



**ICANN**  
Domain Metrics



# **ICANN Domain Metrics**

OCTO Security, Stability, and Resiliency Research

December 2025

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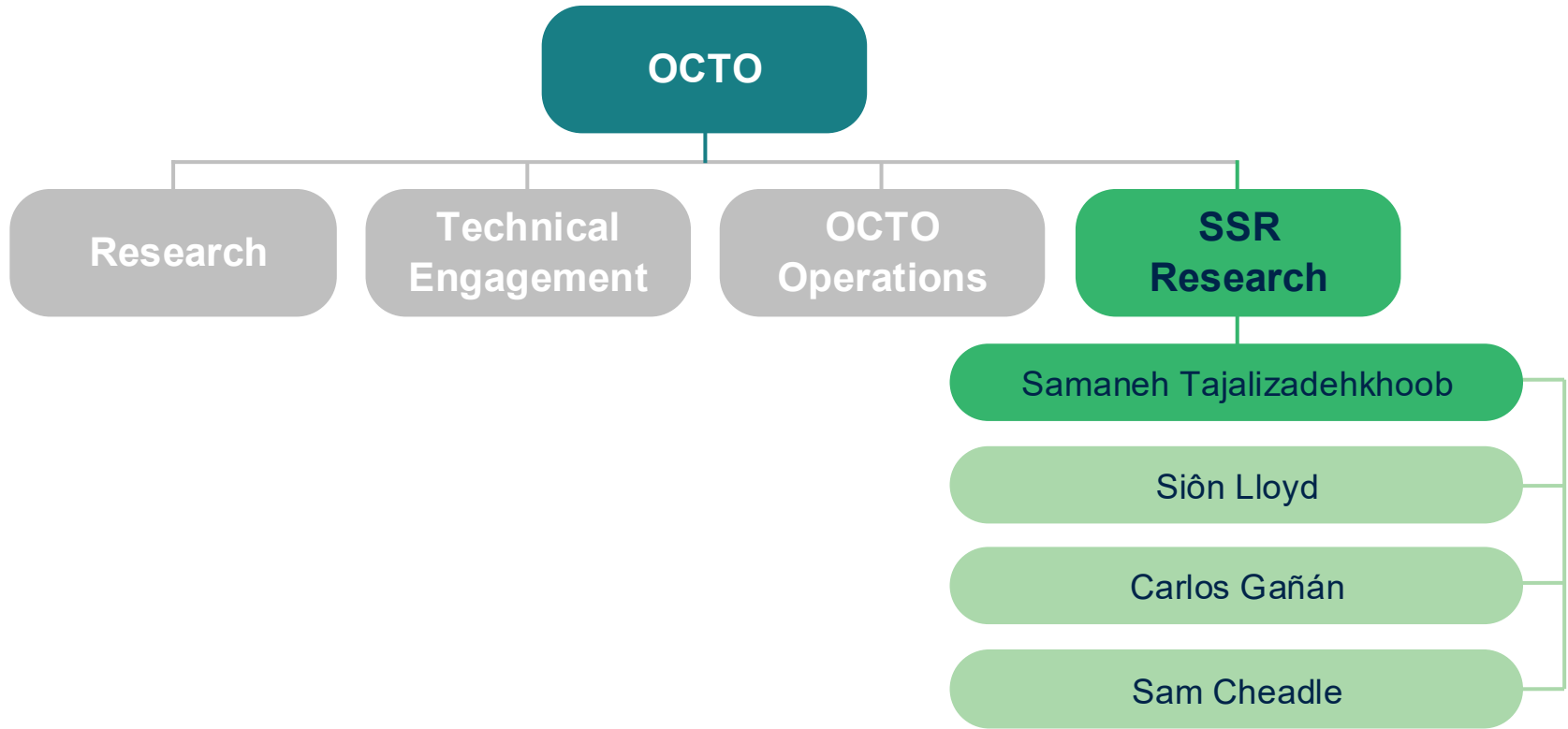
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# Meet the ICANN Domain Metrics Team

# Our Team: Driving DNS Security Research



# The Story Behind ICANN Domain Metrics

# ICANN Domain Metrics: Your Comprehensive DNS Data Platform



**Collects, combines, and compares DNS metadata**



**Dynamic dashboards, interactive visualizations**



**Flexible API for direct data access**



**Open and accessible for all ICANN account holders**

- Global DNS trends for general users
- Customized views for registries and registrars

# What Metrica is NOT



**NOT for abuse investigation or attribution:**

No threat hunting, forensics, or dispute adjudication.



**NOT an abuse detection/ discovery tool:**

Doesn't crawl, scan or detect malicious activity.



**Doesn't take action against abusive domains:**

No notifications, removals, or blocking.

# How ICANN Domain Metrics Differs from Other Platforms



## **Diverse reputation data sources:**

Integrates public and commercial RBLs for broad, balanced coverage.



## **Broad data integration:**

Not just RBLs - DNS zones, registration data, popularity rankings, geolocation.



## **Dynamic and flexible:**

Interactive dashboards, advanced filters, full API access.



## **Always evolving:**

Designed for transparency and community-driven updates.



## **Granular analysis:**

Search, filter, compare across domains, TLDs, and registrars.



## **User friendly:**

Allows different users to interact in ways that suit them.

# Goal: Empowering the Internet Community

✓  
Share ICANN's technical research

✓  
Consistent,  
impartial data on  
domain names

✓  
Enable open,  
trusted data for  
external research



# Overcoming Abuse Metric Challenges

## ICANN Domain Metrics addresses common pitfalls:

- Inconsistent DNS Abuse definitions
- Overlooked edge cases
- Registration lifecycle awareness
- Ignoring TLD, registrar, hosting context
- Lack of data source transparency

## Key challenges tackled:

- RBL Paradox
- Temporal Simpson's Paradox

# RBLs Paradox: Many Feeds, Inconsistent Views

- ✓ Limited overlap between RBLs.
- ✓ More feeds = more disagreement.
- ✓ Single RBL = blind spots; multiple RBLs = contradictions.

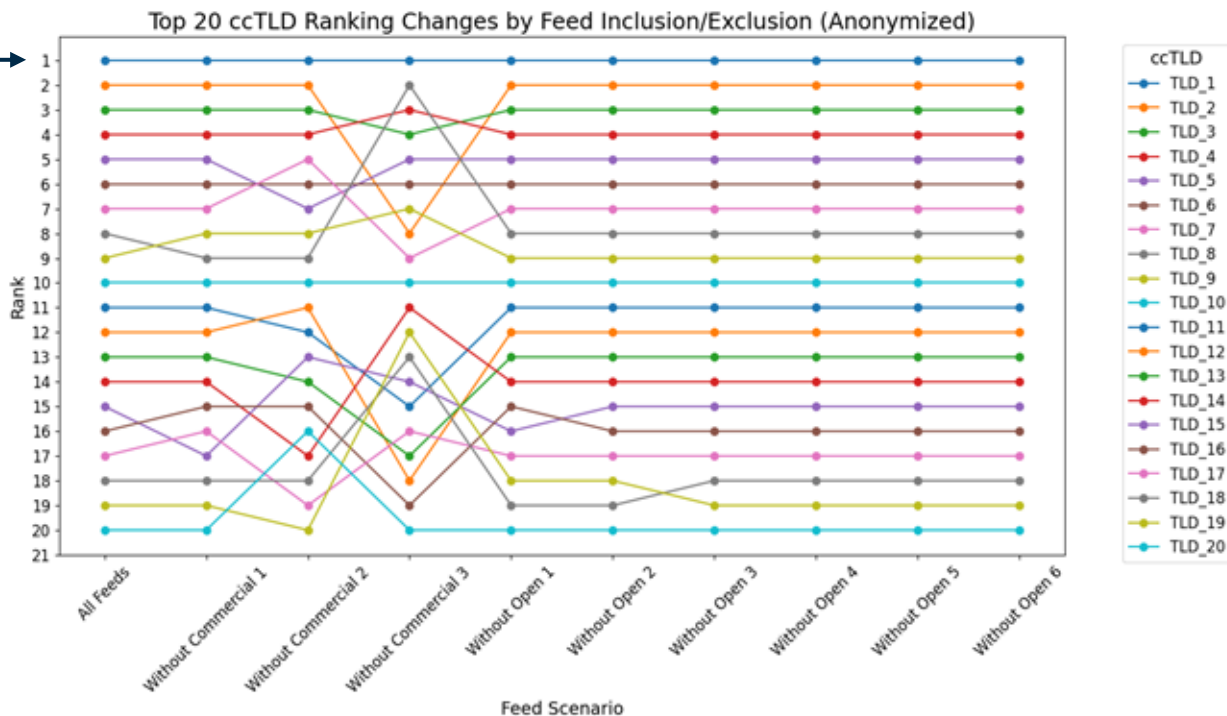
*“Blindfolded people and the elephant” — each RBL feed touches part of the threat landscape, but none sees the whole.*



# RBL Impact: Shifting DNS Abuse Rankings

Chart demonstrates how different RBL combinations alter TLD rankings.

Highlighting the critical need for diverse, quality-controlled data.



# ICANN Domain Metrics's Solution to the RBL Paradox

## **Diverse Data Sources:**

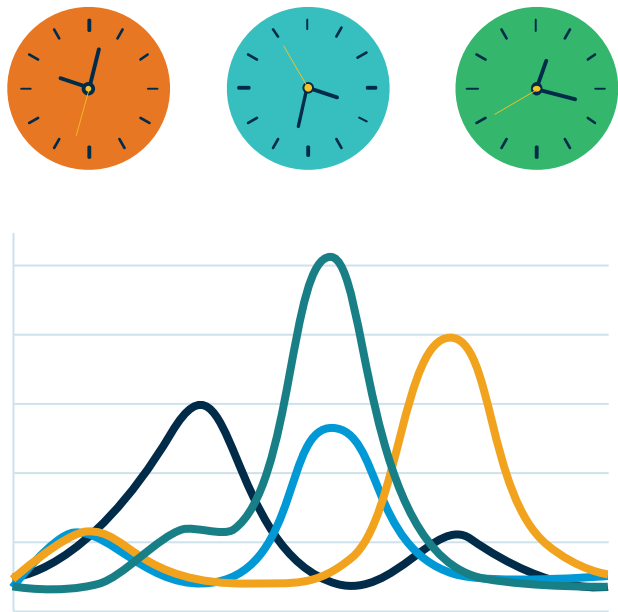
Integrates public and commercial RBLs for broad, balanced coverage.



## **Rigorous Quality Control:**

Yearly evaluation of all input lists using OCTO037 methodology.

# Temporal Simpson's Paradox: Time Distorts Metrics

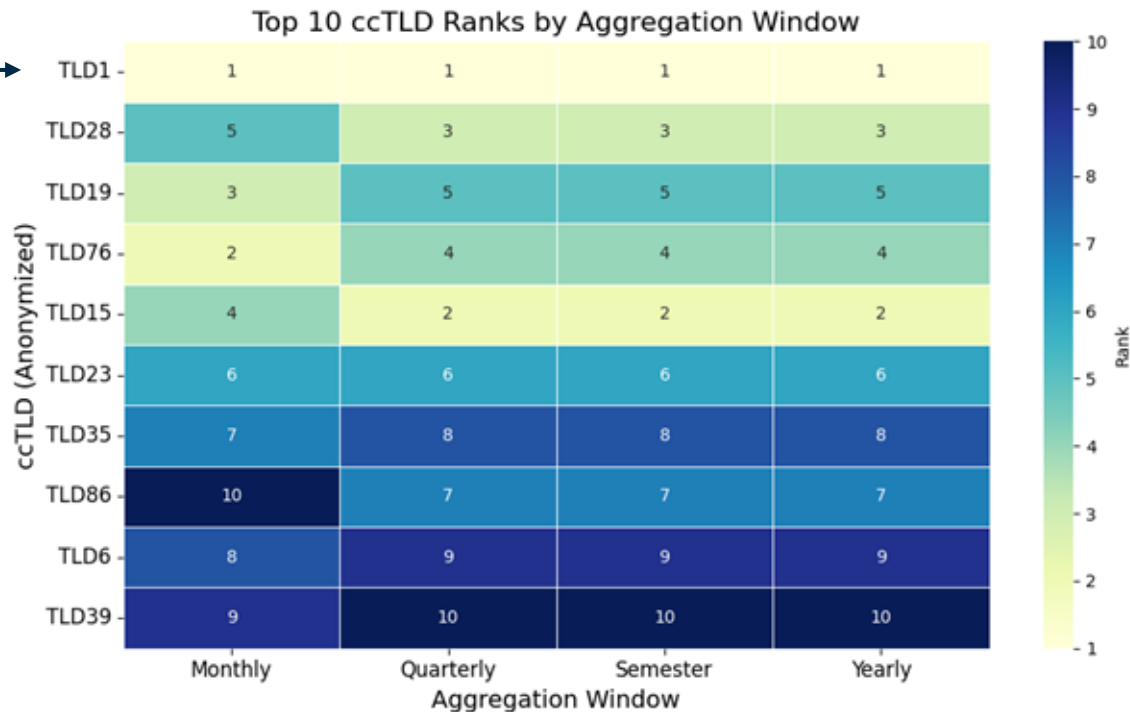


- Abuse counts vary wildly by time window (daily, weekly, monthly).
- Short windows miss long-term trends; long windows hide short-term dynamics.
- Inconsistent reporting windows make comparisons unreliable.
- Time choices can alter narratives, creating opposite stories from the same data.

# Visualizing the Temporal Paradox: Rank Changes by Aggregation Window

Heatmap shows how ccTLD rankings shift with different aggregation windows.

Emphasizing the need for flexible time-series analysis.



# ICANN Domain Metrics's Solution to the Temporal Paradox



## Customizable Time Windows:

Define your own ranges for accurate metrics.



## Lifecycle-Aware Metrics:

Accounts for domain dynamics, filters inactive domains.



## Trend-Focused Analysis:

Fine-grained, time-series views reveal true trends.



## Flexible Comparisons:

Ensures fair, meaningful interpretations across equivalent time spans.

# ICANN Domain Metrics Data: A Foundation of Diverse Sources

## Comprehensive Data Inputs:

- gTLD zone data
- Registration data
- Public and commercial RBLs
- Domain popularity rankings

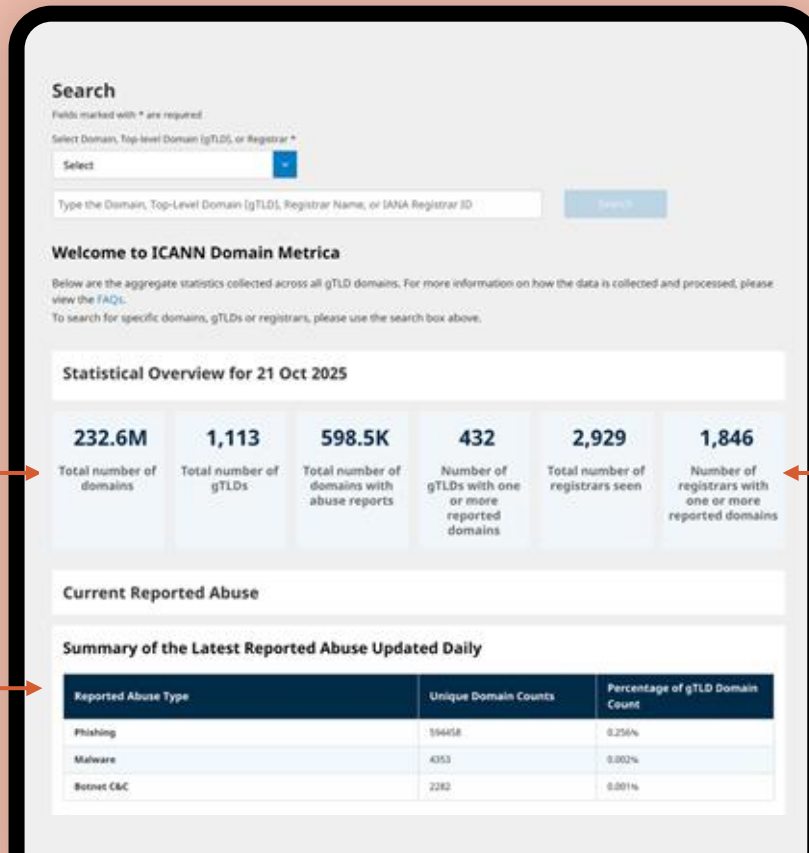
**Accessible Data:** Available via API and WebUI (where permitted)



# Dashboard Overview: Instant DNS Abuse Statistics

Total domains, gTLDs, domains with abuse reports.

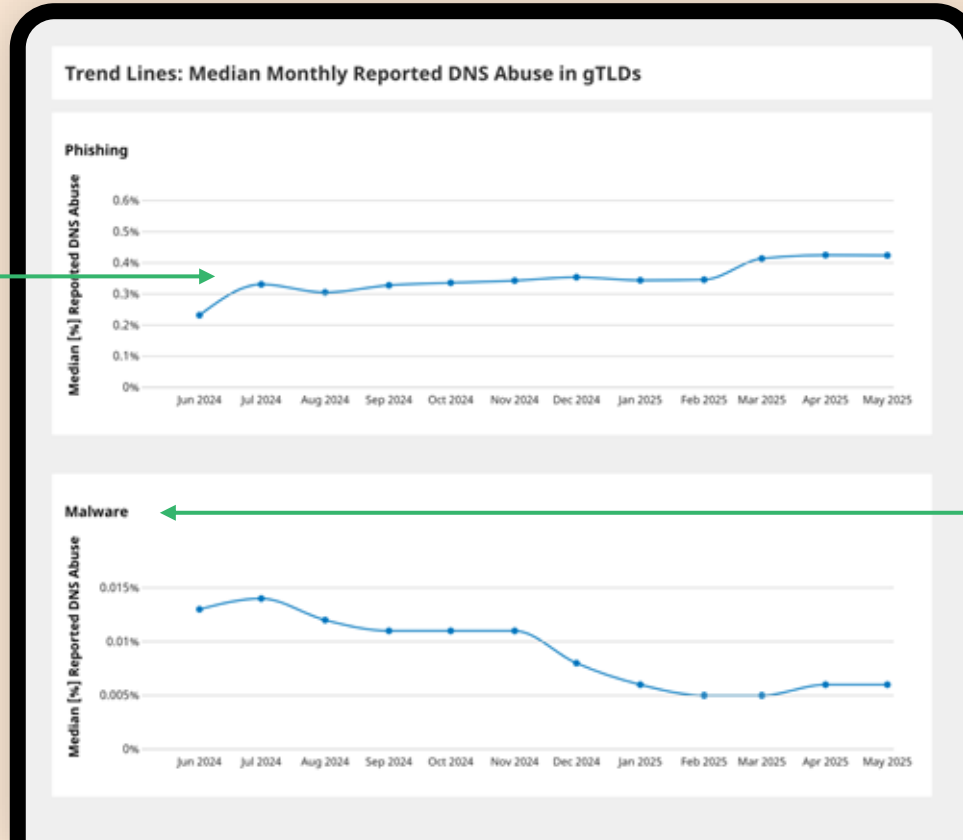
Summary of latest reported abuse by type (Phishing, Malware, Botnet C&C).



Number of gTLDs/registrars with reported domains.

# 12-Month Trends: Phishing & Malware in gTLDs

Visualizes median monthly reported DNS abuse.



Track historical trends for key abuse types.

# ICANN Domain Metrics for ccTLDs: Enhancing Abuse Mitigation



**Current Challenge:** Limited ccTLD zone file access impacts data processing.

- Limits filtering non-delegated domains.
  - Prevents normalized zone-based counts.
- 



**Benefits for ccTLDs:** Access abuse data via MoSAPI and (when ready) UI, benchmarking insights for mitigation.

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**Participation Options:**

- **Full Zone Files:** Maximize comparability with gTLDs.
- **Self-Report Zone Size:** Use DNS queries for existence, normalize with reported size.
- **No Data Sharing:** Still get meaningful insights via DNS queries & estimated zone size.

# ICANN Domain Metrics: Continuously Evolving



**Not  
“finished” –  
constantly  
adding  
features**



**Evolving  
based on  
community  
feedback  
and new  
use cases**



**Yearly  
evaluation  
of input  
lists using  
OCTO037  
methodology**



**Committed  
to continuous  
improvement  
for a more  
secure  
Internet**

# Q&A

# Learn More and Engage!



**ICANN Domain Metrica Homepage:**  
[icann.org/octo-ssr/metrica-en](https://icann.org/octo-ssr/metrica-en)



**ICANN Domain Metrica Platform:**  
[domainmetrica.icann.org](https://domainmetrica.icann.org)



**Connect with SSR Research:**  
[ssr-research@icann.org](mailto:ssr-research@icann.org)

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