

# Overview in General

This file contains a general overview of the data in the graph including node labels and relationships types.

## References

- [jqassistant](#)
- [Neo4j Python Driver](#)

## Node Labels

### Table 1a - Highest node count by label combination

Lists the 30 label combinations with the highest number of nodes. The labels with the lowest node count are listed in table 1b. The total list would sum up to the total number of labels (100%).

The whole table can be found in the CSV report `Node_label_combination_count`.

Total number of nodes: 307172

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Git, Change]	231027	75.210957
1	[Git, Commit]	11618	3.782246
2	[Java, ByteCode, Parameter]	11202	3.646817
3	[Java, ByteCode, Method, Member]	10670	3.473624
4	[File, Git]	10547	3.433581
5	[Java, ByteCode, Bound, ParameterizedType]	6542	2.129751
6	[Java, ByteCode, Bound]	6316	2.056177
7	[Java, ByteCode, Member, Field]	2847	0.926842
8	[Java, ByteCode, Bound, WildcardType]	2723	0.886474
9	[Java, Value, ByteCode, Annotation]	2225	0.724350
10	[Java, ByteCode, Constructor, Method, Member]	1651	0.537484
11	[Xml, Element]	1534	0.499394
12	[Xml, Text]	1016	0.330759
13	[Java, ByteCode, Bound, TypeVariable]	989	0.321969
14	[Java, ByteCode, Method, Member, Lambda]	769	0.250348
15	[Type, File, Java, ByteCode, Class]	699	0.227560
16	[Type, File, Java, ByteCode, JavaType]	597	0.194354
17	[Type, File, Java, ByteCode, ResolvedDuplicate...	542	0.176448
18	[Java, ByteCode, Method, Member, GenericDeclar...	525	0.170914
19	[Java, Value, ByteCode, Primitive]	467	0.152032
20	[Author, Git, Person]	288	0.093759
21	[Committer, Git, Person]	242	0.078783
22	[Type, File, Java, ByteCode, Class, GenericDec...	215	0.069993
23	[Type, File, Java, ByteCode, ExternalType]	194	0.063157
24	[Type, File, Java, ByteCode, Interface]	167	0.054367
25	[Git, Tag]	165	0.053716
26	[Java, ByteCode, Bound, GenericArrayType]	145	0.047205
27	[Java, Value, ByteCode, Enum]	142	0.046228
28	[Maven, Dependency]	116	0.037764
29	[Value, Property]	109	0.035485

## Chart 1a - Highest node count by label combination

Values under 0.5% will be grouped into "others" to get a cleaner plot. The group "others" is then broken down in Chart 1b.

<Figure size 640x480 with 0 Axes>

Nodes per label combination (more than 0.5% overall)

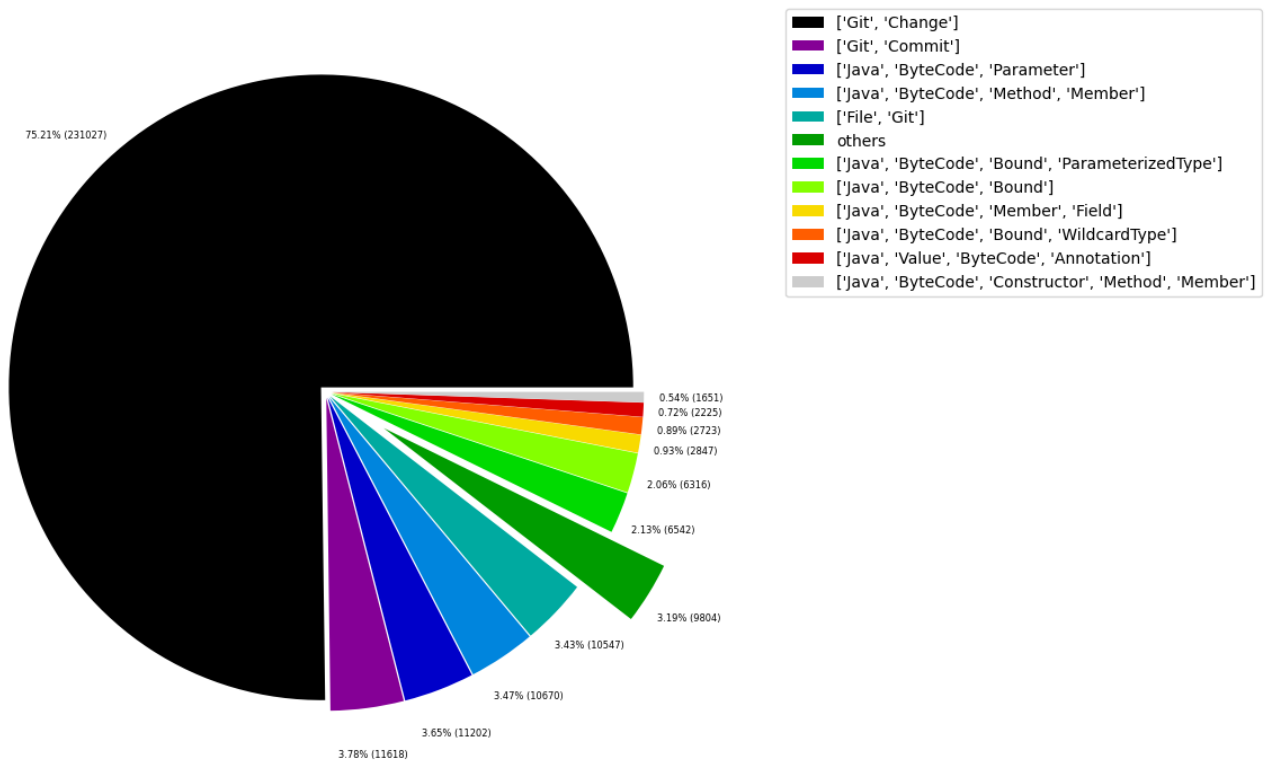


Table 1b - Lowest node count by label combination

Lists the 30 label combinations with the lowest number of nodes until they reach 0.5% of the total node count, which are shown above.

	nodeLabels	nodesWithThatLabels	nodesWithThatLabelsPercent
0	[Analyze, Task, jQAssistant]	1	0.000326
1	[Maven, Exclusion]	1	0.000326
2	[Repository, File, Git]	1	0.000326
3	[File, TS, Scan]	1	0.000326
4	[Java, ByteCode, Constructor, Method, Member, ...]	3	0.000977
5	[File, Maven, Xml, Pom, Document]	6	0.001953
6	[Type, File, Java, ByteCode, Void]	6	0.001953
7	[Java, ManifestSection]	6	0.001953
8	[File, Java, Manifest]	6	0.001953
9	[Artifact, File, Jar, Archive, Zip, Java]	6	0.001953
10	[File, Java, Properties]	8	0.002604
11	[File, Java, ServiceLoader]	9	0.002930
12	[Xml, Attribute]	12	0.003907
13	[Maven, ExecutionGoal]	14	0.004558
14	[Maven, PluginExecution]	14	0.004558
15	[Maven, Plugin]	16	0.005209
16	[Maven, Configuration]	16	0.005209
17	[jQAssistant, Rule, Concept]	19	0.006185
18	[File]	21	0.006837
19	[Type, File, Java, ByteCode, PrimitiveType]	21	0.006837
20	[Git, Branch]	24	0.007813
21	[Xml, Namespace]	24	0.007813
22	[Type, File, Java, ByteCode, Enum]	25	0.008139
23	[Java, Value, ByteCode, Class]	28	0.009115
24	[File, Directory]	39	0.012696
25	[Type, File, Java, ByteCode, Annotation]	40	0.013022
26	[Type, File, Java, ByteCode, ExternalType, Ext...]	65	0.021161
27	[Artifact, Maven]	69	0.022463
28	[Type, File, Java, ByteCode, GenericDeclaratio...]	80	0.026044
29	[Value, ManifestEntry]	91	0.029625

## Chart 1b - Lowest node count by label combination

Shows the lowest (less than 0.5% overall) node count label combinations. Therefore, this plot breaks down the "others" slice of the pie chart above. Values under 0.01% will be grouped into "others" to get a cleaner plot.

<Figure size 640x480 with 0 Axes>

Nodes per label combination (less than 0.5% overall)

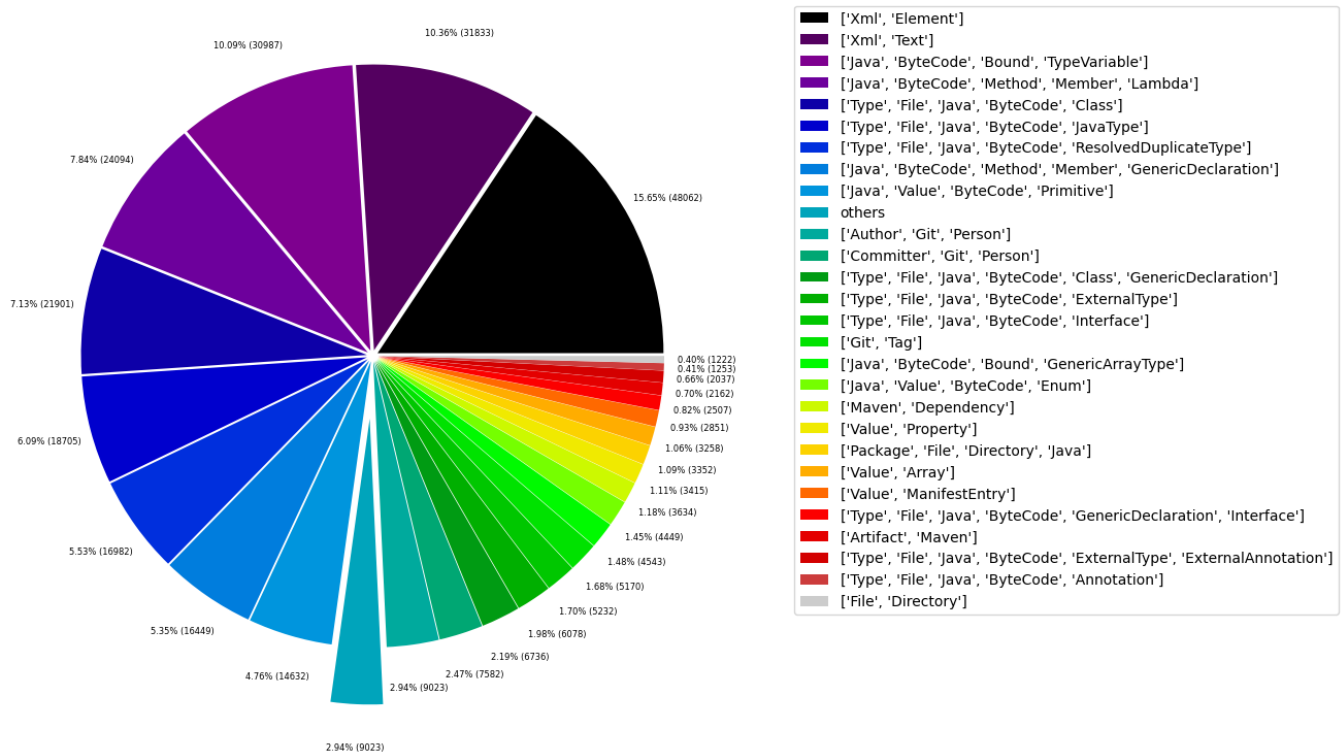


Table 1c - Highest node count by single label

Lists the 40 labels with the highest number of nodes. Doesn't sum up to the total number of nodes or 100% because one node can have multiple labels. Helps to identify commonly used labels.

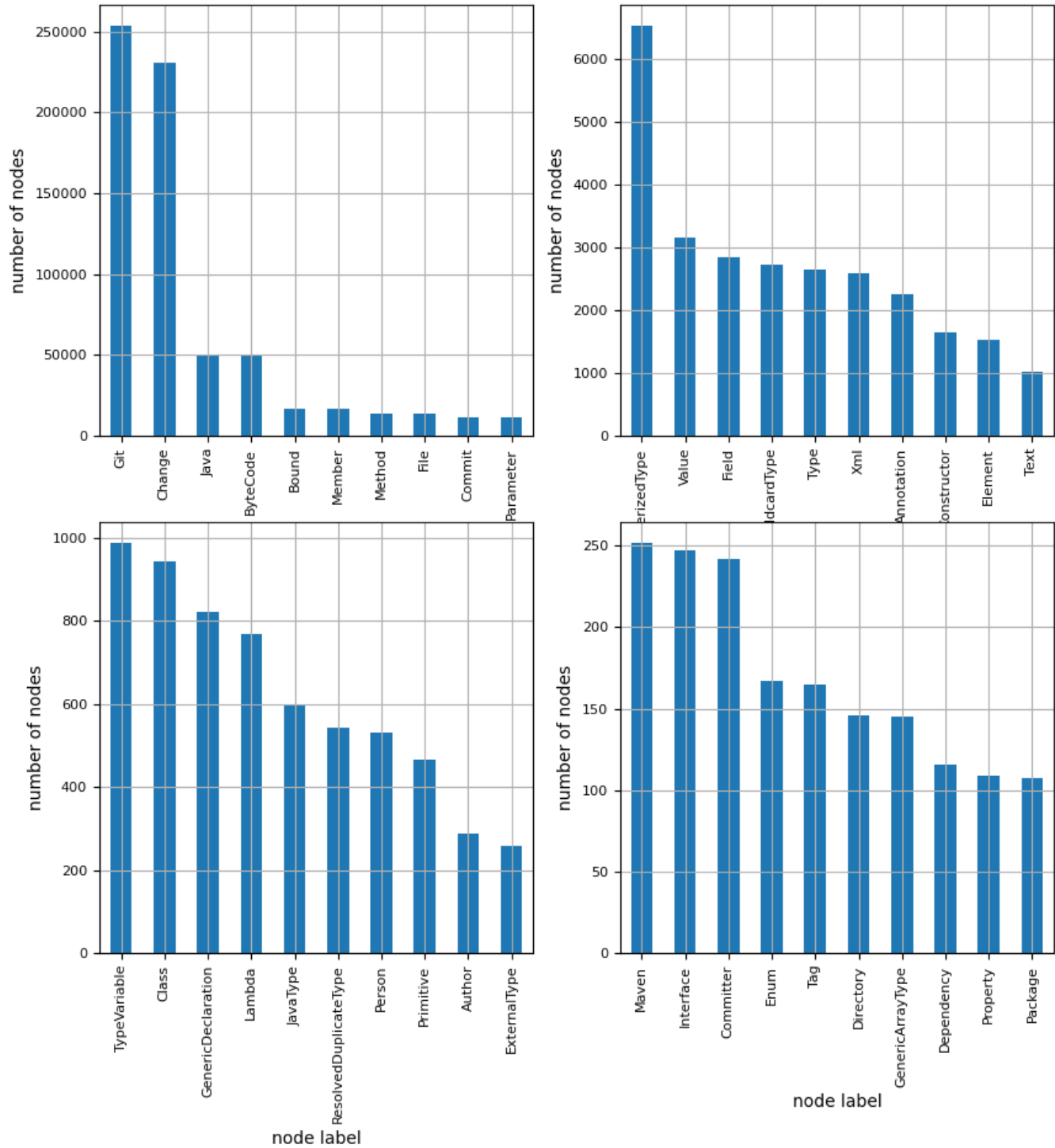
	nodeLabel	nodesWithThatLabel	nodesWithThatLabelPercent
0	Git	253912	82.661180
1	Change	231027	75.210957
2	Java	50037	16.289571
3	ByteCode	49895	16.243342
4	Bound	16715	5.441577
5	Member	16465	5.360189
6	Method	13618	4.433347
7	File	13402	4.363028
8	Commit	11618	3.782246
9	Parameter	11202	3.646817
10	ParameterizedType	6542	2.129751
11	Value	3166	1.030693
12	Field	2847	0.926842
13	WildcardType	2723	0.886474
14	Type	2651	0.863034
15	Xml	2592	0.843827
16	Annotation	2265	0.737372
17	Constructor	1654	0.538461
18	Element	1534	0.499394
19	Text	1016	0.330759
20	TypeVariable	989	0.321969
21	Class	942	0.306669
22	GenericDeclaration	823	0.267928
23	Lambda	769	0.250348
24	JavaType	597	0.194354
25	ResolvedDuplicateType	542	0.176448
26	Person	530	0.172542
27	Primitive	467	0.152032
28	Author	288	0.093759
29	ExternalType	259	0.084318
30	Maven	252	0.082039
31	Interface	247	0.080411
32	Committer	242	0.078783
33	Enum	167	0.054367
34	Tag	165	0.053716
35	Directory	146	0.047530
36	GenericArrayType	145	0.047205
37	Dependency	116	0.037764
38	Property	109	0.035485
39	Package	107	0.034834

## Chart 1c - Highest node count by label

Shows the 40 labels with the highest number of nodes.

<Figure size 640x480 with 0 Axes>

## Node count by label



## Relationship Types

Table 2a - Highest relationship count by type

Lists the 30 relationship types with the highest number of occurrences. The whole table can be found in the CSV report `Relationship_type_count` .

Total number of relationships: 953595

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	CONTAINS_CHANGE	231027	24.226952
1	MODIFIES	231027	24.226952
2	UPDATES	148004	15.520635
3	CREATES	57540	6.034008
4	DELETES	35338	3.705766
5	INVOKES	29738	3.118515
6	COMMITTED	23236	2.436674
7	OF_TYPE	17636	1.849422
8	DEPENDS_ON	17445	1.829393
9	DECLARES	16827	1.764586
10	OF_RAW_TYPE	15200	1.593968
11	HAS_PARENT	14122	1.480922
12	HAS	11902	1.248119
13	HAS_COMMIT	11618	1.218337
14	RETURNS	10643	1.116092
15	HAS_FILE	10547	1.106025
16	RENAMES	9855	1.033458
17	READS	7695	0.806946
18	HAS_ACTUAL_TYPE_ARGUMENT	7501	0.786602
19	HAS_NEW_NAME	6159	0.645872
20	OF_GENERIC_TYPE	5349	0.560930
21	RESOLVES_TO	3805	0.399016
22	SIMILAR	3419	0.358538
23	RETURNS_GENERIC	3253	0.341130
24	CONTAINS	3084	0.323408
25	WRITES	3066	0.321520
26	ANNOTATED_BY	2213	0.232069
27	HAS_FIRST_CHILD	1534	0.160865
28	HAS_LAST_CHILD	1534	0.160865
29	HAS_ELEMENT	1522	0.159607

## Chart 2a - Highest relationship count by type

Values under 0.5% will be grouped into "others" to get a cleaner plot. The group "others" is then broken down in the second chart.

<Figure size 640x480 with 0 Axes>



Relationship types (more than 0.5% overall)

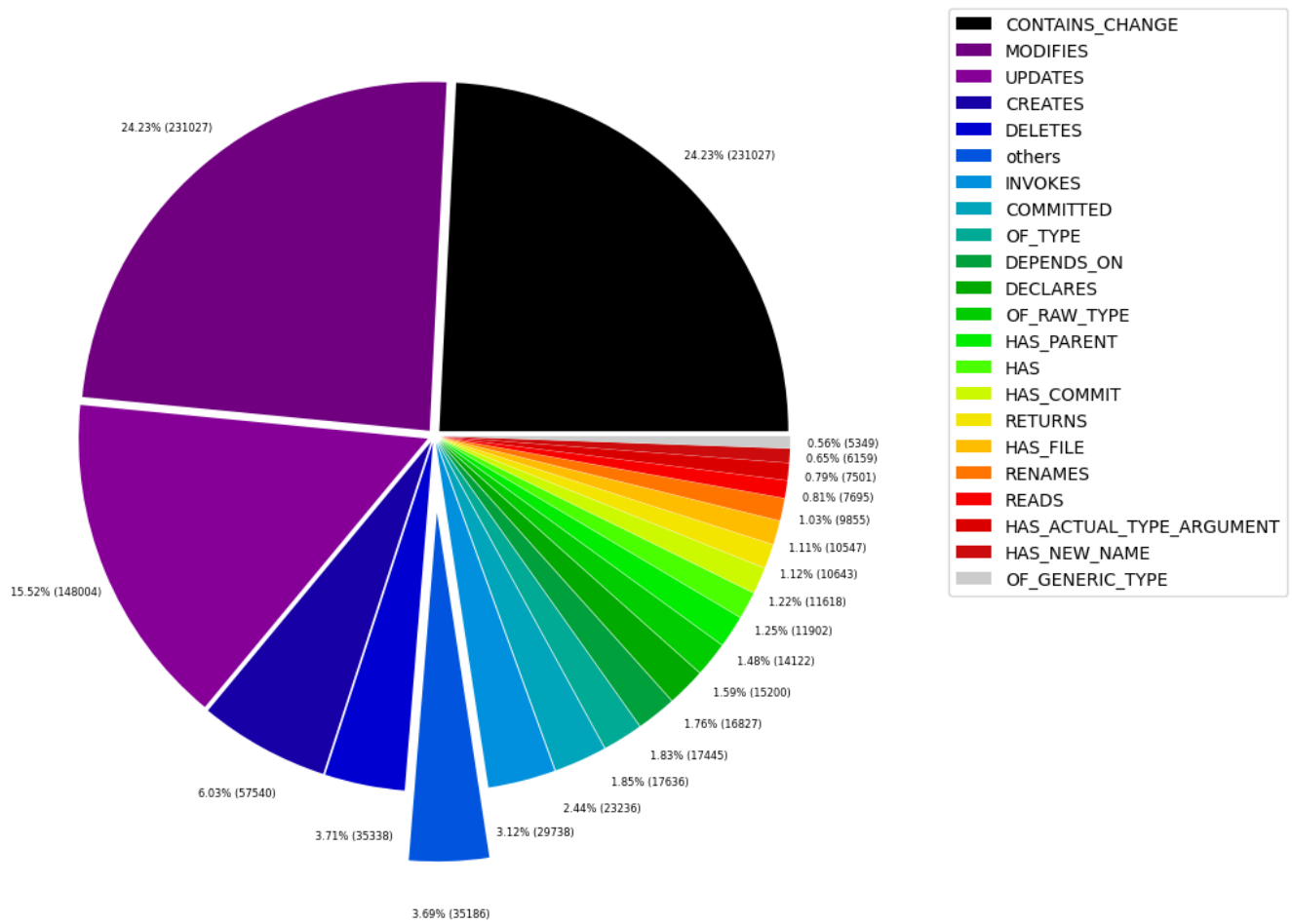


Table 2b - Lowest relationship count by type

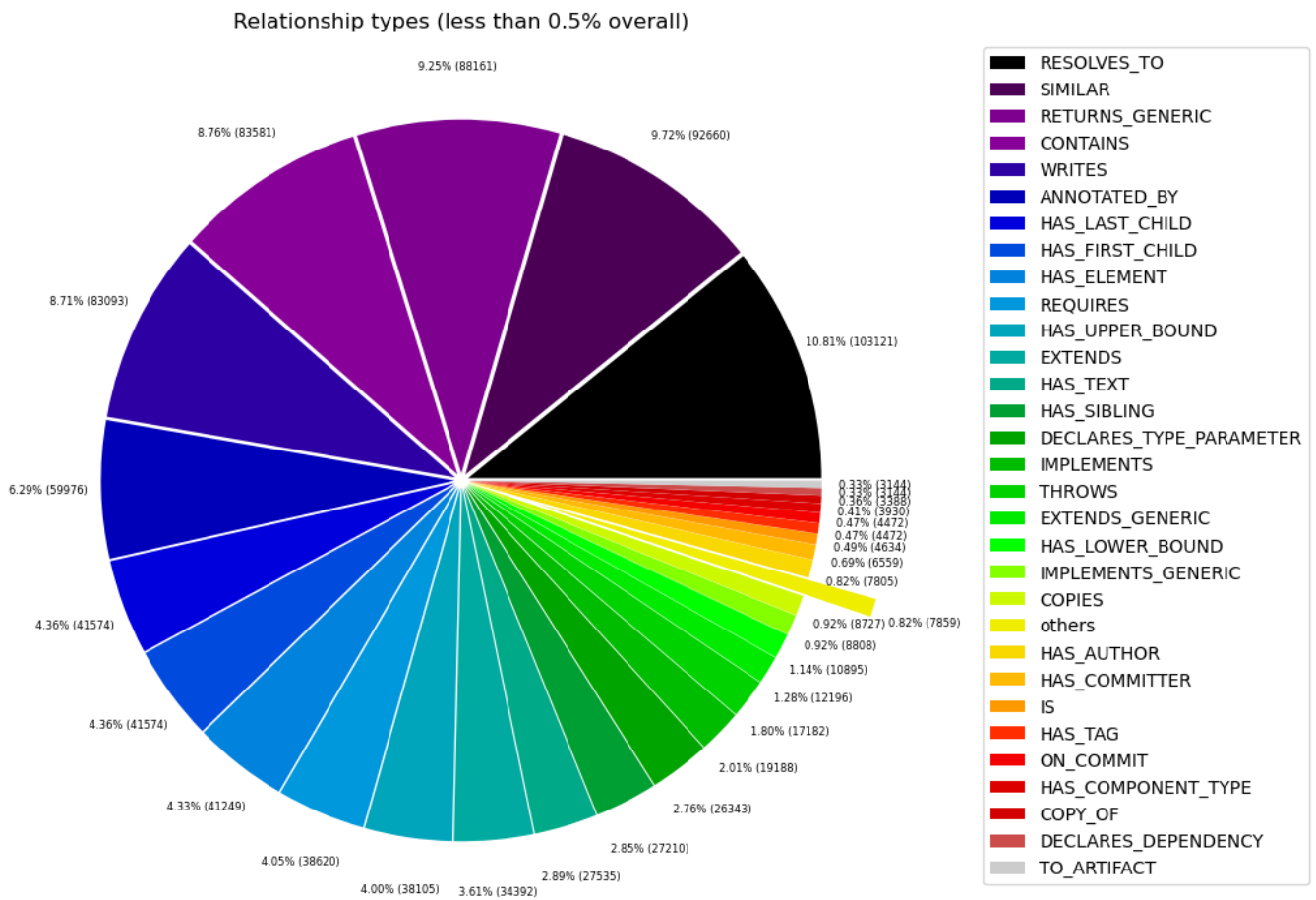
Lists the 30 relationships type with the lowest number of occurrences up to 0.5% of the total node count. This is essentially breaking down the "others" slice from the chart above.

	relationshipType	nodesWithThatRelationshipType	nodesWithThatRelationshipTypePercent
0	EXCLUDES	1	0.000105
1	THROWS_GENERIC	5	0.000524
2	DESCRIBES	6	0.000629
3	HAS_ROOT_ELEMENT	7	0.000734
4	OF_NAMESPACE	12	0.001258
5	HAS_ATTRIBUTE	12	0.001258
6	HAS_GOAL	14	0.001468
7	HAS_EXECUTION	14	0.001468
8	USES_PLUGIN	16	0.001678
9	IS_ARTIFACT	16	0.001678
10	HAS_CONFIGURATION	16	0.001678
11	REQUIRES_TYPE_PARAMETER	17	0.001783
12	INCLUDES_CONCEPT	19	0.001992
13	HAS_BRANCH	24	0.002517
14	DECLARES_NAMESPACE	24	0.002517
15	HAS_HEAD	25	0.002622
16	REQUIRES_CONCEPT	28	0.002936
17	HAS_DEFAULT	34	0.003565
18	DECLARES_DEPENDENCY	116	0.012164
19	TO_ARTIFACT	116	0.012164
20	COPY_OF	125	0.013108
21	HAS_COMPONENT_TYPE	145	0.015206
22	ON_COMMIT	165	0.017303
23	HAS_TAG	165	0.017303
24	IS	171	0.017932
25	HAS_COMMITTER	242	0.025378
26	HAS_AUTHOR	288	0.030202
27	COPIES	322	0.033767
28	IMPLEMENTS_GENERIC	325	0.034082
29	HAS_LOWER_BOUND	402	0.042156

## Chart 2b - Lowest relationship count by type

Shows the lowest (less than 0.5% overall) relationship types. This plot breaks down the "others" slice of the pie chart above. Values under 0.01% will be grouped into "others" to get a cleaner plot.

<Figure size 640x480 with 0 Axes>



## Node labels with their relationships

Table 3a - Highest relationship count by node labels and relationship type

Lists the 30 node labels and their relationship types with the highest number of occurrences.

	sourceLabels	relationType	targetLabels	numberOfRelationships	numberOfNodesWithSameLabelsAsSource	numberOfNodesWithS
0	[Git, Commit]	CONTAINS_CHANGE	[Git, Change]	231027	11618	
1	[Git, Change]	MODIFIES	[File, Git]	231027	231027	
2	[Git, Change]	UPDATES	[File, Git]	148004	231027	
3	[Git, Change]	CREATES	[File, Git]	57540	231027	
4	[Git, Change]	DELETES	[File, Git]	35338	231027	
5	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	18210	10583	
6	[Git, Commit]	HAS_PARENT	[Git, Commit]	14116	11618	
7	[Repository, File, Git]	HAS_COMMIT	[Git, Commit]	11618	1	
8	[Author, Git, Person]	COMMITTED	[Git, Commit]	11618	288	
9	[Committer, Git, Person]	COMMITTED	[Git, Commit]	11618	242	
10	[Repository, File, Git]	HAS_FILE	[File, Git]	10547	1	
11	[Git, Change]	RENAMES	[File, Git]	9855	231027	
12	[Java, ByteCode, Method, Member]	HAS	[Java, ByteCode, Parameter]	7306	10583	
13	[Java, ByteCode, Method, Member]	READS	[Java, ByteCode, Member, Field]	6917	10583	
14	[File, Git]	HAS_NEW_NAME	[File, Git]	6159	10547	
15	[Java, ByteCode, Parameter]	OF_TYPE	[Type, File, Java, ByteCode, JavaType]	5730	11202	
16	[Java, ByteCode, Bound]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	3218	6316	
17	[Java, ByteCode, Bound, ParameterizedType]	OF_RAW_TYPE	[Type, File, Java, ByteCode, JavaType]	2779	6542	
18	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, WildcardType]	2723	6542	
19	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound, ParameterizedType]	2435	11202	
20	[Java, ByteCode, Bound, ParameterizedType]	HAS_ACTUAL_TYPE_ARGUMENT	[Java, ByteCode, Bound, TypeVariable]	2230	6542	
21	[Java, ByteCode, Constructor, Method, Member]	WRITES	[Java, ByteCode, Member, Field]	1971	1651	
22	[Java, ByteCode, Method, Member]	RETURNS	[Type, File, Java, ByteCode, JavaType]	1892	10583	
23	[Java, Value, ByteCode, Annotation]	OF_TYPE	[Type, File, Java, ByteCode, ExternalType, Ext...	1842	2225	
24	[Java, ByteCode, Parameter]	OF_GENERIC_TYPE	[Java, ByteCode, Bound]	1819	11202	
25	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	1745	1651	
26	[Java, ByteCode, Constructor, Method, Member]	HAS	[Java, ByteCode, Parameter]	1710	1651	
27	[Java, ByteCode, Method, Member]	INVOKES	[Java, ByteCode, Constructor, Method, Member]	1704	10583	
28	[Java, ByteCode, Parameter]	ANNOTATED_BY	[Java, Value, ByteCode, Annotation]	1594	11202	
29	[Java, ByteCode, Constructor, Method, Member]	INVOKES	[Java, ByteCode, Method, Member]	1539	1651	

## Graph Density

```
total_number_of_nodes (vertices): 307172
total_number_of_relationships (edges): 953595
-> total directed graph density: 1.0106531367835574e-05
-> total directed graph density in percent: 0.0010106531367835574
```