

ICANN Domain Metrica

The next generation of ICANN
measurements



I C A N N
Domain Metrica

Agenda

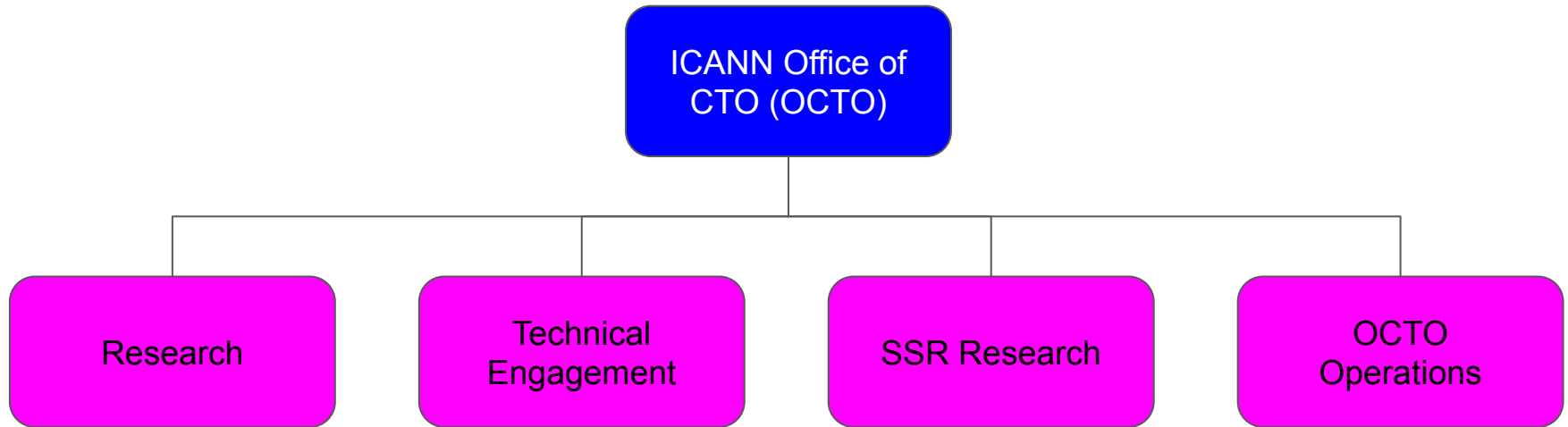
Introduction - a bit about us

Domain Metrica background

A quick look via two use cases

Questions?

Where we fit, who we are



Where we fit, who we are

SSR Research

Where we fit, who we are

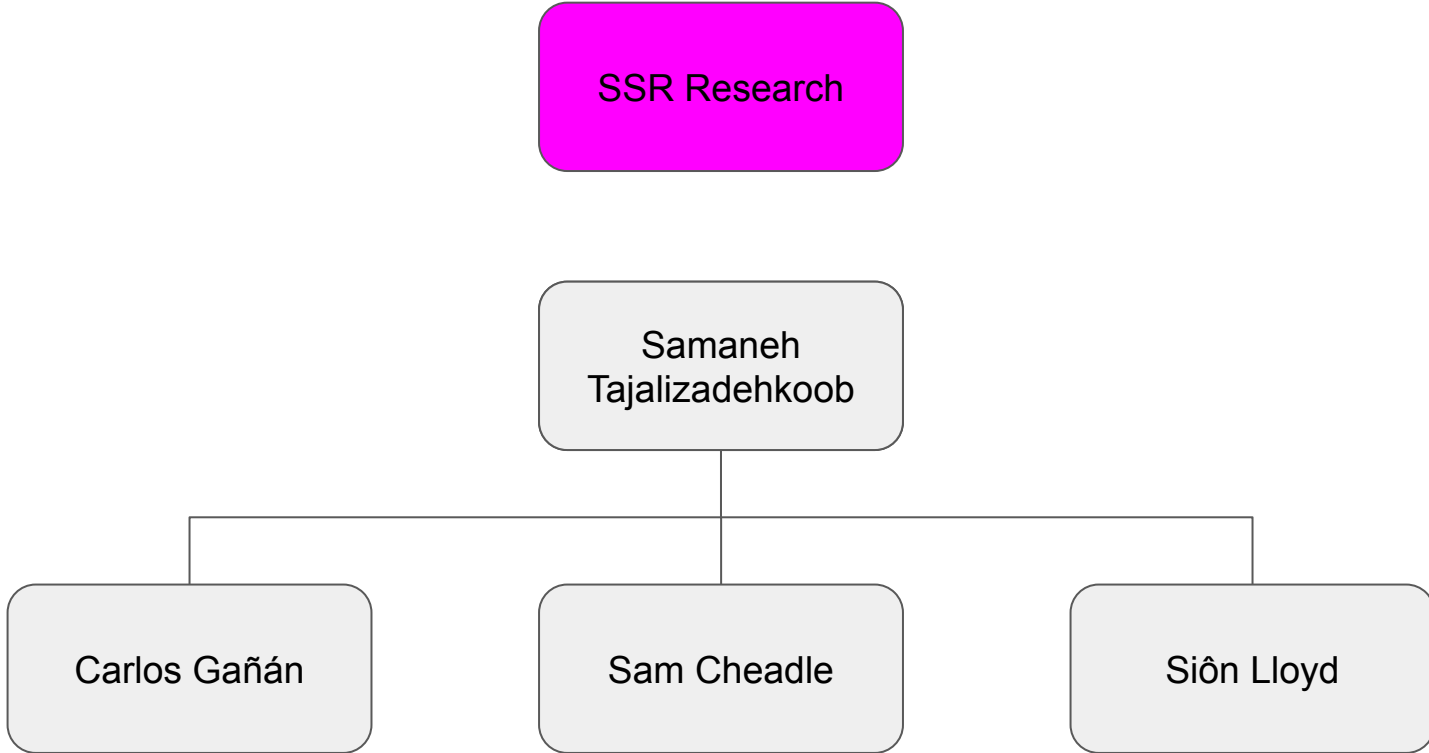
SSR Research

Where we fit, who we are

SSR Research

Samaneh
Tajalizadehkoob

Where we fit, who we are



Security Stability & Resilience (SSR) Research

Think Tank that mostly do **research** and **development** on **Internet identifiers**

We look to use **data** and **scientific** methods to answer questions of interest to the community

Our goal is to

Increase **reliability** of the metrics that we measure (*e.g.*, security, insecurity, abuse, *etc.*)

Develop a metrics/method **from scratch**.

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I C A N N
Domain Metrica

What is ICANN Domain Metrica?

A system to **collect**, **combine** and **compare** any metadata related to domain names.

The platform has a **dynamic dashboard** with relevant **statistics** and visualisations; alongside an API to access raw data.

Vision for Metrica

- A place for the community to get consistent and impartial information
- A place for our research to be exposed to the world
- A place where external researchers can test hypotheses

ICANN Domain Metrics - Module 1

Data and statistics for **gTLDs** and **registrars**

Searchable for gTLDs, registrars and domains [get **Metadata** and statistics]

Shareable **domain-level** data

Interactive visualisations and comparisons [allows to filter on dates and add gTLDs to compare]

Abuse map - abuse hosts geolocation [[Maxmind data](#)]

Domain Popularity Ranking [[Tranco list](#)]

MoSAPI:

Access to lists of reported domains (contracted parties)

A separate API for the rest of the ICANN community

ICANN Domain Metrica -

Domain Metrica is not “finished”

It is planned to evolve through its existence

Reflect feedback, new use cases, *etc.*

Build on what we have

Yearly evaluation of the inputs lists we use [using our RBL evaluation methodology **OCTO037**]

Want to know more?

Metrica homepage:

<https://www.icann.org/octo-ssr/metrica-en>

DASC webinar on ICANN Domain Metrica (4 December 2024):

<https://community.icann.org/display/ccnsowkspc/ccNSO+Webinars>

ICANN Domain Metrics - Use Case I

What do we know about the domain “flagylone24.top”?

Search in the UI:

Background
Current active reports

ICANN Domain Metrics

[Sign in](#) 

Search

Fields marked with * are required

Select Domain, Top-level Domain (gTLD), or Registrar *

Domain

▼

flagylone24.top

[Clear](#)

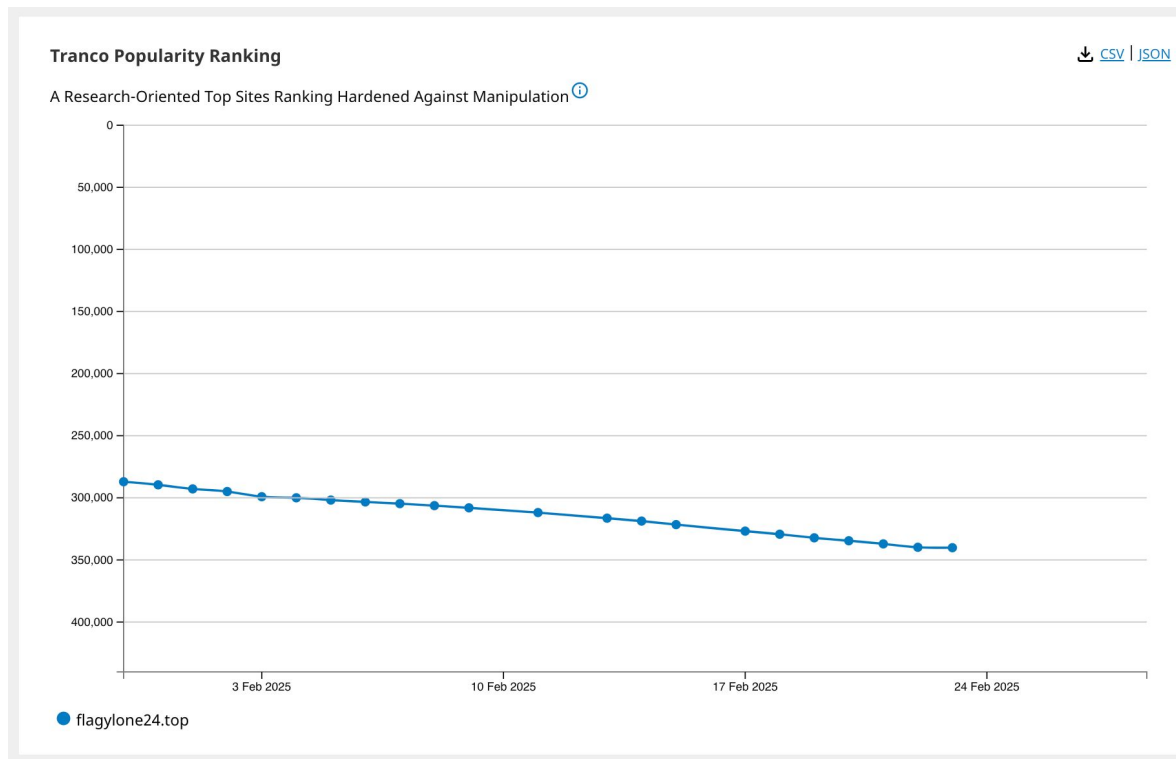
Search

flagylone24.top

Registrar	NameCheap, Inc.	IP Addresses	104.21.44.198
Created Date	11 Jul 2024	(28 Feb 2025)	172.67.203.104
Expiration Date	11 Jul 2025		2606:4700:3031:0:0:ac43:cb68
			2606:4700:3033:0:0:6815:2cc6
NS Records	beau.ns.cloudflare.com. itzel.ns.cloudflare.com.	Signed?	false

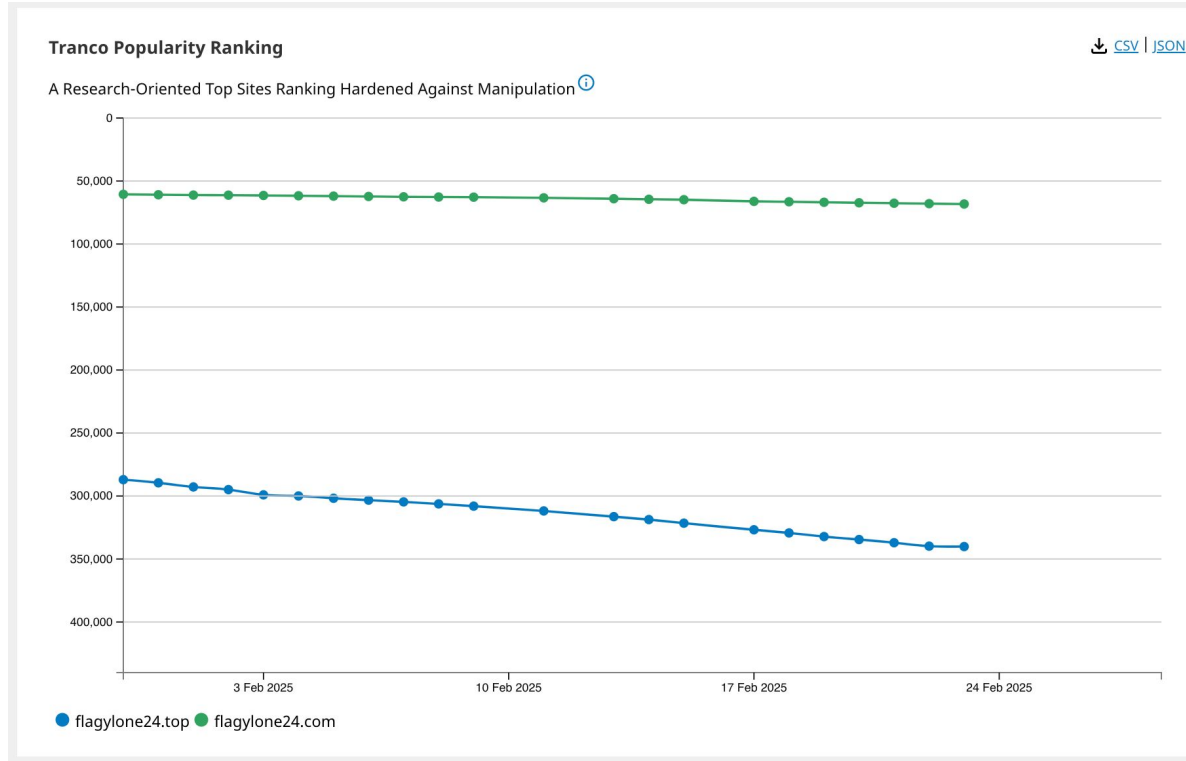
ICANN Domain Metrics - Use Case I

You can also see the popularity:



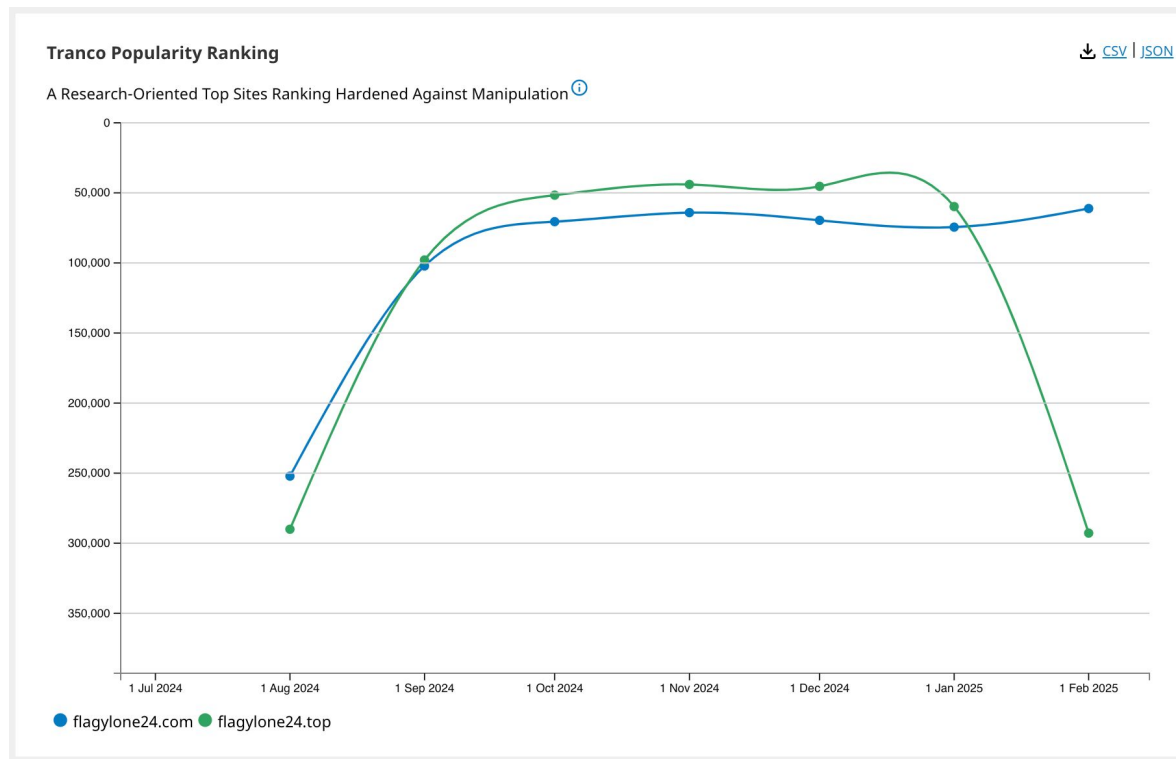
ICANN Domain Metrica - Use Case I

Add a related domain for comparison (“com” version)



ICANN Domain Metrics - Use Case I

Go back to created date for domains



ICANN Domain Metrica - Use Case I

Switch to the API:

Can see reports going back in time, along with the *daily* TRANCO ranking.

Basic search

```
https://domainmetrica.icann.org/v1/domainmetrica/domain?domain=<DOMAIN>&startDate=<STARTDATE>&endDate=<ENDDATE>
```

where:

DOMAIN = fully qualified domain name (FQDN) to be searched on

STARTDATE = Date to search from, format 'YYYY-MM-DD' (default 24 hours ago)

ENDDATE = Date to search to (default now)

ICANN Domain Metrics - Use Case I

```
{
  "flagylone24.top": {
    "reported_abuse": [
      {
        "date": "2024-08-27",
        "reported_abuse_type": "Phishing",
        "url_count": 1,
        "rbl_name": "surbl"
      },
      {
        "date": "2024-08-28",
        "reported_abuse_type": "Phishing",
        "url_count": 1,
        "rbl_name": "surbl"
      }
    ],
    "tranco_ranking": [
      {
        "date": "2024-08-25",
        "rank": 107777
      },
      {
        "date": "2024-08-26",
        "rank": 106373
      }
    ]
  }
}
```

```
{
  "date": "2024-08-27",
  "rank": 105114
},
{
  "date": "2024-08-28",
  "rank": 103826
},
{
  "date": "2024-08-29",
  "rank": 102352
},
{
  "date": "2024-08-30",
  "rank": 100911
},
{
  "date": "2024-08-31",
  "rank": 99389
}
]
```

ICANN Domain Metrics - Use Case I

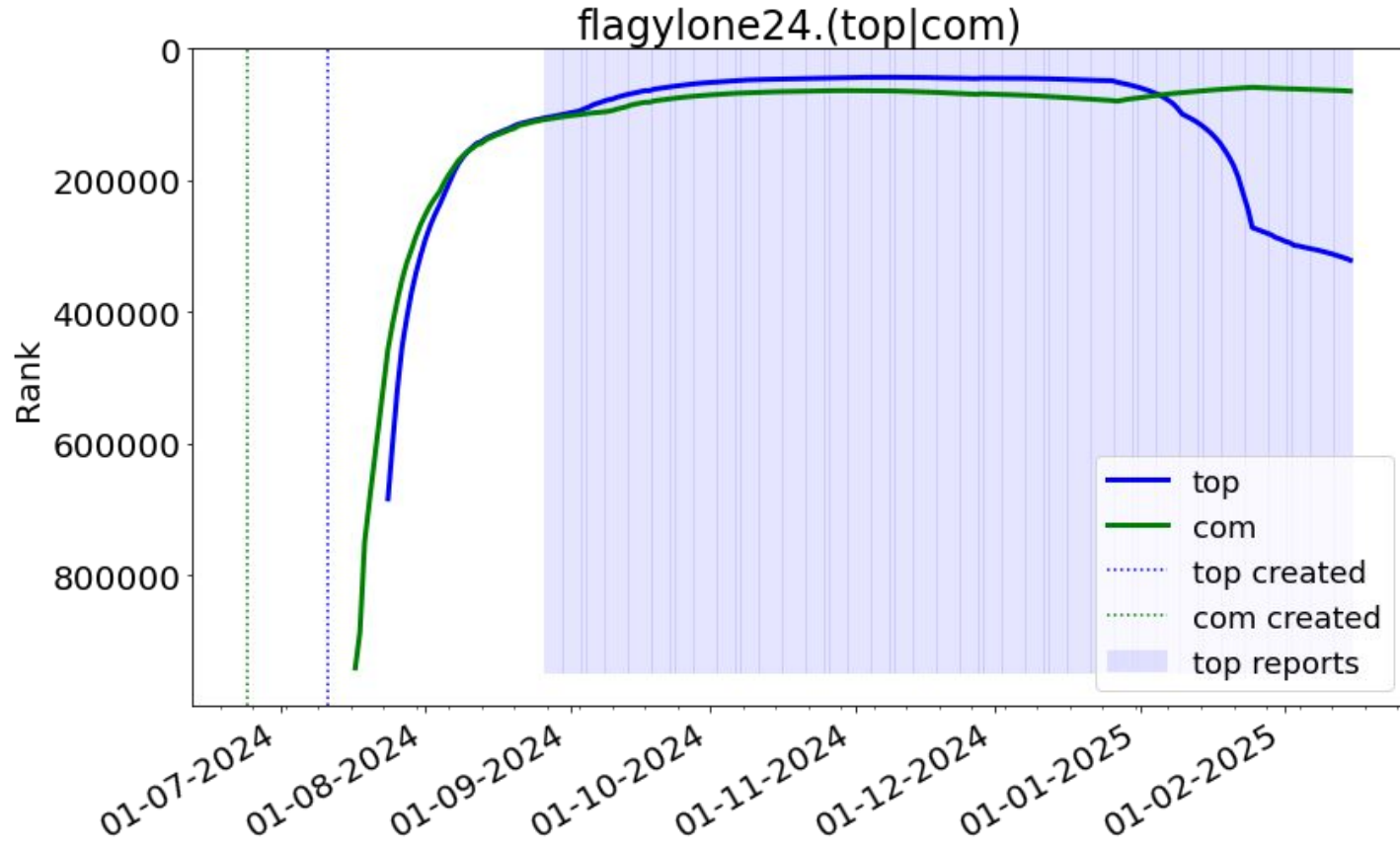
We can load this data into python

E.g. with JSON data in a variable “data_top” create panda dataframes

```
df_reports_top = pd.DataFrame(data_top['flagylone24.top']['reported_abuse'])
df_reports_top['date'] = df_reports_top['date'].astype("datetime64")

df_tranco_top = pd.DataFrame(data_top['flagylone24.top']['tranco_ranking'])
df_tranco_top['date'] = df_tranco_top['date'].astype("datetime64")
```

ICANN Domain Metrics - Use Case I



ICANN Domain Metrics - Use Case II

Search

Fields marked with * are required

Select Domain, Top-level Domain (gTLD), or Registrar *

TLD



com

[Clear](#)

Search

com

Last Updated 02 Mar 2025

Registry <http://www.verisigninc.com>

Type generic

Delegation Date no data available

Zone Size 154,419,109

Size Change (since 01 Mar 2025) -13,069

Number of Signed Delegations 6,355,830

Current Reported Abuse

Last updated 02 Mar 2025

Summary of the latest reported abuse updated daily

Reported Abuse Type	Unique Domain Counts	Percentage of Total Zone Size
Phishing	205,975	0.133%
Malware	2,194	0.001%
Botnet C&c	583	0.000%

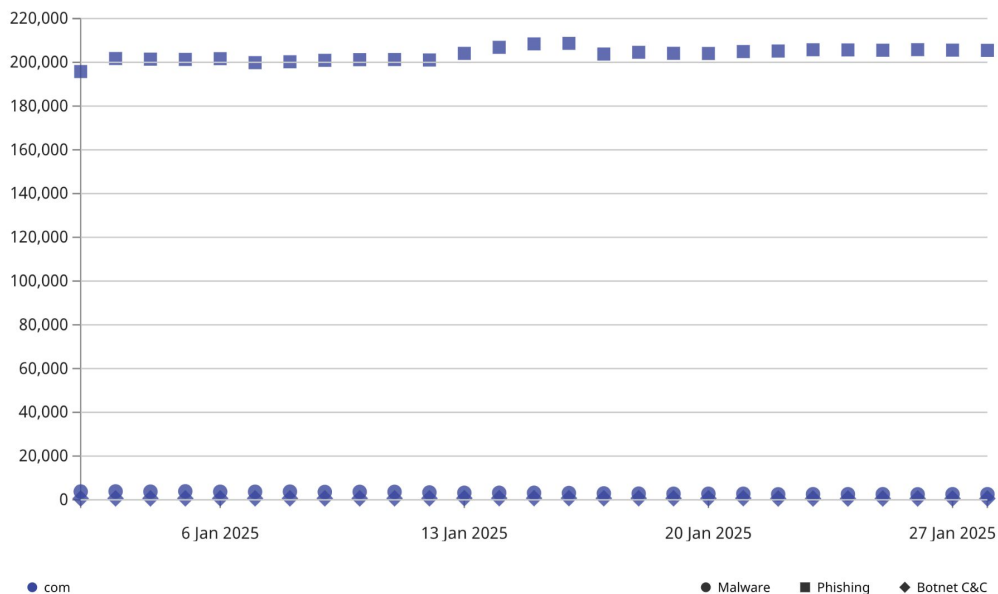
ICANN Domain Metrics - Use Case II

Reported Abuse Counts

↓ [CSV](#) | [JSON](#)

Reported abuse grouped by abuse type

Weekly, monthly, and quarterly views are aggregate views of reported abuse



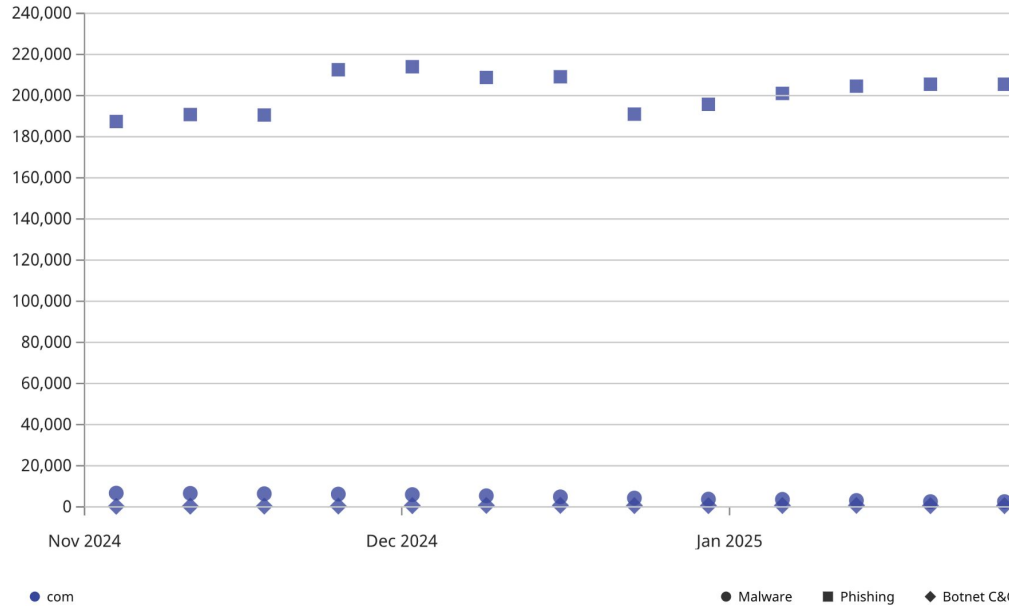
ICANN Domain Metrics - Use Case II

Reported Abuse Counts

[CSV](#) | [JSON](#)

Reported abuse grouped by abuse type

Weekly, monthly, and quarterly views are aggregate views of reported abuse



ICANN Domain Metrics - Use Case II

Switch to the API:

Can see *daily* statistics going back in time, along with zone sizes.

End point with gTLD specified

```
https://domainmetrics.icann.org/v1/domainmetrics/tld?tld=<TLD>&startDate=<STARTDATE>&endDate=<END  
DATE>
```

where:

TLD = gTLD to be searched on

STARTDATE = Date to search from, format 'YYYY-MM-DD' (default 24 hours ago)

ENDDATE = Date to search to (default now)

ICANN Domain Metrics - Use Case II

```
{
  "com": [
    {
      "date": "2024-11-01",
      "zone_size": 154317557,
      "reported_abuse_total": 189414,
      "phishing": 186661,
      "malware": 6846,
      "botnet": 296
    },
    {
      "date": "2024-11-02",
      "zone_size": 154308688,
      "reported_abuse_total": 189568,
      "phishing": 186809,
      "malware": 6851,
      "botnet": 291
    },
    {
      "date": "2024-11-03",
      "zone_size": 154275758,
      "reported_abuse_total": 189517,
      "phishing": 186760,
      "malware": 6852,
      "botnet": 291
    }
  ],
}
```

```
{
  {
    "date": "2025-01-29",
    "zone_size": 154038975,
    "reported_abuse_total": 207954,
    "phishing": 205675,
    "malware": 2562,
    "botnet": 608
  },
  {
    "date": "2025-01-30",
    "zone_size": 154055996,
    "reported_abuse_total": 208104,
    "phishing": 205828,
    "malware": 2499,
    "botnet": 618
  },
  {
    "date": "2025-01-31",
    "zone_size": 154061864,
    "reported_abuse_total": 208140,
    "phishing": 205884,
    "malware": 2477,
    "botnet": 613
  }
]
}
```

ICANN Domain Metrics - Use Case II

Can also drop the TLD in the API call:

see *total* aggregate daily statistics, along with aggregate zone sizes.

End point no TLD

This will return aggregate data for all gTLDs

```
https://domainmetrics.icann.org/v1/domainmetrics/tld?startDate=<STARTDATE>&endDate=<ENDDATE>
```

(data returned in same format)

ICANN Domain Metrics - Use Case II

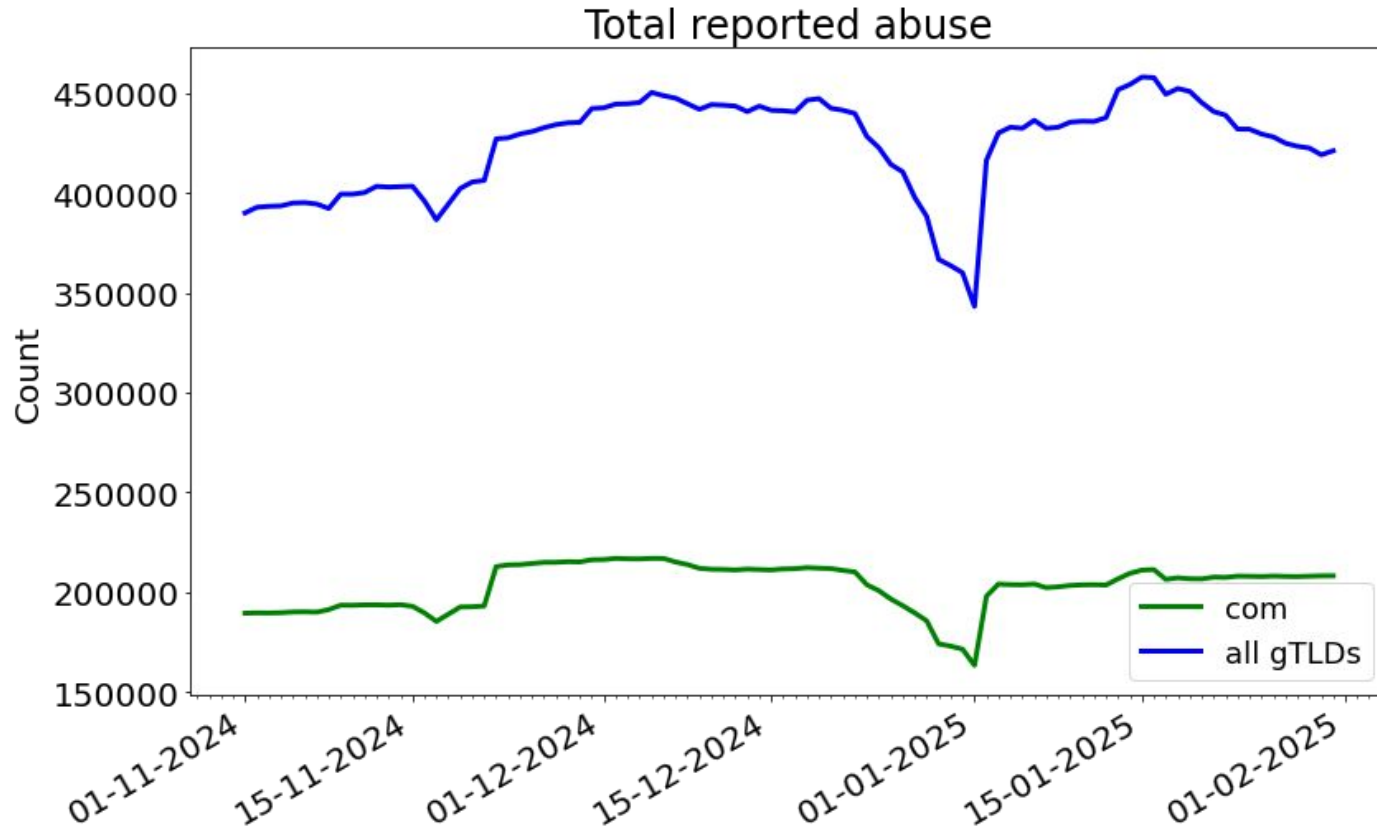
Again, we can load this data into python

E.g. with JSON data in variables “data_com” and “data_all” create panda dataframes

```
df_stats_com = pd.DataFrame(data_com['com'])
df_stats_com['date'] = df_stats_com['date'].astype("datetime64")

df_stats_all = pd.DataFrame(data_all['all_tlds'])
df_stats_all['date'] = df_stats_all['date'].astype("datetime64")
```

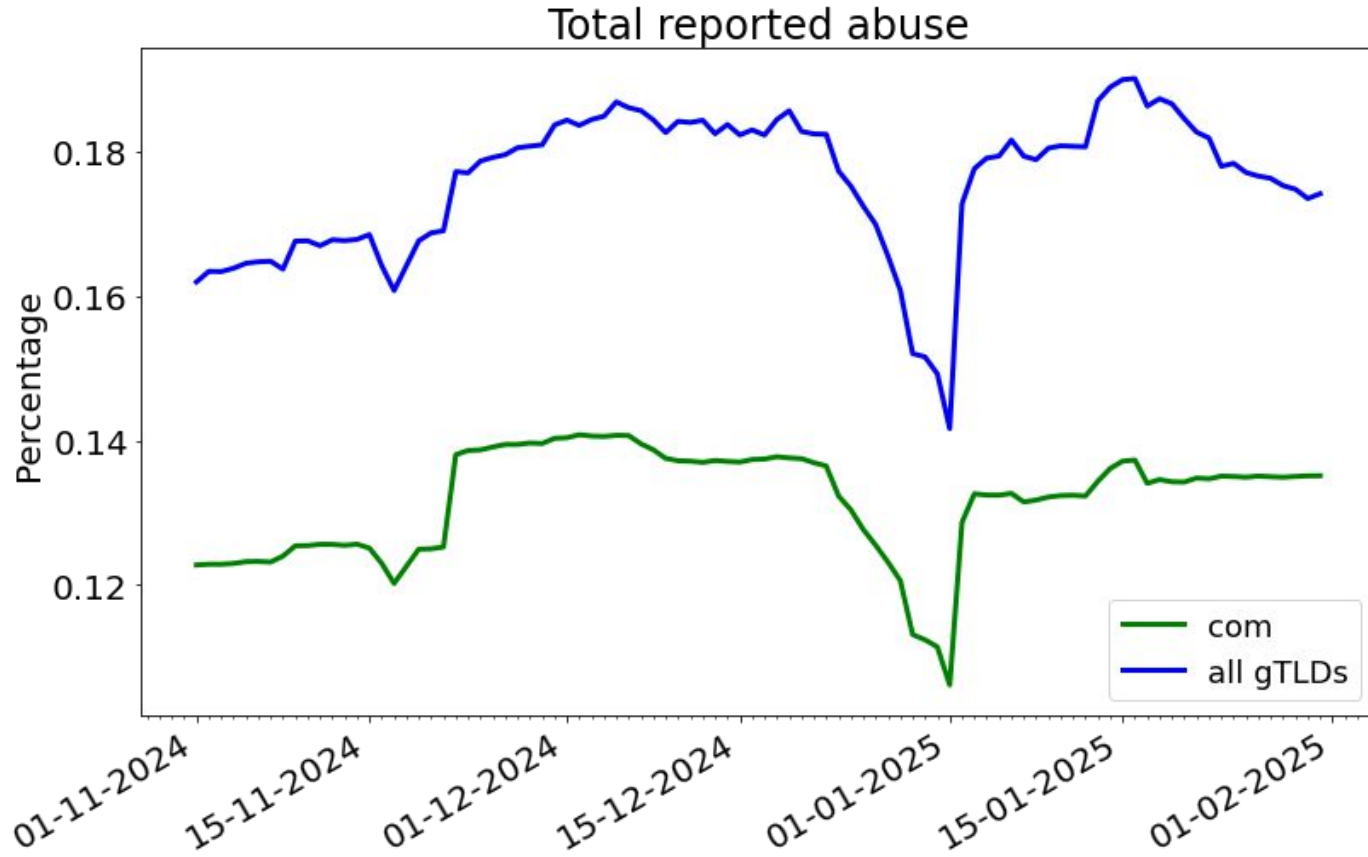
ICANN Domain Metrics - Use Case II



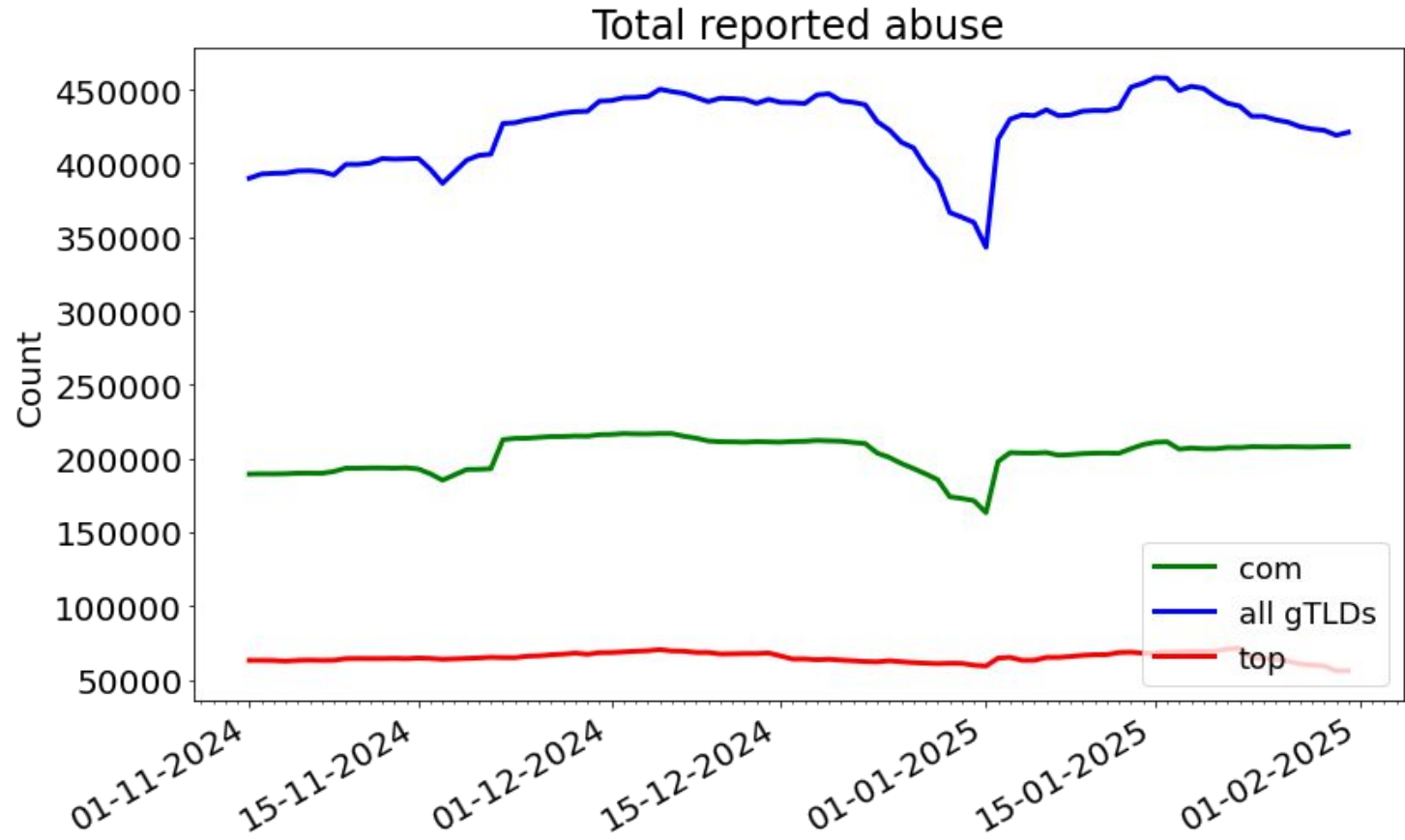
ICANN Domain Metrics - Use Case II

```
df_stats_com['percent_total'] = df_stats_com['reported_abuse_total']/df_stats_com['zone_size'] * 100  
df_stats_all['percent_total'] = df_stats_all['reported_abuse_total']/df_stats_all['zone_size'] * 100
```

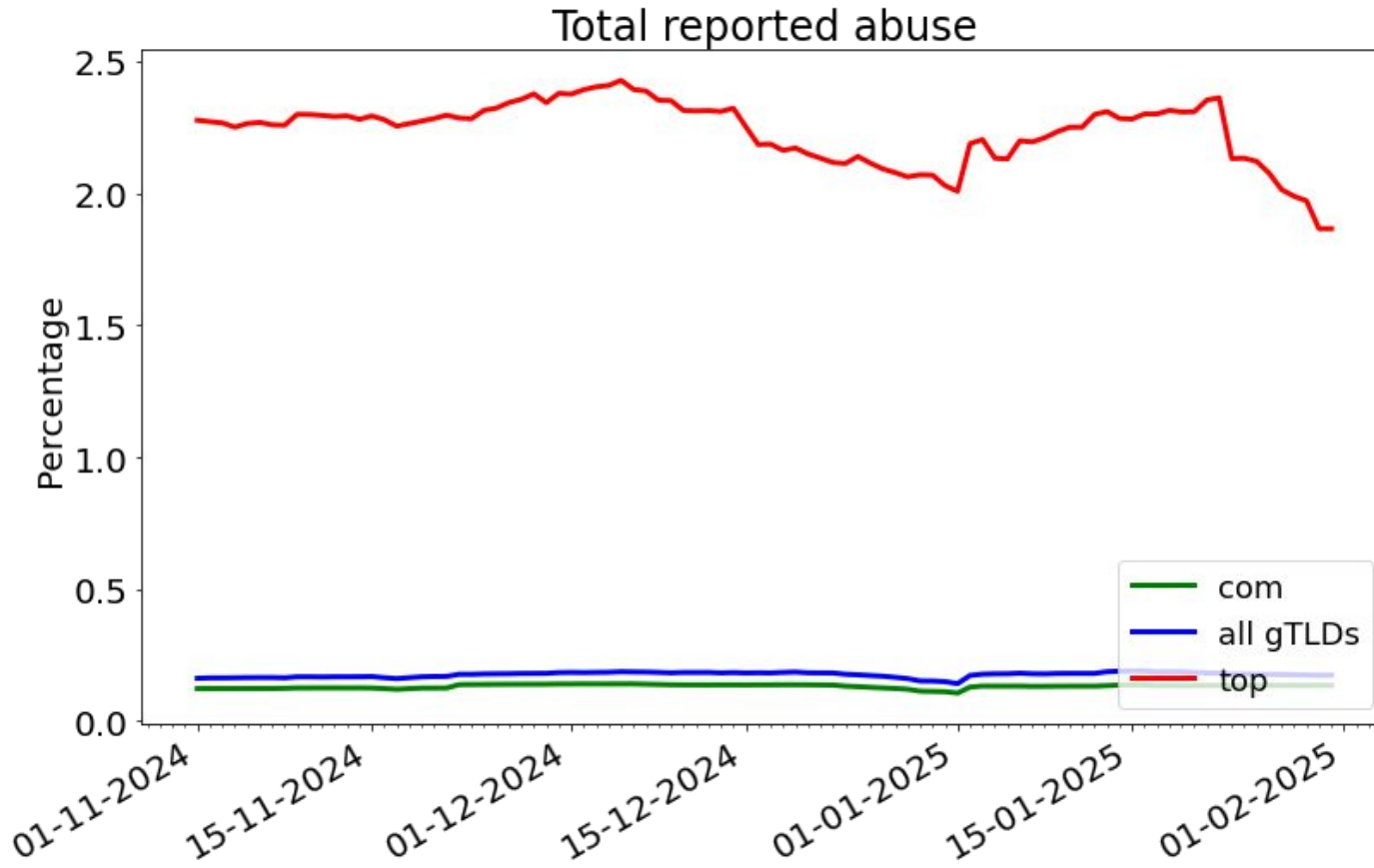
ICANN Domain Metrics - Use Case II



ICANN Domain Metrics - Use Case II



ICANN Domain Metrics - Use Case II





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