escape
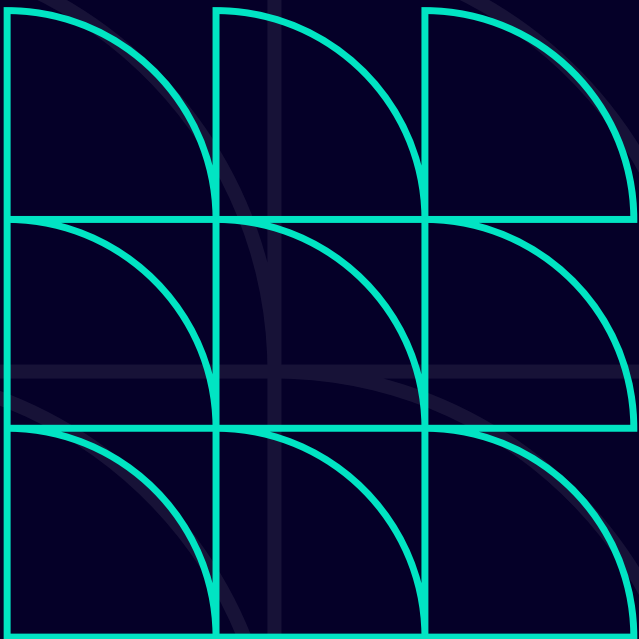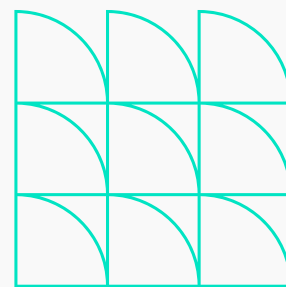
The State of Public APIs 2023

An analysis of the design, performance, security and reliability of 6,000+ public APIs

The State of Public APIs 2023

More and more companies are extending their software offering with public APIs. They enable external developers to leverage their services, open new usage streams, and empower fruitful partnerships between organizations.

APIs have become a fully parallel world wide web, where interactions between companies are entirely managed by robots, without humans in the loop. Thus, their performance, reliability, security, and developer experience are becoming increasingly important.

Yet, while website quality ranking has been a mostly solved problem since the inception of Google's PageRank algorithm, we found no equivalent ranking for APIs.

How do Public APIs compare to each other regarding quantitative metrics of reliability, performance, security, and developer-friendly design? Using Escape's in-house technology, we crawled 6,000+ APIs for you and compiled the results in this one-of-a-kind report.

We hope you will enjoy browsing the data and feel free to submit your own API if you want us to index it in the leaderboard.

The current data was updated on march 3, 2023.

General Information
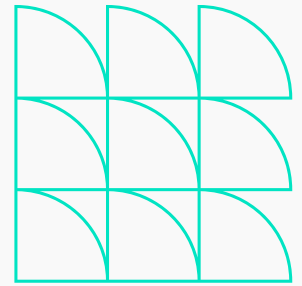
What did we scan?

Escape's in-house API scanner crawled 6478 public OpenAPI-documented APIs online. It took us 83,245 requests to gather the data.
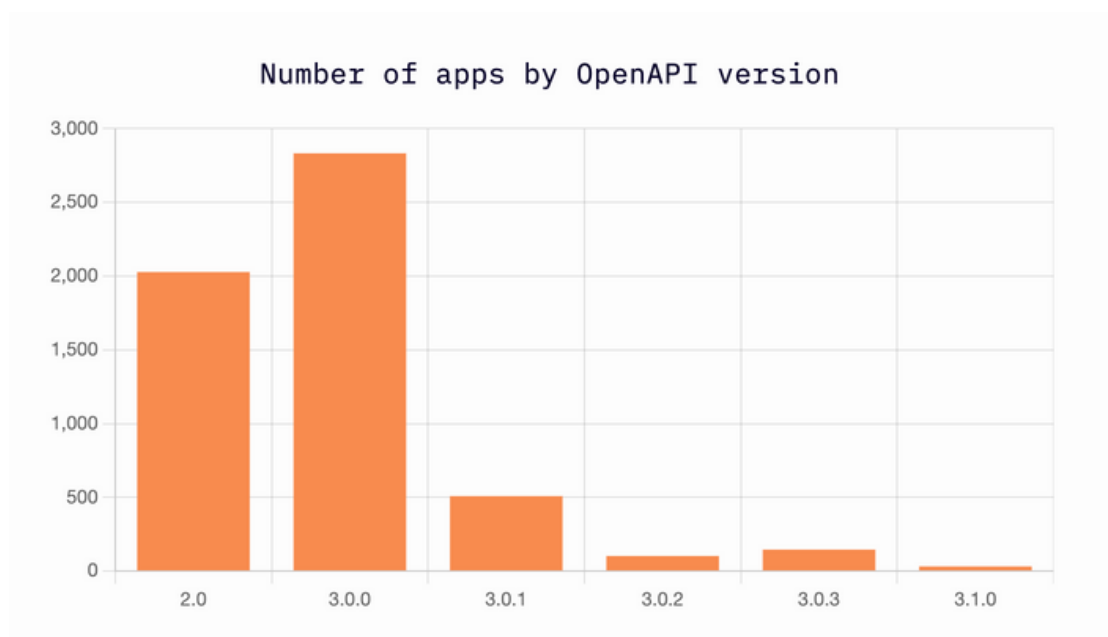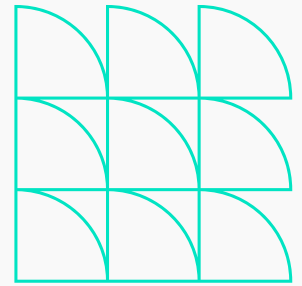
6,478
Total scanned endpoints

83,245
Total sent requests

We gathered both OpenAPI 2.0 and OpenAPI 3.0+ specs. We observed that most public APIs rely on OpenAPI 3.0.0 Documentation. OpenAPI 3.0.1 also has some ground.

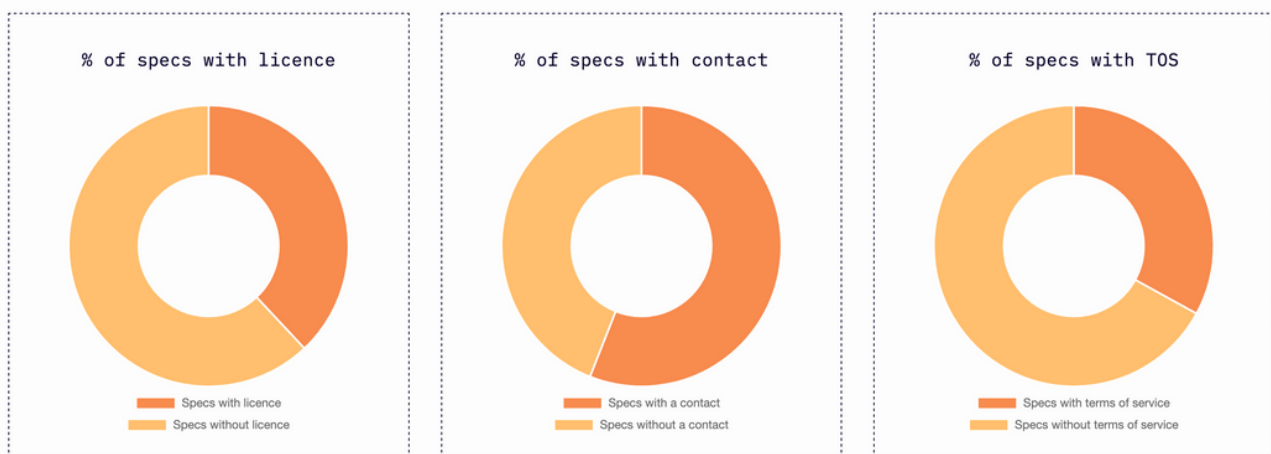### Number of apps by OpenAPI version
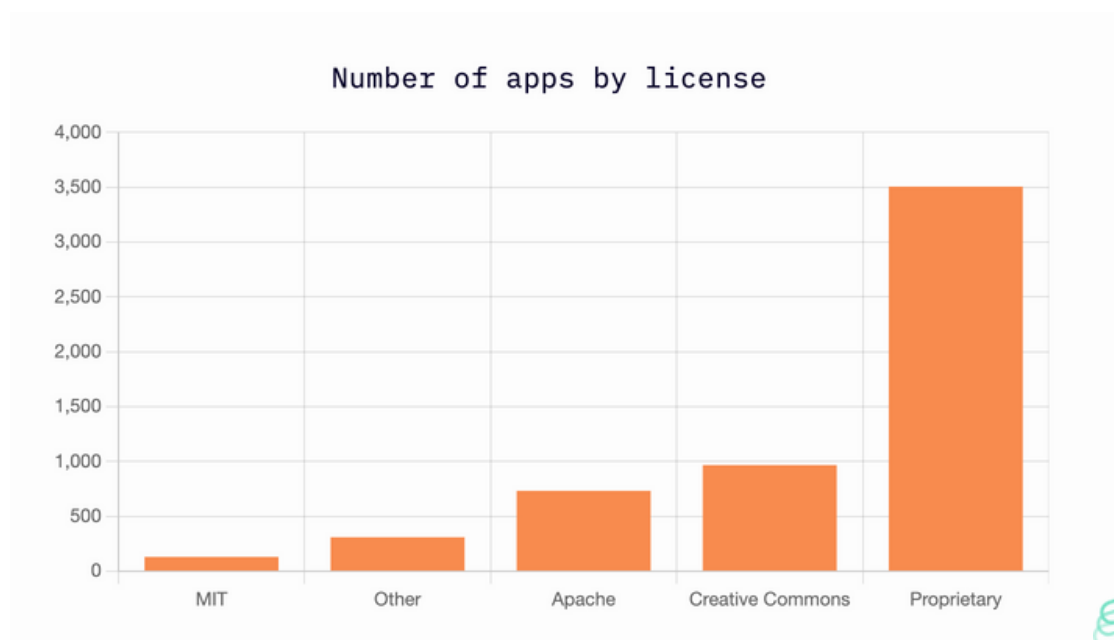
General Information

What metadata were included in the documentations?

Between a third and a half of documentations contained metadata such as license, contact info, and terms of services.

Creative Commons 3.0 and Apache 2.0 are the most common licenses used for API documentations. MIT is used in only ~4% of Public API documentations.
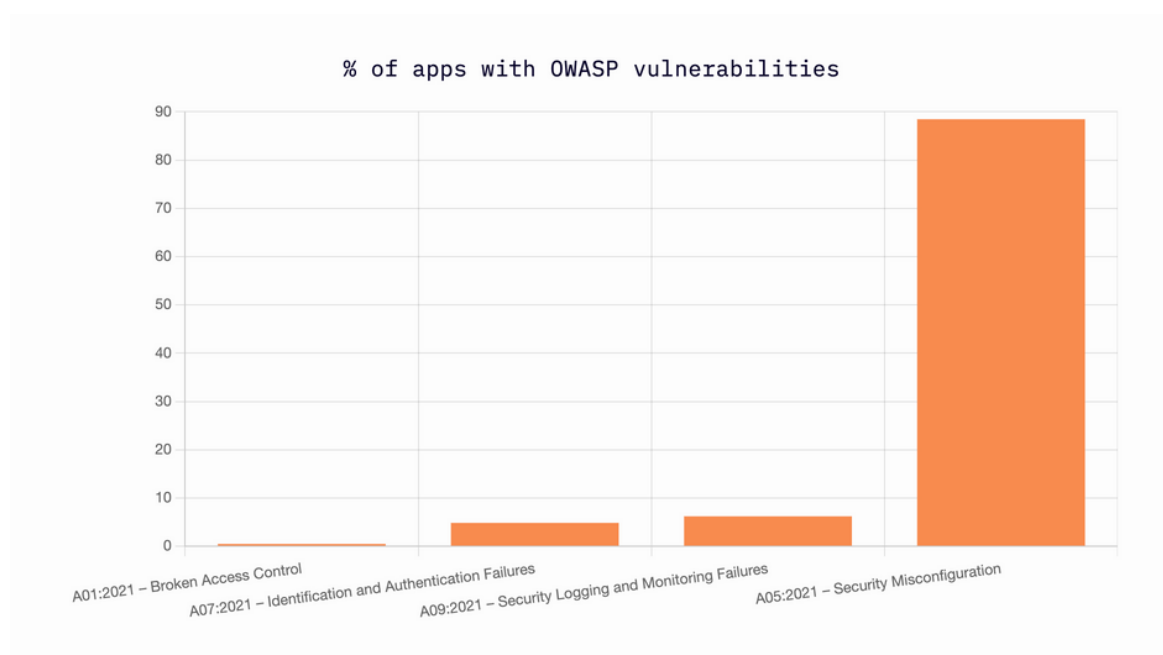
Security

We used our passive scanners to search for OWASP API Top 10 project vulnerabilities in the crawled APIs. An outstanding amount of APIs had minor security misconfiguration, but up to 12 percent of APIs had more serious vulnerabilities, and around half a percent had critical ones.

Considering that we ran only a passive scan, in the wild, and with no authentication provided, we consider that those results raise concerns about how many public APIs are easily exploitable by malicious actors.
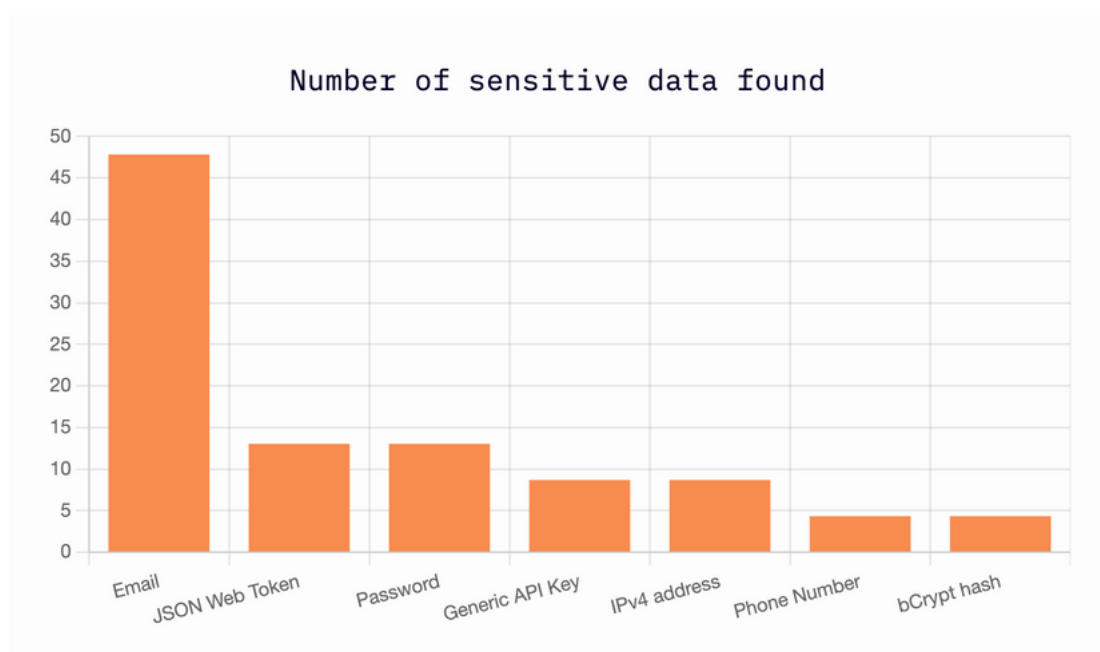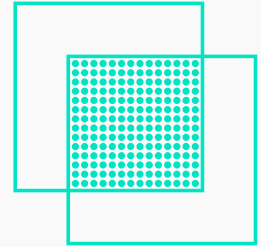

% of apps with OWASP vulnerabilities

Security

What sensitive data was found during the crawl?

During our scan, we detected a concerning amount of sensitive data being open to the wild. Specially, we found several passwords and Json Web Tokens in error messages that were publicly accessible.
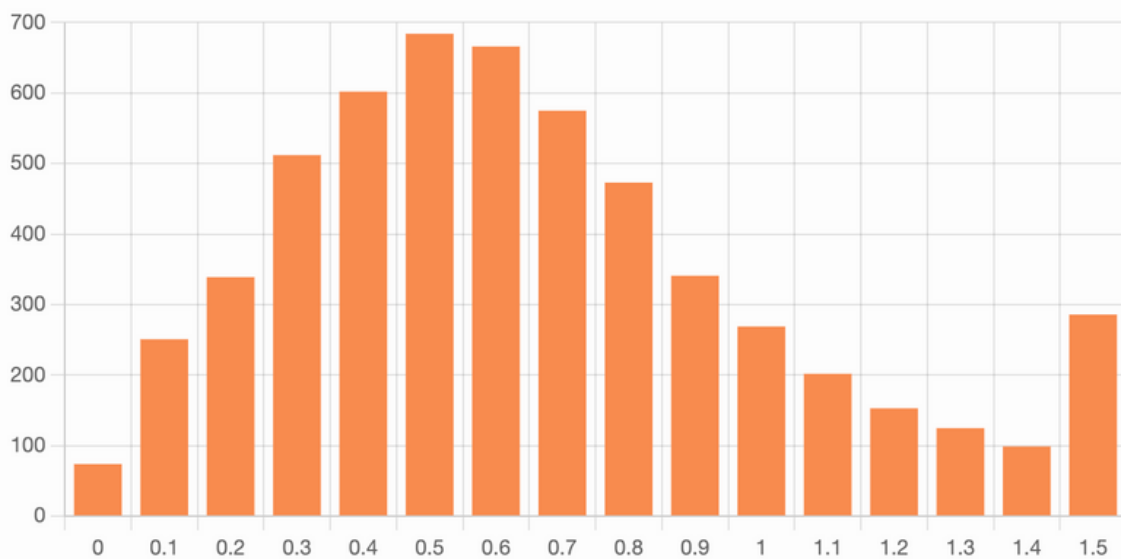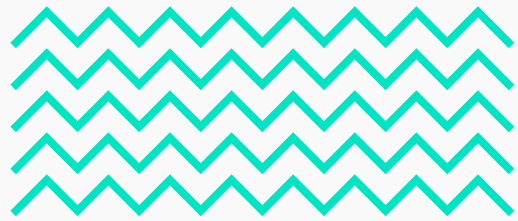

Number of sensitive data found

Performance

Our dataset has a median response time of 500ms. A majority of APIs are in the 400ms-700ms range, still, there is a long tail down to a very slow 1400ms p50.
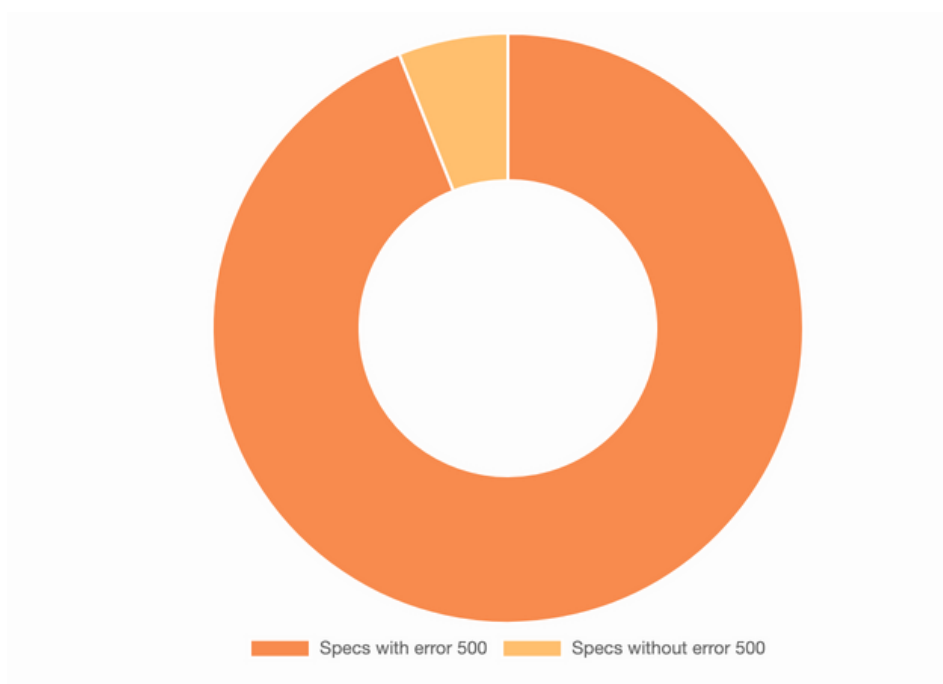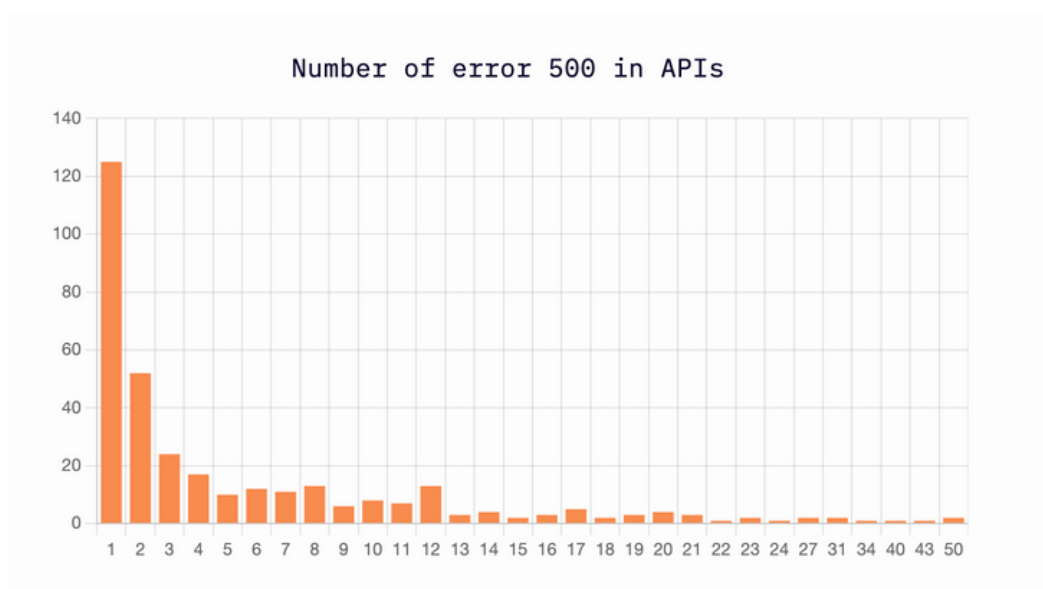

Number of APIs by response time

Reliability

On this part, the results were quite good overall. Our crawl generated straight 500 errors in only 6% of tested APIs.

Specs with error 500 Specs without error 500

However, the APIs that had more than one error tend to be very unreliable.

Number of error 500 in APIs

Design

About 90% of documentations came with a description, which is quite a good score overall.

Specs with a description   Specs without a description
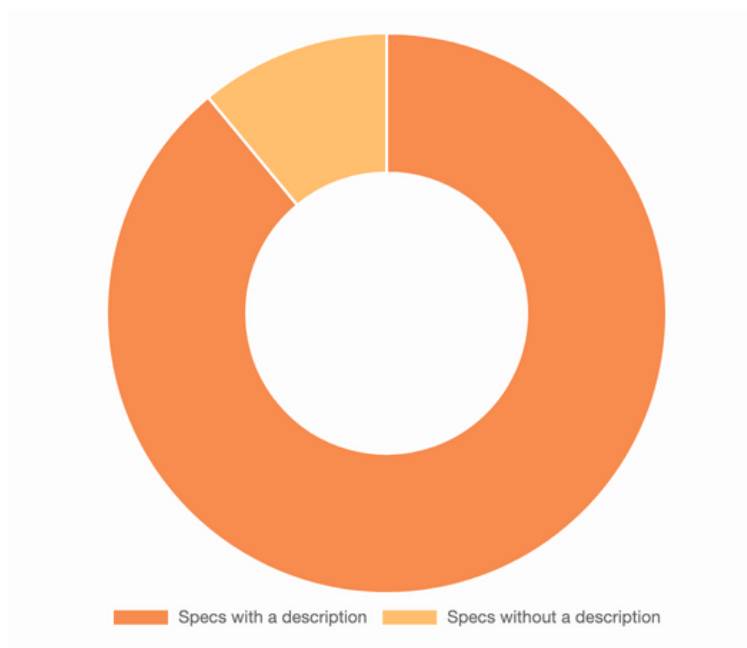
Documentations were surprisingly well commented. On average, 60% of routes had human readable comments in specifications. However, some might have been auto generated by the underlying web framework.


Number of APIs per comment ratio
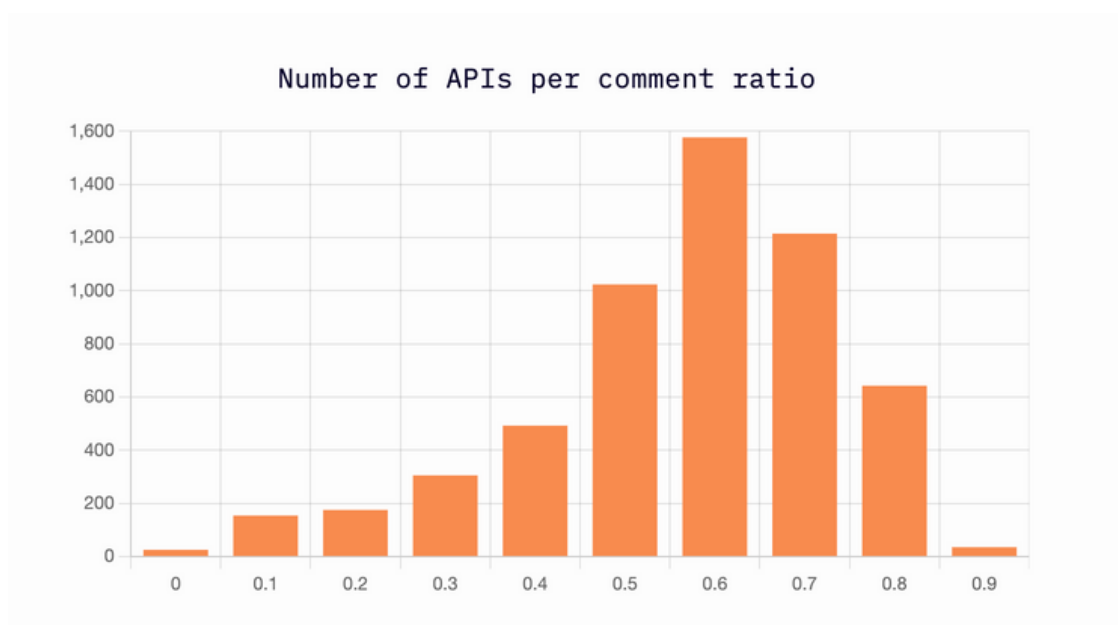
Design

Examples however, are have not gained widespread usage, with 90% of specifications having zero examples, and less than 1% having 90%+ routes covered by examples.

Number of APIs with examples
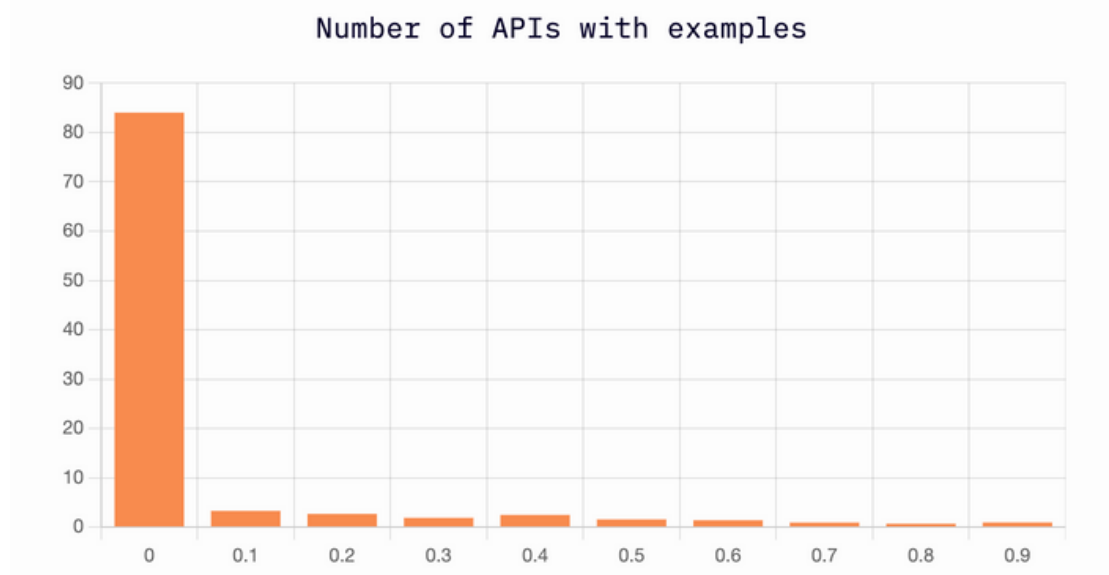
Interestingly, the ratio of duplicated objects in the documentations was quite equally distributed.

Number of APIs per duplicated objects ratio
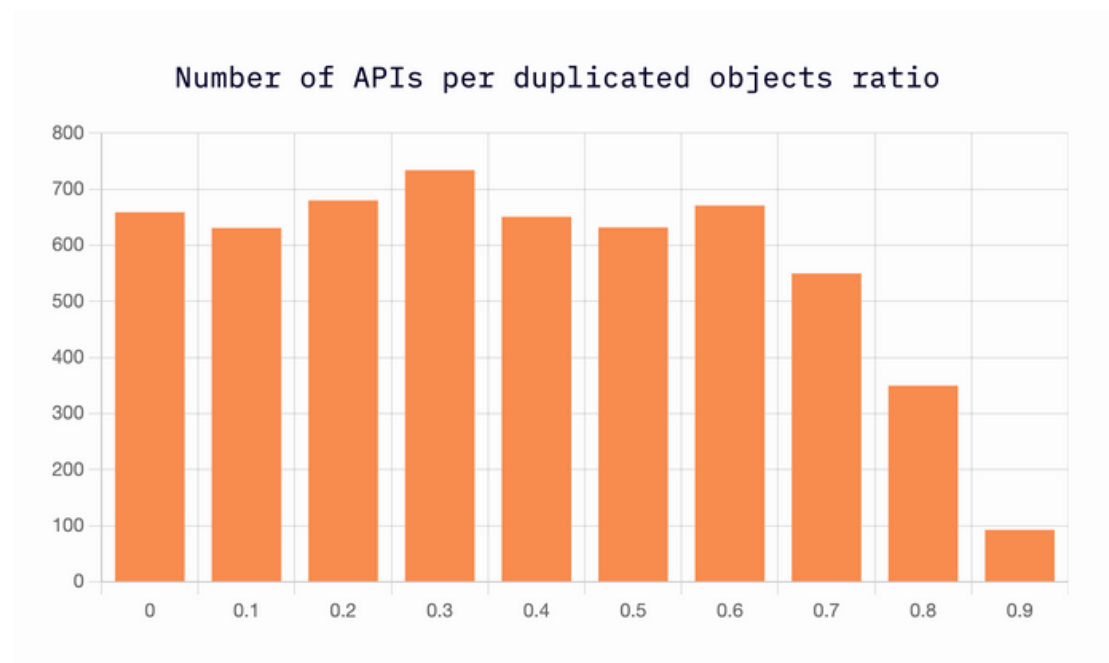
Conclusion

Conclusion

We crawled and analyzed 6000+ public OpenAPI-based APIs in the wild.

Our results show that while public APIs are getting more and more documented with an evident tendency towards caring about developer experience, significant improvement in the industry can still be made regarding documentation quality, response reliability, and security.

We hope to see more studies of this kind to be conducted to observe how those tendencies evolve in the future.

If you want to see how your API compares to our dataset, feel free to request us to index it.

About Escape

Escape is a security company on a journey to help developers create secure and reliable public APIs.

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