



DNS  
RESEARCH  
FEDERATION

Habits of excellence: why are European  
ccTLD abuse rates so low?

# Roadmap

- Who we are
- Background to the project
- Sources and methods
- Results
- Conclusions
- Q&A

# What is the DNS Research Federation?

- A UK non profit
- Mission: to advance the understanding of the Domain Name System's impact on cybersecurity, policy and technical standards.
- Achieving our mission through:
  - Education and research
  - Improving access to data
  - Engagement in technical standards

# Background

- NIS2 - WHOIS and data verification procedures; reflecting best practices used within the industry
- The BC and IPC wanted to learn more about EU ccTLDs:
  - Comparative abuse rates
  - Abuse rates and market share
  - Impact of demonstrated effective practices
  - Other factors?

# Sources and methods

- DAP.LIVE data:
  - gTLD zones and DomainTools for ccTLD numbers
  - OpenPhish, APWG, Abuse.ch URLhaus Project, Spamhaus
- Desk based research: ccTLD numbers, pricing, population size
- CENTR study on EU ccTLD data habits; European Commission study on DNS Abuse
- What did we measure, and how did we define abuse?
  - Phishing, malware and spam only
  - Counted distinct/unique domain names found on each abuse list
  - January 1 through December 31, 2022

# Results

**Abuse Total** = All reports across  
Phishing, Malware, and Spam

**Abuse Rate** = Abuse total / Total  
registrations

**Global Rate** = Average Abuse Rate

Average Abuse Rate by TLD Type

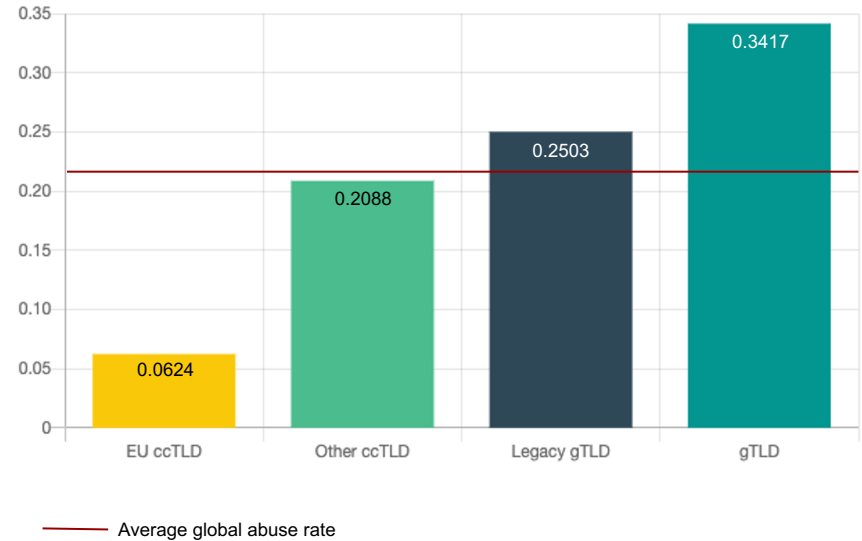
.COM Cost Price **\$8.97**

Average EU Price **\$8.64**

TLD TYPE	ABUSE RATE	DIFFERENCE
gTLD	↑ 0.3417%	+ 0.1206%
Legacy gTLD	↑ 0.2503%	+ 0.0292%
Global Abuse Rate	= 0.2211%	
Other ccTLD	↓ 0.2088%	- 0.0124%
EU ccTLD	↓ 0.0624%	- 0.1587%

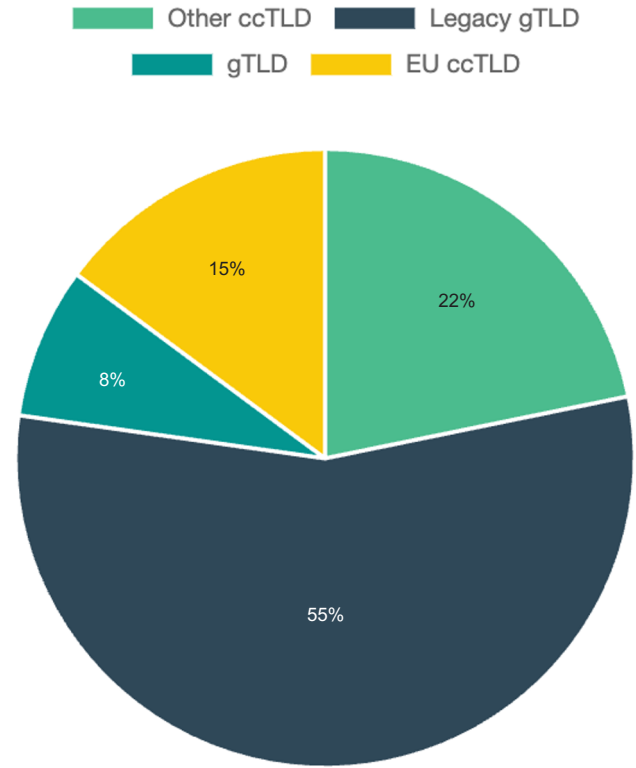
The EU ccTLD abuse rates are the lowest of any TLD bloc within the global market.

Average Abuse Rate by TLD Type



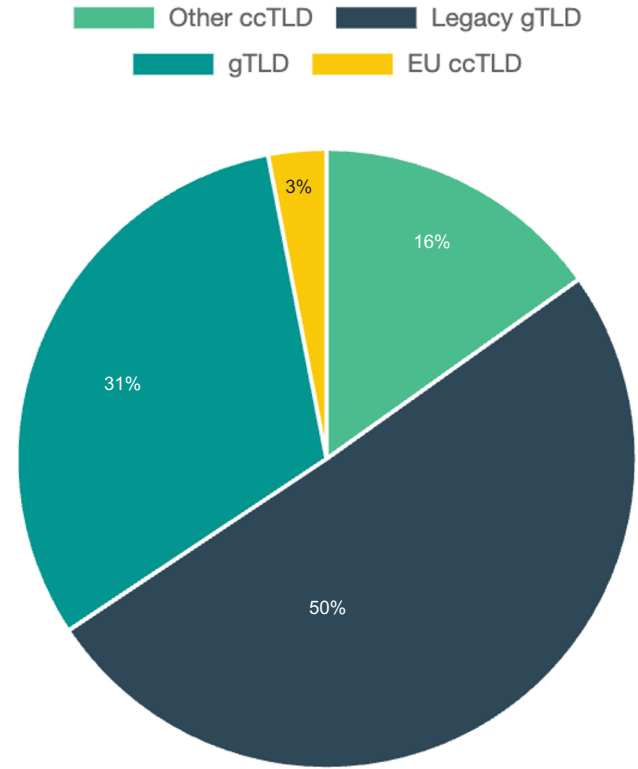


The EU ccTLD abuse rates are significantly lower than the market share of the EU ccTLDs



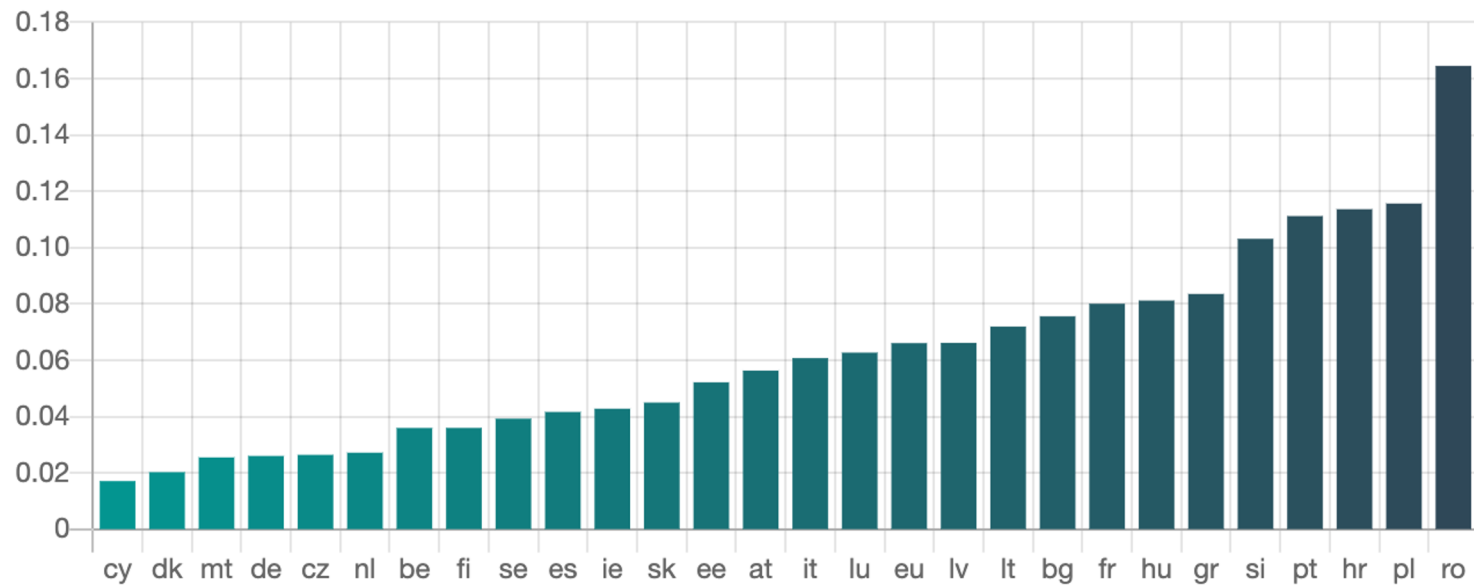
TLD Market Share

The EU ccTLD abuse rates are significantly lower than the market share of the EU ccTLDs



TLD Abuse Rates

EU ccTLD - combined abuse rates (%) for spam, phishing, malware



# Correlation with anti-abuse measures?

# CENTR report - key findings

- Approximately 50% undertake **automated syntax validation** on registration of domain
- Diverse measures across the EU ccTLDs
- Only 20% undertake systematic identity verification
- Ad hoc checks the most common
- Lack of standardised, pan-European electronic identity processes.

ccTLD	Country/Territory	Data verification (from CENTR report)			Derived from text of CENTR report				
		At registration	Ad hoc	Periodically	Use eID	External verification services / checks	Require address in country / region	Checks on postal / phone details / bank account	Copy of registrant passport
at	Austria								
be	Belgium		X		X	X			
bg	Bulgaria								
cz	Czech Republic		X			X	X	X	
cy	Cyprus								
de	Germany		X						
dk	Denmark	X	X		X	X		X	
ee	Estonia	X	X	X					
es	Spain								
eu	European Union		X		X			X	X
fi	Finland								
fr	France		X						X
gr	Greece								
hr	Croatia								
hu	Hungary	X	X						
ie	Ireland	X		X					
it	Italy		X	X					
lt	Lithuania								
lu	Luxembourg								
lv	Latvia	X	X	X					
mt	Malta	X	X						
nl	Netherlands					X			X
pl	Poland								
pt	Portugal	X	X						
ro	Romania		X						X
se	Sweden								
si	Slovenia								
sk	Slovak Republic		X						
28		7	14	4	3	4	1	3	4

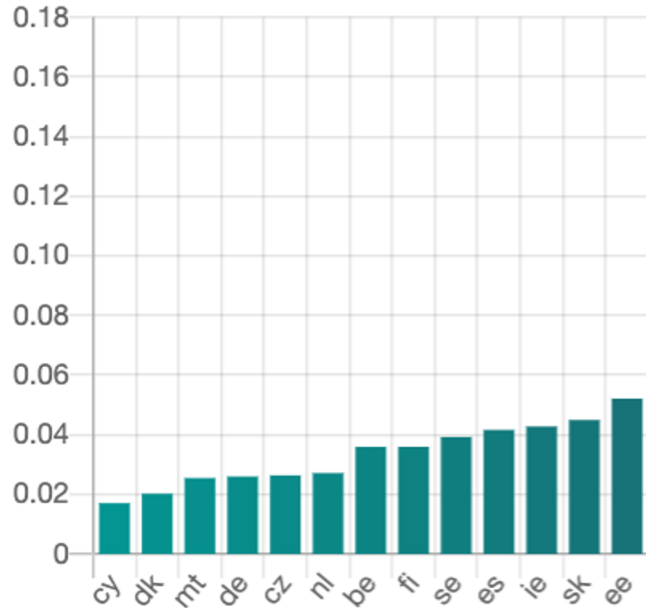


# What other factors might account for the differences?

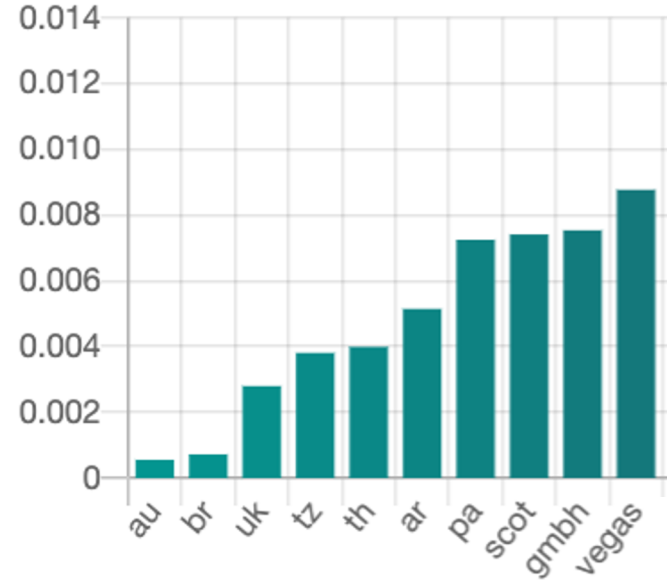
- Maturity of domestic markets
- Evolving within a data protection environment
- Predominance of not-for-profit models with close links to local stakeholders
- Other quality markers: renewal rates, developed web content
- Pricing and market penetration? - the jury's out.

# And, finally...

EU ccTLD - combined abuse rates (%)



All TLD combined abuse rates (%)





“We are what we repeatedly do.  
Excellence, then, is not an act, but a habit.”

Aristotle (ish)

# Conclusions

- EU ccTLD abuse rates are the lowest of any TLD block in the global market
- EU ccTLDs have significantly lower abuse rates than market share
- Correlations with data practices: many undertake data checks, but there is no uniform picture. Most commonly occurring are automated syntax validation and ad hoc checks in response to a query
- Other factors may contribute to the excellence of this group
- And finally, there are TLDs with abuse rates 10x lower than the best performing EU ccTLDs: .au, .br and .uk - more research needed!

# Questions?

Find out more at [dnisrf.org](https://dnisrf.org)