Wikidata & id.loc.gov

One year later

This presentation: https://bit.ly/swib2020mm

Code & Data: https://github.com/thisismattmiller/swib-2020-resources

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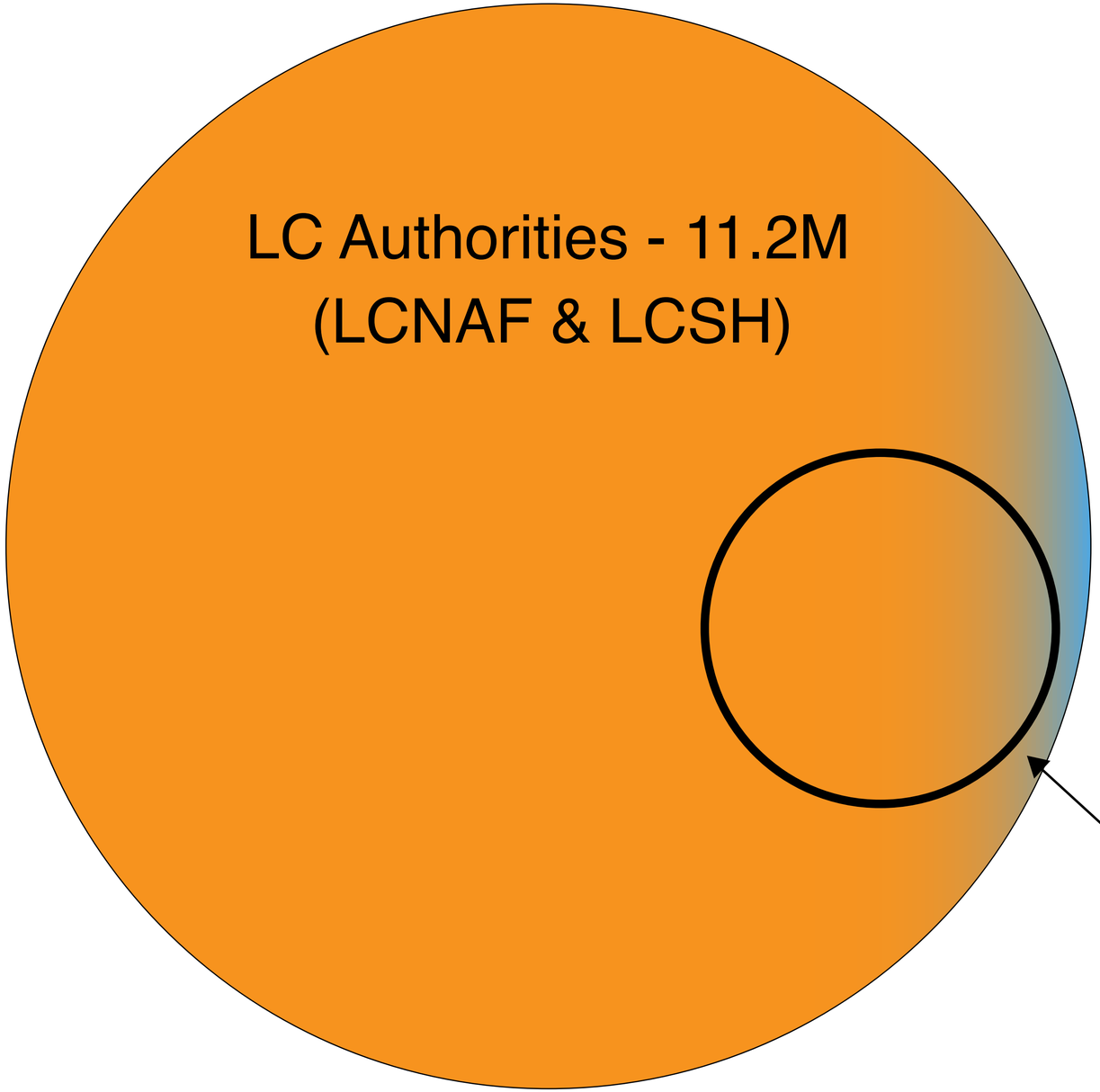
Context

- id.loc.gov is a linked data platform serving authorities, vocabularies and other resources.
- We've been adding skos:closeMatch links from external authorities for many years, mostly when supplied a mapping by an organization.
- In mid-2019 started a process of ingesting Wikidata records into id.loc.gov
  - A fairly straight forward process using Wikidata's public SPARQL endpoint
  - There are now around 1.2 million LCCNs in Wikidata
- The idea behind supporting Wikidata IDs in id.loc.gov was to encourage their usage and increase their visibility
- This process has now been running for over a year, with detailed log files (https://id.loc.gov/loads/extrardf/wikidata/)
- This presentation aims to see what we can learn now that this process has been ongoing for over a year
- Acronyms:
  - LC - Library of Congress
  - LCCN - Library of Congress Control Number
  - NAF - LC Name Authority File
  - LCSH - LC Subject Headings

Scope - Comparing Linked Records

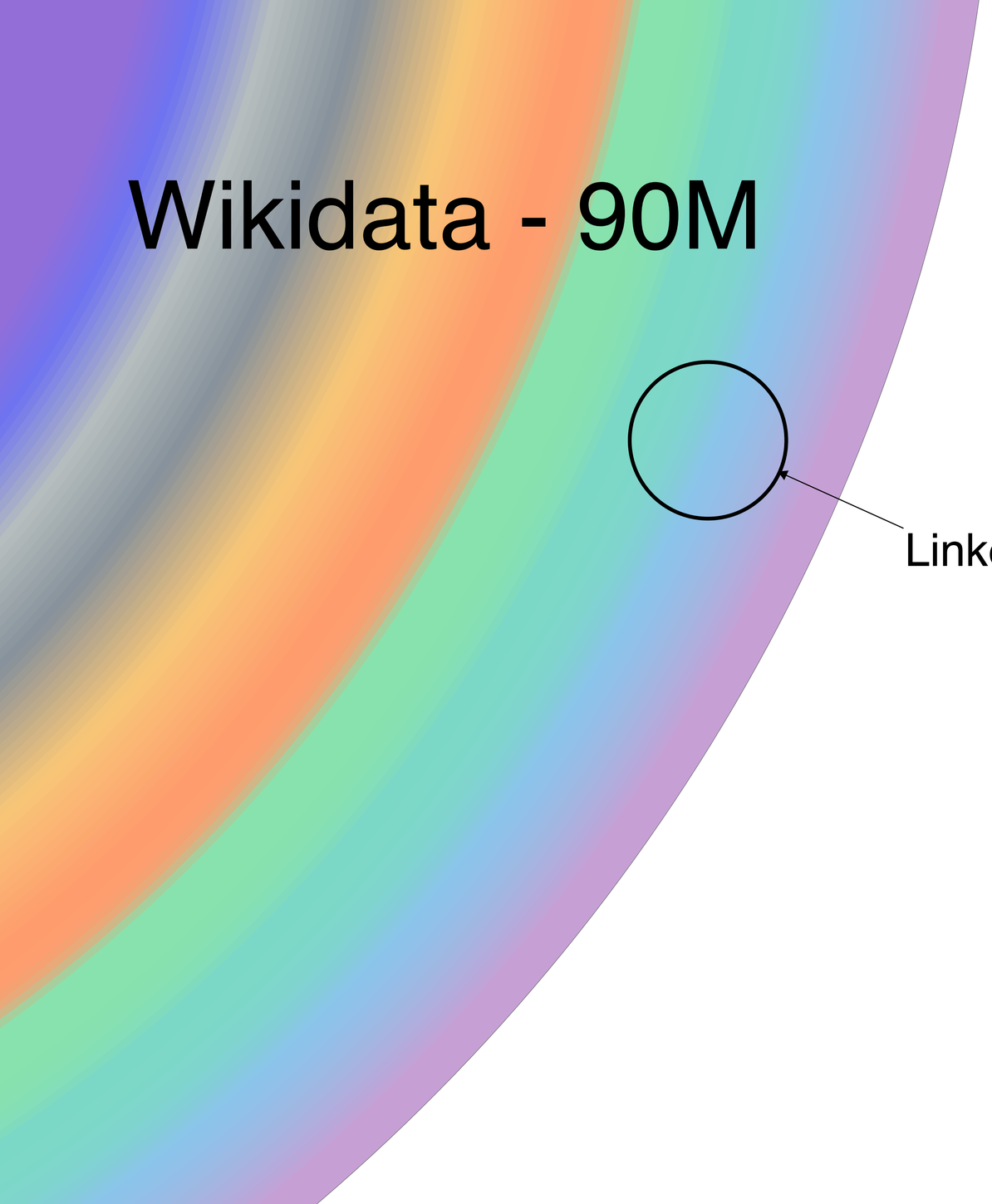
- We are looking at records linked in id.loc.gov and Wikidata
- This means the results are most directly useful to institutions that use NAF or LCSH headings
- But there are general trends and themes that are likely beneficial to anyone interested in leveraging Wikidata in their bibliographic system or vice versa
  - Thinking about knowledge panels
  - Leveraging external metadata
  - Curious about the interplay of Wiki* and bibliographic data
- All of this data was collected via public Wikidata and id.loc.gov endpoints. All the data used and aggregates generated are available: https://github.com/thisismattmiller/swib-2020-resources



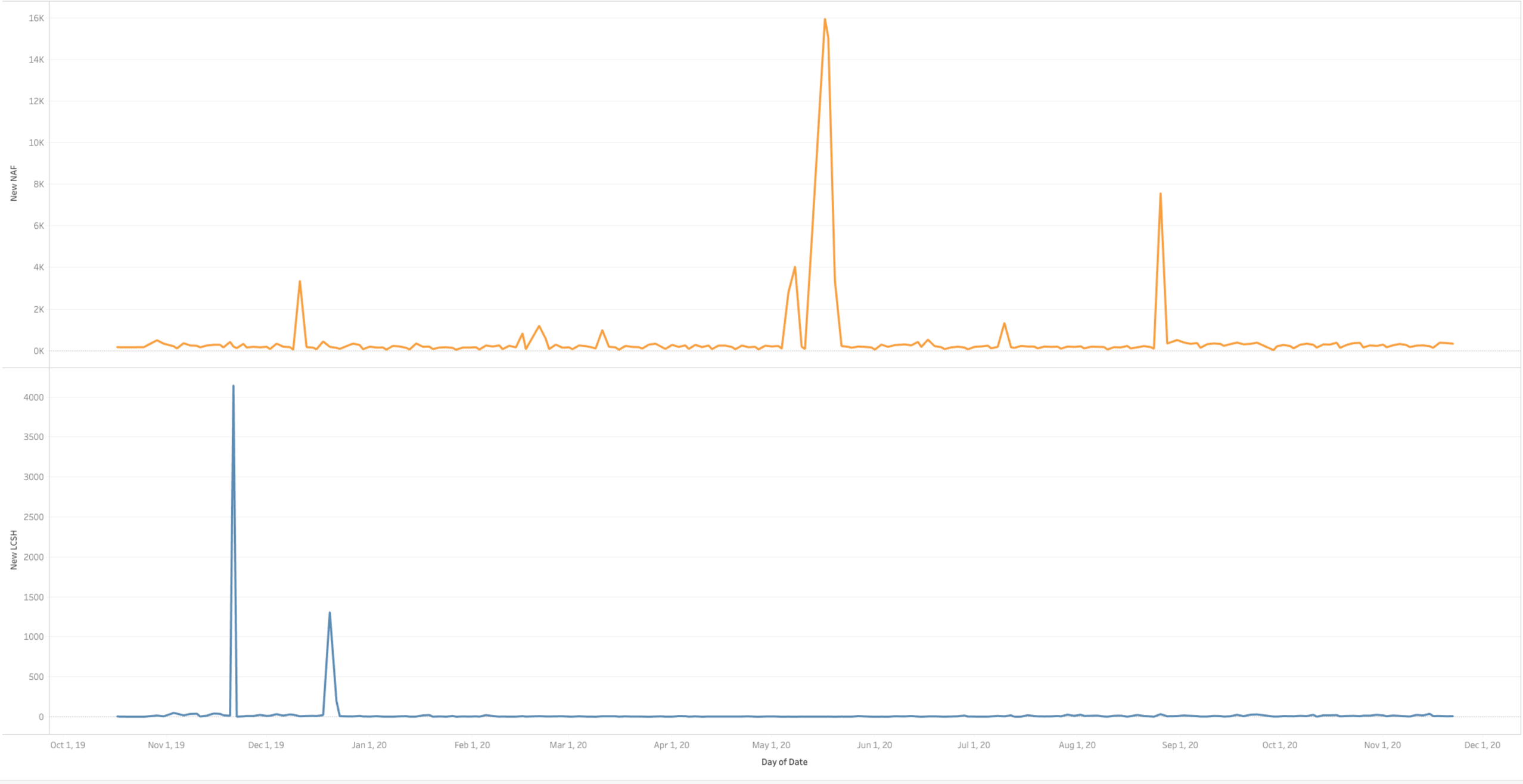
Scope: LC Data

NAF **1,199,975**

LCSH **41,673**

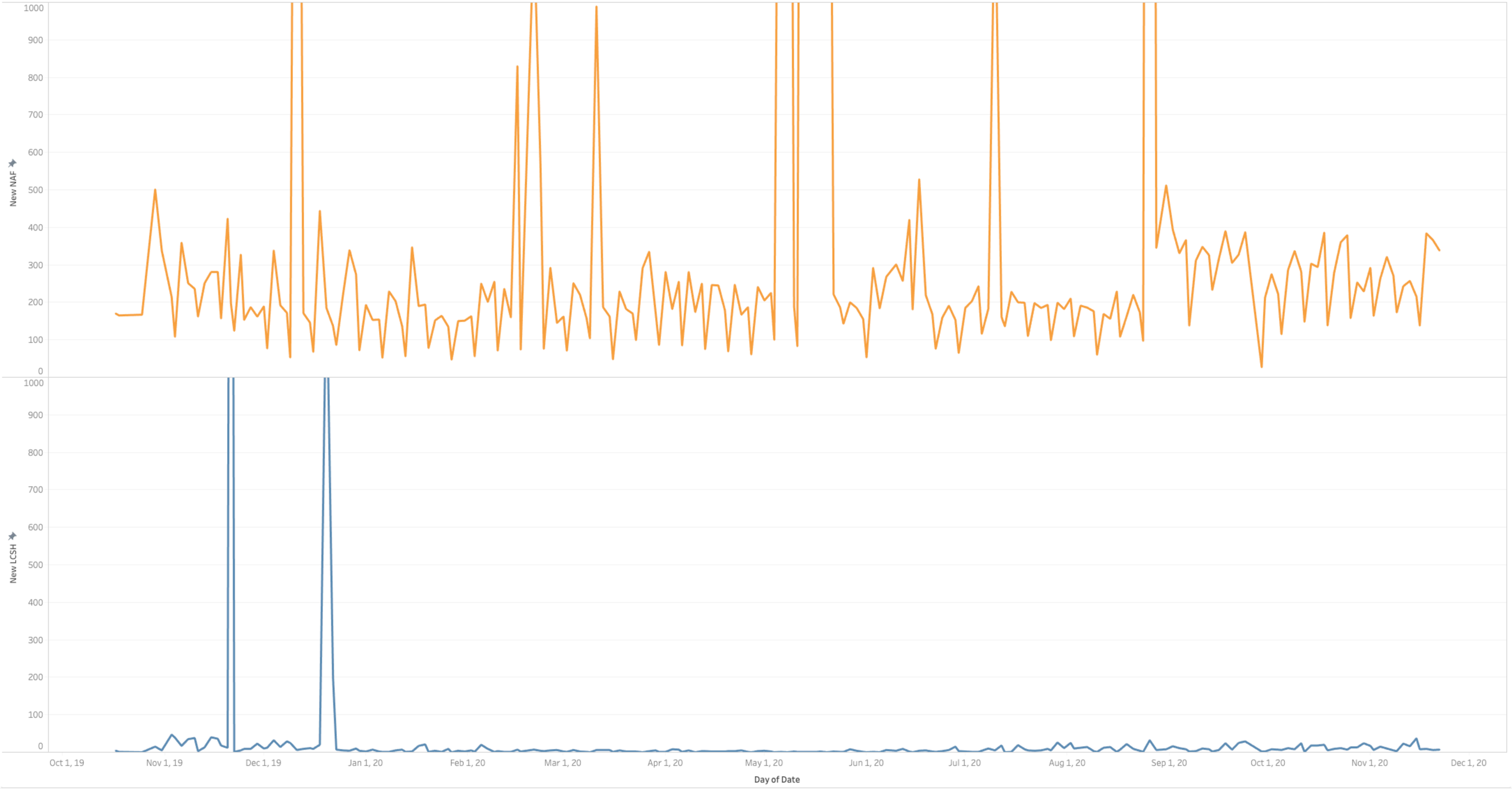

Wikidata - 90M
Linked to id.loc.gov - 1.2M (1.3%)

New NAF & LCSH 2019 - 2020



Measure Names | New LCSH | New NAF

New NAF & LCSH 2019 - 2020



Measure Names | New LCSH | New NAF

Events

Mean average of actions every cycle (2 days) with bulk events removed.
Oct 2019 - Nov 2020

	NAF	LCSH
New Links	220	8
Unlinks	18	1
Link Changes	5	1
Label Changes	74	15

Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/report_hisogram.csv

Events - Label Changes

When a Wikimedian changes a label (mostly English) and that change flows into id.loc.gov

- 15246 Label change events. That's 1.2% of all links (NAF & LCSH)
- The majority of these events are normal but it does provide a vector vandalism to show up in any data reuse of these labels.
- For this analysis a label vandalism event is defined as the label changing value and then being change back to the previous value.
- How rare is this? Is there a large risk to a potentially harmful label being used if you display Wikidata labels?
- Some Examples…

Label Vandalism Examples

```
Q998 2020-02-14 baby -> Terrible creature
Q998 2020-02-16 Terrible creature -> baby
```

```
Q12013 2020-02-05 Google Maps -> 00000000000000000000
Q12013 2020-02-07 00000000000000000000 -> Google Maps
Q12013 2020-08-14 Google Maps -> Snazzy Maps
Q12013 2020-08-16 Snazzy Maps -> Google Maps
```

```
Q7859785 2020-05-31 Ty Dolla $ign -> Camila cabello
Q7859785 2020-06-01 Camila cabello -> Ty Dolla $ign
Q7859785 2020-06-05 Ty Dolla $ign -> Camila cabello
Q7859785 2020-06-07 Camila cabello -> Ty Dolla $ign
Q7859785 2020-06-10 Ty Dolla $ign -> Olga Pardo
Q7859785 2020-06-12 Olga Pardo -> Ty Dolla $ign
Q7859785 2020-06-14 Ty Dolla $ign -> Camila Cabello
Q7859785 2020-06-17 Camila Cabello -> Ty Dolla $ign
Q7859785 2020-07-10 Ty Dolla $ign -> Camila Cabello
Q7859785 2020-07-12 Camila Cabello -> Ty Dolla $ign
Q7859785 2020-08-05 Ty Dolla $ign -> Camila Cabello
Q7859785 2020-08-07 Camila Cabello -> Ty Dolla $ign
```

```
Q166118 2020-02-21 archives -> archive
Q166118 2020-03-25 archive -> archives
Q166118 2020-04-01 archives -> archive
Q166118 2020-05-24 archives -> archive
Q166118 2020-05-29 archive -> archives
Q166118 2020-08-03 archives -> Luis Alberto Arrúa Rodríguez.jpg
Q166118 2020-08-05 Luis Alberto Arrúa Rodríguez.jpg -> archives
```

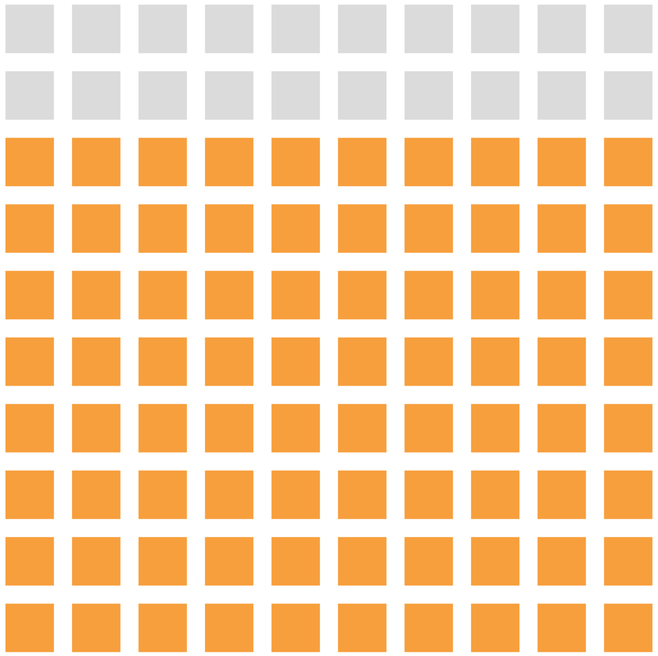
Events - Label Changes

- Only 2540 or 0.2% of the identifiers had this type of vandalism label change in over a year
- Most were fixed in the next load
- If concerned you can implement a delay in label updates, as they are often fixed in a short period of time
- Conclusion: Label vandalism is a very infrequent problem

Data:
https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/label_changes.json
https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/label_changes_possible_vandalism.json

What’s Linked? - Wikidata Items

P31 “Instance of” for the 1.2M records



Vast majority of linked Items are Q5 Humans: 993,685 - 80%

There are 8.5M Q5 Humans total on Wikidata meaning 11.5% are linked to id.loc.gov

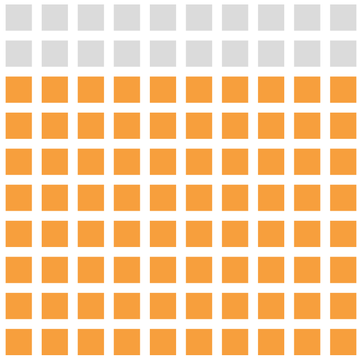
Top 100 Instance Of (P31) for linked items

Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/wiki_instance_of.json

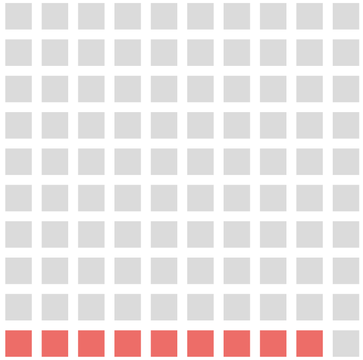
human	Q5	993685
musical group	Q215380	11109
organization	Q43229	10025
business	Q4830453	9310
human settlement	Q486972	6677
city of the United States	Q1093829	6207
university	Q3918	5553
museum	Q33506	5317
village	Q532	3748
commune of France	Q484170	3626
town	Q3957	3497
city	Q515	3430
nonprofit organization	Q163740	3412
government agency	Q327333	2999
town of the United States	Q15127012	2895
unincorporated community in the United States	Q17343829	2720
art museum	Q207694	2494
municipality seat	Q15303838	2407
research institute	Q31855	2383
publisher	Q2085381	2311
census-designated place	Q498162	2281
film	Q11424	2229
big city	Q1549591	2084
river	Q4022	1865
civil parish	Q1115575	1859
political party	Q7278	1845
enterprise	Q6881511	1780
open-access publisher	Q45400320	1755
ethnic group	Q41710	1737
taxon	Q16521	1729
church building	Q16970	1580
municipality of Spain	Q2074737	1393
hospital	Q16917	1374
urban municipality of Germany	Q42744322	1360
battle	Q178561	1306
high school	Q9826	1282
village in the United States	Q751708	1226
school	Q3914	1218
educational institution	Q2385804	1202
island	Q23442	1176
municipality of Germany	Q262166	1173
voluntary association	Q48204	1146
library	Q7075	1144
private not-for-profit educational institution	Q23002054	1137
public educational institution of the United States	Q23002039	1127
theatre	Q24354	1085
mountain	Q8502	1081
opera	Q1344	897
facility	Q13226383	883
school district	Q398141	878
foundation	Q157031	870
comune of Italy	Q747074	867
municipality of Brazil	Q3184121	839
learned society	Q955824	808
neighborhood	Q123705	804
literary work	Q7725634	797
orchestra	Q42998	792
film production company	Q1762059	791
faculty	Q180958	777
musical ensemble	Q2088357	733
academic institution	Q4671277	733
monastery	Q44613	730
mountain range	Q46831	725
language	Q34770	715
trade union	Q178790	689
archives	Q166118	684
public university	Q875538	680
borough of Pennsylvania	Q777120	659
Wikimedia list article	Q13406463	645
modern language	Q1288568	629
locality	Q3257686	619
rock band	Q5741069	608
archaeological site	Q839954	597
scientific society	Q748019	593
radio station	Q14350	588
book publishing company	Q1320047	578
college	Q189004	573
musical composition	Q207628	570
military unit	Q176799	570
lake	Q23397	566
higher education institution	Q38723	562
choir	Q131186	545
Ortsteil	Q253019	544
village of Poland	Q3558970	538
county of China	Q1289426	537
association football club	Q476028	536
building	Q41176	526
park	Q22698	511
institute	Q1664720	511
township of Pennsylvania	Q9035798	506
airport	Q1248784	497
pressure group	Q1666019	492
secondary school	Q159334	491
association	Q15911314	484
concentration camp	Q152081	482
abbey	Q160742	472
aircraft family	Q15056993	471
city\/town	Q7930989	470
populated place in the Netherlands	Q1852859	455
bay	Q39594	446

What’s Linked? - LC Authorities

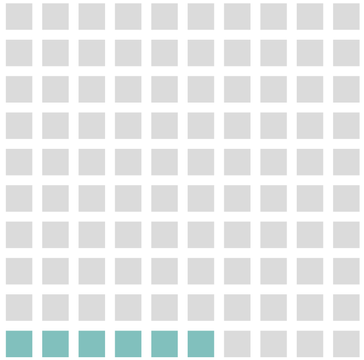
rdf:type of the 1.2M records



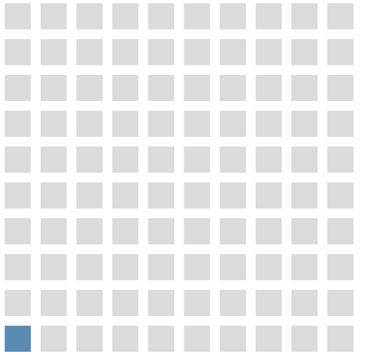
madsrdf:PersonalName - 80%



madsrdf:CorporateName - 9.8%



madsrdf:Geographic - 6.7%



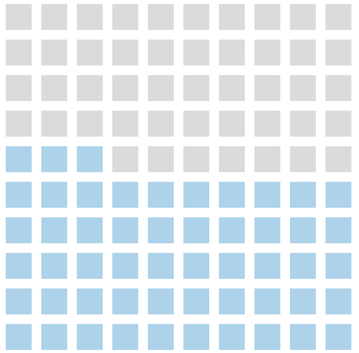
madsrdf:Topic - 1.9%

Likewise majority of linked authority records are personal names - 80%

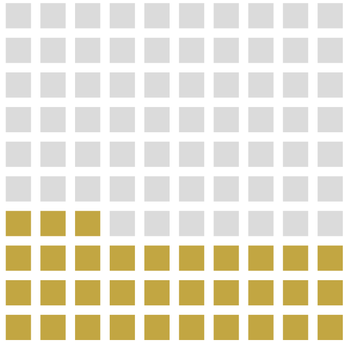
Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/lc_type_of.json

What’s Linked? - Wikidata Items

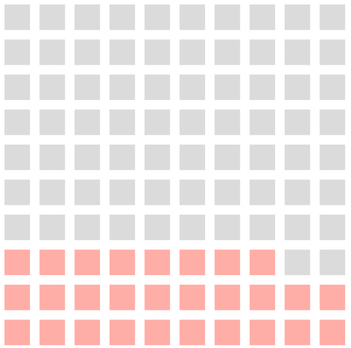
Top 10 site links for the 1.2M records



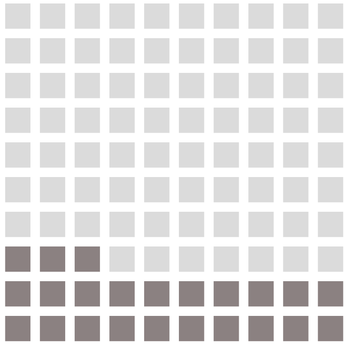
English Wikipedia - 53%



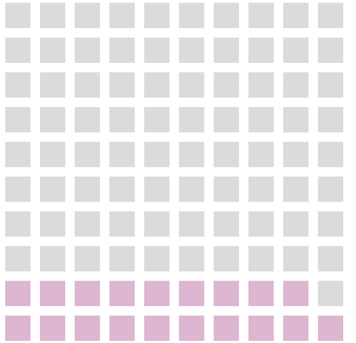
German Wikipedia - 33%



French Wikipedia - 28%

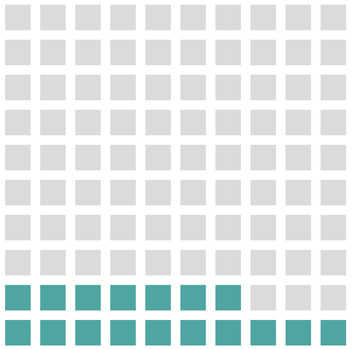


Commons - 23%

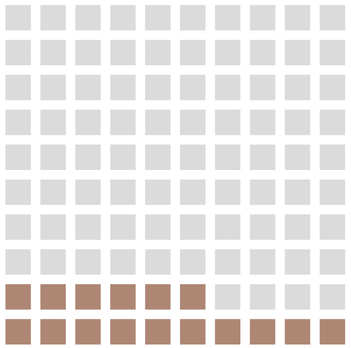


Spanish Wikipedia - 19%

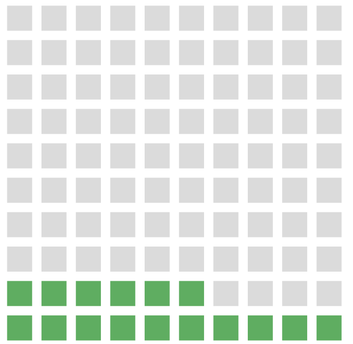
Italian Wikipedia - 18%



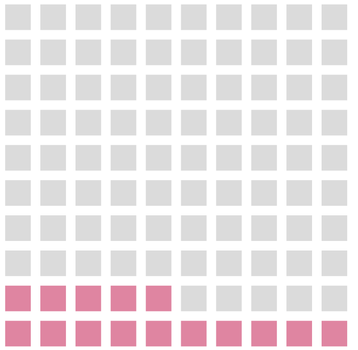
Russian Wikipedia - 17%



Egyptian Arabic Wikipedia - 16%



Arabic Wikipedia - 16%

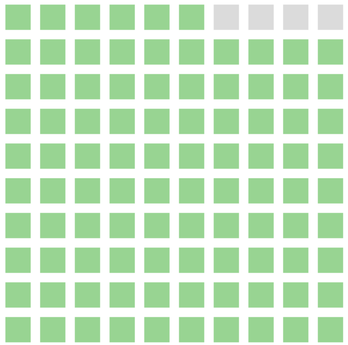


No Link - 15%

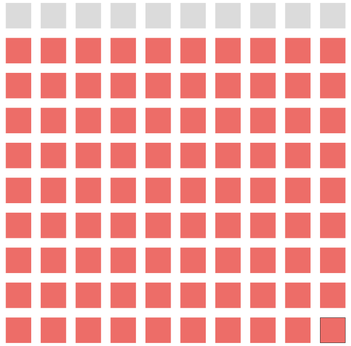
Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/wiki_site_links.json

What’s Linked? - Wikidata Items

Top 10 external id links for the1.2M records

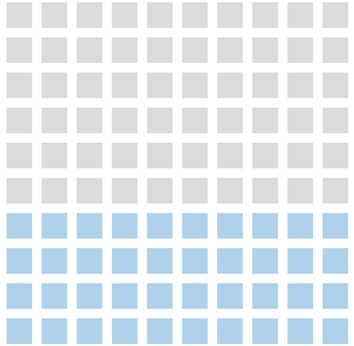


VIAF ID - P214 - 96%

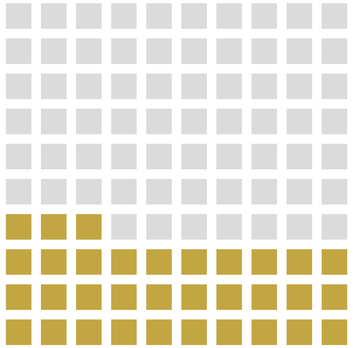


WorldCat Identities ID - P7859 - 90%

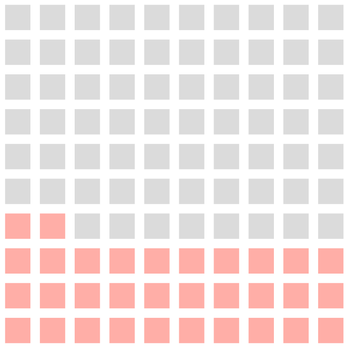
ISNI - P213 - 68%



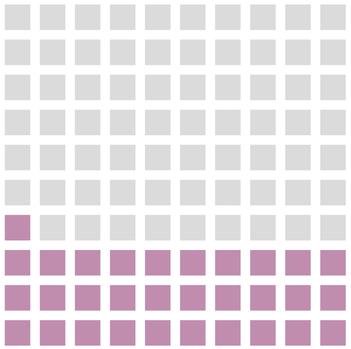
GND ID - P227 - 40%



FAST ID - P2163 - 33%

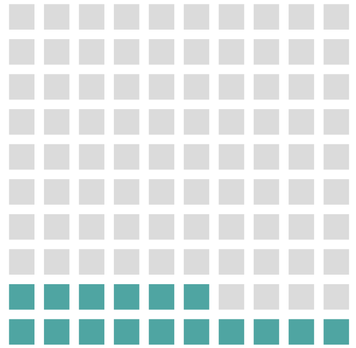


Nationale Thesaurus voor Auteurs ID - P1006 - 32%

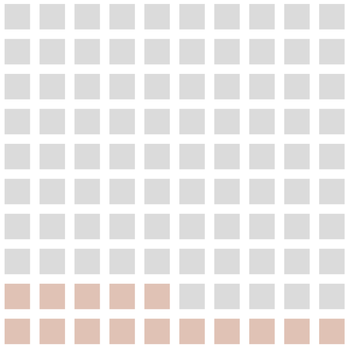


IdRef ID - P269 - 31%

Bibliothèque nationale de France ID - P268 - 31%



NUKAT ID - P1207 - 16%



Freebase ID - P646 - 15%

Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/wiki_identifier_links.json

What's Linked? - Wikidata Items

Top 50 non-external id properties for the 1.2M records

Property	Count	Percent
instance of (P31)	1230815	99.23
date of birth (P569)	954418	76.94
sex or gender (P21)	926440	74.69
occupation (P106)	850390	68.56
given name (P735)	820048	66.11
country of citizenship (P27)	721963	58.2
place of birth (P19)	629480	50.75
date of death (P570)	565042	45.55
family name (P734)	462454	37.28
image (P18)	411152	33.15
languages spoken written or signed (P1412)	362998	29.26
educated at (P69)	329204	26.54
place of death (P20)	325131	26.21
Commons category (P373)	322086	25.97
employer (P108)	203513	16.41
country (P17)	182152	14.68
award received (P166)	176338	14.22
official website (P856)	171954	13.86
name in native language (P1559)	155254	12.52
described by source (P1343)	142504	11.49
located in the administrative territorial entity	134214	10.82
coordinate location (P625)	131643	10.61
inception (P571)	106260	8.57
position held (P39)	100327	8.09

Property	Count	Percent
member of (P463)	97798	7.88
topic's main category (P910)	91332	7.36
work location (P937)	71740	5.78
work period (start) (P2031)	71040	5.73
place of burial (P119)	68087	5.49
political party (P102)	67454	5.44
genre (P136)	64027	5.16
spouse (P26)	62593	5.05
religion (P140)	58179	4.69
field of work (P101)	56425	4.55
father (P22)	55124	4.44
instrument (P1303)	54897	4.43
child (P40)	52015	4.19
area (P2046)	49734	4.01
copyright status as a creator (P7763)	47146	3.8
cause of death (P509)	46467	3.75
population (P1082)	45075	3.63
postal code (P281)	45054	3.63
elevation above sea level (P2044)	44694	3.6
locator map image (P242)	39685	3.2
birth name (P1477)	38864	3.13
sibling (P3373)	38588	3.11
manner of death (P1196)	36442	2.94
writing language (P6886)	36071	2.91
native language (P103)	34301	2.77

Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/wiki_claims_count.json

What's Linked? - Wikidata Items

Property Sets - Minimal Viable Properties - Percent of Items that have these sets of properties

```
P31  "instance of"
P17  "country"
P571 "inception"
```

53%

```
P31   "instance of"
P21   "sex or gender"
P569  "date of birth"
P106  "occupation"
P734  "family name"
P735  "given name"
P5008 "on focus list of Wikimedia project"
```

23%

```
P21    "sex or gender"
P19    "place of birth"
P20    "place of death"
P27    "country of citizenship"
P31    "instance of"
P569   "date of birth"
P570   "date of death"
P106   "occupation"
P735   "given name"
P1411  "nominated for"
P734   "family name"
```

13%

What’s Linked? - Wikidata Items

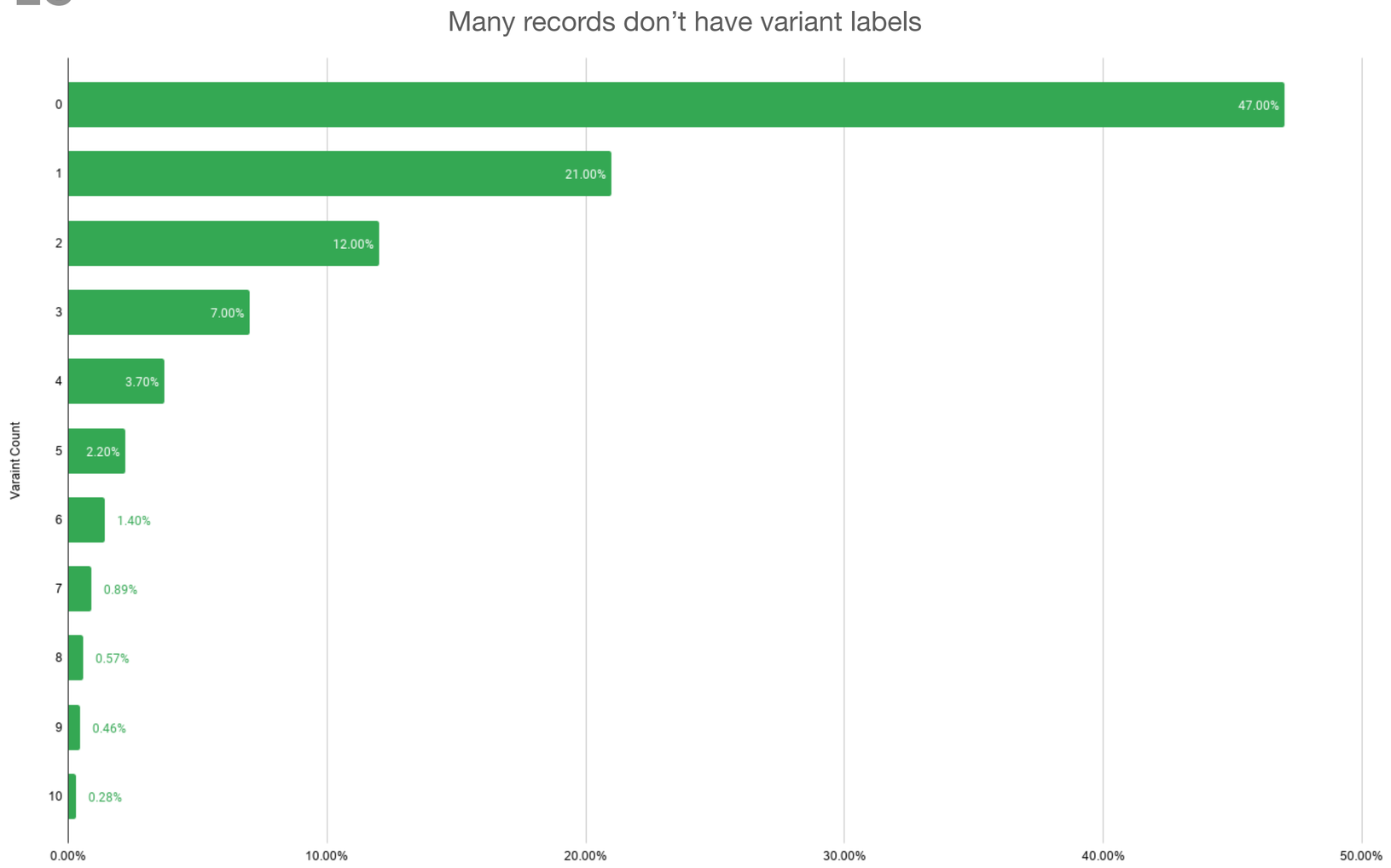
What resources in LC’s catalog are now connected?

LC resources where the Item contributed to : 6,528,494

LC resources where the Item is the subject : 4,767,528

Comparison: Wikidata vs LC

Variant Labels - LC

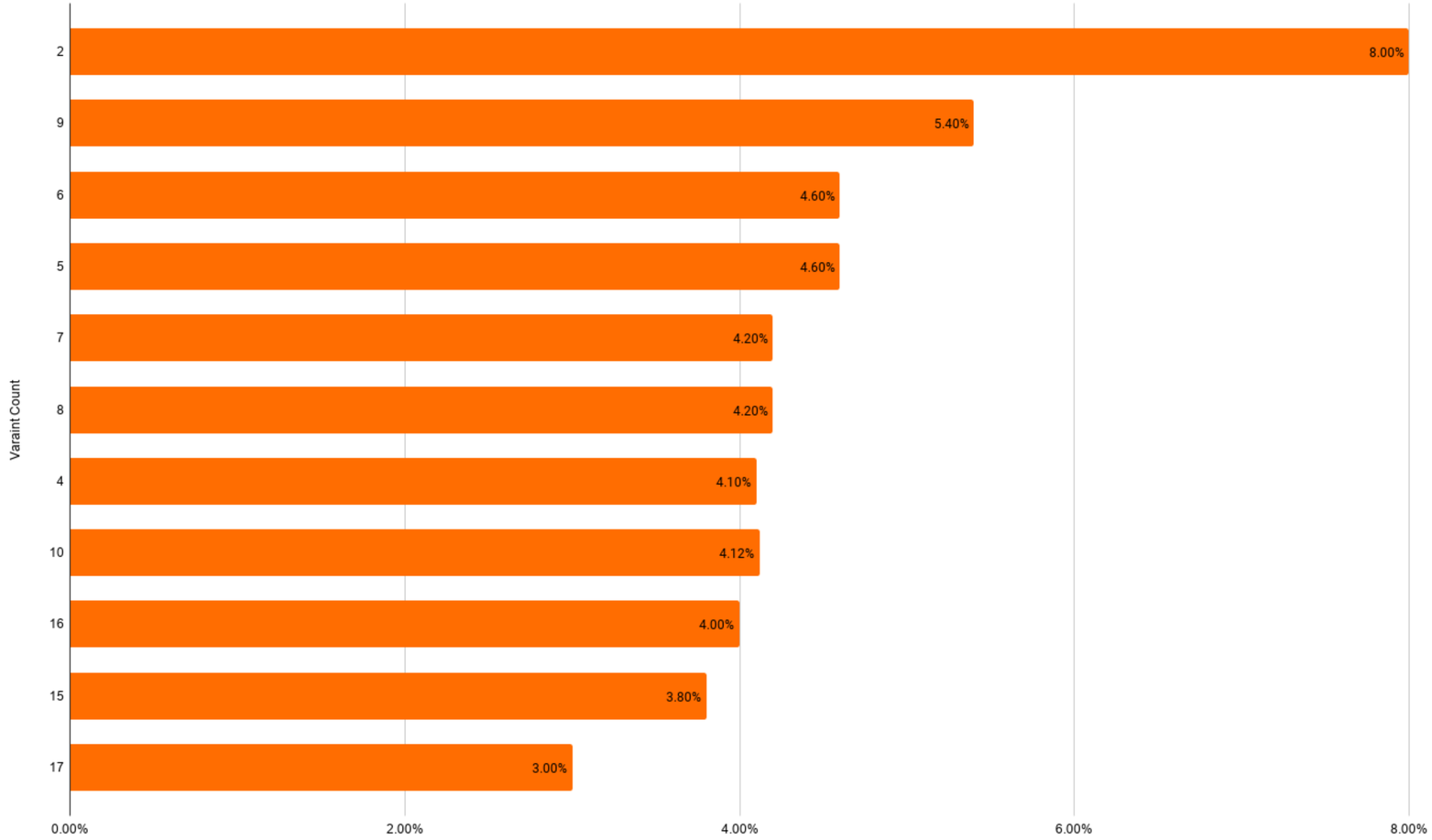


Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/lc_number_of_variant_labels.json

Comparison: Wikidata vs LC

Variant Labels - Wikidata

Very long tail of >2 variant labels



Data: https://github.com/thisismattmiller/swib-2020-resources/blob/main/aggregate_data/wiki_label_count.json

Thanks!

This presentation: https://bit.ly/swib2020mm

Code & Data: https://github.com/thisismattmiller/swib-2020-resources

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