All Invalid	(7) All Invalid
Ask + Incentive (AI)	-0.0285*** (0.0059)	-0.0268*** (0.0066)	-0.0224*** (0.0076)	-0.0249*** (0.0068)	-0.0245*** (0.0074)	-0.0327*** (0.0060)	-0.0332*** (0.0066)
AI × Above Median Privacy Public		-0.0045 (0.0079)					
AI × Above Median Privacy Intermediary			-0.0110 (0.0081)				
AI × Above Median Privacy Government				-0.0085 (0.0078)			
AI × Above Median Trust Government					-0.0080 (0.0079)		
AI × Above Median Trust Startup						0.0153 (0.0100)	
AI × Above Median Trust Retailer							0.0105 (0.0081)
Constant	0.0531*** (0.0057)	0.0531*** (0.0057)	0.0531*** (0.0057)	0.0531*** (0.0057)	0.0531*** (0.0057)	0.0531*** (0.0057)	0.0531*** (0.0057)
Observations	3,086	3,086	3,086	3,086	3,086	3,086	3,086
R-squared	0.005	0.006	0.006	0.006	0.006	0.006	0.006

# Heterogeneous Effects? None!






- Gender
- Race
- Citizenship Status
- Year of Study
- Coding Ability
- Digital Wallet Preference
- Will the Bitcoin price go down?
- Are you a Mac or a PC?
- Privacy Sensitive



## 2. Small Costs

Small frictions in the process of selecting a new technology, have large effects on privacy choices.

# Inspired by the Microsoft Windows “Browser Ballot” Screen

 <p>mozilla <b>Firefox</b></p>	 <p>Windows Internet Explorer 8</p>	 <p>Opera browser</p>	 <p>Google chrome</p>	 <p>Safari</p>
<p>Your online security is Firefox's top priority. Firefox is free, and made to help you get the most out of the web.</p>	<p>Internet Explorer is the world's most widely used browser, designed by Microsoft with you in mind.</p>	<p>The powerful and easy-to-use Web browser. Try the only browser with Opera Turbo technology, and speed up your Internet connection.</p>	<p>Google Chrome. A fast new browser. Made for everyone.</p>	<p>Safari for Windows from Apple, the world's most innovative browser.</p>
<a href="#">Install</a>	<a href="#">Install</a>	<a href="#">Install</a>	<a href="#">Install</a>	<a href="#">Install</a>
<a href="#">Tell me more</a>	<a href="#">Tell me more</a>	<a href="#">Tell me more</a>	<a href="#">Tell me more</a>	<a href="#">Tell me more</a>



- Wallets differ in terms of how much they expose a user's transactions to an intermediary, the government and the public
- Random Order
- Increased Transparency: 50% randomly exposed to additional information on key trade-offs

To receive your bitcoin, you will need to have a Bitcoin wallet set up and share the public address with us.

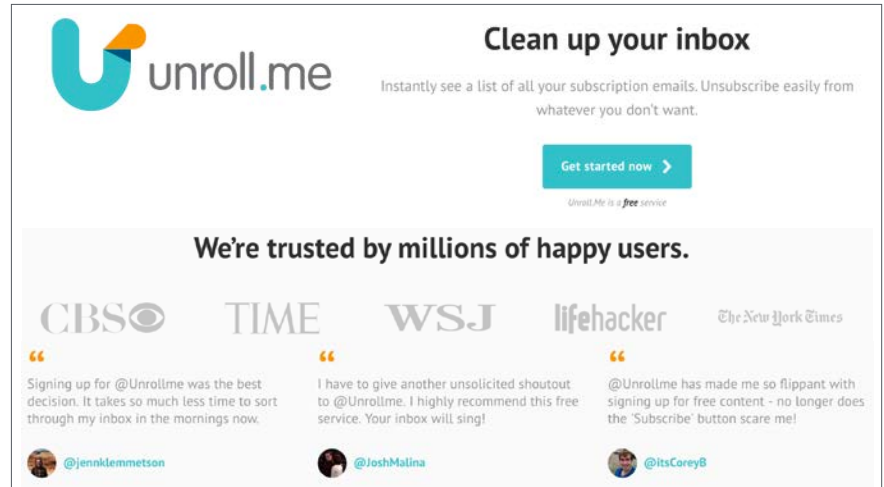
	How is my privacy protected?	How secure is my data?	How can I lose my bitcoin?	How can I access US dollars?	Can a government agency or the IRS seize my transaction data?
	<ul style="list-style-type: none"> <li>+ It is hard for external parties to identify you when you send out money</li> <li>- Has access to all your transactions</li> </ul>	<ul style="list-style-type: none"> <li>+ The company heavily invests in the security of their accounts</li> <li>- Your data is secure as long as any of the company security infrastructure is not breached, including through personal identity theft</li> </ul>	<ul style="list-style-type: none"> <li>+ If you are locked out of your wallet, you may be able to unlock it by proving your identity to the company</li> <li>- The company could freeze your account or go out of business</li> </ul>	<ul style="list-style-type: none"> <li>+ Easy conversion to and from US dollars (e.g., from bank account, credit card, debit card)</li> </ul>	- Yes
	<ul style="list-style-type: none"> <li>+ Only you have access to all your transactions</li> <li>- External parties could identify you when you send out money</li> </ul>	<ul style="list-style-type: none"> <li>+ Your data is secure as long as your passwords are secure</li> </ul>	<ul style="list-style-type: none"> <li>+ Nobody can freeze your account</li> <li>- If you are locked out of your wallet or lose access to your computer without a proper backup, it will be impossible for you to regain access</li> </ul>	- Only through a third-party service or individual	+ No
	<ul style="list-style-type: none"> <li>- Has access to all your transactions</li> <li>- External parties could identify you when you send out money</li> </ul>	<ul style="list-style-type: none"> <li>+ Your data is secure as long as your passwords are secure</li> <li>- Hackers could compromise your account through browser vulnerabilities</li> </ul>	<ul style="list-style-type: none"> <li>+ As long as you remember your password, you might be able to access a backup of your wallet</li> <li>- If you are locked out of your wallet, it may be impossible for you to regain access</li> </ul>	- Only through a third-party service or individual	- Maybe
	<ul style="list-style-type: none"> <li>+ It is hard for external parties to identify you when you send out money</li> <li>- Has access to all your transactions</li> </ul>	<ul style="list-style-type: none"> <li>+ The company heavily invests in the security of their accounts</li> <li>- Your data is secure as long as any of the company security infrastructure is not breached, including through personal identity theft</li> </ul>	<ul style="list-style-type: none"> <li>+ If you are locked out of your wallet, you may be able to unlock it by proving your identity to the company</li> <li>+ If the bitcoin is lost because of a breach at Circle, their deposit insurance may cover your loss</li> <li>- The company could freeze your account or go out of business</li> </ul>	<ul style="list-style-type: none"> <li>+ Easy conversion to and from US dollars (e.g., from bank account, credit card, debit card)</li> </ul>	- Yes
Other wallets					

VARIABLES	(1) Maximized Privacy from the Public	(2) Maximized Privacy from the Public	(3) Maximized Privacy from the Intermediary	(4) Maximized Privacy from the Intermediary	(5) Maximized Privacy from the Government	(6) Maximized Privacy from the Government
Best Wallet Not 1st	-0.1301*** (0.0161)	-0.1761*** (0.0240)	-0.1320*** (0.0147)	-0.1839*** (0.0225)	-0.0379*** (0.0130)	-0.0164 (0.0165)
Increased Transparency	<b>-17%</b>	0.0902*** (0.0210)	<b>-46%</b>	-0.1845*** (0.0225)	<b>-32%</b>	0.0644*** (0.0231)
Best Not 1st × Increased Transparency		0.0966*** (0.0318)		0.1082*** (0.0290)		-0.0391 (0.0257)
Constant	0.7777*** (0.0105)	0.7313*** (0.0161)	0.2867*** (0.0115)	0.3779*** (0.0174)	0.1199*** (0.0117)	0.0859*** (0.0148)
Observations	3,108	3,108	3,108	3,108	3,108	3,108
R-squared	0.021	0.047	0.025	0.054	0.003	0.008

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Observations	3,108	3,108	3,108	3,108	3,108	3,108
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# 3. Small Talk

Can easily distract people from escaping surveillance with orthogonal talk...



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@jennklemmetson

“  
I have to give another unsolicited shoutout to @Unrollme. I highly recommend this free service. Your inbox will sing!  
@JoshMatina

“  
@Unrollme has made me so flippant with signing up for free content - no longer does the 'Subscribe' button scare me!  
@ItsCoreyB

# Encryption Randomization

"PGP is a program that gives your electronic mail something that it otherwise doesn't have: Privacy. It does this by encrypting your mail so that nobody but the intended person can read it. When encrypted, the message looks like a meaningless jumble of random characters. PGP has proven itself quite capable of resisting even the most sophisticated forms of analysis aimed at reading the encrypted text.

PGP can also be used to apply a digital signature to a message without encrypting it. This is normally used in public postings where you don't want to hide what you are saying, but rather want to allow others to confirm that the message actually came from you. Once a digital signature is created, it is impossible for anyone to modify either the message or the signature without the modification being detected by PGP."

**PGP makes sure that any communication between you and someone else can only be read by the sender and the receiver.**

*"End-to-end encryption creates a sort of digital tunnel between the senders and receivers of e-mails -- helping to keep the prying eyes of everyone from governments to Internet service providers and mail providers themselves from seeing the content of messages"*

(source:

<http://www.washingtonpost.com/blogs/the-switch/wp/2014/08/07/yahoo-to-role-out-end-to-end-encryption-option-for-all-yahoo-mail-users-in-2015/>)

**Although the technology has been available for a while, it is catching traction among those concerned about privacy and security. Both Yahoo! and Google have recently announced plans to integrate PGP into their email services. (For more information:**

[http://en.wikipedia.org/wiki/Pretty\\_Good\\_Privacy](http://en.wikipedia.org/wiki/Pretty_Good_Privacy))

# Effect of Small Talk on Privacy

VARIABLES	(1) Escaping Surveillance from the Public	(2) Escaping Surveillance from the Intermediary	(3) Escaping Surveillance from the Government
Encryption Randomization	-0.0105* (0.0061)	-0.0361 (0.0250)	-0.0331* (0.0182)
Constant	0.0229*** (0.0049)	0.6921*** (0.0175)	0.8820*** (0.0122)
Observations	1,882	1,410	1,410
R-squared	0.002	0.001	0.002

# Conclusions (I)

- Although we study a very specific setting and technology...we are able to document possibly more general digital privacy paradoxes using **field experiment** data
  - People say they care about privacy, but in the face of '**small money**' they are willing to share very sensitive data
  - People say they want privacy-protecting technologies but are put off from using them by very '**small costs**' such as scrolling down a list
  - People worry about government surveillance, but stop worrying when receive reassurance '**small talk**' about something completely orthogonal

# Conclusions (II)

- Debate in the US and Europe about the regulation of **personal data**
- Sensitive data is becoming more valuable because of **machine learning and prediction**
- Survey-based privacy research may not be best grounding for policy
- Policy focus has been on restricting data access through use of **consent mechanisms**...but this approach has implicit in it assumptions about the **lack of malleability** of users' preferences
- We document multiple, potential market failures in digital privacy



# Thank you!

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