

# The Long Taile of Typosquatting Domain Names

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# Extent of Typosquatting

GOOG~~X~~E.COM

56 million potential typos targeting  
ALL  
.com domains

4.7 million typos  
targeting the 488 113  
Alexa's top .com domains

230 000 typos targeting the  
3264 Alexa's top.com  
domains

Alexa provides a list of domains ranked by popularity

# Outline

- Why Typosquatting?
- How do we find Typosquatting domains?
- Trends in Typosquatting
- Possible defenses

# The Target Domain: pncbank.com

The screenshot shows the PNC Personal Banking website homepage. The browser address bar displays the URL: <https://www.pnc.com/webapp/unsec/Homepage.do?siteArea=/PNC/Corp/PI>. The page features the PNC logo and navigation links for HOME, SECURITY ASSURANCE, LOCATE PNC, CONTACT US, and CUSTOMER SERVICE. A search bar is located in the top right corner. The main navigation bar includes tabs for PERSONAL, SMALL BUSINESS, CORPORATE & INSTITUTIONAL, and ABOUT PNC. The left sidebar contains sections for Online Banking Sign On, PNC Security Assurance, Turn Your House Into a Home, Important FDIC Information, and Economic Reports. The main content area is divided into Products and Services and Solutions sections. The Solutions section lists various services such as Retirement Center, Virtual Wallet, PNC Wealth Insight, PNC Total Insight, PNC HomeHQ, PNC Purchase Payback, Saving for Education, and PNC Achievement Sessions. The Special Segments section lists options for Español, Po polsku, WorkPlace Banking, Military Banking, and Student Banking.

Personal Banking - PNC B x

The PNC Financial Services Group, Inc. [US] <https://www.pnc.com/webapp/unsec/Homepage.do?siteArea=/PNC/Corp/PI>

PNC

HOME SECURITY ASSURANCE LOCATE PNC CONTACT US CUSTOMER SERVICE

Search

PERSONAL SMALL BUSINESS CORPORATE & INSTITUTIONAL ABOUT PNC

Online Banking Sign On

User ID:  SIGN ON

Forgot Your User ID or Password?

New to Online Banking? Get Started Now! Learn More View Demo

Sign On to Other Services: Select Service

Know that financial planning can help you save for your kids' education and your retirement.

1 2 3 4

PNC Security Assurance

NEW STRONG Turn Your House Into a Home. PNC Has Lending Solutions Designed To Help. more

FDIC Important FDIC Information Learn about the expiration of unlimited coverage for noninterest-bearing transaction accounts. more

Economic Reports Expert insight on latest economic news plus impact on economy and financial markets. more

Products and Services

Checking

Online & Mobile Banking

Savings

Mortgages, Loans & Lines of Credit

Credit Cards

Retirement, Investments & Wealth

Account Services

Solutions

Whatever challenges and opportunities lie ahead, PNC can help. See why working with PNC to plan for life's greatest milestones is the smart choice.

Retirement Center

Virtual Wallet

PNC Wealth Insight

PNC Total Insight<sup>SM</sup>

PNC HomeHQ<sup>SM</sup>

PNC Purchase Payback

Saving for Education

PNC Achievement Sessions

Special Segments

Español

Po polsku

WorkPlace Banking

Military Banking

Student Banking

# Potential Typo Domain: pncbank.com

Buy this domain.

**pncbnk.com**  [Search Ads](#)

Related Links

- [Pncbank.com](#)
- [PNC Bank on Line Banking](#)
- [PNC Bank](#)
- [Online Banking Account](#)
- [Bank Online Banking](#)
- [PNC Bank Savings Accounts](#)
- [Bank Account Loans](#)
- [PNC Bank Loan Rates](#)
- [Online Business Bank Account](#)
- [PNC Bank Online Bill Pay](#)

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# Potential Typo Domain: pncbanX.com


The screenshot shows a web browser window titled "Pnc Survey" with the URL `consumer-response.info/unitedstates/1.php?&c1=WTUS&c2=~apix07-pncban.com~&t202kw=PNC`. The page content includes a header "2014 Pnc Survey - July 21, 2014" and a message from a customer service representative: "In just 4 quick questions, help us bring you an improved Pnc. Want to know what your reward is? Complete this survey to find out - they are all worth more than \$50!". The survey question is "Question: 1 of 4: Your gender?". A white pop-up box with a blue question mark icon contains the following text: "Dear Pnc visitor, Congratulations! You have won access to the consumers-feedback rewards program for Pnc visitors. We ask that you first participate in a quick, 30 second survey. (survey is 100% anonymous)". Below the text is a progress bar and a red "Accept" button.

# Potential Typo Domain: pncbanX.com

Pnc Survey

consumer-response.info/unitedstates/1.php?&c1=WTUS&c2=~apix07-pncban.com~&t202kw=PNC


### 2014 Survey - July 21, 2014

 **Thank you for completing the survey!**

We have the following **limited special offers** for your participation. Please choose up to **(2)** offers for completing the survey!


Offer ends today: July 21, 2014

✓ **NOTE:** Coupon **"PNC"** has been applied for reduced shipping price




**Android Tablet- WIFI + external 3G + Front camera**  
Regular Price: \$89.99  
Yours: **\$00.00\***  
You Pay: **\$1**  
Quantity Left: **(2)**

[Click Here To Select](#)




**Garcinia Cambogia- Hailed as the #1 Solution in a Bottle to Burn Fat Try it Today.**  
Regular Price: ~~\$79.99~~  
You Pay: **\$4.95- Risk Free!**  
Quantity Left: **(2)**

[Click Here To Select](#)



**Teeth Whitening Kit- Noticeable Whiter & Brighter Teeth in only 6 days..**  
Regular Price: ~~\$89.99~~  
You Pay: **\$6.95 Risk Free!**  
Quantity Left: **(3)**

[Click Here To Select](#)



**Pimsleur Approach- Discover how you can speak any language in just 10 days!**  
You Pay: **\$9.95 - 30 Day Trial!**  
Quantity Left: **(2)**

[Click Here To Select](#)

# Potential Typo Domain: pncban~~X~~.com

Get Your Android Tablet for only **\$1**

+ 3-day trial to NowLucky.com

- ✓ 7" screen size
- ✓ 4GB data capacity
- ✓ WIFI + external 3G
- ✓ Front camera
- ✓ Earphone jack
- ✓ A13 processor

**Get Your Android Tablet**

Jmase

Bnd

James@secret.com

James@secret.com

I accept NowLuckys [terms & conditions](#)

**Get My Tablet »**

VALUE TRIAL  
\$99 **\$1**



# Potential Typo Domain: pncban~~X~~.com

Android Tablet

https://nowlucky.com/c/gateway.php?lang=US

Android Tablet   **Payment**   Done

VISA   VISA Electron   MasterCard   Maestro

**Cardnumber**

**Expiration**

01   2014

**CVV**

   Last 3 digits

**Make payment**

**Order Details**

NowLucky-account	\$1
Automatic renewal at \$99	
Android Tablet	\$0
Regular price \$99	
Delivery	\$0
Regular price \$13.07	

**Your Price**   **\$1**

Your membership is a subscription service. If you do not unsubscribe within the trial period (3 days) it will automatically go into a membership. The membership costs \$99 and will be renewed every 30 days.

**Secure Payments**

Transactions are protected by SSL.

# Potential Typo Domain: pmcbank.com

The screenshot shows the homepage of the Punjab and Maharashtra Co-operative Bank Limited (PMC Bank) website. The browser address bar displays the URL [www.pmcbank.com/english/home.aspx](http://www.pmcbank.com/english/home.aspx). The website header features the PMC Bank logo and navigation links for Home, Branch, ATM, and Contact Us. A search bar is also present. The main navigation menu includes Personal Banking, NRI Banking, Loans, Services, and About Us. A language selector is set to Hindi (हिंदी मराठी). Promotional banners include "Now connect your AADHAAR CARD with PMC BANK a/c to receive government subsidies directly" and "Verified by VISA". A sidebar on the right contains links for IB Terms & Conditions, Internet Banking Login, Internet Banking Demo, Online Visa Bill Pay, PMC - ACE Log In, and Mobile Pay Application. The main content area is divided into "NEWS & ANNOUNCEMENTS" and "WHAT'S NEW" sections. The footer contains various utility links and social media icons.

Punjab & Maharashtra Co x

www.pmcbank.com/english/home.aspx

Home | Branch | ATM | Contact Us

PMCBANK PUNJAB AND MAHARASHTRA CO-OPERATIVE BANK LIMITED

PERSONAL BANKING | NRI BANKING | LOANS | SERVICES | ABOUT US

हिंदी मराठी | Stop PMC Theme Song | Verified by VISA

Now connect your AADHAAR CARD with PMC BANK a/c to receive government subsidies directly

IB TERMS & CONDITIONS

INTERNET BANKING LOGIN

INTERNET BANKING DEMO

ONLINE VISA BILL PAY

PMC - ACE LOG IN

Mobile Pay Application

NEWS & ANNOUNCEMENTS

Introducing

Anant Recurring Deposit

Attractive Rate of Interest

WHAT'S NEW

- Get a lot of benefits with PMC Visa Bill Pay

- Career in PMCB
- Calculator
- Loan Application
- Inquiry
- Feedback
- Grievance
- To view our commercials - Click Here

Feedback | Suggestions | Grievance Redressal | Codes | Interest Rates | Service Charges | Forms | Career | IFSC & NEFT Code | Disclaimer

# Ecosystem

Target Domain  
(pncbank.com)

2 %  
Brand  
Protection



TypoSquatting  
Domain

98 %

Competitor  
Brand

Other  
Domain

Phishing/  
Malicious

Ads



pmcbank.com

# Potential Typo Domains

The Target Domain

Generated Typo domains

Potential Typo Domains

- Deletion →
- Addition →
- Substitution →
- Transposition →

- pncb~~X~~nk
- pncba~~A~~nk
- pn~~Z~~bank
- pn~~BC~~ank
- www pncbank
- .
- .
- .
- pncban~~X~~
- p~~M~~cbank

Selecting Registered Domains

- pncbnk
- pncban
- .
- .
- .
- pmcbank

pncbank.com

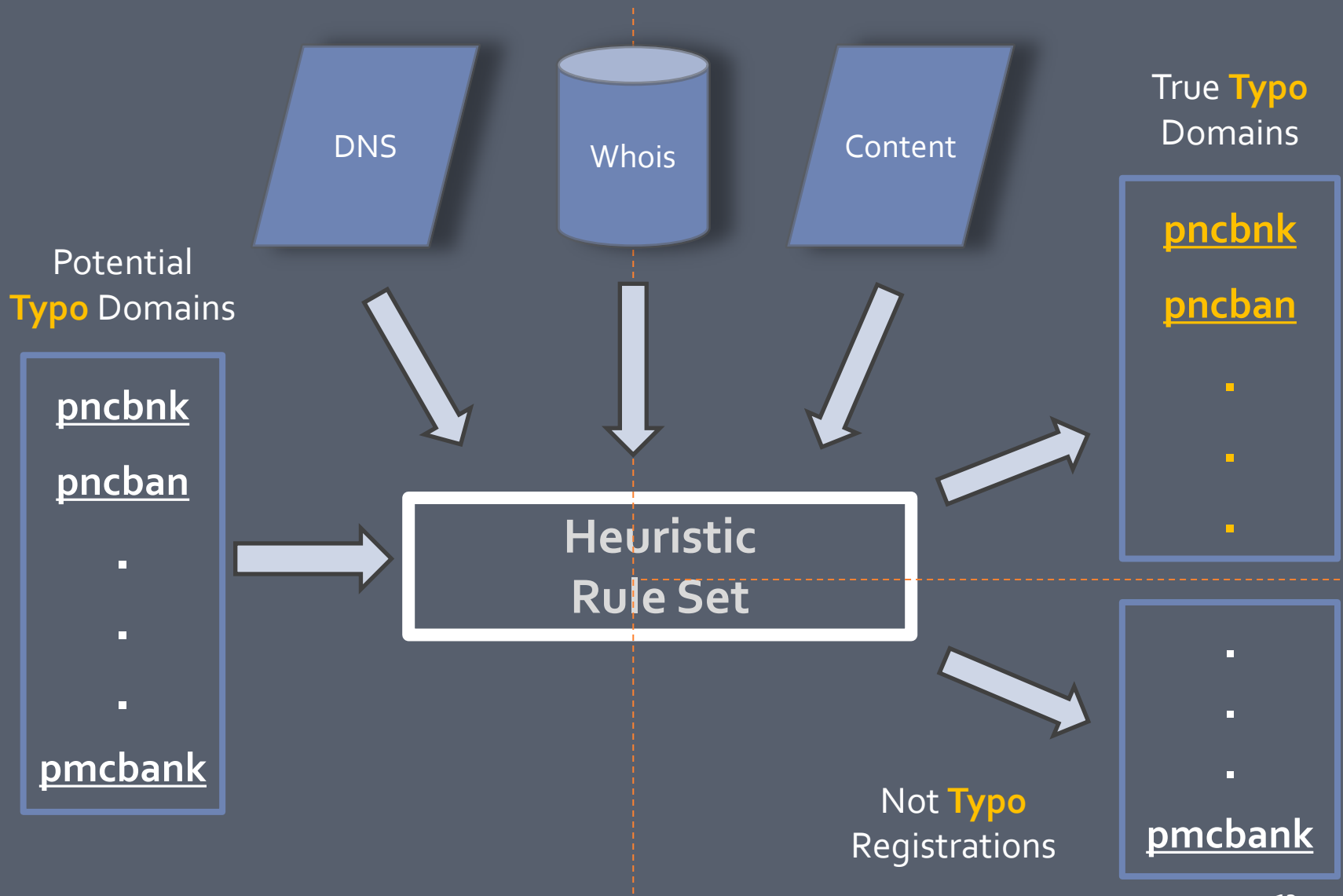
Typo Generation

→

→

→

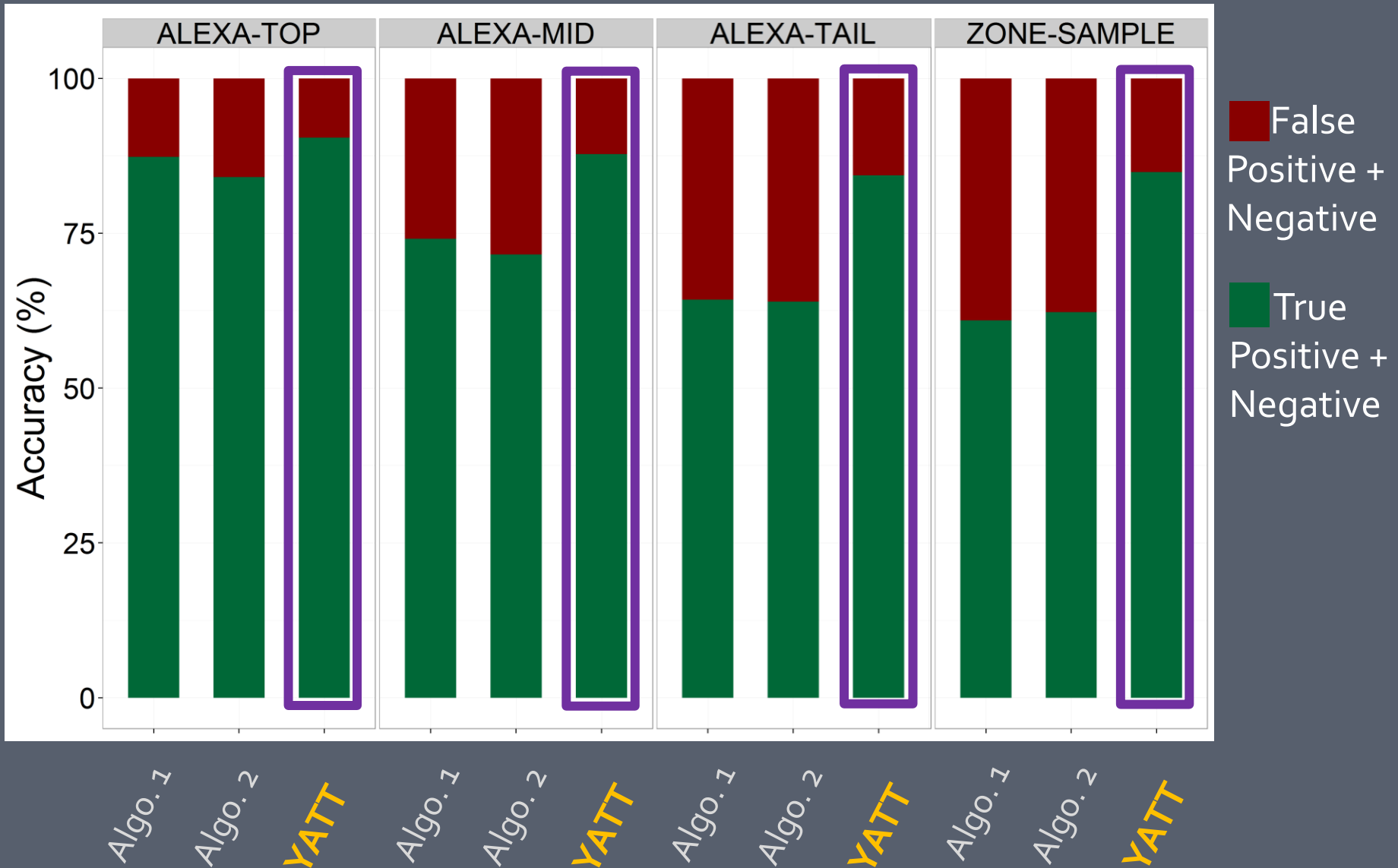
# True **Typo** Domains



# Manual Categorization

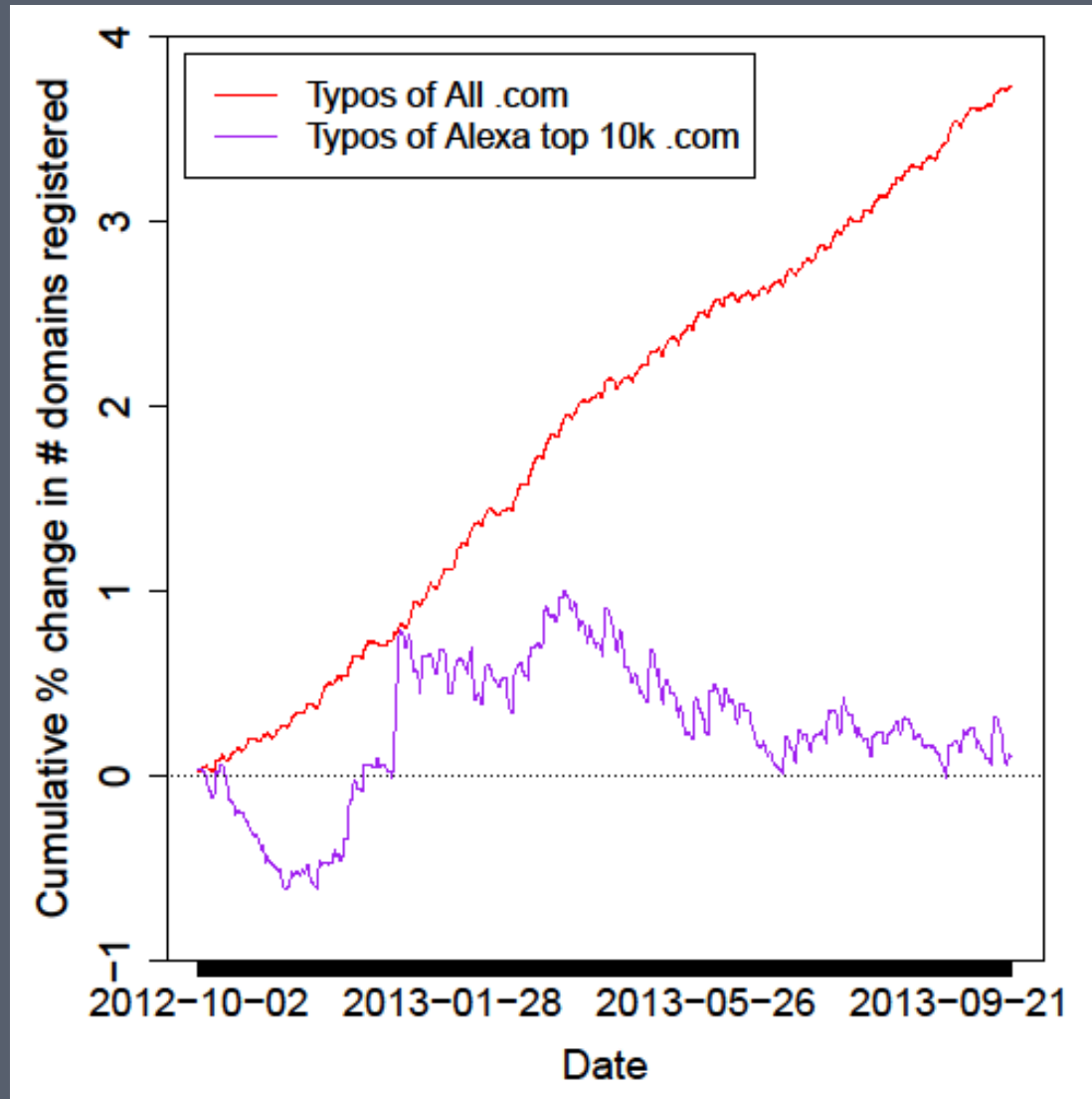


# Accuracy



Based on previous work: Algo. 1 and Algo. 2 Ours: **YATT**

# Trends in registration across time



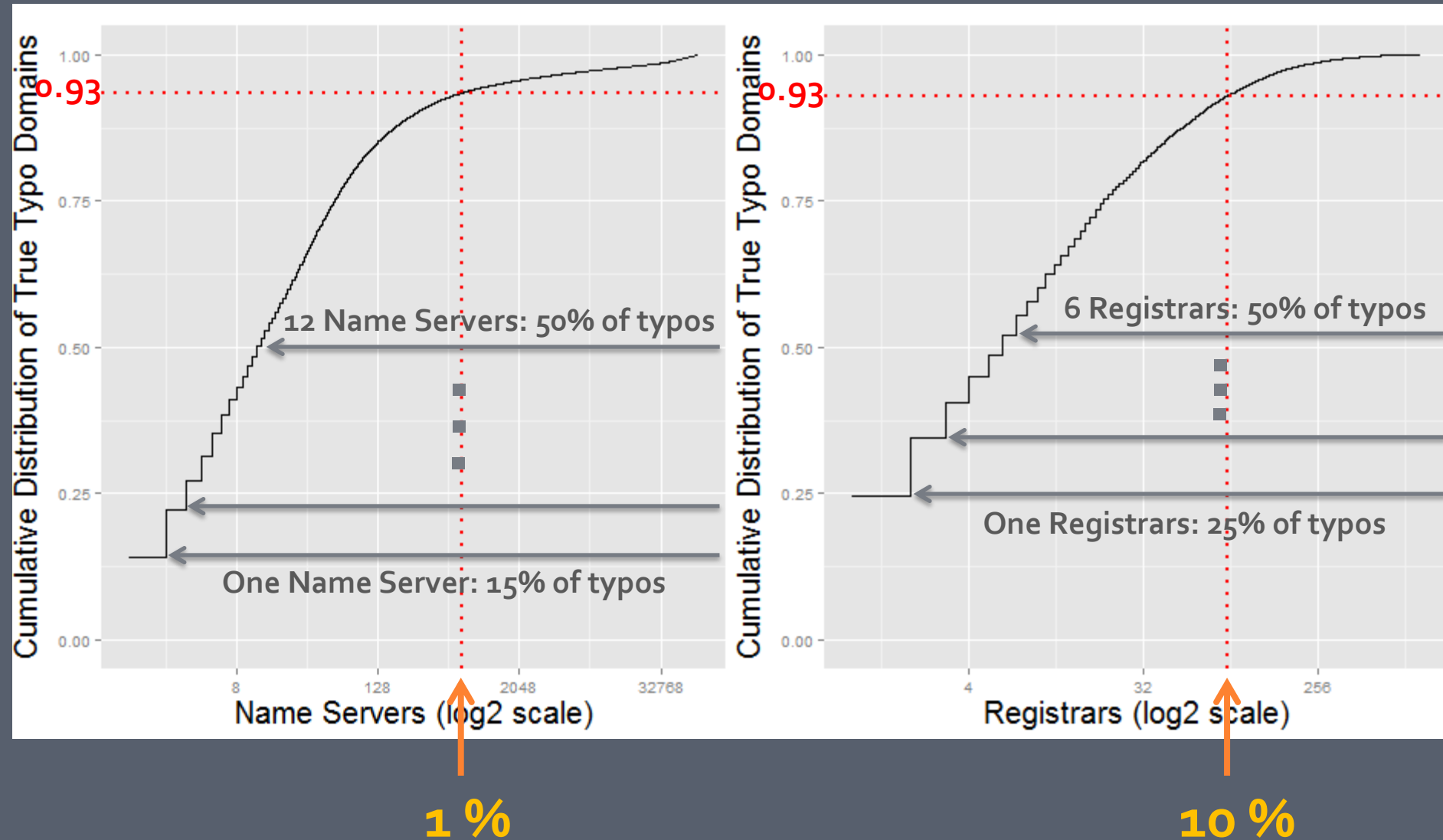
>= 71% of typo domains remained registered for over one year



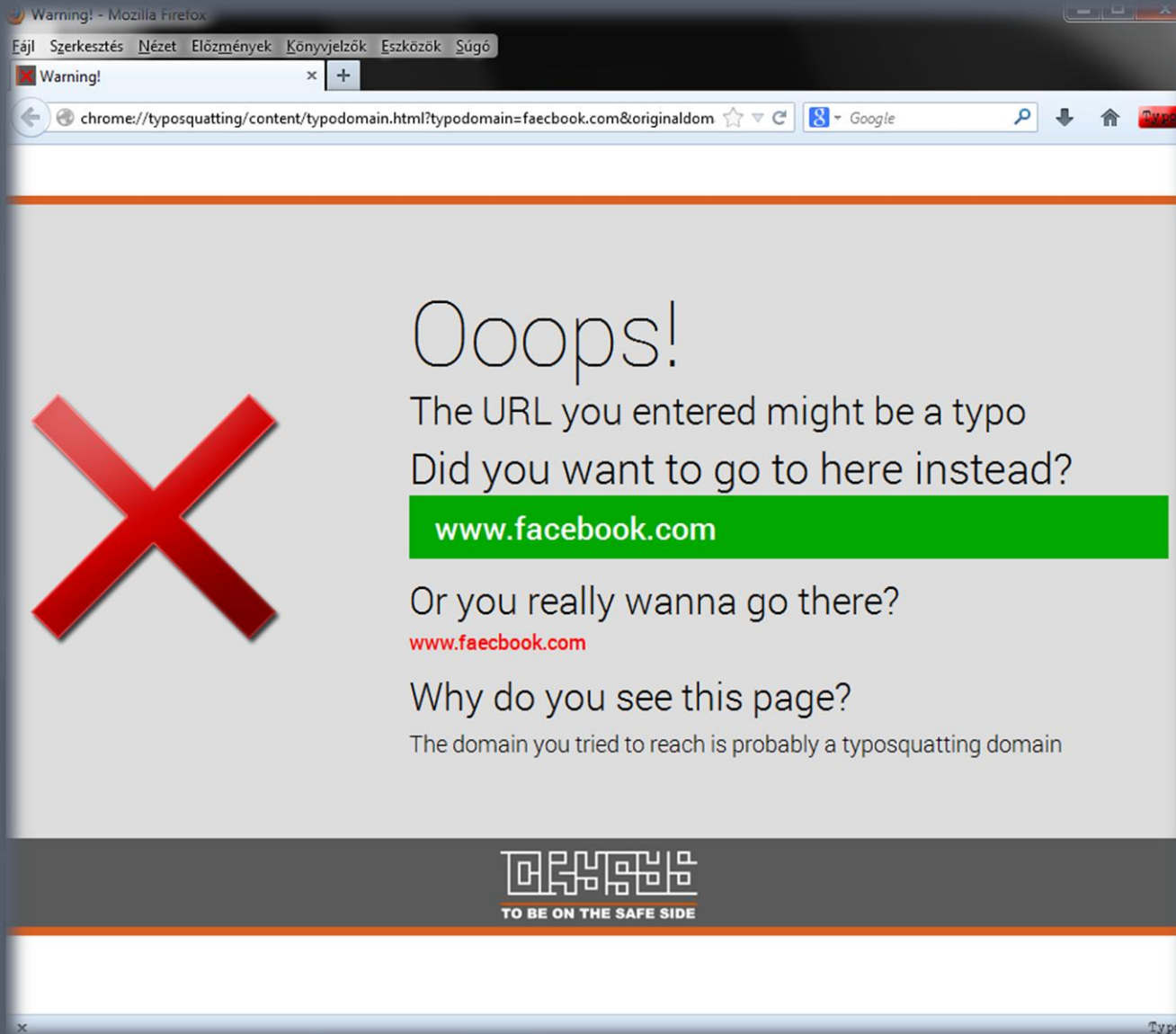
# BAD Name Servers

Name Server	True Typos	All .com domains	Typo Ratio
aof.net	5221	6332	82%
citizenhawk.net	8819	12004	73%
easily.net	18281	36890	50%
domainingdepot.com	51854	132864	39%
next.org	9426	30252	31%
domainmanager.com	23493	90929	26%

# Infrastructure & Intervention



# Tool




Warning! - Mozilla Firefox

Fájl Szerkesztés Nézet Előzmények Könyvjelzők Eszközök Súgó

Warning! x +

chrome://typosquatting/content/typodomain.html?typodomain=faecbook.com&originaldom Google




Ooops!

The URL you entered might be a typo  
Did you want to go to here instead?

[www.facebook.com](http://www.facebook.com)

Or you really wanna go there?  
[www.faecbook.com](http://www.faecbook.com)

Why do you see this page?  
The domain you tried to reach is probably a typosquatting domain



Typo

# Takeaways

- Typosquatters invest significant resources
- Typosquatting steadily increases
- Typosuatting could be contained

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