The state of **Open Science** in the Nordic countries

Andreas O. Jaunsen

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NORDIC E-INFRASTRUCTURE COLLABORATION

Open Access

Open Access refers to research outputs which are distributed online and free of cost or other barriers, and possibly with the addition of a Creative Commons license to promote reuse. Open access can be applied to all forms of published research output, including peer-reviewed and non peer-reviewed academic journal articles, conference papers, theses, book chapters, and monographs.

Open Data represents the concept of openly sharing research data in raw or processed form. A piece of data is open if anyone is free to use, reuse, and redistribute it – subject only, at most, to the requirement to attribute and/or share-alike.

Source: Wikipedia

Current Funding Cycle for Research Articles
Limited dissemination, economic efficiency and social impact

Government RFPs announced, research grants awarded

Scientific research conducted and papers written

Articles submitted to journals and peer review occurs

Acceptance in journals; authors transfer copyright to publishers

Slow scientific progress, poor return on public investment

Public granted little or no reuse rights beyond access to read articles

Libraries subscribe or public pays per article fee to view on publisher's website

Articles published in mainly closed access journals

Source: Creative Commons

The state of **Open Science** in the Nordic countries

Optimized Funding Cycle for Research Articles

Maximum dissemination, economic efficiency and social impact

Government RFPs announced, open license requirements included, research grants awarded

Scientific research conducted and papers written

Articles submitted to journals and peer review occurs

Acceptance in journals; public access policy ensures deposit in open repository

Accelerated scientific progress, optimal return on public investment

Public granted full reuse rights under open licenses

Public can download articles from open access repository

Articles published in traditional journals under embargo

Source: Creative Commons

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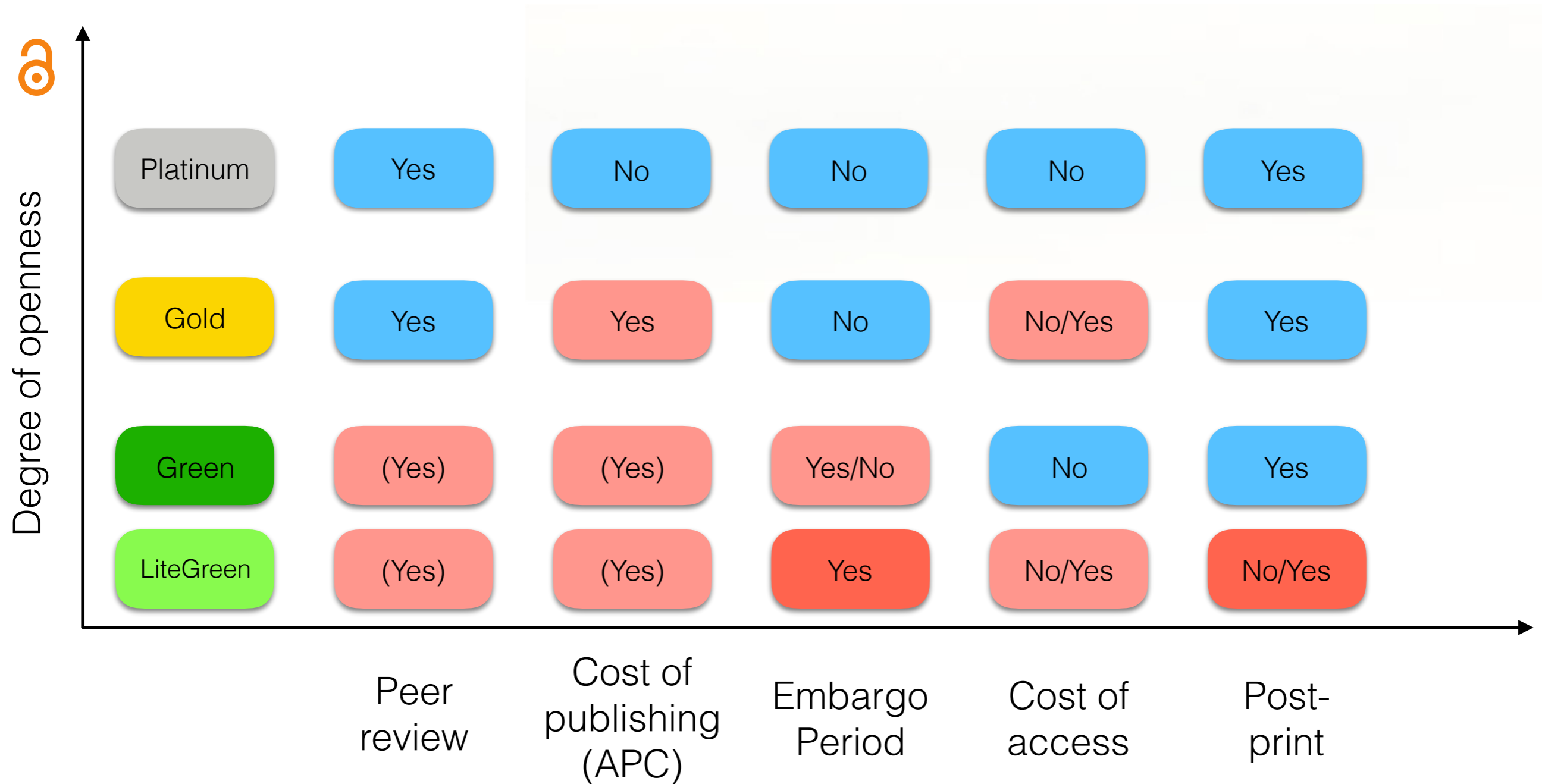| ACCESS	READER RIGHTS	REUSE RIGHTS	COPYRIGHTS	AUTHOR POSTING RIGHTS	AUTOMATIC POSTING	MACHINE READABILITY	ACCESS
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CLOSED ACCESS	Subscription, membership, pay-per-view, or other fees required to read all articles	No reuse rights beyond fair use/dealing or other limitations or exceptions to copyright (All Rights Reserved)	Publisher holds copyright, with no author reuse beyond fair use	Author may not deposit any versions to any repositories or websites at any time	No automatic posting in third-party repositories	No full text articles available for crawling	**CLOSED ACCESS**

HowOpenIsIt?®

Source: SPARC & PLOS

Typical OA publication models

Degree of openness →

	Peer review	Cost of publishing (APC)	Embargo Period	Cost of access	Post-print
Platinum	Yes	No	No	No	Yes
Gold	Yes	Yes	No	No/Yes	Yes
Green	(Yes)	(Yes)	Yes/No	No	Yes
LiteGreen	(Yes)	(Yes)	Yes	No/Yes	No/Yes

National Open Access publication policies
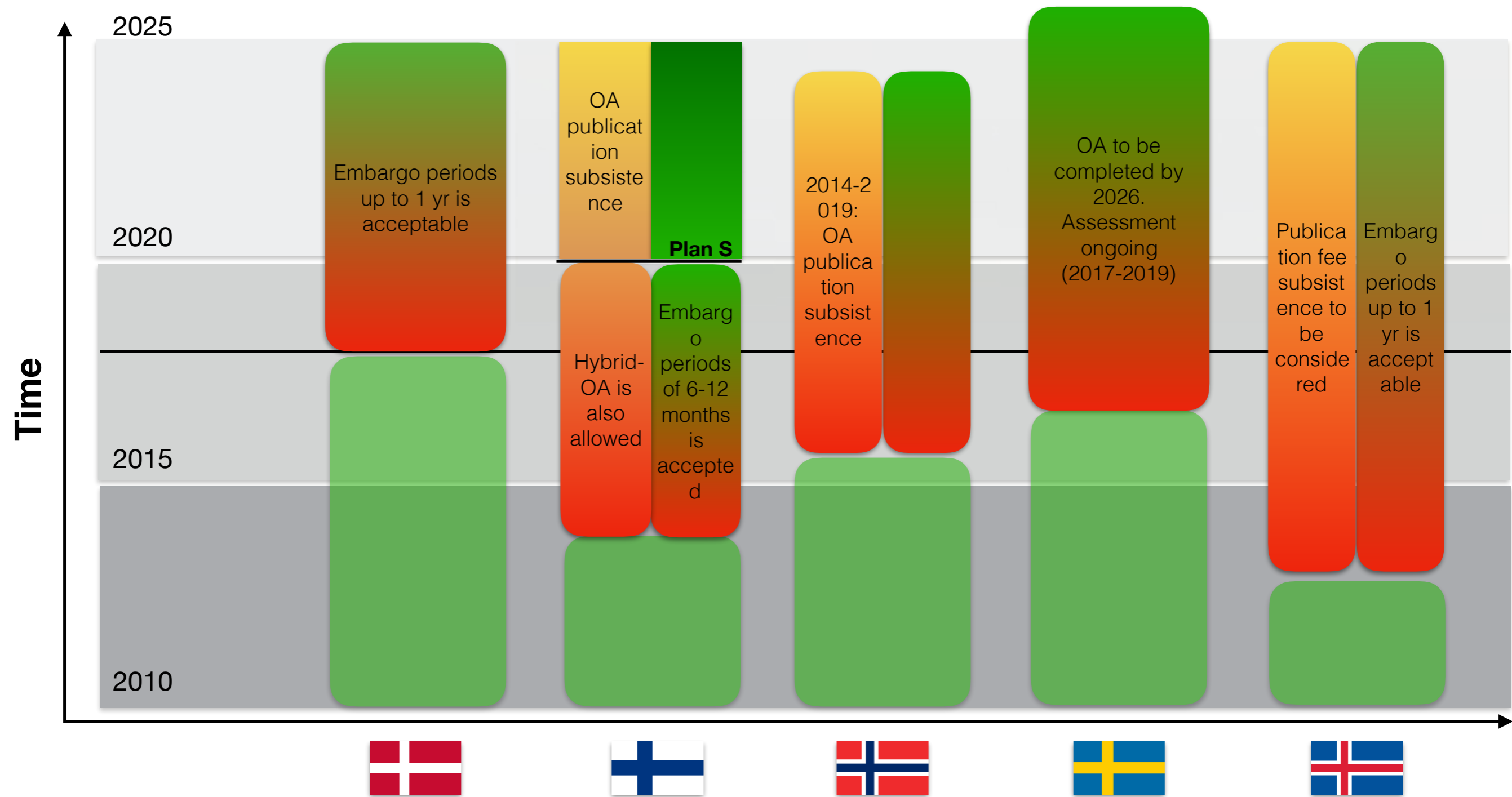
Open Data

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Source: Wikipedia

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The state of **Open Science** in the Nordic countries
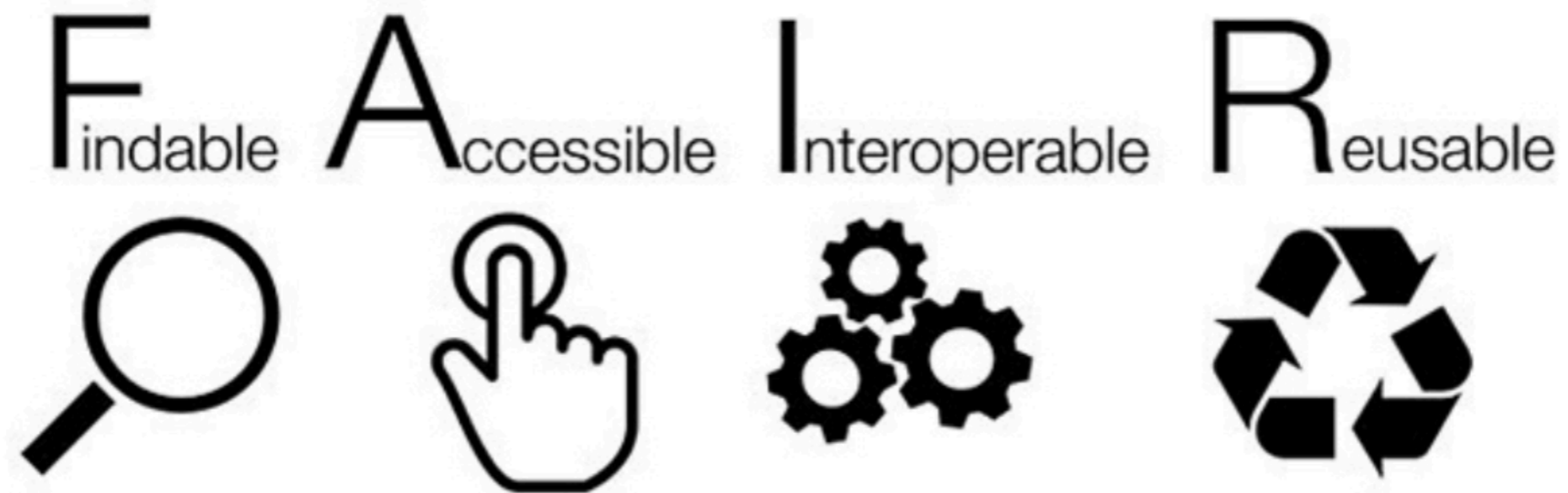
- FAIR is **not** a standard

- FAIR is **not** equal to 'Open' or 'Free'

  - Data are often Open but not FAIR

  - Data could be closed yet perfectly FAIR

- FAIR is **not** equal to RDF, Linked Data, or Semantic Web

- FAIR is **not** assuming that only humans can find and re-use data

- FAIR is **not** for humans only but for machines as well

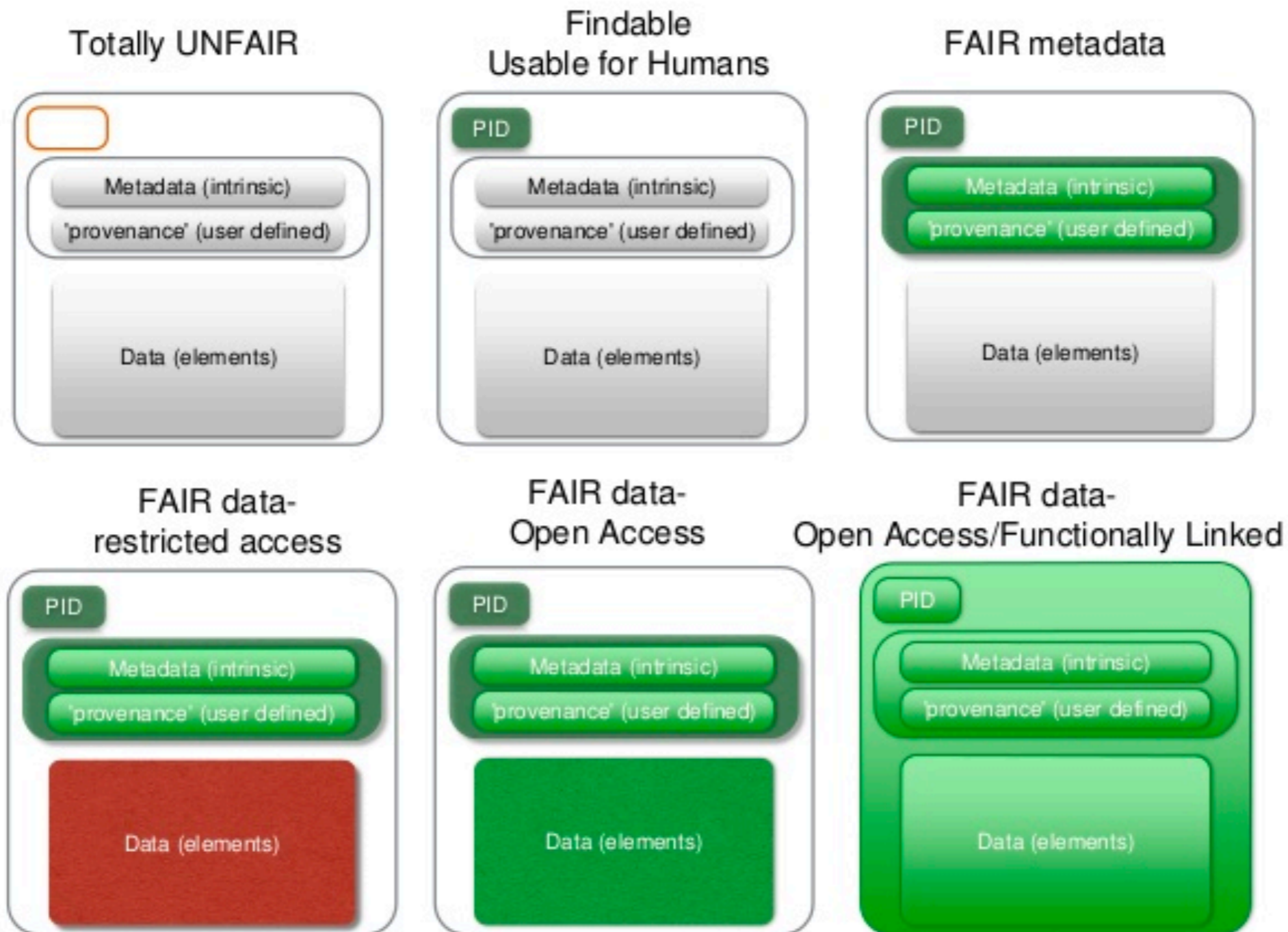- Data that are **not** FAIR are pretty 'Re-useless'.....

Source: GO-FAIR

Data as increasingly FAIR Digital Objects
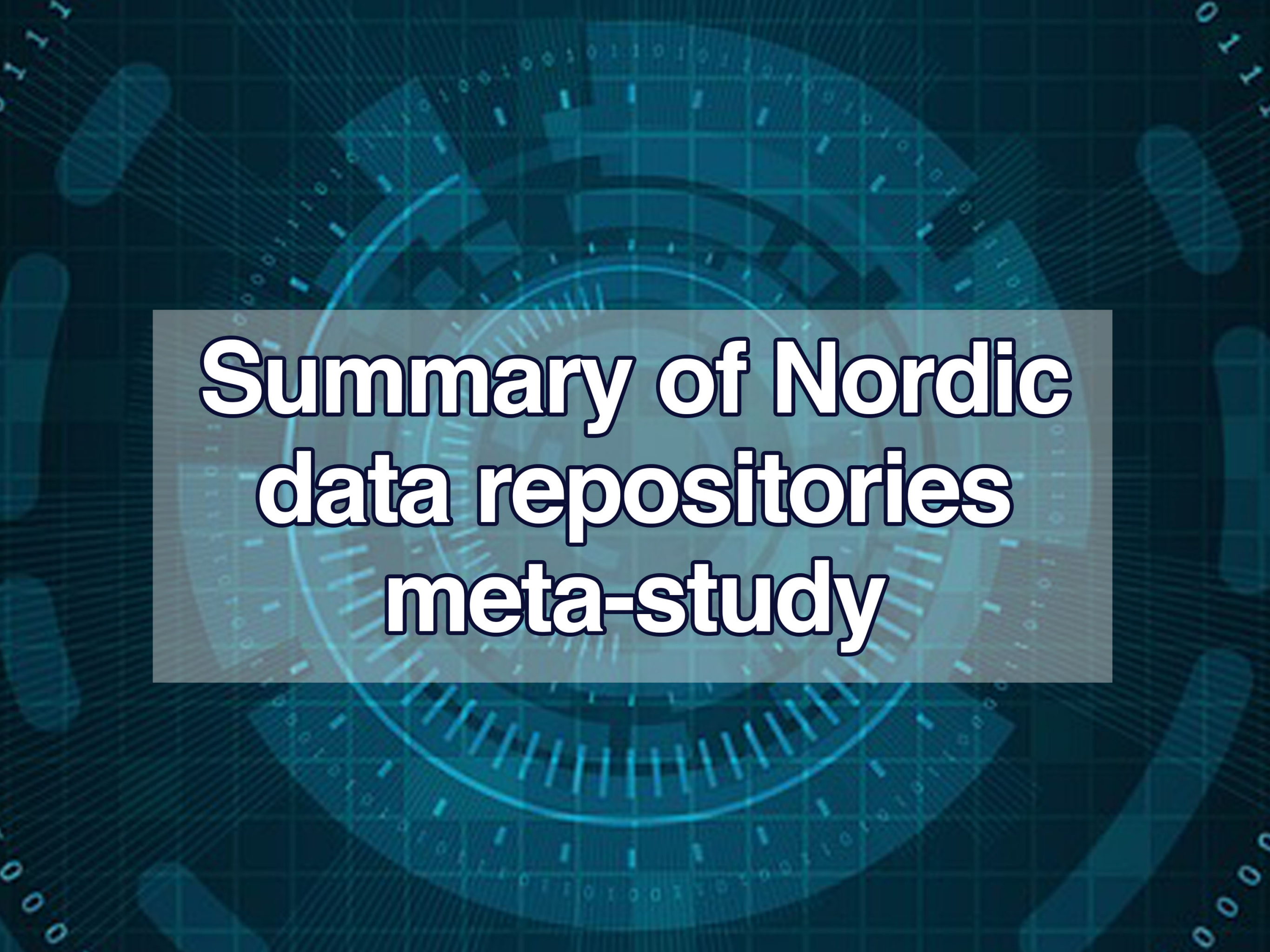
- <u>Data wrangling</u> can consume the majority of a researchers time. Studies[*] indicate this can be as much as 78%. That is time **not** spent doing actual science!

- Time freed-up from data wrangling, by making data more FAIR, will give researchers more time to do science!

- Scientists can focus on addressing science goals and answering the driving questions using FAIR (linked) data

- Ultimately, the FAIRification of research data may lead to a paradigm shift in how modern science is conducted

[*] *Data Science Report 2016, CrowdFlower*

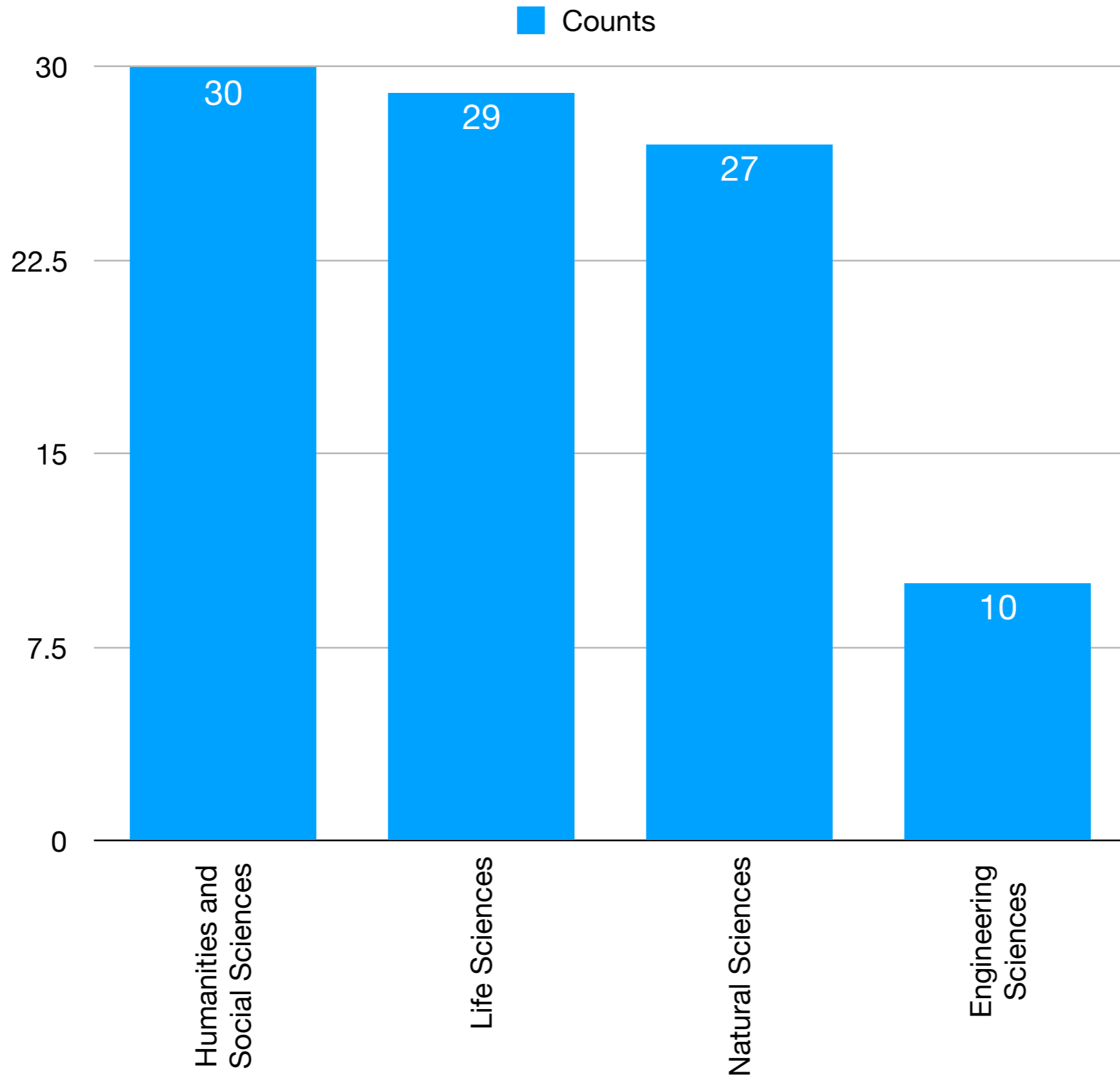# Summary of Nordic data repositories meta-study

re3data.org

- is a global registry of research data repositories that covers research data repositories from different academic disciplines

- it contains more than 2000 repositories for the permanent storage and access of data sets to researchers, funding bodies, publishers and scholarly institutions

- promotes a culture of sharing, increased access and better visibility of research data (e.g. RepositoryFinder)

- The registry went live in autumn 2012 and is funded by the German Research Foundation (DFG)
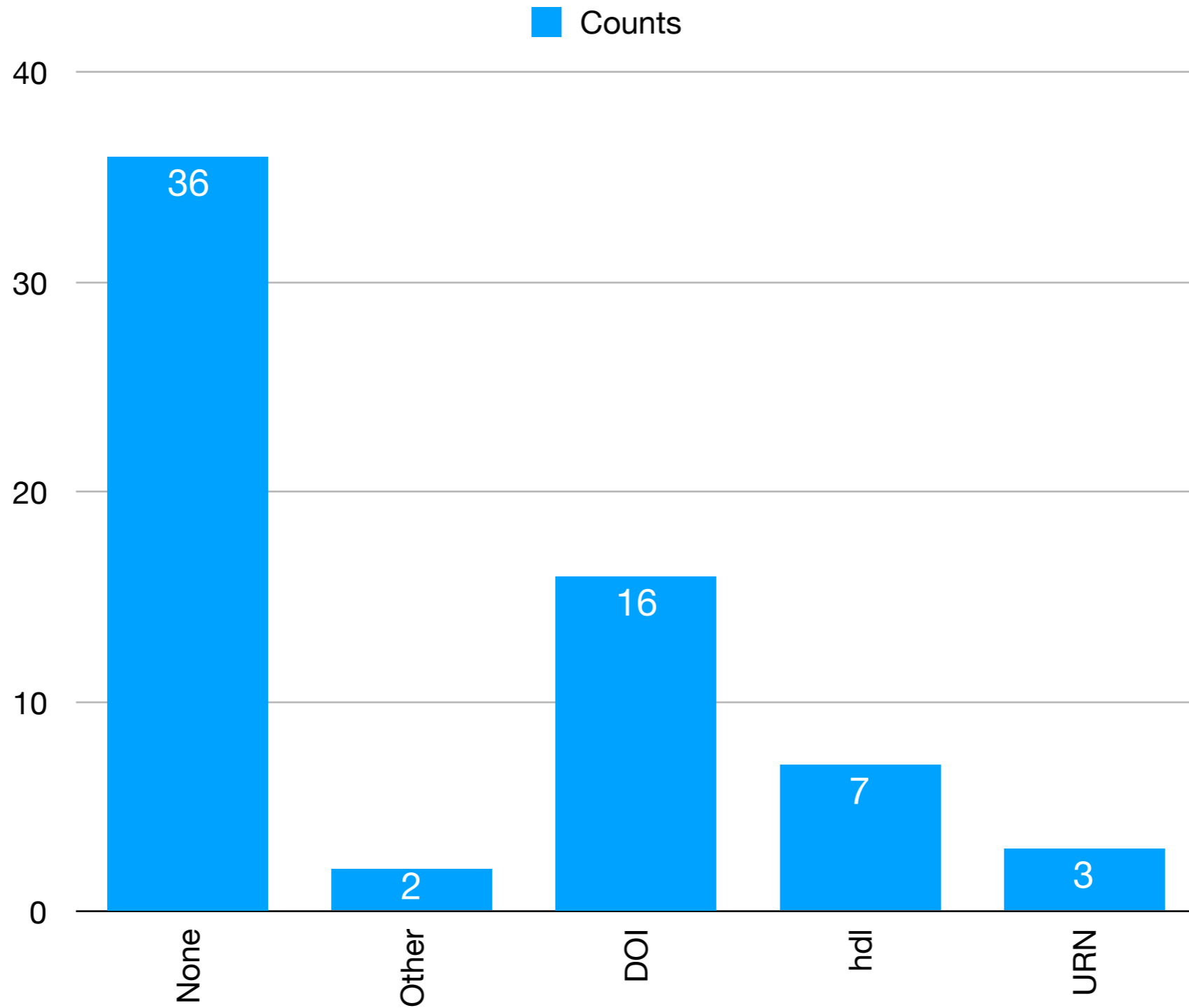
A study of research data repositories in the Nordics

- Extract data from re3data.org

- Select individually science subjects; "Humanities and Social Sciences", "Life Sciences", "Natural Sciences" and "Engineering Sciences"

- Separately select repositories linked to Denmark, Finland, Norway, Sweden and Iceland

- Select only "providerTypes=dataProvider"
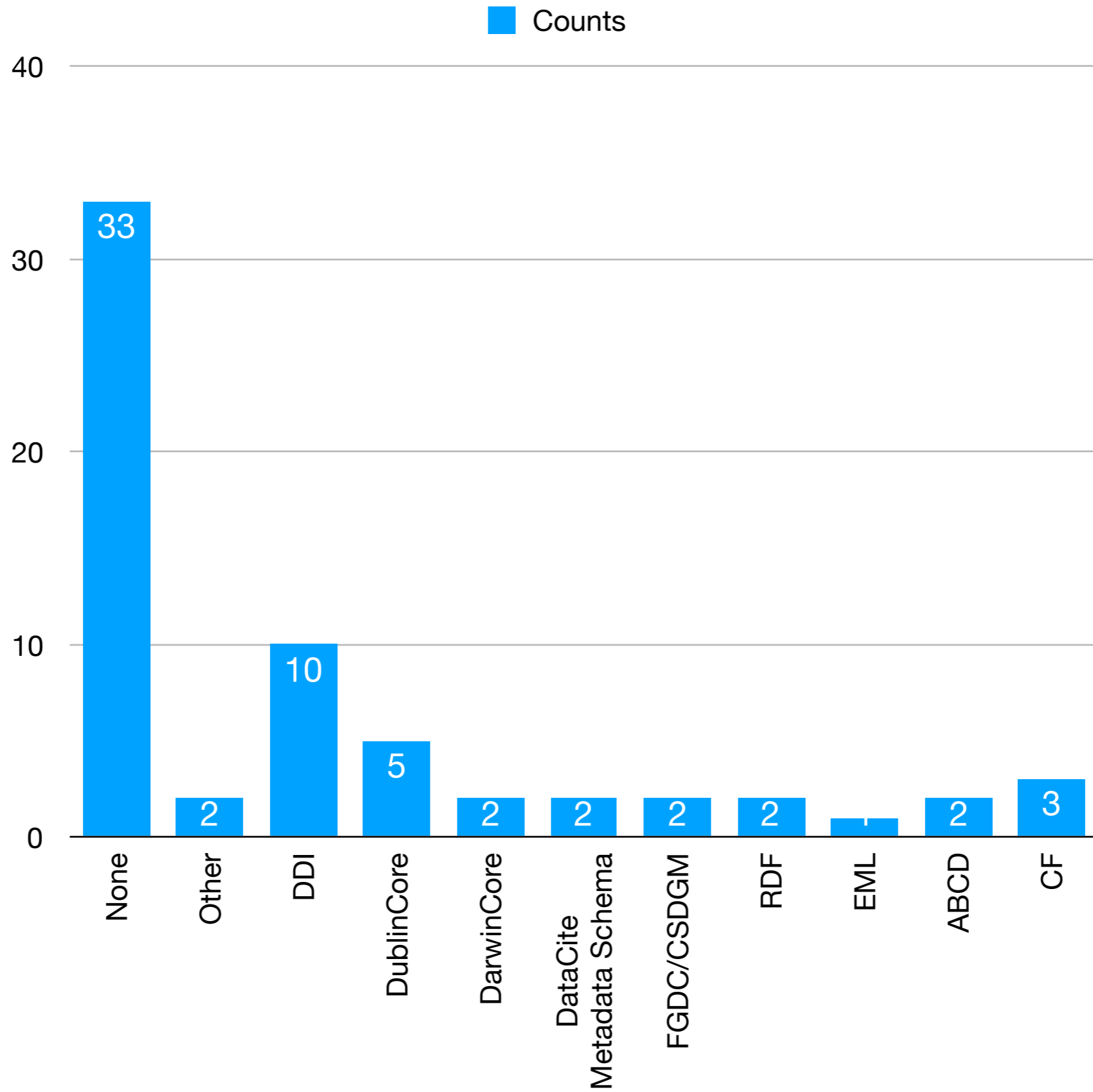
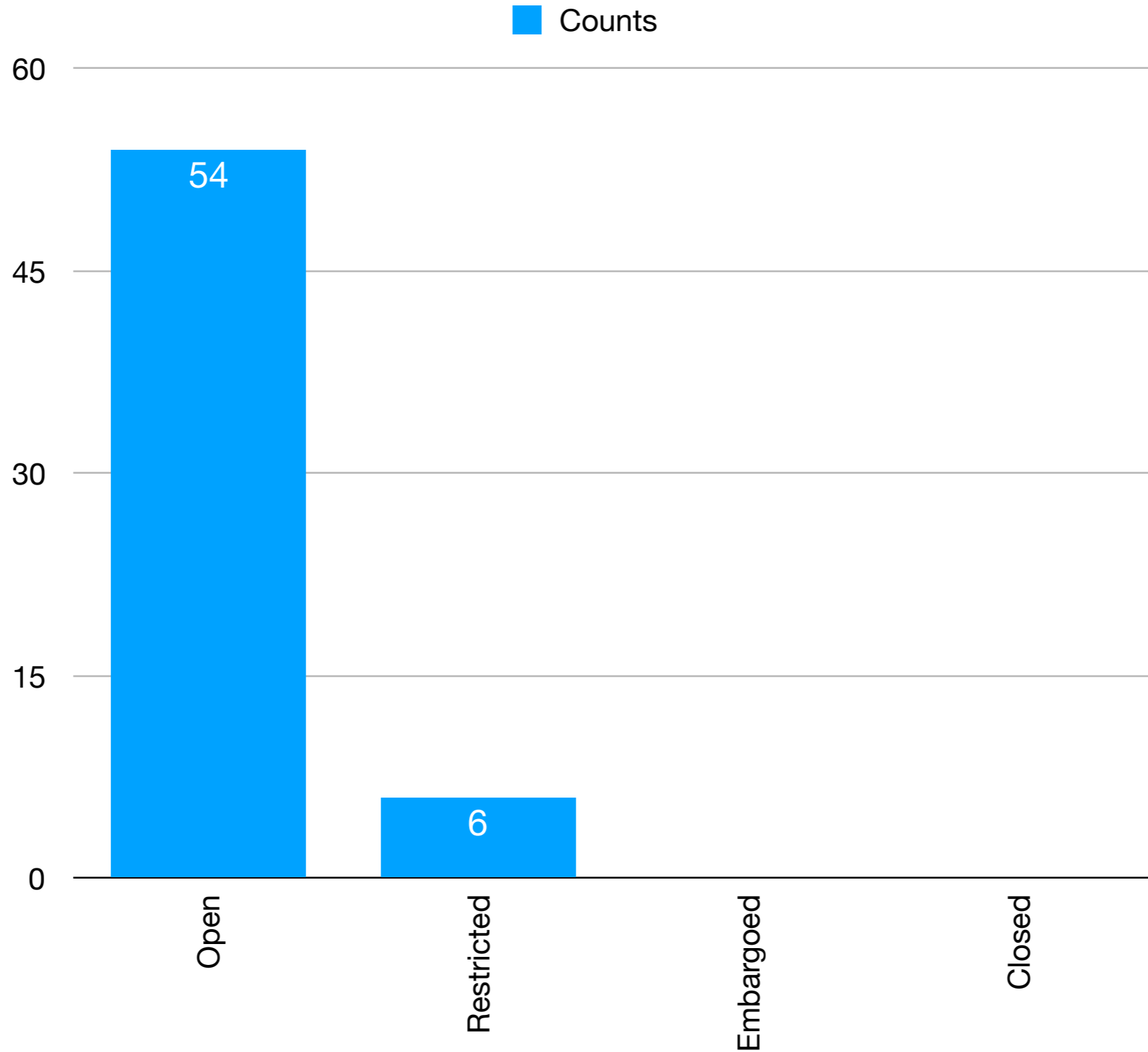- Trimmed for duplicates, resulting in 61 entries

Persistent Identifiers

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Data access type

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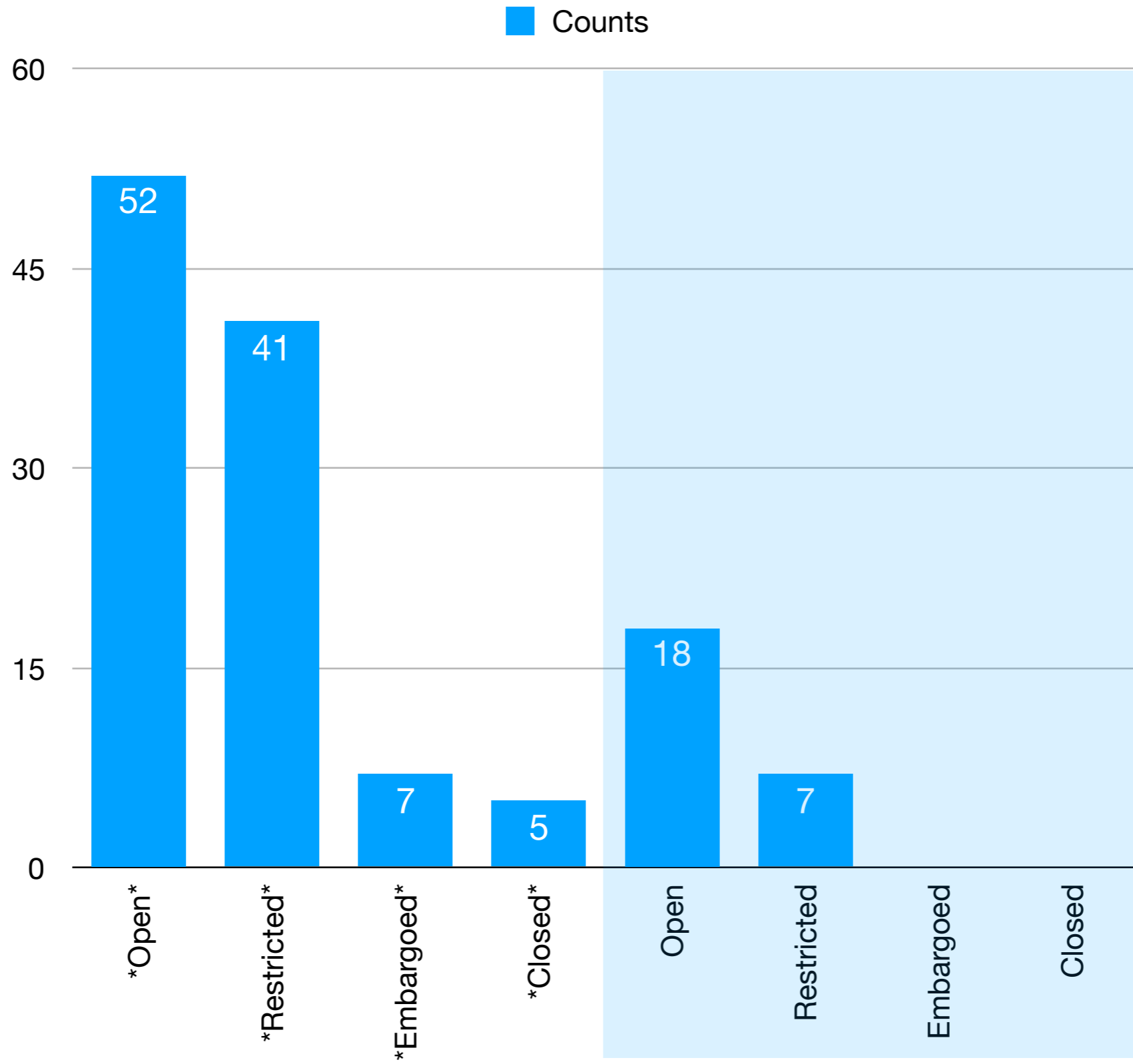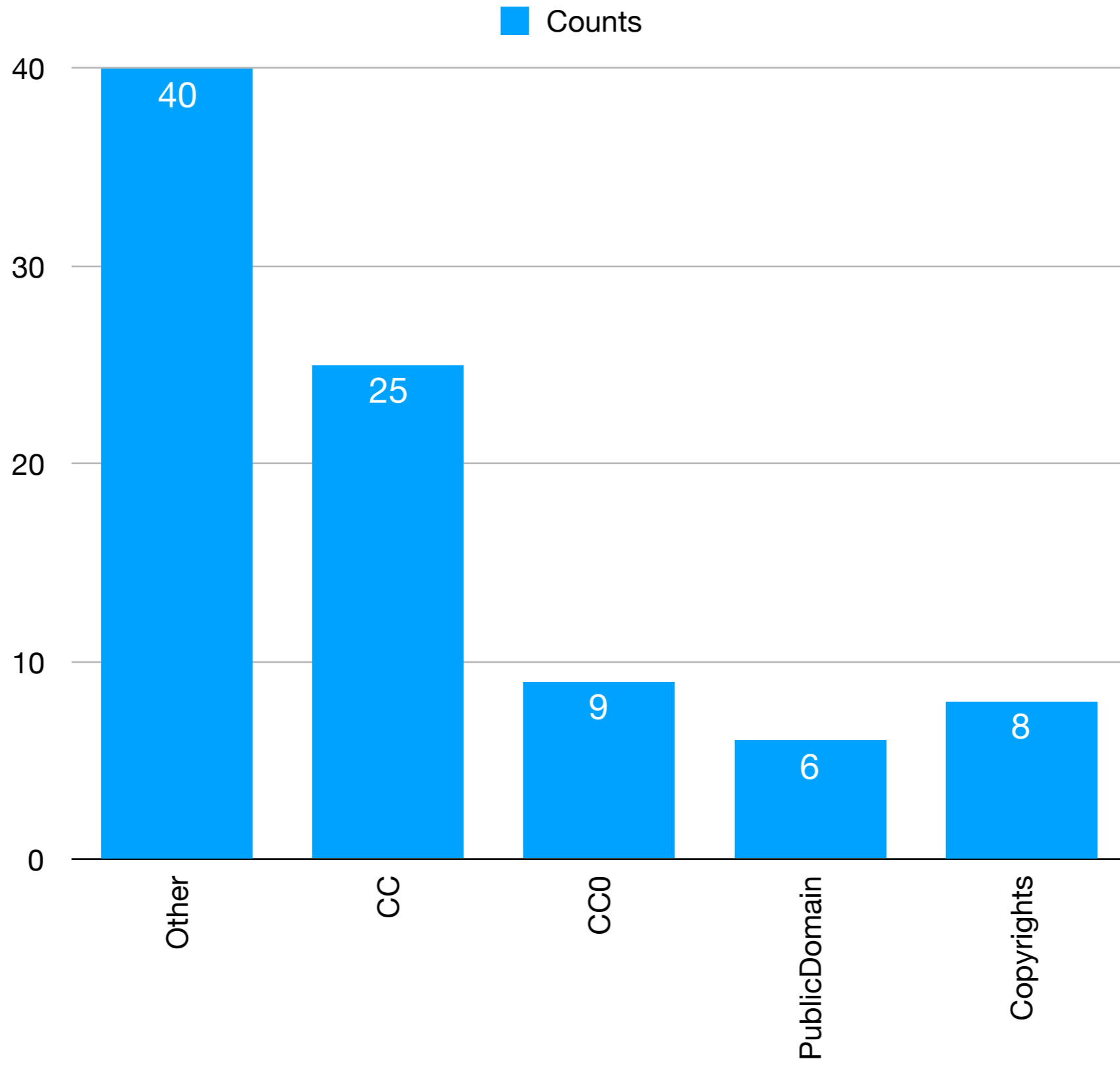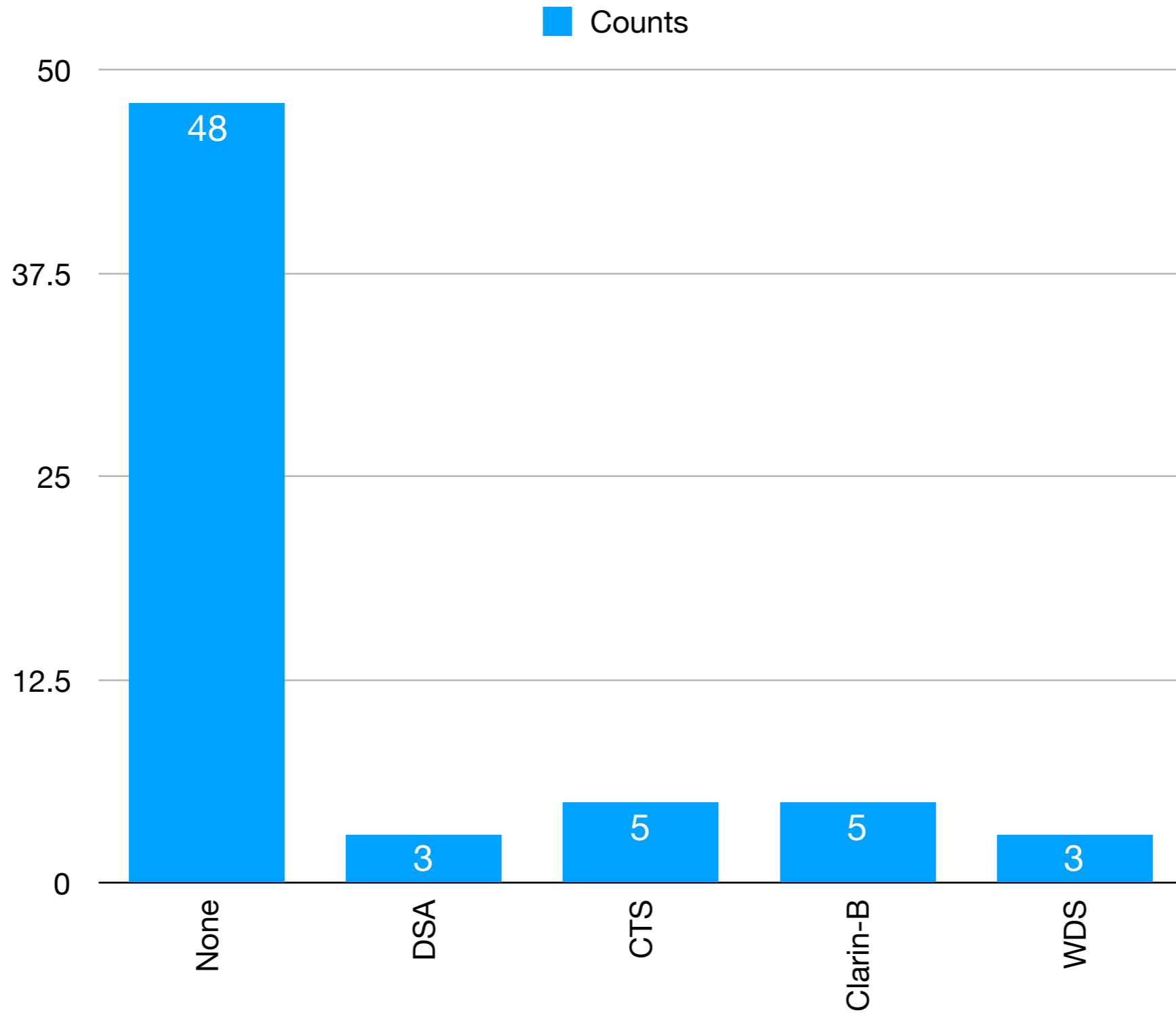
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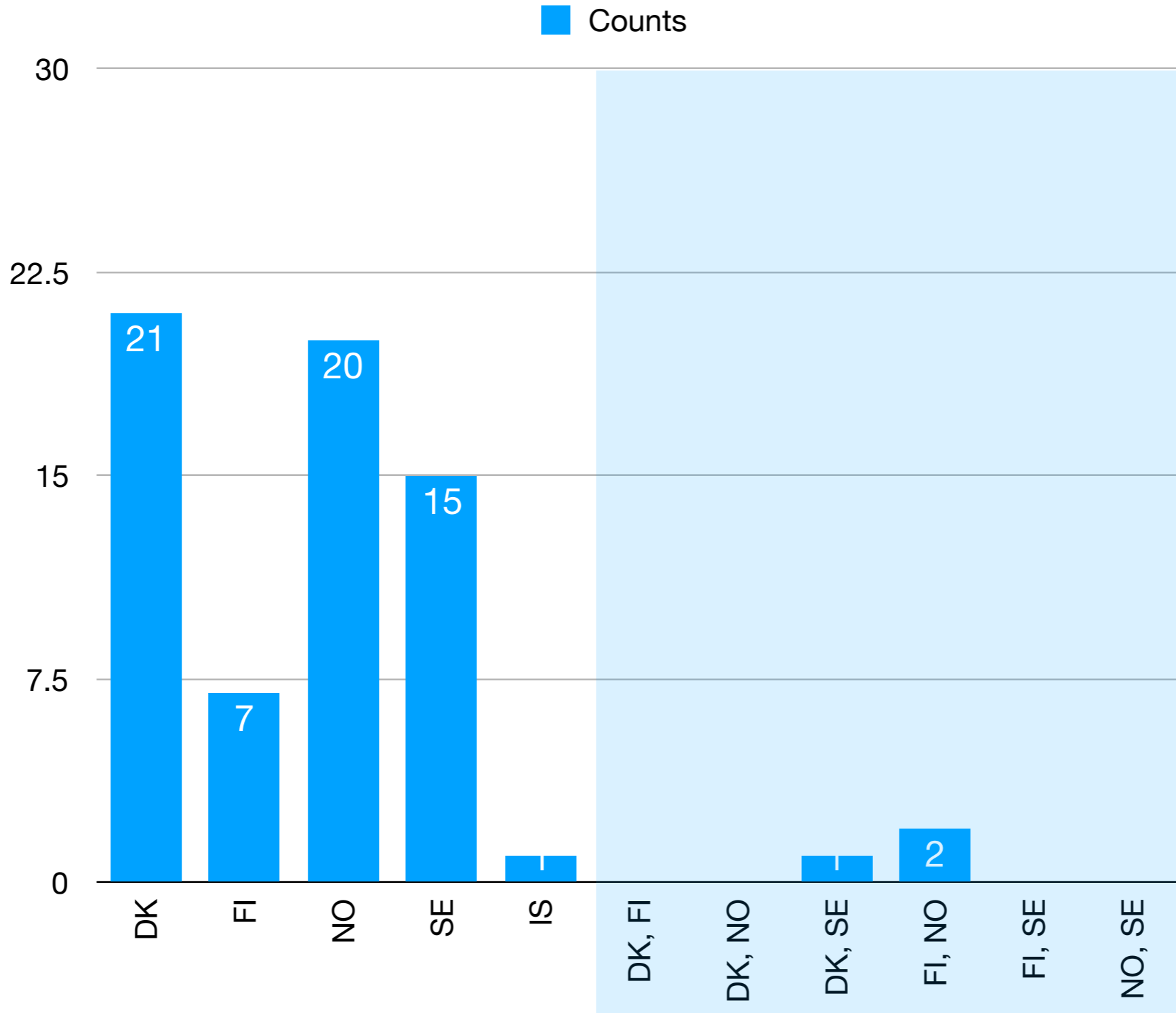
Summary of our findings

- Found 61 repositories with Nordic involvement from re3data.org sample

- While many of the repositories have partnered with other countries (or EU), only three (5%) has a second Nordic country among its partners. This is surprising as we expect there to be strong synergies in partnering with other Nordic countries

- Approx. 60% of the repositories do not issue PIDs, while 27% use DOI (this is the most common PID technology used)

- Almost all repositories provide unrestricted access to their metadata

- A majority (70%) of the repositories do not provide unrestricted access to all their data. Typically, some of the data is shared, while some remains restricted. For sensitive data this can be expected to some extent, but it seems to apply to repositories in all scientific disciplines

- The majority (56%) of the repositories do not employ any metadata standard

- About 80% of the repositories are not certified archives or do not follow established archive/repository standards

Actions to develop Open Science

1. Making legacy data findable, accessible and reusable

2. Enabling FAIR data – machine actionable protocols, templates, vocabularies and standards

3. Data stewardship: a fundamental pillar for Open Science

4. Training the researchers and changing the culture of modern science

5. Preparing for the future: FAIRification of research data & modelling knowledge (FAIR linked data)

EOSC-Nordic

- INFRAEOSC-5b call

- Led by Nordforsk/NeIC

- Nordics + Estonia +?

- WP4 FAIR data

Thank you!

Interested in FAIR?

**Join the NeIC workshop
Stockholm 14 nov 2018**

"FAIR Awareness Day: Towards Automated Data Re-Use"

Register here for free: http://bit.ly/FAIR-Nordic

Special advisor: **Andreas O. Jaunsen**